GUIDANT

Electronic Preset Delivery System

Smith Meter® AccuLoad® III

Operator Reference Manual

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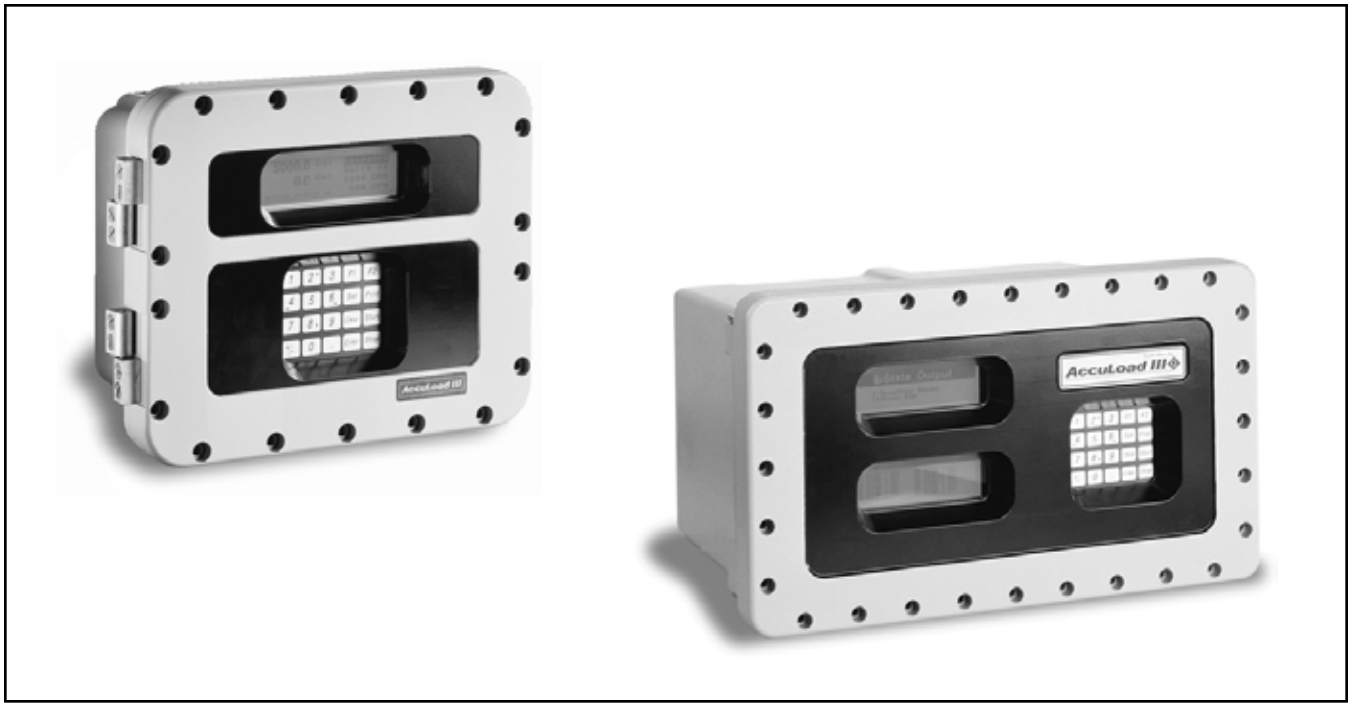

Caution

The default or operating values used in this manual and in the program of the AccuLoad® III are for factory testing only and should not be construed as default or operating values for your metering system. Each metering system is unique and each program parameter must be reviewed and programmed for that specific metering system application.

Disclaimer

Guidant hereby disclaims any and all responsibility for damages, including but not limited to consequential damages, arising out of or related to the inputting of incorrect or improper program or default values entered in connection with the AccuLoad® III.

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Product Description

The Smith Meter® AccuLoad® III is a micro-processor based electronic preset/blending instrument that supports up to 50 recipes on six load arms (six dual channel meters total) and six products per load arm. It is configurable to support a variety of user applications. In addition, the firmware is able to detect the absence of the BSE expansion board and enforce a limit of three meters. The firmware is also able to detect whether a second display is available and use the second display only if present. If limited to one display, the number of arms is limited to two.

The AccuLoad III offers six options: Straight product, sequential blending, ratio blending, side-stream blending, hybrid blending and unloading. If ratio, sequential blending or hybrid is selected, the operator enters the number of products to be associated with the load arm. Straight product arms must be programmed for one product. Side-stream product arms must be programmed for two products. If multiple arm operation is selected, the process is repeated for each load arm defined.

Side-stream blending is a two-product ratio blender where the minor of two products is metered and is controlled by a valve. The main product is free-flowing. Another meter and its corresponding control valve are located downstream from where the two products merge.

Two to six meters may be used to create a ratio blend. The AccuLoad III allows any combination of ratio blending arms to be supported with the available meter inputs. (This limits the number of ratio blending arms to three two-product arms maximum. Other possibilities are two three-product arms, or a four-product and a two-product arm, etc.) For purposes of determining valid arm combinations, a side-stream blending arm can be considered a two-product ratio blending arm, as both require the same resources.

For applications with straight product delivery or sequential blending, each load arm may be configured independently for blending activity and product number.

Two to six meters may be used to create a hybrid blend. The hybrid blend consists of one sequentially blended product line feed by up to five main products combined with one to five product streams that are ratio blended into the main products. Hybrid blending is ideal for applications where two or more diesel products are being blended sequentially combined with bio mass which it is recommended to be ratio blended.

Optimum measurement accuracy is attained through continuous linearization of the meter factor with changes in flow rates. The AccuLoad III is also capable of maintaining back pressure on the measurement system using either automatic flow optimization or a pressure transmitter. Volumetric correction is calculated directly from published API equations providing precise volumetric measurement results. Precise temperature, pressure compensation, and density correction are options that are available in the instrument.

The dynamic real-time display of the current actual operating conditions of the system provides the operator with valuable system information while the system is operating.

The AccuLoad III provides several loading system control functions: Additive injection, pump control, alarm control, set stop, valve control, back pressure control, automatic adjustment of final trip point, and flow rate controlled injector. Other significant features are as follows:

- One display on AccuLoad III-S hardware; two displays on AccuLoad III-Q hardware. When six arms are programmed for use, all six arms can be viewed on the two displays.
- Up to 24 different additive injectors can be simultaneously paced or controlled through communications.
- The AccuLoad III interfaces with Add-Pak smart additive injector systems. Each Add-Pak system incorporates up to ten metered injectors along with digital outputs to energize additive pumps and injector solenoids. The AccuLoad III controls the Add-Pak injectors via 232 or 485 communications, and can interface with a maximum of two Add-Pak systems.
- The AccuLoad III will monitor and totalize the volume of additive injected by piston-type additive injectors or smart injectors.
- When using Firmware Revision 10.01 and above, the AccuLoad supports shared injectors.
- When using Firmware Revision 10.02 and above, the AccuLoad supports downstream injectors (piston, smart, metered, etc.) with straight and sequential load arms.
- When using Firmware Revision 10.02 and above, a user-configurable prove report can be automatically printed at the end of a prove. A sample user configurable prove report is provided with AccuMate.
- When using Firmware Revision 10.04 and above, the AccuLoad supports temperature compensated flow additives, mass meter communications, and non-cyclic meter pulse averaging.
- When using Firmware Revision 10.05 and above, the AccuLoad supports the inclusion of PIN validation in the data base and an ability to automate start and stop batches for unattended tank filling.
- When using Firmware Revision 10.07 and above, the AccuLoad supports the use of a captive card reader, flow controlled additive pulse input security, general pulse analog inputs, and remote injector input for proving metered injectors.
- When using Firmware Revision 10.08 and above, the AccuLoad supports six product meters on the EAAI/PIB (single pulse only) and first/second high flow preset where the unit can be programmed to automatically use the second high flow rate for smaller batches.

- When using Firmware Revision 10.09 and above, the AccuLoad supports clean line blending where it will account for the clean line product in the line at the beginning of a batch, added a set of Additive non-resettables to include leakage, added ISO 91-2 volume correction to 20° C API tables 59A, B, D (live density input) and 60A, B, D (reference density input).
- When using Firmware Revision 10.10 and above, the AccuLoad supports hybrid arm configuration as described previously, clean line product can now be selected in the recipe and the flow controlled additive percentage has been changed from 10 to 20 percent.
- The AccuLoad III, if so programmed, will automatically calculate and adjust the additive pulse output to be stopped at the first trip point of the product with the same number of pulses. This will have the same effect as if the additive output was stopped at the end of the batch.
- A contact is available to start and stop a pump or other electrically operated equipment as well as a program code that will set the time delay of that start or stop.
- Two programmable alarm contacts are available. They operate independently and can be configured to close on a Valve Fault, on any alarm, or not at all.
- The AccuLoad III contains the intelligence to control a Smith Meter Model 210 or 215 Digital Control Valve, or an analog valve, that will provide low flow start and multi-stage shutdown.
- The AccuLoad III contains the intelligence to automatically reduce the flow of product and ensure the flow is within the pumping capabilities of the system. Once the flow is able to continue at the programmed high flow rate, the AccuLoad III will increase the flow to programmed values.
- The AccuLoad III, if so programmed, will automatically adjust the final trip point of the batch (Preset).

Critical functions such as minimum flow rate, excess flow rate, temperature detection, preset volume overrun, and memory retention, are monitored by internal circuits. Any failure will signal closure of the valve. Should the valve fail to close within a programmable period after having been signaled, a contact is closed. This can be wired through external relays to shut off the pump and/or kill power circuits.

Environmental fluctuations within specified limits have virtually no effect on the operation of this control system. AccuLoad III is available in an explosion-proof housing for hazardous locations. (See Bulletin SS06036 for Specifications.)

How to Use This Manual

This manual is to be used as a guide for the AccuLoad III.

This manual is divided into eight sections: Introduction, Operations, Security, Dynamic Displays, Diagnostics, Reference, Appendix, and Index.

The “Operations” section describes the daily operation of the AccuLoad III and explains what is required of an operator to effectively load the product.

The “Security” section describes the levels of security available within the AccuLoad III and explains how they can be configured and utilized.

The “Dynamic Displays” section describes the infor-mation that can be displayed by the AccuLoad III while in the “READY” state or in the Run Mode.

The “Diagnostics” section describes the diagnostic information that can be displayed by the AccuLoad III.

The “Reference” section gives a description of each program code available in the instrument.

The “Appendix” contains information about the AccuLoad’s Audit Trail function and additive alarms.

The “Index” is a comprehensive listing, with page numbers, of all subjects covered in this manual.

The examples presented in this manual are for clarity and operator convenience. The values might vary for specific installations and/or operations.

Product Blending with AccuLoad III

Sequential Blending

Sequential blending is the act of loading multiple products, one at a time, into a vessel (e.g., a tanker truck). This is most commonly done with products that mix very easily.

The AccuLoad III accomplishes sequential blending of multiple products in the following manner. The ratio of varying products is designated in the recipe as a percentage of the total preset. These percentages must total 100%. When the operator enters the preset, the AccuLoad automatically calculates the actual volumes of each product to be delivered. Each of these is delivered as a type of “mini-batch,” complete with individual high flow rates, first trip volumes, and so on. The order of product delivery must be included in the recipe definition.

If an incorrect product volume is delivered, the volumes of the remaining products are adjusted accordingly. If this adjustment creates a blend intolerance alarm, the operator will be prompted to stop or continue the batch. An exception to this rule is when another delivery of the same product is specified in the recipe. In this case, the volume of that product’s next delivery only is adjusted to maintain the correct blend ratio and preset amount.

Ratio Blending

Ratio blending is the process of mixing multiple products simultaneously during delivery to a vessel (e.g., a tanker truck). Ratio blending is used primarily when loading speed is an issue, or when the component products do not easily mix.

The AccuLoad III accomplishes ratio blending of multiple products in the following manner. All products required for the recipe are delivered simultaneously through their own meters (and their own corresponding pumps and control valves). Two-stage valves are not used for ratio blending; only digital or analog valves are acceptable. The ratio of the component products is designated in the recipe as a percentage of the total preset. These percentages must total 100%.

When the operator enters the preset, the AccuLoad III automatically calculates the actual volumes of each product to be delivered. As stated above, products are delivered simultaneously, each through its own meter. Flow rates are adjusted for optimal blend accuracy while conforming to the programmed system flow profile using Smith's exclusive control algorithm. Should flow rate variations occur, the profile is dynamically adjusted to attain the best possible mix.

Hybrid Blending

The AccuLoad III supports hybrid blending which is defined as a combination of sequential blending and ratio blending. A typical hybrid blending arm configuration may be three sequential products and one or two ratio products. The sequential products flow one at a time and in most cases one of the ratio products would flow simultaneously with each of the sequential products. The ratio product(s) can be plumbed either upstream or down stream of the sequential product meter. On a hybrid arm there must be at least one sequential product configured.

Side Stream Blending

The AccuLoad III supports side-stream blending, which is defined as two-product ratio blending where the minor of the two products is metered and is controlled by a valve, and the main product is free-flowing. Another meter and its corresponding control valve are located downstream of where the two products merge. The AccuLoad III also supports side-stream blender arm proving. For more information on side-stream blending, refer to Application Bulletin AB06054.

Wild Stream Blending

The AccuLoad III.net firmware starting in revision 11.04 was enhanced to provide a continuous in-line blending option or commonly referred to as a Wild Stream Blender. This feature is intended to be used in applications where it is desired to continuously blend two or more products where a preset volume is not normally used. The AccuLoad III's Hybrid Arm Configuration is used for the Wild Stream Blender application. For more information on Wild Stream Blending, refer to application bulletin AB06072.

Downstream Injector Blending

When using Firmware Revision 10.00 and above, the AccuLoad III supports downstream injector blending. For ratio blending applications, the additive injector can only be delivered if it is plumbed into a product that is part of the recipe being delivered. Downstream injectors allow those additives to be available for delivery with any product in the blend since they are plumbed downstream of the manifold. For more information on downstream injector blending, refer to Application Bulletin AB06056.

Unloading

When using Firmware Revision 10.01 and above, the AccuLoad III allows a truck compartment to be unloaded without entering a preset volume. Implementing this feature requires that a load arm be identified as "unloading"; up to six load arms can be so configured. For more information on unloading, refer to Application Bulletin AB06055.

Vapor Recovery – "Straight with VRS"

When using AccuLoad III.net firmware revision 11.16 and higher, single product delivery with a vapor recovery option is available. This feature requires a load arm type to be programmed as "Straight with VRS". Two meters are required for this application to determine the amount of vapor recovered while loading light density products. The AccuLoad provides a vapor product total and a net mass total between the liquid product meter and the vapor product meter in the system. For additional information refer to AB0A007.

Internet Connectivity Features

- **ARP/RARP and DHCP Support**
- **PING echo Diagnostics**
- **SLIP** (serial line internet protocol) used for access to Internet functionality for computers without an Ethernet interface
- **FTP** (file transfer protocol) used for large object and flash image transfers
- **Smith Meter Protocol and Modbus Protocol** support over TCP/IP no address or framing characters required, ex. Send 'EQ', receive '01810030' response; routing and security of transmission provided by TCP layer
- **Limited HTTP Server Functionality** delivers run data of host names instead of IP addresses for remote computes such as mail servers, etc.
- **Simple Mail Transport Protocol** (SMPT) alarm notification to any email address

- **Post Office Protocol V3** (POP3) handle email replies (remote alarm clearing)
- **Collection of HTML Pages** used for diagnostic and status monitoring via any web browser
- **Web Server** allows for command line argument passing (for enhanced CGI scripting support)
- **Support for Network Printers** (LPR client) prints reports directly to the network printer
- **Modifications to the Remote Display Application to Support TCP/IP Connections**
- **Addition of a Remote Display Daemon to the AccuLoad III** allows user interaction with the remote display software over TCP/IT
- **Compliant with the FTP Standard**

Dynamic Name Service (DNS) Client

The AccuLoad III includes DNS client ability. To support this feature, a program code (System-780) will allow for the entry of an IP address specifying a DNS server. If this address is zero and DHCP is enabled, the DHCP client will attempt to use information from the DHCP server to populate the DNS server IP.

SMPT and POP3 Client Functionality

The AccuLoad II includes the ability to send emails when specific conditions are encountered. Six new parameters will be required to support this feature, refer to 781-786.

Alarm Responses

Arm Directory – 600 Directory Alarms

Assuming parameters 780-786 are configured correctly, the client functionality assumes that the account and associated password is a previously created and valid account on the server specified. Support for base 64 encoding of the username and password will be included (i.e. support for AUTH LOGIN as opposed to merely AUTH PLAIN).

The SMPT client will attempt to connect to the SMPT server specified via port 25 (the well-known SMPT port). Upon successful connection, the SMPT client will issue an email with the text of the alarm event.

In support of this feature, the existing Alarm Configuration parameters are modified to allow an additional option to enable/disable notification by email. (Refer to System 600 – Alarm Directory – parameters 602-664 & 671-680.

Switch Settings

A 8 pin DIP switch will be available for use (SW1-SW8). The switch will be utilized as follows:

SW1 – Force Firmware Upgrade (on power up, bootloader waits for firmware upgrade)

SW 2 OFF – SW3 OFF: bootloader uses previously programmed IP address (default)

SW 2 ON – SW3 OFF: bootloader uses IP address 192.168.0.1

SW 2 OFF – SW3 ON: bootloader uses IP address 10.0.0.1

SW 2 ON – SW3 ON: bootloader uses DHCP to determine address

SW 4 – SW 8: for factory use only

For instructions on upgrading the firmware, please see the AccuMate manual.

Card Reader Interface

The AccuLoad III can obtain proximity card data through a proprietary interface board. The AccuLoad can also pass card data and status to a host computer. The card reader interface is activated by choosing the card reader option in the serial communications function program code. This interface offers the potential for enhanced functionality and security ranging from simple transaction-stamping with driver card data to a mini automation system with validation and authorization. The card reader interface supports up to 1000 cards with firmware 11.08 and higher. For more information, refer to Proximity Card Reader Installation/Operation Manual MN06144.

ComFlash Mass Storage Expansion Board

This optional hardware module provides additional flash to store transaction data. The module comes with a 512 M SD card that is capable of storing thousands (10,000+) of additional historical transaction data. The option uses Com port 4 and only works with 232 communications.

Alarm options are also available with this feature. See Installation Manual MN06135 for additional details. The Smith Meter® Card Reader can also be operated on Com 4 while ComFlash is installed and functioning.

AccuLoad Interface Control Board

The AccuLoad Interface Control Board provides additional flexibility to the AccuLoad's standard features. The AccuLoad III supports the use of one optional AICB in the AccuLoad III-S hardware and two optional AICBs in the AccuLoad III-Q hardware. In the AccuLoad III-S hardware the AICB board provides ten additional metered additive injector systems, for a total of 12. When selected as general inputs and outputs, it provides 10

additional DC inputs and 20 additional AC outputs. In the AccuLoad III-Q hardware, two AICB boards provide twenty additional metered additive injector systems, for a total of 24. When selected as general purpose inputs and outputs, they provide 20 additional DC inputs and 40 additional AC outputs.

Metered Injector With Flow Control

The AccuLoad III supports an additive injector type known as a flow rate controlled injector. This new injector type is similar to a metered injector type in that a meter pulse input is received; however, rather than a solenoid, a digital valve is used to control the flow of the additive. The AccuLoad controls the flow of the additive in an attempt to constantly maintain the desired ratio as if the additive were a ratio product. The AccuLoad adjusts the valve as needed to achieve the desired flow rate if the rate is out of tolerance from the current target rate. For more information on metered injector with flow control, refer to Application Bulletin AB06057.

Bay Transaction Control

The AccuLoad III supports bay transaction control. The customer can choose whether to track transactions and print reports for each individual load arm, or to track transactions and print a single report for all load arms on a bay. The AccuLoad III now supports the definition of up to two bays. For more information on bay transaction control, refer to Application Bulletin AB06058.

Flow Controlled Additive Temperature Compensation

The AccuLoad III allows for temperature compensating for additives delivered into the product stream. With this method of additive injection, up to 20% of the total preset can consist of additive. Because the additive contribution to the preset is significant, temperature compensation is required to ensure accurate delivery of the additive. For more information on flow controlled additive temperature compensation, refer to Application Bulletin AB06057.

Mass Meter Communications Interface

When using Firmware Revision 10.04 and above, the AccuLoad III has the capability of obtaining temperature, density, and status information from Smith Meter S-Mass meters and / or Apollo mass meters via serial communications (EIA-232 / 485) ports. A direct pulse input is required for volume / mass accumulation and flow control purposes. For more information on mass meter communications interface, refer to Application Bulletin AB06060.

When using Firmware Revision 11.08 and above, the AccuLoad III has the capability of obtaining density and status from E+H Promass 84 Coriolis Meters. This is accomplished by using an EIA-485 serial port with Modbus Communications protocol. A direct pulse input is required for volume/mass accumulation. Refer to Installation Manual MN06135 for wiring and programming information.

Pulse Input Period Averaging Time

The AccuLoad III offers an option to improve flow control when the AccuLoad III is used with non-cyclic third party meters and / or transmitters – that is, where the pulse periods vary as the meter rotates even though product is flowing through the meter at a constant rate.

Run Mode

This is the normal driver-controlled mode of operation where a preset volume of product is entered into the AccuLoad III. The flow is then initiated, controlled, and stopped by the AccuLoad III at the end of the batch.

All preset and control operations can be performed either locally through the keypad or through communications. The operation described in this section assumes that the AccuLoad is being operated locally through the keypad. For more information on operating through communications, refer to the AccuLoad III Communications Manual MN06130L.

Keypad Functions

The push-buttons on the keypad perform the following preset functions in the Run Mode:

0 - 9 Used for presetting the quantity to be delivered

CLEAR Used to clear incorrect entries and to exit from the dynamic displays

ENTER Used for dynamic displays and selecting the recipe to be loaded

PRINT Signals completion of transaction when “Print Key” option is selected in the Systems Directory

SET Used to initiate the preset sequence and paging through recipes

START Used to start the delivery (providing all external permissive senses are satisfied)

STOP Used to stop delivery at any time (not intended as emergency stop)

↑ Used to move the selection arrow up in selection of recipes and navigating the dynamic displays

↓ Used to move the selection arrow down in selection of recipes and navigating the dynamic displays

F1 In split screen mode, toggles between one screen view and another; in full screen mode, toggles between one load arm display and another

F2 Toggles between full screen and split screen modes

Overview

The AccuLoad III allows up to a six-arm operation. Each arm may be configured to deliver or unload a straight product, or may be configured as a sequential or ratio blender. Up to six distinct products may be delivered in a sequential blend. For ratio blending with one product per meter, a maximum of six components may be blended together. The AccuLoad III can control six meters, so if ratio blending is selected on any arm, the number of additional load arms available depends on the number of products to be delivered simultaneously by the ratio blending arm(s). A table of possible configuration combinations appears below.

Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 6
6 product ratio	N/A	N/A	N/A	N/A	N/A
5 product ratio	straight/sequential	N/A	N/A	N/A	N/A
4 product ratio	2 product ratio	N/A	N/A	N/A	N/A
4 product ratio	straight/sequential	straight/sequential	N/A	N/A	N/A
3 product ratio	3 product ratio	N/A	N/A	N/A	N/A
3 product ratio	2 product ratio	straight/sequential	N/A	N/A	N/A
3 product ratio	straight/sequential	straight/sequential	straight/sequential	N/A	N/A
2 product ratio	2 product ratio	2 product ratio	N/A	N/A	N/A
2 product ratio	2 product ratio	straight/sequential	straight/sequential	N/A	N/A
2 product ratio	straight/sequential	straight/sequential	straight/sequential	straight/sequential	N/A
straight/sequential	straight/sequential	straight/sequential	straight/sequential	straight/sequential	straight/sequential

Note: *Straight/Sequential indicates that the arm can be either a straight product arm or a sequential blending arm. Table does not include hybrid configuration.*

Note: *"2 Product Ratio" is the same arm configuration combination for 2 product "side-stream" and "Straight with VRS" arm types.*

Load arms must be programmed in order. For example, Load Arm 1 must be programmed before Load Arm 2. However, it is not necessary to configure ratio-blending arms before straight or sequential blending arms. The configuration that allows a three-product ratio blender on Arm 1 and a straight or sequential blender on Arm 2, could just as easily be a straight or sequential blender on Arm 1 and a three-product ratio blender on Arm 2. If jumper J23 is removed from the KDC board, indicating no BSE is available; all combinations requiring more than three meters are prohibited. If jumper J24 is removed, indicating that the second display is not available, the number of arms is restricted to two. These jumper states are available via communications.

Side-stream blending is also an option on the AccuLoad III. Side-stream blending is two-product ratio blending where the minor of the two products is metered and is controlled by a valve. The main product is free flowing. Another meter and control valve is located downstream from where the two products merge.

The "RUN" Mode permits the operator to select the recipe and preset volume, start the preset volume, and observe the dynamic variables such as flow rate, temperature, volume correction factors, transaction totals and non-resettable totals. The AccuLoad III processes normal start-up, flow control and shutdown sequences, and operator-requested stops.

Product delivery is controlled by several program code entries. Functions such as first high flow rate, second high flow rate, low flow start, and first and second trip points are automatically controlled and monitored per their program entries. Safety and volume accuracy functions including excess high flow, low flow, overrun, and temperature probe failure are also monitored per their program parameters. If at any time an alarm occurs while in the Ready State or the Run Mode, the AccuLoad III will attempt to shut down the flow and a message indicating an alarm condition will pop up over the current display.

When the delivery is completed, the display will read:

800	IV	Unleaded
	GAL	Batch #1
0		800 IV
		0 GPM
	Batch Complete	

The "batch complete" message will flash, alternating with the time and date.

Depending on how the AccuLoad III is programmed, a transaction can be ended by pressing the "PRINT" button, by a communication command, or by an external input. If the "STOP" button is pressed during flow, and if the Start after Stop delay is programmed, the preset position will display:

Restart in	
5 secs	
11/03/99	11:16:10

Once the time-out has been reached, the display will read "Press Start to Continue" alternating with the time and date.

0	IV	Unleaded
	GAL	Batch #1
100		100 IV
		0 GPM
	Press Start to Continue	

The operator can then press "START" and continue the batch. If the AccuLoad III is programmed to disable the time-out, the display will read as above, with the "Press Start to Continue" message alternating with the time and date.

Remote Start/Stop

Digital inputs can be programmed to be used for Remote Start/Remote Stop operations. When the power is applied to these contacts, the AccuLoad III will respond as though the "START" or "STOP" keys have been pressed on the keypad.

Additive Monitoring

Additive injector feedback provides the capability of the AccuLoad monitoring the additive products that are being injected. The AccuLoad III monitors the injector feedback switches for a change of state and counts the errors if no change is detected before the next injection. An alarm will be set if the number of errors exceeds the programmable maximum.

With Smart or metered injectors, the additive volume injected is actually measured, providing the ultimate in feedback. The AccuLoad communicates with the Additive Injector System where the AccuLoad is the master. The AccuLoad constantly monitors the Additive System for its status, polls for additive totals, and signals the system when to inject the additive – all through the communications line.

The AccuLoad III communications package has also been designed with a pass-through communications mode. In this mode of operation, the supervisory computer can talk to the Additive Injector System through the communication lines that have been run to the AccuLoad and from the AccuLoad to the Additive Injector System(s). (This is further described in the AccuLoad III Communications Manual.)

AccuLoad III supports additive meter proving. The AccuLoad controls a metered injector for proving, and then calculates a new meter factor for the metered injector.

AccuLoad III interfaces with Add-Pak smart additive injector systems. An Add-Pak system incorporates up to ten metered injectors along with digital outputs to energize additive pumps and injector solenoids. The AccuLoad III controls the Add-Pak injectors via 232 or 485 communications.

Additive Injector Selection

When the AccuLoad III is in operation, the additive selection can be programmed to be either automatic or manual, depending on how Code 801 of the Systems Directory has been programmed.

Code ***Description***

801 Manual/Auto Additive Injector Option must be programmed to either:

– Auto injectors, where the additive outputs that are programmed in the AccuLoad III will automatically be selected for each batch according to the programming in the recipe definition;

– Manual injectors, where the operator is prompted at the beginning of each transaction;

– Manual injectors, where the operator is prompted at the beginning of each batch.

The operation is as follows for manual selection of additives:

1. Select Recipe.
2. The driver or operator is required to select a recipe. Using the up and down arrow keys, the display will read as follows:

Select Recipe

→ Recipe 1
Recipe 2
Press Print for Help

Help: Press up or down arrow to select recipe. Press ENTER when done.

3. After the recipe has been selected, press “ENTER.” The following will be displayed:

Select Injectors

→ INJ #1 OFF
INJ #2 OFF
Press Print for Help

Help: Press up or down arrows to select injector. Press SET key to toggle injector on/off. Press “ENTER” when done.

4. Press the “SET” key to toggle Injector #1 from “OFF” to “ON.” After Additive Injector #1 has been selected to either “ON” or “OFF,” press the down arrow key and continue selection with the next injector.
5. When the additive selection is complete, press the “ENTER” key.

Recipe 1
Enter Preset Volume

→ 0 GAL

Press START when Ready

Automated Proving Mode

The AccuLoad III firmware provides an automated proving mode of operation. This feature allows the operator to prove the meter on all four products, and four meter factors and associated flow rates for each product without having to enter the program mode for each product and meter factor. When the automated proving mode is activated, the AccuLoad will calculate the meter factor for a proving run based on information that is obtained during the prove. The operator can select the flow rate and meter factor that is being proved through the keypad of the AccuLoad. After the prove is complete, the operator enters the prover volume and prover temperature and the AccuLoad calculates the new meter factor. The operator has the choice of downloading the new meter factor to the program or ignoring it. The AccuLoad also has the capability of providing an average meter factor over a maximum of ten proves.

Entry to the Automated Proving Mode will require several conditions to be met:

1. The Automated Proving Mode must be enabled via System Code 321.
2. The programmed security must be met. When normal conditions are met for starting a transaction (pressing the “SET” key or receiving authorization via communications), the Automated Proving Mode will be activated.

3. To initiate the proving sequence, the AccuLoad will prompt for the prover coefficient of cubical expansion. Note that the most recent value for this entry will be displayed. If this value is acceptable, the operator need only press “ENTER.”

Enter Prover Coefficient

→ 0.000186005

11/03/99 12:24:36

4. The AccuLoad III will prompt for the low flow start volume. If low flow start is not desired, enter zero. Press “ENTER.”

Enter Low Flow Start Volume

→ 100 Gal

11/03/99 12:25:37

5. Next, the AccuLoad III will display the “Select Recipe” prompt. If in remote control communications mode, only those recipes allocated will be available for selection. Recipes must be selected before the meter factors, since the recipe determines the product being proved. Note that only recipes comprising 100% of a single product may be delivered when proving.
6. Using the up and down arrow keys, select the required recipe.

   The operator must next select the meter factor and associated flow rate for proving.

Select Recipe

→ Recipe 1
Recipe 2
Press Print for Help

Select Meter Factor to Prove

→	#1	0.99850	600 GPM
	#2	0.99999	400 GPM
	#3	1.00000	200 GPM
	#4	1.00055	100 GPM

   Move the up or down arrow keys to the meter factor associated flow rate that is required. Note that only those factors currently programmed will be offered as selections. Press “ENTER.” after entering the selection.

7. Enter the batch amount desired.

Recipe 1
Enter Preset Volume

→ 1000 GAL

Press START when ready

8. Press “START” to begin flow. The flow rate associated with the selected meter factor will be used as the high flow rate. The batch will be delivered. The flow rate ramp-down from first trip to the end of the batch will be the same as if not proving.

   If after the batch is completed the operator presses “PRINT,” the display reverts to the Ready Mode display and will not go through the Auto Prove Sequence.
9. When the batch has completed, the AccuLoad will prompt for the actual prover volume. Enter the prover volume and press “ENTER.”

Raw Meter Volume 1000.94 GAL

Enter Prover Volume
→ **1000**
Batch Complete

“Batch Complete” will flash with the time and date.

10. The AccuLoad III will prompt for the prover temperature. Press “ENTER” to have the meter factor calculated.

Meter Temperature 60.0 F
Enter Prover Temperature

→ **60.5 F**

Batch Complete

11. The AccuLoad III will then calculate the meter factor. The new meter factor will be displayed.

#1	**0.99850**	**600 GPM**
	New Meter Factor	**0.98375**
	Average Flow Rate	**500 GPM**

Press ENTER to continue

12. When the ENTER key is pressed, the AccuLoad III will display the following screen.

New Meter Factor 0.98375
→ Reject
Save
Average
Re-enter prove values

13. If "REJECT" or "SAVE" is selected, the AccuLoad III will return to the Run Mode display where the trans action can be ended. If "AVERAGE" is selected, the AccuLoad III will then average all meter factors in the buffer (up to ten of them). The average meter factor will be displayed. Select "SAVE" to download the average meter factor into the Program Mode.

Average Meter Factor 0.98400
→ Continue
Save

14. If "Save" is selected, the AccuLoad III will download the average meter factor and will return to the "RUN" mode display where the transaction can be ended or a new batch can be started. If "Continue" is selected, a new batch can be started allowing the AccuLoad III to continue proving at this rate. Note that if the AccuLoad III is in remote control mode, authorization is required for each batch.
15. Each time a transaction is ended and a new transaction is begun, the AccuLoad III will start a new prove with Step 1.
16. In the event that the meter factor is not successfully downloaded, the AccuLoad III will display a message indicating that the meter factor was rejected.

Displays and Viewports

The AccuLoad III supports either one or two physical displays, depending on the hardware (AccuLoad III-S or AccuLoad III-Q). The AccuLoad determines how load arms are allocated to viewports and whether the screen can be split based on the currently programmed configuration.

Single or Dual Arm Operation

The diagrams below show the two viewports available on the AccuLoad III-S hardware with dual arm operation. The arms run independently. One arm may be in Run mode while the other is in Ready mode, or both arms may be in Run or Ready mode simultaneously.

After "SET" is pressed, a display test will be done where either all of the pixels will be turned on for one second and off for one second if the unit is in a single screen mode, or all the pixels on the active viewport only if the unit is in a split screen mode. The unit may be toggled at any time between full and split screen modes, or the focus may be toggled between load arms. If the unit is in the full screen mode, the displays are identical for that single arm operation.

	AccuLoad III
	Ready
	Press SET
	Diesel

The following screens are displayed if the operator continues the presetting sequence in the split screen view. Note that the amount of information displayed is reduced in this mode, and that many abbreviations are required. Should the operator need more information, he may press the "F2" key to switch to full screen mode, then press "F2" again to revert to the split screen view.

Enter	**AccuLoad III**
Transaction ID	**Ready**
XXXXXX	**Press SET**
Press ENTER	**Diesel**

The AccuLoad will attempt to display an entire message for operator prompts. If the message will not fit, it will be wrapped to the next line.

Enter Driver	**AccuLoad III**
ID	**Ready**
XXXXXX	**Press SET**
Press ENTER	**Diesel**

The recipe selection screen appears as in full screen view.

Select recipe	**AccuLoad III**
→Diesel-R	**Ready**
Diesel-C	**Press SET**
Unleaded	
More...	**Diesel**

If manual injectors are programmed, the display will appear as shown below.

Injectors **→ Inj1 ON** **Inj2 OFF** **Inj3 ON** **More...**	**AccuLoad III** **Ready** **Press SET** **Diesel**

The preset screen is simplified to allow for the reduced space in a viewport. Pressing the ENTER key at this screen moves the screen to the dynamic displays. From the dynamic displays, the START key may be pressed to begin the batch. If both load arms were at the preset screen, then the START key begins the batch on the arm that held the focus last. The "F1" key may be used from the dynamic displays to change the focus to the other arm, which allows the START key to begin the batch on the other load arm.

Diesel (RED) **Enter Preset** **_____Gal**	**AccuLoad III** **Ready** **Press SET** **Diesel**

If a permissive is not met, the following screen is displayed. If the programmed message is too long for the viewport, it is wrapped to the next line.

Connect the Ground	**AccuLoad III** **Ready** **Press SET** **Diesel**

If the load arm is a sequential blender, the block valve status screens will be similar to those shown below.

Block Valve #4 **Closing in** **15 secs**	**AccuLoad III** **Ready** **Press SET** **Diesel**

Block Valve #1 **Opening in** **20 secs**	**AccuLoad III** **Ready** **Press SET** **Diesel**

Delivery screens are similar to those shown below, whether the load arm is a single preset, a sequential blender, or a ratio blender. The top line alternates between the recipe name and the preset amount.

Unleaded (87) **0 Gal** **5000 Gal**	**AccuLoad III** **Ready** **Press SET** **Diesel**

If an alarm occurs, the focus changes to the arm on which the alarm occurs. The screen remains in split screen mode. The actual alarm message is displayed on the screen, and wrapped to the next line if necessary. If an alarm is not a system alarm, the other load arm may continue to prepare for a transaction, start the transaction, and run it without interference.

Injectors **→ Inj1 ON** **Inj2 OFF** **Inj3 ON** **More...**	**AccuLoad III** **Ready** **Press SET** **Diesel**

At any time during a delivery, the ENTER key may be used to move to the dynamic displays.

Three to Six Arm Operations

The diagrams below show the four viewports available on the AccuLoad III-Q hardware. Only one viewport may be active at any given time. The presence of a border indicates an active viewport.

Viewport One	**Viewport Three**

Viewport One	**Viewport Three**

The AccuLoad's displays operate as indicated in the table below.

	Top Display		Bottom Display	
# of Load Arms	Viewport 1	Viewport 3	Viewport 2	Viewport 4
1	Load Arm 1(full screen)		Dynamic Display menu (full screen)	
2	Load Arm 1 (full screen)		Load Arm 2 (full screen)	
3	Load Arm 1	Load Arm 3	Load Arm 2 (full screen)	
4	Load Arm 1	Load Arm 3	Load Arm 2	Load Arm 4
5	Last Accessed Load Arm		System Status Display	
5	Last Accessed Load Arm		System Status Display	

When five or six load arms are active, the focus is on the top physical display at all times. The F1 key selects the load arm to be actively displayed on the top viewport. The lower display contains a run display similar to that shown below. (Assume Load Arm 3 has the current focus on the top physical display.)

1	**Regular**	**72˚**	**0605**	**999999.9**
2	**UNL87**	**68˚**	**Ready**	**0**
4	**UNL91**	**70˚**	**Opening...**	**0**
5	**UNL93**	**–**	**Done**	**6001.0**
6	**Diesel**	**–**	**ALARM**	**254.7**

Dynamic displays are accessed from the top display only, and focus will never change to the system run display.

F1 and F2 Keys

When using AccuLoad III-S hardware in RUN mode, the AccuLoad III operates in one of two screen modes: full and split screen. In split screen mode, load arms 1 and 2 appear side by side, with a black border around the active view. Use the F1 key to toggle between one view and the other. Use the F2 key to switch from split to full screen mode. If the AccuLoad is in full screen mode, pressing F2 will shift from one full-screen load arm display to the other full-screen load arm display. The chart below illustrates the keystrokes that move between states, depending on the starting screen.

	Split Screen (Arm 1)	**Split Screen (Arm 2)**	**Full Screen (Arm 1)**	**Full Screen (Arm 2)**
F1	Split Screen (Arm 2)	Split Screen (Arm 1)	Full Screen (Arm 2)	Full Screen (Arm 1)
F2	Full Screen (Arm 1)	Full Screen (Arm 2)	Split Screen (Arm 1)	Split Screen (Arm 2)

When using AccuLoad III-Q hardware, the F2 key operates as a zoom key, toggling the display be-tween split screen and full screen. F2 only operates when both viewports of a physical display are in RUN or READY mode. F2 does not function while the Main Menu (or any of its submenus) is being displayed, or when the Dynamic Displays are being navigated. F2 also does not operate if only one load arm is designated to a physical display.

The F2 key only works on the physical display that currently has the focus. Each physical display can be formatted as a split or full screen display, independent of the other.

System Program Code 123 determines the period during which the AccuLoad remains in a full screen format. If set to zero seconds, “zoom” is prohibited. If set to 99 seconds, “zoom” will remain in effect until changed by the operator. If set to any other value, the display reverts to a split screen format after the programmed period has elapsed. A single parameter sets this timeout value, but both physical displays maintain their own timeout counter and operate independent of the other physical display.

F2 Key Press to Change Zoom – Focus Maintained				
# of Load Arms	**Viewport 1**	**Viewport 2**	**Viewport 3**	**Viewport 4**
1	Load Arm 1; F2 has no effect	Main Menu or Dynamic Display; F2 has no effect	Viewport not used	Viewport not used
2	Load Arm 2; F2 has no effect	Load Arm 2; F2 has no effect	Viewport not used	Viewport not used
3	Load Arm 1; Split to full screen; Full to split screen	Load Arm 2; Split to full screen; Full to split screen	Load Arm 3; Split to full screen; Full to split screen	Viewport not used
4	Load Arm 1; Split to full screen; Full to split screen	Load Arm 2; Split to full screen; Full to split screen	Load Arm 3; Split to full screen; Full to split screen	Load Arm 4; Split to full screen; Full to split screen
5	N/A			
6	N/A			

The F1 key always moves the focus to the next viewport or load arm. The number of viewports and load arms is defined in Program Mode. The zoom of the physical display is maintained as the focus changes.

F1 Key Press to Change Focus				
# of Load Arms	**Viewport 1**	**Viewport 2**	**Viewport 3**	**Viewport 4**
1	Viewport 2	Viewport 1	Not Used	Not Used
2	Viewport 2	Viewport 1	Not Used	Not Used
3	Viewport 2	Viewport 3	Viewport 1	Not Used
4	Viewport 2	Viewport 3	Viewport 4	Viewport 1
5	Viewport 1 always remains active full screen; displayed arm increments			
6	Viewport 1 always remains active, displayed arm increments, system display updates to include all arms other than the one being displayed in Viewport 1			

Note: *The table above indicates default operation. The system display is also selectable for three- or four-arm setups via program mode selection.*

The examples below illustrate the operation of the F1 and F2 keys on the AccuLoad III.

F1 and F2 Keys
(Ready Mode, Four Load Arms)

After power-up, the AccuLoad III displays all configured load arms in four viewports.

AccuLoad III **Arm 1 Ready** **Press SET** **Unleaded**	**AccuLoad III** **Arm 3 Ready** **Press SET** **Fuel Oil**
AccuLoad III **Arm 2 Ready** **Press SET** **Premium**	**AccuLoad III** **Arm 4 Ready** **Press SET** **Diesel**

Press F2 to change zoom on top to full screen format.

AccuLoad III
Arm 1 Ready

Press SET key
11/13/00 12:02:22 PM

AccuLoad III **Arm 2 Ready** **Press SET** **Premium**	**AccuLoad III** **Arm 4 Ready** **Press SET** **Diesel**

Press F1 to change the focus to Load Arm 2. Note that zoom of the bottom display remains split screen.

AccuLoad III
Arm 1 Ready

Press SET key
11/13/00 12:02:22 PM

AccuLoad III **Arm 2 Ready** **Press SET** **Premium**	**AccuLoad III** **Arm 4 Ready** **Press SET** **Diesel**

Press F1 to change the focus to Load Arm 3. Note that zoom of the top display remains full screen.

AccuLoad III
Arm 3 Ready

Press SET key
11/13/00 12:02:22 PM

AccuLoad III **Arm 2 Ready** **Press SET** **Premium**	**AccuLoad III** **Arm 4 Ready** **Press SET** **Diesel**

Press F1 to change the focus to Load Arm 4.

AccuLoad III
Arm 3 Ready

Press SET key
11/13/00 12:02:22 PM

AccuLoad III **Arm 2 Ready** **Press SET** **Premium**	**AccuLoad III** **Arm 4 Ready** **Press SET** **Diesel**

Press F2 to change the format of the bottom display to full screen.

AccuLoad III
Arm 3 Ready

Press SET key
11/13/00 12:02:22 PM

AccuLoad III
Arm 4 Ready

Press SET key
11/13/00 12:02:22 PM

Press F1 to change the focus to Load Arm 1.

AccuLoad III
Arm 1 Ready

Press SET key
11/13/00 12:02:22 PM

```
AccuLoad III
Arm 4 Ready

Press SET key
11/13/00    12:02:22 PM
```

Example
F1 and F2 Keys
(Ready Mode, Six Load Arms)

After power-up, the AccuLoad III displays all configured load arms in a combination of a single zoomed viewport and a system status display.

```
AccuLoad III
Arm 1 Ready

Press SET key
11/13/00    12:02:22 PM
```

2	UNL87	72.5˚	Ready	0
3	UNL89	68.2˚	Ready	0
4	UNL91	70.4˚	Ready	0
5	UNL93	–	Ready	0
6	Diesel	–	ALARM	0

After pressing F1, the top viewport will display the next arm.

```
AccuLoad III
Arm 2 Ready

Press SET key
11/13/00    12:02:22 PM
```

1	UNL87	72.5˚	Ready	0
3	UNL89	68.2˚	Ready	0
4	UNL91	70.4˚	Ready	0
5	UNL93	–	Ready	0
6	Diesel	–	ALARM	0

If only five arms are programmed, the system display will always include all five arms, although one of those arms has a full-screen viewport on the top display. Pressing F1 when the last arm programmed has the focus will cycle the display back to Arm 1.

F2 will not affect the zoom when five or six load arms are programmed for use. Instead, it will invoke a user prompt to select a specific arm to receive the focus.

```
Select Arm: 1

Press desired arm number to
view or <Clear> to cancel
```

Ready State

When two displays are available, the ready state for dual arm operation appears as two fully zoomed viewports. A single load arm is allocated to each of the two viewports.

```
AccuLoad III
Arm 1 Ready

Press SET key
11/13/00    12:02:22 PM
```

```
AccuLoad III
Arm 2 Ready

Press SET key
11/13/00    12:02:22 PM
```

If a single load arm is configured on AccuLoad III, the bottom display will present an alternate ready screen with different literals than the primary ready screen. Pressing the ENTER key while focused on the bottom display presents the Dynamic Display menu at the top level. No other action but dynamic display may be taken while the focus is on the bottom display.

```
AccuLoad III
Arm 1 Ready

Press SET key
11/13/00    12:02:22 PM
```

```
AccuLoad III
```

The unit may be moved to the main menu screen by pressing the ENTER key with focus on either display.

From the main menu, the unit may be moved into the dynamic displays, the print menu, program mode, or the diagnostics menu. Pressing the zoom key (F2) has no effect while the main menu or any of its submenus is being displayed.

The ready state for triple arm operation initially consists of a split screen on the top display for Load Arms 1 and 3, and a full screen on the bottom display for Load Arm 2.

AccuLoad III Arm 1 Ready Press SET Unleaded	AccuLoad III Arm 3 Ready Press SET Diesel

AccuLoad III Arm 2 Ready Press SET key 6/27/00 10:58:51 AM

The ready state for quadruple arm operation opens with a split screen on each physical display, with each side of each screen devoted to a different load arm. Load Arm 4 occupies the second viewport of the bottom physical display.

AccuLoad III Arm 1 Ready Press SET Premium	AccuLoad III Arm 3 Ready Press SET Fuel Oil

AccuLoad III Arm 2 Ready Press SET Premium	AccuLoad III Arm 4 Ready Press SET Diesel

To move to the run mode, a load arm must first be determined before the SET key can be pressed. This is the viewport with the focus.

The unit may be moved to main menu simply by pressing the ENTER key from either display. There are no viewports for the main menu screen. The main menu always occupies a full screen. Access to the main menu is prohibited while any arm of the unit is in the run state.

The AccuLoad III will present the dynamic displays menu if the ENTER key is pressed while a transaction is occurring on one or more load arms. The menu will appear in full screen format on the viewport corresponding to the current focus. Like the main menu, the dynamic display menu appears in full-screen mode only. The only valid movement of the load arms in the ready mode is to the run state or to the dynamic displays menu. The main menu is not available until all transactions on that load arm are complete.

For five or six load arm configurations, the Ready mode appears as a single full-screen zoomed view of the arm with the focus on the top display. The system status is displayed full-screen on the bottom display.

AccuLoad III Arm 2 Ready Press SET key 11/13/00 12:02:22 PM

1	Regular	72.5˚	Ready	0
3	UNL89	68.2˚	Ready	0
4	UNL91	70.4˚	Ready	0
5	UNL93	–	Ready	0
6	Diesel	–	ALARM	0

Stop Key

The STOP key allows arm-specific shutdown capabilities. The default setting shuts down flow on all load arms in the process of delivering when the STOP key is pressed. As an alternative, the STOP key can be programmed to prompt the operator to select the specific arm on which the flow is to be stopped. If the latter option is selected, the following display will appear when the STOP key is pressed and multiple arms are delivering.

Stop Arm: ? {1, 3}
Press number of arm to stop;
Pressing <Stop> a second time stops all arms

Keypad Data Entry

All programming information is entered via the keypad or through communications. This document will describe information being entered via the keypad. The program codes for AccuLoad III are divided into seven main directories plus Diagnostics. The main directories are as follows:

- Configuration Directories
- System Directories
- Load Arm Directories
- Meter Directories
- Product Directories
- Bay Directories
- Recipe Directories

The subdirectories for each of the seven main directories are as follows:

Configuration Directories

Code	*Description*
000	Load Arm Configuration Directory
100	Pulse Input Directory
200	Pulse Output Directory
300	Digital Input Directory
400	Digital Input Directory
500	Digital Output Directory
600	Digital Output Directory
700	Digital Output Directory
800	Digital Output Directory
900	Analog Input and Output Directory

System Directories

Code	*Description*
100	General Purpose Directory
200	Flow Control Directory
300	Volume Accuracy Directory
400	Temperature/Density Directory
500	Pressure Directory
600	Alarm Configuration Directory
700	Communications Directory
800	Additive Directory

Load Arm Directories

Code	*Description*
100	General Purpose Directory
200	Flow Control Directory
300	Volume Accuracy Directory
700	Communications Directory

Meter Directories

Code	*Description*
200	Flow Control Directory
300	Volume Accuracy Directory
400	Temperature/Density Directory
500	Pressure Directory

Product Directories

Code	*Description*
100	General Purpose Directory
200	Flow Control Directory
300	Volume Accuracy Directory
400	Temperature/Density Directory
500	Pressure Directory

Bay Directories

Code	*Description*
100	General Purpose Directory
700	Communications

Recipe Directories

Recipes 01 through 50

The push buttons on the keypad perform the following functions while the instrument is in the Program Mode:

Key	*Description*
0 – 9	Used to enter the access code and for data entries
CLEAR	Used for clearing incorrect entries or for getting to an exit point
ENTER	Used to enter the Program Mode security access code, to enter the subdirectory, and to enter program data
START	Not used in Program Mode
ET	Page scrolling
PRINT	Used to access Help Messages
STOP	Used to set the security level
F1	Not used in Program Mode
F2	Not used in Program Mode
↑	Used to move up through the menus
↓	Used to move down through the menus
+/-	Used for adding signs to values being programmed
.	Decimal point, for values requiring one
← →	Used for alphanumeric entries

Entry to Main Directories

1. Close the security input if configured. This will provide the first step for access to program codes. (At the factory, no security input is configured, so none is required.)

```
AccuLoad III Ready
FMC Smith Meter Inc.

Press SET key
10/03/99    16:38:00
```

Press "ENTER." This displays the main menu.

```
Main Menu
→ Dynamic Displays
  Print Menu
  Program Model Menu
  Diagnostics Menu
```

2. Move the arrow to the Program Mode menu and press "ENTER." This will display the "Enter Passcode" screen.

```
Enter Passcode
→ XXXX
```

3. Enter the access code. (The access code preset at the factory is "0".) For security, any digit entered will be displayed as an "X". (Access codes can be up to four digits long.)
4. Press "ENTER." This procedure checks for the proper access code. If it is correct, the following will be displayed.

```
Program Mode Menu

→ Config Directories
  System Directories
  Load Arm 1 Directories
        More...
```

5. If an incorrect access code was entered, the following prompt will appear.

```
Enter Passcode

→ X
Access Denied
Press CLEAR to re-enter
```

6. Press CLEAR to return the display to the "Enter Passcode Screen" in Step 3.
7. Repeat Steps 3, 4, and 5 to re-enter Program Mode.
8. Pressing the down arrow key will display the last nine items on the menu, which are as follows:

   - Load Arm 2 Directories
   - Load Arm 3 Directories
   - Load Arm 4 Directories
   - Load Arm 5 Directories
   - Load Arm 6 Directories
   - Bay Directories
   - Recipe Directory
   - Exit Without Saving
   - Diagnostics.

9. Press ENTER with the arrow in front of "Config Directories" to enter the configuration directories. The following screen will be displayed:

```
Config Directories

→ 000 Load Arm Configuration
  100 Pulse Inputs
  200 Pulse Outputs
        More...
```

Pressing the down arrow will display the remainder of the Configuration Directory, which is as follows:

- 300 DC & AC Digital Inputs
- 500 DC & AC Digital Outputs
- 900 Analog Inputs/Outputs

Press ENTER with the arrow in front of "System Directories" to enter the systems directories. The following screen will be displayed:

```
System Directories

→ 100 Gen Purpose Dir
  300 Vol Accuracy Dir
  400 Temp/Dens Dir
        More...
```

Pressing the down arrow will display the remainder of the System Directories, which is as follows:

- 500 Pressure Directory
- 600 Alarm Directory
- 700 Communications Directory
- 800 Additive Directory

Program Subdirectory Selection

Once in the Program Mode menu, move the arrow to the main directory required. Pressing the ENTER key will display the subdirectories in that directory. To select one of the subdirectories, move the arrow by using the up and down arrow keys to the subdirectory required. Once the arrow is in front of the desired subdirectory, press the ENTER key to display the menu for that subdirectory. The same steps are used to get to the specific program codes.

Example:

Program Mode Menu

→ **Config Directories**
System Directories
Load Arm 1 Directories
More...

1. Select the required directory by moving the arrow with the up and down arrow key on the keypad.

Program Mode Menu

Load Arm 6 Directories
→ **Recipe Directory**
Exit without saving
More...

2. Press the ENTER key.

System Directories

→ **100 Gen Purpose Dir**
300 Vol Accuracy
More...

3. Choose the required subdirectory by moving through the menu using the up and down arrow keys.

System Directories

400 Temp / Dens Dir
500 Gen Purpose Dir
→ **600 Alarm Dir**
More...

4. Press the ENTER key. This will display the menu for the subdirectory.

600 Alarm Directories

→ **601 Run/Ready Clear Air 0**
Default Alarm Configuration
User Alarm Configuration
User Alarm Messages

5. Choose the required set of parameters by moving through the menu using the up and down arrow keys on the keypad.

600 Alarm Directories

601 Run/Ready Clear Air 0
→ **Default Alarm Configuration**
User Alarm Configuration
User Alarm Messages

6. Press the ENTER key on the keypad.

600 Alarm Directories

→ **602 Additive Comm Failure**
603 Back Pressure Alarm
604 Communications Alarm

7. Moving the arrow to the required program code and pressing ENTER will display the program code. It can now be changed.
8. To exit at any point in Program mode, press the CLEAR button. Each time the CLEAR key is pressed, the AccuLoad III will back out one menu level. Repeat this step until the Ready mode is reached.

Changing Program Mode Parameters

The program codes represent parameters that can be changed either to enhance the performance of the AccuLoad III or to accommodate application changes. There are three types of parameters in AccuLoad III: codes that require numerical data, codes where an option can be selected from a list, and codes where

alphanumeric data is entered. Once a code has been selected, change the programmed contents by entering a new value through the keypad.

Numeric Data

The numeric data is entered into the program codes via the keypad just as numbers are entered into a calculator. The number of digits for each entry is listed in the Reference section of this manual.

Example: To change the Level 1 Access Code for parameter 151, do the following:

1. Choose the General Purpose Directory sub-menu from the System Directories menu.

```
      Date and Time
      Units & Identifiers
      Timeouts
      Display & Control
→     Security
```

2. Select "151 Level 1 Access Code" from the Security submenu.

```
                Security

→   151 Lev 1 Access Code        0
    152 Lev 2 Access Code        0
    153 Lev 3 Access Code        0
```

3. To specify a new Level 1 Access Code, enter the desired code number.

```
    151 Lev 1 Access Code    →   1182
    Enter access code for this
    security level
```

4. Press ENTER to store the new value. The display will revert back to the submenu and will indicate the new value.

```
                Security

→   151 Lev 1 Access Code       1182
    152 Lev 2 Access Code          0
    153 Lev 3 Access Code          0
                More...
```

Note: *If an incorrect value is entered on the screen and has not been stored, the value can be cleared by pressing CLEAR twice and a new value can then be entered.*

Options

Codes that have a number of options are changed by moving the arrow to the option required by the application, then pressing "ENTER."

Example: To configure Load Arm 1 for sequential blending, choose the Load Arm Configuration sub-menu from the Configuration Directories menu.

1. Position the cursor beside "002 Arm1 Config" and press ENTER.

```
        000 Load Arm Configuration

          001 Number of Load Arms
→         002 Arm 1 Config
          003 Arm 1 Num Prods
                  More...
```

2. The following screen will appear. Position the cursor beside the desired configuration and press ENTER.

```
        002 Arm 1 Configuration

          Straight
→         Sequential
          Ratio
          Side-Stream
                  More...
```

3. The new value will be stored and the display will revert to the submenu. Notice that the new value appears beside the parameter on the submenu display.

```
        000 Load Arm Configuration

          001 Number of Load Arms
→         002 Arm 1 Config
          003 Arm 2 Config          Sequential

                  More...
```

Alphanumeric Data

The parameters that require alphanumeric data are the codes that display Product Messages, Prompt Messages, or Permissive Messages on the displays of AccuLoad III, or provide information to be printed out on the Bill of Lading Emulation. When adding or changing information in these alphanumeric program codes, the keys listed below perform the following functions:

Key	*Description*
ENTER	Moves the character from the character set to the ID line. Also enters the data into the instrument's memory after END has been selected from the character set
SET	Moves the cursor six positions to the right
→	Moves the cursor one position to the right each time it is pressed
←	Moves the cursor one position to the left each time it is pressed
↑ and ↓	Selects the next block of characters. An example of this is changing from uppercase letters to lowercase letters. The blocks of characters available in AccuLoad III are as follows: • A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # * • a b c d e f g h i j k l m n o p q r s t u v w x y z & @ • 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ' - " / + = _ END

Example:

1. Choose the Load Arm 1 Directories submenu from the Program Mode menu by placing the cursor beside the desired option and pressing ENTER. The following display will appear.

```
          Load Arm 1 Directories

    →  100 Gen Purpose
       200 Flow Control
       300 Vol Accuracy
                    More...
```

2. Position the cursor beside "100 Gen Purpose" and press ENTER. The following display will appear.

```
          100 Gen Purpose Arm 1

    →  107 Load Arm ID
       108 Ready Msg
```

3. Position the cursor beside "107 Load Arm ID" and press ENTER. The following display will appear.

```
       ABCDEFGHIJKLMNOPQRSTUVWXYZ#*
       abcefghijklmnopqrstuvwxyz&@
  →    0123456789<>()?!.,'-"/+=_END
                                ^
```

4. To change or add information, move the arrow to the required set of characters using the up and down arrows on the keypad. Then, using the left and right arrows, move the cursor to the character required.

```
  →    ABCDEFGHIJKLMNOPQRSTUVWXYZ#*
       abcefghijklmnopqrstuvwxyz&@
       0123456789<>()?!.,'-"/+=_END
                                ^
```

5. Repeat Step 6 until the desired ID is displayed, then press ENTER.

```
  →    ABCDEFGHIJKLMNOPQRSTUVWXYZ#*
       abcefghijklmnopqrstuvwxyz&@
       0123456789<>()?!.,'-"/+=_END
                                ^
Load Arm #1
```

6. The display will revert to the Recipe 1 submenu, and the new parameter for recipe 1 will appear.

```
          100 Gen Purpose Arm 1

    →  107 Load Arm ID      Load Arm #1
       108 Ready Msg
```

Viewing the Help Messages

The AccuLoad III features unique "Help" messages hat allow the operator to have at his fingertips the ability to review what is required or what the options are for an individual program code. Press the PRINT key to display the "Help" message. Where there is room on the display, some parameters will display the "Help" message without the need of pressing the PRINT key.

Example: To view the help message associated with Load Arm Configuration parameter 002, choose "000 Load Arm Configuration" from the Configuration Directories menu. The following display will appear.

```
000 Load Arm Configuration

    001 Number of Load Arms
→   002 Arm 1 Config              Sequential
    003 Arm 1 Num Prods

More...
```

1. With the cursor beside “002 Arm1 Config,” press ENTER. The following display will appear.

```
002 Arm 1 Configuration    Sequential

    Straight
→   Sequential
    Ratio
    Side-Stream

More...
```

2. Press PRINT to display the following help message.

```
Select the configuration for this load arm:
Straight Product, Sequential Blender, Ratio Blender,
Side-Stream Blender, or Unloading.
```

Exit Without Changes

If the operator attempts to exit Program Mode with conflicting or otherwise invalid selections, the following screen will appear.

```
Programming Errors Exit

→   View Error List
    Exit with Errors
    Exit without changes
```

To view all errors, position the cursor beside “View Error List” and press ENTER. A screen similar to that shown below will appear.

```
Programming Errors

→   A1M1 201 Valve Type
                          Print = error msg
```

If the operator positions the cursor beside “Exit with Errors,” the AccuLoad will accept all changes as programmed and return to the main menu. If the operator positions the cursor beside “Exit without Changes,” the AccuLoad will disregard all changes made in the current editing session and return to the main menu.

Ready State

The AccuLoad’s primary ready screen is shown below. Each physical display is allocated to a single load arm.

```
AccuLoad III Arm 1 Ready
Unleaded

Press SET key
6/27/00   10:58:51 am
```

If only one load arm is configured, the bottom display will continuously present the Dynamic Display menu.

```
AccuLoad III Arm 1 Ready
Unleaded

Press SET key
6/27/00   10:58:51 am
```

```
Dynamic Displays

→   System
    Load Arm 1
    Recipes
          More...
```

Ready Mode screens display the time of day and load arm identification. The load arm with the current focus may be moved to RUN mode by pressing the SET key (assuming that the unit is not programmed for some other control mode via communications).

The AccuLoad may be moved to the main menu screen by pressing ENTER with focus on either display.

```
Main Menu

→   Dynamic Displays
    Print Menu
    Program Mode Menu
    Diagnostics Menu
```

AccuLoad III Arm 2 Ready Diesel Press SET key 6/27/00 10:58:51 am

From here, the AccuLoad may be moved into the Dynamic Displays, the Print menu, the Program Mode menu, or the Diagnostics menu. Pressing the F2 (zoom) key has no effect while the Main menu or any of its submenus is being displayed. The F1 key toggles between the physical display showing the Main menu and the next viewport. See the section on Dynamic Displays in this manual for additional information.

The Ready mode for triple arm operation initially consists of a split screen on the top display for Load Arms 1 and 3, and a full screen on the bottom display for Load Arm 2.

AccuLoad III Arm 1 Ready Press SET Unleaded	AccuLoad III Arm 3 Ready Press SET Diesel

AccuLoad III Arm 2 Ready Premium Press SET key 6/27/00 10:58:51 am

The Ready state for quadruple arm operation initially consists of a split screen on each physical display, with each side of each screen being devoted to a different load arm. Load Arm 4 occupies the second viewport of the lower physical display.

AccuLoad III Arm 1 Ready Press SET Unleaded	AccuLoad III Arm 3 Ready Press SET Fuel Oil

AccuLoad III Arm 2 Ready Press SET Premium	AccuLoad III Arm 4 Ready Press SET Diesel

To move to the RUN mode, a load arm must first be determined before the SET key can be pressed. This will be the viewport with the focus.

The AccuLoad may be moved to the Main menu by pressing the ENTER key from either display. There is no viewport for the Main menu screen; the Main menu always occupies a full screen. Access to the Main menu is prohibited while any arm of the unit is in RUN mode or even beginning to start a preset sequence.

If ENTER is pressed during a transaction on one or more load arms, the AccuLoad will display the Dynamic Displays menu in full-screen format on the display corresponding to the viewport with the current focus. Like the Main menu, the Dynamic Displays menu appears in full-screen mode only. The only valid movement of load arms in Ready mode when another arm is in Run mode is to Run mode or to the Dynamic Displays menu. The Main menu is unavailable until all transactions on all load arms are complete.

Security

The AccuLoad III provides the ability to set up five levels of security. Each level may have an access code of up to four digits. Each parameter in the database may be assigned a security level and may not be changed unless that security restriction has been met. This allows access to sensitive parameters, such as those that affect volume accuracy, to be restricted to a higher level of security than other parameters that can be protected at a lower level. The highest level of security is level 5; the lowest is level 1. If one of the two security switches is set for a security level, that switch must also be active to access a higher level of security.

Security levels must be programmed contiguously, beginning with level one. For example, if only two levels of security are desired, they must be levels one and two.

Note: *The operator must have the highest security level programmed in the unit in order to access any data on the security menu.*

The security menu can be found by selecting System Directories from the Program Mode Menu, then choosing General Purpose Directory, then Security.

```
   Date & Time
   Units & Increments
   Timeouts
   Display & Control
→  Security
```

Pressing ENTER with the arrow in front of "Security" will display the Security menu.

```
                Security

   151 Lev 1 Access Code          0
   152 Lev 2 Access Code          0
   153 Lev 3 Access Code          0
→                 More...
```

Additional items on the menu include the following:

- 154 Lev 4 Access Code
- 155 Lev 5 Access Code
- 156 Level for Security Input 1
- 157 Level for Security Input 2
- 158 Level for Diagnostics Directory
- Set Parameter Security

From this menu, access codes can be programmed for each level of security desired for the application. If the operator wants all the parameters set to the same security level, the "Set Parameter Security" option can be used. Note that before a security level higher than Level 1 can be assigned to a parameter, an access code must be assigned to that security level; otherwise, it will not appear on the menu of level choices.

Passcode

Select the level of security desired on the Security menu by moving the arrow to the selection and pressing ENTER. This will display the screen from which passcodes can be entered. The entry can contain one to four digits. A zero entry removes the access code requirement.

```
151 Lev 1 Access Code      → 1234

Enter Access code for this security level
```

After the passcode has been entered, press the ENTER key to save the passcode in memory and return the display to the Security menu. If more than one security level is defined, passcode entry will determine which of the parameters is eligible for modification. The highest level of security programmed is required when changing the parameters on the Security menu.

Set Parameter Security

When "Set Parameter Security" is selected on the Security menu, all the parameters in the unit can be set to Security Level 1. Pressing ENTER will display the following screen:

```
            Select Security Level

→  Level 1
   Level 2
   Level 3
                more...
```

Moving the arrow to the desired level and pressing the ENTER key will display the following screen:

```
          All parameters will be
        assigned this security level.
              Are you sure?

→  No
   Yes
```

When "Yes" is selected and the ENTER key is pressed, the AccuLoad will automatically set the security for all parameters, which will be displayed as follows on the Security menu:

```
                Security
  157 Security In 2 Level          2
  158 Diagnostics Sec Level        5
→ Set Parameter Security           3
                More...
```

In this example, all parameters in the AccuLoad are set to Level 3 security. If a few of the parameters need to be set to a higher security, do the following:

1. Select the parameter that requires a higher level security.

```
137 Powerfail Alarm                Enable
→   Enable
    Disable

          Press PRINT for help
```

2. Press the "STOP" key.

```
          137 Powerfail Alarm
          Select Security Level
→   Level 3
    Level 4
    Level 5
```

This display indicates that the security level is currently set to Level 3.

3. To change to Level 4 security, move the cursor to Level 4.

```
          137 Powerfail Alarm
          Select Security Level
    Level 3
→   Level 4
    Level 5
```

4. Press "ENTER". The new security level has been changed to Level 4 and the data has been stored in memory. The screen then returns to the parameter as seen in Step 1.
5. In order to change Parameter 137, the operator now must enter Program Mode with his Level 4 passcode. If an associated switch input has been assigned to Level 4, it will also have to be closed. If these steps are not taken, the follow-ing screen will be displayed:

```
          Access Denied
     This parameter cannot be modified
     at the current security access level.

          Press any key
```

To change the parameter, Program Mode must be exited and the Level 4 passcode entered.

When selecting the appropriate security level for each parameter, it is important to consider that only those parameters secured at the two highest pro-grammed security levels will be included in the audit trail log.

Resetting Passcode

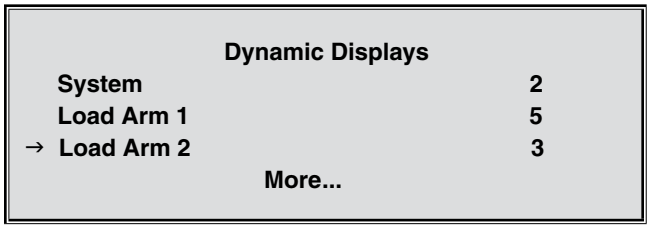
To reset the passcodes that are programmed in the AccuLoad, Jumper J22 on the KDC board must be in place. Moving the jumper from its parked position to both pins (see the Installation Manual) and power cycling the AccuLoad will reset all passcodes to 0. Along with the security input access level, parameters 151-157. This allows the operator to enter Program Mode and set the passcode(s) as desired.

Caution: Do not leave the jumper in position. If left on the pins, the passcodes will be reset every time the unit goes through a power cycle.

When the passcodes have been re-established, move the jumper back to its parked position.

Dynamic Displays

This section describes informational displays that can be viewed while in the Run or Ready Mode. These displays are "dynamic" in the sense that the displayed values reflect current actual conditions and continuously update while being viewed. The Dynamic Display menu is selected by pressing ENTER while in the Run or Ready Mode. The Dynamic Display menu will appear, allowing the operator to select from the following menu:



Additional Dynamic Displays, available but not appearing on the initial screen, are Load Arms 3, 4, 5, and 6, Recipes, Injector Rates, and Diagnostics.

The dynamic display screen will remain displayed for the time period that was programmed in System Code 121. This code may be accessed by choosing Systems Directories, then General Purpose Directory, then Timeouts. If a 0 is entered in Code 121, the display will remain until the CLEAR button is pressed. The AccuLoad III will continue to function normally while the display is on.

Keypad Functions

The keys on the keypad perform the following func-tions when accessing the dynamic displays:

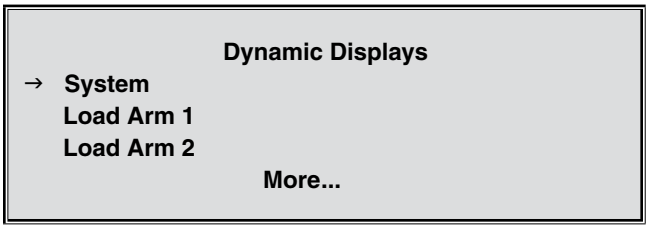
Key	*Description*
0 – 9	Not Used.
↑	Used to navigate backwards through the menu to get into the displays. When in the dynamic displays, the up arrow also moves backward through the displays.
←	Once in the dynamic displays, this works like the up arrow to move backwards through the displays.
→	Once in the dynamic displays, this works like the down arrow to move forward through the displays.
↓	Used to navigate forward through the menu to get into the displays. When in the dynamic displays, the down arrow also moves forward through the displays.
CLEAR	Used to exit the dynamic display.
ENTER	Used to enter the Dynamic Display menu and to enter the dynamic displays from the menu.

Note: *Keys not listed are not used in the dynamic displays.*

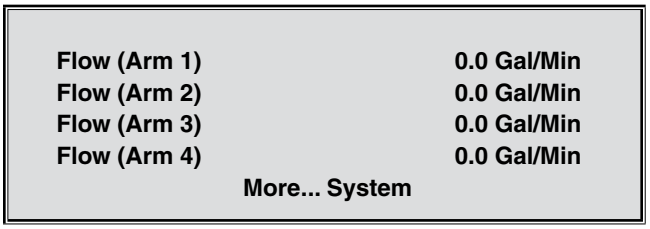
Entry to Dynamic Displays

The following steps should be used to enter the dynamic displays. While in the Run or Ready mode of the AccuLoad III, the following steps should be followed.

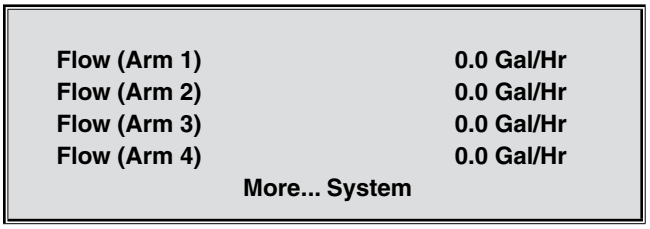
1. Press "ENTER". This will display the Dynamic Displays menu.



2. Move the arrow to the displays to be viewed and press "ENTER."



3. To move through the displays, press either the ↑ or ← key to move backwards through the displays. Press either the ↓ or → key to move forward through the displays.



4. Continue using the arrow keys to display the dynamic information needed.
5. To end the review of dynamic displays, either let the timer expire or press CLEAR to return to the run mode screen.

Dynamic Display System

Dynamic displays are grouped into five categories: system, load arm, recipe, injector, and diagnostics. Displays may be accessed by selecting Dynamic Displays from the Main Menu. The load arm dynamic displays are further divided into eight categories: product, batch, transaction, blend, density sampling, recipes, injector rates, and flow controlled additives.

Dynamic Displays are always full screen. Once in the Dynamic Displays, the arrows may be used to advance to the next page of variables. CLEAR exits the display. Each time any key is pressed, the Dynamic Display timeout timer is reset. If the AccuLoad was at either the preset screen or the delivery screen, the START and STOP keys function as if still at that screen. Pressing START re-starts the load arm that had the focus when the Dynamic Displays menu was first selected. STOP halts delivery on all active load arms configured in the AccuLoad III-Quad. The F2 (zoom) key is disabled while in Dynamic Displays. Use the F1 key to toggle the focus among valid viewports.

Each physical display may access the Dynamic Display menus simultaneously and independently, so two separate Dynamic Displays may be viewed at the same time. An exception to this is the Diagnostics menu on the Dynamic Displays menu. Only one instance of each diagnostic screen is permitted. The first physical display to access run-time diagnostics takes precedence. If the second physical display attempts to enter run-time diagnostics, an error message will appear.

System Dynamic Displays

System dynamic displays show all data that is common to the entire AccuLoad. A listing of system dynamic displays, as well as the format in which the information appears, is set forth in the table below.

Description	Display Format
Current Flow Rate in Units/Min for Arm 1	Flow (Arm 1) XXXXX.X Gal/Min
Current Flow Rate in Units/Min for Arm 2	Flow (Arm 2) XXXXX.X Gal/Min
Current Flow Rate in Units/Min for Arm 3	Flow (Arm 3) XXXXX.X Gal/Min
Current Flow Rate in Units/Min for Arm 4	Flow (Arm 4) XXXXX.X Gal/Min
Current Flow Rate in Units/Min for Arm 5	Flow (Arm 5) XXXXX.X Gal/Min
Current Flow Rate in Units/Min for Arm 6	Flow (Arm 6) XXXXX.X Gal/Min
Current Flow Rate in Units/Hour for Arm 1	Flow (Arm 1) XXXXXXX.X Gal/Hr
Current Flow Rate in Units/Hour for Arm 2	Flow (Arm 2) XXXXXXX.X Gal/Hr
Current Flow Rate in Units/Hour for Arm 3	Flow (Arm 3) XXXXXXX.X Gal/Hr
Current Flow Rate in Units/Hour for Arm 4	Flow (Arm 4) XXXXXXX.X Gal/Hr
Current Flow Rate in Units/Hour for Arm 5	Flow (Arm 5) XXXXXXX.X Gal/Hr
Current Flow Rate in Units/Hour for Arm 6	Flow (Arm 6) XXXXXXX.X Gal/Hr
Current Recipe for Arm 1	Recipe (Arm 1) NNNNNNNNN
Current Recipe for Arm 2	Recipe (Arm 2) NNNNNNNNN
Current Recipe for Arm 3	Recipe (Arm 3) NNNNNNNNN
Current Recipe for Arm 4	Recipe (Arm 4) NNNNNNNNN
Current Recipe for Arm 5	Recipe (Arm 5) NNNNNNNNN
Current Recipe for Arm 6	Recipe (Arm 6) NNNNNNNNN
Preset and delivered for Arm 1	Arm 1 Preset XXXXXX Del XXXXXX
Preset and delivered for Arm 2	Arm 2 Preset XXXXXX Del XXXXXX
Preset and delivered for Arm 3	Arm 3 Preset XXXXXX Del XXXXXX
Preset and delivered for Arm 4	Arm 4 Preset XXXXXX Del XXXXXX
Preset and delivered for Arm 5	Arm 5 Preset XXXXXX Del XXXXXX
Preset and delivered for Arm 6	Arm 6 Preset XXXXXX Del XXXXXX
Preset and remaining for Arm 1	Arm 1 Preset XXXXXX Rem XXXXXX
Preset and remaining for Arm 2	Arm 2 Preset XXXXXX Rem XXXXXX
Preset and remaining for Arm 3	Arm 3 Preset XXXXXX Rem XXXXXX
Preset and remaining for Arm 4	Arm 4 Preset XXXXXX Rem XXXXXX
Preset and remaining for Arm 5	Arm 5 Preset XXXXXX Rem XXXXXX
Preset and remaining for Arm 6	Arm 6 Preset XXXXXX Rem XXXXXX
Time of Last Power Fail	PF 12:01:06 AM 12-01-03

Load Arm Dynamic Displays

Load Arm dynamic displays are divided into the following categories: Product, Batch, Transaction, Blend, Ratio Blend Data, Recipes, Injector Rates, and Flow Controlled Additives. Product dynamic displays show all data associated with a specific product. Select "Product" from the Dynamic Displays menu, as shown on the screen below.

Dynamic Displays
→ **Product**
Batch
Transaction
More...

Product Dynamic Displays

If Product Dynamic Displays is selected, a menu appears listing all products associated with that load arm. (If only one product is available on the selected load arm, this screen is omitted.) Each load arm can accommodate up to six products.

Select Product
→ **Unleaded**
Premium
Fuel Oil
Diesel

If user-defined names have been assigned to these products, they will appear on this menu. If no user-defined name has been configured, the products will be listed as Product 1, Product 2, etc. Position the cursor beside the appropriate option, then press the ENTER key.

A listing of product dynamic displays, as well as the format in which the information appears, is set forth in the table below.

Description	Display Format
Current Flow Rate in Units/Min	Flow XXXXX.X Gal/Min
Current Flow Rate in Units/Hour	Flow XXXXXXX.X Gal/Hr
Current and Average Temperature	Temperature Cur Avg XXXX.XF XXXX.XF
Current and Average Density @ Observed Temperature	Dens Cur Avg XXXX.X XXXX.X KgM3
Average API @ Reference Temperature	Avg Dens @ ref temp XXXX.X APJ
Average Reference Density @ Reference Temperature	Avg Dens @ ref temp XXXX.X kg/m^3
Average Relative Density @ Reference Temperature	Avg Rel Dens @ ref temp X.XXXX
Relative Density @ 60°F and Current Pressure	Avg Rel Dens @ 60°F and PRS X.XXXX
Reference Density @ Reference Density Temperature	Ref Dens @ ref dens temp XXXX.X kg/m^3
Current Reference Density @ Reference Temperature	Cur Ref Dens @ ref temp XXXX.X kg/m^3
Batch Average Pressure	Batch Avg Press XXXX.X PSI
Batch Average Vapor Pressure	Avg Vapor Press XXXX.X PSI
Current and Average Meter Factor	Mfac Cur Avg X.XXXXX X.XXXXX
Batch Average CTPL	Batch Avg CTPL X.XXXXX
Batch Average CTL	Batch Avg CTL X.XXXX
Batch Average CPL	Batch Avg CPL X.XXXX
Actual Percentage of Batch	Actual Blend % XXX%
Desired Percentage of Batch	Desired Blend % XXX%
Instantaneous Blend Percentage	Instantaneous Blend % XX.X
Deviation Count (Error Between Desired and Actual Volume)	Deviation Count XXXX.XX
Indicated (Raw) Volume	IV Batch XXXXXXX.XX Gal
Gross Batch Volume	GV Batch XXXXXXX.XX Gal
Gross at Standard Temperature Batch	GST Batch XXXXXXX.XX Gal
Gross at Standard Temperature and Pressure Batch	GSV Batch XXXXXXX.XX Gal
Mass Amount Batch	Mass Batch XXXXXXX.XX Lbs

Continued on next page...

Description	Display Format
Raw Transaction Volume Transaction	IV Trans XXXXXXX.XX Gal
Gross Transaction Volume Transaction	GV Trans XXXXXXX.XX Gal
Gross at Standard Temperature Transaction	GST Trans XXXXXXX.XX Gal
Gross at Standard Temperature and Pressure Transaction	GSV Trans XXXXXXX.XX Gal
Mass Transaction Amount Transaction	Mass Trans XXXXXXX.XX Lbs
Current Valve Requested Position	Valve Requested Closed

Batch Dynamic Displays

Batch Dynamic Displays, from the Load Arm Dynamic Displays menu, shows all data associated with a specific batch. Select "Batch" from the Dynamic Displays menu, as shown on the screen below.

Dynamic Displays
Product
→ Batch
Transaction
More...

Type a batch number to indicate a specific past batch, or press ENTER for current or last batch data. Only the additive injectors configured for this load arm will be included in the batch dynamic displays.

Dynamic Displays
Select Batch →

Press ENTER for current or last batch.

A listing of batch dynamic displays, as well as the format in which the information appears, is set forth in the following table.

Description	Display Format
Recipe Name and Number	Recipe XX NNNNNNNNN
Indicated (Raw) Batch Volume	IV Batch XXXXXXX.X Gal
Gross Batch Volume	GV Batch XXXXXXX.X Gal
Gross at Standard Temperature	GST Batch XXXXXXX.X Gal
Gross at Standard Temperature and Pressure	GSV Batch XXXXXXX.X Gal
Mass Batch Amount	Mass Batch XXXXXXX.X Gal
Batch Average Temperature	Batch Avg Temp XXXX.X°F
Batch Average Density	Batch Avg Dens XXXX.X Lb/F3
Batch Average Pressure	Batch Avg Press XXXX.X Psi
Batch Average Meter Factor	Batch Avg Mtr Factor X.XXXXX
Batch Average CTL	Batch Avg CTL X.XXXX
Batch Average CPL	Batch Avg CPL X.XXXX
Additive 1 Batch Total	Add 1 Batch XXXXXX.XXX Gal
Additive 2 Batch Total	Add 2 Batch XXXXXX.XXX Gal
Additive 3 Batch Total	Add 3 Batch XXXXXX.XXX Gal
Additive 4 Batch Total	Add 4 Batch XXXXXX.XXX Gal
Additive 5 Batch Total	Add 5 Batch XXXXXX.XXX Gal
Additive 6 Batch Total	Add 6 Batch XXXXXX.XXX Gal
Additive 7 Batch Total	Add 7 Batch XXXXXX.XXX Gal
Additive 8 Batch Total	Add 8 Batch XXXXXX.XXX Gal
Additive 9 Batch Total	Add 9 Batch XXXXXX.XXX Gal
Additive 10 Batch Total	Add 10 Batch XXXXXX.XXX Gal

Continued on next page...

Description	Display Format
Additive 11 Batch Total	Add 11 Batch XXXXXX.XXX Gal
Additive 12 Batch Total	Add 12 Batch XXXXXX.XXX Gal
Additive 13 Batch Total	Add 13 Batch XXXXXX.XXX Gal
Additive 14 Batch Total	Add 14 Batch XXXXXX.XXX Gal
Additive 15 Batch Total	Add 15 Batch XXXXXX.XXX Gal
Additive 16 Batch Total	Add 16 Batch XXXXXX.XXX Gal
Additive 17 Batch Total	Add 17 Batch XXXXXX.XXX Gal
Additive 18 Batch Total	Add 18 Batch XXXXXX.XXX Gal
Additive 19 Batch Total	Add 19 Batch XXXXXX.XXX Gal
Additive 20 Batch Total	Add 20 Batch XXXXXX.XXX Gal
Additive 21 Batch Total	Add 21 Batch XXXXXX.XXX Gal
Additive 22 Batch Total	Add 22 Batch XXXXXX.XXX Gal
Additive 23 Batch Total	Add 23 Batch XXXXXX.XXX Gal
Additive 24 Batch Total	Add 24 Batch XXXXXX.XXX Gal
Batch Mass Vapor Recovery Meter	Vapor Recovered XXXXXXX.XX lbs
Batch Mass Net Volume for VRS	Delivered Net XXXXXXX.XX lbs

Transaction Dynamic Displays

Transaction Dynamic Displays, from the Load Arm Dynamic Displays menu, shows all data associated with a specific batch. Select "Transaction" from the Dynamic Displays menu, as shown on the screen below. Only those additive injectors configured for this load arm will be included in the transaction dynamic displays.

Type a transaction number to indicate a specific past transaction, or press ENTER for current or last transaction data.

Dynamic Displays
Product
Batch
→ **Transaction**
More...

A listing of batch dynamic displays, as well as the format in which the information appears, is set forth in the table below.

Description	Display Format
Indicated (Raw) Transaction Volume	IV Trans XXXXXXX.XX Gal
Gross Transaction Volume	GV Trans XXXXXXX.XX Gal
Gross at Standard Temperature Volume	GST Trans XXXXXXX.XX Gal
Gross at Standard Temperature and Pressure	GSV Trans XXXXXXX.XX Gal
Mass Transaction Volume	Mass Trans XXXXXXX.XX Lbs
Transaction Average Temperature	Trans Avg Temp XXXX.X°F
Transaction Average Density	Trans Avg Dens XXX.X Lb/F3
Transaction Average Pressure	Trans Avg Press XXXX.X Psi
Transaction Average Meter Factor	Trans Avg Mtr Factor X.XXXXX
Transaction Average CTL	Trans Avg CTL X.XXXX
Transaction Average CPL	Trans Avg CPL X.XXXX
Injector 1 Transaction Total	Add 1 Trans XXXXXX.XXX Gal
Injector 2 Transaction Total	Add 2 Trans XXXXXX.XXX Gal
Injector 3 Transaction Total	Add 3 Trans XXXXXX.XXX Gal
Injector 4 Transaction Total	Add 4 Trans XXXXXX.XXX Gal
Injector 5 Transaction Total	Add 5 Trans XXXXXX.XXX Gal
Injector 6 Transaction Total	Add 6 Trans XXXXXX.XXX Gal
Injector 7 Transaction Total	Add 7 Trans XXXXXX.XXX Gal

Continued on next page...

Description	Display Format
Injector 8 Transaction Total	Add 8 Trans XXXXXX.XXX Gal
Injector 9 Transaction Total	Add 9 Trans XXXXXX.XXX Gal
Injector 10 Transaction Total	Add 10 Trans XXXXXX.XXX Gal
Injector 11 Transaction Total	Add 11 Trans XXXXXX.XXX Gal
Injector 12 Transaction Total	Add 12 Trans XXXXXX.XXX Gal
Injector 13 Transaction Total	Add 13 Trans XXXXXX.XXX Gal
Injector 14 Transaction Total	Add 14 Trans XXXXXX.XXX Gal
Injector 15 Transaction Total	Add 15 Trans XXXXXX.XXX Gal
Injector 16 Transaction Total	Add 16 Trans XXXXXX.XXX Gal
Injector 17 Transaction Total	Add 17 Trans XXXXXX.XXX Gal
Injector 18 Transaction Total	Add 18 Trans XXXXXX.XXX Gal
Injector 19 Transaction Total	Add 19 Trans XXXXXX.XXX Gal
Injector 20 Transaction Total	Add 20 Trans XXXXXX.XXX Gal
Injector 21 Transaction Total	Add 21 Trans XXXXXX.XXX Gal
Injector 22 Transaction Total	Add 22 Trans XXXXXX.XXX Gal
Injector 23 Transaction Total	Add 23 Trans XXXXXX.XXX Gal
Injector 24 Transaction Total	Add 24 Trans XXXXXX.XXX Gal
Mass Transaction Volume Vapor Recovery Meter	Vapor Recovered XXXXXXX.XX lbs
Mass Transaction Net Volume for VRS	Delivered Net XXXXXXX.XX lbs

Blend Dynamic Displays

Blend dynamic displays show all data associated with a specific sequential blending transaction. Selecting “Blend” from the Dynamic Displays menu results in a screen similar to that shown to the right.

Note: *CBR = Current Blend Ratio; Flow = Current Flow Rate; Amount = Batch Amount Delivered*

Recipe #	CBR %	Flow	Amount
Recipe 1	XXX.X	XXXXX	XXXXXX
Recipe 2	XXX.X	XXXXX	XXXXXX
Recipe 3	XXX.X	XXXXX	XXXXXX
Recipe 4	XXX.X	XXXXX	XXXXXX

Ratio Blend Data Dynamic Displays

Ratio blend data dynamic displays show all data associated with a specific ratio blending transaction. Selecting “Ratio Blend” from the Dynamic Displays menu results in a screen similar to that shown to the right.

Note: *CBR = Current Blend Ratio; DBR = Desired Blend Ratio; DRate = Desired Flow Rate; Tol = Flow Tolerance; CRate = Current Flow Rate*

CBR	DBR	DRate	Tol	CRate
1 XXX.X	XXX.X	XXXXX	XXX	XXXXX
2 XXX.X	XXX.X	XXXXX	XXX	XXXXX
3 XXX.X	XXX.X	XXXXX	XXX	XXXXX
4 XXX.X	XXX.X	XXXXX	XXX	XXXXX

Density Sampling Dynamic Displays

Density sampling dynamic displays apply only to unloading arms. The screen displays up to ten density samples taken during the batch. Selecting “Density Sampling” from the Dynamic Displays menu results in a screen similar to that shown to the right.

Each of the samples is a flow weighted average over the delta volume programmed in product parameter 415. The last complete density sample is considered the density of the pure uncontaminated product when the contaminant percentage is calculated.

Density Sampling

Density Samples		**55.1**	**55.0**
48.6	**48.3**	**48.2**	**48.2**
48.2	**0.0**	**0.0**	**0.0**
Last Dens 48.2		**0.15% Contam**	

Recipe Dynamic Displays

Recipe dynamic displays show all data associated with a programmed recipe. Selecting “Recipe” from the Dynamic Displays menu results in a screen similar to that shown to the right. If the operator fails to enter a recipe number, a listing of all currently configured recipes will appear. Position the cursor beside the appropriate option, then press ENTER.

Dynamic Displays
→ **Enter Recipe #**
Select Recipe

A listing of recipe dynamic displays, as well as the format in which the information appears, is set forth in the table below.

Description	Display Format
Recipe Name, Arm Association and Number	Recipe XX – NNNNNNNNN
IV Volume for the Transaction	IV Recipe XXXXXXX.XX Gal
GV Volume for the Transaction	GV Recipe XXXXXXX.XX Gal
GST Volume for the Transaction	GST Recipe XXXXXXX.XX Gal
GSV Volume for the Transaction	GSV Recipe XXXXXXX.XX Gal
Mass Volume for the Transaction	Mass Recipe XXXXXXXXX.XX Lbs

Injector Dynamic Displays

Injector dynamic displays show all data associated with specific injectors. Twenty-four injectors are available for use, but the AccuLoad will display only those that are configured. Selecting “Injector” from the Dynamic Displays menu results in a screen similar to that shown to the right. Position the cursor beside the appropriate option, then press ENTER.

If the Injector dynamic displays are accessed from the main Dynamic Display menu, then all additive injectors configured for the AccuLoad will be included in the displays. However, if the Injector Rates dynamic displays are accessed from the Load Arm dynamic displays, then only the additive injectors configured for the particular load arm will be displayed.

Dynamic Displays
→ **Enter Recipe #**
Select Recipe

A listing of injector dynamic displays, as well as the format in which the information appears, is set forth in the table below.

Description	Display Format
Injector 1 Current Pulse Rate	Inj 1 Prg XXX Cal XXXX.XX
Injector 2 Current Pulse Rate	Inj 2 Prg XXX Cal XXXX.XX
Injector 3 Current Pulse Rate	Inj 3 Prg XXX Cal XXXX.XX
Injector 4 Current Pulse Rate	Inj 4 Prg XXX Cal XXXX.XX
Injector 5 Current Pulse Rate	Inj 5 Prg XXX Cal XXXX.XX
Injector 6 Current Pulse Rate	Inj 6 Prg XXX Cal XXXX.XX
Injector 7 Current Pulse Rate	Inj 7 Prg XXX Cal XXXX.XX
Injector 8 Current Pulse Rate	Inj 8 Prg XXX Cal XXXX.XX
Injector 9 Current Pulse Rate	Inj 9 Prg XXX Cal XXXX.XX
Injector 10 Current Pulse Rate	Inj 10 Prg XXX Cal XXXX.XX
Injector 11 Transaction Total	Inj 11 Prg XXX Cal XXXX.XX
Injector 12 Transaction Total	Inj 12 Prg XXX Cal XXXX.XX
Injector 13 Transaction Total	Inj 13 Prg XXX Cal XXXX.XX
Injector 14 Transaction Total	Inj 14 Prg XXX Cal XXXX.XX
Injector 15 Transaction Total	Inj 15 Prg XXX Cal XXXX.XX

Continued on next page...

Description	Display Format
Injector 16 Current Pulse Rate	Inj 16 Prg XXX Cal XXXX.XX
Injector 17 Current Pulse Rate	Inj 17 Prg XXX Cal XXXX.XX
Injector 18 Current Pulse Rate	Inj 18 Prg XXX Cal XXXX.XX
Injector 19 Current Pulse Rate	Inj 19 Prg XXX Cal XXXX.XX
Injector 20 Current Pulse Rate	Inj 20 Prg XXX Cal XXXX.XX
Injector 21 Current Pulse Rate	Inj 21 Prg XXX Cal XXXX.XX
Injector 22 Current Pulse Rate	Inj 22 Prg XXX Cal XXXX.XX
Injector 23 Current Pulse Rate	Inj 23 Prg XXX Cal XXXX.XX
Injector 24 Current Pulse Rate	Inj 24 Prg XXX Cal XXXX.XX

Flow Controlled Additives Dynamic Displays

The screens below and to the right are examples of the information that is available on the display for all configured flow controlled additives. If additives are not temperature compensated, Batch Average CTL, current and average temperature, GST values, GSV values, and Mass values are not displayed.

Note: *Flow Controlled Additives Dynamic Displays are available only when using Revision 10.04 firmware and up.*

Flow **50.0 Gal/Min**
Flow **3000.0 Gal/Hr**
Temp Cur Avg **35.2F 37.8F**
Avg Density **44.2 Lb/Ft3**
Arm 1 Inj 1
more...

MFac **1.02345**
Batch Avg CTL **0.9876**
IV Batch **100.000 Gal**
GV Batch **102.345 Gal**
Arm 1 Inj 1
more...

GST Batch **101.078 Gal**
Mass Batch **802.361 Lbs**
IV Trans **100.000 Gal**
GV Trans **102.34 Gal**
Arm 1 Inj 1
more...

GST Trans **101.08 Gal**
Mass Trans **802.36 Lbs**
Arm 1 Inj 1
more...

Dynamic Displays Diagnostics

Dynamic Displays Diagnostics allow the operator to review current configurations, identify causes of system errors, and analyze data collected by the AccuLoad III. Selecting “Diagnostics” from the main menu, and then choosing a specific diagnostic, usually results in the screen shown directly below. Position the cursor beside the appropriate load arm, and then press ENTER to reach the desired diagnostic screen.

```
Select Load Arm
→ Load Arm #1
  Load Arm #2
  Load Arm #3
  Load Arm #4
```

Note: *The diagnostics available through the Dynamic Displays menu are run-time diagnostics only. Program mode diagnostics are accessed from the Program Mode Main Menu.*

The Diagnostics menu available through the Dynamic Display consists of the following:

- Active Alarms
- Alarm History
- Non-Resettable Volumes
- Event Log
- Transaction Log
- Audit Trail
- Digital Inputs
- Digital Outputs
- Analog Inputs
- Analog Input Summary
- Analog Outputs
- Pulse Inputs
- View Turbine Meter Data
- Communications Monitor
- Network Status
- Force Injector Auto Detect
- CIVACON Overfill Monitor
- Boolean Algebraic
- Transaction Archive Data
- ComFlash Archive Data
- Printer Standby Data
- Download Directory
- AccuLoad Information
- Software Version
- Factory Diagnostics

Active Alarms

The Diagnostics menu provides the selection "Active Alarms" where all active alarms for a load arm can be viewed with the arrow in front of "Active Alarms." Press ENTER, select a load arm, and one of the following will be displayed. If no alarms are active, the following screen will be displayed.

```
No Active Alarms

Press Any Key
```

If there are active alarms, they will be displayed as follows:

```
Active Alarms

→ DA: EAAI Failure
  DA: BSE Failure
```

The active alarms can be cleared from this display by moving the arrow to the alarm and pressing “ENTER.” The AccuLoad will then ask for the passcode. When the passcode is entered, the alarm will clear.

Pressing the CLEAR key will return the system to the Diagnostic menu.

Alarm History

The Diagnostics menu provides the selection “Alarm History” where the most recent alarms can be viewed. With the arrow in front of “Alarm History,” press “ENTER”, select a load arm, and the historical alarms will be displayed. The alarms will be listed in order of occurrence.

```
Alarm History

1. PA: Powerfail Alarm
2. DA: Mtr Program Erro MI
3. PA: Powerfail Alarm
                more...
```

This is an alarm history for the transaction. For a more complete history of alarms, please access the Event Log.

Pressing the up and down arrow keys will allow the operator to page through the Alarm History displays. If “More…” is not displayed, then there is only one screen of alarms in the alarm history.

Pressing the CLEAR key will revert to the Diagnostic menu.

Non-Resettable Volumes

The Diagnostics menu provides the selection "Non-Reset Volumes" where the meter and additive injector volumes can be viewed. With the arrow in front of "Non-Reset Volumes," pressing ENTER will display a menu to allow the operator to view either the meter, the additive volumes or recipes. Choosing either the meter, additive injectors or recipe by moving the arrow and pressing ENTER will either display the non-resettable volumes or in the case of meter which load arm.

Non-Reset Volumes

→ **Meter**
Additive Injectors
Recipes

Meter volumes are displayed as follows:

Arm 1 Non-Reset Volumes

IV	**20684 Gal**
GV	**20304 Gal**
GST	**20309 Gal**

more...

Non-Reset Volumes

GSV	**20309 Gal**
Mass	**18241 Lbs**

more...

Additive injector values are displayed as follows: Only additives one through three are displayed in this example. Using the arrow keys on the keypad will allow the operator to move through all 24 of the additives.

Non-Reset Volumes

INJ #1	**0.000 Gal**
INJ #2	**0.000 Gal**
INJ #3	**0.000 Gal**

more...

Pressing the CLEAR key will return the display to the Non-Reset Volumes screen.

Choosing "Recipes" from the "Non-Reset Volumes" menu results in the following screen.

Recipe Directory

→ **Enter Recipe #**
Select Recipe

Selecting "Enter Recipe #" results in a prompt for a specific recipe number. Type the recipe number, then press ENTER to review the desired recipe data.

Recipe 6 Non-Reset Volumes

IV	**20684 Gal**
GV	**20304 Gal**
GST	**20309 Gal**

more...

Recipe 6 Non-Reset Volumes

GSV	**0 Gal**
Mass	**0 Lbs**

more...

Choosing "Select Recipe" from the Recipe Directory submenu results in the following display.

Recipe Directory

→ **Recipe 1 NNNNNNNNN**
Recipe 2 NNNNNNNNN
Recipe 3 NNNNNNNNN

Position the cursor beside the desired recipe, then press the ENTER key to obtain the same information displayed in response to "Enter Recipe #," above.

Event Log

The View Only Diagnostics menu displays "Event Log" where past events can be viewed. With the arrow in front of "Event Log," pressing ENTER will display the last event that occurred in the AccuLoad. The "Event Log"

includes alarms, transaction start and end, and program mode parameter changes.

```
Event Log # 1500

03/12/99                    8:52:20 AM
Alarm Occurred              A5:M2:DA
DA: Mtr Program Error
```

From the display, the operator can go back through the events using the up and down arrow keys. Pressing the CLEAR key will display the Diagnostics menu.

Transaction Log

The Diagnostics menu provides the selection "Transaction Log," where the transaction date can be viewed. With the arrow in front of "Transaction Log," pressing ENTER will display the following.

```
Transaction Log

Enter # of transactions back
Enter 1 for most recent

→1
```

Entering the number of batches back, the AccuLoad will display the following screen.

```
→ Transaction Totals
  Batch #1
  Batch #2
  Batch #3
```

From this display, the operator can choose either "Transaction Totals" or "Batch Data." If more than one batch is included in a transaction, each will be listed separately. The following information is displayed for Transaction Totals.

```
Transaction #16

Start 09/03/99              9:58:59 AM
End 09/03/99                10:02:24 AM
IV Trans                    1980.52 GAL
        Press PRINT for help
```

```
Transaction #16

GV Trans                    2110.18 GAL
GST Trans                   2115.43 GAL
GSV Trans                   2115.43 GAL
```

```
Transaction #16

Trans Avg Temp                 11.5 C
Trans Avg Dens             961.3 Kg/m3
Trans Avg Press             4.2 Kg/cm2
        Press PRINT for help
```

```
Transaction #16

Trans Avg CTL                  1.0025
Trans Avg CPL                  1.0000
Add 1 Trans                150.000 cc
        Press PRINT for help
```

Note: *Additive totals will be displayed only for those injectors used in the transaction.*

```
Transaction #16

Add 3 Trans                110.000 cc
Alarm Occurred                1:VF01
Alarm Occurred                1:PR01
        Press PRINT for help
```

```
Transaction #16

Prompt #1 Response                0
Prompt #2 Response               12
Card Number                       0
        Press PRINT for help
```

When "Batch" is selected from the above menu, the following data will be displayed.

Transaction #16 – Batch #1

Recipe #	2
IV Batch	1980.52 GAL
GV Batch	2110.18 GAL

Transaction #16 – Batch #1

GST Batch	2115.43 GAL
GSV Batch	2115.43 GAL
Mass Batch	2048.45 LBS

Press PRINT for help

Transaction #16 – Batch #1

Batch Avg Mtr Factor	1.06547
Batch Avg Temp	11.5 C
Batch Avg Dens	961.3 Kg/m3

Press PRINT for help

Transaction #16 – Batch #1

Batch Avg Press	4.2 Kg/cm2
Batch Avg CTL	1.0025
Batch Avg CPL	1.0000

Press PRINT for help

Transaction #16 – Batch #1

Add 1 Batch	150.00 cc
Add 2 Batch	110.000 cc
Alarm Occurred	1:VF

Press PRINT for help

Audit Trail

The View Only Diagnostics menu provides the selection "Audit Trail" where audit trail data is available for viewing. With the arrow in front of "Audit Trail," pressing ENTER will display the last audit trail entry that occurred in the AccuLoad.

Audit Trail Entry #13

02/12/99	11:43:32
Program Mode Exit	
abort changes – thru keypad	

The audit trail provides the date, time, and description of Program Mode changes. Note that only changes to parameters secured at the two highest security levels programmed are logged in the audit trail. Pressing the up and down arrows on the keypad will allow the operator to step through the audit trail.

Audit Trail Entry #12

02/12/99	11:36:13 AM
SY: 719	
0 7/None	
3 8/None	

In the example on the screen above, "Audit Trail Entry #12," "SY: 719" is system parameter 719; "0 7/None" is the old value, and "3 8/None" is the new value.

Audit Trail Entry #224

09/03/99	11:24:45
Program Mode Exit	
abort changes – thru keypad	

Pressing the CLEAR key will display the Diagnostic menu.

Digital Inputs

The Diagnostics menu provides for the selection of "Digital Inputs" where the current status of the digital inputs can be viewed. With the arrow in front of "Digital Input," pressing ENTER will display the first three digital inputs, the programmed function, and their status.

Digital Inputs

#1 Permissive 1	ON
#2 NA	OFF
#3 Permissive 2	OFF

More...

Viewing the above displays provides information on digital input #1. It is used as a permissive and the current status is ON. Likewise, the functions and status of digital inputs #2 and #3 are also available. By using the up and down arrows, digital inputs 4 through 43 can also be viewed. Included in the display are inputs on the BSE board. Pressing the CLEAR key will display the Diagnostics menu.

Digital Outputs

The Diagnostics menu provides the selection "Digital Outputs" where the function and status of the digital outputs can be viewed. With the arrow key in front of "Digital Outputs," pressing ENTER will display the first three digital outputs and their status.

Digital Outputs

#1 Alarm Relay 1 OFF
#2 N/A OFF
#3 Pump OFF
More...

By using the up and down arrows on the keypad, digital outputs #4 through #78 can be viewed. Included in the display are outputs on the BSE board. Pressing the CLEAR key will display the Diagnostics menu.

Analog Inputs

The Diagnostics menu provides the selection "Analog Inputs," where the function and status of the analog inputs can be viewed. With the arrow in front of "Analog Inputs," pressing ENTER will display the first two analog inputs, their current reading in engineering units, current, or voltage, and raw analog input value.

#1: M1 Temp In 15.0 C
14.062 mA 36863
#2: M1 Pressure 6.2 Kg.cm3
16.170 mA 42388

Analog Input Test more...

By using the up and down arrow keys on the keypad, analog inputs 3 through 6 can be viewed. Pressing the CLEAR key will display the Diagnostics menu.

Analog Input Summary

The Diagnostics menu provides the selection "Analog Input Summary" when using Revision 10 or higher firmware. This diagnostic displays the engineering values for associated input on all programmed arms. With the arrow in front of "Analog Input Summary," pressing ENTER will display the following screen.

Analog Input Summary

#1:	**50.65**	**#4:**	**50.51**
#2:	**41.53**	**#5:**	**57.89**
#3:	**50.13**	**#6:**	**64.23**

Pressing the CLEAR key will display the Diagnostics menu.

Analog Outputs

The Diagnostics menu provides the selection "Analog Outputs," where the function and status of the analog outputs can be viewed. With the arrow in front of "Analog Outputs," pressing ENTER will display the first two analog outputs, their current reading in engineering units, current, or voltage, and raw analog output value.

#1: Gen Purpose Out
14.062 mA 36863
#2: Flow Rate Out
16.170 mA 42388

Analog Output Test more...

By using the up and down arrow keys on the keypad, analog outputs 3 through 6 can be viewed. Pressing the CLEAR key will display the Diagnostics menu.

Pulse Inputs

The Diagnostics menu provides the selection "Pulse Inputs" where the leakage pulses and the batch pulses are displayed. The leakage pulses are the pulses received when the valve is not told to open and no flow is authorized. Batch pulses are zero since no batch is in progress. With the arrow in front of "Pulse Inputs," pressing ENTER will display the pulse inputs. Select meter pulse inputs or configurable pulse inputs.

Pulse Inputs
→ **Mtr Pulse Inputs**
Config Pulse Inputs

If no transaction is in progress, the following display will appear.

```
Pulse Inputs

A1 Leak                    0
Batch                      0
A2 Leak                    0
Batch                      0
More... Mtr Pulse Inputs
```

Using the up and down arrow keys on the keypad, other meters can be viewed.

Pressing the CLEAR key will display the Diagnostics menu.

The following screen will appear if a batch is in progress on load arm 1. The screen shows frequency of meter pulse input and number of pulses in the batch.

```
A1   829.6 Hz              43576

A2 Leak                    0
Batch                      0
More... Mtr Pulse Inputs
```

The following screen will appear if a transaction is between batches on load arm 1. The screen shows pulses over the whole transaction, as well as pulses from the last batch and the dual pulse errors.

```
A1   Trans                 50637

Batch                      50637
A2 Leak                        0
Batch                          0
More... Mtr Pulse Inputs
```

If Config Pulse Inputs is selected, all configurable pulse inputs will be displayed.

```
 4.  A1 Freq Den           0.00 Hz
 5.  A2 Freq Den           0.00 Hz
 6.  NA
10.  Meter Inj 1                0
More... Config Pulse Inputs
```

View Turbine Meter Data

The Diagnostics menu provides the selection “View Turbine Meter Data” to display turbine meter configuration data. With the arrow in front of “View Turbine Meter Data,” pressing ENTER will display a screen similar to that shown next:

```
Turbine Meter Diagnostics

→ Load Arm #1 Meter 1
  Load Arm #2 Meter 1
  Load Arm #3 Meter 1
  Load Arm #4 Meter 1

Select a Turbine Meter
```

Note that the appearance of this screen may deviate from this example, depending on the way the AccuLoad is configured. Position the cursor in front of the desired load arm, and then press ENTER to obtain the following screen.

```
Turbine Meter Diagnostics

→ Signature          0.000000e+000
  Cur TMD Value      0.000000e+00
  # Blades: 3        Tol: Most Lax

A1M1 Disabled – Meter OK
```

Press ENTER on this screen to change the status line at the bottom to a hex string (e.g., 0x1001). Press ENTER again to return to the original status line (e.g., A1M1 Disabled – Meter OK). Press CLEAR twice to return to the Dynamic Displays Diagnostics Menu.

Communications Monitor

The Diagnostics menu provides the selection “Comm Monitor” to review messages being sent and received across the communications lines. With the arrow in front of “Comm Monitor,” pressing ENTER will display the following:

```
Comm Monitor Live View

Rx 01PC_00_001_0.0
Tx                              .01N001
Enter = Freeze, print = errors
```

This display indicates that AccuLoad address 01 received a PC command from the host and responded with a “no response,” indicating that it is in Program mode. To freeze a command or response for further viewing, press “ENTER.”

```
Comm Monitor Freeze View

Rx 01PC_00_001_0.0
Tx                                .01N001
Enter = Toggle ASCII/hex << >>
```

On this display, the operator can toggle the message between the ASCII and hex characters. The decimal point key allows toggling between page scrolling ("<< >>") and character scrolling ("< >"). To return to the previous display, press CLEAR.

Pressing the PRINT key in the live view will display the following screen.

```
Comm Monitor Error Counts

Overruns: 00000
Parity: 00000
Framing: 00000
```

From this display, the overrun errors, parity errors, and framing errors can be viewed. Pressing CLEAR will return to the Live View display.

When completed, press CLEAR until the Diagnostics menu is displayed.

Network Status

Displays Network Diagnostics for the following:

- Link Layer Statistics
- IP Layer Statistics
- TCP Statistics
- UDP Statistics
- Packet Buffer Monitor
- Memory Pool Monitor
- TCP Segments Utilization
- TCP Connections
- Smith/IP
- Modbus/TCP
- SMTP
- Remote Display
- POP3
- FTP Connections
- HTTP Connections

Force Injector Auto Detect

AccuLoad III supports up to twenty-four smart injectors. They need not all share the same communications port. This diagnostic instructs the AccuLoad to search for smart injectors and indicate the comm port with which they are associated. The AccuLoad will flag a comm port and its related injectors, then move to the next comm port and search for smart injectors there. (The AccuLoad also repeats this process automatically, every time the operator exits Program mode.) With the arrow in front of "Force Inj Auto Detect," pressing ENTER will display the following:

```
Currently detecting Smart Injectors
on configured comm ports.

Press any key.
```

The AccuLoad will not indicate to the operator the comm port on which the injector was found.

Note: *While assigning 24 smart injectors to a single comm port is possible, it is not desirable. It is recommended that no more than 12 smart injectors be assigned to a single comm port, to avoid delays in data processing.*

CIVACON Overfill Monitor

Internal Use only.

```
CIVACON Overfill Monitor

Connect plug to socket

0x00 0x00 0x00 0x00 0x00
```

Boolean/Algebraic

The Diagnostics menu provides the selection "Boolean Algebraic" to view Boolean/Algebraic registers and their results. General-purpose timers can also be viewed from this screen. With the arrow in front of "Boolean Algebraic," pressing ENTER will display the Boolean/ Algebraic Processing menu.

```
Boolean/Algebraic Processing

→ User Boolean Registers
  User Algebraic Registers
  Equation Line Status
  General Purpose Timers
```

User Boolean Registers

The User Boolean Registers display indicates the registers and their current True or False value, where 0 is False and 1 is True.

User Boolean Registers

#1	1	#4	0	#7	0
#2	1	#5	0	#8	0
#3	1	#6	0	#9	0

More...

Using the up and down arrows, the 100 User Boolean Registers can be viewed. Pressing CLEAR will return to the Boolean/Algebraic Processing menu.

User Algebraic Registers

The User Algebraic Registers display the current values of the variables in the register. This display is read-only, but the registers can be modified via Boolean/Algebraic equations or via communications. These registers are used to check the values of the variables that have been set up and/or downloaded from the AccuMate.

User Algebraic Registers

#1	0.0
#2	0.0
#3	0.0

More...

Using the up and down arrow keys, all one hundred User Algebraic Registers can be viewed. Pressing CLEAR will return to the Boolean/Algebraic Processing menu.

Equation Line Status

The Equation Line Status displays the current status of the equations, where “D” indicates that the equation is disabled, “T” is True, and “F” is False. All equations without an “IF” statement will have a “True” status. Those with an “IF” will indicate the result of the “IF” expression: either “True” or “False.”

Equation Line Status

#1	D	#4	T	#7	D
#2	D	#5	D	#8	D
#3	F	#6	D	#9	D

More...

Using the up and down arrow keys, view all 200 equations. Pressing CLEAR will return to the Boolean/Algebraic Processing menu.

General Purpose Timers

The General Purpose Timers display the current time on the timers. The timers are broken down as follows:

Timer Numbers	Resolution	Range
1-4	0.1 second	109 minutes
5-8	1.0 second	18.2 hours
9-12	1.0 minute	45.5 days
13-16	1 hour	7.5 years

Clear the timer by writing a zero to the database location of the desired timer.

General Purpose Timers

#1	0	#4	0	#7	0
#2	0	#5	0	#8	0
#3	0	#6	0	#9	0

More...

Using the up and down arrow keys will display the remaining timers. Pressing CLEAR will return to the Boolean/Algebraic Processing menu. Pressing CLEAR again will return the display to the Display menu.

Transaction Archive Data

The Diagnostics menu provides the selection “Transaction Archive Data,” which allows the operator to view transaction data on a specified load arm. With the arrow in front of “Transaction Archive Data,” pressing ENTER will display the following screen.

Select Load Arm

→ **Arm No 1**
Arm No 2

Position the cursor to the left of the desired load arm and press ENTER to display a screen similar to that shown below.

# Transactions Stored	
Current Total for Arm:	11
Locked (Run in Standby):	0
Guaranteed Min. for Arm:	154
Under Host Control	

Pressing CLEAR will return to the Diagnostics menu.

ComFlash Archive Data

The first screen of this diagnostic shows the revision and serial # for ComFlash and SD card. 2nd and 3rd screens show the maximum # of transactions that can be stored and the actual # of transactions stored in ComFlash for each load arm. The last screen shows any diagnostic errors communicating with the SD card.

Printer Standby Data

This diagnostic is to indicate which arms have transaction reports that have not been printed.

Printer Standby Data	
# Transactions Stored:	500
# Locked (not printed):	15
Transactions	3251-3265
In Printer Standby Mode	

The bottom line in the above screen will indicate one of the following options:

- In Printer Standby Mode (last attempt at printing failed)
- Printer Available (last transaction report was successfully printed)
- Storage Full (transactions are not permitted)

The transaction range shown indicates the oldest transaction pending and the latest transaction pending. If the printer is down intermittently and pending reports have not been printed, it is possible that not all of the transactions in the range shown are pending.

Download Directory

This diagnostic shows what user configurable files have been downloaded (i.e. configurable reports, card database, translations and equations).

AccuLoad Directory

This diagnostic shows the MAC address, Bootloader Revision and CRC, License number and whether the firmware is locked from erasing/upgrades (JP1 jumper in).

Software Version

The Diagnostics menu provides the selection “Software Version,” which allows the operator to view the version of software that is running in the AccuLoad. With the arrow in front of “Software Version,” pressing ENTER will display the software version and the CRC of the PROMs.

Software Version	
AccuLoad IIIX Revision	10.01
CRC	494F8231 Max Arms 6
Copyright 2000-2002 FMC Smith Meter Inc.	

Pressing CLEAR will return to the Diagnostics menu.

Factory Diagnostics

For factory use only.

Program Mode Diagnostics

The Program Mode Diagnostics are used to troubleshoot or to determine the current status of the AccuLoad. Program Mode Diagnostics is selected by moving the cursor to “Diagnostics” on the Program Mode menu and pressing “ENTER.” This will display the Diagnostics menu. Note that Program Mode Diagnostics are only available if Program Mode was entered at a security level at or greater than the level entered in System Parameter 158.

Program Mode Menu	
	Recipe Directory
	Exit Without Saving
→	Diagnostics

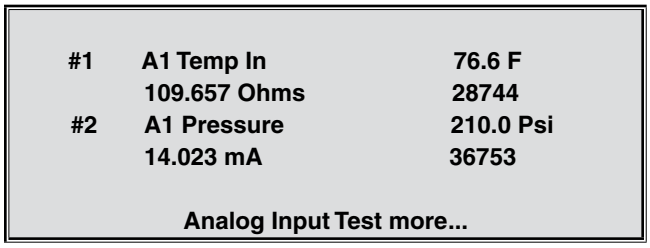
Pressing ENTER with the arrow in front of Diagnostics will display three items of the Diagnostics Menu. Pressing the up and or down arrows will step through the Diagnostics Menu. The available diagnostics in the order that they appear on the menu are as follows:

- Analog Input Test
- Analog Output Test
- Digital Input Test
- Digital Output Test
- Pulse Input Test
- Pulse Output Test

- Solenoid Actuation Count
- Turbine Meter Diagnostics
- Add-Pak Diagnostics
- Prove Metered Injector Additives
- Communications Test
- Keypad Test
- Display Pixel Test
- Boolean/Algebraic
- Transaction Archive Information
- Reset Totals
- Reset Dual Pulse Errors
- Erase Event Log
- Erase Transaction Log
- Transaction Number Init
- Erase Web Pages
- Card Reader Database Update
- Mass Meter Menu
- Download Directory
- Factory Initialize
- Split Architecture Factory Initialize
- Valve Closure Diagnostics
- Factory Diagnostics
- Upgrade Firmware

Analog Input Test

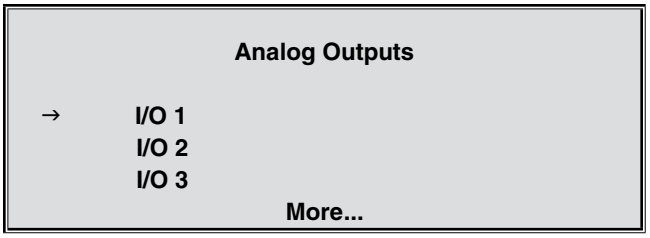
Selecting Analog Input Test and pressing ENTER will display the status of the analog input points in the AccuLoad.



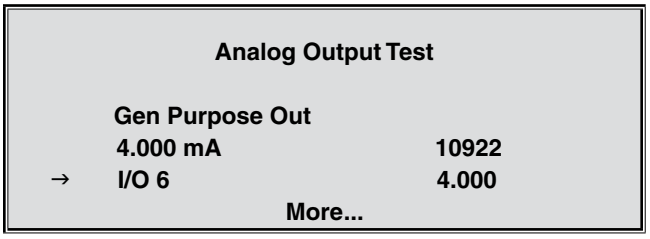
This screen is used to view the current status of the inputs. The operator can view the function; the current value of the input; the reading of the input in ohms, milliamps, or volts; and the raw analog input value.

Analog Output Test

Selecting “Analog Output Test” and pressing ENTER will display the status of the analog output points in the AccuLoad.

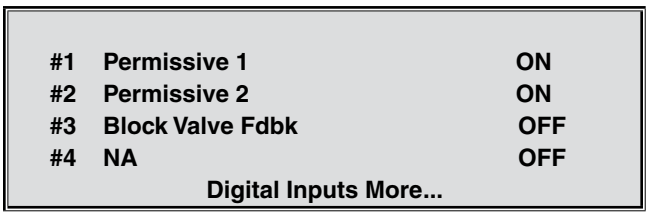


This screen is used to view the current status of the outputs. The operator can view the function; the current value of the output; the reading of the output in ohms, milliamps, or volts; and the raw analog output value.



Digital Input Test

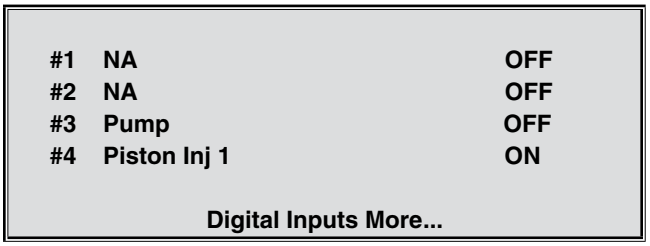
Selecting Digital Input Test and pressing ENTER will display the status of the digital input points in the AccuLoad.



This screen shows the Input number, the function that is programmed in the unit for the input and the status of the input point (i.e., if it is on (closed) or off (open). Check the inputs by changing the status of the input, then referring to the diagnostic screen to see if the AccuLoad recognizes the change of state.

Digital Output Test

Selecting “Digital Output Test” and pressing ENTER will display the status of the digital output points in the AccuLoad.



Moving the arrow to the output that is to be tested and pressing ENTER will change the state of the output. An example would be moving the arrow to output #3 Pump and pressing ENTER.

```
    #1  NA                          OFF
    #2  NA                          OFF
→   #3  Pump                        ON
    #4  Piston Inj 1                ON
            Digital Inputs More...
```

Pulse Input Test

Selecting Pulse Input Test and pressing ENTER will display a screen that indicates the number of pulses received by the respective pulse input. Pressing ENTER clears the pulse count value. This diagnostic should not be used to verify the actual meter pulses received for any batch or transaction. It is intended as a method of verifying pulse input wiring to the respective pulse input on the AccuLoad. Applying pulse to the respective input will cause the respective counter to increment.

Note: *If Dual Pulse is enabled, "Reset Dual Pulse Errors" will appear as a menu option on the screen. See description "Reset Dual Pulse Errors" on page 55.*

```
                Pulse Inputs

1.  0                       4.  0
2.  0                       5.  0
3.  0                       6.  0
        More... Press ENTER to Clear
```

Pressing CLEAR will return the display to the Diagnostic Menu.

Pulse Output Test

Selecting the Pulse Output Test and pressing ENTER will display a screen that shows the output tests and the counts that are output from the AccuLoad. Pulse Out 1 and Out 2 are default, while outputs 3, 4, and 5 are programmable. The first output sends out pulses at 100 Hz and the second output sends out pulses at 200 Hz, the third at 12 Hz, the fourth at 15 Hz, and the fifth at 20 Hz. The first output will send out 2000 pulses and the second will send 4000 pulses, the third will send 240 pulses, the fourth will send 300 pulses, and the fifth will output 400 pulses.

```
            Press START when ready

OUT1 @100 Hz   0
OUT2 @200 Hz   0
OUT3 @12 Hz    0
OUT4 @15 Hz    0
OUT5 @20 Hz    0
```

When the test is complete, the receiving device counts should be compared to the diagnostic screen. To start the test when the diagnostic screen is displayed, press the START key.

```
            Test done - Press CLEAR

OUT1 @100 Hz   2000
OUT2 @200 Hz   4000
OUT3 @12 Hz    240
OUT4 @15 Hz    300
OUT5 @20 Hz    400
```

Pressing CLEAR will return the display to the Diagnostic Menu.

If pulse outputs 3, 4, or 5 are not configured they will not appear in this diagnostic.

Solenoid Actuation Diagnostic Counters

The AccuLoad III.net with KDC.net firmware revision 11.08 and higher, will provide registers to indicate the upstream and downstream solenoid actuations.

Separate counters will be available for both the upstream and downstream solenoid of each meter. The counter will be incremented each time the solenoid is energized.

The registers will be viewable from the AccuLoad's Diagnostic Menu (via main menu and program mode).

```
            Diagnostics
    Pulse Input Test
    Pulse Output Test
→   Solenoid Actuation Count
            more...
```

```
            Arm 1 Meter 1
    Upstream                123456789
    Downstream              123456789
    Press 1 to reset upstream
    Press 2 to reset downstream
```

The registers may only be cleared from the program mode diagnostics menu which is under security level

access control. The upstream and downstream counters may be individually cleared or modified.

Note: *The counters will be cleared by a factory initialization of firmware upgrade.*

The registers may be read and modified (set or cleared) via Smith Meter Protocol and Modbus.

Turbine Meter Diagnostics

From Turbine Meter Diagnostics, the operator can collect or generate information about a turbine meter, enable or disable the diagnostic, and view information about a meter. With the arrow in front of "Turbine Meter Diagnostics," press ENTER to display the following screen.

```
          Turbine Meter Diagnostics

     Load Arm #1          Turbine Mtr #1
→    Load Arm #2          Turbine Mtr #1
     Load Arm #3          Turbine Mtr #1
          Select a Turbine Meter
```

Place the cursor in front of the desired Load Arm, then press ENTER to obtain the following screen.

```
          Turbine Meter Diagnostics

→    Begin Learn Mode
     Disable/Enable Diag
     View Data
          A2M1 Disabled - Meter OK
```

"Begin Learn Mode" signals the AccuLoad to initiate a statistical sampling from which it derives a signature (or numerical profile) and two sub-signatures for the turbine meter. The meter signature, as well as a standard deviation for each measurement, is then sent to the KDC board. Before initiating a learn, it is best to record the current signature so the new signature can be voided, if necessary. Choose "View Data" from the Turbine Meter Diagnostics display. The current signature will appear, as shown on the screen below.

```
          Turbine Meter Diagnostics

→    Signature            0.000000e+000
     Cur TMD Value        0.000000e+00
     # Blades: 3          Tol: Most Lax

          A2M1 Disabled - Meter OK
```

Pressing ENTER will toggle the last line of this display from a message like "A2M1 Disabled – Meter OK" to a hex view (e.g., 0x0000).

If constantly changing numbers appear at the bottom of the AccuLoad display, the turbine meter diagnostics feature is enabled and is working. (The diagnostic on the AccuLoad runs once a second, and updates the display about once every five seconds.) The AccuLoad counts pulses and flow tolerance. If a statistically significant variation occurs in 4 out of 10 meter turns, an alarm will be generated. The alarm does not necessarily indicate the reason for the variation; possible causes are bearing problems, a bent blade, or flow inconsistency. Selecting a less strict flow tolerance may correct the problem. If the alarm persists, the meter should be proved.

Note: *This diagnostic applies to turbine meters only; it is not to be used for positive displacement meters.*

Choose "Disable/Enable Diagnostic" to disable or enable Learn Mode. The diagnostic toggles between "disabled" and "enabled" every time the screen is selected and exited.

```
     Turbine Meter Diagnostics for this
     meter have been ENABLED.

          Press any key.
```

Select "View Data" to display the turbine meter's signature and current configuration.

```
          Turbine Meter Diagnostics

→    Signature            0.000000e+000
     Cur TMD Value        0.000000e+000
     # Blades: 0          Tol: Most Lax
          Mtr #1 Disabled - Meter OK
```

Press CLEAR twice to return to the Diagnostics Menu.

Add-Pak Diagnostics

Selecting "Add-Pak Diagnostics" from the menu allows the operator to turn the pump on and off and view pulse and volume information at one Add-Pak injector at a time. These functions allow the operator to test the additive injector I/O during a period of no activity at the load arm. It is possible to manipulate outputs and read pulse input data without configuring the injector for use at the AccuLoad III, but the injector cannot be proved unless it is configured for use.

Note: *Only injectors 5 through 24 are valid Add-Pak injectors; I/O and pulse input diagnostics exist elsewhere on the AccuLoad for injectors 1 through 4.*

```
Add-Pak Diagnostics

→  Software Version
   I/O Diagnostics
   Test Inject
   Initialize
```

Software Version

Selecting “Software Version” from the Add-Pak Diagnostics menu displays a screen similar to that shown below. This option indicates the software version and CRC associated with the Add-Pak software for all injectors configured as Add-Paks. If no injector is configured as an Add-Pak, a pop-up with the message “Injector Not Configured” will appear. All configured injectors on one Add-Pak will return the same information.

```
Add-Pak Diagnostics

→  Inj #3 Version 00 Inj      72852B46
   #12 Version 00             72852B46
```

I/O Diagnostics

Selecting “I/O Diagnostics” from the Add-Pak Diagnostics menu displays a screen similar to that shown below.

```
Add-Pak Diagnostics

→  Inj #5
   Inj #6
   Inj #7
                  more...
```

Position the cursor beside the appropriate injector and press ENTER. A screen similar to that shown below will appear. This diagnostic screen allows the pump or solenoid to be turned on and off. The state of the output will change when the ENTER key is pressed with the arrow positioned at one of the I/O points. “ENTER” communicates a state change to the Add-Pak board. The displayed state only toggles once the Add-Pak is queried about the state of the I/O point after it has been commanded to change. Therefore, if the Add-Pak is not communicating, the state will not toggle with ENTER. This diagnostic also allows the counts to be reset to zero at any time. Counts and volume update when incoming pulses are seen by the Add-Pak.

```
Add-Pak Injector #5

→  Pump                       OFF
   Solenoid                   OFF
   Reset Counts
      Counts 000000 Vol. 0000000.000
```

The I/O diagnostic may be performed on an injector not programmed as an Add-Pak. Because Injectors 1 through 4 cannot be Add-Pak injectors, AccuLoad Injector 5 corresponds to Add-Pak Injector 1, AccuLoad Injector 6 to Add-Pak Injector 2, and so on. In order to perform a diagnostic, a Smart Injector comm port must be programmed. Note that there is a slight delay when exiting the screen as the AccuLoad resets and verifies that the I/O points on the Add-Pak are de-energized.

Test Inject

Selecting “Test Inject” from the Add-Pak Diagnostics menu displays a screen similar to that shown below. This option allows the operator to prove an Add-Pak injector. Note that “Test Inject” won’t work if the additive injector is not programmed as an Add-Pak. In this case, a pop-up will appear with the message “Injector Not Configured.”

```
Add-Pak Diagnostics

→  Inj #5
   Inj #6
   Inj #7
                  more...
```

Select an Add-Pak injector by positioning the cursor beside the desired injector and pressing ENTER. A screen similar to that shown below will appear.

```
Add-Pak Injector #5

→  Injection Vol              0.000
   Injector is                Not Authorized
   Inject                     Injection #0
      Counts 000000   Vol. 0000000.000
```

After selecting an Add-Pak injector, this diagnostic will request the injection volume. The next step is to authorize the injector and energize the pump. This cannot be done if the injection volume has not been specified. Finally, the operator can request test injections from this diagnostic screen. A counter will display the number of injections completed thus far, in addition to the pulse and volume information (which will update as the test proceeds). By comparing the reported volume to the

actual volume injected, the injector meter factor can be calculated and programmed by the operator. The meter factor is now computed just like metered injector proving.

Initialize

Selecting "Initialize" from the Add-Pak Diagnostics menu displays a screen similar to that shown below.

```
Add-Pak Initializing

Please Wait   /
```

This command will initialize all twenty Add-Pak injectors and reset all parameters and totals back to zero. The AccuLoad will not initialize the Add-Pak injectors as part of its own initialization. When the initialization is complete, the display will return to the Add-Pak Diagnostics menu. Press "CLEAR" to force an early exit out of the display; however, be aware that the Add-Pak may cause an Additive Communications (AC) alarm as it completes the initializing process.

Metered Injector Proving

When using Revision 1 and above firmware, the AccuLoad III supports additive meter proving. The AccuLoad controls a metered injector (or Add-Pak metered injector) for proving, and then calculates a new meter factor for the metered injector.

A diagnostic has been added to the Program Mode menu allowing the proving of Add-Pak or local metered injectors. The injector to be proved must be programmed to function prior to running this diagnostic.

When the operator selects the proving diagnostic, the following screen will appear.

```
Prove Mtr Inj Additives

→  Inj #1
   Inj #2
   Inj #3
                  more...
```

The list of selections includes injectors 1 through 24. Position the cursor beside the appropriate injector and press ENTER. If the selected injector is not configured, the AccuLoad will display a screen similar to that shown below.

```
This Injector is not Configured.

Press any key to continue...
```

If the injector is configured for operation, the AccuLoad III will display a screen similar to that shown below. The display is the same for both Add-Pak injectors and resident metered injectors, except that the display will specify the type of injector.

```
Prove Metered Injector #1

→  Injection Vol          1234.123 gal
   Injector is            Authorized
   Inject                 Injection #4
      Counts 123456  Vol. 12345678.123
```

A description of each of the entries is as follows:

Injection Volume

This is an input field for the user to specify the volume of additive to be attempted for each test injection. The volume is displayed in the units specified in Additive Directory 805 (Injector Units).

Injector Is

If the injector is an Add-Pak, this selection authorizes and de-authorizes a specific Add-Pak. If not authorized, this selection prevents test injections from being performed.

Inject

This selection initiates an injection. If an injection is already in progress, this selection is ignored. Once the test injection is complete, the selection accepts additional input. This operation is not permitted if the injector is incorrectly programmed. The test injection volume must be valid and the injection must be authorized.

Injection Number

This display-only item is a count of the number of test injections performed on this metered injector for this current diagnostic.

Counts

This display-only item is a count of the number of pulses received by the metered injector, starting from when the diagnostic first began. This selection is zeroed when this screen is first entered.

Volume

This display-only item is the current amount of additive as calculated from the parameters programmed for the metered injector and the current number of pulses. The count is displayed in units of totalized additive.

When the test injections are complete, press CLEAR. The AccuLoad will display a screen similar to that shown

below. Enter the actual amount of additive as measured by an external device (e.g., a graduated cylinder). Select the volume units in which the total is to be displayed. If no test injections have been performed, or if there are no recorded additive pulses or volumes, the CLEAR key will exit the diagnostic altogether.

Enter Actual Additive Amount

	Injected Units	**(*) uuu**
	Totalized Units	**(*) uuu**
	Additive Volume	**12345678.123**
→	**Continue**	

An asterisk (*) marks the currently selected volume type in which the actual volume units will be entered. One of these selected is always indicated. The actual volume injected is also entered on this screen. When this amount is entered, moving the selection to "Continue" allows the calculation process to proceed. Pressing CLEAR exits this diagnostic.

Once the "Continue" option has been selected, the AccuLoad will calculate a new meter factor based on the volume entered. This new meter factor, the current meter factor, and the choice of accepting this meter factor, are presented on the next screen, as shown on the next page.

New Additive Meter Factor

	New M-Factor: 1.12345	**%Diff**
	Old M-Factor: 1.12345	**123.45%**
→	**Accept New Meter Factor**	
	Reject New Meter Factor	

Rejecting the new meter factor exits the diagnostic and erases all proving data. Accepting the new meter factor stores it in the database. Saving the factor in non-volatile memory requires a program mode exit with changes. If the new meter factor is accepted but the unit loses power before exiting program mode, the new meter factor is lost.

Communications Test

Selecting "Communications Test" from the menu allows the operator to run a diagnostic on any of the communication ports on the AccuLoad. Pressing ENTER with the cursor in front of selection one will activate a popup screen where the operator can select the communications port to be tested.

Select comm port to test.

→	**Comm 1**
	Comm 2
	Comm 3
	Comm 4

For this test to be completed, the transmit and receive terminals on the comm port must be connected. Once the comm port has been selected for testing by moving the arrow to the required port, pressing ENTER will start the communications test.

Comm Port 1 Test

Tx	**S**	**overruns: 00000**
Rx	**S**	**parity: 00000**
Errs	**00003**	**framing: 00000**

Press CLEAR to stop test

The test will display the characters that are being transmitted on the transmit line. It will also display the characters as they are received back into the instrument. Also displayed are the errors that have occurred during the test, the overruns, the parity, and the framing errors. Pressing CLEAR will end the test and return the unit to the Communications Test menu. The test is identical for the four ports. The only difference in the display will be the communications port number and the channel designation.

Keypad Test

Select "Keypad Test" from the menu to run a diagnostic test on the keypad of the AccuLoad. Pressing ENTER will display the keypad test screen.

Keypad Test

Press any key and it will be displayed.
Press CLEAR twice to exit.

With this screen displayed, any key that is pressed will appear on the screen as the key that was pressed.

Keypad Test

STOP

Press any key and it will be displayed.
Press CLEAR twice to exit.

To end the test, the CLEAR key must be pressed twice. The first time, CLEAR will appear on the test screen. The second time, the unit will return to the Diagnostic Test menu.

Display Pixel Test

Selecting "Display Pixel Test" and pressing ENTER will initiate the pixel test on the display. All the pixels will be lit, allowing the operator to determine if any of the pixels on the display are not functioning. Pressing CLEAR will terminate the test and return the unit to the Diagnostic menu.

Boolean/Algebraic Processing

Selecting "Boolean/Algebraic Processing" and pressing ENTER will display the following list of Boolean/Algebraic-related diagnostic displays that can be viewed by the operator.

- User Boolean Registers
- User Algebraic Registers
- Equation Line Status
- General Purpose Timers

User Boolean Registers

Selecting "User Boolean Registers" and pressing ENTER will display the first nine user Boolean registers. There are a total of 100 user Boolean registers. The range of these registers is 0 to 255. These registers are set aside for the user. They can be written to by Boolean/Algebraic equations or via communications. The values can be printed on user-defined reports.

User Boolean Registers

#1 0	#4 0	#7 0
#2 0	#5 0	#8 0
#3 0	#6 0	#9 0

More...

User Algebraic Registers

Selecting "User Algebraic Registers" and pressing ENTER will display the first three user algebraic registers.

User Algebraic Registers

#1 0
#2 0
#3 0
More...

Equation Line Status

The Equation Line Status displays the current status of the equations, where "D" indicates that the equation is disabled, "T" is True, and "F" is False. All equations without an "IF" statement will have a "True" status. Those with an "IF" will indicate the result of the "IF" expression: either "True" or "False."

Equation Line Status

#1 D	#4 T	#7 D
#2 D	#5 D	#8 D
#3 F	#6 D	#9 D

More... STOP to toggle on/off.

Entering the equation number that is to be disabled and pressing ENTER will change the status on the screen from either T (True) or F (False) to D (Disabled). The equation from that point until enabled will not be active. To enable an equation the same process is followed, except that the screen will indicate that the equation is D (Disabled). Entering the equation number will enable that equation.

Toggle Equation ON/OFF

Enter Equation # →1

General Purpose Timers

Selecting "General Purpose Timers" and pressing ENTER will display nine of the sixteen general purpose timers that can be activated and used through the Boolean and/or algebraic equations.

General Purpose Timers		
#1 0	#4 0	#7 0
#2 0	#5 0	#8 0
#3 0	#6 0	#9 0
More...		

The timers are incremented at these intervals:

Timer Numbers	Resolution	Range
1-4	0.1 second	109 minutes
5-8	1.0 second	18.2 hours
9-12	1.0 minute	45.5 days
13-16	1 hour	7.5 years

The operator can clear the times by writing a zero to the database location of the desired timer. Like the user Boolean and user algebraic registers, these timers are reserved strictly for the user. They may be started via Boolean/Algebraic equations or via communications. Timers are very useful in the design of equations as they allow setting a user alarm or taking some other action after an event has persisted for a period of time.

Transaction Archive Information

This diagnostic reveals the transaction archive information for a specific arm. Pressing ENTER will display the following screen.

Select Load Arm
Load Arm #1
Load Arm #2
Load Arm #3
More...

Select the arm for which transaction information is desired, then press ENTER. A screen similar to that shown below will appear.

Transaction Archive Info	
Current Total for Arm:	5
Locked (Run in Standby):	0
Guaranteed Min. for Arm:	40
Standalone Operation	

Pressing CLEAR will return the unit to the Diagnostics Menu screen.

Reset Totals

This diagnostic is used for resetting the non-resettable totals. Pressing ENTER will display the following screen.

Reset Totals
WARNING
Non-resettable volumes will be reset.
Press ENTER to continue or CLEAR to exit.

Pressing CLEAR will return the unit to the Diagnostics Menu screen. Pressing ENTER on the screen will reset the non-resettable totals (both product and additive) and return the unit to the Diagnostics Menu screen.

Note: *This diagnostic is not available in ALP Firmware.*

Reset Dual Pulse Errors

This diagnostic is used for resetting the dual pulse errors if they occur outside of the options programmed in meter code 303 “Dual Pulse Error Reset”. For instance if code 303 is programmed for no automatic reset of the errors this diagnostic would have to be used for resetting the errors if they exceeded the count programmed in meter code 302 “Dual Pulse Error Count”.

To reset the errors, scroll through the menu until the cursor is in front of “Reset Dual Pulse Errors” and press “ENTER”, the following screen will appear.

Reset Dual Pulse Errors
WARNING
Dual Pulse Error counter will be reset.
Press ENTER to continue or CLEAR to exit.

Erase Event Log

This diagnostic is used for erasing the event log. Pressing ENTER will display the following screen.

Erase Event Log
WARNING
The event log will be erased!
Press ENTER to continue or CLEAR to exit.

Pressing CLEAR will return the unit to the Diagnostics Menu screen without erasing the event log. Pressing ENTER will erase the event log and return the unit to the Diagnostics Menu screen.

Erase Transaction Log

This diagnostic is used to erase the transaction log. Pressing ENTER with the arrow in front of "Erase Transaction Log" will display the following screen.

Erase Transaction Log
WARNING
The transaction log will be erased!
Press ENTER to continue or CLEAR to exit.

Pressing CLEAR will return the unit to the Diagnostics Menu screen without erasing the transaction log. Pressing ENTER will erase the transaction log and return the unit to the Diagnostics Menu. Not only will the log be erased, but historic transactions currently archived will no longer be available via communications.

Transaction Number Init

This diagnostic (installed in Firmware Revision 11.04) allows for setting the starting transaction number per Load Arm to any desired number. This can only be done after a Factory Initialization or Firmware Upgrade. The transaction number may only be set before any transactions are started or the Accuload is power cycled. Once either of these occurs, this diagnostic will not be available (including for viewing).

Erase Web Pages

This diagnostic is used to erase all Web pages.

Erase Web Pages
WARNING
All web pages will be erased!
Press ENTER to continue or CLEAR to exit.

Card Reader Database Update

Selecting "Card Reader Database Update" and pressing ENTER will display a screen that prompts the operator to add a new entry to the card reader database of driver IDs. Once the data has been successfully entered, this diagnostic confirms that the card has been read and recorded. Press ENTER to add another card or CLEAR to exit the diagnostic.

Please card-in new card to store in driver database.

Press CLEAR to cancel.

Mass Meter Menu

Selecting "Mass Meter Menu" from Program Mode Diagnostics displays the opening mass meter diagnostics screen. Mass meter diagnostics display mass meter information and allow the operator to perform certain maintenance tasks. These diagnostics are only available when a mass meter has been configured for use and when the AccuLoad III is equipped with Revision 10.04 firmware or higher.

Mass Meter Diagnostics

→ **Arm 6 Meter 1**

Press ENTER to accept the arm and meter selection shown on the screen. The following display will then appear.

Arm 6 Meter 1

→ **Revision and Date**
Magnitude and Drive
Zero
Tare

Revision and Date

Selecting "Revision and Date" from the Mass Meter Diagnostics menu displays a screen similar to that shown below. This option indicates the software version and date associated with the mass meter.

Arm 6 Meter 1

Revision	**14**
Date	**10/03**

Magnitude and Drive

Selecting "Magnitude and Drive" from the Mass Meter Diagnostics menu displays a screen similar to that shown below.

Arm 6 Meter 1

→	**Drive**	**XXXX**
	Forward Magnitude	**XXXX**
	Reverse Magnitude	**XXXX**

This screen displays the current valves and is dynamically updated. Press CLEAR to return to the Mass Meter Diagnostics menu.

Zero

Selecting "Zero" from the Mass Meter Diagnostics menu displays a screen similar to that shown below. In this case, a pop-up will appear with the message "Injector Not Configured."

```
Arm 6 Meter 1

Are you sure?

→  Yes
   No
```

Position the cursor beside "Yes" and press ENTER to set the meter to zero. The screen will then display "Zeroing in Progress" until the process is complete. Once the meter has been set back to zero, the message will change to "Zeroing Complete – Press Clear to Exit." Note that there can be no flow in progress when "Zero" is initiated.

Position the cursor beside "No" and press ENTER to abort the zero function and return the display to the Mass Meter Diagnostics menu.

Tare

Selecting "Tare" from the Mass Meter Diagnostics menu displays a screen similar to that shown below.

```
Arm 6 Meter 1

Current Tare                 XXX
Enter New Tare          →    XXX
```

This screen allows the operator to specify a new tare value for a mass meter. Use the keypad to indicate the new tare value and then press ENTER. The display will return to the Mass Meter Diagnostics menu.

Download Directory

This diagnostic shows what user configurable files have been downloaded (i.e. configurable reports, card database, translations and equations). It also provides for any available directory to be deleted.

Factory Initialize

Selecting "Factory Initialize" and pressing ENTER will display a screen that tells the operator that if ENTER is pressed, all the parameters in the unit will be reset to the default values as they were shipped from the factory. Caution: Running this diagnostic will change all parameters that have been programmed previously.

```
Factory Initialize
WARNING
All run data and parameters will be erased!
Press ENTER to continue or CLEAR to exit.
```

This diagnostic should always be run when a new set of PROMs is installed.

Note: *In ALP firmware only, the "Factory Initialize" will not reset the "Non-Reset Totals".*

Split Architecture Factory Initialize

Selecting "Split Architecture Factory Initialize" and pressing ENTER will display a screen that tells the operator that if ENTER is pressed, all the parameters in the unit will be reset to the default values as they were shipped from the factory.

Caution: Running this diagnostic will change all parameters that have been programmed previously. This initialization should only be used when using an MMI in the AccuLoad III-SA configuration.

```
Split Archit Factory Init
WARNING
All run data and parameters will be erased!
Press ENTER to continue or CLEAR to exit.
```

This diagnostic should always be run when a new set of PROMs is installed.

Factory Diagnostics

The Watchdog Reset Test, Address Space Integrity Test, Power-Up Diagnostics, and Flash Confidence Test diagnostics are for factory use only.

Valve Closure Diagnostics

This command retrieves the time it takes for the product flow control valve to completely close, retrieves the volume of product that has been delivered after the STOP button (or remote stop) has been pressed and indicates the flow rate. This command will also measure the volume and time if there is a loss of permissive resulting in valve closure or if a communication command is issued to stop the batch.

Position the cursor beside the desired arm number and meter number and press ENTER to view the time, volume and flow rate of the valve closure.

	Seconds	Gal	GPM
1	12.3	25	497
2	6.7	12	250
3	7.3	15	265

more... Arm1/Mtr1 #1=latest

STD Field Test Initialize

The significance of this diagnostic is to set the appropriate program mode parameters so the AccuLoad III operates as an AccuLoad II STD. The test expedites AccuLoad setup for demo purposes.

Field Test Initialize
WARNING
All run data and parameters will be erased!
Press ENTER to continue or CLEAR to exit.

SEQ Field Test Initialize

The significance of this diagnostic is to set the appropriate program mode parameters so the AccuLoad III operates as an AccuLoad II SEQ. The test expedites AccuLoad setup for demo purposes.

Field Test Initialize
WARNING
All run data and parameters will be erased!
Press ENTER to continue or CLEAR to exit.

RBU Field Test Initialize

The significance of this diagnostic is to set the appropriate program mode parameters so the AccuLoad III operates as an AccuLoad II RBU. The test expedites AccuLoad setup for demo purposes.

Field Test Initialize
WARNING
All run data and parameters will be erased!
Press ENTER to continue or CLEAR to exit.

A2 STD Field Test Initialize

The purpose of this diagnostic is to set the appropriate program mode parameters so the AccuLoad III operates and communicates as an AccuLoad II STD. This test facilitates AccuLoad III to II communication, and is only available when using Revision 9 or above firmware. This test expedites AccuLoad setup for demo purposes.

Field Test Initialize
WARNING
All run data and parameters will be erased!
Press ENTER to continue or CLEAR to exit.

A2 SEQ Field Test Initialize

The purpose of this diagnostic is to set the appropriate program mode parameters so the AccuLoad III operates and communicates as an AccuLoad II SEQ. This test facilitates AccuLoad III to II communication, and is only available when using Revision 9 or above firmware. This test expedites AccuLoad setup for demo purposes.

Field Test Initialize
WARNING
All run data and parameters will be erased!
Press ENTER to continue or CLEAR to exit.

A2 SQR Field Test Initialize

The purpose of this diagnostic is to set the appropriate program mode parameters so the AccuLoad III operates and communicates as an AccuLoad II SQR. This test facilitates AccuLoad III to II communication, and is only available when using Revision 9 or above firmware. This test expedites AccuLoad setup for demo purposes.

Field Test Initialize
WARNING
All run data and parameters will be erased!
Press ENTER to continue or CLEAR to exit.

A2 RBM Field Test Initialize

The purpose of this diagnostic is to set the appropriate program mode parameters so the AccuLoad III operates and communicates as an AccuLoad II RBM. This test facilitates AccuLoad III to II communication, and is only available when using Revision 9 or above firmware. This test expedites AccuLoad setup for demo purposes.

Field Test Initialize
WARNING
All run data and parameters will be erased!
Press ENTER to continue or CLEAR to exit.

A2 Hardware Initialize

This initialization configures all parameters to the factory database default settings and, in addition, configures the I/O for convenient installation of an AccuLoad III KDC board into an AccuLoad II housing using STD firmware (which has fixed I/O assignments).

AccuLoad II Hardware Initialize
WARNING
All run data and parameters will be erased!
Press ENTER to continue or CLEAR to exit.

Upgrade Firmware

This diagnostic is used to initiate a Firmware Upgrade using the keypad versus using AccuMate. Consult factory field service for assistance.

Print Menu

The Print Menu is available in the AccuLoads Main Menu.

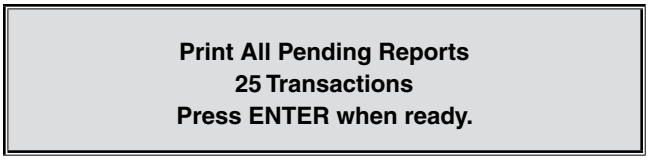
Print Individual Report

This selection allows for printing historical reports.

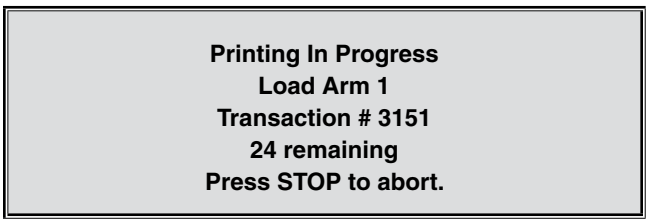
Print Pending Reports

If "Print Pending Reports" is selected, the AccuLoad will prompt whether it is desired to print pending reports from all arms or a particular arm.

Once the selection is made, the AccuLoad will display the # of pending reports to be printed.



While printing is in progress, the AccuLoad will display the current transaction being printed.



Pressing STOP will abort the printing after the current transaction report is finished. Also if any report fails to be printed within programmed communications time-out, the AccuLoad will abort printing any more pending reports.

Note: *If it is desired to abort the printing of pending reports initiated automatically (auto re-print) or via communications command, the Print Menu may be entered and will allow the printing to be aborted.*

Online Data Pages for AccuLoad III

When the AccuLoad is linked to a PC through a network connection, the web browser (Internet Explorer, Netscape, or Firefox, etc.) can be used to access a set of useful web pages that are stored in the AccuLoad. The data supplied on these web pages is real time data and can be used to monitor the AccuLoad from a remote location or to diagnose problems.

The most important part of being able to access these web pages is to first establish a successful connection to the AccuLoad. To determine if there is a connection to the AccuLoad, simply open AccuMate and connect to the AccuLoad over a TCP/IP connection. If AccuMate can establish an "Online" status, then there is connectivity to the AccuLoad over the network.

When this connection has been verified, launch an internet browser, and enter the following URL:

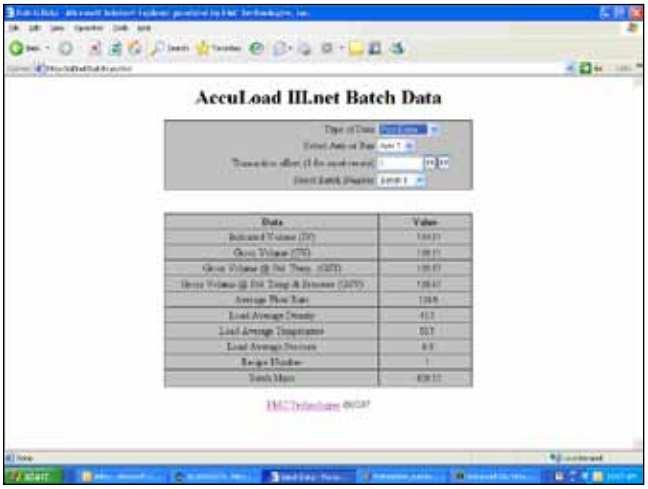
http://xxx.xxx.xxx.xxx ← Enter the IP address. Each "x" corresponds to each IP digit, which is specified in the AccuLoad System Parameter 735. (This is the IP address of the AccuLoad.)

An example of a URL that might be used to access the main data page is http://192.168.0.1.

Press Enter after the appropriate URL address has been entered into the browser and the AccuLoad III main menu data page will be displayed.

As shown above, the main page has a few options to choose from such as Transaction Data, Batch Data, Diagnostic Data, and Flow Display. The Transaction Data page shows transaction totals, the Batch data page shows batch totals. The diagnostics data shows current hardware configuration or I/O status. The flow display can display a real time view of the current flow on any arm. This display resembles the actual AccuLoad display and is sometimes referred to as a remote flow display.

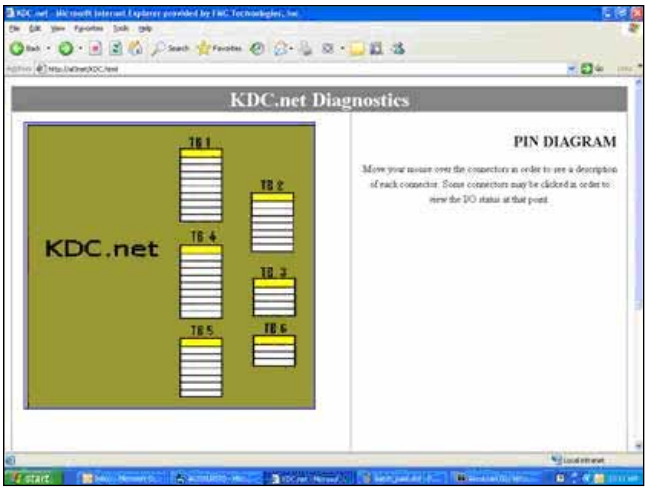
On the batch data page, data associated with batches in progress may be viewed as well as batch data sorted in the historical log. When this page is used to view historical batch data, a specific transaction offset and a specific batch must be specified. By default, transaction offset 1 (most recent transaction) is used as well as batch 1. These controls offer the ability to view batch data sorted in the transaction log.



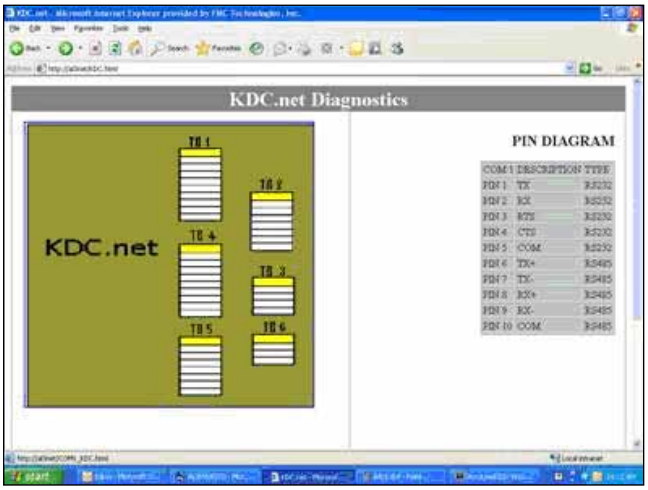
For transaction data currently in progress and historical logs of transactions, the information will be displayed as follows:

The Diagnostics Data will provide an option to view basic overhead diagrams of the AccuLoad circuit boards. These circuit boards are the KDC.net, the EAAI, and the BSE. One circuit board diagram may be displayed at a time and each diagram may be used to view data associated with a particular connector. After selecting any of the boards, a visual representation of the board will appear. By using the “mouse over” ability, these pages will display a pin diagram, descriptions, and in some cases the functionality of each connector. If the are any issues with being able to view the pin diagram, then try using the Internet Explorer web browser.

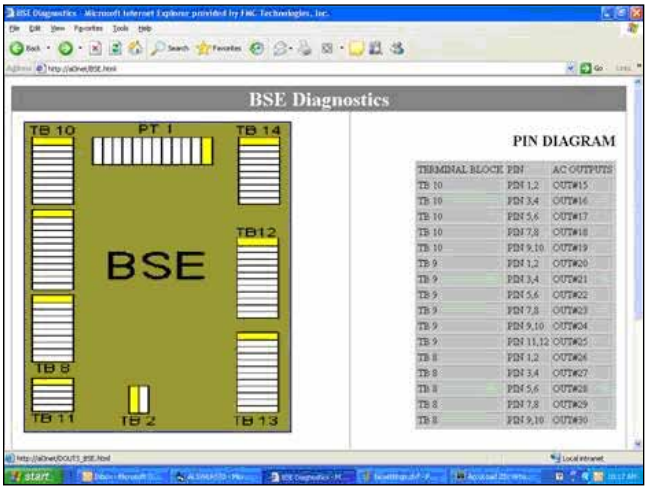
The KDC.net board is shown below:



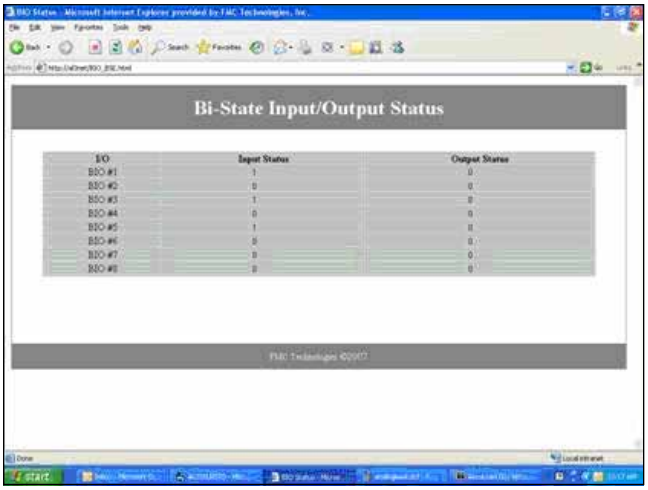
This shows the KDC.net board with an example of the mouse over function. The corresponding pin connection information is for the Com 1 connector (TB1).



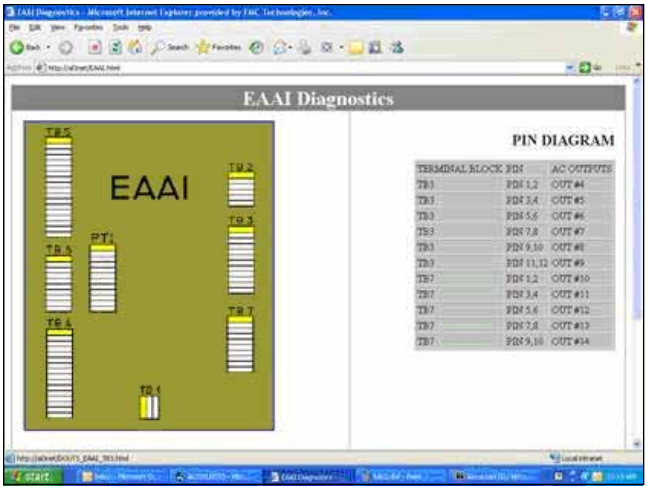
The BSE board will be displayed as shown:



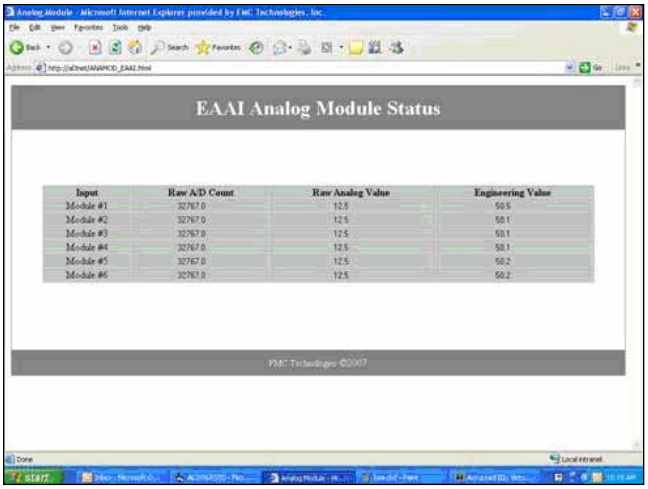
Some terminal blocks are actually a link to another page and may be clicked on. One indication that a terminal block is actually a link is when the “arrow” mouse cursor transforms into a “hand”. Clickable terminal blocks include those that have a status or configuration associated with them (such as COM1, digital outputs/inputs, bi-state inputs/outputs, etc). For instance if a digital I/O terminal block was clicked, the status of that particular I/O would be displayed along with the respective status. The bi-state inputs are shown below with the corresponding on/off state. All of this data is real time, and therefore any status changes or configuration changes will be seen immediately on the data pages.



The EAAI board will be displayed as shown:



The EAAI also has the ability to display its current status. In the below example, the Raw A/D Count, the Raw Analog Value, and the Engineering Value is shown. Any input or output has the ability to display its status, value, or state that it is currently in.



This section describes the individual program codes within the directories. The directories and subdirectories are listed above each set of parameters. Please note that the numbers in parentheses are reference numbers for communications. In the database, pick list items have a reference number for communications (e.g., (2)). Through communications, a 2 would be sent to the AccuLoad to select that option for the parameter.

The program code explanations frequently list "fatal" or "critical" warnings, or indicate that in some circumstances, the code is "no entry." A fatal warning is triggered by a selection that the AccuLoad cannot accept and will not allow to be entered. Possible causes include an entry that falls outside an allowable range, or an entry that seriously conflicts with a previous entry. A critical warning signals that a selection is incompatible with a previously configured program code. The AccuLoad will accept the new entry, but the selection will undoubtedly cause a problem in operation and should be changed. "No entry" indicates that a program code is unavailable and will not appear on the menu, because previous selections make it irrelevant. For example, ratio blending program codes will not appear when sequential blending has been chosen.

The main system directories are as follows:

Configuration Directories

000 – Load Arm Configuration Directory
100 – Pulse Input Directory
200 – Pulse Output Directory
300 – DC & AC Digital Input Directory
500 – DC & AC Digital Output Directory
900 – Analog I/O Directory

System Directories

100 – General Purpose Directory
200 – Flow Control Directory
300 – Volume Accuracy Directory
400 – Temperature/Density Directory
500 – Pressure Directory
600 – Alarm Configuration Directory
700 – Communications Directory
800 – Additive Directory

Load Arm Directories

100 – General Purpose Directory
200 – Flow Control Directory
300 – Volume Accuracy Directory
700 – Communications

Meter Directories

Note: *This is a subdirectory under Load Arm.*

200 – Flow Control Directory
300 – Volume Accuracy Directory
400 – Temperature/Density Directory
500 – Pressure Directory

Product Directories

Note: *This is a subdirectory under Meter.*

100 – General Purpose Directory
200 – Flow Control Directory
300 – Volume Accuracy Directory
400 – Temperature/Density Directory
500 – Pressure Directory

Bay Directories

100 – General Purpose
700 – Communications

Recipe Directory

Configuration 000 – Arm Configuration Directory

001 – Number of Load Arms
002 – Arm 1 Configuration
003 – Arm 1 Number of Products
004 – Arm 2 Configuration
005 – Arm 2 Number of Products
006 – Arm 3 Configuration
007 – Arm 3 Number of Products
008 – Arm 4 Configuration
009 – Arm 4 Number of Products
010 – Arm 5 Configuration
011 – Arm 5 Number of Products
012 – Arm 6 Configuration
013 – Arm 6 Number of Products
014 – Arm 1 Ratio Products
015 – Arm 2 Ratio Products
016 – Arm 3 Ratio Products
017 – Arm 4 Ratio Products
018 – Arm 5 Ratio Products
019 – Arm 6 Ratio Products
020 – Number of Additive Injectors

Configuration 001 – Number of Load Arms

This parameter defines the number of load arms associated with this AccuLoad. Valid entries are 1 through 6.

Critical: Insufficient meter pulse inputs, BSE required.

Critical: Configuration requires more meters than are available.

Fatal: Entry is out of specified range.

Help: Enter the number of load arms associated with this AccuLoad.

Configuration 002 – Arm 1 Configuration

This parameter determines the functionality of Arm 1. The factory default is “straight product.” Selections are as follows:

- (0) Straight Product Arm
- (1) Sequential Blending Arm
- (2) Ratio Blending Arm
- (3) Side-Stream Blender
- (4) Unloading
- (5) Hybrid Blending (Revision 10.10 and up)
- (6) Straight with VRS

Critical: Unloading requires inputs DE Head High Flow, Low Flow and Stop.

Help: Select the configuration for this load arm: straight product, sequential blender, ratio blender, side-stream blender or unloading.

Configuration 003 – Arm 1 Number of Products

This parameter defines the number of products assigned to this arm. Valid entries are 1 through 6. The factory default is “1.”

Critical: Straight product configuration requires single product.

Critical: Ratio blending configuration requires more than one product.

Critical: Block valves required for all products. [sequential blending configuration]

Critical: Configuration requires more meters than are available.

Critical: Number of products must be set to 2 when the arm is configured for side-stream blending.

Critical: "Straight with VRS" requires this parameter to be programmed to 2.

Help: Enter the number of products associated with this load arm.

Configuration 004 – Arm 2 Configuration

This parameter determines the functionality of Arm 2. The factory default is “straight product.” Selections are as follows:

- (0) Straight Product Arm
- (1) Sequential Blending Arm
- (2) Ratio Blending Arm
- (3) Side-Stream Blender
- (4) Unloading
- (5) Hybrid Blending (Revision 10.10 and up)
- (6) Straight with VRS

Critical: Unloading requires inputs DE Head High Flow, Low Flow and Stop.

Help: Select the configuration for this load arm: straight product, sequential blender, ratio blender, side-stream blender or unloading.

Note: *No entry if number of load arms equals 1.*

Configuration 005 – Arm 2 Number of Products

This parameter defines the number of products assigned to this arm. Valid entries are 1 through 6. The factory default is “1.”

Critical: Straight product configuration requires single product.

Critical: Ratio blending configuration requires more than one product.

Critical: Block valves required for all products. [sequential blending configuration]

Critical: Configuration requires more meters than are available.

Critical: Ratio blending limited to five products.

Critical: Number of products must be set to 2 when the arm is configured for side-stream blending.

Critical: "Straight with VRS" requires this parameter to be programmed to 2.

Help: Enter the number of products associated with this load arm.

Note: *No entry if number of load arms equals 1.*

Configuration 006 – Arm 3 Configuration

This parameter determines the functionality of Arm 3. The factory default is “straight product.” Selections are as follows:

- (0) Straight Product Arm
- (1) Sequential Blending Arm
- (2) Ratio Blending Arm
- (3) Side-Stream Blender
- (4) Unloading
- (5) Hybrid Blending (Revision 10.10 and up)
- (6) Straight with VRS

Critical: Unloading requires inputs DE Head High Flow, Low Flow and Stop.

Help: Select the configuration for this load arm: straight product, sequential blender, ratio blender, side-stream blender or unloading.

Note: *No entry if number of load arms is less than 3.*

Configuration 007 – Arm 3 Number of Products

This parameter defines the number of products as-signed to this arm. Valid entries are 1 through 6. The factory default is “1.”

Critical: Straight product configuration requires single product.

Critical: Ratio blending configuration requires more than one product.

Critical: Block valves required for all products. [sequential blending configuration]

Critical: Configuration requires more meters than are available.

Critical: Ratio blending limited to four products.

Critical: Number of products must be set to 2 when the arm is configured for side-stream blending.

Critical: "Straight with VRS" requires this parameter to be programmed to 2.

Help: Enter the number of products associated with this load arm.

Note: *No entry if number of load arms is less than 3.*

Configuration 008 – Arm 4 Configuration

This parameter determines the functionality of Arm 4. The factory default is “straight product.” Selections are as follows:

- (0) Straight Product Arm
- (1) Sequential Blending Arm
- (2) Ratio Blending Arm
- (3) Side-Stream Blender
- (4) Unloading
- (5) Hybrid Blending (Revision 10.10 and up)
- (6) Straight with VRS

Critical: Unloading requires inputs DE Head High Flow, Low Flow and Stop.

Help: Select the configuration for this load arm: straight product, sequential blender, ratio blender, side-stream blender or unloading.

Note: *No entry if number of load arms is less than 4.*

Configuration 009 – Arm 4 Number of Products

This parameter defines the number of products as-signed to this arm. Valid entries are 1 through 6. The factory default is “1.”

Critical: Straight product configuration requires single product.

Critical: Ratio blending configuration requires more than one product.

Critical: Block valves required for all products. [sequential blending configuration]

Critical: Configuration requires more meters than are available.

Critical: Number of products must be two when side-stream blending.

Critical: Ratio blending limited to three products.

Critical: "Straight with VRS" requires this parameter to be programmed to 2.

Help: Enter the number of products associated with this load arm.

Note: *No entry if number of load arms is less than 4.*

Configuration 010 – Arm 5 Configuration

This parameter determines the functionality of Arm 5. The factory default is “straight product.” Selections are as follows:

- (0) Straight Product Arm
- (1) Sequential Blending Arm
- (2) Ratio Blending Arm
- (3) Side-Stream Blender
- (4) Unloading
- (5) Hybrid Blending (Revision 10.10 and up)
- (6) Straight with VRS

Critical: Unloading requires inputs DE Head High Flow, Low Flow and Stop.

Help: Select the configuration for this load arm: straight product, sequential blender, ratio blender, side-stream blender or unloading.

Note: *No entry if number of load arms is less than 5.*

Configuration 011 – Arm 5 Number of Products

This parameter defines the number of products as-signed to this arm. Valid entries are 1 through 6. The factory default is “1.”

Critical: Straight product configuration requires single product.

Critical: Ratio blending configuration requires more than one product.

Critical: Block valves required for all products. [sequential blending configuration]

Critical: Configuration requires more meters than are available.

Critical: Number of products must be two when side-stream blending.

Critical: Ratio blending limited to two products.

Critical: "Straight with VRS" requires this parameter to be programmed to 2.

Help: Enter the number of products associated with this load arm.

Note: *No entry if number of load arms is less than 5.*

Configuration 012 – Arm 6 Configuration

This parameter determines the functionality of Arm 6. The factory default is “straight product.” Selections are as follows:

- (0) Straight Product Arm
- (1) Sequential Blending Arm
- (2) Unloading

Critical: Unloading requires inputs DE Head High Flow, Low Flow and Stop.

Help: Select the configuration for this load arm: straight product, sequential blender or unloading.

Note: *No entry if number of load arms is less than 6.*

Configuration 013 – Arm 6 Number of Products

This parameter defines the number of products assigned to this arm. Valid entries are 1 through 6. The factory default is "1."

Critical: Straight product configuration requires single product.

Critical: Block valves required for all products. [sequential blending configuration]

Help: Enter the number of products associated with this load arm.

Note: *No entry if number of load arms is less than six.*

Configuration 014 – Number of Ratio Products for Load Arm 1

This parameter specifies the number of products on a hybrid load arm that do not share a meter. Product runs with separate metering, whether upstream or down stream of a shared meter, are considered ratio products. Each ratio product for the hybrid arm requires a digital or analog valve for flow control. Each sequential product requires a block valve, unless there is only one sequential product. This parameter does not require an entry if the loading arm is not programmed as a hybrid loading arm.

Critical: Control valves required for all hybrid arm ratio products.

Critical: Block valves required for all hybrid arm sequential products (if more than one sequential product)

Critical: Entry for the Ratio Products must be less than "Arm Number of Products"

Help: Enter the number of ratio plumbed products on the hybrid arm.

Configuration 015 – Number of Ratio Products for Load Arm 2

This parameter specifies the number of products on a hybrid load arm that do not share a meter. Product runs with separate metering, whether upstream or down stream of a shared meter, are considered ratio products. Each ratio product for the hybrid arm requires a digital or analog valve for flow control. Each sequential product requires a block valve, unless there is only one sequential product. This parameter does not require an entry if the loading arm is not programmed as a hybrid loading arm.

Critical: Control valves required for all hybrid arm ratio products.

Critical: Block valves required for all hybrid arm sequential products (if more than one sequential product)

Critical: Entry for the Ratio Products must be less than "Arm Number of Products"

Help: Enter the number of ratio plumbed products on the hybrid arm.

Configuration 016 – Number of Ratio Products for Load Arm 3

This parameter specifies the number of products on a hybrid load arm that do not share a meter. Product runs with separate metering, whether upstream or down stream of a shared meter, are considered ratio products. Each ratio product for the hybrid arm requires a digital or analog valve for flow control. Each sequential product requires a block valve, unless there is only one sequential product. This parameter does not require an entry if the loading arm is not programmed as a hybrid loading arm.

Critical: Control valves required for all hybrid arm ratio products.

Critical: Block valves required for all hybrid arm sequential products (if more than one sequential product)

Critical: Entry for the Ratio Products must be less than "Arm Number of Products"

Help: Enter the number of ratio plumbed products on the hybrid arm.

Configuration 017 – Number of Ratio Products for Load Arm 4

This parameter specifies the number of products on a hybrid load arm that do not share a meter. Product runs with separate metering, whether upstream or down stream of a shared meter, are considered ratio products. Each ratio product for the hybrid arm requires a digital or analog valve for flow control. Each sequential product requires a block valve, unless there is only one sequential product. This parameter does not require an entry if the loading arm is not programmed as a hybrid loading arm.

Critical: Control valves required for all hybrid arm ratio products.

Critical: Block valves required for all hybrid arm sequential products (if more than one sequential product)

Critical: Entry for the Ratio Products must be less than "Arm Number of Products"

Help: Enter the number of ratio plumbed products on the hybrid arm.

Configuration 018 – Number of Ratio Products for Load Arm 5

This parameter specifies the number of products on a hybrid load arm that do not share a meter. Product runs with separate metering, whether upstream or down stream of a shared meter, are considered ratio products. Each ratio product for the hybrid arm requires a digital or analog valve for flow control. Each sequential

product requires a block valve, unless there is only one sequential product. This parameter does not require an entry if the loading arm is not programmed as a hybrid loading arm.

Critical: Control valves required for all hybrid arm ratio products.

Critical: Block valves required for all hybrid arm sequential products (if more than one sequential product)

Critical: Entry for the Ratio Products must be less than "Arm Number of Products"

Help: Enter the number of ratio plumbed products on the hybrid arm.

Configuration 019 – Number of Ratio Products for Load Arm 6

This parameter specifies the number of products on a hybrid load arm that do not share a meter. Product runs with separate metering whether upstream or down stream of a shared meter, are considered ratio products. Each ratio product for the hybrid arm requires a digital or analog valve for flow control. Each sequential product requires a block valve, unless there is only one sequential product. This parameter does not require an entry if the loading arm is not programmed as a hybrid loading arm.

Configuration 020 – Number of Injectors

This parameter defines the number of additive injectors that will be used with this AccuLoad. The range of this entry is 0 through 24. This parameter is used to limit the number of injectors that will be available for selection in I/O configuration. It is important that this number is set to the maximum desired as no additive injectors beyond this number will function.

Fatal: Entry out of specified range.

Help: Enter the number of additive injectors associated with this AccuLoad.

Configuration 100 – Pulse Input Directory

General Parameters

101 – Pulse Input Channel Selection

102 – Transmitter Integrity

Pulse Input 3

103 – Pulse Input 3 Function

104 – Pulse Input 3 Arm

105 – Pulse Input 3 Meter

Pulse Input 4

107 – Pulse Input 4 Function

108 – Pulse Input 4 Arm

109 – Pulse Input 4 Meter

Pulse Input 5

111 – Pulse Input 5 Function

112 – Pulse Input 5 Arm

113 – Pulse Input 5 Meter

Pulse Input 6

115 – Pulse Input 6 Function

116 – Pulse Input 6 Arm

117 – Pulse Input 6 Meter

Pulse Input 7

119 – Pulse Input 7 Function

120 – Pulse Input 7 Arm

121 – Pulse Input 7 Meter

Pulse Input 8

123 – Pulse Input 8 Function

124 – Pulse Input 8 Arm

125 – Pulse Input 8 Meter

Pulse Input 9

127 – Pulse Input 9 Function

128 – Pulse Input 9 Arm

129 – Pulse Input 9 Meter

Pulse Input 10

131 – Pulse Input 10 Function

132 – Pulse Input 10 Arm

133 – Pulse Input 10 Meter

Pulse Input 11

135 – Pulse Input 11 Function

136 – Pulse Input 11 Arm

137 – Pulse Input 11 Meter

Pulse Input 12

139 – Pulse Input 12 Function

140 – Pulse Input 12 Arm

141 – Pulse Input 12 Meter

142 – Flow Controlled Additive Pulse Input Channel Selection

143 – Flow Controlled Pulse Error Count

144 – Flow Controlled Dual Pulse Error Reset

145 – Flow Controlled Additive Pulse Security Alarm Amount

146 – Reverse Volume – Batch

147 – Reverse Volume – Nonresettables

Configuration 101 – Transmitter Channel Selection

This parameter defines the transmitter type used with AccuLoad III. The two types available are Single (Channel A only) and Dual (Channel A and B). Selections are as follows:

- (0) Single channel
- (1) Dual channel

Critical: Transmitter integrity not available with single channel.

Help: Select a single or dual pulse transmitter, PIB PT1 (1(+), 2(-) for single channel or A, (3(+), 4(-) for channel B.

Configuration 102 – Meter Pulse Transmitter Integrity

This parameter defines whether or not transmitter integrity is in effect if a dual channel transmitter is selected for use. Transmitter integrity uses the inverse pulses to determine if there is an integrity problem with the transmitter. This feature is only used with the Smith Meter dual pulse transmitter PPST or the GPST. Selections are as follows:

- (0) No - No transmitter integrity
- (1) Yes - Transmitter integrity

Critical: Transmitter integrity not available with single channel.

Critical: Transmitter integrity not available with more than four meters.

Critical: Transmitted integrity not available with three meters [no BSE].

Help: If Yes, /A input to pulse input 3, 6, 9, 12 required. PIB PT1:5(+), 6(-)

Configuration 103 – Pulse Input #3 Function

Pulse input #3 function can be assigned to be one of the following functions. Selections are as follows:

- (0) N/A
- (1) Frequency Densitometer
- (2) Metered Injector #1
- (3) Metered Injector #2
- (4) Metered Injector #3
- (5) Metered Injector #4
- (6) Flow Rate Controlled Injector #1
- (7) Flow Rate Controlled Injector #2
- (8) Flow Rate Controlled Injector #3
- (9) Flow Rate Controlled Injector #4

A Metered Injector is a direct input from an additive injector system that contains no control electronics; hence, the interface consists of an injecting solenoid input and a meter pulse output. This input is used as a meter input for the additive meter and is connected to the injector's meter pulse output.

Critical: Input assignments must be unique.

Critical: Injector I/O assignment does not match type.

Critical: No digital output assigned for this injector.

Critical: Pulse input already allocated for meter pulses.

Critical: Insufficient configurable pulse inputs [no BSE].

Critical: Only one densitometer allowed per arm/meter.

Help: Select function for In 3, EAAI PIB PT1:5(+), 6(-)

Configuration 104 – Pulse Input #3 Arm

Pulse input #3 arm can be assigned to one of the following arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which arm this input is associated with.

Note: *No entry if pulse input selected as a metered injector.*

Configuration 105 – Pulse Input #3 Meter

Pulse input #3 meter can be assigned to one of the following meters. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

Critical: Meter not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which meter this input is associated with.

Note: *No entry if load arm is not configured as a ratio blender.*

Configuration 107 – Pulse Input #4 Function

Pulse input #4 can be assigned to one of the following functions. Selections are as follows:

- (0) N/A
- (1) Frequency Densitometer
- (2) Metered Injector #1
- (3) Metered Injector #2
- (4) Metered Injector #3
- (5) Metered Injector #4
- (6) Flow Rate Controlled Injector #1
- (7) Flow Rate Controlled Injector #2
- (8) Flow Rate Controlled Injector #3
- (9) Flow Rate Controlled Injector #4

A Metered Injector is a direct input from an additive injector system that contains no control electronics; hence, the interface consists of an injecting solenoid input and a meter pulse output. This input is used as a meter input for the injector and is connected to the injector's meter pulse output.

Critical: Input assignments must be unique.

Critical: Injector I/O assignment does not match type.

Critical: No digital output assigned for this injector.

Critical: This input cannot be a frequency densitometer.

Critical: Pulse input already allocated for meter pulses.

Critical: Insufficient configurable pulse inputs [no BSE].

Critical: Only one densitometer allowed per arm/meter.

Help: Select function for In 4, EAAI PIB PT1:7(+),8(-)

Configuration 108 – Pulse Input #4 Arm

Pulse input #4 arm can be assigned to one of the following arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which arm this input is associated with.

Note: *No entry if pulse input selected as a metered injector.*

Configuration 109 – Pulse Input #4 Meter

Pulse input #4 meter can be assigned to one of the following meters. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

Critical: Meter not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which meter this input is associated with.

Note: *No entry if load arm is not configured as a ratio blender.*

Configuration 111 – Pulse Input #5 Function

Pulse input #5 can be assigned to one of the following functions. Selections are as follows:

- (0) N/A
- (1) Frequency Densitometer
- (2) Metered Injector #1
- (3) Metered Injector #2
- (4) Metered Injector #3
- (5) Metered Injector #4
- (6) Flow Rate Controlled Injector #1
- (7) Flow Rate Controlled Injector #2
- (8) Flow Rate Controlled Injector #3
- (9) Flow Rate Controlled Injector #4

A Metered Injector is a direct input from an additive injector system that contains no control electronics; hence, the interface consists solely of an injecting solenoid input and a meter pulse output. This input is used as a meter input for the injector and is con-nected to the injector's meter pulse output.

Critical: Input assignments must be unique.

Critical: Injector I/O assignment does not match type.

Critical: No digital output assigned for this injector.

Critical: Pulse input already allocated for meter pulses.

Critical: Insufficient configurable pulse inputs [no BSE].

Critical: Only one densitometer allowed per arm/meter.

Help: Select function for In 5, EAAI PIB PT1:9(+), 10(-)

Configuration 112 – Pulse Input #5 Arm

Pulse input #5 arm can be assigned to one of the following arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which arm this input is associated with.

Note: *No entry if pulse input selected as a metered injector.*

Configuration 113 – Pulse Input #5 Meter

Pulse input #5 meter can be assigned to one of the following meters. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

Critical: Meter not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which meter this input is associated with.

Note: *No entry if load arm is not configured as a ratio blender.*

Configuration 115 – Pulse Input #6 Function

Pulse input #6 can be assigned to one of the following functions. Selections are as follows:

- (0) N/A
- (1) Frequency Densitometer
- (2) Metered Injector #1

- (3) Metered Injector #2
- (4) Metered Injector #3
- (5) Metered Injector #4
- (6) Flow Rate Controlled Injector #1
- (7) Flow Rate Controlled Injector #2
- (8) Flow Rate Controlled Injector #3
- (9) Flow Rate Controlled Injector #4

A Metered Injector is a direct input from an additive injector system that contains no control electronics; hence, the interface consists of an injecting solenoid input and a meter pulse output. This input is used as a meter input for the injector and is connected to the injector's meter pulse output.

Critical: Input assignments must be unique.

Critical: Injector I/O assignment does not match type.

Critical: No digital output assigned for this injector.

Critical: Pulse input already allocated for meter pulses.

Critical: Insufficient configurable pulse inputs [no BSE].

Critical: Only one densitometer allowed per arm/meter.

Help: Select function for In 6, EAAI PIB PT1:11(+), 12(-)

Configuration 116 – Pulse Input #6 Arm

Pulse input #6 arm can be assigned to one of the following arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which arm this input is associated with.

Note: *No entry if pulse input selected as a metered injector.*

Configuration 117 – Pulse Input #6 Meter

Pulse input #6 meter can be assigned to one of the following meters. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

Critical: Meter not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which meter this input is associated with.

Note: *No entry if load arm is not configured as a ratio blender.*

Configuration 119 – Pulse Input #7 Function

Pulse input #7 can be assigned to one of the following functions. Selections are as follows:

- (0) N/A
- (1) Frequency Densitometer
- (2) Metered Injector #1
- (3) Metered Injector #2
- (4) Metered Injector #3
- (5) Metered Injector #4
- (6) Flow Rate Controlled Injector #1
- (7) Flow Rate Controlled Injector #2
- (8) Flow Rate Controlled Injector #3
- (9) Flow Rate Controlled Injector #4

A Metered Injector is a direct input from an additive injector system that contains no control electronics; hence, the interface consists of an injecting solenoid input and a meter pulse output. This input is used as a meter input for the injector and is connected to the injector's meter pulse output.

Critical: Input assignments must be unique.

Critical: Injector I/O assignment does not match type.

Critical: No digital output assigned for this injector.

Critical: This input cannot be a frequency densitometer.

Critical: Pulse input already allocated for meter pulses.

Critical: Insufficient configurable pulse inputs [no BSE].

Critical: Only one densitometer allowed per arm/meter.

Help: Select function for In 7, BSE PIB PT1:1 (+),2(-)

Configuration 120 – Pulse Input #7 Arm

Pulse input #7 arm can be assigned to one of the following arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which arm this input is associated with.

Note: *No entry if pulse input is selected as a metered injector.*

Configuration 121 – Pulse Input #7 Meter

Pulse input #7 meter can be assigned to one of the following meters. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4

- (4) Meter 5
- (5) Meter 6

Critical: Meter not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which meter this input is associated with.

Note: *No entry if load arm is not configured as a ratio blender.*

Configuration 123 – Pulse Input #8 Function

Pulse input #8 can be assigned to one of the following functions. Selections are as follows:

- (0) N/A
- (1) Frequency Densitometer
- (2) Metered Injector #1
- (3) Metered Injector #2
- (4) Metered Injector #3
- (5) Metered Injector #4
- (6) Flow Rate Controlled Injector #1
- (7) Flow Rate Controlled Injector #2
- (8) Flow Rate Controlled Injector #3
- (9) Flow Rate Controlled Injector #4

A Metered Injector is a direct input from an additive injector system that contains no control electronics; hence, the interface consists of an injecting solenoid input and a meter pulse output. This input is used as a meter input for the injector and is connected to the injector's meter pulse output.

Critical: Input assignments must be unique.

Critical: Injector I/O assignment does not match type.

Critical: No digital output assigned for this injector.

Critical: This input cannot be a frequency densitometer.

Critical: Pulse input already allocated for meter pulses.

Critical: Insufficient configurable pulse inputs [no BSE].

Critical: Only one densitometer allowed per arm/meter.

Help: Select function for In 8, BSE PIB PT1:3(+), 4(-)

Configuration 124 – Pulse Input #8 Arm

Pulse input #8 arm can be assigned to one of the following arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which arm this input is associated with.

Note: *No entry if pulse input is selected as a metered injector.*

Configuration 125 – Pulse Input #8 Meter

Pulse input #8 meter can be assigned to one of the following meters. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

Critical: Meter not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which meter this input is associated with.

Note: *No entry if load arm is not configured as a ratio blender.*

Configuration 127 – Pulse Input #9 Function

Pulse input #9 can be assigned to one of the following functions. Selections are as follows:

- (0) N/A
- (1) Frequency Densitometer
- (2) Metered Injector #1
- (3) Metered Injector #2
- (4) Metered Injector #3
- (5) Metered Injector #4
- (6) Flow Rate Controlled Injector #1
- (7) Flow Rate Controlled Injector #2
- (8) Flow Rate Controlled Injector #3
- (9) Flow Rate Controlled Injector #4

A Metered Injector is a direct input from an additive injector system that contains no control electronics; hence, the interface consists of an injecting solenoid input and a meter pulse output. This input is used as a meter input for the injector and is connected to the injector's meter pulse output.

Critical: Input assignments must be unique.

Critical: Injector I/O assignment does not match type.

Critical: No digital output assigned for this injector.

Critical: Pulse input already allocated for meter pulses.

Critical: Insufficient configurable pulse inputs [no BSE].

Critical: Only one densitometer allowed per arm/meter.

Help: Select function for In 9, BSE PIB PT1:5(+), 6(-)

Configuration 128 – Pulse Input #9 Arm

Pulse input #9 arm can be assigned to one of the following arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which arm this input is associated with.

Note: *No entry if pulse input is selected as a metered injector.*

Configuration 129 – Pulse Input #9 Meter

Pulse input #9 meter can be assigned to one of the following meters. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

Critical: Meter not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which meter this input is associated with.

Note: *No entry if load arm is not configured as a ratio blender.*

Configuration 131 – Pulse Input #10 Function

Pulse input #10 can be assigned to one of the following functions. Selections are as follows:

- (0) N/A
- (1) Frequency Densitometer
- (2) Metered Injector #1
- (3) Metered Injector #2
- (4) Metered Injector #3
- (5) Metered Injector #4
- (6) Flow Rate Controlled Injector #1
- (7) Flow Rate Controlled Injector #2
- (8) Flow Rate Controlled Injector #3
- (9) Flow Rate Controlled Injector #4

A Metered Injector is a direct input from an additive injector system that contains no control electronics; hence, the interface consists of an injecting solenoid input and a meter pulse output. This input is used as a meter input for the injector and is connected to the injector's meter pulse output.

The Flow Rate Controlled Injector is similar to the Metered Injector except for the fact that the additive flow control is accomplished with a flow control valve (either a 210, 215, or analog valve type).

Critical: Input assignments must be unique.

Critical: Injector I/O assignment does not match type.

Critical: No digital output assigned for this injector.

Critical: Pulse input already allocated for meter pulses.

Critical: Insufficient configurable pulse inputs [no BSE].

Critical: Only one densitometer allowed per arm/meter.

Help: Select function for In 10, BSE PIB PT1:7(+), 8(-)

Configuration 132 – Pulse Input #10 Arm

Pulse input #10 arm can be assigned to one of the following arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Help: Specify which arm this input is associated with.

Note: *No entry if pulse input is selected as a metered injector.*

Configuration 133 – Pulse Input #10 Meter

Pulse input #10 meter can be assigned to one of the following meters. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

Critical: Meter not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which meter this input is associated with.

Note: *No entry if load arm is not configured as a ratio blender.*

Configuration 135 – Pulse Input #11 Function

Pulse input #11 can be assigned to one of the following functions. Selections are as follows:

- (0) N/A
- (1) Frequency Densitometer
- (2) Metered Injector #1
- (3) Metered Injector #2
- (4) Metered Injector #3
- (5) Metered Injector #4
- (6) Flow Rate Controlled Injector #1
- (7) Flow Rate Controlled Injector #2
- (8) Flow Rate Controlled Injector #3
- (9) Flow Rate Controlled Injector #4

A Metered Injector is a direct input from an additive injector system that contains no control electronics; hence, the interface consists of an injecting solenoid input and a meter pulse output. This input is used as a meter input for the injector and is connected to the injector's meter pulse output.

Critical: Input assignments must be unique.

Critical: Injector I/O assignment does not match type.

Critical: No digital output assigned for this injector.

Critical: Pulse input already allocated for meter pulses.

Critical: Insufficient configurable pulse inputs [no BSE].

Critical: Only one densitometer allowed per arm/meter.

Help: Select function for In 11, BSE PIB PT1:9(+), 10(-)

Configuration 136 – Pulse Input #11 Arm

Pulse input #11 arm can be assigned to one of the following arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which arm this input is associated with.

Note: *No entry if pulse input is selected as a metered injector.*

Configuration 137 – Pulse Input #11 Meter

Pulse input #11 meter can be assigned to one of the following meters. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

Critical: Meter not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which meter this input is associated with.

Note: *No entry if load arm is not configured as a ratio blender.*

Configuration 139 – Pulse Input #12 Function

Pulse input #12 can be assigned to one of the following functions. Selections are as follows:

- (0) N/A
- (1) Frequency Densitometer
- (2) Metered Injector #1
- (3) Metered Injector #2
- (4) Metered Injector #3
- (5) Metered Injector #4
- (6) Flow Rate Controlled Injector #1
- (7) Flow Rate Controlled Injector #2
- (8) Flow Rate Controlled Injector #3
- (9) Flow Rate Controlled Injector #4

A Metered Injector is a direct input from an additive injector system that contains no control electronics; hence, the interface consists of an injecting solenoid input and a meter pulse output. This input is used as a meter input for the injector and is connected to the injector's meter pulse output.

Critical: Input assignments must be unique.

Critical: Injector I/O assignment does not match type.

Critical: No digital output assigned for this injector.

Critical: Pulse input already allocated for meter pulses.

Critical: Insufficient configurable pulse inputs [no BSE].

Critical: Only one densitometer allowed per arm/meter.

Help: Select function for In 11, BSE PIB PT1:11(+), 12(-)

Configuration 140 – Pulse Input #12 Arm

Pulse input #12 arm can be assigned to one of the following arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which arm this input is associated with.

Note: *No entry if pulse input is selected as a metered injector.*

Configuration 141 – Pulse Input #12 Meter

Pulse input #12 meter can be assigned to one of the following meters. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

Critical: Meter not configured.

Critical: Only one densitometer allowed per arm/meter.

Help: Specify which meter this input is associated with.

Note: *No entry if load arm is not configured as a ratio blender.*

Configuration 142 – Flow Rate Controlled Additive Pulse Input Channel Selector

This program code reflects the transmitter interface being utilized for flow-controlled injectors.

- (0) Single Channel
- (1) Dual Channel

Note: *If the meter pulse input type in Configuration 101 - Transmitter Channel Selection is programmed for 0 – Single Channel, then this program code must also be 0 – Single Channel.*
If flow controlled additives are using dual pulse inputs, the pulse connections to the PIB on the EAA/BSE are no longer programmable; they must be wired to the fixed locations described in the Installation/Operation manual.

Configuration 143 – Flow Rate Controlled Additive Pulse Error Count

This program code determines the maximum number of dual pulse error counts allowed before a dual pulse error alarm occurs. The count is maintained for each flow-controlled additive separately and the alarm is generated only if the error count for any one injector pulse stream exceeds the error count programmed here. The range of this entry is 0-999 counts. An entry of 0 disables the alarm.

Configuration 144 – Flow Rate Controlled Additive Pulse Error Reset

This program code defines the conditions under which the dual pulse error count will be reset for the flow-controlled additives.

- (0) No Reset
- (1) Reset at End of the Transaction
- (2) Reset at Power-up
- (3) Reset at End of Transaction and Power-up

Configuration 145 – Flow Rate Controlled Additive Pulse Error Amount

This program code determines if error pulses accumulated after a Pulse Security alarm occurs are counted towards the flow-controlled additive amount delivered.

Note: *Select '0 – Count' to continue to totalize normally after this alarm occurs; Select '1 – Ignore' to ignore all pulses after an alarm occurs. Selecting '1 – Ignore' will cause any volume or mass that actually flows through the meter from point where this alarm occurs to when the valve is completely closed to be ignored. The Accuload will ignore any pulses from the meter until the alarm is cleared. Some measurement agencies require this behavior, taking the position that after a Pulse Security alarm, the consumer cannot be responsible for any measured quantity since it may not be reliable.*

Configuration 146 – Reverse Flow Accumulation for Batch Totals

This program code allows for the detection and accumulation of reverse flow when using a dual-pulse transmitter (quadrature detection).

- (0) Ignore (do not include reverse flow in totals)
- (1) Count (include reverse flow in batch totals)

If this option is enabled (by selecting '1') then measured flow in the reverse direction is accumulated and the amount is deducted from the batch amount.

This feature requires Dual Pulse meter inputs. This feature is not available when Transmitter Integrity is selected. Meter pulse input wiring is as for dual pulse meters WITH integrity, however / A is not required to be wired to the Pulse Input Board to use this feature.

Note: *Meters are typically not proved in the reverse direction and this amount may not be accurate. Reverse flow is typically considered an error and should not be part of normal operation.*

Critical: Cannot totalize reverse flow with transmitter integrity (hardware limitation).

Help: Select if reverse volume should count towards batch totals.

Note: *Parameters will be no entry if dual pulse is not configured. This parameter is only available when using Revision 10.12 and above firmware.*

Configuration 147 – Reverse Flow Accumulation for Nonresettable Totals.

This program code allows for the detection and accumulation of reverse flow when using a dual-pulse transmitter (quadrature detection).

- **(0) Ignore (do not include reverse flow in non-resettable totals)**
- **(1) Count (include reverse flow in non-resettable totals)**

If this option is enabled (by selecting '1') then measured flow in the reverse direction is accumulated and the amount is deducted from the nonresettable totalizers.

This feature requires Dual Pulse meter inputs. This feature is not available when Transmitter Integrity is selected. Meter pulse input wiring is as for dual pulse meters with integrity, however / A is not required to be wired to the Pulse Input Board to use this feature.

Critical: Cannot totalize reverse flow with transmitter integrity (hardware limitation).

Help: Select if reverse volume should count towards non-resettable totals.

Note:

1. Meters are typically not proved in the reverse direction and this amount may not be accurate. Reverse flow is typically considered an error and should not be part of normal operation.
2. Parameter will be no entry if dual pulse is not configured.
3. This parameter is only available when using Revision 10.12 and above firmware.

Configuration 200 – Pulse Output Directory

Pulse Output 1

201 – Pulse Output 1 Function

202 – Pulse Output 1 Meter

203 – Pulse Output 1 Pulse/Volume

204 – Pulse Output 1 Pulse Units

205 – Pulse Output 1 Maximum Frequency

Pulse Output 2

206 – Pulse Output 2 Function

207 – Pulse Output 2 Meter

208 – Pulse Output 2 Pulse/Volume

209 – Pulse Output 2 Pulse/Units

210 – Pulse Output 2 Maximum Frequency

Pulse Output 3

211 – Pulse Output 3 Function

212 – Pulse Output 3 Meter

213 – Pulse Output 3 Pulse/Volume

214 – Pulse Output 3 Pulse Units

215 – Pulse Output 3 Maximum Frequency

Pulse Output 4

216 – Pulse Output 4 Function

217 – Pulse Output 4 Meter

218 – Pulse Output 4 Pulse/Volume

219 – Pulse Output 4 Pulse/Units

220 – Pulse Output 4 Maximum Frequency

Pulse Output 5

221 – Pulse Output 5 Function

222 – Pulse Output 5 Meter

223 – Pulse Output 5 Pulse/Volume

224 – Pulse Output 5 Pulse/Units

225 – Pulse Output 5 Maximum Frequency

Configuration 201 – Pulse Output #1 Function

This program code allows a pulse output to be defined. The output will be active when flow is active during a batch, and represents volume. The number of pulses is determined by Configuration 203 – Pulse/Volume, and volume type is determined by Configuration 204 – Pulse Out Units. Selections are as follows:

- (0) Not used
- (1) Arm 1 Pulses
- (2) Arm 2 Pulses
- (3) Arm 3 Pulses
- (4) Arm 4 Pulses
- (5) Arm 5 Pulses
- (6) Arm 6 Pulses

Note: *Available options will vary based on arm configurations.*

Critical: Load arm not configured.

Help: Select function for this pulse output, KDC TB4:7(+),8(-)

Configuration 202 – Pulse Output #1 Meter

This parameter defines the meter associated with this pulse output. Selections are as follows:

- (0) Combined Meters (Ratio Blending Only)
- (1) Meter 1
- (2) Meter 2
- (3) Meter 3
- (4) Meter 4
- (5) Meter 5
- (6) Meter 6

Help: Select meter(s) for this pulse output.

Note: *No entry if corresponding Pulse Output Function = Not Used or if the selected load arm is not a ratio blender.*

Configuration 203 – Pulse Output #1 Pulse/Volume

This five-digit parameter defines the pulse output resolution, the number of pulses per unit of volume to be generated (e.g., 0.1 will output 1 pulse for every 10 units of volume). The range of this parame-ter is 0.00 through 999.99.

Note: *No entry if corresponding Pulse Output Function = Not Used*

Help: Enter output pulses per unit of volume

Configuration 204 – Pulse Output #1 Units

This parameter defines the volume type used to pace the pulse output. Selections are as follows:

- (0) IV [Indicated Volume or Raw]
- (1) GV [Gross]
- (2) GST [Gross Standard Temperature]
- (3) GSV [Gross at Standard Temperature and Pressure]
- (4) Mass

Critical: Selected units not available.

Note: *No-entry if corresponding Pulse Output Function = Not Used*

Help: Select volume type on which to base pulse output.

Configuration 205 – Pulse Output #1 Maximum Frequency

This four-digit entry limits the pulse output frequency for Pulse Output #1 to a fixed range (0 to 3500 Hz) to avoid over-speeding the device attached to the pulse output. All of the intended pulses will eventu-ally be transmitted; the total period will be increased if required to ensure the correct number of pulses is output. A 0 entry disables this feature.

Fatal: Entry is out of specified range.

Note: *No entry if respective pulse out function not assigned.*

Help: Enter limit frequency for the output (0 to 3500 Hz).

Configuration 206 – Pulse Output #2 Function

This program code allows a second pulse output to be defined. The output will be active when flow is active during a batch, and represents volume. The number of pulses is determined by Configuration 208 – Pulse/Volume. Volume type is determined by Configuration 209 – Pulse Out Units. Selections are as follows:

- (0) Not used
- (1) Arm 1 Pulses
- (2) Arm 2 Pulses
- (3) Arm 3 Pulses
- (4) Arm 4 Pulses
- (5) Arm 5 Pulses
- (6) Arm 6 Pulses

Note: *Available options will vary based on arm configurations.*

Critical: Load arm not configured.

Help: Select function for this pulse output, KDC TB4:7(+),8(-)

Configuration 207 – Pulse Output #2 Meter

This parameter defines the meter associated with this pulse output. Selections are as follows:

- (0) Combined Meters (Ratio Blending Only)
- (1) Meter 1
- (2) Meter 2
- (3) Meter 3
- (4) Meter 4
- (5) Meter 5
- (6) Meter 6

Help: Select meter(s) for this pulse output.

Note: *No entry if corresponding Pulse Output Function = Not Used or if the selected load arm is not a ratio blender.*

Configuration 208 – Pulse Output #2 Pulse/Volume

This five-digit parameter defines the pulse output resolution, the number of pulses per unit of volume to be generated (e.g., 0.1 will output 1 pulse for every 10 units of volume). The range of this parameter is 0.00 through 999.99.

Note: *No entry if corresponding Pulse Output Function = Not Used*
Help: Enter output pulses per unit of volume

Configuration 209 – Pulse Output #2 Units

This parameter defines the volume type used to pace the pulse output. Selections are as follows:

- (0) IV [Indicated Volume or Raw]
- (1) GV [Gross]
- (2) GST [Gross Standard Temperature]
- (3) GSV [Gross at Standard Temperature and Pressure]
- (4) Mass

Critical: Selected units not available.

Note: *No-entry if corresponding Pulse Output Function = Not Used*
Help: Select volume type on which to base pulse output.

Configuration 210 – Pulse Output #2 Maximum Frequency

This four-digit entry limits the pulse output frequency for Pulse Output #2 to a fixed range (0 to 3500 Hz) to avoid over-speeding the device attached to the pulse output. All of the intended pulses will eventually be transmitted; the total period will be increased if required to ensure the correct number of pulses is output. A 0 entry disables this feature.

Fatal: Entry is out of specified range.

Note: *No entry if respective pulse out function not assigned.*
Help: Enter limit frequency for the output (0 to 3500 Hz).

Configuration 211 – Pulse Output #3 Function

This program code allows a pulse output to be defined. The output will be active when flow is active during a batch, and represents volume. The number of pulses is determined by Configuration 213 – Pulse/Volume, and volume type is determined by Configuration 214 – Pulse Out Units. Selections are as follows:

- (0) Not used
- (1) Arm 1 Pulses
- (2) Arm 2 Pulses
- (3) Arm 3 Pulses
- (4) Arm 4 Pulses
- (5) Arm 5 Pulses
- (6) Arm 6 Pulses

Note: *Available options will vary based on arm configurations.*
Critical: Load arm not configured.

Help: Select function for this pulse output, KDC TB5:1(+),2(-),TB4: 1(+),2(-)

Configuration 212 – Pulse Output #3 Meter

This parameter defines the meter associated with this pulse output. Selections are as follows:

- (0) Combined Meters (Ratio Blending Only)
- (1) Meter 1
- (2) Meter 2
- (3) Meter 3
- (4) Meter 4
- (5) Meter 5
- (6) Meter 6

Help: Select meter(s) for this pulse output.

Note: *No entry if corresponding Pulse Output Function = Not Used or if the selected load arm is not a ratio blender.*

Configuration 213 – Pulse Output #3 Pulse/Volume

This five-digit parameter defines the pulse output resolution, the number of pulses per unit of volume to be generated (e.g., 0.1 will output 1 pulse for every 10 units of volume). The range of this parameter is 0.00 through 999.99.

Note: *No entry if corresponding Pulse Output Function = Not Used*
Help: Enter output pulses per unit of volume

Configuration 214 – Pulse Output #3 Units

This parameter defines the volume type used to pace the pulse output. Selections are as follows:

- (0) IV [Indicated Volume or Raw]
- (1) GV [Gross]
- (2) GST [Gross Standard Temperature]
- (3) GSV [Gross at Standard Temperature and Pressure]
- (4) Mass

Critical: Selected units not available.

Note: *No-entry if corresponding Pulse Output Function = Not Used*
Help: Select volume type on which to base pulse output.

Configuration 215 – Pulse Output #3 Maximum Frequency

This three-digit entry limits the pulse output fre-quency for Pulse Output #1 to a fixed range (0 to 125 Hz) to

avoid over-speeding the device attached to the pulse output. All of the intended pulses will eventually be transmitted; the total period will be increased if required to ensure the correct number of pulses is output. A 0 entry disables this feature.

Fatal: Entry is out of specified range.

Note: *No entry if respective pulse out function not assigned.*
Help: Enter limit frequency for the output (0 to 125 Hz).

Configuration 216 – Pulse Output #4 Function

This program code allows a pulse output to be defined. The output will be active when flow is active during a batch, and represents volume. The number of pulses is determined by Configuration 218 – Pulse/Volume, and volume type is determined by Configuration 219 – Pulse Out Units. Selections are as follows:

- (0) Not used
- (1) Arm 1 Pulses
- (2) Arm 2 Pulses
- (3) Arm 3 Pulses
- (4) Arm 4 Pulses
- (5) Arm 5 Pulses
- (6) Arm 6 Pulses

Note: *Available options will vary based on arm configurations.*
Critical: Load arm not configured.

Help: Select function for this pulse output, KDC TB5:3(+),4(-),TB4:3(+),4(-)

Configuration 217 – Pulse Output #4 Meter

This parameter defines the meter associated with this pulse output. Selections are as follows:

- (0) Combined Meters (Ratio Blending Only)
- (1) Meter 1
- (2) Meter 2
- (3) Meter 3
- (4) Meter 4
- (5) Meter 5
- (6) Meter 6

Help: Select meter(s) for this pulse output.

Note: *No entry if corresponding Pulse Output Function = Not Used or if the selected load arm is not a ratio blender.*

Configuration 218 – Pulse Output #4 Pulse/Volume

This five-digit parameter defines the pulse output resolution, the number of pulses per unit of volume to be generated (e.g., 0.1 will output 1 pulse for every 10 units of volume). The range of this parameter is 0.00 through 999.99.

Note: *No entry if corresponding Pulse Output Function = Not Used*
Help: Enter output pulses per unit of volume

Configuration 219 – Pulse Output #4 Units

This parameter defines the volume type used to pace the pulse output. Selections are as follows:

- (0) IV [Indicated Volume or Raw]
- (1) GV [Gross]
- (2) GST [Gross Standard Temperature]
- (3) GSV [Gross at Standard Temperature and Pressure]
- (4) Mass

Critical: Selected units not available.

Note: *No-entry if corresponding Pulse Output Function = Not Used*
Help: Select volume type on which to base pulse output.

Configuration 220 – Pulse Output #4 Maximum Frequency

This three-digit entry limits the pulse output fre-quency for Pulse Output #1 to a fixed range (0 to 125 Hz) to avoid over-speeding the device attached to the pulse output. All of the intended pulses will eventually be transmitted; the total period will be increased if required to ensure the correct number of pulses is output. A 0 entry disables this feature.

Fatal: Entry is out of specified range.

Note: *No entry if respective pulse out function not assigned.*
Help: Enter limit frequency for the output (0 to 125 Hz).

Configuration 221 – Pulse Output #5 Function

This program code allows a pulse output to be defined. The output will be active when flow is active during a batch, and represents volume. The number of pulses is determined by Configuration 223 – Pulse/Volume, and volume type is determined by Configuration 224 – Pulse Out Units. Selections are as follows:

- (0) Not used
- (1) Arm 1 Pulses
- (2) Arm 2 Pulses
- (3) Arm 3 Pulses
- (4) Arm 4 Pulses
- (5) Arm 5 Pulses
- (6) Arm 6 Pulses

Note: *Available options will vary based on arm configurations.*
Critical: Load arm not configured.

Help: Select function for this pulse output, KDC TB5:5(+),6(-), TB4:5(+),6(-)

Configuration 222 – Pulse Output #5 Meter

This parameter defines the meter associated with this pulse output. Selections are as follows:

- (0) Combined Meters (Ratio Blending Only)
- (1) Meter 1
- (2) Meter 2
- (3) Meter 3

- (4) Meter 4
- (5) Meter 5
- (6) Meter 6

Help: Select meter(s) for this pulse output.

Note: *No entry if corresponding Pulse Output Function = Not Used or if the selected load arm is not a ratio blender.*

Configuration 223 – Pulse Output #5 Pulse/Volume

This five-digit parameter defines the pulse output resolution, the number of pulses per unit of volume to be generated (e.g., 0.1 will output 1 pulse for every 10 units of volume). The range of this parameter is 0.00 through 999.99.

Note: *No entry if corresponding Pulse Output Function = Not Used*

Help: Enter output pulses per unit of volume

Configuration 224 – Pulse Output #5 Units

This parameter defines the volume type used to pace the pulse output. Selections are as follows:

- (0) IV [Indicated Volume or Raw]
- (1) GV [Gross]
- (2) GST [Gross Standard Temperature]
- (3) GSV [Gross at Standard Temperature and Pressure]
- (4) Mass

Critical: Selected units not available.

Note: *No-entry if corresponding Pulse Output Function = Not Used*

Help: Select volume type on which to base pulse output.

Configuration 225 – Pulse Output #5 Maximum Frequency

This three-digit entry limits the pulse output frequency for Pulse Output #1 to a fixed range (0 to 125 Hz) to avoid over-speeding the device attached to the pulse output. All of the intended pulses will eventually be transmitted; the total period will be in-creased if required to ensure the correct number of pulses is output. A 0 entry disables this feature.

Fatal: Entry is out of specified range.

Note: *No entry if respective pulse out function not assigned.*

Help: Enter limit frequency for the output (0 to 125 Hz).

DC & AC Digital Input Function Assignments

301 Digital Input DC #1	KDC TB4:1(+), 2(-)
305 Digital Input DC #2	KDC TB4:3(+), 4(-)
309 Digital Input DC #3	KDC TB4:5(+), 6(-)
313 Digital Input DC #4	EAAI TB4:4(+), 5(-)
317 Digital Input DC #5	EAAI TB4:6(+), 7(-)
321 Digital Input DC #6	EAAI TB4:8(+), 9(-)
325 Digital Input AC #7	EAAI TB2:1 (Com), 2
329 Digital Input AC #8	EAAI TB2:1 (Com), 3
333 Digital Input AC #9	EAAI TB2:1 (Com), 4
337 Digital Input AC #10	EAAI TB2:1 (Com), 5
341 Digital Input AC #11	EAAI TB2:1 (Com), 6
345 Digital Input AC #12	BSE TB11:1, 5 (Com)
349 Digital Input AC #13	BSE TB11:2, 5 (Com)
353 Digital Input AC #14	BSE TB11:3, 5 (Com)
357 Digital Input AC #15	BSE TB11:4, 5 (Com)
361 Digital Input DC #16	BSE TB12:1, 2
365 Digital Input DC #17	BSE TB12:4, 5
369 Digital Input DC #18	BSE TB12:7, 8
373 Digital Input DC #19	BSE TB12:10, 11
377 Digital Input DC #20	BSE TB13:1, 2
381 Digital Input DC #21	BSE TB13:4, 5
385 Digital Input DC #22	BSE TB13:7, 8
389 Digital Input DC #23	BSE TB13:10, 11
393 Digital Input DC #24	AICB1 TB5:2 (Sig), 3 (Com)
397 Digital Input DC #25	AICB1 TB5:5 (Sig), 6 (Com)
401 Digital Input DC #26	AICB1 TB5:8 (Sig), TB4:1 (Com)
405 Digital Input DC #27	AICB1 TB4:3 (Sig),4 (Com)
409 Digital Input DC #28	AICB1 TB4:6 (Sig), 7 (Com)
413 Digital Input DC #29	AICB1 TB4:9 (Sig), 10 (Com)
417 Digital Input DC #30	AICB1 TB3:2 (Sig), 3 (Com)
421 Digital Input DC #31	AICB1 TB3:5 (Sig), 6 (Com)
425 Digital Input DC #32	AICB1 TB3:8 (Sig), 9 (Com)
429 Digital Input DC #33	AICB1 TB3:11 (Sig),12 (Com)
433 Digital Input DC #34	AICB2 TB5:2 (Sig), 3 (Com)
437 Digital Input DC #35	AICB2 TB5:5 (Sig), 6 (Com)
441 Digital Input DC #36	AICB2 TB5:8 (Sig), TB4:1 (Com)
445 Digital Input DC #37	AICB2 TB4:3 (Sig), 4 (Com)
449 Digital Input DC #38	AICB2 TB4:6 (Sig), 7 (Com)
453 Digital Input DC #39	AICB2 TB4:9 (Sig), 10 (Com)
457 Digital Input DC #40	AICB2 TB3:2 (Sig), 3 (Com)
461 Digital Input DC #41	AICB2 TB3:5 (Sig), 6 (Com)
465 Digital Input DC #42	AICB2 TB3:8 (Sig), 9 (Com)
469 Digital Input DC #43	AICB2 TB3:11 (Sig),12 (Com)

The availability of the digital inputs depends on the hardware being used in the AccuLoad. The inputs available are as follows:

Hardware	Inputs Available
ALIII-S	Digital Input 1 – Digital Input #11 (6 – DC and 5 – AC)
ALIII-Q	Digital Input 1 – Digital Input #23 (14 – DC and 9 – AC) *Digital input #16 – 23 can be configured as inputs or outputs, if configured as outputs not available in these parameters.*
AICB1 (Opt.)	Digital Input #24 – Digital Input #33 (10 – DC) *Available as an option on both the ALIII-S and ALIII-Q hardware.*
AICB2 (Opt.)	Digital Input #34 – Digital Input #43 (10 – DC) *Available as an option on the ALIII-Q hardware.*

The Bi-State I/O Board (BIOB), part of the Bi-State Expansion (BSE) hardware, provides eight additional DC channels that are jumper-configurable as either inputs or outputs. Those configured as inputs are mapped to input(s) 16 through 23 (361, 365, 369, … 389). If less than eight channels are configured for inputs, channels above the number programmed are not available for input function assignment.

The AccuLoad IIIX also allows unused channels on installed AICB (Add-Pak) board(s) to be used for general-purpose I/O. One input is available for each AICB channel not being used for Add-Pak injector control. The AICB set to address 100 is mapped to Digital Input #24-33 (393, 397, 401… 429).

Example - If 1 AICB is installed and 6 Add-Pak injectors are programmed for use, 4 channels on the AICB are available for use as general purpose inputs. If additives 5,6,7,8,9 and 10 are programmed for Add-Pak injectors (corresponding to AICB channels 1-6) then AICB channels 7-10 are available for General Purpose I/O. You could then assign Digital Inputs #30-33 (which map to those AICB channels) to the desired function.

If a second AICB is installed, the inputs map to Digital Input #34-43 (433, 437, 441, …469).

Note: *the AICB I/O status is monitored via serial communications; it is recommended that it not be used for any time-sensitive function (such as injector feedback).*

These program codes define the function for a digital input. Except for general purpose inputs, duplicate assignments are not allowed. Inputs 1 through 6 (301, 305, 309, 313, 317, 321) are DC inputs, and 7 through 15 (325, 329, 333, … 357) are AC. Selections are as follows:

- (00) Not used
- (01) Security Switch Input #1
- (02) Security Switch Input #2
- (03) Permissive #1
- (04) Permissive #2
- (05) First/Second High Flow Switch
- (06) Remote Start
- (07) Remote Stop (Master)
- (08) Remote Stop by Load Arm
- (09) Transaction Reset
- (10) General Purpose Input
- (11) Printer Tray Switch
- (12) Block Valve Feedback
- (13) Piston Injector #1 Feedback
- (14) Piston Injector #2 Feedback
- (15) Piston Injector #3 Feedback
- (16) Piston Injector #4 Feedback
- (17) Piston Injector #5 Feedback
- (18) Piston Injector #6 Feedback
- (19) Piston Injector #7 Feedback
- (20) Piston Injector #8 Feedback
- (21) Piston Injector #9 Feedback
- (22) Piston Injector #10 Feedback
- (23) Piston Injector #11 Feedback
- (24) Piston Injector #12 Feedback
- (25) Piston Injector #13 Feedback
- (26) Piston Injector #14 Feedback
- (27) Piston Injector #15 Feedback
- (28) Piston Injector #16 Feedback
- (29) Piston Injector #17 Feedback
- (30) Piston Injector #18 Feedback
- (31) Piston Injector #19 Feedback
- (32) Piston Injector #20 Feedback
- (33) Piston Injector #21 Feedback
- (34) Piston Injector #22 Feedback
- (35) Piston Injector #23 Feedback
- (36) Piston Injector #24 Feedback
- (37) System Permissive #1
- (38) System Permissive #2
- (39) System Permissive #3
- (40) Swing Arm – Side A
- (41) Swing Arm – Side B
- (42) DE Head Stop Flow [not available if no unloading arms]

- (43) DE Head Low Flow [not available if no unloading arms]
- (44) DE Head High Flow [not available if no unloading arms]
- (45) Bay A Permissive 1 [not available if Bays not assigned]
- (46) Bay A Permissive 2 [not available if Bays not assigned]
- (47) Bay B Permissive 1 [not available if Bays not assigned]
- (48) Bay B Permissive 2 [not available if Bays not assigned]
- (49) Metered Injector Prove Remote
- (50) Recipe Select 1
- (51) Recipe Select 2
- (52) Recipe Select 3

Critical: Must be at highest level of security [to program or deprogram security inputs]

Critical: Input assignments must be unique [except general purpose inputs; block valve feedback (check arm and product); permissive #1 (check arm); permissive #2 (check arm)]

Critical: Injector I/O assignment does not match type [injector feedbacks only]

Critical: No digital output assigned for this injector [injector feedbacks only]

Critical: Block valves used with sequential blending only

Critical: This I/O currently configured as output. See JP1 on BSE. [digital inputs 16 through 23 only]

Critical: BSE required for this digital I/O point.

Critical: This I/O currently configured as an Add-Pak injector. [Inputs 24 – 43 only]

Critical: Smart Injector comm port required for AICB I/O. [Inputs 24 – 43 only]

Note: *Digital inputs 16 through 23 and digital outputs 31 through 38 are the bi-state I/Os on the BSE board. Only eight I/Os are available. The number of inputs and outputs is selectable by jumper position.*

Note: *Additive injector selections available dependent on Configuration Code 020. (Only 12 are available with AccuLoad III-S hardware.)*

Help: Select desired option from list (plus terminal connection)

DC & AC Digital Input Arm Assignments

302 Digital Input DC #1	Arm Assignment
306 Digital Input DC #2	Arm Assignment
310 Digital Input DC #3	Arm Assignment
314 Digital Input DC #4	Arm Assignment
318 Digital Input DC #5	Arm Assignment
322 Digital Input DC #6	Arm Assignment
326 Digital Input AC #7	Arm Assignment
330 Digital Input AC #8	Arm Assignment
334 Digital Input AC #9	Arm Assignment
338 Digital Input AC #10	Arm Assignment
342 Digital Input AC #11	Arm Assignment
346 Digital Input AC #12	Arm Assignment
350 Digital Input AC #13	Arm Assignment
354 Digital Input AC #14	Arm Assignment
358 Digital Input AC #15	Arm Assignment
362 Digital Input DC #16	Arm Assignment
366 Digital Input DC #17	Arm Assignment
370 Digital Input DC #18	Arm Assignment
374 Digital Input DC #19	Arm Assignment
378 Digital Input DC #20	Arm Assignment
382 Digital Input DC #21	Arm Assignment
386 Digital Input DC #22	Arm Assignment
390 Digital Input DC #23	Arm Assignment
394 Digital Input DC #24	Arm Assignment
398 Digital Input DC #25	Arm Assignment
402 Digital Input DC #26	Arm Assignment
406 Digital Input DC #27	Arm Assignment
410 Digital Input DC #28	Arm Assignment
414 Digital Input DC #29	Arm Assignment
418 Digital Input DC #30	Arm Assignment
422 Digital Input DC #31	Arm Assignment
426 Digital Input DC #32	Arm Assignment
430 Digital Input DC #33	Arm Assignment
434 Digital Input DC #34	Arm Assignment
438 Digital Input DC #35	Arm Assignment
442 Digital Input DC #36	Arm Assignment
446 Digital Input DC #37	Arm Assignment
450 Digital Input DC #38	Arm Assignment
454 Digital Input DC #39	Arm Assignment
458 Digital Input DC #40	Arm Assignment
462 Digital Input DC #41	Arm Assignment
466 Digital Input DC #42	Arm Assignment
470 Digital Input DC #43	Arm Assignment

Assign the associated digital input to one of the load arms. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Note: *Some digital input functions are system-based and the arm entry is not used, and will not appear on the AccuLoad Program Mode menus in these cases. These functions include security inputs, general purpose inputs, remote stop (master), and piston injector feedback inputs.*

Note: *No entry if associated function is not used.*

Critical: No DE Head High Flow, Low Flow, Stop Inputs on this arm.

Critical: Load arm not configured.

Help: Select the arm associated with this input

DC & AC Digital Input Product Assignments

304 Digital Input DC #1	Product Assignment
308 Digital Input DC #2	Product Assignment
312 Digital Input DC #3	Product Assignment
316 Digital Input DC #4	Product Assignment
320 Digital Input DC #5	Product Assignment
324 Digital Input DC #6	Product Assignment
328 Digital Input AC #7	Product Assignment
332 Digital Input AC #8	Product Assignment
336 Digital Input AC #9	Product Assignment
340 Digital Input AC #10	Product Assignment
344 Digital Input AC #11	Product Assignment
348 Digital Input AC #12	Product Assignment
352 Digital Input AC #13	Product Assignment
356 Digital Input AC #14	Product Assignment
360 Digital Input AC #15	Product Assignment
364 Digital Input DC #16	Product Assignment
368 Digital Input DC #17	Product Assignment
372 Digital Input DC #18	Product Assignment
376 Digital Input DC #19	Product Assignment
380 Digital Input DC #20	Product Assignment
384 Digital Input DC #21	Product Assignment
388 Digital Input DC #22	Product Assignment
392 Digital Input DC #23	Product Assignment
396 Digital Input DC #24	Product Assignment
400 Digital Input DC #25	Product Assignment
404 Digital Input DC #26	Product Assignment
408 Digital Input DC #27	Product Assignment
412 Digital Input DC #28	Product Assignment
416 Digital Input DC #29	Product Assignment
420 Digital Input DC #30	Product Assignment
424 Digital Input DC #31	Product Assignment
428 Digital Input DC #32	Product Assignment
432 Digital Input DC #33	Product Assignment
436 Digital Input DC #34	Product Assignment
440 Digital Input DC #35	Product Assignment
444 Digital Input DC #36	Product Assignment
448 Digital Input DC #37	Product Assignment
452 Digital Input DC #38	Product Assignment
456 Digital Input DC #39	Product Assignment
460 Digital Input DC #40	Product Assignment
464 Digital Input DC #41	Product Assignment
468 Digital Input DC #42	Product Assignment
472 Digital Input DC #43	Product Assignment

Assign a product to one of the digital input functions from the list above. Selections are as follows:

- (0) Product 1
- (1) Product 2
- (2) Product 3
- (3) Product 4
- (4) Product 5
- (5) Product 6

These entries can only be configured for a Sequential Blending arm.

Critical: Only one block valve feedback per product.

Critical: Product not configured.

Help: Select the product associated with this input

Note: *No entry except with Block Valve Feedback.*

DC & AC Digital Output Function Assignments

501 Digital Output DC #1	KDC TB5:1(+), 2(-)
505 Digital Output DC #2	KDC TB5:3(+), 4(-)
509 Digital Output DC #3	KDC TB5:5(+), 6(-)
513 Digital Output AC #4	EAAI TB3: 1, 2
517 Digital Output AC #5	EAAI TB3: 3, 4
521 Digital Output AC #6	EAAI TB3: 5, 6
525 Digital Output AC #7	EAAI TB3: 7, 8
529 Digital Output AC #8	EAAI TB3: 9, 10
533 Digital Output AC #9	EAAI TB3: 11, 12
537 Digital Output AC #10	EAAI TB7: 1, 2
541 Digital Output AC #11	EAAI TB7: 3, 4
545 Digital Output AC #12	EAAI TB7: 5, 6
549 Digital Output AC #13	EAAI TB7: 7, 8
553 Digital Output AC #14	EAAI TB7: 9, 10
557 Digital Output AC #15	BSE TB10:1, 2
561 Digital Output AC #16	BSE TB10:3, 4
565 Digital Output AC #17	BSE TB10:5, 6
569 Digital Output AC #18	BSE TB10:7, 8
573 Digital Output AC #19	BSE TB10:9, 10
577 Digital Output AC #20	BSE TB9:1, 2
581 Digital Output AC #21	BSE TB9:3, 4
585 Digital Output AC #22	BSE TB9:5, 6
589 Digital Output AC #23	BSE TB9:7, 8
593 Digital Output AC #24	BSE TB9:9, 10
597 Digital Output AC #25	BSE TB9:11, 12
601 Digital Output AC #26	BSE TB8:1, 2
605 Digital Output AC #27	BSE TB8:3, 4
609 Digital Output AC #28	BSE TB8:5, 6
613 Digital Output AC #29	BSE TB8:7, 8
617 Digital Output AC #30	BSE TB8:9, 10
621 Digital Output DC #31	BSE TB12:3, 2
625 Digital Output DC #32	BSE TB12:6, 5
629 Digital Output DC #33	BSE TB12:9, 8
633 Digital Output DC #34	BSE TB12:12, 11
637 Digital Output DC #35	BSE TB13:3, 2
641 Digital Output DC #36	BSE TB13:6, 5
645 Digital Output DC #37	BSE TB13:9, 8
649 Digital Output DC #38	BSE TB13:12, 11
653 Digital Output AC #39	AICB1 TB8:10
657 Digital Output AC #40	AICB1 TB8:9
661 Digital Output AC #41	AICB1 TB8:8
665 Digital Output AC #42	AICB1 TB8:7
669 Digital Output AC #43	AICB1 TB8:6
673 Digital Output AC #44	AICB1 TB8:5
677 Digital Output AC #45	AICB1 TB8:4
681 Digital Output AC #46	AICB1 TB8:3
685 Digital Output AC #47	AICB1 TB8:2
689 Digital Output AC #48	AICB1 TB8:1
693 Digital Output AC #49	AICB1 TB7:10
697 Digital Output AC #50	AICB1 TB7:9
701 Digital Output AC #51	AICB1 TB7:8
705 Digital Output AC #52	AICB1 TB7:7

709 Digital Output AC #53	AICB1 TB7:6
713 Digital Output AC #54	AICB1 TB7:5
717 Digital Output AC #55	AICB1 TB7:4
721 Digital Output AC #56	AICB1 TB7:3
725 Digital Output AC #57	AICB1 TB7:2
729 Digital Output AC #58	AICB1 TB7:1
733 Digital Output AC #59	AICB2 TB8:10
737 Digital Output AC #60	AICB2 TB8:9
741 Digital Output AC #61	AICB2 TB8:8
745 Digital Output AC #62	AICB2 TB8:7
749 Digital Output AC #63	AICB2 TB8:6
753 Digital Output AC #64	AICB2 TB8:5
757 Digital Output AC #65	AICB2 TB8:4
761 Digital Output AC #66	AICB2 TB8:3
765 Digital Output AC #67	AICB2 TB8:2
769 Digital Output AC #68	AICB2 TB8:1
773 Digital Output AC #69	AICB2 TB7:10
777 Digital Output AC #70	AICB2 TB7:9
781 Digital Output AC #71	AICB2 TB7:8
785 Digital Output AC #72	AICB2 TB7:7
789 Digital Output AC #73	AICB2 TB7:6
793 Digital Output AC #74	AICB2 TB7:5
797 Digital Output AC #75	AICB2 TB7:4
801 Digital Output AC #76	AICB2 TB7:3
805 Digital Output AC #77	AICB2 TB 7:2
809 Digital Output AC #78	AICB2 TB7:1

This program code defines the function of a digital output. Except for General-Purpose outputs, duplicate assignments are not allowed for the same arm (or meter or product). If a digital valve is being configured, both upstream and downstream solenoids must be assigned. Outputs 1-3 are DC (located on the KDC board). Outputs 4-30 are AC.

The Bi-State I/O Board (BIOB), part of the Bi-State Expansion (BSE) hardware, provides 8 additional DC channels that are jumper-configurable as either inputs or outputs. Those configured as outputs are mapped to output(s) 31-38 (521, 525, 529, …549). If one or more BIOB channels are configured for inputs, the corresponding BIOB output channels are not available; i.e. if the number of BIOB inputs is set to 3 using the jumpers on the BSE, then outputs 31-33 would not be available.

The AccuLoad IIIX also allows unused channels on installed AICB (Add-Pak) board(s) to be used for general-purpose I/O. Two digital outputs are available for each AICB channel not being used for Add-Pak injector control. The AICB set to address 100 maps to Digital Output #39-58 (653, 657, 661, …729).

Example - If 1 AICB is installed and 6 Add-Pak injectors are programmed for use, 8 channels on the AICB are available for use as general purpose outputs. If additives 5,6,7,8,9 and 10 are programmed for Add-Pak injectors (corresponding to AICB channels 1-6) then AICB channels 7-10 are available for General Purpose I/O. You could then assign Digital Outputs #51-58 (which map to those AICB channels) to the desired functions.

If a second AICB is installed, the outputs map to Digital Output #59-78 (733, 737, 741, …813).

Note: *the AICB I/O is controlled via serial communications; it is recommended that it not be used for any time-sensitive function. Do NOT use these outputs for control valve or injector solenoids. Response should be satisfactory for pump outputs and block valve control.*

Selections are as follows:

- (00) Not used
- (01) Pump
- (02) Upstream Solenoid
- (03) Downstream Solenoid
- (04) Alarm Relay #1
- (05) Alarm Relay #2
- (06) General Purpose Output
- (07) Block Valve [not selectable if no sequential blending]
- (08) Stop Relay
- (09) Additive Pump #1
- (10) Additive Pump #2
- (11) Additive Pump #3
- (12) Additive Pump #4
- (13) Additive Pump #5
- (14) Additive Pump #6
- (15) Additive Pump #7
- (16) Additive Pump #8
- (17) Additive Pump #9
- (18) Additive Pump #10
- (19) Additive Pump #11
- (20) Additive Pump #12
- (21) Additive Pump #13
- (22) Additive Pump #14
- (23) Additive Pump #15
- (24) Additive Pump #16
- (25) Additive Pump #17
- (26) Additive Pump #18
- (27) Additive Pump #19
- (28) Additive Pump #20
- (29) Additive Pump #21
- (30) Additive Pump #22
- (31) Additive Pump #23
- (32) Additive Pump #24
- (33) Piston Injector #1
- (34) Piston Injector #2
- (35) Piston Injector #3
- (36) Piston Injector #4
- (37) Piston Injector #5
- (38) Piston Injector #6
- (39) Piston Injector #7
- (40) Piston Injector #8
- (41) Piston Injector #9

- (42) Piston Injector #10
- (43) Piston Injector #11
- (44) Piston Injector #12
- (45) Piston Injector #13
- (46) Piston Injector #14
- (47) Piston Injector #15
- (48) Piston Injector #16
- (49) Piston Injector #17
- (50) Piston Injector #18
- (51) Piston Injector #19
- (52) Piston Injector #20
- (53) Piston Injector #21
- (54) Piston Injector #22
- (55) Piston Injector #23
- (56) Piston Injector #24
- (57) Metered Injector #1 Solenoid
- (58) Metered Injector #2 Solenoid
- (59) Metered Injector #3 Solenoid
- (60) Metered Injector #4 Solenoid
- (61) Shared Additive #1 Solenoid
- (62) Shared Additive #2 Solenoid
- (63) Shared Additive #3 Solenoid
- (64) Shared Additive #4 Solenoid
- (65) Shared Additive #5 Solenoid
- (66) Shared Additive #6 Solenoid
- (67) Shared Additive #7 Solenoid
- (68) Shared Additive #8 Solenoid
- (69) Shared Additive #9 Solenoid
- (70) Shared Additive #10 Solenoid
- (71) Shared Additive #11 Solenoid
- (72) Shared Additive #12 Solenoid
- (73) Shared Additive #13 Solenoid
- (74) Shared Additive #14 Solenoid
- (75) Shared Additive #15 Solenoid
- (76) Shared Additive #16 Solenoid
- (77) Shared Additive #17 Solenoid
- (78) Shared Additive #18 Solenoid
- (79) Shared Additive #19 Solenoid
- (80) Shared Additive #20 Solenoid
- (81) Shared Additive #21 Solenoid
- (82) Shared Additive #22 Solenoid
- (83) Shared Additive #23 Solenoid
- (84) Shared Additive #24 Solenoid
- (85) Shared System Flush #1
- (86) Shared System Flush #2
- (87) Shared System Flush #3
- (88) Shared System Flush #4
- (89) Flow Controlled Injector #1 Upstream Solenoid
- (90) Flow Controlled Injector #2 Upstream Solenoid
- (91) Flow Controlled Injector #3 Upstream Solenoid
- (92) Flow Controlled Injector #4 Upstream Solenoid
- (93) Flow Controlled Injector #1 Downstream Solenoid
- (94) Flow Controlled Injector #2 Downstream Solenoid
- (95) Flow Controlled Injector #3 Downstream Solenoid
- (96) Flow Controlled Injector #4 Downstream Solenoid
- (97) Vapor Line Valve

The number of additive pumps, piston injectors, and metered injectors is dependent on Configuration Code 020 and shared additives and on the hardware. (AccuLoad III hardware allows for 24.) The number of metered injectors depends on the number of load arms selected and choices for dual pulse and transmitter integrity. (See installation manual for pulse input table, Manual MN06135.)

Note: *For selection (97) Vapor Line Valve, this is available for Straight with VRS arm type. If configured, the AccuLoad will open the vapor line valve when the main product valve is open and close the vapor line valve when the main product valve is closed.*

Critical: Output assignments must be unique [except for general purpose function, block valve, up and downstream solenoids, and pump in multi-arm/multi-meter modes]

Critical: Metered injector pulse input not configured

Critical: Both upstream and downstream solenoids required

Critical: Injector I/O assignment does not match type

Critical: Too many additive pumps defined

Critical: Too many additive injectors defined

Critical: Block valves used with sequential blending only

Critical: Upstream, downstream, and pump not permitted on this output [501, 505, 509 only]

Critical: This I/O currently configured as input. See JP1 on BSE. [digital outputs 31 through 38 only]

Critical: This I/O point is configured for Add-Pak Injector.

Critical: Smart Injector communications must be configured to use Add-Pak I/O.

Critical: Upstream/Downstream Solenoid function not supported on Add-Pak hardware.

Critical: Digital valve solenoids not supported on AICB hardware.

Critical: Smart Inject comm port required for AICB I/O.

Critical: Upstream and downstream solenoids not available for vapor recovery line.

Critical: Pump not available for Vapor Recovery Line.

Note: *Digital inputs 16 through 23 and digital outputs 31 through 38 are the bi-state I/Os on the BSE board. Only eight I/Os are available. The number of inputs and outputs is selectable by jumper position.*

Help: Select desired option from list (plus terminal connection)

DC & AC Digital Output Arm Assignments

502 Digital Output DC #1 Arm Assignment
506 Digital Output DC #2 Arm Assignment
510 Digital Output DC #3 Arm Assignment
514 Digital Output DC #4 Arm Assignment
518 Digital Output DC #5 Arm Assignment
522 Digital Output DC #6 Arm Assignment
526 Digital Output DC #7 Arm Assignment
530 Digital Output DC #8 Arm Assignment
534 Digital Output DC #9 Arm Assignment
538 Digital Output DC #10 Arm Assignment
542 Digital Output DC #11 Arm Assignment
546 Digital Output DC #12 Arm Assignment
550 Digital Output DC #13 Arm Assignment
554 Digital Output DC #14 Arm Assignment
558 Digital Output DC #15 Arm Assignment
562 Digital Output DC #16 Arm Assignment
566 Digital Output DC #17 Arm Assignment
570 Digital Output DC #18 Arm Assignment
574 Digital Output DC #19 Arm Assignment
578 Digital Output DC #20 Arm Assignment
582 Digital Output DC #21 Arm Assignment
586 Digital Output DC #22 Arm Assignment
590 Digital Output DC #23 Arm Assignment
594 Digital Output DC #24 Arm Assignment
598 Digital Output DC #25 Arm Assignment
602 Digital Output DC #26 Arm Assignment
606 Digital Output DC #27 Arm Assignment
610 Digital Output DC #28 Arm Assignment
614 Digital Output DC #29 Arm Assignment
618 Digital Output DC #30 Arm Assignment
622 Digital Output DC #31 Arm Assignment
626 Digital Output DC #32 Arm Assignment
630 Digital Output DC #33 Arm Assignment
634 Digital Output DC #34 Arm Assignment
638 Digital Output DC #35 Arm Assignment
642 Digital Output DC #36 Arm Assignment
646 Digital Output DC #37 Arm Assignment
650 Digital Output DC #38 Arm Assignment
654 Digital Output DC #39 Arm Assignment
658 Digital Output DC #40 Arm Assignment
662 Digital Output DC #41 Arm Assignment
666 Digital Output DC #42 Arm Assignment
670 Digital Output DC #43 Arm Assignment
674 Digital Output DC #44 Arm Assignment
678 Digital Output DC #45 Arm Assignment
682 Digital Output DC #46 Arm Assignment
686 Digital Output DC #47 Arm Assignment
690 Digital Output DC #48 Arm Assignment
694 Digital Output DC #49 Arm Assignment
698 Digital Output DC #50 Arm Assignment
702 Digital Output DC #51 Arm Assignment
706 Digital Output DC #52 Arm Assignment
710 Digital Output DC #53 Arm Assignment
714 Digital Output DC #54 Arm Assignment
718 Digital Output DC #55 Arm Assignment
722 Digital Output DC #56 Arm Assignment
726 Digital Output DC #57 Arm Assignment
730 Digital Output DC #58 Arm Assignment
734 Digital Output DC #59 Arm Assignment
738 Digital Output DC #60 Arm Assignment
742 Digital Output DC #61 Arm Assignment
746 Digital Output DC #62 Arm Assignment
750 Digital Output DC #63 Arm Assignment
754 Digital Output DC #64 Arm Assignment
758 Digital Output DC #65 Arm Assignment
762 Digital Output DC #66 Arm Assignment
766 Digital Output DC #67 Arm Assignment
770 Digital Output DC #68 Arm Assignment
774 Digital Output DC #69 Arm Assignment
778 Digital Output DC #70 Arm Assignment
782 Digital Output DC #71 Arm Assignment
786 Digital Output DC #72 Arm Assignment
790 Digital Output DC #73 Arm Assignment
794 Digital Output DC #74 Arm Assignment
798 Digital Output DC #75 Arm Assignment
802 Digital Output DC #76 Arm Assignment
806 Digital Output DC #77 Arm Assignment
810 Digital Output DC #78 Arm Assignment

This entry defines the arm associated with the digital output function. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.
Note: No entry if associated function is not used.
Help: Select the arm associated with this output.

DC & AC Digital Output Meter Assignments

503 Digital Output DC #1 Meter Assignment
507 Digital Output DC #2 Meter Assignment
511 Digital Output DC #3 Meter Assignment
515 Digital Output AC #4 Meter Assignment
519 Digital Output AC #5 Meter Assignment
523 Digital Output AC #6 Meter Assignment
527 Digital Output AC #7 Meter Assignment
531 Digital Output AC #8 Meter Assignment
535 Digital Output AC #9 Meter Assignment
539 Digital Output AC #10 Meter Assignment
543 Digital Output AC #11 Meter Assignment
547 Digital Output AC #12 Meter Assignment
551 Digital Output AC #13 Meter Assignment
555 Digital Output AC #14 Meter Assignment
559 Digital Output AC #15 Meter Assignment
563 Digital Output AC #16 Meter Assignment
567 Digital Output AC #17 Meter Assignment
571 Digital Output AC #18 Meter Assignment
575 Digital Output AC #19 Meter Assignment
579 Digital Output AC #20 Meter Assignment
583 Digital Output AC #21 Meter Assignment

587 Digital Output AC #22 Meter Assignment
591 Digital Output AC #23 Meter Assignment
595 Digital Output AC #24 Meter Assignment
599 Digital Output AC #25 Meter Assignment
603 Digital Output AC #26 Meter Assignment
607 Digital Output AC #27 Meter Assignment
611 Digital Output AC #28 Meter Assignment
615 Digital Output AC #29 Meter Assignment
619 Digital Output AC #30 Meter Assignment
623 Digital Output AC #31 Meter Assignment
627 Digital Output AC #32 Meter Assignment
631 Digital Output AC #33 Meter Assignment
635 Digital Output AC #34 Meter Assignment
639 Digital Output AC #35 Meter Assignment
643 Digital Output AC #36 Meter Assignment
647 Digital Output AC #37 Meter Assignment
651 Digital Output AC #38 Meter Assignment
655 Digital Output AC #39 Meter Assignment
659 Digital Output AC #40 Meter Assignment
663 Digital Output AC #41 Meter Assignment
667 Digital Output AC #42 Meter Assignment
671 Digital Output AC #43 Meter Assignment
675 Digital Output AC #44 Meter Assignment
679 Digital Output AC #45 Meter Assignment
683 Digital Output AC #46 Meter Assignment
687 Digital Output AC #47 Meter Assignment
691 Digital Output AC #48 Meter Assignment
695 Digital Output AC #49 Meter Assignment
699 Digital Output AC #50 Meter Assignment
703 Digital Output AC #51 Meter Assignment
707 Digital Output AC #52 Meter Assignment
711 Digital Output AC #53 Meter Assignment
715 Digital Output AC #54 Meter Assignment
719 Digital Output AC #55 Meter Assignment
723 Digital Output AC #56 Meter Assignment
737 Digital Output AC #57 Meter Assignment
731 Digital Output AC #58 Meter Assignment
735 Digital Output AC #59 Meter Assignment
739 Digital Output AC #60 Meter Assignment
743 Digital Output AC #61 Meter Assignment
747 Digital Output AC #62 Meter Assignment
751 Digital Output AC #63 Meter Assignment
755 Digital Output AC #64 Meter Assignment
759 Digital Output AC #65 Meter Assignment
763 Digital Output AC #66 Meter Assignment
767 Digital Output AC #67 Meter Assignment
771 Digital Output AC #68 Meter Assignment
775 Digital Output AC #69 Meter Assignment
779 Digital Output AC #70 Meter Assignment
783 Digital Output AC #71 Meter Assignment
787 Digital Output AC #72 Meter Assignment
791 Digital Output AC #73 Meter Assignment
795 Digital Output AC #74 Meter Assignment
799 Digital Output AC #75 Meter Assignment
803 Digital Output AC #76 Meter Assignment
807 Digital Output AC #77 Meter Assignment
811 Digital Output AC #78 Meter Assignment

This entry defines the meter associated with the output function. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

This entry is only valid for a Ratio Blending arm. (In other configurations, only Meter 1 exists for the arm; hence, the arm entry determines which meter is intended.)

Critical: Meter not configured.

Note: *No entry if corresponding function is not upstream or downstream solenoid or pump*

Help: Select the meter associated with this output

DC & AC Digital Output Product Assignments

504 Digital Output DC #1 Product Assignment
508 Digital Output DC #2 Product Assignment
512 Digital Output DC #3 Product Assignment
516 Digital Output AC #4 Product Assignment
520 Digital Output AC #5 Product Assignment
524 Digital Output AC #6 Product Assignment
528 Digital Output AC #7 Product Assignment
532 Digital Output AC #8 Product Assignment
536 Digital Output AC #9 Product Assignment
540 Digital Output AC #10 Product Assignment
544 Digital Output AC #11 Product Assignment
548 Digital Output AC #12 Product Assignment
552 Digital Output AC #13 Product Assignment
556 Digital Output AC #14 Product Assignment
560 Digital Output AC #15 Product Assignment
564 Digital Output AC #16 Product Assignment
568 Digital Output AC #17 Product Assignment
572 Digital Output AC #18 Product Assignment
576 Digital Output AC #19 Product Assignment
580 Digital Output AC #20 Product Assignment
584 Digital Output AC #21 Product Assignment
588 Digital Output AC #22 Product Assignment
592 Digital Output AC #23 Product Assignment
596 Digital Output AC #24 Product Assignment
600 Digital Output AC #25 Product Assignment
604 Digital Output AC #26 Product Assignment
608 Digital Output AC #27 Product Assignment
612 Digital Output AC #28 Product Assignment
616 Digital Output AC #29 Product Assignment
620 Digital Output AC #30 Product Assignment
624 Digital Output AC #31 Product Assignment
628 Digital Output AC #32 Product Assignment
632 Digital Output AC #33 Product Assignment
636 Digital Output AC #34 Product Assignment
640 Digital Output AC #35 Product Assignment
644 Digital Output AC #36 Product Assignment
648 Digital Output AC #37 Product Assignment
652 Digital Output AC #38 Product Assignment

656 Digital Output AC #39	Product Assignment
660 Digital Output AC #40	Product Assignment
664 Digital Output AC #41	Product Assignment
668 Digital Output AC #42	Product Assignment
672 Digital Output AC #43	Product Assignment
676 Digital Output AC #44	Product Assignment
680 Digital Output AC #45	Product Assignment
684 Digital Output AC #46	Product Assignment
688 Digital Output AC #47	Product Assignment
692 Digital Output AC #48	Product Assignment
696 Digital Output AC #49	Product Assignment
700 Digital Output AC #50	Product Assignment
704 Digital Output AC #51	Product Assignment
708 Digital Output AC #52	Product Assignment
712 Digital Output AC #53	Product Assignment
716 Digital Output AC #54	Product Assignment
720 Digital Output AC #55	Product Assignment
724 Digital Output AC #56	Product Assignment
728 Digital Output AC #57	Product Assignment
732 Digital Output AC #58	Product Assignment
736 Digital Output AC #59	Product Assignment
740 Digital Output AC #60	Product Assignment
744 Digital Output AC #61	Product Assignment
748 Digital Output AC #62	Product Assignment
752 Digital Output AC #63	Product Assignment
756 Digital Output AC #64	Product Assignment
760 Digital Output AC #65	Product Assignment
764 Digital Output AC #66	Product Assignment
768 Digital Output AC #67	Product Assignment
772 Digital Output AC #68	Product Assignment
776 Digital Output AC #69	Product Assignment
780 Digital Output AC #70	Product Assignment
784 Digital Output AC #71	Product Assignment
788 Digital Output AC #72	Product Assignment
792 Digital Output AC #73	Product Assignment
796 Digital Output AC #74	Product Assignment
800 Digital Output AC #75	Product Assignment
804 Digital Output AC #76	Product Assignment
808 Digital Output AC #77	Product Assignment
812 Digital Output AC #78	Product Assignment

Assign a product to one of the digital output functions from the list above. Selections are as follows:

- (0) Product 1
- (1) Product 2
- (2) Product 3
- (3) Product 4
- (4) Product 5
- (5) Product 6

These entries are used only if the entry for the related Digital Output Function is “Block Valve Feed-back."

Critical: Product not configured.

Note: *No entry if associated function is anything other than a block valve.*

Help: Select the product associated with this output

Configuration 900 – Analog I/O Directory

901, 911, 921, 931, 941, 951 – Analog I/O Function

902, 912, 922, 932, 942, 952 – Analog I/O Arm Assignment

903, 913, 923, 933, 943, 953 – Analog I/O Meter Assignment

905, 915, 925, 935, 945, 955 – Analog I/O Type

906/907, 916/917, 926/927, 936/937, 946/947, 956/957 – Analog I/O Calibration Counts

908/909, 918/919, 928/929, 938/939, 948/949, 958/959 – Analog I/O High/Low Values

910, 920, 930, 940, 950, 960 – Analog I/O RTD Offset

Configuration 901, 911, 921, 931, 941, 951 – Analog I/O Function

These program codes define the function of the analog inputs. Selections are as follows:

- (0) Not Used
- (1) Temperature Input
- (2) Density Input
- (3) Pressure Input
- (4) Product Analog Valve Out
- (5) Flow Rate Out
- (6) General Purpose Output
- (7) Injector #1 Analog Valve
- (8) Injector #2 Analog Valve
- (9) Injector #3 Analog Valve
- (10) Injector #4 Analog Valve
- (11) Injector #1 Temperature Input
- (12) Injector #2 Temperature Input
- (13) Injector #3 Temperature Input
- (14) Injector #4 Temperature Input
- (15) General Purpose Input

Critical: RTDs can only be temperature inputs

Critical: I/O assignments must be unique (per load arm or meter)

Critical: Function and type must both be input or output

Critical: Only one densitometer allowed per arm/meter.

Critical: This injector is not configured as a flow controlled injector.

Critical: Duplicate assignments are not allowed.

Help: Select function for this analog I/O

Configuration 902, 912, 922, 932, 9642, 952 – Analog I/O Arm Assignment

This entry defines the arm associated with the Analog I/O point. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Critical: Load arm not configured.

Note: *No entry if associated function = not used.*
Help: Select the arm associated with this I/O point

Configuration 903, 913, 923, 933, 943, 953 – Analog I/O Meter Assignment

This entry defines the meter associated with the Analog I/O point. Selections are as follows:

- (0) Meter 1
- (1) Meter 2
- (2) Meter 3
- (3) Meter 4
- (4) Meter 5
- (5) Meter 6

This entry is only valid for a Ratio Blending arm. (In other configurations, only Meter 1 exists for the arm; hence, the arm entry determines which meter is intended.)

Critical: Meter not configured.

Critical: Meter must be set to 1 when this input is assigned to a side-stream blending arm.

Critical: Density cannot be configured for the vapor recovery meter.

Critical: Analog valve not available for vapor recovery line.

Note: *No entry if associated function = not used*
Note: *No entry if associated function = flow rate output*
Help: Select the meter associated with this I/O point

Configuration 905, 915, 925, 935, 945, 955 – Analog I/O Type

Analog Inputs & Outputs

905 Analog I/O #1	EAAI TB5:1(RTD+), 2(SIG+),3(SIG-),4(RTD-)
915 Analog I/O #2	EAAI TB5:5(RTD+), 6(SIG+),7(SIG-),8(RTD-)
925 Analog I/O #3	EAAI TB5:9(RTD+), 10(SIG+),11(SIG-), 12(RTD-)
935 Analog I/O #4	EAAI TB6:7(RTD+), TB5:13(SIG+),TB5: 14(SIG-),TB6:8(RTD-)
945 Analog I/O #5	EAAI TB6:5(RTD+), TB5:15(SIG+), TB5:16(SIG-),TB6:6(RTD-)
955 Analog I/O #6	EAAI TB6:3(RTD+), TB5:17(SIG+),TB5: 18(SIG-),TB6:4(RTD-)

These program codes define the type of analog module used. Selections are as follows:

- (0) Not Used
- (1) 4 – 20 mA Input
- (2) 1 – 5 Vdc Input
- (3) RTD
- (4) 4 – 20 mA Output
- (5) 1 – 5 Vdc Output

Critical: RTDs can only be temperature inputs.

Critical: Function and type must both be input or output.

Critical: Analog type must be programmed.

Note: *No entry if associated function = not used*
Help: Select desired option from list (plus terminal connection)

Configuration 906, 916, 926, 936, 946, 956 - Analog I/O Calibration 1 Counts

These five-digit program codes are used to calibrate the analog input module. Calibration factors can be found on the top label of the input modules. The range of these parameters is 0 to 65535. Calibration 1 counts must be less than Calibration 2 counts. Factory default calibration is 12288. When these values are assigned based on the values from the label on the Analog Input/Output Modules, maximum accuracy will be attained.

Critical: Cal1 must be less than Cal2

Note: No entry if associated function = not used
Help: Enter count value indicated on module. Default = 12288

Configuration 907, 917, 927, 937, 947, 957 – Analog I/O Calibration 2 Counts

These five-digit program codes are used to calibrate the analog input module. Calibration factors can be found on the top label of the input modules. The range of these parameters is 0 to 65535. Calibration 2 counts must be greater than Calibration 1 counts. The factory default value is 53248. When these values are assigned based on the values from the label on the Analog Input/Output Modules, maximum accuracy will be attained.

Critical: Cal1 must be less than Cal2

Note: *No entry if associated function = not used*
Help: Enter count value indicated on module. Default = 53248

Configuration 908, 918, 928, 938, 948, 958 – Analog I/O Low Value

These program codes are used to define the lower ranges of the analog input, expressed as engineering values corresponding to the defined function of the input. The Low entry represents the engineering value at 4mA (or 1v for a V-In module) and the High entry represents the engineering value at 20mA (or 5v). The range of these parameters is –999.99 to 9999.99. (This varies with the assigned function.) Low Value must be less than High Value.

Note: *These entries are not valid if a RTD temperature probe is selected as the Transducer Type for that input.*
Note: *No entry if analog type is RTD.*
Note:*No entry if associated function = not used.*
Note: *No entry if associated function = analog valve.*
Critical: Low value must be less than high value (unless density input and units are API

Fatal: Entry is out of specified range.

Help: Enter value @4mA/1V.

Configuration 909, 919, 929, 939, 949, 959 – Analog I/O High Value

These program codes are used to define the lower and upper ranges of the analog input, expressed as engineering values corresponding to the defined function of the input. The Low entry represents the engineering value at 4mA (or 1v for a V-In module) and the High entry represents the engineering value at 20mA (or 5v). The range of these parameters is from –999.99 to 9999.99. (This varies with the assigned function.) High Value must be greater than the Low Value.

Note: *These entries are not valid if a RTD temperature probe is selected as the Transducer Type for that input.*
Note: *No entry if analog type is RTD.*
Note: *No entry if associated function = not used.*
Note: *No entry if associated function = analog valve.*
Critical: Low value must be less than high value (unless density input and units are API)

Fatal: Entry is out of specified range.

Help: Enter value @20mA/5V.

Configuration 910, 920, 930, 940, 950, 960 – RTD Offset

This parameter is used to correct the reading of the RTD input by a fixed amount. The range of this program code is –9.9 to 9.9.

Note: *This offset is applied to inputs configured as an RTD only. No-entry if corresponding Analog Type is not RTD.*
Help: Offset zeroes out RTD probe error.

System 100 – General Purpose Directory

- Date and Time
- Units and Identifiers
- Timeouts
- Display and Control
- Security

Date and Time

101 – Date

102 – Time

103 – Unit MAC Address

Units and Identifiers

111 – Flow Rate Time

112 – Flow Rate Descriptor

Timeouts

121 – Dynamic Display Timeout

122 – Auto Reset Timer

123 – Display Zoom Timer

Display and Control

131 – Decimal/Comma Select

132 – Start Key Disable

133 – Default/Translated Literals

134 – Transaction ID

135 – Transaction ID Message

136 – Number of Batches/Transaction

137 – Powerfail Alarm

138 – Stop Key Action

139 – System Status Display

140 – Stop Key Disable

141 – Permissive 1 Sense

142 – System Permissive 1 Message

143 – Permissive 1 Restart

144 – Permissive 2 Sense

145 – Permissive 2 Message

146 – Permissive 2 Restart

147 – Permissive 3 Sense

148 – Permissive 3 Message

149 – Permissive 3 Restart

Security

151 – Level 1 Access Code

152 – Level 2 Access Code

153 – Level 3 Access Code

154 – Level 4 Access Code

155 – Level 5 Access Code

156 – Security Input 1 Access Level

157 – Security Input 2 Access Level

158 – Security Level for Program Diagnostics

Date and Time

System 101 – Date

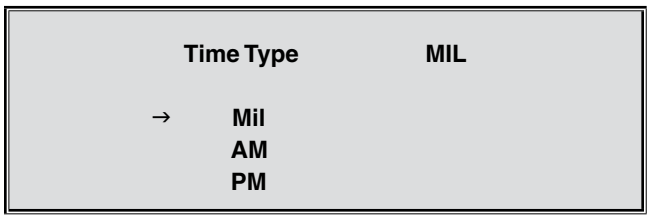
This entry allows the operator to set the date on the AccuLoad. To change the date, enter the correct month next to the cursor and press the ENTER key. Move to the next selection, enter the correct day next to the cursor, and press the ENTER key. Move to the next selection, enter the correct year next to the cursor, and press the ENTER key. When the month, day, and year have been entered, move to "Accept New Date" and press ENTER. The new date has been accepted.

- Month
- Day
- Year
- Accept New Date

Fatal: Invalid date

System 102 – Time

A correction or change to the time can be made through this entry. Set the time by moving the cursor to the hour, pressing the ENTER key, entering the correct hour, and pressing ENTER again. This step is repeated for the minutes setting. Once the hour and minute have been set, the time type is selected. Pressing ENTER will display the following:



Select the proper designation by moving the arrow and press the ENTER key. To accept the new time, move the cursor to Accept New Time and press "ENTER." The time has been accepted and the screen reverts to the Date and Time display. Selections are as follows:

- Hours
- Min
- Time Type
- Accept New Time

Fatal: Entry out of range

Fatal: Invalid time

System 103 – Unit MAC Address

This program code returns the MAC Address of the Ethernet interface on the AccuLoad III.net. It is read-only program code.

System 111 – Flow Rate Time

This parameter is used to define the time units used to compute the flow rate. Selections are as follows:

- (0) Per minute
- (1) Per hour

Help: Enter the time base for flow rate calculations and display.

System 112 – Flow Rate Descriptor

This parameter allows a three-character alphanumeric message to serve as the flow rate unit identifier (for example, GPM, LPM, BPH). The available characters are as follows:

- ABCDEFGHIJKLMNOPQRSUVWXYZ#*
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _ END

Help: Enter a three-character entry to be displayed while flow rate is displayed.

System 121 – Dynamic Display Timeout

This program code defines the amount of time, in seconds, that dynamic displays will remain displayed before the AccuLoad III returns to the run or ready screen. A zero entry for this program code will cause the dynamic display to remain indefinitely, until the operator presses CLEAR. The range of this parameter is 0 to 99 seconds.

Help: Enter time in seconds before dynamic display timeout. Zero allows displays to remain indefinitely.

System 122 – Auto Reset Timer

This program code defines the amount of time, in minutes, before AccuLoad III will return to the ready screen in the absence of key input by the operator. The auto reset feature will remove the AccuLoad III from the program mode or end transactions in progress when this parameter is set to a non-zero value. The clock starts after each keystroke (unless flowing). If another keystroke is not made in the time set in this code, the unit will revert to the Ready display. If the driver's load has been completed and he hasn't ended the transaction, the AccuLoad will return to the Ready mode after the time has expired. The range of this parameter is 0 to 99 minutes. An entry of 0 disables this feature.

Help: Enter time in minutes with no operator activity before AccuLoad resets to Ready Mode. Zero disables this feature.

System 123 – Display Zoom Timer

This program code defines the time in seconds that will transpire before the AccuLoad III restores any viewports that may have been hidden by a "zoom" operation (F2). An entry of zero prevents the F2 key from functioning as a "zoom" key. An entry of 99 disables the timeout function, effectively allowing a zoomed viewport to remain zoomed indefinitely. The range for this entry is 0 to 99 seconds.

Help: Enter time in seconds before full screen reverts to split screen. Zero disables zoom. 99 disables reset.

System 131 – Decimal/Comma Select

This parameter specifies whether a decimal or a comma is to be used to separate the whole and fractional parts of numeric data. The comma is typically used in European markets. The selected delimiter is used in the program mode and on run screens and dynamic displays local to AccuLoad III, in host communications, and on delivery reports. Selections are as follows:

- (0) Decimal
- (1) Comma

Help: Select delimiter between whole and fractional numbers.

System 132 – Start Key Disable

This one-digit program code allows the enabling/disabling of the local "START" key and remote start input. When the local "START" key is disabled, it will not function at the AccuLoad III. The only method for starting a batch will be through the communication remote start command. Selections are as follows:

- (0) No (Enabled)
- (1) Yes (Disabled)

Note: *If the local "START" key is disabled at the AccuLoad III and communications is in polling only, the AccuLoad III will not be able to start a transaction until the parameters are properly set.*

Note: *The "START" Key Enabled selection will not prohibit starting the batch via communications.*

Help: If "START" key is disabled, and no communications control is defined, transactions cannot be started.

System 133 – Default/Translated Literals

This parameter allows the user to initialize all the displays used in the AccuLoad III to either the default (factory literals) or the translated literals. Translated literals are only available if the translation has been completed in the AccuMate and downloaded to the AccuLoad. Selections are as follows:

- (0) Default literals
- (1) Translated literals

Note: *If a translation has been entered on AccuMate and downloaded to the AccuLoad, the new translation will not appear on the display until "translated literals" is selected here.*

Help: Select factory-programmed default literals or literals translated via AccuMate.

System 134 – Transaction ID

This nine-digit security number provides an additional security level for operation of the AccuLoad III. If this code is programmed with any number other than 000000000, the driver or operator is required to enter this security ID before a transaction can be started. A 0 entry disables this feature.

Help: Enter a nine-digit translation ID. Zero disables this feature.

System 135 – Transaction ID Message

This code allows a 28-character alphanumeric entry to prompt during the preset operations to enter a security ID. This message should not be programmed as blanks. If programmed as blanks, when the operator presses "SET" the display will go blank. The data entry allows the following characters to be selected as part of the prompt:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - \ “ / + = END

Note: *No-entry if Transaction ID is zero*

Help: Enter message to prompt for translation ID at start of transaction.

System 136 – Number of Batches/Transaction

This program code provides the operator with the capability of setting the loading position up for the number of batches allowed per transaction. The range of this entry is from 1 to 10.

Fatal: Entry out of specified range.

Help: Enter the number of batches per transaction.

Warning: *Changing this value deletes all stored transaction data. Re-entering the same number will not clear local storage because the size of the transaction hasn't changed. Do not use System Code 136 to purge transactions; the Erase Transaction Log has been provided for this purpose. For more information on Erase Transaction Log, refer to Section V – Diagnostics in this manual.*

System 137 – Powerfail Alarm

This program code provides the operator with the capability of either enabling or disabling the powerfail alarm. The powerfail alarm is a diagnostic alarm that is not clearable through communications. The factory default for this parameter is "enable." Selections are as follows:

- (0) Enable
- (1) Disable

Help: Select if an alarm indicating loss of power is desired.

System 138 – Stop Key Action

This program code allows the operator to determine whether pressing the stop key will shut down all currently loading arms, or prompt to stop one or more specific arms only. Selections are as follows:

- (0) Stop all arms immediately
- (1) Prompt for arm(s) to stop

Help: Select if STOP key stops all arms immediately or prompts for arms to stop.

No entry if only one arm configured.

System 139 – System Status Display

This program code allows the operator to determine the mode of the display interface. The factory default

is "no." Selecting "yes" dedicates the lower screen to system status display. The upper screen is always a full-screen view of the arm currently in focus. Selections are as follows:

- (0) No
- (1) Yes

Help: Select whether lower display is dedicated to the System Status view.

Note: *No entry if less than three or more than four arms are configured. (If less than three arms are configured, the System Status display will never be used; if more than four arms are configured, it will always be used.)*

System 140 – Stop Key Disable

This program code allows the STOP key on the AccuLoad III keypad to be disabled for wild stream blending operations. It is only available when the AccuLoad has at least one arm configured with a wild stream meter. (i.e. the AccuLoad is not in control of one product stream).

Arms that are not configured with any wild stream meter will always stop when the STOP key is depressed, regardless of this setting.

Warning: Disabling the STOP key for wild stream arms prevents an operator from using the STOP key to shut down flow on product streams that ARE being controlled by the AccuLoad.

IMPORTANT: The AccuLoad STOP key should never be used as an Emergency stop key.

Note: *Allowing the STOP key to function on a wild stream blending arm could result in an out-of-spec blend if STOP is pressed during the blending operation.*

System 141, 144, 147 – Permissive Sense

These parameters define the conditions under which a defined permissive is expected to be present in order for loading operations to be allowed. Selections are as follows:

- (0) N/A
- (1) Transaction Start – Permissive only checked immediately after authorization
- (2) Continuous – Permissive must be met continuously during the batch
- (3) Start Key Pressed – Permissive must be met whenever flow is started
- (4) Batch Start – Permissive must be met to start a batch

Note: *No entry if digital input not programmed as permissive.*
Help: Select permissive sense for loading

System 142, 145, 148 – Permissive Messages

These 28-character alphanumeric messages will be displayed if a permissive sense entry, corresponding with the message, is defined but not present when expected. The data entry allows the following characters to be selected:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _ END

Note: *No entry if digital input not programmed as permissive.*
Help: Enter message to be displayed in absence of permissive.

System 143, 146, 149 – Permissive Restart

These parameters will determine how a restart is initiated after a permissive is lost and then restored. Selections are as follows:

- (0) Manual – Start key must be pressed to restore flow
- (1) Automatic – Flow will be started automatically as soon as the permissive is restored

Note: *No entry if digital input not programmed as permissive*
Help: Select whether batch will restart automatically or start key will be required after permissive is restored

System 151, 152, 153, 154, 155 – Access Code

These four-digit numbers permit entry into the AccuLoad III's program or Weights and Measures program codes. The access codes must be entered through the AccuLoad III keypad after the Program Mode security contact has been closed (if a security contact has been programmed and wired to a switch). If this contact has not been closed, the AccuLoad III will not allow entry into the Program Mode. Once the security is set up for the parameters in the unit the operator must enter the program mode at the level assigned to the parameter(s) that are to be changed. The range of these entries is from 0 to 9999.

Critical: Duplicate access codes are not permitted

Critical: Must be at highest level of security

Help: Enter Access Code for this security level.

Note: *These access codes must be programmed in order, beginning with security level one. Intermediate levels cannot be skipped.*
Note: *The operator must enter Program Mode at the highest programmed security level to obtain access to these access codes.*

System 156, 157 – Security Input Access Level

These one-digit numeric entries are used to assign the relay to the level of access code. For instance, if a parameter is assigned level 1 access code and the security input is assigned level 2 that parameter can be changed without the switch being closed. If the parameter is assigned level 2 access code then both the access code and the switch closed would be needed to change the parameter. The range of these entries is from 0 to 5.

Critical: Must be at highest level of security

Critical: Access level not valid

Critical: Access level assigned to other security input

Note: *No-entry if digital input not programmed as security input*
Help: Select access level (1 through 5) to be associated with this security input.

System 158 – Security Level for Program Diagnostics

This parameter associates a security level with the Program Mode diagnostics. To access these diagnostics, Program Mode must have been accessed with at least the level indicated in this parameter. Selections are as follows:

- (1) Level 1 access
- (2) Level 2 access
- (3) Level 3 access
- (4) Level 4 access
- (5) Level 5 access

Help: Enter security level (1-5) required to enter Diagnostics Directory

Note: *This parameter is only available when using Revision 10 or above firmware. Prior to Revision 10, the highest level of security set up was required to access diagnostics.*

System 200 – Flow Control Directory

201 – Solenoid Alarm Count

202 – Leakage Alarm Limit

203 – Reverse Flow Limit

204 – Solenoid Count Clear

System 201 – Solenoid Alarm Count

The AccuLoad III.net firmware 11.08 and higher provides counters to indicate the number of times the upstream and downstream solenoids have been energized. This parameter defines a solenoid actuation count which when exceeded will cause a "SC: Solenoid Count" alarm to occur (alarms 666). This alarm will only be set when the load arm is idle. Separate counters are available for both the upstream and downstream solenoid of each meter. The counter will be incremented each time the solenoid is energized. The SC alarm will only be set when the load arm is idle. Clearing the alarm will not accur again until the count has been cleared and the threshold exceeded again. The range of this parameter is 0 to 999999999. The factory default setting is 0 (which disables this feature.)

The registers are viewable from the AccuLoad's Diagnostic Menu (via main menu and program mode).

The registers may only be cleared from the program mode diagnostics menu which is under security level access control. The upstream and downstream counters may be individually cleared or modified.

Note: *The counters will be cleared by a factory initialization or firmware upgrade.*

The registers may be read via Smith Meter Protocol and Modbus.

System 202 – Leakage Alarm Limit

This parameter available in firmware 11.08 and higher indicates the maximum leakage limit in between transactions. Leakage amounts greater than this parameter will activate a leakage alarm. The range of this parameter is 0 to 999.9. The factory default setting is 0 (which disables this feature).

System 203 – Reverse Flow Limit

This parameter available in firmware 11.08 indicates the maximum reverse flow limit. When reverse flow occurs during a batch and has exceeded this programmed limit, then the Reverse Flow Alarm is activated. The range of this parameter is 0 to 999.9. The factory default setting is 0 (which disables this feature).

System 204 – Solenoid Count Clear

This program code determines whether the solenoid maintenance counts maintained by the AccuLoad are reset when the Solenoid Counts alarm is cleared. Options are:

- 0 - Manual
- 1 - Automatic

If Manual (the default) is selected, the counts are not cleared automatically when the alarm is cleared. If Automatic is selected, then when the Solenoid Counts alarm is cleared, the counts are reset to zero immediately.

If Manual is selected, the counts can be reset manually using the Program Mode diagnostic or alternately via communications using the 'SC' command.

System 300 – Volume Accuracy Directory

Pulse Inputs

301 – Volume Units

302 – Mass Units

303 – Volume Descriptor

304 – Mass Descriptor

305 – Pulse In Type

Transaction Control

311 – Maximum Preset

312 – Minimum Preset

313 – Auto Preset

314 – Auto Preset Increment

315 – Transaction Termination

316 – Recipes per Transaction

317 – Transaction Start

Prove Control

321 – Auto Prove Select

322 – Proving Counters

323 – PIB III Pulse Output (Prover Out) Source

Display Conventions

331 – Run Display

332 – Preset Amount Type

333 – Delivery Amount Type

334 – Display Resolution

335 – Delivered Amount Display

336 – Update Leakage

System 301 – Volume Units

This parameter selects the volume units used to measure product delivery. The factory default is "Gallons." Selections are as follows:

- (0) Gallons
- (1) Barrels
- (2) Dekaliters
- (3) Liters
- (4) Cubic Meters

Help: Select volume units. These are used to select proper conversion factors for calculations

System 302 – Mass Units

This parameter defines the mass units used for product measurement. The factory default is "Pounds." Selections are as follows:

- (0) Pounds
- (1) Kilograms
- (2) US Tons
- (3) Metric Tons
- (4) Long Tons

Help: Select mass units. These are used to select proper conversion factors for calculations

System 303 – Volume Descriptor

This code allows a four-character entry message to serve as the display unit identifier of the volumetric measurement units that will be displayed on the display and the reports. The data entry allows the following characters to be selected as part of the display unit prompt:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = END

Help: Enter an alphanumeric volume descriptor to be used on displays and reports

System 304 – Mass Descriptor

This code allows a four-character entry message to serve as the display unit identifier for the mass of the product to be used on displays and reports. The data entry allows the following characters to be selected as part of the display unit prompt:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = END

Help: Enter an alphanumeric mass descriptor to be used on displays and reports.

System 305 – Pulse In Type

This parameter allows the selection of mass pulse input rather than the default of pulses representing volume from the meter. The AccuLoad then totalizes directly in mass. A density input is required to back-calculate volume when using a mass meter. Selections are as follows:

- (0) Volume
- (1) Mass

Note: *This parameter is only available when using Revision 9 or above firmware.*

Help: Specify whether meter pulses input to AccuLoad represent volume or mass

System 311 – Maximum Preset

This six-digit entry establishes the largest volume that can be preset. An error message appears: "Preset batch volume exceeds the maximum permitted. "PRESS 'CLEAR' TO CONTINUE" will be displayed on any attempt to start a batch with more than the maximum preset value. The range of this entry is 0 to 999999 units. The factory default is "0".

Note: *"0" disables the maximum preset volume.*

Help: Enter maximum preset volume allowed for any batch.

System 312 – Minimum Preset

This six-digit entry will allow for the setting of the minimum preset amount. An error message, "Fatal: Preset batch volume is below the minimum required" is displayed. "PRESS 'CLEAR' TO CONTINUE" will be displayed on any attempt to start a batch with less than the minimum preset value. The range of this entry is 0 to 999999 units. The factory default is "0".

Note: *"0" disables the minimum preset volume*

Help: Enter minimum preset volume allowed for any batch

System 313 – Auto Preset

This six-digit program code allows the operator to select the Auto Preset mode of operation for the AccuLoad III. An entry of 0 disables this function and the preset amount used in the Run Mode will have to be either manually entered by the driver or entered through communications. An entry other than 0 (i.e., 1000) will result in the preset amount programmed in this code being used in the Run Mode. The AccuLoad III will preset automatically at 1000 each time the "SET" button is pressed. The factory default is "0".

Note: *"0" disables the Auto Preset.*

Help: Select auto preset: a starting point for batch preset amounts

System 314 – Auto Preset Increment

This five-digit program code allows the operator to program a volume to be used as an incremental increase for the Auto Preset. The range of this entry is from 0 to 99999. The factory default is "0".

Example: Auto Preset is programmed for 1,000 units and the Auto Preset increment is programmed for 100 units. The driver/operator approaches the AccuLoad III and goes through the necessary steps to get to the Preset Display.

Where:

Premium = Programmed Product Name

P	=	Preset
1000	=	Volume programmed for Auto Preset
Gal	=	Units of measurement

Driver presses "SET". Volume will increment 100 units to 1100.

Driver presses "SET" again. The volume will increment another 100 units to 1200.

Driver continues pressing "SET" until the volume of product required is reached (i.e., 2000 gal).

Help: Enter amount to increment the auto preset volume with each press of the "SET" key.

System 315 – Transaction Termination

This program code defines the primary method used to terminate a transaction. Communications can always be used to terminate a transaction if the AccuLoad III is programmed for Poll & Authorize or Remote Control operations. The factory default is "PRINT key." Selections are as follows:

- (0) Print key - For transactions that may be remotely authorized and terminated by the "PRINT" key: The ticket printer tray switch is ignored. The "PRINT" key is used to end the transaction. (The transaction may also be terminated via communications.)
- **(1) Communications control only** – For transactions that will be authorized and terminated remotely (i.e., through communications): The "PRINT" key is disabled and the ticket printer tray switch is ignored.
- **(2) Transaction reset input** – For transactions that will be authorized and terminated by a master reset input, the "PRINT" key is disabled. The ticket printer tray input is used to authorize and end the transaction.
- **(3) Printer Tray Switch Input** – For transactions that will be authorized and terminated by a switch input from a load printer: The "PRINT" key is disabled. The switch input, when active, authorizes the AccuLoad to load. When the input de-activates, the transaction is ended. The AccuLoad will not allow loading to continue or restart until the input is re-activated (a ticket is put in the printer).
- **(4) Card Reader** – For transactions that will be authorized and terminated by the insertion and removal of the card from the card reader. The transaction is ended when the card is pulled.

Critical: No comm port selected for communications control.

Critical: Transaction reset input required for each arm configured.

Critical: Printer tray switch input required for each arm configured.

Critical: Printer tray switch input is configured [if other method is selected].

Critical: Option not allowed if bays are configured. [Printer tray switch input]

Help: Select how a transaction will be terminated.

System 316 – Recipes per Transaction

This program code provides the operator with the capability of setting the loading position up to allow only single recipe transactions or to allow multiple recipes per transaction. If programmed for a single recipe, the AccuLoad III will only prompt the driver for a recipe at the beginning of the transaction. The driver can load multiple batches of the recipe but only that recipe for the transaction. If programmed for multiple recipes, the driver will be prompted for the recipe at the beginning of each batch. The factory default is "Multiple." Selections are as follows:

- (0) Single Recipe per Transaction
- (1) Multiple Recipes per Transaction

Help: Select single or multiple recipes per transaction

System 317 – Transaction Start

This parameter selects whether a transaction requires operator intervention to begin and end the transaction. In Manual Mode, a transaction is started by the operator pressing the “SET” key and ended when the operator presses the “PRINT” key. Using the Auto mode for this parameter, the Auto Preset and Auto Reset timer are used to continuously run batches that are initiated by a Remote Start input and can be stopped by a Remote Stop input without operator intervention. If a Remote Stop input is not used the batch would run until the Auto Preset value was reached. The Auto mode is intended to be used in an unattended tank filling operation.

- (0) Manual Operation
- (1) Automatic Operation

Help: Select automatic starting and ending of transactions on a continuous mode of operation.

System 321 – Auto Prove Select

This parameter is used to enable or disable the Automated Proving Mode. The default for this program code will be disabled. Select one of the three security options to enable the automated prove and associated security. Once selected and the security activated, the beginning of the next transaction will launch the auto prove. Once the prove is completed and the meter factor calculated, the operator has the choice of downloading the calculated meter factor into the software or ignoring it. The

factory default is "Disabled." Selections are as follows:

- (0) Disabled
- (1) Security input not required
- (2) Security input 1 required
- (3) Security input 2 required

Critical: Security input not configured

Note: *Auto proving is described in Section II – Operations.*

Help: Select security level required for auto proving or disable auto proving.

System 322 – Proving Counters

This parameter defines whether AccuLoad III is operating in a proving mode. The factory default is "Not Proving." Selections are as follows:

- **(0) Not proving** – This is the normal operating mode where a preset volume is set and the flow of product is started and stopped.
- **(1) Proving** – In this mode the AccuLoad III operates as in the Run Mode, except the preset and delivery counters both count up and go to tenths resolution. Volume preset and delivery units are in the volume units selected in the display units select code.

System 323 – High Speed Prover Pulse Output

This parameter defines which pulse input is echoed to the high speed prover pulse output terminals. The feature is designed to ease proving operations by redirecting the selected meter to a pair of terminals which can be field-wired for proving personnel access. Although with both the EAAI and BSE boards present there could be two PIB III boards installed, only one output at a time will be activated. This will allow the outputs to be wired in parallel to provide a common connection point external to the AccuLoad for proving personnel access, independent of the meter currently being proved. Select 0 in this parameter to utilize this functionality. Alternately, any individual pulse input can be configured to be echoed to the high speed prover output. Selections are as follows:

- (0) Echo meter selected via Auto Proving
- (1) Echo pulse input #1 - EAAI
- (2) Echo pulse input #2 - EAAI
- (3) Echo pulse input #3 - EAAI
- (4) Echo pulse input #4 - EAAI
- (5) Echo pulse input #5 - EAAI
- (6) Echo pulse input #6 - EAAI
- (7) Echo pulse input #7 - BSE
- (8) Echo pulse input #8 - BSE
- (9) Echo pulse input #9 - BSE
- (10) Echo pulse input #10 - BSE
- (11) Echo pulse input #11 - BSE
- (12) Echo pulse input #12 - BSE

Help: Select the pulse input/meter connected to the prover pulse output

Note: *This parameter is only available when using Revision 10 or above firmware.*

System 331 – Run Display

This parameter defines which arrangement the AccuLoad III will use for the delivery display. The default delivery display contains a transaction counter and a preset downcounter. A downcounter starts at the preset volume and counts down to zero, indicating the remaining volume throughout the batch. The US W&M display uses a smaller font for this down-counter, and prefixes it with a "Remain" prompt. The "Blank Downcounter" option prevents the downcounter from appearing. Selections are as follows:

- (0) Default Display
- (1) Blank Downcounter
- (2) US Weights and Measures Display

Note: *This option will have no effect while the AccuLoad III is in the proving mode.*

Help: Select the desired information to be shown on the delivery screen.

System 332 – Preset Amount Type

This program code selects the registration type used to enter the preset value. This registration type is also used for the downcounter display. The factory default is "IV." Selections are as follows:

- (0) Indicated volume (IV)
- (1) Gross volume (GV)
- (2) GST volume (GST)
- (3) GSV volume (GSV)
- (4) Mass

Critical: Selected units not available

Help: Preset registration type

System 333 – Delivery Amount Type

This code establishes how the delivery registration display (up-counter) will appear during operation. Five possible selections are available that are dependent on the needs of the operation. The factory default is "IV." Selections are as follows:

- (0) Indicated volume (IV)
- (1) Gross volume (GV)
- (2) GST volume (GST)
- (3) GSV volume (GSV)
- (4) Mass

Critical: Selected units not available

Help: Delivery display registration type

System 334 – Display Resolution

This program codes selects the resolution that will be used by AccuLoad III for the delivery upcounter and downcounter during normal operations. The factory default is "Whole." Selections are as follows:

- (0) Whole units

- (1) Tenths
- (2) Hundredths

Help: Select display resolution in whole, tenths, or hundredths

System 335 – Delivered Amount/Upcounter

This parameter selects whether the upcounter represents the batch delivered amount or the transaction delivered amount on the delivery screen.

- (0) Transaction
- (1) Batch

Help: Display transaction or batch delivered amount for up counter on run display.

System 336 – Update Leakage

This parameter is available with firmware revision 11.08 and higher.

Leakage that occurs between transactions may be added to the non-resettable totals either dynamically or at the start of a transaction. The factory default is "Trans Start" which indicates that the non-resettable totals will be updated with leakage at the start of the transaction. To have the non-resettable totals updated immediately after the leakage occurs, choose "Dynamic". To insure the true end of transaction non-resettable totals are retrieved (i.e. not including leakage which may have occurred after the transaction was end), review the VT command.

- (0) Trans Start
- (1) Dynamic

System 400 – Temperature/Density Directory

Temperature

401 – Temperature Units

402 – Reference Temperature

Density

411 – Density Units

412 – Density Prompt

System 401 – Temperature Units

This program code selects the temperature scale used by AccuLoad III. The factory default is "Not Used." Selections are as follows:

- (0) Not Used
- (1) Fahrenheit
- (2) Celsius

Note: *A zero entry, signifying No Temperature Selected, will cause all temperature-related program codes to be removed from the menus in Program Mode.*

Critical: API table conflicts with selected units

Help: Select temperature units

System 402 – Reference Temperature

This parameter defines the reference temperature from which temperature corrections are made. Typical entry units are 60°F, and 15°C. The range of this entry is 0.0 – 999.9.

Note: *Temperature units are defined in a separate parameter.*

The actual uncompensated volume throughput is temperature compensated to its equivalent volume at this four-digit reference temperature in tenth degrees. The most common reference temperatures are 60.0 Deg. F and 15.0 Deg. C. The range of this entry is 0.0 to 999.9.

Note: *No-entry if Temperature Units = Not Used*

Help: Used as base for correction of liquid volume

System 411 – Density Units

This selection allows the operator to choose which density scale will be used if there is a densitometer installed. It is used to convert volume to mass. Selections are as follows:

- (0) Not Used
- (1) API
- (2) Lb/Ft3 (Pounds/Cubic Feet)
- (3) Kg/M3 (Kilograms/Cubic Meter)

Note: *When using temperature compensation, a value (API, Lb/Ft3, or Kg/M3) must be entered in this parameter.*

Help: Select density units. These are used for a live density input and for mass calculation

System 412 – Density Prompting

This parameter defines whether the operator will be prompted for a density entry prior to starting a batch. The available selections are:

- (0) No
- (1) Always
- (2) In Standby

Help: Select if it is desired to be prompted for the reference density during presetting sequence.

System 500 – Pressure Directory

501 – Pressure Units

System 501 – Pressure Units

This parameter defines the pressure units used by AccuLoad III. The factory default is "Not Used." Selections are as follows:

- (0) Not Used
- (1) PSI
- (2) Bar
- (3) Kg/cm2 (Kilograms/square centimeter)
- (4) Kpa (kilopascals)

Note: *If "not used" is selected, signifying no pressure transducer installed, any associated parameters will be removed from the menus in Program Mode.*

Help: Select units of pressure

System 600 – Alarm Configuration Directory

601 – Run/Ready Clearable Alarms

Default Alarm Configuration

602 – Additive Communications Alarm
603 – Back Pressure Alarm
604 – Communications Alarm
605 – Density Transducer Alarm
606 – Additive Feedback Alarm
607 – High Density Alarm
608 – High Flow Alarm
609 – High Pressure Alarm
610 – High Temperature Alarm
611 – Low Additive Alarm
612 – Low Density Alarm
613 – Low Flow Alarm
614 – Low Pressure Alarm
615 – Low Temperature Alarm
616 – Excess Additive Pulses Alarm
617 – No Additive Pulses Alarm
618 – Overrun Alarm
619 – Transmitter Integrity Alarm
620 – Pressure Transducer Alarm
621 – Pulse Security Alarm
622 – Additive Frequency Alarm
623 – Shared Printer Alarm
624 – Temperature Transducer Alarm
625 – Valve Fault Alarm
626 – Additive Unauthorize Failed Alarm
627 – Zero Flow Alarm
628 – Additive Injector Error
629 – Over-Rev Metered Injector
630 – Additive Clean Line
631 – Injector Command Rejected
632 – Ticket Alarm
633 – CIVACON Monitor Communications Alarm
634 – Clean Line Alarm
635 – Block Valve Alarm
636 – Blend High Alarm
637 – Blend Low Alarm
638 – Product Overrun
639 – Product Zero Flow
640 – Unauthorized Flow
641 – PTB Printer Failure Alarm
642 – Turbine Meter Alarm
643 – Auto Detect Failed
644 – Add-Pak Power Fail
645 – Add-Pak Diagnostic
646 – AICB Auto Detect
647 – AICB Communications Failed
648 – MMI Comm Failed Alarm
649 – MMI Excess Active Arms Alarm
650 – Storage Full Alarm
651 – DE Head Alarm
652 – Mass Meter Comm Fail
653 – Mass Meter Overdrive
654 – Mass Meter Tube
655 – Additive High Temperature
656 – Additive Low Temperature
657 – Additive Temperature Probe
658 – Card Removed Alarm
659 – Additive Pulse Security
660 – Additive Xmit Integrity
661 – Product Stop Alarm
662 – Additive Comm Totals
663 – ComFlash Memory Alarm
664 – Network Printer Alarm
665 – F.A. Sening COP Alarm
666 – Solenoid Alarm Counts
667 – Promass Meter Alarm
668 – Predict Overrun Alarm
669 – Non Resettable Leakage Alarm
670 – Reverse Flow Alarm

User Alarm Configuration

671 – User Alarm 1
672 – User Alarm 2
673 – User Alarm 3
674 – User Alarm 4
675 – User Alarm 5
676 – User Alarm 6
677 – User Alarm 7
678 – User Alarm 8
679 – User Alarm 9
680 – User Alarm 10
681 – Report Storage Full Alarm

User Alarm Messages

686 – User Alarm 1 Message
687 – User Alarm 2 Message
688 – User Alarm 3 Message
689 – User Alarm 4 Message
690 – User Alarm 5 Message
691 – User Alarm 6 Message
692 – User Alarm 7 Message
693 – User Alarm 8 Message
694 – User Alarm 9 Message
695 – User Alarm 10 Message

System 601 – Run/Ready Alarm Clearing

This parameter defines the number of alarms that can be cleared in the Run and Ready modes without the requirement of entering a passcode. Alarms must be configured to be clearable in the Run/Ready mode. When this number of alarms has been cleared, subsequent alarms require a passcode entry to clear, even if they are programmed for Run/Ready mode clearing. The range of this entry is 0 to 20.

Alarm Responses

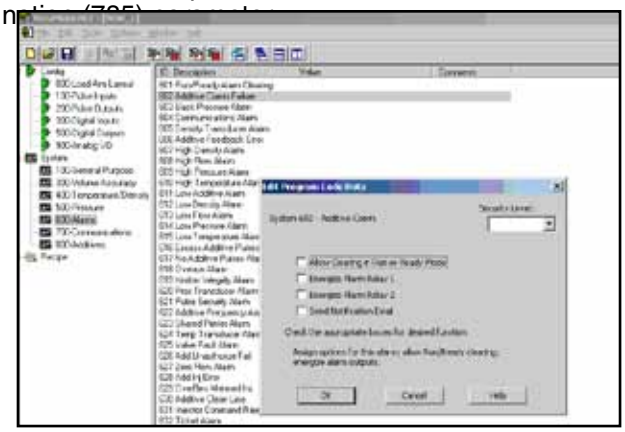
Arm Directory – 600 Directory Alarms (602 – 680)

The existing Alarm Configuration parameter (System 602 – 680) will be modified to allow an additional option to enable/disable notification by email. This option will send an email to a specified email account if an alarm shall occur allowing for notification the instant the alarm occurs.

Example: System Alarm Configuration Directory
Program Code 602 – Additive Comm Fail

X – Allow run/ready clearing
X – Energize alarm relay #1
X – Energize alarm relay #2
X – Send Notification Email
X – Allow Flow to Continue

If this option is checked and a valid server and user is configured, an email will be issued by the AccuLoad III to the address specified in the Email Notification Destination (705) parameter.



The combination of these program codes and new options will provide the information required to transmit email notifications on specified events, and check for replies to alarm events that signal the alarm should be cleared remotely. Replies will only be accepted from the programmed Email Notification Destination address. In order to clear the alarm remotely, "Reply" to the notification. The reply message sent must contain the alarm message in the body of the response message (nothing else needs to be included). The AccuLoad will recognize the message sent to it by the alarm message previously send and will clear the appropriate alarm (if it is clearable).

System 602 to 664 and 671 to 680 – Alarm Configuration

These parameters allow the actions of each alarm to be configured. Multiple options selected from the following list may be configured for each alarm. Selections are as follows:

- (1) Allow run/ready clearing
- (2) Energize alarm output 1
- (4) Energize alarm output 2
- (8) Send Notification Email
- (16) Allow Flow to Continue

Note: *Through Communications, add to get combination of desired options (i.e., 7 would set up the first three options.)*
Note: *Allow Flow to Continue is available with Unlimited Preset arms only.*

Help: Assign options for this alarm: Allow Run/Ready clearing; energize alarm outputs.

For more information about alarm messages and their equivalent in Blend-Pak injectors, AccuTrollers, Mini-Pak injectors, and metered injectors, refer to Appendix II – Alarms.

602 AC: Additive Communications Failure Alarm

Indicates a failure on the master/slave communications line between the AccuLoad III and the Additive Injector Subsystem.

603 BP: Back Pressure Alarm

Indicates insufficient pressure in the system to maintain the minimum back pressure flow rate entry set.

604 CM: Communications Alarm

Indicates a failure on one of the communication channels.

605 DR: Density Transducer Alarm

Indicates a failure or an out-of-range condition.

606 FA: Additive Feedback Error Alarm

Indicates that the additive feedback has exceeded the programmed number of errors.

607 HD: High Density Alarm

Indicates the density transducer is out of range of the high alarm setting.

608 HF: High Flow Alarm

Indicates that the flow rate has exceeded the flow limit set in the excess high flow program code for more than 4 seconds.

609 HP: High Pressure Alarm

Indicates that the pressure transducer is out of range of the high pressure setting.

610 HT: High Temperature Alarm

Indicates that the temperature probe or transducer is out of range of the high temperature setting.

611 KA: Low Additive Alarm

Indicates that not enough additive was injected during one cycle or an average of several cycles.

612 LD: Low Density Alarm

Indicates that the density transducer is out of range of the low alarm setting.

613 LF: Low Flow Alarm

Indicates that the flow rate was at or below the minimum flow rate established by the minimum flow limit program

code for longer than eight seconds.

614 LP: Low Pressure Alarm

Indicates that the pressure transducer is out of range of the low alarm setting.

615 LT: Low Temperature Alarm

Indicates that the temperature probe or transducer is out of range of the low alarm setting.

616 MA: Excess Additive Pulses Alarm

Indicates that too many additive flow meter pulses were detected.

617 NA: No Additive Pulses Alarm

Indicates that the additive flow meter's pulses were not detected

618 OA: Overrun Alarm

Indicates that the volume delivered exceeded the preset amount by at least the number of units programmed in the overrun alarm code.

619 XA: Transmitter Integrity Alarm

Indicates a collision on the incoming pulse stream.

620 PR: Pressure Transducer Alarm

Indicates a pressure transducer failure or an out-of-range (less than 2 mA/0.5 Vdc or greater than 23 mA/5.5 Vdc) condition.

621 PS: Pulse Security Alarm

Indicates an out of sequence error in the A-B pulse stream.

If this alarm occurs, the transaction must be terminated using one of the methods in System 315. Pressing CLEAR as a run clearable alarm will open the valve, but as soon as pulses start, the PS alarm will reoccur and again shut down the valve.

622 RA: Additive Frequency Alarm

The additive volume is too high for the rate selected; a second dose of additive is being requested before delivery of the first dose completes.

623 SP: Shared Printer Alarm

Indicates an output was attempted to the shared printer, but was unsuccessful because the shared printer remained busy longer than the programmed shared printer out alarm timer.

624 TP: Temperature Transducer Alarm

Indicates a temperature transducer failure or an out-of-range condition (less than 2 mA/0.5 vdc/52.11 Ω or greater than 23 mA/5.5 vdc/220.88 Ω).

625 VF: Valve Fault Alarm

For blending arms, this indicates that the valve did not close within the time allowed by the valve fault timeout program code after receiving the signal to close. For straight product arms, this alarm is activated when the released flag is cleared which cannot occur until flow is stopped. Once flow is stopped and unauthorized flow is detected longer than the valve fault timeout, the VF alarm will activate.

626 UA: Additive Unauthorize Failed Alarm

The unauthorize command failed at the end of the batch for an additive. Authorization may have to be removed manually (by power cycling the additive system) to prevent unwanted additive in subsequent batches/ transactions.

627 ZF: Zero Flow Alarm

Indicates that the Zero Flow Timer has expired and the AccuLoad has not detected any flow in the system.

628 GA: Additive Injector Error Alarm

Indicates that there is an additive injector error.

629 OR: OverSpeed Metered Injector Alarm

Indicates that an injection is attempted before the previous injection is complete.

630 CA: Additive Clean Line Alarm

Indicates that an insufficient amount of additive-free product was delivered at the end of the load. (This is usually due to ending the batch prematurely.)

631 CR: Injector Command Rejected Alarm

Indicates that the command from the AccuLoad to the injector was rejected.

632 TK: Ticket Alarm

Indicates a removal of the ticket from the Load Printer was tried during the batch. When the alarm is received, press PRINT to clear the transaction.

633 CV: CIVACON Communication Failure Alarm

Indicates a failure on the communications line between the AccuLoad III and the CIVACON Grounding/Overfill System.

634 CL: Clean Line Alarm

Indicates that the clean line volume delivered has underrun the clean line volume programmed by at least the amount of the clean line alarm limit.

635 BV: Block Valve Alarm

Indicates that the block valve did not open or close as signaled by the AccuLoad III.

636 BH: Blend High Alarm

Indicates that the blend tolerance has been exceeded and the product being delivered is over the volume required for the batch.

637 BL: Blend Low Alarm

Indicates that the blend tolerance has not been met and the product being delivered is under the volume required for the batch.

638 OA: Product Overrun Alarm

Indicates that the product delivered exceeds the preset amount by at least the number of units programmed in the overrun alarm code.

639 ZF: Product Zero Flow Alarm

Indicates that the Zero Flow Timer has expired and the AccuLoad has not detected any flow of this product.

640 UF: Unauthorized Flow Alarm

Indicates that unauthorized flow was detected for the product. Unauthorized flow is when the AccuLoad III receives pulses from a product or products that have

not been signaled to flow.

641 PP: PTB Printer Alarm

The PTB printer alarm is set when the AccuLoad III fails to get a correct response from a PTB printer after sending data to be printed. The AccuLoad III will continue to re-send the data to the printer until the communications port timeout setting expires, at which time the PTB printer alarm is set.

642 TM: Turbine Meter Alarm

Indicates that the turbine meter signature has changed, and the meter should be proved. This alarm is displayed when the AccuLoad detects a statistically significant variation in 4 out of 10 updates.

643 AD: Auto Detect Failed Alarm

Indicates that the AccuLoad has failed to verify the presence of Add-Pak Injectors in the AccuLoad III.

644 A1, A2: Add-Pak Power Fail Alarm

Indicates an Add-Pak power fail. A1 refers to Add-Pak 1; A2 refers to Add-Pak 2.

645 D1, D2: Add-Pak Diagnostic Alarm

Indicates a RAM or ROM failure on the Add-Pak board (AICB board). D1 refers to Add-Pak 1; D2 refers to Add-Pak 2.

646 P1, P2: AICB Auto Detect Alarm

Indicates that no AICB board is connected to a comm port when using the AICB board for I/O. When using the AICB board for injectors and no AICB board is found connected to a comm port for a specific injector, the Inject Auto Detect alarm will be set for that injector. P1 refers to AICB1 Auto Detect; P2 refers to AICB2 Auto Detect.

647 C1, C2: AICB Communications Failed Alarm

Indicates a communication failure on an AICB board. C1 refers to AICB Board 1; C2 refers to AICB Board 2.

648 MC: MMI Communications Failed Alarm

Indicates a communication failure between the MMI and FCM when using the AccuLoad III-SA.

649 ME: MMI Excess Active Arms Alarm

Indicates that more than six arms are active when using the AccuLoad III-SA. No more than six arms can be active at once.

650 SF: Storage Full Alarm

Indicates that the archived transaction area is full. The operator must clear stored standby transactions to continue.

651 DE: DE Head Alarm

Indicates an illegal combination of inputs. If the low flow switch is covered, the stop float must be covered. If the high flow switch is covered, both the stop float and low flow switches must also be covered.

652 MF: Mass Meter Comm Fail

This alarm is set when any command sent to a mass meter fails both the first and second attempt. The normal polling sequence to each of the mass meters is not interrupted by the occurrence of a mass meter communications alarm. The mass meter in alarm will be skipped in the polling loop until this alarm is cleared.

653 MO: Mass Meter Overdrive

This alarm is set when a mass meter reports a status indicating an overdrive condition exists. (This alarm is valid only for S-Mass.)

654 MT: Mass Meter Tube

This alarm is set when a mass meter reports a status indicating a tube imbalance condition exists. (This alarm is valid only for S-Mass.)

655 AH: Additive High Temperature

Indicates the additive temperature is out of range of the high temperature setting.

656 AL: Additive Low Temperature

Indicates the additive temperature is out of range of the low temperature setting.

657 AT: Additive Temperature Probe

Indicates an additive temperature probe failure or an out-of-range condition (less than 2 mA / 0.5 Vdc / 52.11 Ω or greater than 23 mA / 5.5 Vdc / 220.88 Ω).

658 CD: Card Removed Alarm

Indicates that the card has been removed from the card reader before the end of the batch or transaction.

659 PS: Additive Pulse Security Alarm

Indicates an out of sequence error in the A B pulse stream for the additive meter.

Note: *If this alarm occurs, the transaction must be terminated using one of the methods in System Code 315. Pressing clear as a run clearable alarm will open the value, but as soon as pulses start, the PS alarm will reoccur and again shut down the valve.*

660 XA: Additive Transmitter Integrity Alarm

Indicates a collision on the incoming additive meter pulse stream

661 PA: Product Stop Alarm

Indicates that the remaining batch volume delivered after the product shutdown has underrun the programmed product stop volume by more than the programmed product stop alarm limit.

662 CT: Additive Comm Totals

If the current volume received is significantly greater that the previous volume an alarm will show and the volume will not be added to the overall totals.

663 CF: Com Flash Alarm

Indicates a communication failure with the Com Flash Memory expansion board or the SD chip used there.

664: Network Printer Alarm

Indicates the network printer has failed to print a report. There are many reasons for this error such as an error in the interchange between the devices, no response, printer is not reachable, or other various abort functions

to name a few.

665: F.A. Sening COP

Assigns options for this alarm: allow run/ready clearing; energize alarm outputs.

666: Solenoid Alarm Counts

Indicates when the solenoid actuation count exceeds the "solenoid count alarm" (System 201).

667: Promass Meter Alarm

Indicates that the meter has a "status" problem.

668: Predict Overrun Alarm

Indicates overrun data has stopped the batch because it suspects a value fault condition will result in an overrun occurring based on the Meter Ramp Down Tolerance code 211.

669: Non Resettable Leakage Alarm

Indicates that leakage occurring between transactions has exceeded the programmed "leaking alarm limit" (system 202).

670: Reverse Flow Alarm

Indicates that reverse flow occurring during a batch has exceeded the programmed "reverse flow limit" (system 203).

System 671 to 680 – User Alarms

These program codes allow the operator to customize the AccuLoad III by defining alarm conditions to a particular system. User alarms may be set through communications or Boolean/algebraic equations, or may be selected from the following:

- Allow run/ready mode clearing
- Energize alarm output #1
- Energize alarm output #2

681: RP – Report Storage Full

If a transaction is attempted to be started from the AccuLoad keypad and it would require overwriting a pending transaction report, the following alarm will be set and the transaction will not be allowed to be started.

System 686 to 695 – User Alarm Messages

These program codes permit the entry of an 18-character text entry identifying an alarm condition. User alarms can be set through communications or Boolean/algebraic equations.

System 700 – Communications Directory

Comm Addresses

701 – Load Arm 1 Address
702 – Load Arm 2 Address
703 – Load Arm 3 Address
704 – Load Arm 4 Address
705 – Load Arm 5 Address
706 – Load Arm 6 Address

Comm Port 1 Configuration

707 – Comm Port 1 Function
708 – Comm Port 1 Baud Rate
709 – Comm Port 1 Data/Parity
710 – Comm Port 1 Control
711 – Comm Port 1 Timeout

Comm Port 2 Configuration

712 – Comm Port 2 Function
713 – Comm Port 2 Baud Rate
714 – Comm Port 2 Data/Parity
715 – Comm Port 2 Control
716 – Comm Port 2 Timeout

Comm Port 3 Configuration

717 – Comm Port 3 Function
718 – Comm Port 3 Baud Rate
719 – Comm Port 3 Data/Parity
720 – Comm Port 3 Control
721 – Comm Port 3 Timeout

Comm Port 4 Configuration

722 – Comm Port 4 Function
723 – Comm Port 4 Baud Rate
724 – Comm Port 4 Data/Parity
725 – Comm Port 4 Control
726 – Comm Port 4 Timeout
727 – Printer Standby
728 – Auto Reprint
729 – Auto Tear Off

Host Interface

731 – Comm Link Programming
732 – Modbus Endian Protocol
733 – Time out Action
734 – Inhibit Auto Focus
735 – IP Address
736 – Netmask
737 – Gateway
738 – Ethernet Host Control
739 – Ethernet Host Timeout

Prompts

740 – Prompt Mode
741 – Prompts Used
742 – Prompt Timeout
743 – Prompt 1 Message
744 – Prompt 1 Input Type
745 – Prompt 1 Length
746 – Prompt 2 Message
747 – Prompt 2 Input Type

748 – Prompt 2 Length
749 – Prompt 3 Message
750 – Prompt 3 Input Type
751 – Prompt 3 Length
752 – Prompt 4 Message
753 – Prompt 4 Input Type
754 – Prompt 4 Length
755 – Prompt 5 Message
756 – Prompt 5 Input Type
757 – Prompt 5 Length
758 – Prompt Response Validation

RBM Product Configuration

761 – RBM Product Map – Arm 1
762 – RBM Product Map – Arm 2
763 – RBM Product Map – Arm 3
764 – RBM Product Map – Arm 4
765 – RBM Product Map – Arm 5
766 – RBM Product Map – Arm 6

Card Reader Data

771 – Card ID Validation
772 – Card Data Valid Timeout
773 – Card Reader Configuration
774 – Card Authorization
777 – User Text Archived
780 – DNS Server IP
781 – SMTP Server Name
782 – POP3 Server name
783 – Email Account User Name
784 – Email Account Password
785 – Email Account User Name
786 – Email Reply-To Address
787 – Network Printer
788 – BlueTooth Master

System 701 – Load Arm 1 Address

This two-digit entry defines the communications address associated with this load arm. For multiple AccuLoads on a shared communications line, all addresses must be unique. The range of this entry is 01 to 99.

Critical: Address must not be zero.

Critical: Addresses must be unique.

Fatal: Entry out of specified range.

Help: Enter a unique communication address for this load arm.

System 702 – Load Arm 2 Address

This two-digit entry defines the communications address associated with this load arm. For multiple AccuLoads on a shared communications line, all addresses must be unique. The range of this entry is 01 to 99.

Critical: Address must not be zero.

Critical: Addresses must be unique.

Fatal: Entry out of specified range.

Help: Enter a unique communication address for this load arm.

System 703 – Load Arm 3 Address

This two-digit entry defines the communications address associated with this load arm. For multiple AccuLoads on a shared communications line, all addresses must be unique. The range of this entry is 01 to 99.

Critical: Address must not be zero.

Critical: Addresses must be unique.

Fatal: Entry out of specified range.

Help: Enter a unique communication address for this load arm.

Note: *Not used on AccuLoad III-S hardware.*

System 704 – Load Arm 4 Address

This two-digit entry defines the communications address associated with this load arm. For multiple AccuLoads on a shared communications line, all addresses must be unique. The range of this entry is 01 to 99.

Critical: Address must not be zero.

Critical: Addresses must be unique.

Fatal: Entry out of specified range.

Help: Enter a unique communication address for this load arm.

Note: *Not used on AccuLoad III-S hardware.*

System 705 – Load Arm 5 Address

This two-digit entry defines the communications address associated with this load arm. For multiple AccuLoads on a shared communications line, all addresses must be unique. The range of this entry is 01 to 99.

Critical: Address must not be zero.

Critical: Addresses must be unique.

Fatal: Entry out of specified range.

Help: Enter a unique communication address for this load arm.

Note: *Not used on AccuLoad III-S hardware.*

System 706 – Load Arm 6 Address

This two-digit entry defines the communications address associated with this load arm. For multiple AccuLoads on a shared communications line, all addresses must be unique. The range of this entry is 01 to 99.

Critical: Address must not be zero.

Critical: Addresses must be unique.

Fatal: Entry out of specified range.

Help: Enter a unique communication address for this load arm.

Note: *Not used on AccuLoad III-S hardware.*

System 707, 712, 717, 722 – Comm Port Function

This program code defines the function of the communications port. The factory default is "Minicomp Host" on comm port 1. Selections are as follows:

- **(0) Not used** – This communications port is not selected for use
- **(1) Terminal host communications** – This communications port communicates with a terminal type device using a simplified communications protocol
- **(2) Minicomputer host communications** – This communications port communicates with a minicomputer type device using a sophisticated and secure communications protocol
- **(3) Modbus host communications**
- **(4) Printer** – Permits the AccuLoad III through this communication port to automatically output an end of a transaction report to a printer connected to the AccuLoad III
- **(5) Shared printer** – Same as number (4) above except the output report will go to a shared printer connected to one or more AccuLoads. (This requires special wiring. See the Installation manual for further details.)
- **(6) Smart injector control** – Permits the AccuLoad III through this communication port to communicate with and control up to twenty-four smart additive injector systems
- **(7) CIVACON Grounding and Overfill Monitor** – Permits the AccuLoad III through this communication port to communicate with the CIVACON Grounding and Overfill System
- **(8) Smith Meter MMI** – Facilitates communication between the MMI and a Flow Control Module
- **(9) AccuLoad II Terminal-STD** – Uses terminal host communications to allow an AccuLoad III to communicate like an AccuLoad II-STD
- **(10) AccuLoad II Mini-STD** – Uses minicomputer host communications to allow an AccuLoad III to communicate like an AccuLoad II-STD
- **(11) AccuLoad II Terminal-SEQ** – Uses terminal host communications to allow an AccuLoad III to communicate like an AccuLoad II-SEQ
- **(12) AccuLoad II Mini-SEQ** – Uses minicomputer host communications to allow an AccuLoad III to communicate like an AccuLoad II-SEQ
- **(13) AccuLoad II Terminal-SQR** – Uses terminal host communications to allow an AccuLoad III to communicate like an AccuLoad II-SQR
- **(14) AccuLoad II Mini-SQR** – Uses minicomputer host communications to allow an AccuLoad III to communicate like an AccuLoad II-SQR
- **(15) AccuLoad II Terminal-RBM** – Uses terminal host communications to allow an AccuLoad III to communicate like an AccuLoad II-RBM
- **(16) AccuLoad II Mini-RBM** – Uses minicomputer host communications to allow an AccuLoad III to communicate like an AccuLoad II-RBM
- **(17) Smith Meter Card Reader** – Assigns a communications channel to the Smith Meter Card Reader Interface board, allowing passage of card data to a host computer
- **(18) S-Mass or Apollo Meter** – Assigns a commu nications channel to an S-Mass or Apollo Meter.
- **(19) Com Flash** – Allows mass storage of transaction data to be placed on a 512 M SD card (only available on Com 4).
- **(20) Card Reader / ComFlash** – Enables the Smith Meter Card Reader to operate on Com 4 while the ComFlash is installed and running.
- **(21) SLIP (TCP/IP)** – This allows for a serial line over internet protocol to be established.
- **(22) F.A. Sening COP** – Enables the interface to the F.A. Sening cross over prevention.
- **(23) E+H Promass** – Assigns a communication channel to an E+H Promass Coriolis Meter.

Note: *Only one part may be configured for mass meter communications. This option is only available when using Revision 10.04 firmware or higher.*

The communications port control must be correctly configured for the selected function.

Critical: Shared printing is only possible on port 1 [710, 715, and 720 only]

Critical: Comm port 4 can be a printer or injector control only

Critical: An address must not be zero

Critical: Only two ports may be configured for injector control

Critical: Only two ports may be configured for printer functions

Critical: Only two ports may be configured for host interface

Critical: Only one port may be used for CIVACON interface

Critical: Modbus requires 8-bit data.

Critical: Function conflicts with Port Control.

Critical: Permissive input must be configured with CIVACON.

Note: *Options 8 through 16 are only available when using Revision 9 or higher firmware.*

Note: *When using Revision 9 firmware or higher, it is possible to program two host control ports for redundancy purposes. Note that only one host control port should be issuing control commands at any one time. It is up to the automation system to prevent conflicts when using this feature.*

Help: KDC TB1:(232:1(TX), 2(RX), 3(RTS), 4(CTS), 5(COM)), (485:6(TX+), 7(TX-), 8(RX+), 9(RX-), 10(COM)

System 708, 713, 718, 723 – Baud Rate

This parameter sets the speed of the associated communications port. The factory default is "38400." Selections are as follows:

- (0) 1200 baud
- (1) 2400 baud
- (2) 4800 baud
- (3) 9600 baud
- (4) 19200 baud
- (5) 38400 baud

Note: *No entry if corresponding function = Not Used.*
Help: Select the baud rate for this communications port

System 709, 714, 719, 724 – Data/Parity

This parameter defines the number of data bits and parity used by the associated communications port. Unless indicated otherwise, one stop bit is used. The factory default is "8/None." Selections are as follows:

- (0) 7 bits No Parity
- (1) 7 bits Odd Parity
- (2) 7 bits Even Parity
- (3) 8 bits No Parity
- (4) 8 bits Odd Parity
- (5) 8 bits Even Parity
- (6) 8 bits No Parity, 2 Stop bits

Critical: Modbus requires 8-bit data

Critical: Smith Meter MMI requires 8-bit data

Note: *No entry if corresponding function = Not Used.*
Help: Select the data format: number of bits per character and type of parity.

System 710, 715, 720, 725 – Control

This program code defines the level of control the associated communications port commands. Polling Only, Poll and Authorize, and Remote Control are valid with host communications options. XON/XOFF is valid with printer options. Only one port can have transaction control. The factory default is "Poll & Program." Selections are as follows:

- **(0) N/A** – No communications on this port.
- **(1) Polling Only** – No transaction control, display control or programming allowed via this port. Able to read program code values and run data from the unit. Loading as above.
- **(2) Poll & Authorize** – Full programming/prompting control. Transaction control requiring authoriza tion from host. Allows use of AccuLoad III communications commands such as AU Authorize Transaction and AP Authorize Transaction and Preset for host authorization. Designed for terminals where the driver enters desired preset volume after authorization.
- **(3) Remote Control** – Full programming and prompting control. Transaction control (also requiring authorization from host) Allows use of SB – Set Batch to enter the preset remotely and EB to end the batch remotely. This is designed for pre-dispatch operations where the driver has limited input during the load process and the preset is host-controlled.
- **(4) Xon/Xoff** – For printer ports only. Xon/Xoff flow control.
- **(5) Poll & Program** – For use with demonstration/ AccuMate ports. Allows full program access but does not affect transaction control (acts like a standalone unit).
- **(6) PTB-FX** – Security level designed to support PTB Weights and Measures Agency-approved printer interface.
- **(7) PTB-LQ** – Security level designed to support PTB Weights and Measures Agency-approved printer interface.

Critical: Comm port not configured for host communications

Critical: Comm port not configured for printer

Note: *No entry if corresponding function = Not Used.*
Help: Select the degree of control for this communications port.

System 711, 716, 721, 726 – Timeout

These three-digit codes allow the operator to specify the amount of time, in seconds, before aborting a communications transfer that has halted. The communications alarm will then be set. This entry is also used to abort a printout if waiting for a shared printer on an XON from a printer. If the timer expires while waiting for a shared printer, the shared printer alarm will be set. The range of this entry is from 0 to 999 seconds.

If the port is configured for host communication, zero disables the communications timeout and the accompanying alarm. If the port is configured for a printer, the timeout cannot be disabled.

Note: *No entry if corresponding function = Not Used.*
Help: Enter elapsed time in seconds of comm fail before signaling an alarm

System 727 - Printer Standby

This parameter defines how the AccuLoad will handle the event when a transaction report fails to print.

If "Standby" is selected, the AccuLoad will silently enter printer standby mode (no alarm will be set or displayed) when a transaction report fails to print within the programmed communications port timeout. An event will be logged in the event log indicating that the transaction report is pending. A printer standby flag will be available via communications (see EE command) which will indicate when there are pending transaction reports.

If "Standby & Alarm" is selected and Network Printing or PTB printing is being used, the AccuLoad will set the "NP: Network Printer" or "PP: PTB Printer" alarm respec-

tively and will enter printer standby mode. These alarms are configurable in the Alarms Directory and therefore do not necessarily need to stop flow. If choosing this option, be sure to configure the alarm appropriately. No alarm will be set if using serial printing with XON/XOFF or no flow control.

If "Alarm + No Trans" is selected, the AccuLoad will set the associated printer alarm as above but will not enter standby mode. Although the alarm may be cleared, the AccuLoad will not allow a new transaction to start on that arm until the pending transaction has been successfully printed.

0 - NA

1 - Silent Standby

2 - Standby and Alarm

3 - Alarm and No transaction

Help: Select if desired to protect transaction reports not printed and if alarm should be set when the report is not printed.

System 728 - Auto Re-Print

The AccuLoad may be configured to automatically reprint pending transaction reports using this parameter. The AccuLoad will always attempt to print a transaction report when the transaction is ended. If a report is successfully printed and there are pending reports, then the pending reports will be printed as well.

0 - No

1 - Yes

Help: Select is desired to automatically reprint pending transaction reports when printer becomes available.

The AccuLoad will only reprint pending reports on idle arms. If a transaction is in progress on an arm, then the pending reports on that arm will not be printed until the arms becomes idle. If any report fails to print, the printing of any remaining reports will be aborted.

System 729 - Auto Tear Off

When enabled, the AccuLoad will function with a printer's auto tear off feature. The tear off feature is when a printer automatically advances the paper to the tear off position after a form feed is received (a form feed is at the end of the print job).

0 - No

1 - Yes

Help: Select if printers Auto-Tear Off feature is enabled.

System 731 – Comm Link Programming

This program code defines which program code parameters can be modified through communications by the access level assigned to those parameters. The factory default is "Level 1 Access." Selections are as follows:

- **(0) Alarm Clearing Only** - This selection allows only the alarms to be reset (cleared) through communications.
- **(1) Level 1 Access Parameters** – This selection allows only the parameters that are assigned level 1 access to be changed through communications.
- **(2) Level 2 Access Parameters** – This selection allows only the parameters that are assigned levels 1 and 2 access to be changed through communications.
- **(3) Level 3 Access Parameters** – This selection allows only the parameters that are assigned levels 1 through 3 access to be changed through communications.
- **(4) Level 4 Access Parameters** – This selection allows only the parameters that are assigned levels 1 through 4 access to be changed through communications.
- **(5) Level 5 Access Parameters** – This selection allows all parameters to be changed through communications.

Help: Select program mode groups modifiable via communications

System 732 – Modbus Endian Protocol

This program code defines the byte order for floating point values returned by Modbus communications. AccuLoad III supports three variations of the Modbus protocol. The factory default is "Big." Selections are as follows:

• (0) Big endian – bytes are ordered most significant first

• (1) Little 8 endian – bytes are ordered least significant first

• (2) Little 16 endian – words are ordered least significant first

Note: *No-entry if no comm port set up for Modbus*

Help: Select modbus data format: big endian, little 8 endian, or little 16 endian [affects floating point numbers].

System 733 – Timeout Action

Standby mode allows the AccuLoad to continue to allow transactions in the case where host control has been lost. Selections are as follows:

- (0) Alarm
- (1) Standby
- (2) Alarm and Standby

Help: Select the type of action to take on comm timeout, set an alarm and/or go into standby mode.

System 734 – Inhibit Auto Focus

This program code, when selected, prevents the automation SB, AP and WD functions from changing the focus of the display. (The FS command will still result in a focus change.) Selections are as follows:

- (0) No
- (1) Yes

Note: *This parameter is only available when using Revision 8 and above firmware.*

Help: Select if it is not desired to automatically change the focus to an arm receiving communication prompt commands (WD, SB, AP)

Systems 735 – IP Address

This parameter defines the network communications address associated with the AccuLoad. For multiple AccuLoads on a shared communications line, all addresses must be unique. The decimal range of each octet in this entry is 000 - 255.

4 octet numeric entry – 255.255.255.255

System 736 – Netmask

The netmask (sometimes called a subnet mask) is a four byte address used to define a network. This address uses the same format as the IP address. A typical netmask is 255.255.255.0. This means that the first three octets describe a particular network and the last octet describes a specific device. If the AccuLoad is assigned IP address 192.168.0.1 and a printer has IP address 192.168.0.9, then the two devices are on the same network because the first three octets of each address are the same. In order to increase the number of devices on a particular network, simply adjust the netmask. In the previous examples, the netmask allowed 256 devices to be connected to the network. If more devices are needed on a network, then the netmask of 255.255.254.0 would allow 512 devices to be connected to the network. Similarly, a network of 255.255.253.0 would allow 1024 devices to be connected and so on.

4 octet numeric entry - 255.255.255.255

Help: Enter the IP subnet mask for this device's IP address.

System 737 – Gateway

The Gateway address is another four byte address that also uses the same format as the IP address. A Gateway provides an exit route for all addresses that are not part of the local network. The Gateway address typically belongs to a network device such as a router. The router can then connect to another local network or to the internet.

The entry for 'System 737-Gateway' should be the IP address for the router that your AccuLoad III.net uses to connect to any IP addresses not in your local subnet. If you don't have a router and are not connected to external networks, you can leave this entry 0.0.0.0.

4 octet numeric entry – 255.255.255.255

Help: Enter the address that allows access to other IP networks.

System 738 – Ethernet Host Control

This program code determines what level of control is exhibited by a host interfaced to the AccuLoad III via the TCP/IP interface. It is similar to Comm Control but contains entries only valid for host computers (i.e. no control options that are applicable to printers). Options are:

- None
- Poll & Program
- Poll & Authorize
- Remote Control

The highest level of control programmed among this entry and the serial port entries is assumed to be the desired level of control for the AccuLoad III.

Help: Enter the level of control allowed from the thernet port.

System 739 – Ethernet Timeout

This entry specifies the timeout value in seconds for the host communication protocols via Ethernet/TC-IP network (Smith I/P, Modbus TCP) before a communications alarm will be generated. A zero entry disables the time out action. Range is 0-999

3 digit numeric entry

Help: Enter elapsed time in seconds of comm. fail before signaling an alarm

System 740 – Prompt Mode

This program code defines when prompts will be displayed. Selections are as follows:

- (0) Transaction Start
- (1) In Standby Only

Help: Select when prompts are to be displayed, always at start of transaction or only when AccuLoad is in standby mode.

System 741 – Prompts Used

This program code defines the number of local prompts configured at AccuLoad III. These prompts are presented to the operator prior to the preset prompt. The data entered by the operator is stored by AccuLoad III and can be printed on a Bill of Lading and retrieved through communications. The range of this program code is 0 to 5.

Help: Zero entry disables this feature

System 742 – Prompt Timeout

This two-digit code defines the amount of time, in seconds, that a local prompt will remain displayed at AccuLoad III before the prompting sequence is aborted and AccuLoad III returns to the ready screen. The range of this parameter is 0 to 99 seconds. If set to zero, AccuLoad III will wait indefinitely for data entry in response to a prompt. The factory default is "0".

Note: *No entry if prompts used = 0.*

Help: Enter time, in seconds, for display of prompt messages.

System 743, 746, 749, 752, 755 – Prompt Message

This program code defines the 28-character text entry displayed to the operator as one of the five local prompts. It is important to not leave this message as all blanks,

as a blank screen will be presented to the operator if this prompt is activated. The data entry allows the following characters to be selected as part of the display unit prompt:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = END

Note: *No entry if prompts used = 0.*

Help: Enter prompt message to be displayed at start of transaction

System 744, 747, 750, 753, 756 – Prompt Input Type

This parameter defines whether numeric or alphanumeric data entered in response to a local prompt will echo to the screen or display Xs in place of digits as a security feature. The factory default is "Numeric." Selections are as follows:

- (0) Numeric
- (1) Hidden
- (2) Alphanumeric

Note: *No entry if prompts used = 0.*

Help: Select type of prompt response desired.

System 745, 748, 751, 754, 757 – Prompt Length

This program code defines the maximum length of a response to a local prompt. The range of this entry is 0 to 20.

Note: *Codes 745, 748, 751, 754, and 757 are associated with codes 743, 746, 749, 752, and 755 respectively.*

Note: *No-entry if prompts used = 0*

Help: Set maximum length for prompt response

System 758 – Prompt Response Validation

This program code enables options for prompt response validation. Options 1 and 2 are used only if no card reader is installed on the system. If Option 3 is selected, a card reader must be in place because ID validation is performed by the card reader. Once the card data has been verified, the PIN is compared with the PIN previously defined for that card in the database. Valid options are as follows:

- (0) None
- (1) Response 1 = ID
- (2) Response 1 = ID, 2 = PIN
- (3) Response 1 = PIN for Card

Critical: Selection invalid when using Card Reader (for Options 1 and 2 above)

Critical: Prompt Response Type cannot be alphanumeric for PIN entry

Critical: Card Validation must be enabled in 771 for this option (for Option 3 above)

Help: Select level of validation for prompt responses.

System 761, 762, 763, 764, 765, 766 – RBM Product Map

This program code affects the Host Communications emulation of the AccuLoad II RBM only. It allows only specific products to be available for an arm so that it is possible to configure an AccuLoad III arm to emulate either the left or right side of an AccuLoad II RBM. This parameter is a bit-mapped entry with the lowest order bit representing product 1, and each successive bit representing the next product up to product 4 which is the maximum supported by RBM.

Example: The operator needs to emulate an AccuLoad II RBM that has a three-product ratio blending configuration on side 1 and a straight product on side 2. An RBM unit required products 1 and 2 to be on opposite sides. Therefore, for Arm 1 (System 761), he configures products 1, 3, and 4 (1 + 4 + 8) for a value of 13. For Arm 2 (Product 2 only) he configures System 762 to 2.

Help: Configure AccuLoad II-RBM products to an AccuLoad III load arm.

System 771 – Card ID Validation

This parameter defines the type of validation required by the card reader prior to initiating a transaction. The factory default is "ID Stamp Only." If "Standalone/Standby" is selected, the AccuLoad operates as if "ID Stamp Only" was selected while under host control. Selections are as follows:

- (0) ID Stamp Only
- (1) ID Stamp and Card-In Required
- (2) Standalone/Standby
- (3) Validate Always

Note: *No entry if card reader communications port or MMI port is programmed.*

Note: *If an MMI port is configured and no card reader is being used, this parameter should be set to (0) ID Stamp Only; otherwise, card data will be expected.*

Help: 1) Log ID with transaction, 2) Log ID and card-in required, 3) Validate card data in stand-alone/stand-by, 4) Always validate card data.

System 772 – Card Data Valid Timeout

This entry indicates the period that new card data will remain valid when no transactions are in progress. On new card data, this timer is reset to 1 and begins to increment each minute until either a transaction is started or the timer reaches the value programmed and expires. On expiration, the card data is zeroed. If programmed for any validation selection other than ID stamp only, loading will be prevented until a valid card is again presented to the reader, or until the next message from the card reader containing successfully read data is received.

If a transaction is started within the card data valid timeout period, the card data will remain valid and other transactions may be started on other arms. When all transactions on arms in the unit have been ended, the valid card status will be removed.

A value of zero for this program entry indicates the timer should never expire. The card data will remain valid until a transaction is run and will remain valid until all transactions are ended. The range of this entry is 0 to 99 minutes.

Note: *No entry if card reader communications port or MMI port is programmed.*

Critical: Card reader must be attached to MMI if using an MMI.

Help: Enter time in minutes that new card data will remain valid when no transactions are in progress.

System 773 – Card Reader Configuration

This program code allows the Accuload to be con-figured to match the new card reader option that allows for a 'captive' card mode. Initial versions of the card reader interface supported authorization upon a valid card entering the field of the proximity reader. That authorization continued until all transactions ended or until a timeout occurred before any transactions were started. With the new option, authorization continues until the card is removed, and transactions may be started as long as the card remains in the reader. The new option will also re-quire the card to remain captive at the reader for the duration of loading; removal of the card when a batch is in progress will result in a 'Card Removed' alarm.

- (0) Momentary (default)
- (1) Captive Card mode

Note: *A new option has also been added to System 315 – Transaction Termination to allow selection of card removal as a means of ending a transaction. This is to ensure that in Captive Card mode the operator cannot leave his card behind, as the transaction cannot be ended until the card is removed.*

Versions of the Smith Card Reader available after the 10.07 release (approximately August 2004) can be configured to operate in either the proximity (momentary) or Captive mode.

Help: Select 1) card is presented momentarily (use 772 card time out or 2) card remains in proximity of the card reader.

System 774 – Card Authorization

- All Arms
- Single Trans

Help Message: Select if it is desired for a valid card to apply to all arms or only for the next transaction that is started.

Critical: Single Trans authorization is not available with "captive card" reader option (773).

Factory default setting will be "All Arms" (valid card authorizes all arms)).

System 777 – User Text Archived

When this option is selected, the 8 32-character user text fields available for writing/reading by the host (via BW/BR commands) are stored along with the final transaction data when a transaction ends. This allows a host to not just place relevant text on the immediate bill of lading/receipt ticket, but also allows the AccuLoad III.net to recall the data and to reprint the ticket later with the same information.

0 - Not Stored

1 - Stored

Enabling this option (selecting 'Stored') will reduce the total number of transactions that can be archived at the AccuLoad in the transaction log since it increases the size of each stored transaction.

The AccuLoad III.net will include DNS client ability. To support this feature, a new program code will be added to allow for the entry of an IP address specifying a DNS server. If this address is zero and DHCP is enabled, the DHCP client will attempt to use information from the DHCP server to populate the DNS server IP.

System 780 – DNS Server IP

Enter the IP address of the primary DNS server assigned to the AccuLoad network

The DNS (Domain Name Service) provides a mechanism for Internet devices to obtain the IP address of another device on the network using a text based name instead of a complex numeric address.

4 octet numeric entry – 254.254.254.254

Help: Enter the address of the network DNS server or 0 if not using DNS

This IP address will be used to by the new DNS client to resolve host names if host names are entered instead of IP addresses for the remote servers (specifically, the SMTP & POP3 servers and network printers at this time).

System 781 – SMTP Server Name

Enter the host name for the SMTP (Simple Mail Transport Protocol) server that services the email account set up for the AccuLoad III.net if you desire the AccuLoad III.net to be able to send email notifications for specific alarms.

Examples:

smtp.yourmailserver.com (if using DNS)

192.168.0.98

(as IP address if no DNS server available/used)

To utilize the email features, an email account must be set up for each AccuLoad III.net on a mail service provider that supports SMTP (and optionally POP3) access.

Enter up to 28 characters of text

Enter the server name or IP address of the SMTP server

Help: Enter the host name for the SMTP (Simple Mail Transport Protocol) server that services the email account set up for the AccuLoad III.net if you desire the AccuLoad III.net to be able to send email notifications for specific alarms.

System 782 – POP3 Server Name

Enter the host name for the POP3 (Post Office Protocol - 3) server that services the email account set up for the AccuLoad III.net if you desire the AccuLoad III.net to be able to send email notifications for specific alarms.

Examples:

pop.yourmailserver.com (if using DNS)

192.168.0.99

(as IP address if no DNS server available/used)

To utilize the email features, an email account must be set up for each AccuLoad III.net on a mail service provider that supports SMTP (and optionally POP3) access.

Enter up to 28 characters of text

Enter the server name or IP address of the POP3 server

Help: Enter the host name for the POP3 (Post Office Protocol - 3) server that services the email account set up for the AccuLoad III.net if you desire the AccuLoad III.net to be able to send email notifications for specific alarms.

System 783 – Email Account User Name

Enter the account name that was created for this AccuLoad III.net on the mail server providing SMTP/POP3 functionality.

Enter up to 28 characters of text

Enter the User name on the SMTP/POP3 server

784 – Email Account Password

Enter the password for the email account name in System

Enter up to 28 characters of text

Enter the password for the mail user on the POP3/SMTP server

System 785 – Email Notification Destination

(TO address)

Enter the email address where notification emails will be sent if an alarm configured for notification occurs.

The AccuLoad III.net must have access to an SMTP server that is capable of forwarding emails to the destination for this feature to operate.

Enter up to 28 characters of text

Enter the email address you want to receive notification

Help: Enter the email address where notification emails will be sent if an alarm configured for notification occurs. The AccuLoad III.net must have access to an SMTP server that is capable of forwarding emails to the destination for this feature to operate.

System 786 – Email address for reply (FROM address)

Enter the email account of the sending AccuLoad III.net in this field. For example, if the SMTP/POP3 servers used are at yourmailhere.com, and the Email account name is AL3NET_1, then the reply-to address would be AL3NET_1@yourmailhere.com

Enter the email address to specify in the <FROM> field.

Help: Enter the email account of the sending AccuLoad III.net in this field. For example, if the SMTP/POP3 servers used are at yourmailhere.com, and the Email account name is AL3NET_1, then the reply-to address would be AL3NET_1@yourmailhere.com

System 787 – Network Printer

Enter the IP address (or printer name if DNS server is available and the printer has a name in the domain) of the network printer where the AccuLoad III.net is to send print jobs.

The AccuLoad III.net can now utilize a network printer that supports the Internet-standard LPR protocol for printing the load tickets, etc.

The network printer can be used in place of or in conjunction with the previously supported serial printer options.

Enter up to 28 characters of text

Enter the print server name or IP address for the network printer to use.

System 788 – BlueTooth Master Enable/Disable

This parameter is to select the Master AccuLoad when interfacing via the Smith Meter/Sening Cross Over prevention (COP) system via a BlueTooth interface. One and only one of the AccuLoads sharing a BlueTooth module should be configured as a master.

0 - Disabled (AccuLoad is not designated as a master)

1 - Enabled (Designate this AccuLoad as the BlueTooth master.

System 800 / 900 – Additive Directory

General Injector Menu

801 – Additive Selection Method

802 – Additive Pacing Units

803 – Additive Stop Option

804 – Additive Stop Amount

805 – Additive Injection Units Descriptor

Miscellaneous Injector Menu

806 – Additive Totals Units Descriptor

807 – Injection/Totalization Conversion Factor

808 – Clean Line Additive

Piston Injector Menu

809 – Piston Injector Feedback Errors

Injector Configuration Menu

810 – Additive 1 Type

811 – Additive 1 Arm

812 – Additive 1 Plumbing

813 – Additive 2 Type
814 – Additive 2 Arm
815 – Additive 2 Plumbing
816 – Additive 3 Type
817 – Additive 3 Arm
818 – Additive 3 Plumbing
819 – Additive 4 Type
820 – Additive 4 Arm
821 – Additive 4 Plumbing
822 – Additive 5 Type
823 – Additive 5 Arm
824 – Additive 5 Plumbing
825 – Additive 6 Type
826 – Additive 6 Arm
827 – Additive 6 Plumbing
828 – Additive 7 Type
829 – Additive 7 Arm
830 – Additive 7 Plumbing
831 – Additive 8 Type
832 – Additive 8 Arm
833 – Additive 8 Plumbing
834 – Additive 9 Type
835 – Additive 9 Arm
836 – Additive 9 Plumbing
837 – Additive 10 Type
838 – Additive 10 Arm
839 – Additive 10 Plumbing
840 – Additive 11 Type
841 – Additive 11 Arm
842 – Additive 11 Plumbing
843 – Additive 12 Type
844 – Additive 12 Arm
845 – Additive 12 Plumbing
846 – Additive 13 Type
847 – Additive 13 Arm
848 – Additive 13 Plumbing
849 – Additive 14 Type
850 – Additive 14 Arm
851 – Additive 14 Plumbing
852 – Additive 15 Type
853 – Additive 15 Arm
854 – Additive 15 Plumbing
855 – Additive 16 Type
856 – Additive 16 Arm
857 – Additive 16 Plumbing
858 – Additive 17 Type
859 – Additive 17 Arm
860 – Additive 17 Plumbing
861 – Additive 18 Type
862 – Additive 18 Arm
863 – Additive 18 Plumbing
864 – Additive 19 Type
865 – Additive 19 Arm
866 – Additive 19 Plumbing
867 – Additive 20 Type
868 – Additive 20 Arm
869 – Additive 20 Plumbing
870 – Additive 21 Type
871 – Additive 21 Arm
872 – Additive 21 Plumbing
873 – Additive 22 Type
874 – Additive 22 Arm
875 – Additive 22 Plumbing
876 – Additive 23 Type
877 – Additive 23 Arm
878 – Additive 23 Plumbing
879 – Additive 24 Type
880 – Additive 24 Arm
881 – Additive 24 Plumbing

Injector Addresses

882 – Additive Injector 1 Address
883 – Additive Injector 2 Address
884 – Additive Injector 3 Address
885 – Additive Injector 4 Address
886 – Additive Injector 5 Address
887 – Additive Injector 6 Address
888 – Additive Injector 7 Address
889 – Additive Injector 8 Address
890 – Additive Injector 9 Address
891 – Additive Injector 10 Address
892 – Additive Injector 11 Address
893 – Additive Injector 12 Address
894 – Additive Injector 13 Address
895 – Additive Injector 14 Address
896 – Additive Injector 15 Address
897 – Additive Injector 16 Address
898 – Additive Injector 17 Address
899 – Additive Injector 18 Address
900 – Additive Injector 19 Address
901 – Additive Injector 20 Address
902 – Additive injector 21 Address
903 – Additive Injector 22 Address
904 – Additive Injector 23 Address
905 – Additive Injector 24 Address

Metered Injectors

906 – Metered Injector 1 K Factor
907 – Metered Injector 1 Meter Factor
908 – Metered Injector 1 High Tolerance
909 – Metered Injector 1 Low Tolerance
910 – Metered Injector 1 Maximum Tolerance Error
911 – Metered Injector 2 K Factor
912 – Metered Injector 2 Meter Factor
913 – Metered Injector 2 High Tolerance
914 – Metered Injector 2 Low Tolerance
915 – Metered Injector 2 Maximum Tolerance Error
916 – Metered Injector 3 K Factor
917 – Metered Injector 3 Meter Factor
918 – Metered Injector 3 High Tolerance
919 – Metered Injector 3 Low Tolerance
920 – Metered Injector 3 Maximum Tolerance Error
921 – Metered Injector 4 K Factor
922 – Metered Injector 4 Meter Factor
923 – Metered Injector 4 High Tolerance
924 – Metered Injector 4 Low Tolerance
925 – Metered Injector 4 Maximum Tolerance Error
926 – Metered Injector 5 K Factor
927 – Metered Injector 5 Meter Factor
928 – Metered Injector 5 High Tolerance
929 – Metered Injector 5 Low Tolerance
930 – Metered Injector 5 Maximum Tolerance Error
931 – Metered Injector 6 K Factor
932 – Metered Injector 6 Meter Factor
933 – Metered Injector 6 High Tolerance
934 – Metered Injector 6 Low Tolerance
935 – Metered Injector 6 Maximum Tolerance Error
936 – Metered Injector 7 K Factor
937 – Metered Injector 7 Meter Factor
938 – Metered Injector 7 High Tolerance
939 – Metered Injector 7 Low Tolerance
940 – Metered Injector 7 Maximum Tolerance Error
941 – Metered Injector 8 K Factor
942 – Metered Injector 8 Meter Factor
943 – Metered Injector 8 High Tolerance
944 – Metered Injector 8 Low Tolerance
945 – Metered Injector 8 Maximum Tolerance Error
946 – Metered Injector 9 K Factor
947 – Metered Injector 9 Meter Factor
948 – Metered Injector 9 High Tolerance
949 – Metered Injector 9 Low Tolerance
950 – Metered Injector 9 Maximum Tolerance Error
951 – Metered Injector 10 K Factor
952 – Metered Injector 10 Meter Factor
953 – Metered Injector 10 High Tolerance
954 – Metered Injector 10 Low Tolerance
955 – Metered Injector 10 Maximum Tolerance Error
956 – Metered Injector 11 K Factor
957 – Metered Injector 11 Meter Factor
958 – Metered Injector 11 High Tolerance
959 – Metered Injector 11 Low Tolerance
960 – Metered Injector 11 Maximum Tolerance Error
961 – Metered Injector 12 K Factor
962 – Metered Injector 12 Meter Factor
963 – Metered Injector 12 High Tolerance
964 – Metered Injector 12 Low Tolerance
965 – Metered Injector 12 Maximum Tolerance Error
966 – Metered Injector 13 K Factor
967 – Metered Injector 13 Meter Factor
968 – Metered Injector 13 High Tolerance
969 – Metered Injector 13 Low Tolerance
970 – Metered Injector 13 Maximum Tolerance Error
971 – Metered Injector 13 K Factor
972 – Metered Injector 13 Meter Factor
973 – Metered Injector 13 High Tolerance
974 – Metered Injector 13 Low Tolerance
975 – Metered Injector 13 Maximum Tolerance Error
976 – Metered Injector 14 K Factor
977 – Metered Injector 14 Meter Factor
978 – Metered Injector 14 High Tolerance
979 – Metered Injector 14 Low Tolerance
980 – Metered Injector 14 Maximum Tolerance Error
981 – Metered Injector 15 K Factor
982 – Metered Injector 15 Meter Factor
983 – Metered Injector 15 High Tolerance
984 – Metered Injector 15 Low Tolerance
985 – Metered Injector 15 Maximum Tolerance Error
986 – Metered Injector 16 K Factor
987 – Metered Injector 16 Meter Factor
988 – Metered Injector 16 High Tolerance
989 – Metered Injector 16 Low Tolerance
990 – Metered Injector 16 Maximum Tolerance Error
991 – Metered Injector 17 K Factor
992 – Metered Injector 17 Meter Factor
993 – Metered Injector 17 High Tolerance
994 – Metered Injector 17 Low Tolerance
995 – Metered Injector 17 Maximum Tolerance Error
996 – Metered Injector 18 K Factor
997 – Metered Injector 18 Meter Factor
998 – Metered Injector 18 High Tolerance

999 – Metered Injector 19 Low Tolerance
000 – Metered Injector 19 Maximum Tolerance Error
001 – Metered Injector 20 K Factor
002 – Metered Injector 20 Meter Factor
003 – Metered Injector 20 High Tolerance
004 – Metered Injector 20 Low Tolerance
005 – Metered Injector 20 Maximum Tolerance Error
006 – Metered Injector 21 K Factor
007 – Metered Injector 21 Meter Factor
008 – Metered Injector 21 High Tolerance
009 – Metered Injector 21 Low Tolerance
010 – Metered Injector 21 Maximum Tolerance Error
011 – Metered Injector 22 K Factor
012 – Metered Injector 22 Meter Factor
013 – Metered Injector 22 High Tolerance
014 – Metered Injector 22 Low Tolerance
015 – Metered Injector 22 Maximum Tolerance Error
016 – Metered Injector 23 K Factor
017 – Metered Injector 23 Meter Factor
018 – Metered Injector 23 High Tolerance
019 – Metered Injector 23 Low Tolerance
020 – Metered Injector 23 Maximum Tolerance Error
021 – Metered Injector 24 K Factor
022 – Metered Injector 24 Meter Factor
023 – Metered Injector 24 High Tolerance
024 – Metered Injector 24 Low Tolerance
025 – Metered Injector 24 Maximum Tolerance Error
026 – Piston Stop Action

Flow Controlled Injectors

***Note:** The entry is volume or mass based upon System Code 305 setting (Pulse In Type)*

027 – Flow Controlled Injector #1 Minimum Flow*
028 – Flow Controlled Injector #1 Maximum Flow*
029 – Flow Controlled Injector #1 Flow Tolerance*
030 – Flow Controlled Injector #1 Second Trip Amount*
031 – Flow Controlled Injector #2 Minimum Flow*
032 – Flow Controlled Injector #2 Maximum Flow*
033 – Flow Controlled Injector #2 Flow Tolerance*
034 – Flow Controlled Injector #2 Second Trip Amount*
035 – Flow Controlled Injector #3 Minimum Flow*
036 – Flow Controlled Injector #3 Maximum Flow*
037 – Flow Controlled Injector #3 Flow Tolerance*
038 – Flow Controlled Injector #3 Second Trip Amount*
039 – Flow Controlled Injector #4 Minimum Flow*
040 – Flow Controlled Injector #4 Maximum Flow*
041 – Flow Controlled Injector #4 Flow Tolerance*
042 – Flow Controlled Injector #4 Second Trip Amount*
043 – Flow Controlled Injector #1 Valve Type
044 – Flow Controlled Injector #1 Valve Kp
045 – Flow Controlled Injector #1 Valve Ki
046 – Flow Controlled Injector #1 Valve Kd
047 – Flow Controlled Injector #1 Valve PID Interval
048 – Flow Controlled Injector #2 Valve Type
049 – Flow Controlled Injector #2 Valve Kp
050 – Flow Controlled Injector #2 Valve Ki
051 – Flow Controlled Injector #2 Valve Kd
052 – Flow Controlled Injector #2 Valve PID Interval
053 – Flow Controlled Injector #3 Valve Type
054 – Flow Controlled Injector #3 Valve Kp
055 – Flow Controlled Injector #3 Valve Ki
056 – Flow Controlled Injector #3 Valve Kd
057 – Flow Controlled Injector #3 Valve PID Interval
058 – Flow Controlled Injector #4 Valve Type
059 – Flow Controlled Injector #4 Valve Kp
060 – Flow Controlled Injector #4 Valve Ki
061 – Flow Controlled Injector #4 Valve Kd
062 – Flow Controlled Injector #4 Valve PID Interval
063 – Flow Controlled Additive #1 API Table
064 – Flow Controlled Additive #1 Reference Density
065 – Flow Controlled Additive #1 Shared Temperature Input
066 – Additive #1 Maintenance Temperature
067 – Additive #1 High Temperature Alarm
068 – Additive #1 Low Temperature Alarm
069 – Flow Controlled Additive #2 API Table
070 – Flow Controlled Additive #2 Reference Density
071 – Flow Controlled Additive #2 Shared Temperature Input
072 – Additive #2 Maintenance Temperature
073 – Additive #2 High Temperature Alarm
074 – Additive #2 Low Temperature Alarm
075 – Flow Controlled Additive #3 API Table
076 – Flow Controlled Additive #3 Reference Density
077 – Flow Controlled Additive #2 Shared Temperature Input
078 – Additive #3 Maintenance Temperature
079 – Additive #3 High Temperature Alarm
080 – Additive #3 Low Temperature Alarm
081 – Flow Controlled Additive #4 API Table
082 – Flow Controlled Additive #4 Reference Density
083 – Flow Controlled Additive #4 Shared Temperature Input
084 – Additive #4 Maintenance Temperature
085 – Additive #4 High Temperature Alarm
086 – Additive #4 Low Temperature Alarm

Metered Injectors

087 – Injector Alarm Pulse Count
088 – Injector Alarm Pulse Time
089 – Injector #1 Flow Timeout

090 – Injector #2 Flow Timeout
091 – Injector #3 Flow Timeout
092 – Injector #4 Flow Timeout
093 – Additive Totals
094 – Injector #1 Flow Rate Cutoff (Dual Pulse)
095 – Injector #2 Flow Rate Cutoff (Dual Pulse)
096 – Injector #3 Flow Rate Cutoff (Dual Pulse)
097 – Injector #4 Flow Rate Cutoff (Dual Pulse)
098 – Additive Stop Volume Disable
099 – Additive Stop Pump Action

System 801 – Additive Selection Method

This parameter defines how additive injectors will be selected for delivery. Only those additives programmed for a recipe will be available. The selection of available additives may be further limited with a communications command from an automation system. The factory default is "Auto." Selections are as follows:

- **(0) Automatic** – No selection is required or allowed when presetting. All the injectors that are programmed, less those disabled via automation communications, will automatically pulse when the unit is loading
- **(1) Transaction** – Manual selection of the injectors at the start of the transaction. At the start of each transaction, the operator will be prompted to select the desired injectors prior to presetting
- **(2) Batch** – Manual selection of the injectors at the start of each batch. At the start of each batch, the operator will be prompted to select the desired injectors prior to presetting
- (3) Standby Transaction
- (4) Standby Batch

Help: Select how injectors are chosen, automatically, at transaction start, or at batch start

System 802 – Additive Pacing Units

This program code selects the volume type used to pace the additive injectors. The factory default is "IV." Selections are as follows:

- (0) Indicated volume (IV)
- (1) Gross volume (GV)
- (2) GST volume (GST)
- (3) GSV volume (GSV)
- (4) Mass

Critical: Selected units not available

Help: Select the product volume type used in the determination of injection points

System 803 – Additive Stop Option

This parameter defines when the additive injection will stop for each batch. It also determines whether the rate will be recalculated so that the total amount of additive expected for the preset volume will be de-livered before the downcounter reaches the volume in System 804 – Additive Stop Volume. The factory default is "Batch." Selections are as follows:

- (0) End of Batch – Stop volume is ignored. Additive is delivered until end of batch
- (1) No recalculation – Additive is delivered as above but injection halts when only stop volume remains
- (2) Recalculation – Proper additive volume for entire preset volume is "squeezed" so that the correct additive amount for preset is delivered when the stop volume is reached.

Help: Injecting may stop at the end of a batch or at the additive stop volume with or without recalculation of the inject rate

Note: *See System 098 for Additive Stop Volume Disable for those individual additives that deliver to the end of the batch.*

System 804 – Additive Stop Amount

This four-digit entry allows the operator to select the amount of product remaining to be delivered when the additive injectors will be shut down. This code is used only in conjunction with Injector Option 1 and 2 of parameter 803. The range of this code is 0 to 9999.

Help: Enter the preset amount left to be delivered before injector shutdown (in preset volume type). Load Arm Parameter 227 (if non-zero) will override this value.

Note: *See System 098 for Additive Stop Volume Disable for those individual additives that deliver to the end of the batch.*
Note: *Extended from 3-digit to 4-digit entry in revision 11.06.*

System 805 – Additive Injection Units Descriptor

This code allows entry of a three-character message to serve as the additive injection units identifier for the injected products, such as cc or oz. These are the units associated with the programmed additive volume per injection in the recipe directory. The data entry allows the following characters to be selected:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _ END

Help: Enter a description for additive injector units.

System 806 – Additive Totals Units Descriptor

This program code is a 3-character text entry used to define the units in which additive injector volumes are totaled. All additive injector totals available in dynamic displays and via communications will be in these units. The data entry allows the following characters to be selected:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _ END

Help: Enter a descriptor for additive totals units.

System 807 – Injection/Totalization Conversion Factor

This ten-digit numeric entry is used to convert injection units to totals units. This parameter is an exponential entry, with a range of 0 to 9.999999e+09. The AccuLoad III uses this formula for the conversion:

Volume in Injector units / Conversion factor = Volume in Total Units

Example: If injection units are in cc., and injector totals are to be displayed in liters, the value would be 1000. (1.00 e+03).

Help: Enter the number of injection units in each add totals unit (e.g., number of cc's per gallon).

System 808 – Clean Line Additive

This three-digit numeric entry determines the tolerance for the additive stop volume. If the batch is ended before the programmed stop volume has been completely delivered, this entry determines if an alarm will occur. An alarm will occur at batch end if the volume delivered since the last injection is short of the stop volume by more than this entry. The range of the entry is 0 to 999. An entry of 0 disables the alarm.

Help: Set the tolerance allowed for under-run of additive stop volume. Zero disables additive clean line alarm.

System 809 – Piston Injector Feedback Errors

This one-digit numeric entry is used with piston injectors with feedback only. It defines the number of missed feedback signals that can occur before an additive feedback alarm occurs. The range is 0 to 9. A 0 entry disables the alarm.

Help: Enter the maximum number of feedback errors allowed for a piston injector before alarming

System 810, 813, 816, 819, 822, 825, 828, 831, 834, 837, 840, 843, 846, 849, 852, 855, 858, 861, 864, 867, 870, 873, 876, 879 – Additive Types

These program codes define the type of additive injector installed at that injector position. AccuLoad III supports a mixed implementation of additive injector types. Selections are as follows:

- (0) N/A
- (1) Piston
- (2) Piston with Feedback
- (3) Titan
- (4) Gate City Blend-Pak
- (5) Gate City Mini-Pak
- (6) Smith Smart Injector
- (7) Metered Injector
- (8) Add-Pak
- (9) Shared Injector 1
- (10) Shared Injector 2
- (11) Shared Injector 3
- (12) Shared Injector 4
- (13) Flow Rate Controlled Injector
- (14) Add-Pak 2-stroke injector (11.04)

Critical: Metered injector pulse input not configured

Critical: Injector I/O assignment does not match type

Critical: No comm port configured for smart additive control

Critical: No injector address assigned

Critical: Only four metered injectors may be configured

Critical: Add-Pak channel already assigned as aux-iliary I/O point

Critical: Additive 1 must be a metered injector type to configure Shared Injector 1

Critical: Flow Rate Controlled Injectors limited to in-jectors 1-4

Critical: Flow Rate Controlled Injector pulse input not configured

Note: *No entry, dependent upon entry in Configuration Code 020 (number of additive injectors)*

Help: Select the type of injector for this additive.

System 811, 814, 817, 820, 823, 826, 829, 832, 835, 838, 841, 844, 847, 850, 853, 856, 859, 862, 865, 868, 871, 874, 877, 880 – Additive Arm

These entries specify the arm with which the associated additive injector is used. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Note: *No entry, dependent upon entry in Configuration Code 020 (number of additive injectors)*

Help: Select the arm with which this injector is to be associated

Note: *Only Arms 1 and 2 can be programmed when using the AccuLoad III-S hardware.*

System 812, 815, 818, 821, 824, 827, 830, 833, 836, 839, 842, 845, 848, 851, 854, 857, 860, 863, 866, 869, 872, 875, 878, 881 – Additive Plumbing

Additive Injector selections are available dependent upon code 020.

View Injector Plumbing lists the meter(s) into which the injector is plumbed.

Configure Injector Plumbing:

```
812 Add #1 Plumbing

→    Meter 1
     Meter 2
     Meter 3
          More...
```

Press ENTER.

```
812 Add #1 Plumbing
        Meter 1
→   Yes
    No
          More...
```

Meters selected have an asterisk.

```
812 Add #1 Plumbing
→   Meter 1
    Meter 2
    Meter 3
          More...
```

Note: *No Entry if selected load arm is not configured as a ratio blender.*

Note: *Only Meter 1, Meter 2, and Meter 3 are available when using the AccuLoad III-S hardware.*

System 882 to 905 – Additive Injector Address

This three-digit numeric entry is used with any smart injector type. It defines the communications address for the associated injector. When more than one injector is installed at AccuLoad III, injector addresses must be unique. The range of this program code is 0 to 999.

Critical: Injector address must be unique

Critical: If AICB Board #1 is present [determined by seeing if Injectors 5 through 14 are Add-Pak], then no injector may have address 100 through 110.

Critical: If AICB Board #2 is present [determined by seeing if Injectors 15 through 24 are Add-Pak], then no injector may have address 200 through 210.

Note: *No entry if corresponding type is not a Smart Injector (Smith Meter, Titan, Gate City types).*

Note: *No entry if the injector is an Add-Pak type. If the injector is an Add-Pak type, this entry will be set automatically.*

Help: Enter the communications address for this smart injector.

System 906, 911, 916, 921, 926, 931, 936, 941, 946, 951, 956, 961, 966, 971, 976, 981, 986, 991, 996, 001, 006, 011, 016, 021 – Metered Injector K Factor

This seven-digit code defines the nominal number of pulses from a meter for one unit of registration. The value must be between 0.001 and 9999.999.

Critical: Entry must not be zero

Critical: Metered injector pulse input not configured

Note: *No-entry if additive injector type is not metered injector.*

Help: Enter the K factor in pulses per unit volume for the metered injector.

System 907, 912, 917, 922, 927, 932, 937, 942, 947, 952, 957, 962, 967, 972, 977, 982, 987, 992, 997, 002, 007, 012, 017, 022 – Metered Injector Meter Factor

The meter factor for the additive meters that are being controlled directly by the AccuLoad are programmed in these parameters. If the additives are being controlled through communications and ancillary equipment, no value should be programmed in these parameters. The range of these entries is 0.0000 to 9.9999. Meter factor equals the actual volume times the current meter factor times the K factor, all divided by the input pulses. The factory default is "0.0000".

Critical: Entry must not be zero

Help: Enter the meter factor for the metered injector.

System 908 to 923 – Metered Injector Tolerances

908 Metered Injector #1 High Tolerance
913 Metered Injector #2 High Tolerance
918 Metered Injector #3 High Tolerance
923 Metered Injector #4 High Tolerance
928 Metered Injector #5 High Tolerance
933 Metered Injector #6 High Tolerance
938 Metered Injector #7 High Tolerance
943 Metered Injector #8 High Tolerance
948 Metered Injector #9 High Tolerance
953 Metered Injector #10 High Tolerance
958 Metered Injector #11 High Tolerance
963 Metered Injector #12 High Tolerance
968 Metered Injector #13 High Tolerance
973 Metered Injector #14 High Tolerance
978 Metered Injector #15 High Tolerance
983 Metered Injector #16 High Tolerance
988 Metered Injector #17 High Tolerance
993 Metered Injector #18 High Tolerance
998 Metered Injector #19 High Tolerance
003 Metered Injector #20 High Tolerance
008 Metered Injector #21 High Tolerance
013 Metered Injector #22 High Tolerance
018 Metered Injector #23 High Tolerance
023 Metered Injector #24 High Tolerance

These four-digit numeric entries define a percentage in three whole digits, followed by one decimal place, for

the amount the actual injected volume can surpass the average volume required to meet the additive needs. The range of this entry is 0 to 999.9. The factory default is "0".

Help: Enter the percent that the actual additive amount may pass the averaged amount before an error is counted

909 Metered Injector # 1 Low Tolerance
914 Metered Injector # 2 Low Tolerance
919 Metered Injector # 3 Low Tolerance
924 Metered Injector # 4 Low Tolerance
929 Metered Injector # 5 Low Tolerance
934 Metered Injector # 6 Low Tolerance
939 Metered Injector # 7 Low Tolerance
944 Metered Injector # 8 Low Tolerance
949 Metered Injector # 9 Low Tolerance
954 Metered Injector #10 Low Tolerance
959 Metered Injector #11 Low Tolerance
964 Metered Injector #12 Low Tolerance
969 Metered Injector #13 Low Tolerance
974 Metered Injector #14 Low Tolerance
979 Metered Injector #15 Low Tolerance
984 Metered Injector #16 Low Tolerance
989 Metered Injector #17 Low Tolerance
994 Metered Injector #18 Low Tolerance
999 Metered Injector #19 Low Tolerance
004 Metered Injector #20 Low Tolerance
009 Metered Injector #21 Low Tolerance
014 Metered Injector #22 Low Tolerance
019 Metered Injector #23 Low Tolerance
024 Metered Injector #24 Low Tolerance

These four-digit numeric entries define a percentage in three whole digits, followed by one decimal place, for the amount the actual injected volume can be under the average volume required to meet the additive needs. The range of this entry is 0 to 999.9. The factory default is "0".

Help: Enter the percent that the actual additive amount may be under the averaged amount before an error is counted.

910 Metered Injector # 1 Maximum Tolerance Error
915 Metered Injector # 2 Maximum Tolerance Error
920 Metered Injector # 3 Maximum Tolerance Error
925 Metered Injector # 4 Maximum Tolerance Error
930 Metered Injector # 5 Maximum Tolerance Error
935 Metered Injector # 6 Maximum Tolerance Error
940 Metered Injector # 7 Maximum Tolerance Error
945 Metered Injector # 8 Maximum Tolerance Error
950 Metered Injector # 9 Maximum Tolerance Error
955 Metered Injector #10 Maximum Tolerance Error
960 Metered Injector #11 Maximum Tolerance Error
965 Metered Injector #12 Maximum Tolerance Error
970 Metered Injector #13 Maximum Tolerance Error
975 Metered Injector #14 Maximum Tolerance Error
980 Metered Injector #15 Maximum Tolerance Error
985 Metered Injector #16 Maximum Tolerance Error
990 Metered Injector #17 Maximum Tolerance Error
995 Metered Injector #18 Maximum Tolerance Error
000 Metered Injector #19 Maximum Tolerance Error
005 Metered Injector #20 Maximum Tolerance Error
010 Metered Injector #21 Maximum Tolerance Error
015 Metered Injector #22 Maximum Tolerance Error
020 Metered Injector #23 Maximum Tolerance Error
025 Metered Injector #24 Maximum Tolerance Error

These two-digit numeric entries allow the operator to set up how many times during the batch that the high and low tolerance percentages can be exceeded continuously before an alarm is set. The range of this entry is from 0 to 99. The factory default is "0".

Help: Enter the maximum number of tolerance errors allowed before an alarm is set.

System 026 – Piston Injector Stop Option

This parameter determines whether any active pis-on injector outputs are de-energized if the batch is stopped prematurely due to the stop key, an alarm, or loss of permissive. This does not affect the state of the piston injector solenoid output at batch end or transaction end. Selections are as follows:

- (0) No Action
- (1) De-energize

Help: De-energize piston injector output when batch is stopped, alarm occurs, or on loss of permissive.

System 027, 031, 035, 039 – Flow Controlled Injector Minimum Flow Rate

This four-digit numeric entry defines the lowest programmed flow rate for the additive. This will be the final stage flow rate for the additive when the valve is signaled to close at the completion of a preset. The range of this entry is 0 to 9999 units per time measurement.

Note: *No entry if the injector type is not a Flow Rate Controlled Injector.*

Help: Enter minimum flow rate for additive control.

System 028, 032, 036, 040 – Flow Controlled Injector Maximum Flow Rate

This four-digit numeric entry defines the maximum flow rate being controlled for this additive during loading. The range of this entry is front 0 to 9999 flow units.

Note: *No entry if the injector type is not a Flow Rate Controlled Injector.*
Note: *Additive will not flow if additive maximum flow is zero.*
Help: Enter maximum flow rate for additive control.

System 029, 033, 037, 041 – Flow Controlled Injector Flow Tolerance Percentage

This single-digit entry designates the percentage of the currently requested flow rate that the flow rate of the additive may vary before the AccuLoad III initiates a valve correction. The range of this one-digit numeric entry is from 0 to 9%.

Example:

Current Flow Rate: 130 GPM

Flow Tolerance: 5%

Flow rate may vary 6.5 GPM (130 GPM × 5% = 6.5 GPM without a valve correction)

Note: *No entry if the injector type is not a Flow Rate Controlled Injector.*
Help: Enter flow tolerance percentage for additive flow control.

System 030, 034, 038, 042 – Flow Controlled Injector Second Trip Amount

This three-digit numeric entry defines the preset amount in tenths remaining for this additive at the final valve closure signal for the product. The range of this entry is from 0.0 to 99.9 units.

Note: *No entry if the injector type is not a Flow Rate Controlled Injector.*
Help: Enter second trip point for additive flow control.

System 043, 048, 053, 058 – Flow Controlled Injector Additive Valve

This entry defines the type of valve to be used with this additive. Selections are as follows:

- (0) Digital
- (1) Analog

Note: *No entry if the injector type is not a Flow Rate Controlled Injector.*
Help: Select the type of valve used.

System 044, 049, 054, 059 – Flow Controlled Additive Kp (PID, Proportional Gain Factor)

This entry defines the PID proportional gain factor for analog valve control. The range of this entry is 0.000 to 999.999. This entry is used only with analog valves.

Note: *No entry if the injector type is not a Flow Rate Controlled Injector.*
Note: *No entry if additive valve type is digital.*
Help: Enter the PID proportional gain factor for analog valve control.

System 045, 050, 055, 060 – Flow Controlled Additive Ki (PID, Integral Gain Factor)

This entry defines the PID integral gain factor for analog valve control. The range of this entry is 0.000 to 999.999. This entry is used only with analog valves.

Note: *No entry if the injector type is not a Flow Rate Controlled Injector.*
Note:*No entry if additive valve type is digital.*
Help: Enter the PID integral gain factor for analog valve control.

System 046, 051, 056, 061 – Flow Controlled Additive Kd (PID, Derivative Gain Factor)

This entry defines the PID derivative gain factor for analog valve control. The range of this entry is 0.000 to 999.999. This entry is used only with analog valves.

Note: *No entry if the injector type is not a Flow Rate Controlled Injector.*
Note:*No entry if additive valve type is digital.*
Help: Enter the PID derivative gain factor for analog valve control.

System 047, 052, 057, 062 – Flow Controlled Additive PID Interval

This entry defines the time interval, in seconds, between PID calculations. The range of this entry is 0.0 to 9.9.

Note: *No entry if the injector type is not a Flow Rate Controlled Injector.*
Note: *No entry if additive valve type is digital.*
Help: Enter the PID derivative gain factor for analog valve control.

System 063, 069, 075, 081 – Flow Controlled Additive API Table

This entry allows the operator to select the appropriate API Table to be used to temperature compensation for Additive #1. This parameter applies only when the injector is configured as a flow rate controlled injector. Selections are as follows:

- (0) NA
- (1) 5A
- (2) 5B
- (3) 5D
- (4) 6
- (5) 6A
- (6) 6B
- (7) 6C
- (8) 6D
- (9) 23
- (10) 23A
- (11) 23B
- (12) 23D
- (13) 24
- (14) 24A
- (15) 24B
- (16) 24D
- (17) 53
- (18) 53A
- (19) 53B

- (20) 53D
- (21) 54
- (22) 54A
- (23) 54B
- (24) 54C
- (25) 54D
- (26) 23E
- (27) 24E
- (28) BR1A
- (29) BR1P
- (30) BR2P
- (31) 59A
- (32) 59B
- (33) 59D
- (34) 60A
- (35) 60B
- (36) 60D
- (37) 53E
- (38) 54E
- (39) 59E
- (40) 60E
- (41) Eth/Bio (PTB)
- (42) Aromatic
- (43) Eth (EPA-RFS2) Fuel grade ethanol
- (44) B100 (EPA-RFS2) Biodiesel

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if this injector is not configured as a flow rate controlled injector.*

Critical: This API table not available for flow controlled injectors. [Odd-numbered API tables, Brazil tables and 24E]

Help: Select the API Table to be used for temperature compensation.

System 064, 070, 076, 082 – Flow Controlled Additive Reference Density

This code has a constant five-digit entry with a floating decimal point. The format is based on table and product selection. The program code format and data entry allows the programmable entry of the Reference Density when Table 54 is selected, Relative Density when Table 24 is selected, API when Table 6 is selected, and temperature coefficient when a C Table is selected. This entry represents the reference value used to calculate the volume correction factor. The range of this value will vary with the table selection chosen.

Note: *When Table 6 is selected, the leading digit will be used to show polarity, + = positive and a - = negative.*

Entry range based on table selection.

Table 6 999.9 to +999.9 API

Table 24 0 to 9.9999 Relative Density

Table 54 0 to 9999.9 Reference Density

C Tables 0 to 0.9999 Percent per Degree Temperature

Note: *If the API table selection is changed, the previous five-digit entry for reference will not be converted. This value must be re-entered.*

The following are examples of the display when Tables 24, 54 or 6C and 54C are selected.

Table 6B selected: +43.2 API

Table 24 selected: 0.8175 Rel Density

Table 54 selected: 1150.2 Kg/M3

Table 6C or 54C selected: 0.0800 %/Deg. F or Deg. C

Fatal: Entry is out of specified range.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if this injector is not configured as a flow rate controlled injector.*
Note: *No entry if Density Units = Not Used*
Note: *No entry if API table is odd*

Help: Enter the product density at reference temperature or the temperature coefficient (for C tables).

System 065, 071, 077, 083 – Flow Controlled Additive Shared Temperature Input

This entry allows the operator to indicate whether an additive is to share a temperature probe already assigned to another arm / meter or additive, and to select a specific probe to be shared. This eliminates having to configure multiple analog inputs for temperature. Selections are as follows:

- (0) Not Used
- (1) Arm 1 Meter 1
- (2) Arm 1 Meter 2
- (3) Arm 1 Meter 3
- (4) Arm 1 Meter 4
- (5) Arm 1 Meter 5
- (6) Arm 1 Meter 6
- (7) Arm 2 Meter 1
- (8) Arm 2 Meter 2
- (9) Arm 2 Meter 3
- (10) Arm 2 Meter 4
- (11) Arm 2 Meter 5
- (12) Arm 2 Meter 6
- (13) Arm 3 Meter 1
- (14) Arm 3 Meter 2
- (15) Arm 3 Meter 3
- (16) Arm 3 Meter 4
- (17) Arm 3 Meter 5
- (18) Arm 3 Meter 6
- (19) Arm 4 Meter 1
- (20) Arm 4 Meter 2
- (21) Arm 4 Meter 3
- (22) Arm 4 Meter 4
- (23) Arm 4 Meter 5
- (24) Arm 4 Meter 6
- (25) Arm 5 Meter 1

- (26) Arm 5 Meter 2
- (27) Arm 5 Meter 3
- (28) Arm 5 Meter 4
- (29) Arm 5 Meter 5
- (30) Arm 5 Meter 6
- (31) Arm 6 Meter 1
- (32) Arm 6 Meter 2
- (33) Arm 6 Meter 3
- (34) Arm 6 Meter 4
- (35) Arm 6 Meter 5
- (36) Arm 6 Meter 6
- (37) Flow Rate Injector #1
- (38) Flow Rate Injector #2
- (39) Flow Rate Injector #3
- (40) Flow Rate Injector #4

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if this injector is not configured as a flow rate controlled injector.*
Critical: Temperature probe already assigned to additive.

Help: Select if it is desired to use another meter or additive temperature input.

System 066, 072, 078, 084 – Additive Maintenance Temperature

This code allows the entry of a maintenance temperature to be used when a temperature probe is not installed or working, but temperature related calculations are desired. The temperature units are dependent on the entry made in the Temperature Scale Select code. This four-digit entry has a range of –999.9 to 999.9 temperature units where –999.9 disables the maintenance temperature.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if this injector is not configured as a flow rate controlled injector.*
Note: *An entry greater than -999.9 will override the temperature probe or transducer input if installed and will be used in all calculations where temperature is used.*
Note: *No entry if Temperature Units = Not Used*
Help: Select maintenance temperature if temperature probe is not installed or to override probe

System 067, 073, 079, 085 – Additive High Temperature Alarm Limit

This code allows the entry of a temperature reading that will cause a high temperature alarm to be generated. The temperature units will be dependent on the entry made in the Temperature Scale Select code. This four-digit entry has a range of –999.9 to +999.9 degrees F or C.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if this injector is not configured as a flow rate controlled injector.*
Note: *An entry of "+999" will disable the alarm.*
Help: Enter temperature that will signal an alarm for high product temperature

System 068, 074, 080, 086 – Additive Low Temperature Alarm Limit

This code allows the entry of a temperature reading that will cause a low temperature alarm to be generated. The temperature units will be dependent on the entry made in the Temperature Scale Select code. This four-digit entry has a range of –999.9 to +999.9 degrees F or C.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if this injector is not configured as a flow rate controlled injector.*
Note: *"-999" will disable the alarm.*
Note: *No entry if Temperature Units = Not Used*
Help: Enter temperature that will signal an alarm for low product temperature.

System 087 – Injector Alarm Pulse Count

This parameter determines the threshold of leakage pulses allowed without an alarm. Any further pulses will result in a alarm. This parameter is for metered injectors and with the Add-Pak using Add-Pak firmware revision 3. The range of values allowed is from 0 – 999. When set to 0, the count defaults to 10.

Help: Enter the number of metered injector leakage pulses allowed before an alarm occurs.

System 088 – Injector Alarm Pulse Time

This parameter defines the amount of time in minutes between resets of the Injector Alarm Pulse Count. The range is from 0 – 999 minutes. If set to 0, the count of metered injectors leakage pulses, which would trigger an alarm, is not reset.

Help: Enter the time in minutes that the alarm count must occur to signal an alarm.

System 089, 090, 091, 092– Flow Controlled Additive 1,2,3,4 Adjust Timeout

This parameter determines the maximum amount of time in seconds allowed to reach the desired rate for a flow rate controlled additive before an alarm will be issued. If the desired flow is not reached before this timeout expires a low additive alarm will occur. The range for this input is 0 to 999 seconds, a zero entry disables the feature. These parameters are not displayed for injectors of a type other than flow controlled.

Help: Enter time in seconds to reach desired flow rate before an alarm occurs. Zero disables.

System 093 – Include Flow-Controlled Additive Totals in Product Totals

This program code allows the separation of flow-controlled additive volume totals from product volume totals.

- (0) Include with Product (Additive delivered amounts are added to the reported product amounts)
- (1) Do Not Include

Previously, additive amounts delivered were always included in the delivered product. With new flow-controlled additives and other high-volume additive systems, it may be desirable to maintain product totals that do not include additive volumes. Select '1' in this program code if you wish the Accuload to record/report product totals that do not include any flow-controlled additive amounts.

Note: *For purposes of calculating blend percentages, the additive amounts will always be considered part of the product amounts; hence this selection will not affect blend results, only the reported totals.*

Help: Determine if individual product totals include the flow controlled additive totals.

System 094, 095, 096, 097– Flow Rate Controlled Additive 1,2,3,4 Dual Pulse Low Flow Rate Cutoff

This parameter defines the additive flow rate below which dual pulse errors will not be counted. Entry is volume or mass based upon System 305 – Pulse In Type. The range of this entry is 0-9999.

This parameter has no effect if flow controlled additive pulse inputs are not configured for dual channel transmitters in Configuration 142 – Flow Controlled Additive Channel Select.

Help: Enter the flow rate at which dual pulse error counts will be counted, mass or volume based upon pulse input type.

System 098 – Additive Stop Volume Disable

This parameter allows the programming of the additive stop volume to be ignored for specified additives. Select the additives that will NOT be stopped at the additive stop volume by scrolling through the list on the AccuLoad display. When the cursor is at an additive that should NOT be stopped, press "Enter". A display will appear that provides two choices:

- (0) Enable Add Stop
- (1) Disable Add Stop

Choosing "Disable Add Stop" and pressing "Enter" will put an asterisk next to that additive indicating that it will NOT be stopped until the end of the batch.

Help: Disable use of additive stop volume for this injector.

System Additive Directory 099 – Additive Stop Pump Action

This program code determines when the additive pump is de-energized while an additive stop amount is configured and active for the associated injector.

The available options are:

0 - End of Batch

1 - When Stop Amount reached (after last injection completes)

If the Additive Stop Disable option is configured for the associated injector, this option has no effect and the pump will remain on until end of batch (default operation).

Note: *This option cannot be guaranteed to give the desired results when used with smart injectors that perform their own pump control.*

Load Arm General Purpose Directory

101 – Permissive 1 Sense
102 – Permissive 1 Message
103 – Permissive 1 Restart
104 – Permissive 2 Sense
105 – Permissive 2 Message
106 – Permissive 2 Restart
107 – Load Arm ID
108 – Load Arm Ready Message
109 – Bay Assignment
110 – Virtual Swing Arm
111 – Unlimited Preset
112 – Transaction Reset Time
113 – Transaction Reset Start Hour

Load Arm 101, 104 – Permissive Sense

These parameters define the conditions under which a defined permissive is expected to be present in order for loading operations to be allowed. Selections are as follows:

- **(0) N/A**
- **(1) Transaction Start** – Permissive only checked immediately after authorization
- **(2) Continuous** – Permissive must be met continuously during the batch
- **(3) Start Key Pressed** – Permissive must be met whenever flow is started
- **(4) Batch Start** – Permissive must be met to start a batch

Note: *No entry if digital input not programmed as permissive.*

Help: Select permissive sense for loading

Load Arm 102, 105 – Permissive Messages

These 28-character alphanumeric messages will be displayed if a permissive sense entry, corresponding with the message, is defined but not present when expected. The data entry allows the following characters to be selected:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ' - " / + = _ END

Note: *No entry if digital input not programmed as permissive.*

Help: Enter message to be displayed in absence of permissive.

Load Arm 103, 106 – Permissive Restart

These parameters will determine how a restart is initiated after a permissive is lost and then restored. Selections are as follows:

- **(0) Manual** – Start key must be pressed to restore flow
- **(1) Automatic** – Flow will be started automatically as soon as the permissive is restored

Note: *No entry if digital input not programmed as permissive.*

Help: Select whether batch will restart automatically or start key will be required after permissive is restored.

Load Arm 107 – Load Arm ID

This program code is a 28-character alphanumeric entry used to identify the load position. It is included on the AccuLoad's display in Ready mode. The Load Arm ID can also be included on the delivery report. The data entry allows the following characters to be selected:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _ END

Help: Enter an alphanumeric identifier for this load arm.

Load Arm 108 – Load Arm Ready Message

This program code is a 28-character alphanumeric entry used to indicate when a particular load arm is ready. It is included on the AccuLoad's display in Ready mode. The data entry allows the following characters to be selected:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _ END

Help: Enter a message to display at the Ready screen for this load arm.

Load Arm 109 – Bay Assignment

When using Firmware Revision 11.01 or higher, this program code allows the operator to assign a load arm to a specific bay. Available options are as follows:

- (0) Independent
- (1) Bay A
- (2) Bay B
- (3) Swing Arm

Help: Select if this arm is part of a bay.

Load Arm 110 – Virtual Swing Arm

- No
- Yes

Help Message: Select if it is desired for swing arm to appear as two separate independent arms to driver and automation system.

Warning: Transaction storage will be erased for all load arms.

Critical: No transactions can be in progress on any arm.[1]

Critical: There are no virtual arms available (must reduce # of load arms)

Critical: At least one recipe needs to be setup for the virtual arm.

Critical: No swing arm detect switch is programmed for this arm.

Critical: Arms 4-6 not available as the primary swing arm.

Critical: If enabled, Bay Assignment (Arm 109) must be set to Independent or Swing Arm.[2]

Factory default setting will be "No" (feature disabled).

[1] *This prevents the parameter from being changed via communications while a transaction is in progress on any arm. Normally parameters can be changed for an arm as long as that arm is idle (regardless of status of other arms).*

[2] *If "virtual swing arm" is enabled (Arm 110), then the arm's bay assignment (Arm 109) cannot be programmed to a fixed bay position.*

Load Arm 111 – Unlimited Preset

This program code enables an alternative method of product delivery for specialized applications where the goal is to continuously blend two or more products. This feature can optionally also be used in situations where a main product stream is not under the control of the AccuLoad but component products being blended into the main product ARE being controlled by the AccuLoad.

When configured for unlimited preset with a wild stream meter, the desired flow rates will not be based on a programmed high flow rate or low flow start rate. Instead the desired flow rate for the controlled products will be based on the flow rate of the wild stream. The AccuLoad will attempt to adjust the flow rates for the controlled products to produce the programmed blend ratio.

If all products are controlled (no wild stream meter), the desired flow rates will be based on the programmed high flow rate or low flow rate. In this configuration, the are high flow rate will not be exceeded.

Load Arm 112 – Transaction Reset Time

This program code specifies the time period for transactions in Unlimited Preset mode. The current transaction will be terminated and a new transaction will be started when the period expires. This entry is in hours (1-999 hours, 0 to disable)

This program code only affects and is only available with arms configured for Unlimited Preset.

Load Arm 113 – Transaction Reset Start Hour

This program code specifies the hour of the day (in military time) when the transaction reset period specified in Load Arm 112 – Transaction Reset Period" begins.

Valid entry is 0 (midnight) to 23 (2300 hours or 11:00 pm).

Load Arm Flow Control Directory

201 – Low Flow Start Rate

202 – Low Flow Start Amount

203 – Low Flow Start Percentage

204 – Low Flow Start Condition

205 – High Flow Rate

206 – Second High Flow Rate

207 – Start After Stop Delay
208 – Overrun Alarm Limit
209 – Zero Flow Timer
210 – Valve Delay to Open
211 – Pump Delay to Off
212 – Valve Fault Timeout
221 – Clean Line Amount
222 – Clean Line Product
223 – Clean Line Alarm Limit
224 – Ratio Factor Adjust
225 – Ratio Factor Time
226 – Block Valve Position
227 – Additive Stop Amount
228 – Valve Close Delay
229 – First/Second High Flow Preset
230 – Clean Line Blend
231 – Additive Start
232 – 1st/2nd High Flow

Load Arm 201 – Low Flow Start Rate

This five-digit numeric entry designates the flow rate used during low flow start, i.e., for the volume of product defined by the low flow start volume or low flow start percentage program codes. The range of this parameter is 0.0 to 9999.9. The factory default is 0.0.

Critical: Low flow start rate can't be less than the minimum flow rate (checks all products configured)

Help: Enter the flow rate during low flow start operation.

Load Arm 202 – Low Flow Start Amount

This four-digit numeric entry defines the amount of product to be delivered at the low flow start rate. If both low flow start amount and low flow start percentage are defined, the larger of the two will be used for low flow start. The range of this parameter is 0.0 to 9999.9. The factory default is 0.0.

Help: Enter amount for delivery during low flow start, mass or volume depending on preset type.

Load Arm 203 – Low Flow Start Percentage

This two-digit numeric entry defines the percentage of the preset volume to be delivered during low flow start. If both low flow start percentage and low flow start volume are defined, the larger of the two will be used for low flow start. The range of this parameter is 0 to 99. The factory default is 0.0.

Help: Enter percent of preset for delivery during low flow start

Load Arm 204 – Low Flow Start Condition

This parameter defines when AccuLoad III will deliver product at the low flow start rate. The factory default is "Always." Selections are as follows:

- (0) Always
- (1) Start of batch

Help: Select whether low flow start is desired at batch beginning or at every start

Load Arm 205 – High Flow Rate

This five-digit code sets the high flow rate for the system. This rate will be divided among the products being delivered according to the percentages assigned in the recipe selected for loading. The range of this entry is 00001 to 99999 flow units. Entry is volume or mass based on System 305 – Pulse In Type.

Note: *"00000" will not allow the valve to open.*
Note: *This parameter is only used for ratio blending.*
Help: Enter the maximum flow rate for digital valve control operation. A zero entry will not allow the valve to open.

Load Arm 206 – Second High Flow Rate

This five-digit entry defines a second high flow rate for the system, which is selectable by an AC contact input. This program code is only available if one of the inputs has been configured for first or second high flow rate selection. The range of this entry is 00000 to 99999 flow units. This flow rate would be typically selected for smaller trucks. Entry is volume or mass based on System 305 – Pulse In Type.

Note: *This parameter is only used for ratio blending.*
Help: Enter the second high flow rate for digital valve control operation. A zero entry will not allow the valve to open.

Load Arm 207 – Start After Stop Delay

This parameter defines the amount of time, in seconds, before AccuLoad III will allow flow to be re-started after flow was stopped during a batch. The range of this three-digit numeric entry is 0 to 999 seconds. The factory default is 0.

Help: Enter time in seconds to delay a start after stop in midload

Load Arm 208 – Overrun Alarm Limit

This program code defines the amount of product, in programmed volume units, that can be delivered above the preset amount before AccuLoad III generates an overrun alarm. The range of this parameter is 0 to 99. An entry of 0 disables the Overrun Alarm.

Help: Enter number of units delivered over preset amount before alarm occurs

Load Arm 209 – Zero Flow Timer

This parameter defines the amount of time, in seconds, that AccuLoad III will ignore a zero flow condition before commanding the valve to close. Once this occurs, Accu-

Load III will require a start command before the batch in progress can be continued. The range of this parameter is 0 to 99 seconds. The factory default is 0.

Help: Enter time in seconds zero flow is ignored before valve closure. Zero disables this feature.

Load Arm 210 – Valve Delay to Open

This program code defines the amount of time, in seconds, before the valve will be commanded to open after the pump relay is closed. This allows the pump to pressurize the line, providing for better valve response. The range of this parameter is 0 to 99 seconds. The factory default is 0.

Help: Enter time delay in seconds to open valve after start

Load Arm 211 – Pump Delay to Off

This two-digit entry allows the operator to select a pump relay delay to off time in seconds. At any time during a normal or operator-requested stop, the pump relay will be delayed by the programmed value in seconds before turning off. This delay will be overridden in an alarm condition (i.e., no delay to off). The range of this entry will be 0 to 99 seconds delay to off.

Note: *No-entry if no digital output configured as pump*
Help: Enter delay time in seconds to open the pump relay contact after stop.

Load Arm 212 – Valve Fault Timeout

This two-digit program code allows the setting of the amount of time that the AccuLoad will ignore flow after the valve has been commanded to close. If flow persists beyond this time, a "Valve Fault" alarm will occur. The range of this parameter is 0 to 99 seconds.

Help: Enter time in seconds to ignore flow when valve has been commanded to close. Zero disables this feature.

Load Arm 221 – Clean Line Amount

This three-digit entry establishes the amount of clean line product to be delivered to fill the pipe/load arm at the end of every batch. This amount is determined by calculating the amount of product to fill the pipe/load arm from the control valve(s) to the end of the loading arm. The range of this entry is 0 to 999 units. The factory default is 0. Entry is volume or mass based on System 332 – Preset Type.

Note: *No entry if load arm set to straight product.*
Help: Enter the amount of clean line product desired at end of batch, mass or volume based on preset type.

Load Arm 222 – Clean Line Product

This one-digit entry selects the product that will be designated as the clean line product. The clean line product will be delivered at the end of every batch whether the designated clean line product is part of the recipe being delivered or not. The purpose is to have the line packed with the clean line product at the end of a delivery. The factory default is "Product 1." Selections are as follows:

- (0) Product #1
- (1) Product #2
- (2) Product #3
- (3) Product #4
- (4) Product #5
- (5) Product #6

Note: *No entry if clean line amount set to 0.*
Note: *No entry if load arm set to straight product.*
Critical: Clean line product must be Product 1 when configured for side-stream blending.

Help: Select the product that will be used to fill the load arm at the end of each batch.

Load Arm 223 – Clean Line Alarm Limit

This two-digit entry defines the amount of product that the clean line amount can be short and not cause an alarm. For example, if the clean line amount is set for 100 gallons and the maximum clean line alarm limit is programmed for 5 gallons, the clean line amount can range between 95 gallons and 100 gallons without causing an alarm. The range of this entry is 0 to 99 units. The factory default is 0.

Note: *No entry if clean line amount set to 0.*
Note: *No entry if load arm set to straight product.*
Help: Set tolerance allowed for under-run of clean line delivery.

Load Arm 224 – Ratio Factor Adjust

This three-digit entry sets the ratio adjustment factor used to speed up the response of the blend valves to help maintain the programmed blend ratio during loading. This factor is used to magnify the difference between the programmed blend ratio and the current blend ratio so that the programmed blend ratio can be achieved more quickly. The value used in this code must not be zero. The range of this entry is 00.1 to 99.9.

Note: *No entry if ratio blending not selected.*
Help: Enter the ratio adjustment factor for the desired blend flow correction.

Load Arm 225 – Ratio Factor Time

This two-digit entry sets the time in seconds between flow rate calculations based on programmed and current blend ratios. If this results in a desired flow rate outside the tolerance of the current flow rate, then the control valves will be adjusted. The value used in this code must not be zero. This value should be determined based on the hydraulic conditions that exist for the system. The range of this entry is 01 to 99 seconds.

Note: *No entry if ratio blending not selected.*

Help: Enter the flow rate adjustment time in seconds for the desired blend flow correction.

Load Arm 226 – Block Valve Position

This one-digit entry sets the position of the product select valve at the end of a transaction or when the STOP button is pressed. The valve can either be left open (for relief of thermal expansion) or closed. This code applies only to electric motor-operated valves. The factory default is 0. Selections are as follows:

- (0) Valve is closed when STOP is pressed and at the end of the transaction
- (1) Valve is open when STOP is pressed and closed at the end of the transaction
- (2) Valve is closed when STOP is pressed and open at the end of the transaction
- (3) Valve is open when STOP is pressed and open at the end of the transaction.

Note: *No entry if sequential blending not selected.*
Help: Select the block valve position at the end of a transaction when STOP is pressed or when stop state occurs.

Load Arm 227 – Additive Stop Amount

This program code allows an arm-specific additive stop quantity (in preset type units) to be specified. If a nonzero value is programmed both here and in System 804 – Additive Stop Amount, this value supersedes the system value. Valid range is 0 to 9999.

Help: Enter load arm preset amount left to be delivered before injector shutdown (in preset type)

Note: *This parameter is only available when using Revision 10 or above firmware.*
Note: *Extended from 3-digit entry in revision 11.06.*

Load Arm 228 – Valve Close Delay

This parameter only affects arms configured for unloading operation. This parameter determines the amount of time in seconds the valve will remain open after the stop switch input is de-asserted. This prevents the valve from closing during the period when the gear pump may be engaged. Range of this parameter is 0 to 999 seconds.

Help: Valve remains open for this time in seconds after stop float becomes uncovered.

Load Arm 229 – First/Second Hi Flow Preset

This program code specifies a preset threshold at which the second high flow rate will be used as if the second high flow switch input had been activated. Any batch with a preset amount less than or equal to this entry will use the rates programmed in Product 203 – Second High Flow Rate and Load Arm 206 – Second High Flow Rate in place of the rates programmed in Product 202 – High Flow Rate and Load Arm 205 – High Flow Rate. (Note: the load arm high flow rate values only apply to ratio blending arms.) This program code does not require nor preclude the use of a first/second high flow switch. The second high flow rate will be used if either the second high flow switch is active or the preset amount is at or below the value in this entry. An entry of 0 disables the feature. The range of this entry is 0 – 999999 units.

Help: Batch presets less than or equal to this will use the second high flow rate.

Load Arm 230 – Clean Line Blend Adjust

When a recipe is delivered, the clean line product is actually pushed into the truck first when the control valve is opened since the clean line product is still packed in the line. At the end of the batch the clean line measured by the meter is packing the line for the next batch and not actually delivered into the truck.

If this parameter is enabled, the control valve for the clean line product will not be opened at the start of the batch, allowing the remaining products to blend-up to the desired blend ratio. Once the desired blend is achieved, blend adjustments will continue to take into account that the clean line product volume has already been delivered into the truck.

- (0) No
- (1) Yes

Help: Select if it is desired to take into account the clean line product already packed in the line at the start of batch for blend adjustments.

Note: *No entry if arm is not configured for ratio blending.*
Note: *This parameter is only available when using Revision 10.09 or above firmware.*

Load Arm 231 – Additive Start

This program code determines when additive pacing begins. Options are:

- (0) Start of Batch
- (1) After Low Flow start volume has been delivered

This option allows for a delay between additive pump startup and first injection to assure sufficient pressure has been established in the additive sub-system.

Critical: Low flow start condition must be “Batch Start.”

Help: Select if additive can be deliver during low flow start.

Note:
1. Parameter will be no entry if there are no injectors configured.
2. Feature is not available for flow controlled additives.
3. This parameter is only available when using Revision 10.12 or above firmware.

Load Arm 232 – 1st/2nd High Flow

- (0) Batch Start
- (1) Dynamic

Select Batch Start and the flow rate used will be for whichever position the input is selected for only when the batch is started. The input will then be ignored once the batch has been started.

Select Dynamic and the AccuLoad will monitor this input

dynamically during the batch. Once the low flow start volume has been delivered, the input will be monitored. If the input changes state the AccuLoad will adjust the flow rate according to the High Flow Rate and Second High Flow Rate parameters. If the batch has already reached 1st trip, the flow rate will only be reduced by a change in state of the 1st/2nd high flow digital input.

Help Message: Select if the 1st/2nd High Flow digital input is to be read at start of batch only or throughout the batch (Dynamic)

Load Arm Volume Accuracy Directory

301 – Blend Tolerance (Percentage)

302 – Blend Tolerance (Volume)

303 – Blend Correction

304 – Blend Alarm Timeout

305 – Blend Alarm Minimum Amount

306 – Blend Correction Amount

307 – Blend Correction Time

308 – Blend Error Reset

309 – Blend Algorithm

310 – Ratio Product Min Flow

311 – Ratio Product Min Close Time

Load Arm 301 – Blend Tolerance (Percentage)

This two-digit program code defines the blend tolerance allowed for all delivered blends. The range of this entry is 0.1 percent to 9.9 percent.

This blend tolerance is applied as a percentage of the total batch delivered. If the delivered amount of the product is within plus or minus the blend percentage of the total delivery, no blend alarm will occur.

A blend tolerance entry of zero allows no tolerance, causing an alarm to occur unless all components are delivered exactly.

For example, assume a blend tolerance percentage of 2%, a preset of 1000 gallons, and a recipe consisting of 25% of each of the four products. The presets for each of the products would be 250 gallons. If 1000 gallons are delivered, the calculated blend tolerance would be 20 gallons (2% of 1000 gallons). If any product delivered less than 230 gallons (250 – 20) a blend low alarm will be set. If any product delivered more than 270 gallons (250 + 20), a blend high alarm will be set. (This is true only if all 1000 gallons are delivered.)

Note: *No entry if no arm configured for sequential or ratio blending.*

Help: Enter the percentage of total preset to be used as the blend tolerance.

Load Arm 302 – Blend Tolerance (Volume)

This three-digit code defines the blend tolerance as a fixed volume. This volume represents the delivered volume of product over or under the delivered volume that will be allowed by AccuLoad III without causing an alarm. The range of this entry is 00.1 to 99.9 units.

If both a blend tolerance volume and a blend tolerance percentage are entered, the AccuLoad will use the larger of the two for a specific batch. It is recommended that the minimum volume tolerance be programmed here to override the percentage applied to very small batches.

Note: *No entry if no arm configured for sequential or ratio blending.*

Help: Enter the volume to be used as the blend tolerance.

Load Arm 303 – Blend Correction

This code establishes the type of Blend Correction that will be allowed in case of a product overrun. Three possible selections are available. The factory default is "No Blend Correction." Selections are as follows:

- **(0) No Blend Correction.** If a product overrun occurs during the loading process, which would cause a blend alarm, no correction will be allowed and the transaction must be ended.
- **(1) Self-Corrected Blend.** If a product overrun occurs during the loading process, the AccuLoad III will automatically try to correct the blend if the product in error is being loaded as another component of the blend (i.e., error in component 2 – Regular, Regular also being loaded as component 5). If the component in error is not repeated as one of the components that has not been loaded, the transaction will have to be ended.
- **(2) Self-Corrected Blend/Complete Batch.** If a product overrun occurs during the loading process, the AccuLoad III will automatically try to correct the blend if the product in error is being loaded as another component of the blend. If the component in error is not repeated as one of the components that has not been loaded, the driver/operator will have the choice of ending the batch or completing the loading of the original preset amount.

Note: *No entry if arm not configured for sequential blending.*

Help: Choose the level of blend correction that will be allowed.

Load Arm 304 – Blend Alarm Timeout

This program code is used for "Unlimited Preset" arms and when timed blend algorithm is enabled (Load Arm 309) to determine how long an "out of tolerance" blend condition can exist before a blend alarm is triggered. The blend tolerance is determined by the values in both Load Arm 301 - Blend Tolerance Percentage and in Load Arm 302 - Blend Tolerance Amount. Both tolerance limits must be exceeded before the AccuLoad begins the out-of-tolerance condition timer.

Note: *A zero value will result in an immediate alarm if the blend goes out of tolerance.*

Load Arm 305 – Blend Alarm Minimum Amount

This program code suppresses the blend tolerance checking at batch start for unlimited preset arms and

when timed blend algorithm is enabled (Load Arm 309). In unlimited preset arms, this volume or mass allows time for the blend stream to catch up with wild stream

In preset applications using the timed blend algorithm, this volume or mass may be used to suppress blend tolerance checking until after low flow start is completed. Due to minimum flow rate restrictions of a minor product meter, it may be impossible to maintain blend during low flow start.

The range of this entry is 0 to 999 volume or mass units; 0 effectively disables any suppression.

Load Arm 306 – Blend Correction Amount

This program code determines how much deviation from a perfect instantaneous blend is allowed before the AccuLoad attempts to adjust/correct the blend on an Unlimited Preset or timed blend algorithm arm (in order to prevent continuous valve adjustment). If this amount is exceeded, the AccuLoad will attempt to adjust the flow rate of the products such that the blend will be on spec within the time specified in Load Arm 307 - Blend Correction Time.

Valid Entry is 0 - 999.99 volume or mass units.

Load Arm 307 – Blend Correction Time

This program code determines how quickly the AccuLoad attempts to bring the blend percentage of an Unlimited Preset or timed blend algorithm arm back to ideal conditions once the deviation from the desired percentages exceeds the value in Load Arm 306 - Blend Correction Amount.

Valid Entries are from 1 - 999 seconds.

Load Arm 308 – Blend Error Reset

This program code determines at what points the accumulated blend errors are reset to 0 when an arm is configured for Unlimited Preset operation. The possible options are:

0 - Batch Start

1 - Blend Alarm Cleared

2 - Batch Start or Blend Alarm Cleared

3 - No reset

Load Arm 309 – Blend Algorithm

• Ratio Adj Fact

• Timed

Help: Select the ratio blend algorithm to use (unlimited preset uses timed).

Load Arm 310 – Ratio Product Min Flow

• Maintain min rate

• Allow valve to close

Help: Select whether a ratio product's valve may be closed during the batch if required to maintain desired blend.

Critical: Option available with Timed Blend Algorithm only.

Factory Default: "Maintain min rate" (lowest flow rate allowed will be the programmed minimum flat rate – Product 201).

Load Arm 311 – Ratio Product Min Close Time

Range: 0 – 999 seconds

Help: If product valve is closed to maintain blend, valve will be opened no sooner than the # of seconds entered.

Critical: Option available only with "allow valve to close" option selected in Arm 310.

Note: *If zero is entered, then the valve will be allowed to open and close as often as necessary to maintain blend.*

Load Arm Communications Directory

701 – Report Selection

702 – Summary Report Print Time

703 – Summary Report Interval

704 – Report Volume Resolution

705 – Report Pages

706 – Report HM Classification

710 – Arm Tag ID

Load Arm 701 – Report Selection

This program code defines which delivery report will be printed at the completion of a transaction if a printer function is assigned to one or more communications ports. The same report will be printed at each port if multiple ports are configured for printer options. The factory default is "Default." Selections are as follows:

- (0) Default
- (1) User Configured Report 1
- (2) User Configured Report 2

Note: *Default Reports – see appendix IV + V*

Note: *The user-configured reports are designed on the AccuMate and downloaded to the AccuLoad.*

Note: *Even if a user-configured report has been downloaded from the AccuMate to the AccuLoad, it will not be printed unless it is selected here. If a user-configured report is selected but none has been downloaded, no report will print.*

Help: Select the report type to be printed

Load Arm 702 – Summary Report Print Time

This entry sets the initial print time of the summary report. Enter the hours, minutes, and time type (AM, PM, or military) the summary report is to be printed. The summary report includes a line per batch for all transactions run during the time interval specified.

Note: *No entry if no printer configured on any comm port*

Fatal: Invalid time entry

Help: Enter up to 6 characters of text. Enter time to

print summary report. Time format is HH:MMT, where T = A,P,M

Load Arm 703 – Summary Report Interval

This parameter sets the interval that the summary report will be printed. Once the time of the report has been set using this parameter, the report would print based on that initial time and the interval programmed. The interval is entered in hours with three digits in whole hours. The range of this entry is from 0 to 999.

Note: *No entry if no printer configured on any comm port*

Help: Enter time interval in hours between printed reports. Zero entry disables this feature.

Load Arm 704 – Report Volume Resolution

This entry selects the volume resolution to print on default reports. The factory default is "Whole units." Selections are as follows:

- (0) Whole units
- (1) Tenths
- (2) Hundredths

Note: *No entry if no printer configured on any comm port*

Help: Select the volume resolution to print on default reports

Load Arm 705 – Report Pages

This entry selects which pages will be printed on reports. The default report for a straight product load arm consists of a single page report with both batch and transaction data on that page. The factory default is "Batch and transaction pages." Selections are as follows:

- (0) Batch and transaction pages – one page per batch plus a summary page for the transaction
- (1) Batch page only – one page per batch only; no transaction summary
- (2) Transaction page only – transaction summary only; no batch details
- (3) No transaction report – printer only used for summary reports

Note: *No entry if no printer configured on any comm port*

Help: Select which pages to print for reports

Load Arm 706 – Report HM Classification

This entry allows the operator to select which product's Hazardous Materials (HM) Classification will be printed on the transaction summary page of the report. The factory default is "Product 1." Selections are as follows:

- (0) Product 1
- (1) Product 2
- (2) Product 3
- (3) Product 4
- (4) Product 5
- (5) Product 6

Note: *No entry if no printer configured on any comm port*

Help: Select which product's HM class to print on summary page of default report

Load Arm 710 – Arm Tag ID

This parameter is used to enter a unique tag number for the load arm. Enter up to 28 characters of text.

Meter Flow Control Directory

201 – Valve Type

202 – PID Proportional Gain Factor

203 – PID Integral Gain Factor

204 – PID Derivative Gain Factor

205 – PID Interval

Ratio Blending Only

206 – Zero Flow Alarm Timer

207 – Overrun Alarm Limit

208 – Flow Adjust Tolerance

209 – Flow Adjust Timer

210 – Meter Plumbing

211 – Ramp Down Tolerance

Meter 201 – Valve Type

This parameter selects the type of control valve used by AccuLoad III. The factory default is "Digital." Selections are as follows:

- (0) Digital
- (1) Two-stage
- (2) Analog
- (3) Wild Stream

Critical: Two-stage valve not allowed with ratio blending

Critical: No analog valve output configured

Critical: Upstream/downstream solenoids required

Note: *A two-stage valve is not allowed for ratio blending.*

Help: Select the type of valve used

Meter 202 – PID Proportional Gain Factor (Kp)

This three-digit entry is the PID proportional gain factor for analog valve control. The range of this entry is from 0.000 to 999.999 (used only with analog valves).

Note: *No entry if valve type is not analog*

Help: Enter the PID proportional gain factor for analog valve control

Meter 203 – PID Integral Gain Factor (Ki)

This three-digit entry is the PID integral gain factor for analog valve control. The range of this entry is from 0.000 to 999.999. (This entry is used only with analog valves.)

Note: *No entry if valve type is not analog*

Help: Enter the PID integral gain factor for analog valve control

Meter 204 – PID Derivative Gain Favor (Kd)

This three-digit entry is the PID derivative gain factor for analog valve control. The range of this entry is from 0.000 to 999.999. (It is used only with analog valves.)

Note: *No entry if valve type is not analog*

Help: Enter the PID derivative gain factor for analog valve control

Meter 205 – PID Interval

This two-digit entry is the time interval in seconds between PID calculations. The range of this entry is from 0.0 to 9.9. (This entry is used only with analog valves.)

Note: *No entry if valve type is not analog*

Help: Enter the time interval in seconds between PID calculations

Meter 206 – Zero Flow Alarm Timer

This two-digit numeric entry defines the amount of time, in seconds, after which a zero flow condition will generate an alarm. An entry of zero causes AccuLoad III to disable the zero flow alarm. The range of this parameter is 0 to 99 seconds.

Note: *No entry if not a ratio blender*

Help: Enter time in seconds zero flow is ignored before valve closure

Meter 207 – Overrun Alarm Limit

This two-digit numeric entry defines the number of units that may be delivered over the preset amount before an alarm occurs. The range of this entry is from 0 to 99 units. An entry of zero disables the overrun alarm.

Note: *No entry if not a ratio blender*

Help: Enter number of units delivered over preset amount before alarm occurs

Meter 208 – Flow Adjust Tolerance

This parameter defines the percentage of flow rate tolerance to be used when making flow rate adjust-ments. The range of this entry is 0 to 9.9%. This is intended as a tighter flow tolerance than in Product 204. This tolerance is only applied when the flow rate has been adjusted (from low flow to high flow, to improve the blend). The purpose of the tighter toler-ance is to closely match the desired flow rate. Note that this tight tolerance is only in effect for the time specified in the following parameter.

Note: *No entry if not a ratio blender*

Help: Enter flow rate tolerance (percent) to be used when making flow rate adjustments

Meter 209 – Flow Adjust Timer

This parameter defines the time duration in seconds for the flow rate adjustment tolerance to be in effect. The range of this entry is 0.0 to 99.9 seconds.

Note: *No entry if not a ratio blender*

Help: Enter the time duration in seconds for the flow rate adjustment tolerance to be in effect

Meter 210 – Meter Plumbing

This entry defines the plumbing of a minor product meter for a hybrid blending arm. The options are as follows:

0 – Ratio (downstream of the main product meter)

1 – Side Stream (upstream of the main product meter)

If the ratio product is plumbed side stream it can share the same temperature probe and densitometer as the sequential product if desired.

This entry is used for hybrid blending arms only; it is not used for any other arm types.

Help: Define meter plumbing as upstream (side stream) or downstream (ratio) of sequential product meter.

Meter 211 – Ramp Down Tolerance

This parameter is used to predict a valve fault condition after first trip. if during ramp down at the end of a batch, the flow rate is not decreasing as expected within the programmed "ramp down flow tolerance %", a "PO: Predict Overrun" alarm will occur which will stop the batch and turn the pump off. Note this tolerance should be greater than the programmed product flow tolerance % (Product 204) and needs to be large enough to allow for normal flow rate fluctuations during ramp down otherwise false alarms may occur. Entering a 0 will disable this feature.

Help: If this flow rate tolerance % is exceeded after first trip, an alarm will stop the batch. (PO Alarm)

Meter Volume Accuracy Directory

301 – K-Factor

Dual Pulse Setup

302 – Dual Pulse Error Count

303 – Dual Pulse Error Reset

304 – Dual Pulse Flow Rate Cutoff

305 – Pulse Security Alarm Amount

Pulse Averaging

306 – Pulse Period Sample Count

Turbine Meter Diagnostics

310 – Turbine Meter Blade Count

311 – Turbine Diagnostic Tolerance

Meter 301 – K Factor

This seven-digit numeric entry defines the nominal number of pulses comprising one unit of volume registration. The range of this entry is 0000.001 to 9999.999.

Critical: Security level for parameter must be at top 2 levels. [Revision 2 and above firmware only]

Fatal: Entry must not be zero

Help: Enter the number of pulses required for one unit of registration

Meter 302 – Dual Pulse Error Count

This three-digit numerical entry defines the number of error counts that may be received from a dual pulse comparator without causing a pulse security alarm.

The range of this parameter is 0 to 999. The factory default is 0.

Note: *No entry if dual pulse not selected*

Help: Enter the number of dual pulse errors allowed before alarm

Meter 303 – Dual Pulse Error Reset

This program code defines the conditions under which the dual pulse error count will be reset. The factory default is "No reset." Selections are as follows:

- (0) No dual pulse error reset
- (1) Reset at end of transaction
- (2) Reset on power-up
- (3) Reset at end of transaction and on power-up

Note: *No entry if dual pulse not selected*

Note: *Clearing a pulse security alarm does not reset the error count.*

Help: Select how dual pulse error count is reset

Meter 304 – Dual Pulse Flow Rate Cutoff

This parameter defines the flow rate below which dual pulse errors will not be counted. The range of this four-digit numerical entry is 0 to 9999. The factory default is 0.

Note: *No entry if dual pulse not selected*

Help: Enter the flow rate at which dual pulse error counts will be counted

Meter 305 – Pulse Security Alarm Amount

This program code determines whether pulses received after a Pulse Security Alarm occurs are ignored (no volume or mass is registered). Select “no” to continue to totalize normally after this alarm occurs. Select “yes” to ignore all pulses after an alarm occurs. Selecting “yes” will cause any volume or mass that actually flows through the meter from the point where this alarm occurs to when the valve is completely closed to be ignored. The AccuLoad will ignore any pulses from the meter until the alarm is cleared. Some measurement agencies require this behavior, taking the position that after a pulse security alarm, the consumer cannot be responsible for any measured quantity because it may not be reliable.

Help: Select whether pulses received after a Pulse Security Alarm are included in vol/mass totals

Meter 306 – Pulse Period Sample Count

This two-digit entry determines the length of time in 0.1 second increments over which the frequency of the meter pulses is averaged to provide flow rate smoothing. This parameter is intended for meters that produce a varying frequency pulse output when the flow is steady.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*

Help: Enter number of 1/10th second samples over which the pulse input periods are averaged.

Meter 310 – Number of Turbine Blades

This two-digit entry should be programmed to the number of blades/buttons present on the rotor for a turbine type meter. This entry must be programmed accurately if any turbine meter diagnostics are to be performed. It is not used and should be programmed to 0 if the meter is any type other than turbine. The range of this two-digit numerical entry is 0 to 99.

Help: Enter the number of blades for turbine meter diagnostics

Meter 311 – Turbine Meter Diagnostic Tolerance

This parameter defines the degree of turbine meter diagnostic tolerance. The stricter the tolerance, the greater the chance of the turbine meter diagnostic causing an alarm. The factory default is "Most Lax." Selections are as follows:

- (0) Most lax
- (1) Lax
- (2) Normal
- (3) Strict
- (4) Most strict

Note: *No entry if number of turbine blades equals zero*

Help: The stricter the tolerance, less variation will result in an alarm.

Meter Temperature/Density Directory

401 – Densitometer Type

402 – Share Temperature Input

403 – Share Density Input

S-Mass

407 – S-Mass A Coefficient

408 – S-Mass B Coefficient

Solartron Densitometer

411 – Solartron Calibration Units

412 – Solartron DCF

413 – Solartron K0

414 – Solartron K1

415 – Solartron K2

416 – Solartron K18

417 – Solartron K19

418 – Solartron K20a

419 – Solartron K20b

420 – Solartron K21a

421 – Solartron K21b

422 – Solartron Tcal

423 – Solartron Pcal

S-Mass

425 – Mass Meter Type

426 – Mass Meter Sequence Number

427 – S-Mass Coefficient Ka
428 – S-Mass Coefficient Kb
429 – S-Mass Coefficient Kc
430 – S-Mass Density Factor
431 – Mass Meter Pulse Multiplier
432 – Mass Meter Low Flow Cutoff
433 – Mass Meter Tube Material
434 – Mass Meter Model

Sarasota Densitometer

441 – Sarasota Calibration Units
442 – Sarasota DCF
443 – Sarasota K
444 – Sarasota D0
445 – Sarasota T0
446 – Sarasota Tcoef
447 – Sarasota Tcal
448 – Sarasota Pcoef
449 – Sarasota Pcal

UGC Densitometer

461 – UGC Calibration Units
462 – UGC DCF
463 – UGC K0
464 – UGC K1
465 – UGC K2
466 – UGC Tc
467 – UGC Kt1
468 – UGC Kt2
469 – UGC Kt3
470 – UGC Pc
471 – UGC Kp1
472 – UGC Kp2
473 – UGC Kp3

Other Densitometers

491 – Other Density Calibration Units
492 – Other DCF
493 – Other A Coefficient
494 – Other B Coefficient
495 – Other C Coefficient

Meter 401 – Densitometer Type

This parameter allows the operator to select the frequency densitometer used by the meter. The factory default is "S-Mass." Selections are as follows:

- (0) S-Mass
- (1) Solartron
- (2) Sarasota
- (3) UGC
- (4) Other

Note: *No entry if no frequency densitometer is configured*

Help: Select the type of frequency densitometer used by this meter

Meter 402 – Share Temperature Input

This parameter allows a temperature analog input assigned to one arm/meter to be used by any other arm/meter. For example, a single temperature probe may be used by several arms without having to use multiple analog inputs. Entries are selected using the keypad, and are limited to configured arms/meters with assigned temperature inputs. Selections are as follows:

- (0) Not Used
- (1) Arm 1 Meter 1
- (2) Arm 1 Meter 2
- (3) Arm 1 Meter 3
- (4) Arm 1 Meter 4
- (5) Arm 1 Meter 5
- (6) Arm 1 Meter 6
- (7) Arm 2 Meter 1
- (8) Arm 2 Meter 2
- (9) Arm 2 Meter 3
- (10) Arm 2 Meter 4
- (11) Arm 2 Meter 5
- (12) Arm 2 Meter 6
- (13) Arm 3 Meter 1
- (14) Arm 3 Meter 2
- (15) Arm 3 Meter 3
- (16) Arm 3 Meter 4
- (17) Arm 3 Meter 5
- (18) Arm 3 Meter 6
- (19) Arm 4 Meter 1
- (20) Arm 4 Meter 2
- (21) Arm 4 Meter 3
- (22) Arm 4 Meter 4
- (23) Arm 4 Meter 5
- (24) Arm 4 Meter 6
- (25) Arm 5 Meter 1
- (26) Arm 5 Meter 2
- (27) Arm 5 Meter 3
- (28) Arm 5 Meter 4
- (29) Arm 5 Meter 5
- (30) Arm 5 Meter 6
- (31) Arm 6 Meter 1
- (32) Arm 6 Meter 2
- (33) Arm 6 Meter 3
- (34) Arm 6 Meter 4
- (35) Arm 6 Meter 5
- (36) Arm 6 Meter 6
- (37) Flow Rate Injector 1
- (38) Flow Rate Injector 2
- (39) Flow Rate Injector 3
- (40) Flow Rate Injector 4

Note: *No entry if no temperature used or inputs configured*

Critical: Selected meter has no I/O point configured for temperature.

Help: Select if it is desired to use another meter's temperature input.

Meter 403 – Share Density Input

This parameter allows a density input (analog or frequency) assigned to one arm/meter to be used by any other arm/meter. For example, a single densitometer may be used by several arms without having to use multiple inputs. Entries are selected using the keypad, and are limited to configured arms/meters with assigned density inputs. Selections are as follows:

- (0) Not Used
- (1) Arm 1 Meter 1
- (2) Arm 1 Meter 2
- (3) Arm 1 Meter 3
- (4) Arm 1 Meter 4
- (5) Arm 1 Meter 5
- (6) Arm 1 Meter 6
- (7) Arm 2 Meter 1
- (8) Arm 2 Meter 2
- (9) Arm 2 Meter 3
- (10) Arm 2 Meter 4
- (11) Arm 2 Meter 5
- (12) Arm 2 Meter 6
- (13) Arm 3 Meter 1
- (14) Arm 3 Meter 2
- (15) Arm 3 Meter 3
- (16) Arm 3 Meter 4
- (17) Arm 3 Meter 5
- (18) Arm 3 Meter 6
- (19) Arm 4 Meter 1
- (20) Arm 4 Meter 2
- (21) Arm 4 Meter 3
- (22) Arm 4 Meter 4
- (23) Arm 4 Meter 5
- (24) Arm 4 Meter 6
- (25) Arm 5 Meter 1
- (26) Arm 5 Meter 2
- (27) Arm 5 Meter 3
- (28) Arm 5 Meter 4
- (29) Arm 5 Meter 5
- (30) Arm 5 Meter 6
- (31) Arm 6 Meter 1
- (32) Arm 6 Meter 2
- (33) Arm 6 Meter 3
- (34) Arm 6 Meter 4
- (35) Arm 6 Meter 5
- (36) Arm 6 Meter 6

Note: *No entry if no densitometer used or inputs configured*

Critical: Selected meter has no I/O point configured for density.

Help: Select if it is desired to use another meter's density input.

Meter 407 – S-Mass A Coefficient

This parameter is used to enter the constant "A" for the Smith S-Mass meter. The "A" constant is used in the equation a/T + b where T is the period of the in-coming signal. Suggested values are 1.000E + 7 Kg/m3 for metric units and 6.242797E + 5 for lb/ft3. This value is entered as 0.000000E + 00. The ten-digit exponential input (7 mantissa, 3 exponent) has a range of –1e37 to 1e38.

Note: No entry if not selected as installed densitometer type

Help: Enter the "A" coefficient to be used for density calculation.

Meter 408 – S-Mass B Coefficient

This parameter is used to enter the offset error "B" to correct the density by this fixed value. This value is used in the equation a/T + b where T is the period of the in-coming signal. This value is entered as 0.000000E + 00. The ten-digit exponential input (7 mantissa, 3 exponent) has a range of –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter the "B" coefficient to be used for density calculation.

Meter 411 – Solartron Calibration Units

This entry allows the user to select the calibration units used for the Solartron Densitometer. Selections are as follows:

- (0) English (Fahrenheit, PSI, Lb/Ft3)
- (1) Metric (Celsius, Bar, Kg/m3)

Note: *No entry if not selected as installed densitometer type*

Help: Select calibration certificate units: English (Fahrenheit, PSI, Lb/Ft3), metric (Celsius, Bar, Kg/m3).

Meter 412 – Solartron DCF

This entry allows the operator to enter the density correction factor for computing the calculated density from the actual density. The range of this six-digit numeric entry is from –9.9999 to 9.9999.

Note: *No entry if not selected as installed densitometer type*

Help: Enter the density correction factor

Meter 413 – Solartron K0

This entry allows the operator to enter the Constant K0 from the Solartron densitometer. Enter the base number (six digits) and two digits for the exponent. This exponential numeric entry has a range of –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter constant from calibration certificate.

Meter 414 – Solartron K1

This entry allows the operator to enter the Constant

K1 from the Solartron densitometer. Enter the base number (six digits) and two digits for the exponent. This exponential numeric entry has a range of –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter constant from calibration certificate.

Meter 415 – Solartron K2

This entry allows the operator to enter the Constant K2 from the Solartron densitometer. Enter the base number (six digits) and two digits for the exponent. This exponential numeric entry has a range of –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter constant from calibration certificate.

Meter 416 – Solartron K18

This entry allows the operator to enter the Constant K18 from the Solartron densitometer. Enter the base number (six digits) and two digits for the exponent. This exponential numeric entry has a range of –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter temperature coefficient data from calibration certificate.

Meter 417 – Solartron K19

This entry allows the operator to enter the Constant K19 from the Solartron densitometer. Enter the base number (six digits) and two digits for the exponent. This exponential numeric entry has a range of –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter temperature coefficient data from calibration certificate.

Meter 418 – Solartron K20a

This entry allows the operator to enter the Constant K20a from the Solartron densitometer. Enter the base number (six digits) and two digits for the exponent. This exponential numeric entry has a range of –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter pressure coefficient data from calibration certificate.

Meter 419 – Solartron K20b

This entry allows the operator to enter the Constant K20b from the Solartron densitometer. Enter the base number (six digits) and two digits for the exponent. This exponential numeric entry has a range of –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter pressure coefficient data from calibration certificate.

Meter 420 – Solartron K21a

This entry allows the operator to enter the Constant K21a from the Solartron densitometer. Enter the base number (six digits) and two digits for the exponent. This exponential numeric entry has a range of –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter pressure coefficient data from calibration certificate.

Meter 421 – Solartron K21b

This entry allows the operator to enter the Constant K21b from the Solartron densitometer. Enter the base number (six digits) and two digits for the exponent. This exponential numeric entry has a range of –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter pressure coefficient data from calibration certificate.

Meter 422 – Solartron Tcal

This entry allows the operator to enter the temperature that the densitometer was calibrated at the factory. The range of this entry is –9999.999 to 9999.999 (limit of three decimal points).

Note: *No entry if not selected as installed densitometer type*

Help: Enter temperature calibration value

Meter 423 – Solartron Pcal

This entry allows the operator to enter the pressure that the densitometer was calibrated at the factory. The range of this entry is –9999.999 to 9999.999 (limit of three decimal places).

Note: *No entry if not selected as installed densitometer type*

Help: Enter pressure calibration value.

Meter 425 – Mass Meter Type

This parameter allows the operator to select the mass meter used by the meter. The factory default is "NA." Selections are as follows:

- (0) NA
- (1) S-Mass
- (2) Apollo
- (3) Promass (Revision 11.08)

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*

Help: Select the type of mass meter, S-Mass or Apollo

Meter 426 – Mass Meter Sequence Number

This entry allows the operator to enter the specific sequence number assigned to a mass meter connected to the AccuLoad. The range of this entry is from 0 to 99999.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*

Help: Last five digits of the Micro-Pak serial number, the Final Assembly Number for Apollo or the address of the Promass.

Meter 427 – S-Mass Coefficient Ka

This entry allows the operator to enter the Constant Ka from the S-Mass meter. This numeric entry has a range of 0.0000 to 63.99999. This parameter specifies the "Ka"

value in the equation KaX2+KbX + Kc = Density. See MN0M008 for more information.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if not selected as installed densitometer type*
Help: Enter the Ka from the S-Mass nameplate.

Meter 428 – S-Mass Coefficient Kb

This entry allows the operator to enter the Constant Kb from the S-Mass meter. This numeric entry has a range of -31.9999 to 31.9999. This parameter specifies the "Kb" value in the equation KaX2+KbX + Kc = Density. See MN0M008 for more information.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if not selected as installed densitometer type*
Help: Enter the Kb from the S-Mass nameplate.

Meter 429 – S-Mass Coefficient Kc

This entry allows the operator to enter the Constant Kc from the S-Mass meter. This numeric entry has a range of -31.9999 to 31.9999. This parameter specifies the "Kc" value in the equation KaX2+KbX + Kc = Density. See MN0M008 for more information.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if not selected as installed densitometer type*
Help: Enter the Kc from the S-Mass nameplate.

Meter 430 – S-Mass Density Factor

This factor is used to adjust the period of the tubes for the minute change in tube frequency that occurs with change in the flow rate. This factor is typically not changed in the field. The setting depends on the sensor size and materials of construction. Factory settings are as follows:

	Stainless Steel	Hastelloy
S25LF	N/A	030
S25	N/A	030
S50	020	028
S100	016	023
S200	019	027

If the Density Factor for your sensor is different from what is shown, consult your Smith Meter representative.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if not selected as installed densitometer type*
Help: Enter the Density Factor for the S-Mass.

Meter 431 – Mass Meter Pulse Multiplier

The mass meter flow rate pulse output is multiplied by this factor to increase the number of pulses per unit of volume resolution. The maximum frequency for the flow rate pulse output is 2500 Hz. Selections are as follows:

- (0) Times 1
- (1) Times 2
- (2) Times 4
- (3) Times 8
- (4) Times 16
- (5) Times .5

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if not selected as installed densitometer type*
Help: Enter the multiplier for the flow pulse output 1, 2, 4, 8, 16, or .5.

Meter 432 – Mass Meter Low Flow Cutoff

This entry allows the operator to specify the low flow cutoff point. The range of this numeric entry is from 0 to 99. This is the Low Flow Cutoff for the S-Mass meter. The range is 0 to 99. A value of 10 approximates 1.0% of full scale flow, 20 approximates 2.0% of full flow etc. This function prevents counting extraneous pulses that may be generated while at no flow condition. Factory default is 20. See MN0M008 for more information.

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if not selected as installed densitometer type.*
Help: Enter the minimum flow to report. 10 = 1% of full scale flow.

Meter 433 – Mass Meter Tube Material

This entry allows the operator to specify the type of material from which the mass meter's tubes were constructed. Selections are as follows:

- (0) Stainless
- (1) Hastelloy

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if not selected as installed densitometer type.*
Help: Select the tube material (stainless or hastelloy) for this meter.

Meter 434 – Mass Meter Sensor Model

This entry allows the operator to specify the type of sensor contained in the mass meter. Selections are as follows:

- (0) Model 25
- (1) Model 50
- (2) Model 100
- (3) Model 200

Note: *This parameter is only available when using Revision 10.04 firmware or higher.*
Note: *No entry if not selected as installed densitometer type.*
Help: Select the sensor model of the meter.

Meter 441 – Sarasota Calibration Units

This entry allows the user to select the calibration units used for the Sarasota Densitometer. The factory default is "English." Selections are as follows:

- (0) English (Fahrenheit, PSI, Lb/Ft3)
- (1) Metric (Celsius, Bar, Kg/m3)

Note: *No entry if not selected as installed densitometer type.*
Help: Select calibration certificate units: English (Fahrenheit, PSI, Lb/Ft3), metric (Celsius, Bar, Kg/m3).

Meter 442 – Sarasota DCF

This entry allows the operator to enter the density correction factor for computing the calculated density from the actual density. The range of six-digit numeric entry is -9.9999 to 9.9999.

Note: *No entry if not selected as installed densitometer type.*
Help: Enter the density correction factor.

Meter 443 – Sarasota K

This entry allows the operator to enter the calibration constant for the spool on the Sarasota densitometer. The range of this exponential numeric entry is from

-9.999999 to 9.999999.

Note: *No entry if not selected as installed densitometer type.*
Help: Enter constant from calibration certificate.

Meter 444 – Sarasota D0

This entry allows the operator to enter the constant D0 from the Sarasota densitometer. The range of this eight-digit numeric entry is -9999.999 to 9999.999.

Note: *No entry if not selected as installed densitometer type.*
Help: Enter constant from calibration certificate.

Meter 445 – Sarasota T0

This entry allows the operator to enter the T0 constant from the Sarasota densitometer. This constant is in microseconds. The range of this eight-digit numeric entry is -9999.999 to 9999.999.

Note: *No entry if not selected as installed densitometer type.*
Help: Enter constant from calibration certificate.

Meter 446 – Sarasota Tcoef

This entry is used for entering the temperature coefficient constant from the Sarasota densitometer in microseconds/degree F. The range of this exponential numeric entry is –9.999999 to 9.999999.

Note: *No entry if not selected as installed densitometer type.*
Help: Enter temperature coefficient data from calibration certificate

Meter 447 – Sarasota Tcal

This entry allows the operator to enter the temperature that the densitometer was calibrated at the factory. The range of this eight-digit numeric entry is

–9999.999 to 9999.999.

Note: *No entry if not selected as installed densitometer type*
Help: Enter temperature calibration value

Meter 448 – Sarasota Pcoef

This entry is used for entering the pressure coefficient constant from the Sarasota densitometer in microseconds/PSIG. The range of this exponential numeric entry is –9.999999 to 9.999999.

Note: *No entry if not selected as installed densitometer type*
Help: Enter pressure coefficient data from calibration certificate.

Meter 449 – Sarasota Pcal

This entry allows the operator to enter the pressure that the densitometer was calibrated at the factory. The range of this eight-digit numeric entry is

–9.999999 to 9.999999.

Note: *No entry if not selected as installed densitometer type*
Help: Enter pressure calibration value.

UGC Densitometer

Meter 461 – UGC Calibration Units

This entry allows the user to select the calibration units used for the UGC Densitometer. The factory default is "English." Selections are as follows:

- (0) English (Fahrenheit, PSI, gr/cc)
- (1) Metric (Celsius, Bar, gr/cc)

Note: *No entry if not selected as installed densitometer type*
Help: Select calibration certificate units: English (Fahrenheit, PSI, gr/cc), metric (Celsius, Bar, gr/cc).

Meter 462 – UGC DCF

This entry allows the operator to enter the density correction factor for computing the calculated density from the actual density. The range of this six-digit numeric entry is –9.9999 to 9.9999.

Note: *No entry if not selected as installed densitometer type*
Help: Enter the density correction factor.

Meter 463 – UGC K0

This entry allows the operator to enter the Constant K0 from the UGC densitometer. Enter the base number (six digits) and then two digits for the exponent. The range of this exponential entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type.*
Help: Enter constant from calibration certificate

Meter 464 – UGC K1

This entry allows the operator to enter the Constant K1 from the UGC densitometer. Enter the base number (six digits) and then two digits for the exponent. The range of this exponential entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type.*
Help: Enter constant from calibration certificate

Meter 465 – UGC K2

This entry allows the operator to enter the Constant K2 from the UGC densitometer. Enter the base number (six digits) and then two digits for the exponent. The range of this exponential entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*
Help: Enter constant from calibration certificate.

Meter 466 – UGC Tc

This entry allows the operator to enter the temperature that the densitometer was calibrated at the factory. The range of this eight-digit numeric entry is

–999.9999 to 999.9999.

Note: *No entry if not selected as installed densitometer type*
Help: Enter temperature calibration value.

Meter 467 – UGC Kt1

This entry allows the operator to enter the Constant Kt1 from the UGC densitometer. Enter the base number (six digits) and then two digits for the exponent. The range of this exponential numeric entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*
Help: Enter constant from calibration certificate.

Meter 468 – UGC Kt2

This entry allows the operator to enter the Constant Kt2 from the UGC densitometer. Enter the base number (six digits) and then two digits for the exponent. The range of this exponential numeric entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*
Help: Enter constant from calibration certificate.

Meter 469 – UGC Kt3

This entry allows the operator to enter the Constant Kt3 from the UGC densitometer. Enter the base number (six digits) and then two digits for the exponent. The range of this exponential numeric entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*
Help: Enter constant from calibration certificate.

Meter 470 – UGC Pc

This entry allows the operator to enter the pressure that the densitometer was calibrated at the factory. The range of this eight-digit numeric entry is from

–999.9999 to 999.9999.

Note: *No entry if not selected as installed densitometer type*
Help: Enter pressure calibration value.

Meter 471 – UGC Kp1

This entry allows the operator to enter the Pressure Constant Kp1 from the UGC densitometer. Enter the base number (six digits) and then two digits for the exponent. The range of this exponential numeric entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*
Help: Enter constant from calibration certificate.

Meter 472 – UGC Kp2

This entry allows the operator to enter the Constant Kp2 from the UGC densitometer. Enter the base number (six digits) and then two digits for the exponent. The range of this exponential numeric entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*
Help: Enter constant from calibration certificate.

Meter 473 – UGC Kp3

This entry allows the operator to enter the Constant Kp3 from the UGC densitometer. Enter the base number (six digits) and then two digits for the exponent. The range of this exponential numeric entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*
Help: Enter constant from calibration certificate.

Other Densitometers

Meter 491 – Other Densitometer Calibration Units

This entry allows the user to select the calibration units used for the Solartron Densitometer. The factory default is "English." Selections are as follows:

- (0) English (Fahrenheit, PSI, Lb/Ft3)
- (1) Metric (Celsius, Bar, Kg/m3)

Note: *No entry if not selected as installed densitometer type*
Help: Select calibration certificate units: English (Fahrenheit, PSI, Lb/Ft3), metric (Celsius, Bar, Kg/m3).

Meter 492 – Other DCF

This entry allows the operator to enter the density correction factor for computing the calculated density from the actual density. The range of this six-digit numeric entry is –9.9999 to 9.9999.

Note: *No entry if not selected as installed densitometer type.*
Help: Enter the density correction factor.

Meter 493 – Other A Coefficient

This code allows the operator to enter the constant “a” by which the density will be calculated according to the following formula:

$$\text{Density} = aT^2 + bT + c$$

Where: T is the period of the incoming signal and a, b, and c are the programmed constants.

Nine digits must be entered for constant a. The first seven digits represent the base number and the last two numbers represent the exponent. The +/- key may be used to set the sign of the base and the exponent field. The range of this exponential numeric entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type.*
Help: Enter the "A" coefficient to be used for density calculation.

Meter 494 – Other B Coefficient

This parameter allows the operator to enter the constant “b” by which the density is calculated according to the following formula:

$$\text{Density} = aT^2 + bT + c$$

Where: T is the period of the incoming signal and a, b, and c are the programmed constants.

Nine digits must be entered for constant b. The first seven digits represent the base number and the last two numbers represent the exponent. The +/- key may be used to set the sign of the base and the exponent field. The range of this exponential numeric entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type*

Help: Enter the "B" coefficient to be used for density calculation.

Meter 495 – Other C Coefficient

This parameter allows the operator to enter the constant "c" by which the density will be calculated according to the following formula:

$$\text{Density} = aT^2 + bT + c$$

Where: T is the period of the incoming signal and a, b, and c are the programmed constants.

Nine digits must be entered for constant c. The first seven digits represent the base number and the last two numbers represent the exponent. The +/- key may be used to set the sign of the base and the exponent field. The range of this exponential numeric entry is –1e37 to 1e38.

Note: *No entry if not selected as installed densitometer type.*

Help: Enter the "C" coefficient to be used for density calculation.

Meter Pressure Directory

501 – Share Pressure Input

Meter 501 – Share Pressure Input

This parameter allows a pressure analog input assigned to one arm/meter to be used by any other arm/meter. For example, a single pressure input may be used by several arms without having to use multiple analog inputs. Entries are selected using the keypad, and are limited to configured arms/meters with assigned pressure inputs. Selections are as follows:

- (0) Not Used
- (1) Arm 1 Meter 1
- (2) Arm 1 Meter 2
- (3) Arm 1 Meter 3
- (4) Arm 1 Meter 4
- (5) Arm 1 Meter 5
- (6) Arm 1 Meter 6
- (7) Arm 2 Meter 1
- (8) Arm 2 Meter 2
- (9) Arm 2 Meter 3
- (10) Arm 2 Meter 4
- (11) Arm 2 Meter 5
- (12) Arm 2 Meter 6
- (13) Arm 3 Meter 1
- (14) Arm 3 Meter 2
- (15) Arm 3 Meter 3
- (16) Arm 3 Meter 4
- (17) Arm 3 Meter 5
- (18) Arm 3 Meter 6
- (19) Arm 4 Meter 1
- (20) Arm 4 Meter 2
- (21) Arm 4 Meter 3
- (22) Arm 4 Meter 4
- (23) Arm 4 Meter 5
- (24) Arm 4 Meter 6
- (25) Arm 5 Meter 1
- (26) Arm 5 Meter 2
- (27) Arm 5 Meter 3
- (28) Arm 5 Meter 4
- (29) Arm 5 Meter 5
- (30) Arm 5 Meter 6
- (31) Arm 6 Meter 1
- (32) Arm 6 Meter 2
- (33) Arm 6 Meter 3
- (34) Arm 6 Meter 4
- (35) Arm 6 Meter 5
- (36) Arm 6 Meter 6

Note: *No entry if no pressure used or inputs configured*

Critical: Selected meter has no I/O point configured for pressure.

Help: Select if it is desired to use another meter's pressure input

Product 100 – General Purpose Directory

101 – Product ID

102 – HM Classification

103 – HM Classification

Product 101 – Product ID

This code allows a nine-character entry message to serve as a product identifier. The data entry will allow the following characters to be selected as part ID:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _ END

Help: Enter an alphanumeric ID to describe the product.

Product 102, 103 – HM Classification

The Hazardous Materials (HM) Classification is a 60-character message divided between two program parameters. The data entry will allow the following characters to be selected as part of the classification:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _ END

Help: Enter the first thirty characters of the Hazardous Materials Classification.

Help: Enter the last thirty characters of the Hazardous Materials Classification.

Product 200 – Flow Control Directory

201 – Minimum Flow Rate

202 – High Flow Rate

203 – Second High Flow Rate

204 – Flow Tolerance Percentage
205 – Flow Tolerance Rate
206 – First Trip Amount
207 – Second Trip Amount
208 – Second Trip Auto Adjust
209 – Excess High Flow Rate
210 – Low Flow Rate Alarm Limit
211 – Block Valve Delay to Open
212 – Block Valve Delay to Close
213 – Product Stop Amount
214 – Product Stop Alarm

Product 201 – Minimum Flow Rate

This four-digit numeric entry defines the lowest programmed (final stage) flow rate for the product. This will be the flow rate when the valve is signaled to close at the completion of a preset. The range of this entry is 0 to 9999 units per time measurement.

Help: Enter the minimum flow rate for digital valve control operations

Product 202 – High Flow Rate

This five-digit program code defines the maximum flow rate being controlled for this product during loading. The range of this entry is 0 to 99999 flow units. The factory default is zero.

Help: Enter the maximum flow rate for digital valve control operation. A zero entry will not allow the valve to open.

Product 203 – Second High Flow Rate

This five-digit program code defines a second high flow rate that is selectable by an AC contact input. This program code is not used when a two-stage valve has been selected. The range of this entry is 0 to 99999 flow units. If zero is entered, second high flow is disabled. This flow rate would normally be used in situations where the size of the trucks varies and a lower high flow rate is needed for the smaller trucks.

Help: Enter the second high flow rate for digital valve control operation. A zero entry will not allow the valve to open.

Product 204 – Flow Tolerance Percentage

This single-digit entry designates the percentage of the currently requested flow rate that the flow rate may vary before the AccuLoad III initiates a valve correction. The range of this one-digit numeric entry is 0 to 9%.

The AccuLoad III will calculate the current flow tolerance using this percentage and the current flow rate. This will be compared with the programmed flow tolerance rate, with the larger of the two tolerances determining when to adjust the valve.

Example:

Current Flow Rate 600 GPM

Flow Tolerance 9%

Flow rate can vary 54 GPM (600 GPM x 9% = 54 GPM) without a valve correction signal from the AccuLoad III.

Help: Enter desired flow rate tolerance as a percentage of the current flow rate

Product 205 – Flow Tolerance Rate

This program code allows for the entry of the minimum flow rate tolerance in units per time. The range of this three-digit numeric entry is from 0 to 999 units per time.

The AccuLoad III will calculate the current flow toler-ance using the percentage entered in Product 204 and the current flow rate. This will be compared with the programmed flow tolerance rate entered here. The larger of the two tolerances will determine when to adjust the valve.

Help: Enter a desired flow rate tolerance in units per time (GPM, BPH, etc.)

Product 206 – First Trip Amount

This four-digit numeric entry designates the preset amount for this product remaining on the line when flow slow-down begins. The range of this entry is 0 to 9999 units.

Help: Enter preset amount remaining before ramp down begins

Product 207 – Second Trip Amount

This three-digit numeric entry defines the preset amount (in tenths) remaining for this product at the final valve closure signal for the product. The range of this entry is 0.0 to 99.9 units.

Help: Enter the preset amount remaining before valve closure occurs

Product 208 – Second Trip Auto Adjust

This one-digit numeric entry defines the number of batches to be included in the average used to calculate the second adjustment. For a preset, this is the number of batches run. The range of this entry is 1 to 9.

This parameter provides the operator an automatic method of adjusting the final trip point of the valve. The use of this parameter is ideal when starting up the system or when system hydraulics are changed during maintenance. The AccuLoad III will automatically set up the second trip amount (Product 207) when this parameter is used.

If for some reason the system parameters change and the second trip amount needs adjusted, the operator must get into the Program Mode and reset the auto adjust to again automatically adjust the final stage trip point

Note: *The batch volumes must be sufficient to allow the AccuLoad III to reach high flow before the first trip point is encountered.*

Help: Enter number of batches to average for auto second trip value adjustment

Product 209 – Excess High Flow Rate

This program code sets the maximum percentage by which the flow rate can exceed the product's high flow rate entry without alarming. This entry must be greater than the Flow Tolerance entry, except when a value of zero is entered to disable excess high flow alarm checking. The excess rate is entered as a percentage of the product high flow rate. The range of this two-digit numeric entry is 00 through 99.

Help: Enter the highest flow rate allowed in percent above the high flow rate without alarming

Product 210 – Low Flow Rate Alarm Limit

This three-digit entry defines the set point in units per minute for the low flow alarm. The low flow alarm will be triggered whenever a flow rate is equal to or lower than the limit set and is maintained for eight seconds. The low flow alarm is not triggered in cases where there is no flow. The range of this entry is 001 to 999 flow units.

Help: Enter the minimum flow rate allowed without a low flow alarm

Product 211 – Block Valve Delay to Open

This program code allows the setting of a time delay (in seconds) for the opening of the product block valve prior to delivery of the product. If an input is programmed for block valve feedback and the feedback does not indicate the valve is open within the programmed delay, a block valve alarm will be triggered. The range of this two-digit numeric entry is 01 to 99 seconds. For example, if the Block Valve Delay to Open entry is set to 05 seconds, the AccuLoad would allow 5 seconds for the block valve to open or else an alarm would be triggered if the valve had not been opened. If no block valve feedback input has been configured, the AccuLoad assumes that the valve has opened after the programmed delay.

Critical: Zero not allowed without block valve feedback

Note: *No entry if load arm is not a sequential blender.*

Help: Enter delay time in seconds to open the block valve after stop.

Product 212 – Block Valve Delay to Close

This program code allows setting of a time delay (in seconds) for the closing of the product block valve after the product has been delivered. If an input is configured for block valve feedback and the feedback does not indicate that the valve has closed within the programmed delay, a block valve alarm will be triggered. The range of this two-digit numeric entry is 01 to 99 seconds. For example, if the block valve delay entry were set to 05 seconds once the delivery was completed, the AccuLoad would allow 5 seconds for the block valve to close, and then an alarm would be triggered. If no input is configured for block valve feedback, the AccuLoad assumes that the valve has closed after the programmed delay.

Critical: Zero not allowed without block valve feedback

Note: *No entry if load arm is not a sequential blender*

Help: Enter time delay in seconds to close the block valve after delivery

Product 213 – Product Stop Amount

This program code specifies the shut down point of the ratio product. When the remaining batch amount (preset type) is equal to or less than this programmed value the ratio product valve will shut down. The flow rates for the ratio product with an early shutdown will be set up such that its requirement towards the batch will be satisfied before the stop volume is met. This feature can be used in lieu of specifying a clean line product and clean line volume in the arm directory. The range of entry for this parameter is 0-999. Operation of this parameter is identical to the additive stop amount, except that the stop amount pertains to a product and not an additive.

Note: *Using this feature will likely result in a period during the batch where the component percentages do not remain at the desired blend ratio. Assuming the batch completes normally, the blend percentages will be accurate.*

Note: *If the clean line volume as specified in the arm flow control directory (Code 221) is greater than the value programmed here then the ratio product will complete its delivery prior to the beginning of the clean line delivery. The clean line amount in the arm control directory (Code 221) will take precedence over this parameter if its value is greater than the value programmed here.*

No Entry: If the load arm is not a hybrid type.

No Entry: If the respective product is a sequential product on a hybrid arm.

Help: Enter the load arm preset amount left to be delivered before product shut down (in preset type)

Product 214 – Product Stop Alarm

This parameter indicates the amount of under-run allowed for the product stop programmed in Product 213 - Product Stop Amount before an alarm occurs. The range of this entry is 0-999. An entry of 0 disables this alarm.

Note: *Due to the conflicting goals of maintaining the correct product percentage ratios throughout the batch while accommodating a product stop amount, it may be desirable to program this amount to a larger value to avoid spurious alarms. The AccuLoad will favor an accurate final blend percentage and preset over a precise stop amount.*

No Entry: If the load arm is not a hybrid type
No Entry: If the respective product is a sequential product on a hybrid arm.

Help: Set the tolerance allowed to under-run of the batch to insure product is flushed from the line.

Product 300 – Volume Accuracy Directory

301 – Minimum Batch Amount
302 – Meter Factor 1
303 – Flow Rate 1
304 – Meter Factor 2
305 – Flow Rate 2
306 – Meter Factor 3
307 – Flow Rate 3

308 – Meter Factor 4
309 – Flow Rate 4
310 – Master Meter Factor
311 – Linearized Factor Deviation
312 – Meter Factor Variation Select
313 – Meter Factor Variation % Change Per Degree
314 – Meter Factor Variation Reference Temperature
315 – Meter Factor 5
316 – Flow Rate 5

Product 301 – Minimum Batch Amount

This five-digit entry allows for the setting of the minimum batch size for this product. The range of this entry is 00001 to 99999 units. This value is used to calculate the minimum preset for the recipe. An error message, "The minimum preset for this recipe is *. Press clear to continue," will be displayed. Any attempt to start a batch with a product volume less than the minimum batch size for that product will not be allowed.

Note: ** indicates the summation of all the minimum batches of the components of the recipe according to the percentages programmed for that recipe.*
Note: *No entry if load arm set to straight product*

Help: Enter the minimum batch amount allowed for this product, mass or volume based on preset type

Product 302 – Meter Factor 1

Product 304 – Meter Factor 2

Product 306 – Meter Factor 3

Product 308 – Meter Factor 4

Product 315 – Meter Factor 5

These program codes and the associated flow rates below allow the entry of the meter factor curve. The AccuLoad will perform linearization to calculate meter factors between the entered flow rates.

If only a single meter factor is used, it must be put into program code 302. The flow rate selected in program code 303 or 305 must be set to "0". Under these conditions any other meter factors programmed will be ignored. The range of these six-digit numeric entries is 0 to 9.99999.

Note: *A zero entry in meter factor 1 will be considered an invalid entry. Zero entries in the remaining factors will result in that factor and subsequent factors not being used. (e.g., if a zero entry is made for factor 2, factors 3 and 4 will not be used.)*

Fatal: Entry must not be zero [302 only]

Critical: Factor varies more than the Linearized Factor Deviation

Critical: Meter factors must be within 2% of the master meter factor

Critical: Security level for parameter must be at top 2 levels.

Help: Meter factor = (actual volume X current factor X k factor)/input pulses.

Product 303 – Flow Rate 1

Product 305 – Flow Rate 2

Product 307 – Flow Rate 3

Product 309 – Flow Rate 4

Product 316 – Flow Rate 5

These five-digit entries are the flow rates at which the meter factors (codes 302, 304, 306, 308, 316) are defined beginning with the highest flow rate in program code 303 and descending to the lowest flow rate in program code 316. If only one meter factor is used, program code 303 or 305 must be set at "0". The range of these entries is 0 to 99999 flow units.

Critical: Flow rates must be entered in descending order

Critical: Corresponding meter factor not programmed

Critical: Security level for parameter must be at top 2 levels

Help: Enter the flow rate corresponding to the meter factor

Product 310 – Master Meter Factor

This program code allows the operator to set a master meter factor. This six-digit entry will be used to restrict meter factors one through four (codes 302, 304, 306 and 308), to plus or minus 2% of the master factor (i.e., the value entered here). This range restriction applies only to meter factors which are programmed for use (i.e., meter factor one always and, if linearizing, all the factors used). Any attempt to enter a meter factor outside the 2% range, if installed, will cause a Critical Warning.

In addition, a master factor entry that causes the current meter factors installed to be out of range will cause those meter factors which are out of range to prompt a Critical Message. This critical condition must be corrected so that all used meter factors are within the 2% range of the master factor before normal Run Mode operations can occur. The range of this entry is 0 to 9.99999. Note that zero disables the master meter factor.

Critical: Meter factor must be within 2% of the master meter factor

Critical: Security level for parameter must be at top 2 levels.

Help: Restricts programmed meter factors to + or –2% of this master factor

Product 311 – Linearized Factor Deviation

This code allows the operator to set a maximum deviation between adjacent meter factors. This three-digit entry will be used to restrict deviation between the adjacent meter factors in use to plus or minus the entered percentage (i.e., the value entered here). Any attempt to enter a meter factor outside the entered range will cause a Critical Warning.

A linearized factor deviation entry that results in the current meter factors installed to be out of range will set a program code alarm. The meter factors that are out of range will be indicated by a DA alarm. The meter factors

at fault must be corrected so they are within range of the deviation entry before normal Run Mode operations can occur. The value of the linearized factor deviation may range from 0 to 9.99%. Zero disables this feature.

Critical: Meter factor varies more than the Linearized Factor Deviation

Critical: Security level for parameter must be at top 2 levels

Help: Set the maximum deviation in percent allowed between adjacent meter factors

Product 312 – Meter Factor Variation Select

This parameter allows the selection of enabling or disabling the meter factor variation entries (calculations). When enabled the AccuLoad III will calculate and use the meter factors based on the current temperature of the product. The factory default is "Disabled." Selections are as follows:

- (0) Disabled
- (1) Enabled

Note: *No entry if temperature units not assigned*

Critical: Security level for parameter must be at top 2 levels.

Help: Enable or disable the use of meter factor variation with temperature.

Product 313 – Meter Factor Percent Change Per Degree Temperature

This four-digit parameter allows the entry of the meter factor variation with temperature. This four-digit entry represents the meter factor percent change per degree of temperature. The range of this parameter is 0.0001 to 0.9999 percent.

Note: *No entry if Program Code 312 is disabled or temperature units are not assigned*

Critical: Security level for parameter must be at top 2 levels.

Fatal: Entry is out of specified range.

Help: Enter the meter factor variation in % change per degree temperature.

Product 314 – Meter Factor Variation Reference Temperature

This four-digit code allows the entry of the meter factor reference temperature. This entry represents the temperature, in tenths, at which the present meter factor was determined. The range of this entry is -999.9 to 999.9 units.

Note: *No entry if Program Code 312 is disabled or temperature units are not assigned*

Critical: Security level for parameter must be at top 2 levels.

Fatal: Entry is out of specified range.

Help: Enter reference temperature for the meter factor percent change per degree.

Product 400 – Temperature/Density Directory

Temperature

401 – Maintenance Temperature

402 – High Temperature Alarm Limit

403 – Low Temperature Alarm Limit

Density

411 – API Table

412 – Reference Density

413 – High Density Alarm Limit

414 – Low Density Alarm Limit

415 – Delta Amount

416 – Contaminant Density

417 – Calculate Current Ref. Density

418 – Reference Density Temperature

419 – Reference Density for "C" Type Tables

420 – Ethanol A1 Coefficient

421 – Ethanol A2 Coefficient

422 – Ethanol A3 Coefficient

423 – Aromatic Hydrocarbon Product

424 – Aromatic Hydrocarbon Reference Density

Product 401 – Maintenance Temperature

This code allows the entry of a maintenance temperature to be used when a temperature probe is not installed or working, but temperature related calculations are desired. The temperature units are dependent on the entry made in the Temperature Scale Select code. This four-digit entry has a range of –999.9 to 999.9 temperature units where –999.9 disables the maintenance temperature.

Note: *An entry greater than -999.9 will override the temperature probe or transducer input if installed and will be used in all calculations where temperature is used.*

Note: *No entry if Temperature Units = Not Used*

Help: Select maintenance temperature if temperature probe is not installed or to override probe

Product 402 – High Temperature Alarm Limit

This code allows the entry of a temperature reading that will cause a high temperature alarm to be generated. The temperature units will be dependent on the entry made in the Temperature Scale Select code. This four-digit entry has a range of –999.9 to +999.9 degrees F or C.

Note: *An entry of "+999" will disable the alarm.*

Help: Enter temperature that will signal an alarm for high product temperature

Product 403 – Low Temperature Alarm Limit

This code allows the entry of a temperature reading that will cause a low temperature alarm to be generated. The temperature units will be dependent on the entry made in the Temperature Scale Select code. This four-digit

entry has a range of –999.9 to +999.9 degrees F or C.

Note: *"-999" will disable the alarm.*
Note: *No entry if Temperature Units = Not Used*
Help: Enter temperature that will signal an alarm for low product temperature.

Product 411 – API Table

This entry selects the API Table and product to be selected. Selections are as follows:

- (0) Not used
- (1) 5A
- (2) 5B
- (3) 5D
- (4) 6
- (5) 6A
- (6) 6B
- (7) 6C
- (8) 6D
- (9) 23
- (10) 23A
- (11) 23B
- (12) 23D
- (13) 24
- (14) 24A
- (15) 24B
- (16) 24D
- (17) 53
- (18) 53A
- (19) 53B
- (20) 53D
- (21) 54
- (22) 54A
- (23) 54B
- (24) 54C
- (25) 54D
- (26) 23E
- (27) 24E
- (28) BR1A
- (29) BR1P
- (30) BR2P
- (31) 59A
- (32) 59B
- (33) 59D
- (34) 60A
- (35) 60B
- (36) 60D
- (37) 53E
- (38) 54E
- (39) 59E
- (40) 60E
- (41) Eth/Gas (PTB)
- (42) Aromatic
- (43) Eth(EPA-RFS2) - fuel grade Ethanol
- (44) B100(EPA-RFS2) – biodiesel

With Firmware 11.08 and higher, the Old Tables allow for non-60F/15C reference temperatures. In addition, the reference density may be at a different temperature from the reference temperature. For example, the reference temperature may be 30C and the reference density's temperature may be 15C. Product parameter #418 may be used to enter the reference density's temperature.

The Old Tables may be used for Asphalt temperature compensation. Old Tables 6, 24 and 54 may be used in place of ASTM D4311 (Asphalt temperature compensation). ASTM D4311 uses a reference density of 1028.1 kg/m3 or 920.9 kg/m3.

Critical: API table conflicts with temperature units

Critical: No density input configured [odd tables only]

Critical: Live density is not available with PTB Ethanol blend calculation.

Note: *Tables 23E and 24E are available only with Revision 4 and above firmware.*
Note: *Tables BR1A, BR1P, and BR2P are available only with revision 9 and above firmware.*
Note: *No entry if Temperature Units = Not Used*
Note: *Tables 59A, B, D and 60A, B, D are available only with revision 10.09 and above firmware.*
Note: *Tables 53E, 54E, 59E, 60E are available only with revision 11.02 and higher. Table Eth/Gas (PTB) available with 11.06 and higher. Table Aromatic available with 11.08 and higher.*
Note: *Available with revision 11.12 and higher are the Eth and B100 (EPA-RFS2) equations for "Standardization of Volumes for renewable fuels per EPA 40 CFR Part 80 regulation of Fuels and Fuel additives". A Reference Density entry is not required when using these equations; EPA –RFS2 uses a C of E of 0.000630 for ethanol and 0.000458 for B100 in these equations that can be entered for Reference Density entry if volume to mass conversion is required.*

Help: Select the API table to be used for temperature compensation.

Product 412 – Reference Density

This code has a constant five-digit entry with a floating decimal point. The format is based on table and product selection. The program code format and data entry allows the programmable entry of the Reference Density when Table 54 is selected, Relative Density when Table 24 is selected, API when Table 6 is selected, and temperature coefficient when a C Table is selected. This entry represents the reference value used to calculate the volume correction factor. The range of this value will vary with the table selection chosen.

Note: *When Table 6 is selected, the leading digit will be used to show polarity, + = positive and a - = negative.*
Entry range based on table selection.

Table 6	999.9 to +999.9 API
Table 24	0 to 9.9999 Relative Density
Table 54, 60	0 to 9999.9 Reference Density
C Tables	0 to 0.99999 Percent per Degree Temperature
Eth/Gas (PTB)	0 to 9999.9 kg/m^3

Note: *If the API table selection is changed, the previous five-digit entry for reference will not be converted. This value must be re-entered.*

Note: *The valid range for the E tables is 0.3500 to 0.6880 relative density @ 60°F or 351.7 to 687.8 kg/m^3 @ 15° C or 331.7 to 683.6 kg/m^3 @ 20° C per GPA TP-27 and API 11.2.4.*

The following are examples of the display when Tables 24, 54 or 6C and 54C are selected.

Table 6B selected: +43.2 API

Table 24 selected: 0.8175 Rel Density

Table 54 selected: 1150.2 Kg/M3

Table 6C or 54C selected: 0.08000 %/Deg. F or Deg. C

Critical: Reference density is required for ethanol blends.

Note: *For Eth/Gas (PTB) tables enter density @15C in units of kg/m3, regardless of what the reference temperature (System 402) is programmed for.*

Fatal: Entry is out of specified range.

Note: *No entry if Density Units = Not Used*

Note: *No entry if API table is odd*

Help: Enter the product density at reference temperature or the temperature coefficient (for C tables).

Product 413 – High Density Alarm Limit

This code allows the entry of a density reading that will cause a high-density alarm to be generated. The units will be dependent on the entry made in the Density Units Select code. This four-digit entry will be dependent on the API table selection as follows:

–999.9 to +999.9 API

0 to 9999.0 Reference Density

Note: *No entry if Density Units = Not Used*

Help: Enter density that will signal an alarm for high product density.

Product 414 – Low Density Alarm Limit

This code allows the entry of a density reading that will cause a low-density alarm to be generated. The units will be dependent on the entry made in the Density Units Select code (System 403). This five-digit entry will be dependent on the API table selection as follows:

–999.9 to +999.9 API

0 to 9999.0 Reference Density

Note: *No entry if Density Units = Not Used*

Help: Enter density that will signal an alarm for low product density.

Product 415 – Delta Amount

This parameter applies to unloading arms only, and specifies the batch quantity between density samples used to calculate the percentage of contaminant during unloading. A maximum of ten samples are taken over the course of a batch. Each of the samples is a flow-weighted average over the amount defined by this entry. The density sample for the 10th delta amount delivered (or the last complete sample if less than 10) will be considered the density of the pure uncontaminated product when the contaminant percentage is calculated. The range of this entry is 0 to 99999 delivery units.

Help: Enter delivery amount between density samples.

Product 416 – Contaminant Density

This parameter applies to unloading arms only, and specifies the density value assumed for the contaminant (such as water) that may be present in an unloading operation. It is used in the calculation to determine the percentage of contaminant present during the unloading operation. The range of this entry is 0.0 to 9999.9 (in units of density type programmed in System 411).

Help: Enter the density of the contaminant.

Product 417 – Calculate Current Ref. Density

This program code enables a real-time calculation of current reference density based on the data from a live densitometer. The batch average reference density is always calculated. This option permits a general purpose analog output to echo the current reference density of the product to be used by other devices. The selections are as follows:

- (0) No calculation
- (1) Yes calculation

Note: *This parameter is only available when using Revision 10.12 firmware and up.*

Help: Select if calculation of reference density at current temperature and density is desired. Average reference density is always calculated.

Product 418 – Reference Density Temperature (Firmware 11.05 and higher)

In some applications, the temperature used to obtain the reference density may not always be the same as the base temperature used for volume correction. The AccuLoad III.net firmware (11.05 and higher) will allow entering a separate reference temperature for the reference density. Volumes will continue to be corrected to the programmed reference temperature in System Directory 402. This feature will only be available with the API 2004 tables (i.e. 6A\B\D, 24A\B\D, 54A\B\D, 60A\B\D), old tables (6, 24 and 54 firmware 11.08 and higher) and aromatics.

For example, this parameter will allow entering a reference density at 15C and correcting volumes to 30C or enter a reference density at 60F and correct volumes to 86F.

- > 15.0

Range: 0.0 – 999.9

Help: Enter base temperature for reference density. If 0, system 402 ref temp is used.

Critical: Reference density must be 15°C or 59°F for PTB ethanol blends.

Hide entry (no-entry) if reference density is not used (i.e. no API table is selected or also if an odd API table is selected).

Note: *This parameter will be available with C tables when using "Ref Dens for C tables" (Load Arm\Meter\Product Directory - #419)*

Product 419 – Reference Density for "C" type Tables (Firmware 11.05 and higher)

The program code is used to calculated mass when using a C Table. This special density allows C Tables to have a reference density also which enables mass to be computed. This reference density will not be used to temperature compensate the volume. The coefficient of thermal expansion will continue to be used to calculate the CTL and temperature compensate the volume.

Range: -9999.9 to 9999.9

Help: Enter ref density used to calculate mass when using a C table. Enter in units per System Directory #411.

Critical: Live density is configured.

Hide entry (no-entry) if a C table is not selected.

Note: *if an analog input is configured for density, this parameter must be set to 0 (i.e it is not used).*
Note: *if a densitomer is configured when using a C table, the density from the densitometer will override the reference density entered in the program mode. The live density used with C tables will be considered to not be temperature corrected.*

Product 420, 421, 422 – Ethanol A1, A2, A3 Coefficients (Firmware 11.06 and higher)

These parameters provide temperature compensation of ethanol and gasoline blends using the PTB equation. The AccuLoad III.net will allow entering the coefficients used in the equation to allow for other blends as new data is available from PTB.

- > -1.12345e-09

Range: -1e+37 to +1e+38

Critical: A1, A2 and A3 constants are required for ethanol blends.

Help: Enter the 15C coefficients for the desired ethanol blend.

Product 423 – Aromatic Hydrocarbon Product (Firmware 11.08 and higher)

This program code specifies the industrial aromatic hydrocarbon or cyclohexane product being delivered. Temperature compensation will be performed according to the ASTM D 1555 standard. This entry is only applicable if API table (product parameter #411) is programmed for "Aromatic" and temperature units (system parameter #401 are programmed.

For impure products, product parameter #424 may be used to enter the density of the mixture. Otherwise the density of the pure product will be used in the calculations.

(0) Benzene
(1) Cumene
(2) Cyclohexane
(3) Ethylbenzene
(4) Styrene
(5) Toluene
(6) m-Xylene
(7) 0-Xylene
(8) p-Xylene
(9) 300-350F Aromatic
(10) 350-400F Aromatic

Product 424 – Aromatic Hydrocarbon Reference Density (Firmware 11.08 and higher)

This parameter is used to enter the reference density of an aromatic hydrocarbon product that is considered impure. If 0 is entered, the density of the pure product will be used in the calculations. Reference density should be entered in density units of kg/m3 and should be based at the programmed reference temperature (system parameter #402) or the reference density's temperature (product parameter #418)

Note: *If "300-350°F Aromatic" or "350-400°F Aromatic" product is selected, the reference density for the product must be entered. Otherwise the conversion of volume and mass will not be available (i.e. if volume pulse input, mass will not be available. If mass pulse input, volume will not be available.*

Product 500 – Pressure Directory

General

501 – Maintenance Pressure
502 – Pressure Coefficient
503 – High Pressure Alarm Limit
504 – Low Pressure Alarm Limit

Back Pressure

511 – Differential Pressure
512 – Minimum Back Pressure Flow Rate
513 – Minimum Back Pressure Flow Rate Timer
514 – Back Pressure % Reduction
515 – Back Pressure Flow Recovery Pressure
516 – Back Pressure Flow Recovery Timer

Vapor Pressure

521 – Vapor Pressure Calculation Method
522 – Vapor Pressure 1
523 – Vapor Pressure Temperature 1
524 – Vapor Pressure 2
525 – Vapor Pressure Temperature 2
526 – Vapor Pressure 3
527 – Vapor Pressure Temperature 3

Product 501 – Maintenance Pressure

This code allows the entry of a maintenance pressure to be used when a pressure transmitter is not installed or is not working, but pressure-related calculations are

desired. The pressure units will be dependent on the entry made in the Pressure Scale Select code (System 501). This five-digit entry has a range of 0.0 to 9999.9 pressure units. A non-zero value entered here will override an analog pressure input.

Note: *No entry if Pressure Units = Not used.*

Help: Select maintenance pressure if pressure probe is not installed or to override probe.

Product 502 – Pressure Coefficient

This code will allow for the entry of a Compressibility Factory that will be used by the system to calculate the CPL. This entry should be zeroed if a densitometer is installed or a reference density is entered. In these cases, the AccuLoad will calculate the compressibility factor. If, however, API table 6C or 54C is selected, then a compressibility factor must be entered here if pressure compensation is desired, as the AccuLoad has no density with which to calculate the compressibility factor. The factor is used as the following: XXXXX equals the factor entered and it is applied as 0.0000XXXXX.

Note: *This value will represent the "F" variable in the CPL equation.*
Note: *No entry if Pressure Units = Not Used.*

Help: Enter compressibility factor used to calculate CPL [where 0.0000XXXXX is the compressibility factor].

Product 503 – High Pressure Alarm Limit

This code will allow for the entry of the pressure reading that will cause a High Pressure Alarm to be generated. The pressure units will be dependent on the entry made in the Pressure Scale Select code. This four-digit entry has a range of 0 to 9999 pressure units.

Note: *No entry if Pressure Units = Not Used.*

Help: If pressure exceeds this value an alarm will occur.

Product 504 – Low Pressure Alarm Limit

This code will allow for the entry of the pressure reading which will cause a Low Pressure Alarm to be generated. The pressure units will be dependent on the entry made in the Pressure Scale Select code. This four-digit entry has a range of 0 to 9999 pressure units.

Note: *No entry if Pressure Units = Not Used.*

Help: If pressure drops below this value, an alarm will occur.

Product 511 – Differential Pressure

This four-digit entry will allow the operator to select the delta pressure, in PSIA, bars, kPa or Kg/cm^2 (units dependent on the Pressure Units Select entry). This is the additional pressure to be maintained above the vapor or back pressure. If AccuLoad III is controlling flow with a two-stage valve, no alarm is issued and flow is not halted if the pressure drops below the programmed limit determined by the vapor pressure and differential pressure. Therefore, this Differential Pressure feature should not be used with a two-stage valve. In this situation, the low-pressure alarm must be set high enough to ensure that the pressure does not fall below the product's vapor pressure.

The range of this entry will be 0 to 9999 pressure units. An entry of 0 will disable pressure control of the valve by a pressure transducer.

Note: *A non-zero entry here will override any other programmed type of back pressure flow control.*
Note: *No entry if Pressure Units = Not Used*

Help: Enter back pressure to be maintained above product vapor pressure

Product 512 – Minimum Back Pressure Flow Rate

This four-digit entry will allow the operator to select the Minimum Back Pressure Flow Rate that will not cause an alarm. That is, any time the flow rate is being controlled because of insufficient back pressure and it falls below this programmed rate, a back pressure alarm will be issued and the valve will be closed. The range of this entry will be 0 to 9999.

Help: Minimum flow rate allowed during back pressure control before alarm.

Product 513 – Minimum Back Pressure Flow Rate Timer

This two-digit entry will allow the operator to select the minimum time, in seconds, allowed for the unit to achieve a desired flow rate. If the flow rate is not reached in this time, the flow rate will be lowered by a percentage because of insufficient back pressure. If the flow rate falls below the back pressure minimum flow, an alarm will be issued and the valve will be closed. The range of this entry will be 0 to 99 seconds.

If a differential pressure is entered in Product 511, this pressure must be attained within this time period after a flow rate change. If not, the flow rate will be lowered due to insufficient back pressure.

Note: *This entry is used for Automatic Flow Optimization (AFO).*
Note: *"00" disables any back-pressure control (including the differential pressure method.)*

Help: Minimum time in seconds to reach desired flow rate during back pressure control.

Product 514 – Back Pressure Percent Reduction

This two-digit entry will allow the operator to select the percentage of flow rate to be used during insufficient back pressure conditions or insufficient flow conditions. (For example, an entry of 90% will cause the flow rate to be reduced to 90% of the current rate during insufficient back pressure conditions.) The range of this entry is 50 percent to 90 percent.

Note: *This entry is used for Automatic Flow Optimization (AFO).*

Help: In back pressure control, the flow rate will be reduced to this percentage of the current flow rate. Range is 50% to 90%.

Product 515 – Back Pressure Flow Recovery Pressure

This four-digit entry allows the programming of the amount of pressure above the vapor pressure of the

product that must be read by the AccuLoad III before it will attempt flow recovery to the programmed high flow. The range of this entry is from 0 to 9999 pressure units. This parameter is used in conjunction with a pressure transmitter input. Note that this pressure must be sufficiently higher than the differential pressure entered in Product 511 to prevent flow rate oscillation.

Help: Enter the differential pressure above vapor pressure to attempt flow recovery.

Product 516 – Back Pressure Flow Recovery Timer

This two-digit numeric entry programs the amount of time the AccuLoad III will wait to attempt flow rate recovery if a pressure reading is not available in the system. The range of this timer is from 0 to 99 minutes. Zero will disable the flow recovery feature. This parameter provides a method of flow recovery that does not require the use of a pressure transmitter input.

Help: Enter the time interval in minutes to attempt flow recovery.

Product 521 – Vapor Pressure Calculation Method

This parameter defines the method that the AccuLoad III will use to calculate the vapor pressure of a product. Selections are as follows:

- **(0) Straight Line Approximation** (Requires points of the curve to be entered in codes 522 through 527).
- **(1) As outlined in GPA TP-15** (Gas Processors Association Technical Publication 15). (Uses the reference density of the product in the calculations).

Critical: GPA-TP15 requires corrected density [temperature used, API table selected]

Help: Choose vapor pressure calculation method.

Product 522, 524, 526 – Vapor Pressure

These three codes allow the operator to select the vapor pressures, which are used to define the vapor pressure versus temperature curve. This curve is used to calculate the current vapor pressure. The pressure(s) are defined beginning with the lowest pressure ascending to the highest pressure. The range of these five-digit numeric entries is 0000.0 to 9999.9 pressure units. The unit for this entry is dependent on the entry made in the Pressure Units Select Code. The vapor pressure calculation, determined from the entries made here, will be used both for differential back pressure control and in the CPL equation as the "Pe" entry. Therefore, careful consideration should be given in determining these points and their accuracy.

Critical: Vapor pressures must be entered in ascending order

Note: *No-entry if Vapor Pressure Calculation Method = GPA-TP15*
Help: Enter vapor pressure at corresponding product temperature.

Product 523, 525, 527 – Vapor Pressure Temperature

These three codes, with three-digit numeric entries, allow the operator to select the temperatures that will be used to define the vapor pressure versus temperature curve. This curve is used to calculate the current vapor pressure. These temperatures correspond with the vapor pressures. The range of these entries is –999 degrees to +999 degrees. The units for these entries are as programmed in the Temperature Units Select Code. The vapor pressure calculation, determined from the entries made here, will be used both for differential back pressure control and in the CPL equation as the "Pe" entry. Therefore, careful consideration should be given in determining these points and their accuracy.

Critical: Corresponding vapor pressure not programmed

Note: *No-entry if Vapor Pressure Calculation Method = GPA-TP15*
Help: Enter product temperature at corresponding vapor pressure.

Bay 100 – General Purpose Directory

101 – Bay Permissive 1 Sense
102 – Bay Permissive 1 Message
103 – Bay Permissive 1 Restart
104 – Bay Permissive 2 Sense
105 – Bay Permissive 2 Message
106 – Bay Permissive 1 Restart
107 – Bay ID

Bay 101, 104 – Permissive Sense

These parameter define the conditions under which a defined permissive is expected to be present in order for loading operations to be allowed. Selections as follows:

- (0) N/A
- (1) Transaction Start – Permissive only checked immediately after authorization
- (2) Continuous – Permissive must be met continuously during the batch
- (3) Start Key Pressed – Permissive must be met whenever flow is started
- (4) Batch Start – Permissive must be met to start a batch

Note: *No entry if digital input is not programmed as a permissive or if the bays are not defined.*
Help: Select permissive sense for loading.

Bay 102, 105 – Permissive Messages

These 28 character alphanumeric messages will be displayed if a permissive sense entry, corresponding with the message is defined but not present when expected. The data entry allows the following characters to be selected.

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *

- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _ END

Note: *No entry if digital input is not programmed as permissive or if the bay is not defined.*

Help: Enter the message to be displayed in absence of permissive.

Bay 103, 106 – Permissive Restart

These parameter will be determined how a restart is mediated after a permissive is lost ant then restored. The selections are as follows:

- **(0) Manual** – Start key must be pressed to restore
- **(1) Automatic** – Flow will be started automatically as soon as the permissive is restored.

Note: *No entry if digital input is not programmed as a permissive or if the bay is not defined.*

Help: Select whether the batch will restart automatically or if the start key will be required after the permissive is restored.

Bay 107 – Bay ID

This entry allows the operator to enter or edit a 28-character bay identification. The ID is used on default reports and is available for configurable reports. The data entry will allow the following characters to be selected as ID:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _ END

Help: Enter a 28-character entry for this bay position.

Bay 700 – Communications Directory

701 – Report Select Bay

702 – Summary Report Print Time

703 – Summary Report interval Bay

704 – Report Total Resolution

705 – Report Pages

706 – Report HM Class

Bay 701 – Report Select

This parameter allows the operator to designate the type of report to be printed for the bay. Selections are as follows:

- (0) Default
- (1) User Configurable Report 1
- (2) User Configurable Report 2

Help: Select the report type to be printed.

Bay 702 – Summary Report Print Time

This parameter allows the operator to specify the initial time of day at which a summary report will be printed. This report summarizes all transaction data on the bay for the interval defined in the Summary Report Interval parameter. The time can be expressed in standard or military format. The range of this entry is six characters.

Help: Enter time to print summary report. Time format is HH;MMT, where T=A,P,M

Bay 703 – Summary Report Interval

This parameter allows the operator to designate the interval of time covered by the Summary Report. If set to zero, the summary report is disabled. The range of this entry is 0 to 999 hours.

Help: Enter time intervals in hours between printed reports.

Bay 704 – Report Total Resolution

This parameter allows the operator to designate the volume resolution to be printed on default reports. Selections are as follows:

- (0) Whole
- (1) 10ths
- (2) 100ths

Help: Select the volume resolution to print on default reports

Bay 705 – Report Pages

This parameter allows the operator to designate the types of reports to be printed. Selections are as follows:

- (0) Batch and Transaction Pages
- (1) Batch Pages Only
- (2) Transaction Page Only
- (3) No Transaction Report

Help: Select which pages to print for reports

Bay 706 – Report HM Class

This parameter allows the operator to designate which arm's HM (Hazardous Materials) class is to appear on the report. The HM class printed on the bay transaction report will be the HM class designated for the arm in Load Arm Parameter 706. Selections are as follows:

- (0) Arm 1
- (1) Arm 2
- (2) Arm 3
- (3) Arm 4
- (4) Arm 5
- (5) Arm 6

Help: Select which arm's HM class to print on summary page of default report.

Recipe Directory

Recipe Composition

--01 – Recipe Used
--02 – Recipe Name
--03 – HM Classification
--04 – First Product Delivered
--05 – First Product Percentage
--06 – Second Product Delivered
--07 – Second Product Percentage
--08 – Third Product Delivered
--09 – Third Product Percentage
--10 – Fourth Product Delivered
--11 – Fourth Product Percentage
--12 – Fifth Product Delivered
--13 – Fifth Product Percentage
--14 – Sixth Product Delivered
--15 – Sixth Product Percentage
--16 – Clean Line Deduct

Recipe Injectors

--17 – Injector 1 Volume
--18 – Injector 1 Rate
--19 – Products Using Injector 1
--20 – Injector 2 Volume
--21 – Injector 2 Rate
--22 – Products Using Injector 2
--23 – Injector 3 Volume
--24 – Injector 3 Rate
--25 – Products Using Injector 3
--26 – Injector 4 Volume
--27 – Injector 4 Rate
--28 – Products Using Injector 4
--29 – Injector 5 Volume
--30 – Injector 5 Rate
--31 – Products Using Injector 5
--32 – Injector 6 Volume
--33 – Injector 6 Rate
--34 – Products Using Injector 6
--35 – Injector 7 Volume
--36 – Injector 7 Rate
--37 – Products Using Injector 7
--38 – Injector 8 Volume
--39 – Injector 8 Rate
--40 – Products Using Injector 8
--41 – Injector 9 Volume
--42 – Injector 9 Rate
--43 – Products Using Injector 9
--44 – Injector 10 Volume
--45 – Injector 10 Rate
--46 – Products Using Injector 10
--47 – Injector 11 Volume
--48 – Injector 11 Rate
--49 – Products Using Injector 11
--50 – Injector 12 Volume
--51 – Injector 12 Rate
--52 – Products Using Injector 12
--53 – Injector 13 Volume
--54 – Injector 13 Rate
--55 – Products Using Injector 13
--56 – Injector 14 Volume
--57 – Injector 14 Rate
--58 – Products Using Injector 14
--59 – Injector 15 Volume
--60 – Injector 15 Rate
--61 – Products Using Injector 15
--62 – Injector 16 Volume
--63 – Injector 16 Rate
--64 – Products Using Injector 16
--65 – Injector 17 Volume
--66 – Injector 17 Rate
--67 – Products Using Injector 17
--68 – Injector 18 Volume
--69 – Injector 18 Rate
--70 – Products Using Injector 18
--71 – Injector 19 Volume
--72 – Injector 19 Rate
--73 – Products Using Injector 19
--74 – Injector 20 Volume
--75 – Injector 20 Rate
--76 – Products Using Injector 20
--77 – Injector 21 Volume
--78 – Injector 21 Rate
--79 – Products Using Injector 21
--80 – Injector 22 Volume
--81 – Injector 22 Rate
--82 – Products Using Injector 22
--83 – Injector 23 Volume
--84 – Injector 23 Rate
--85 – Products Using Injector 23
--86 – Injector 24 Volume
--87 – Injector 24 Rate
--88 – Products Using Injector 24
--89 – Clean Line Product
--90 – Ratio Delivery Mode

Read Only Parameters

Minimum Recipe Preset

Product Flow Rates#LJCleanLineDeduct#

Recipe x01 – Recipe Used

This program code indicates whether a recipe is configured for use. Selections are as follows:

- (0) Not used
- (1) Load Arm 1
- (2) Load Arm 2
- (3) Load Arm 3
- (4) Load Arm 4
- (5) Load Arm 5
- (6) Load Arm 6

Critical: Load Arm not configured.

Help: Select load arm to which this recipe is to be assigned.

Note: *Load Arms 3 through 6 are not available on the AccuLoad III-S hardware.*

Recipe x02 – Recipe Name

This program code allows an alphanumeric entry of up to nine characters. It is used as an identifier of the blend recipe in the preset display and on the product receipt ticket. The data entry allows the following characters to be selected as part of the name:

- A B C D E F G H I J K L M N O P Q R S T U V W X Y Z # *
- a b c d e f g h i j k l m n o p q r s t u v w x y z & @
- 0 1 2 3 4 5 6 7 8 9 < > ( ) ? ! . , ‘ - “ / + = _END

Help: Enter a nine-character alphanumeric message to identify this recipe.

Recipe x03 – HM Classification

This code assigns a product Hazardous Materials (HM) Classification to the recipe. This HM Classification will print on the load ticket for this recipe. HM Classifications are defined in the individual product directories. Selections are as follows:

- (0) Product 1
- (1) Product 2
- (2) Product 3
- (3) Product 4
- (4) Product 5
- (5) Product 6

Critical: Product not configured.

Note: *No entry: No blending for respective load arm*

Help: Select product HM Class for this recipe.

Recipe x04, x06, x08, x10, x12, x14 – Product Delivered

Sequential Blending: These program codes select the components in the order they are to be delivered for this recipe. Recipe x04 is the first product to be delivered, x06 is the second product to be delivered, x08 is the third product to be delivered, x10 is the fourth product to be delivered, x12 is the fifth product to be delivered, and x14 is the sixth product to be delivered.

Hybrid Blending: The delivery order must be specified for the sequential products. The delivery order for the ratio products will be no-entry. Example: For a one product ratio, two product sequential configuration, Recipe x04 will be no-entry for the ratio product. Recipe x06 and x08 must be programmed to specify the delivery order for the two sequential products. Selections are as follows:

- (0) Not Used
- (1) Product 1
- (2) Product 2
- (3) Product 3
- (4) Product 4
- (5) Product 5
- (6) Product 6

Critical: First component must be programmed [--04 only]

Note: *No entry if straight product load arm*

Note: *No entry if load arm is a ratio blending arm*

Help: SEQ: Select product to deliver first in batch.

Ratio/SS: Not used.

Recipe x05, x07, x09, x11, x13, x15 – Product Percentage

These program codes allow for the percentage of products to be used in a recipe to be defined. The percentage entered here represents the portion of the total batch that is to be contributed by this product. The percentages of the six products (ratio blending) or six components (sequential blending) must add up to one hundred percent; otherwise, a critical warning will be issued. The range of these three-digit numeric entries is 000.0 to 100.0, where 0 would mean that this product is not to be included in the recipe, and 100.0 would mean that the recipe was to consist entirely of this product. Starting in firmware revision 11.08, recipe % can be programmed in hundredths of units.

Ratio Blending: Program code x05 is the percentage of product 1, code x07 is the percentage of product 2, code x09 is the percentage of product 3, and x11 is the percentage of product 4. x13 is the percentage for product 5 and x15 is the percentage for product 6.

Sequential Blending: Program code x05 is the percentage of component 1, code x07 is the percentage of component 2, code x09 is the percentage of component 3, code x11 is the percentage of component 4, x13 is the percentage of component 5, and x15 is the percentage of component 6.

Hybrid Blending: Program product percentages for the ratio products first. The remaining parameters can be used to specify the percentages for the sequential products.

Critical: Component percentages must sum to 100%

Critical: Component percentage not used with straight product

Critical: Component percentage not used with ratio blending [13, 15; others depend on number of product selection for ratio blend for this load arm]

Critical: Only one side stream product can deliver per recipe [hybrid blending].

Note: *No entry if not blending*

Help: Select the percentage of the total batch to be contributed by this component

Recipe x16 – Clean Line Deduct

This program code allows the selection of the product from which the clean line volume (if installed) is to be deducted. In the Ready Mode, when a recipe is selected and a preset amount is entered, the preset is divided among the products according to the percentages programmed in the recipe. The clean line volume is deducted from the preset volume of the product selected here. If the product selected is not part of this recipe, a critical warning will be issued. The range of this entry is one through six.

For example, assume a recipe with 50% of products 1 and 2. The clean line is 50 gallons of product 4. A preset of 1000 gallons is entered. This preset is divided among products 1 and 2: 500 gallons each. If product 1 is selected here as the product from which to deduct clean line, then the product 1 preset would be 500 – 50 = 450 gallons. When START is pressed, products 1 and 2 would deliver 450 gallons and 500 gallons, respectively. When products 1 and 2 have been delivered, 50 gallons of the clean line product (product 4) will be delivered.

Selections are as follows:

- (1) Product 1
- (2) Product 2
- (3) Product 3
- (4) Product 4
- (5) Product 5
- (6) Product 6

Critical: Product not used in recipe

Critical: Clean Line Deduct must be Product 1 when recipe is assigned to a side-stream blending arm.

Note: *No entry if associated recipe = Not Used*

Help: Select the product the clean line volume is deducted from.

Recipe x17, x20, x23, x26, x29, x32, x35, x38, x41, x44, x47, x50, x53, x56, x59, x62, x65, x68, x71, x74, x77, x80, x83, x86 – Injector Volume

These seven-digit numeric codes define the volume of additive product that will be injected for each cycle of additive injector (e.g., an entry of 000.100 shows that one-tenth of a unit of product will be injected each cycle of the injector). The range of this program code is 0.000 to 9999.999.

For piston or metered injectors, the units for this additive volume are as programmed in system code 881. For smart injectors, this is the number downloaded to the smart injector. The units may be fixed or programmed on the smart injector.

When using a Smart Additive Injector System the additive injector volume is downloaded to the additive injector at the start of each batch.

Some additive injectors do not support the full range that we have offered here. Titan injectors accept only whole numbers for the volume. Smith and Gate City injectors (Blend-Pak, Mini-Pak, and AccuTroller) accept injector volume in tenths. The AccuLoad III will truncate the entry to the format required for the smart injector.

Code	*Function*
--17	Injector 1 Volume
--20	Injector 2 Volume
--23	Injector 3 Volume
--26	Injector 4 Volume
--29	Injector 5 Volume
--32	Injector 6 Volume
--35	Injector 7 Volume
--38	Injector 8 Volume
--41	Injector 9 Volume
--44	Injector 10 Volume
--47	Injector 11 Volume
--50	Injector 12 Volume
--53	Injector 13 Volume
--56	Injector 14 Volume
--59	Injector 15 Volume
--62	Injector 16 Volume
--65	Injector 17 Volume
--68	Injector 18 Volume
--71	Injector 19 Volume
--74	Injector 20 Volume
--77	Injector 21 Volume
--80	Injector 22 Volume
--83	Injector 23 Volume
--86	Injector 24 Volume

Note: *No entry if associated injector not configured to arm*

Help: Enter the additive volume delivered per injection cycle

Recipe x18, x21, x24, x27, x30, x33, x36, x39, x42, x45, x48, x51, x54, x57, x60, x63, x66, x69, x72, x75, x78, x81, x84, x87 – Injector Rate

This parameter is used to define the rate at which additive is injected into the product stream during delivery. This is the volume of product per additive injection, typically 40 gallons or 100 liters. The range of this three-digit number entry is 0 to 999 volume units.

If the injector is a flow controlled injector, the value represents a percentage of the preset amount that this additive

will comprise. For example, with a preset of 1000 units and this parameter programmed to 10.0, the result will be 900 units of the component products in the recipe plus 100 units of this additive. The range is 0 to 20.0 percent.

Code	*Function*
--18	Injector 1 Rate
--21	Injector 2 Rate
--24	Injector 3 Rate
--27	Injector 4 Rate
--30	Injector 5 Rate
--33	Injector 6 Rate
--36	Injector 7 Rate
--39	Injector 8 Rate
--42	Injector 9 Rate
--45	Injector 10 Rate
--48	Injector 11 Rate
--51	Injector 12 Rate
--54	Injector 13 Rate
--57	Injector 14 Rate
--60	Injector 15 Rate
--63	Injector 16 Rate
--66	Injector 17 Rate
--69	Injector 18 Rate
--72	Injector 19 Rate
--75	Injector 20 Rate
--78	Injector 21 Rate
--81	Injector 22 Rate
--84	Injector 23 Rate
--87	Injector 24 Rate

Note: *No entry if associated injector not configured to arm*
Help: Enter the additive injector rate, in product volume per injection.

Recipe x19, x22, x25, x28, x31, x34, x37, x40, x43, x46, x49, x52, x55, x58, x61, x64, x67, x70, x73, x76, x79, x82, x85, x88 – Product Using Injector

This entry is used to select whether this injector is to be used with this recipe and with which products it will be used. Each of the 24 possible injectors may be used with the products being loaded in this recipe.

Note: *When an additive is paced by more than one product, the additive output will be the result of the combined volumes of the products selected.*

Code	*Function*
--19	Products Using Injector 1
--22	Products Using Injector 2
--25	Products Using Injector 3
--28	Products Using Injector 4
--31	Products Using Injector 5
--34	Products Using Injector 6
--37	Products Using Injector 7
--40	Products Using Injector 8
--43	Products Using Injector 9
--46	Products Using Injector 10
--49	Products Using Injector 11
--52	Products Using Injector 12
--55	Products Using Injector 13
--58	Products Using Injector 14
--61	Products Using Injector 15
--64	Products Using Injector 16
--67	Products Using Injector 17
--70	Products Using Injector 18
--73	Products Using Injector 19
--76	Products Using Injector 20
--79	Products Using Injector 21
--82	Products Using Injector 22
--85	Products Using Injector 23
--88	Products Using Injector 24

This program code allows the operator to select which products use a respective injector in a blender. Products using an injector are marked with an asterisk. The number of products shown on the display is dependent on the number of products configured for the respective load arm.

Note: *No entry if associated injector not configured to arm*
Note: *No entry if arm is configured for a straight product*
Help: Select the products using this injector

Recipe x89 – Clean Line Product

This parameter specifies the product used to 'pack' the load arm and meter run at the end of the batch. This allows the operator to set a clean line product on a per-recipe basis.

If Load Arm parameter "221 Clean Line Amount" is greater than zero and if "089 Clean Line Prd" is not set to "NA", the product as programmed in "089 Clean Line Prd" will be the clean line product. In other words the clean line product programmed in the recipe directory will take precedence over the clean line product programmed in the arm directory provided that the recipe clean line product is not "NA". If the recipe clean line product is programmed as "NA" then the clean line product will be that as programmed in the arm directory ("222 Clean Line Product").

Selections are as follows:

- NA
- Product 1
- Product 2
- Product 3

- Product 4
- Product 5
- Product 6

Critical: Product cannot be a side stream product (ratio product plumbed upstream of the sequential product meter) on a hybrid arm.

Critical: Product greater than the number of products available for this arm.

No Entry: For side stream and straight load arm types

Help: Select the product that will be used to fill the load arm at the end of the batch.

Recipe 090 – Ratio Delivery Mode

This program code allows for a ratio plumbed arm configuration to deliver products one after the other instead of concurrently. Recipes where ratio percentages are difficult to achieve concurrently due to system hydraulics, or where endothermic reactions could significantly affect results may be configured to deliver each product successively with this program code.

0) Concurrent – Products are set up to flow simultaneously (traditional ratio blending) mixing in the arm as they are flowing into the vessel.

1) Successive – Products are set up to flow one after the other (sequentially) and mixing once they are in the vessel.

If this option is set to '1 – Successive' then the product order of delivery must also be specified (as for a sequential blending arm).

Help: Select how recipe products deliver during a batch.

Note: *No entry if the arm is not configured for a ratio configured loadig arm. This parameter is only available when using Revision 10.12 or above firmware.*

Minimum Recipe Preset (Read Only)

This display shows the minimum volume of this recipe that can be delivered. This is a read only program code. When presetting a batch, the entered preset is compared with the recipe minimum preset that is displayed here. If the entered preset is less than the minimum, a warning message will be displayed and the batch will not be delivered until the preset amount has been corrected.

The minimum preset is calculated using the percentages programmed in the recipe and the minimum product batch or second trip amount associated with each product. In the formulas below, if the minimum product batch is less than the second trip volume, the second trip will be used.

If clean line is not installed:

$$\text{Minimum Preset} = \frac{\text{Minimum Product Batch}}{\%\ \text{of Product Programmed}}$$

The minimum preset is calculated for each product in the recipe. The greatest value calculated is displayed here as the Recipe Minimum Preset.

If clean line is installed:

$$\text{Minimum Preset} = \frac{\text{Minimum Product Batch}}{\%\ \text{of Product Programmed}}$$

For the product selected as the product from which to deduct clean line:

$$\text{Minimum Preset} = \frac{\text{Clean Volume} + \text{Minimum Product Batch}}{\%\ \text{of Product Programmed}}$$

The minimum preset is calculated for all products. The greatest value calculated is displayed here as the Recipe Minimum Preset.

Product Flow Rates (Read Only)

This read only display shows the calculated flow rates for this recipe. The flow rates are read, from left to right, first high flow, second high flow, and low flow rate. These rates are calculated based on the percentages of the products in the recipe, the arm high flow rate and low flow start rates and the products' minimum and high flow rates. These flow rates are only displayed for a ratio blender.

Read Only Parameters
Recipe 7

Minimum Preset **60**

Press ENTER for flow rates

Recipe 7

P1	**Hi**	**450**	**2nd**	**0**	**Lo**	**150**
P2	**Hi**	**50**	**2nd**	**0**	**Lo**	**0**
P3	**Hi**	**0**	**2nd**	**0**	**Lo**	**0**
P4	**Hi**	**0**	**2nd**	**0**	**Lo**	**0**

Appendix I – Audit Trail

This Appendix explains the Audit Trail feature and describes how it is accessed.

The Audit Trail can be viewed when the AccuLoad III is in the Ready Mode or the Run Mode. When in the Ready Mode pressing either CLEAR or ENTER will display the main menu. When the main menu is displayed choose the Diagnostic Menu by using the arrow keys on the keypad.

Main Menu

Dynamic Displays
Print Menu
Program Mode Menu
- > Diagnostics Menu

If the AccuLoad is in the Run mode, pressing the ENTER key will display the Dynamic Display menu from which the Read Only Diagnostics may be accessed.

Dynamic Displays

System
Batch
Transaction
- > Diagnostics

The Diagnostics menu that is available through the Dynamic Display or the main menu consists of the following options. Move the cursor to the Audit Trail using the up or down arrow.

- Active Alarms
- Alarm History
- Non-Reset Volumes
- Event Log
- Transaction Log
- Audit Trail
- Digital Inputs
- Digital Outputs
- Analog Inputs
- Analog Input Summary
- Analog Outputs
- Pulse Inputs
- View Turbine Meter Data
- Comm Monitor
- Force Injector Auto Detect
- CIVACON Overfill Monitor
- Boolean Algebraic
- Transaction Archive Data
- Software Version
- Factory Diagnostics

Audit Trail

The View Only Diagnostics menu provides the selection "Audit Trail" where audit trail data is available for viewing. With the arrow in front of "Audit Trail," pressing ENTER will display the last audit trail entry that occurred in the AccuLoad.

Audit Trail Entry #226

09/03/99 17:25:02
Program Mode Exit
Through Keypad

The audit trail provides the date, time, and description of program mode events. Note that only changes to those parameters secured at the two highest levels of security programmed will be logged in the audit trail and any parameter security level changes will be stored. Pressing the up and down arrows on the keypad will allow the operator to step through the audit trail.

Audit Trail Entry #225

09/03/99 17:24:58
SY: 321
1 No Security
0 Disabled

Where 321 is the program code modified
SY indicates that it is a system parameter
1 No Security is the old program value and
0 Disabled is the new program value.

Audit Trail Entry #224

09/03/99 11:24:45
Program Mode Exit
Through Keypad

When finished with the Audit Trail displays pressing the CLEAR key will return the display to the Diagnostic menu.

Appendix II – Alarms

Smart Additive Inject Alarm Cross Reference	
Blend-Pak Injector – From the Blend-Pak's Point of View	**AccuLoad III Equivalent Error Code**
Excess Additive	RA: Additive Frequency Alarm
No Additive Flow	NA: No Additive Pulses Alarm
No Fuel Flow	GA: Additive Injector Error
Low Additive	KA: Low Additive Volume
Leaking Solenoid	MA: Excess Additive Pulses
No Act. Time-Out	GA: Additive Injector Error
Fuel Flow Switch	GA: Additive Injector Error
Low Flow Switch Failure	GA: Additive Injector Error
Flash Vol Alarm	GA: Additive Injector Error
Communication Error to Additive Injector	CT: Additive Communication Totals
Mini-Pak Injector/AccuTroller – From the Mini-Pak/AccuTroller's Point of View	**AccuLoad III Equivalent Error Code**
Additive Cycle Volume Alarm	GA: Additive Injector Error
No Additive Alarm	NA: No Additive Pulses Alarm
Leaking Solenoid	MA: Excess Additive Pulses
Firmware Failure	GA: Additive Injector Error
EEPROM Failure	GA: Additive Injector Error
Communication Error to Additive Injector	CT: Additive Communication Totals
Titan Injector – From the Titan's Point of View	**AccuLoad III Equivalent Error Code**
Alarm Low 1	RA: Additive Frequency Alarm
Alarm Low 2	KA: Low Additive Volume
Pulse Detection	NA: No Additive Pulses Alarm
Alarm High	MA: Excess Additive Pulses
Product Pulse Failure	GA: Additive Injector Error
Unclean Product	GA: Additive Injector Error

Table of Equivalent Error Codes	
Add-Pak (AICB)	**AccuLoad III Equivalent Error Code**
Injections occurring too fast	OR: Overspeed Injector CR: Inj Command Rejected
No additive pulses occurring	NA: No Add Pulses
Out of tolerance high	RA: Additive Frequency Alarm
Out of tolerance low	KA: Low Additive Volume
Excess additive pulses	MA: Excess Additive Pulse
Additive total at least 10 times greater than expected injection volume per injection	CT: Additive Communication Totals
Faulty ROM or RAM	D1: Add-Pak Diagnostic Alarm
Metered Injector – If this happens	**AccuLoad III – This alarm occurs...**
Injections are occurring too fast (before the previous one is complete)	OR: Overspeed Metered Injector
No additive pulses are registering (no pulses have been registered from previous injection)	NA: No Additive Pulses Alarm
Out of tolerance high (meter constantly out of tolerance on high side)	RA: Additive Frequency Alarm
Out of tolerance low (meter constantly out of tolerance on low side)	KA: Low Additive Volume
Excess Additive Pulses	MA: Excess Additive Pulses

AccuLoad II DA Alarms	
Arm Program Error	This alarm indicates a conflict or inconsistency in arm configuration.
Arm Recipe Program Error	This alarm indicates a conflict or inconsistency in arm recipe selection.
BSE Failure	This alarm indicates a failure on the BSE board.
Display Failure	This alarm indicates a failure in data transmission to the display.
EAAI Failure	This alarm indicates a failure on the EAAI board.
Flash Corrupt on Power Up	This alarm indicates that flash memory failed to successfully complete the power up testing sequence.
Flash Memory Error	This alarm indicates a flash memory failure.
Meter Program Error	This alarm indicates a conflict or inconsistency in meter configuration.
Passcode Reset	This alarm indicates that the passcode has been reset.
Product Program Error	This alarm indicates a conflict or inconsistency in product configuration.
RAM Bad	When displayed, this alarm indicates a RAM failure.
RAM Corrupt on Power Up	This alarm indicates that RAM failed to successfully complete the power up testing sequence.
Recipe Program Error	The alarm indicates a conflict or inconsistency in recipe configuration.
ROM Bad	When displayed, this alarm indicates a ROM failure.
System Program Error	This alarm indicates a conflict or inconsistency in system configuration.
Watchdog Alarm	Indicates an internal check feature has detected a possible operational problem in the microprocessor that may have affected information stored in memory. A complete review of all program codes stored in memory must be made to confirm their correctness.

Appendix III – Metered Injector Map on the AccuLoad III

Injector # (AccuLoad)	Communications Address	Board	J1–Address Jumper on AICB Board	Input Point (AICB)	Output Points (AICB)	Input Point (AccuLoad)	Output Points (AccuLoad)
1	NA	AccuLoad	NA	NA	NA	NA	NA
2	NA	AccuLoad	NA	NA	NA	NA	NA
3	NA	AccuLoad	NA	NA	NA	NA	NA
4	NA	AccuLoad	NA	NA	NA	NA	NA
5	101	AICB #1	Out	1	Pump = 1 Solenoid = 2	AICB 1 = 24	AICB 1 = 39 AICB 2 = 40
6	102	AICB #1	Out	2	Pump = 3 Solenoid = 4	AICB 2 = 25	AICB 3 = 41 AICB 4 = 42
7	103	AICB #1	Out	3	Pump = 5 Solenoid = 6	AICB 3 = 26	AICB 5 = 43 AICB 6 = 44
8	104	AICB #1	Out	4	Pump = 7 Solenoid = 8	AICB 4 = 27	AICB 7 = 45 AICB 8 = 46
9	105	AICB #1	Out	5	Pump = 9 Solenoid = 10	AICB 5 = 28	AICB 9 = 47 AICB 10 = 48
10	106	AICB #1	Out	6	Pump = 11 Solenoid = 12	AICB 6 = 29	AICB 11 = 49 AICB 12 = 50
11	107	AICB #1	Out	7	Pump = 13 Solenoid = 14	AICB 7 = 30	AICB 13 = 51 AICB 14 = 52
12	108	AICB #1	Out	8	Pump = 15 Solenoid = 16	AICB 8 = 31	AICB 15 = 53 AICB 16 = 54
13	109	AICB #1	Out	9	Pump = 17 Solenoid = 18	AICB 9 = 32	AICB 17 = 55 AICB 18 = 56
14	110	AICB #1	Out	10	Pump = 19 Solenoid = 20	AICB 10 = 33	AICB 19 = 57 AICB 20 = 58
15	201	AICB #2	In	1	Pump = 1 Solenoid = 2	AICB 1 = 34	AICB 1 = 59 AICB 2 = 60
16	202	AICB #2	In	2	Pump = 3 Solenoid = 4	AICB 2 = 35	AICB 3 = 61 AICB 4 = 62
17	203	AICB #2	In	3	Pump = 5 Solenoid = 6	AICB 3 = 36	AICB 5 = 63 AICB 6 = 64
18	204	AICB #2	In	4	Pump = 7 Solenoid = 8	AICB 4 = 37	AICB 7 = 65 AICB 8 = 66
19	205	AICB #2	In	5	Pump = 9 Solenoid = 10	AICB 5 = 38	AICB 9 = 67 AICB 10 = 68
20	206	AICB #2	In	6	Pump = 11 Solenoid = 12	AICB 6 = 39	AICB 11 = 69 AICB 12 = 70
21	207	AICB #2	In	7	Pump = 13 Solenoid = 14	AICB 7 = 40	AICB 13 = 71 AICB 14 = 72
22	208	AICB #2	In	8	Pump = 15 Solenoid = 16	AICB 8 = 41	AICB 15 = 73 AICB 16 = 74
23	209	AICB #2	In	9	Pump = 17 Solenoid = 18	AICB 9 = 42	AICB 17 = 75 AICB 18 = 76
24	210	AICB #2	In	10	Pump = 19 Solenoid = 20	AICB 10 = 43	AICB 19 = 77 AICB 20 = 78

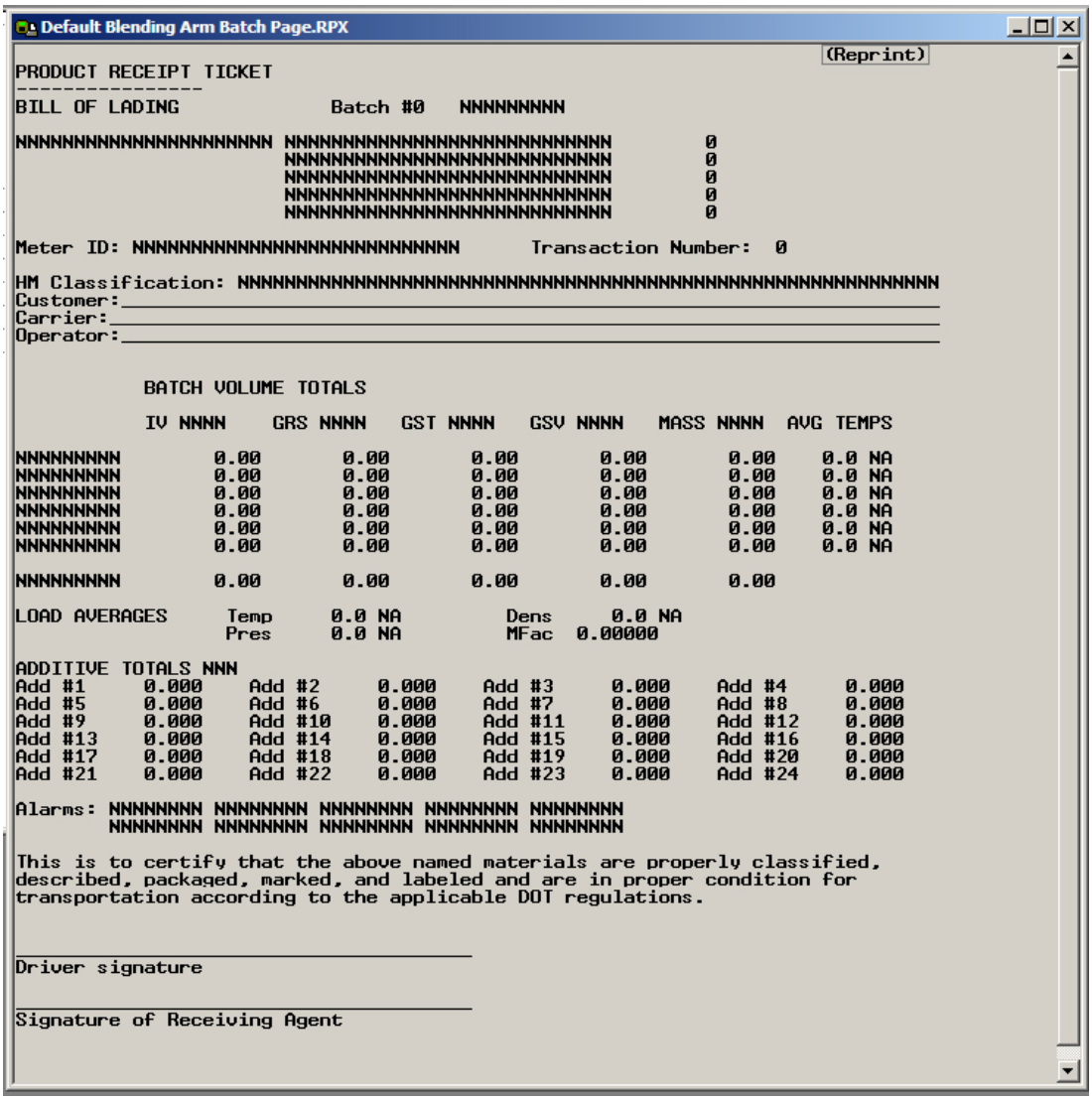
Note: *Add-Pak parameters and mappings are fixed and set automatically.*

Note: *If one Add-Pak injector is programmed to operate, then all addresses are reserved and are unable to be used for any other injector for the entire system in an address bank. Banks are 100 through 110 and 200 through 210. Note that the addresses 100 and 200 are system addresses for the entire AICB board.*

Note: *Special attention should be paid to the Configuration 020 parameter (Number of Injectors). This number provides the number of injectors that will be used staring at Injector #1 and running sequentially to #24. If an injector number is not programmed up, its position is still counted.*

Example: Only two injectors are needed and these are Add-Paks. Injector positions numbers 5 and 6 are configured as Add-Pak injectors. The parameter CF 020 must be set to at least 6, since the accounting starts at injector #1 and continues sequentially to #6. Injectors #1 through #4 count against this number, even though they are not currently configured.

Appendix IV – Default Blending Arm Batch Page Report



Default Blending Arm Batch Page.RPX

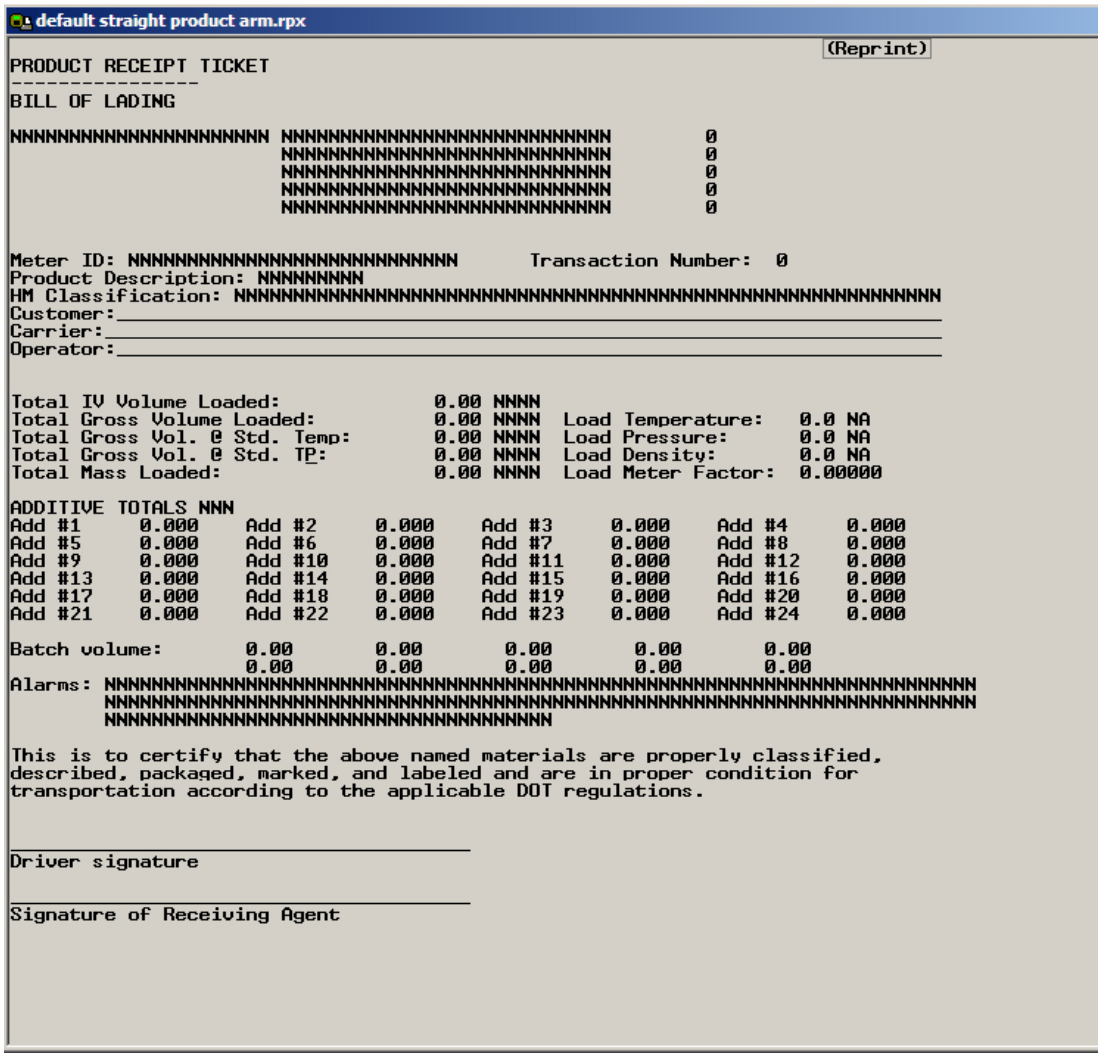
```
                                                                (Reprint)
PRODUCT RECEIPT TICKET
----------------
BILL OF LADING              Batch #0   NNNNNNNNN

NNNNNNNNNNNNNNNNNNNNN NNNNNNNNNNNNNNNNNNNNNNNNNNNN        0
                       NNNNNNNNNNNNNNNNNNNNNNNNNNNN        0
                       NNNNNNNNNNNNNNNNNNNNNNNNNNNN        0
                       NNNNNNNNNNNNNNNNNNNNNNNNNNNN        0
                       NNNNNNNNNNNNNNNNNNNNNNNNNNNN        0

Meter ID: NNNNNNNNNNNNNNNNNNNNNNNNNNNN      Transaction Number:  0

HM Classification: NNNNNNNNNNNNNNNNNNNN
```

Appendix V – Default Straight Product Arm Report



default straight product arm.rpx

(Reprint)

PRODUCT RECEIPT TICKET

BILL OF LADING

NNNNNNNNNNNNNNNNNNNNN NNNNNNNNNNNNNNNNNNNNNNNNNNNN 0
NNNNNNNNNNNNNNNNNNNNNNNNNNNN 0
NNNNNNNNNNNNNNNNNNNNNNNNNNNN 0
NNNNNNNNNNNNNNNNNNNNNNNNNNNN 0
NNNNNNNNNNNNNNNNNNNNNNNNNNNN 0

Meter ID: NNNNNNNNNNNNNNNNNNNNNNNNNNN Transaction Number: 0
Product Description: NNNNNNNNN
HM Classification: NNNNNNNNNNNNNNNNNNNN

AccuLoad III

Specification.....Bulletin SS06036
Installation.....Bulletin MN06135
AccuLoad III Operator Reference.....Bulletin MN06129
Communications Bulletin.....Bulletin MN06130L
Modbus Communications.....Bulletin MN06131L

Revisions included in MN06129 Issue/Rev. 1.6 (10/11):

Vapor Recovery System information added throughout document.
Valve Closure Diagnostic added to document.
Network Status, ComFlash Archive Data, Printer Standby Data, Download Directory, AccuLoad Information, Transaction Number Init, Erase Web Pages and Upgrade Firmware added to Dynamic Display Diagnostics.

Section VII:	System 200 - Flow Control Directory revised. System 300 - Volume Accuracy Directory revised. System 600 - Directory Alarms revised. System 700 - Communications Directory revised.
Page 151:	Appendix IV Default Blending Arm Batch Page Report added.
Page 152:	Appendix V Default Straight Product Arm Proving Report added.

Technical Support

Contact Information:
Field Service Response Center
24/7 Technical Support/Schedule a Technician: 1-844-203-4014
System Installation Supervision, Start-Up, Commissioning Services, and Training Available

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

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