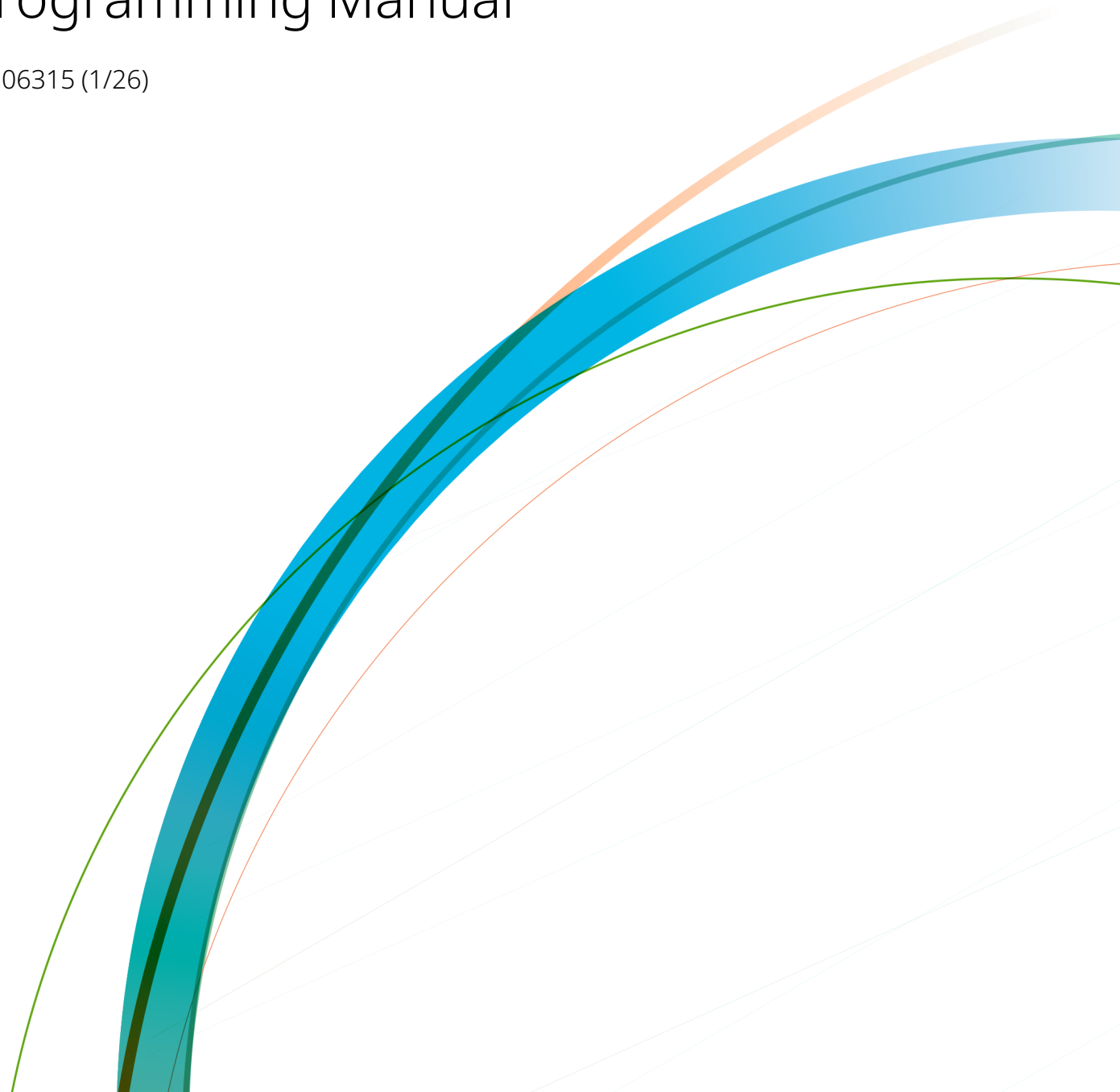
GUIDANT

1010CB Load Computer

Programming Manual

MN06315 (1/26)



Important

All information and technical specifications in this document have been carefully checked and compiled by the author; however, we cannot completely exclude the possibility of errors. Guidant Measurement is always grateful to be informed of any errors; contact us at TechnicalCommunications@GuidantMeasurement.com.

Caution

The default or operating values used in this document and in the configuration parameters of the product described in this document are for factory testing only and should not be construed as default or operating values for your system. Each system is unique and each configuration parameter must be reviewed and programmed for that specific system application.

Disclaimer

Guidant hereby disclaims all responsibility for damages, including but not included to consequential damages arising out of or related to the inputting of incorrect or improper program or default values entered in connection with the product described in this document.

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Contents

1 Overview

1.1 Description

This manual describes the setup procedures for the Model 1010 loading system.

It is intended for managers or supervisors who may be required to do the following:

- Change the setup parameters
- Program personnel and/or vehicle ID numbers for authorisation purposes.

Terminology and Conventions

In this document, “instrument” refers to the generic Model 1010 loading system, and “computer” refers to the attached computer, Distributed Control System (DCS), Load Rack Computers (LRC), or Terminal Automation System (TAS). Litres and Litres/Minute are used as the default units throughout this manual. When other units are programmed in the instrument (such as Gallons), the units in other programmable and displayed parameters change accordingly.

An asterisk (*) denotes default options.

2 Programming Mode

Use Programming Mode to configure the instrument.

2.1 Entering and Exiting Programming Mode

To enter Programming Mode

1. Do one of the following:

   - Hold the '8' key down for five seconds.

     After using this method, you cannot alter certain parameters for W&M.

   - Use the switch on the instrument. On the Model 1010 the switch is located on the right hand side of the enclosure. This switch may be fitted with a tamper seal for W&M requirements.

   - After using this method, use W&M password to alter all parameters (including W&M parameters).

Figure 2-1: Model 1010A instrument switch

If the instrument is not idle (for example, the instrument is in use by an operator, or a vehicle overfill or earth system is connected) it displays the following:

- In this case, either disconnect the permissives to bring the instrument to the idle state or wait until loading is complete and then enter your password.

  If password mode is available, the instrument displays the following:

2. Enter a valid setup password.

   The factory default for setup password is 6789 and W&M password is 4321. These passwords allow to change under the GENERAL SETUP sub-menu of the SYSTEM menu see Section 4.2.8: Authorisations/Pins.

   > NOTE: If the setup password or W&M password is lost, record the four to eight digit hexadecimal number that is displayed at the password prompt (XXXX/ XXXX), and then contact a Guidant supplier, who will be able to convert this number to the setup password.

   If the password entered matches the setup password or W&M password programmed in the instrument, the instrument displays the software version number.

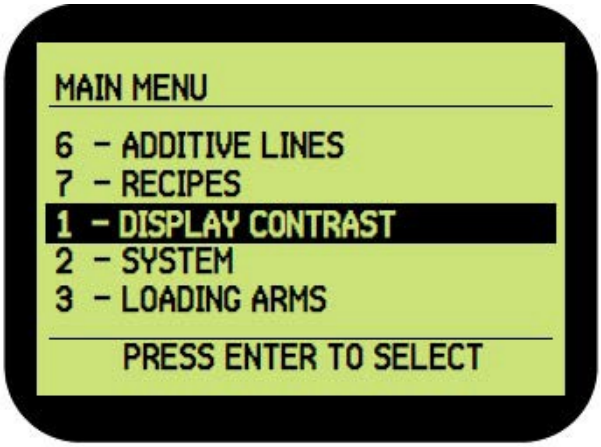
3. Press any key to show the time and date that the application software was compiled.

4. Press any key to show the Weights & Measures software version.

5. Press any key to advance the display to show the time and date that the Weights & Measure (W&M) section of the software was compiled.

6. Press any key.

   The instrument displays the Main Menu.



- To exit Programming Mode, navigate to the main menu and then press the Cancel key.

  The system saves the current setup and returns the instrument to operating mode.

2.2 Navigating in Programming Mode

- To scroll down the menu, press the Display key. To scroll up the menu, press the Arm key.
- To select the highlighted item, press the Enter key.

- To select a menu item, press the number of that item.

  For example, to select the SYSTEM from the main menu, press '2'. You can move directly to an item in a sub-menu in the same way.

  For example, to select GENERAL PURPOSE INPUTS from the main menu, press '23'.

2.3 Entering or Selecting Values in Programming Mode

In programming mode the prompt indicates the type of input that is required. If a parameter has neither a prompt nor parentheses, the parameter cannot be altered.

Prompt	Input Required	Do the following
^	Alphanumeric	Use the numeric keys and the Decimal Point key to enter a Decimal Point.
>	Numeric	Use the numeric keys and the Decimal Point key to enter a Decimal Point. Use the Arm key to change the sign after entering a number.
( )	Select an option	Use the Display key to scroll through the options. When the required option is high- lighted, use the Enter key to select it.

Press the Clear key to correct or clear an entry.

2.4 Exiting the Programming Mode

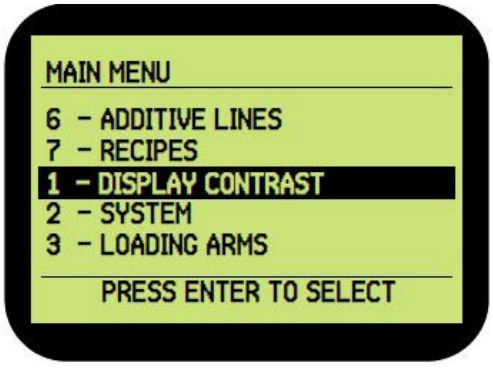
Before exiting Programming Mode the instrument asks for confirmation on saving the changed configuration settings.

- Select YES to save the settings.

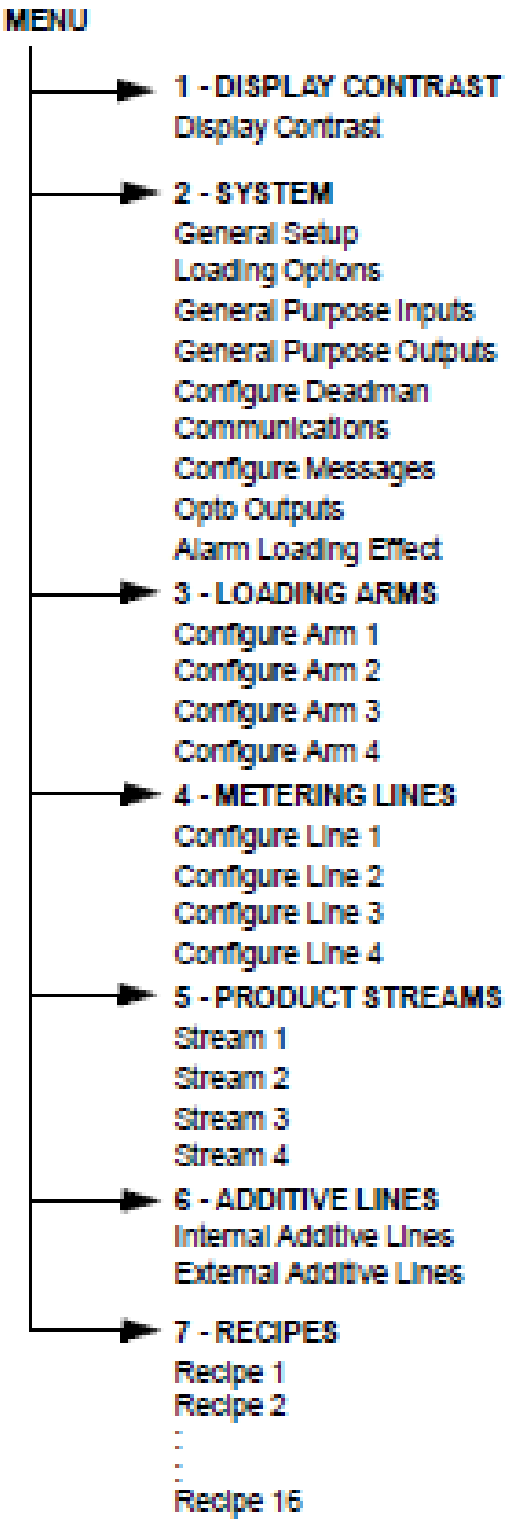
2.5 Menu System

The Configuration Menu for the 1010 instrument consists of the Main Menus described in the following table. Each menu is described in detail in the following chapters.

Main Menu	Purpose
Display Contrast	Configures the display to provide optimum visibility based on ambient lighting
System	Configures the system operating parameters
Loading Arms	Configures loading arm details such as arm name and additive recipe
Metering Lines	Configures operating parameters relating to metering lines flow meters, temperature probes, products and other parameters
Product Streams	Configures product streams for different valve settings, no flow timeout, Deadband, etc
Additive Lines	Configures additive injector systems
Recipes	Configures recipes such as additive quantities and blend percent- age.



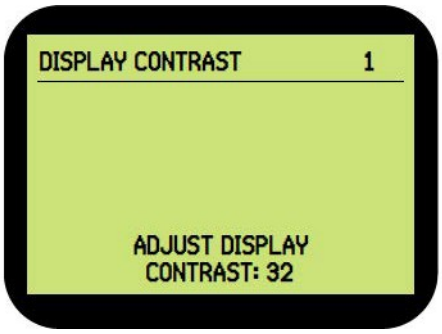
The following diagram shows the detailed menu structure of instrument.



3 Display Contrast (1)

3.1 Description

Use the Display Contrast menu to adjust display contrast for obtaining the best view.



Use the Display key to decrease contrast of the LCD, and the Arm key to increase it.

Set the display contrast of the instrument to suit an average height operator.

Press and hold the START key for 10 seconds to set the display to the factory default value of 32.

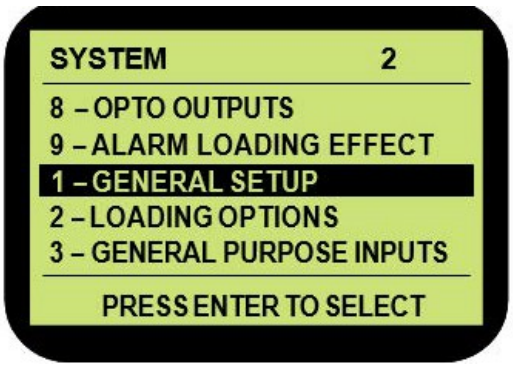
Select a value in the following range:

- 1 – 64 (32*)

4 System (2)

Use the System menu to change overall system operating parameters, such as Language Options, Loading Prompts and Passwords.

The System sub-menus are as follows:



1. General Setup—Use to select items like language options, system time-outs, personnel, master and vehicle authorizations. See Section 4.2: General Setup (21).
2. Loading Options—Use to set operating prompts and system options. See Section 4.3: Loading Options (22).
3. General Purpose Inputs—Use to select system permissive against a range of inputs. See Section 4.4: General Purpose Inputs (23).
4. General Purpose Outputs—Use to select digital output functions to the general purpose outputs. See Section 4.5: General Purpose Outputs (24).
5. Configure Deadman—Use to enable the Deadman system and set the applicable Deadman time-outs. See Section 4.6: Configure Deadman (25).
6. Communications—Use to set the system communications parameters. See Section 4.7: Communications (26).
7. Configure Messages—Use to set operator prompts and system messages. See Section 4.8: Configure Messages (27).

8. Opto Outputs—The Opto Outputs sub-menu of the System menu allows the operator to configure the various opto outputs. See Section 4.9: Opto Outputs (28).

9. Alarm Loading Effect—The Alarm Loading Effect sub-menu of the System menu allows the operator to configure various alarms effects that occur during the loading. See Section 4.10: Alarm Loading Effect.

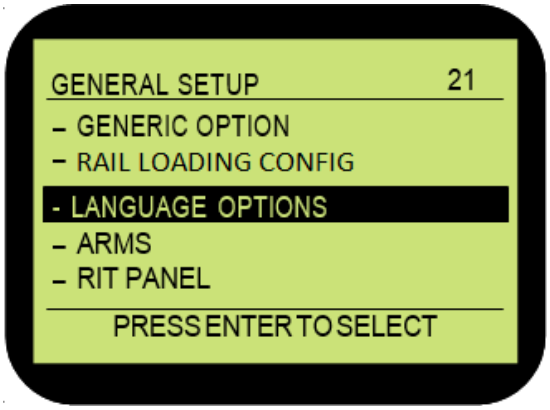
4.1 System Menu

SYSTEM MENU

- **1- GENERAL SETUP**
  - LANGUAGE OPTIONS
  - ARMS
  - RIT PANEL
  - SYSTEM OF UNITS
  - BATCH TYPE
  - TRANSACTION NUMBER
  - CLOCK
  - AUTHORISATIONS / PINS
  - TIMEOUTS
  - BAY NUMBER
  - SHOW OFFICER CARD
  - 4 TO 20 MA OUTPUT
  - GENERIC OPTION
- **2- LOADING OPTIONS**
- **3- GENERAL PURPOSE INPUTS**
- **4- GENERAL PURPOSE OUTPUTS**
- **5- CONFIGURE DEADMAN**
- **6- COMMUNICATIONS**
  - COM PORT 1
  - COM PORT 2
  - COM PORT 3
  - ETHERNET PORT 1
  - ETHERNET PORT 2
  - TERMINAL AUTOMATION MODE
  - OPTIONS
- **7- CONFIGURE MESSAGES**
  - INITIAL MESSAGES
  - MANAGER
  - MESSAGES DEADMAN
  - MESSAGES GP INPUT
  - MESSAGES
- **8- OPTO OUTPUTS**

4.2 General Setup (21)

The General Setup sub-menu of the System menu covers the selection of items such as Language Options, Timeouts, Personal, Vehicle Authorizations and RIT configuration.



4.2.1 Language Options

Default Language This option is used for the default Language Options. Select one of the following second language options:

- English*
- Chinese

4.2.2 Arms

Use the Arms sub-menu to set the first arm number.

- First Arm Number—When there are multiple instruments in a single bay, consecutive arm numbers can be assigned across the units to match the numbering of the physical loading arms.

  Enter a value in the following range:

  - 1 to 6 (1*)

- Vapour Return Meter—To measure vapor for LPG/LNG loading, vapour arm can be use where the actual delivered quantity is measured by subtractions of

vapour measured quantity from the liquid measured quantity. Vapour arm is optional and it is selectable.

Constraints: Available only for sales code K.

Select one of the following options:

- Enable*
- Disable

4.2.3 Remote Interaction Terminal (RIT) Panel

Use the RIT to operate the instrument without using the keyboard in stand- alone mode and in load scheduling mode. After enabling RIT, 3 inputs and 3 outputs must be assigned for each arm. Inputs 11 to 16 and outputs 25 to 30 are assigned to RIT by default. The operator can select the desired inputs and outputs through the general purpose inputs and outputs menu.

Use this menu enable or disable the RIT PANEL. When the RIT is enabled, user can set different states for RIT lamp outputs as below.

Select one of the following options:

- Enable
- Disable*

Constraints: Only available when you use the W&M password including W&M switch on the instrument to enter programming mode.

RIT is available with 1 arm or 2 arm systems only.

- LAMP STATUS BOOT—No selection possible for BOOT state.

  The following lamp status is available for boot condition:

  - ALL OFF

- LAMP STATUS IDLE—Allows the operator to select the lamp status for idle.

  Select one of the following options:

- ALL OFF
- RED STEADY*
- RED FLASHING
- AMBER STEADY
- AMBER FLASHING
- GREEN STEADY
- GREEN FLASHING

- LAMP STATUS AUTHORISATION—Allows the operator to select the lamp status for authorization.

  Select one of the following options:

  - ALL OFF
  - RED STEADY
  - RED FLASHING
  - AMBER STEADY*
  - AMBER FLASHING
  - GREEN STEADY
  - GREEN FLASHING

- LAMP STATE WAIT ACK—Allows the operator to select the lamp status for wait ACK

  Select one of the following options:

  - ALL OFF
  - RED STEADY
  - RED FLASHING
  - AMBER STEADY
  - AMBER FLASHING*

- GREEN STEADY
- GREEN FLASHING

- LAMP STATE WAIT START—Allows the operator to select the lamp status for wait start

  Select one of the following options:

  - ALL OFF
  - RED STEADY
  - RED FLASHING
  - AMBER STEADY
  - AMBER FLASHING
  - GREEN STEADY
  - GREEN FLASHING*

- LAMP STATE LOADING—Allows the operator to select the lamp status for loading

  Select one of the following options:

  - ALL OFF
  - RED STEADY
  - RED FLASHING
  - AMBER STEADY
  - AMBER FLASHING
  - GREEN STEADY*
  - GREEN FLASHING

- LAMP STATE ERROR—Allows the operator to select the lamp status for error

  Select one of the following options:

- ALL OFF
- RED STEADY
- RED FLASHING*
- AMBER STEADY
- AMBER FLASHING
- GREEN STEADY
- GREEN FLASHING

- LAMP STATE BATCH OVER—Allows the operator to select the lamp status for batch over.

  Select one of the following options:

  - ALL OFF
  - RED STEADY
  - RED FLASHING
  - AMBER STEADY
  - AMBER FLASHING*
  - GREEN STEADY
  - GREEN FLASHING

4.2.4 System of Units

Use the System of Units sub-menu to select the operating units for the instrument.

- System of Units—Sets the system of units (either Metric or US) to be used throughout the instrument. The arm setup menu sets the units (volumetric or mass) for a particular arm.

  Select one of the following options:

  - Metric - ISO units*
  - US units

Constraints: Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

- Corrected (Base) Temperature—Sets the basis of temperature correction to convert gross or ambient volumes to net or corrected volumes.

  Constraints: Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

  Select one of the following options:

  - Base 15 C*
  - Base 20 C

  Constraints: Only if System of Units = Metric - ISO units or

  The following option is available:

  - Base 60F*

  Constraints: Only if System of Units = Units US

- Litre/Liter Spelling—Allows for alternate spelling of litre.

  Constraints: Only if Units = Metric - ISO Units

  Select one of the following options:

  - LITRE*
  - LITER

- Volume Decimals—Determines the number of decimal points displayed on all totals and rates (except the accumulated total, which is fixed at no decimal points)

  Constraints: Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

  Select one of the following options:

- 1* (for example, 2344)
- 0.1 (for example, 2344.3)

4.2.5 Batch Type

Selects whether the instrument will batch on gross or net values.

Constraints: Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

Select one of the following options:

- GROSS*
- NET

4.2.6 Transaction Number

- Transaction Number—Allows the operator to key in the current transaction number to ensure continuity of operation after the instrument has been reset. The next transaction will use this value + 1.

  Enter a value in the following range:

  - 0 to 9999999 (0*)
- Overwrite Oldest Trans—Allows to enable the feature of overwriting the last transaction.

  Select one of the following options:

  - Enable
  - Disable*

4.2.7 Clock

Use the Clock sub-menu to set the instrument clock.

> NOTE: The internal clock is used for transaction time and date stamping.

- Year—Year Sets the year on the internal clock.

  Enter a value in the following range:

  - 2012 to 2111

- Month—Year Sets the year on the internal clock.

  Enter a value in the following range:

  - 1 to 12

- Day— Year Sets the year on the internal clock.

  Enter a value in the following range:

  - 1 to 28/29/30/31

- Hour—Sets the hour on the internal clock in 24-hour format. For example, 4:30 p.m. is 16:30, therefore you would enter '16'.

  Enter a value in the following range:

  - 0 to 23

- Minutes—Minutes Sets the minutes on the internal clock.

  Enter a value in the following range:

  - 0 to 59

- Display Date Format—Display Date Format Sets the date format for service display.

  Select one of the following options:

  - DD/MM/YYYY *
  - MM/DD/YYYY
  - YYYY/MM/DD

> NOTE: Slip commands always retain the same date format as laid out in the Software Protocol Manual regardless of this menu setting.

4.2.8 Authorisations/Pins

Use the Authorisations/Pins sub-menu to set passwords, PINs and other methods of authorisation access to the instrument.

- Setup Password—The password required to access any non-W&M parameters in Setup Mode (4 to 8 digits).

  Enter a value in the following range:

  - 0000 – 99999999 (6789*).

- Manager Reset—The password required to reset the system after an Emergency Stop or other system fault. (4 to 8 digits).

  Enter a value in the following range:

  - 0000 – 99999999 (9876*)

- PIN Password—The password required to enter or edit PIN and touch key numbers directly within the instrument. (4 to 8 digits).

  Select one of the following options:

  - 0000 – 99999999 (1234*)

- W&M Password—The password required to access any of the parameters in Setup Mode (4 to 8 digits).

  Constraints: Only available when you use the Weights and Measures switch on the instrument to enter programming mode.

  Enter a value in the following range:

  - 0000 – 99999999 (4321*)

- Personnel Authorisation—Use the Display key to select the type of authorisation that operators will use to identify themselves to the instrument.

  Select one of the following options:

  - NONE*—Item not displayed
  - PIN—Enter personnel PIN > _

- TOUCH—Present personnel touch key
- NEXWATCH—Present personnel NexWatch card

- Vehicle Authorisation—Use the Display key to select the type of authorisation required to identify the vehicle to the instrument.

  Select one of the following options:

  - NONE*—Item not displayed
  - PIN—Enter vehicle pin > _
  - TOUCH—Present vehicle touch key
  - NEXWATCH—Present vehicle NEXWATCH card

- Master Authorisation—Use the Display key to select the type of authorization the operator will use to identify themselves as the master to the instrument.

  Select one of the following options:

  - NONE*—Item not displayed
  - PIN—Enter master Pin > _
  - TOUCH—Present master touch key
  - NEXWATCH—Present master NEXWATCH card

- Authorised Overrun—If enabled, authorisation required to clear the overrun alarm.

  Select one of the following options:

  - Disable*
  - Enable

- Local Authorise Overrun—If enabled, local authorisation required to clear the overrun alarm.

  Select one of the following options:

  - Disable*
  - Enable

- Master ID TAS Override—If enabled, allows the use of a master ID to override the actions of a Terminal Automation System, and allows the instrument to operate in stand-alone mode for one loading sequence. If another load is required the master ID has to be entered again. See the following note for more details.

  > NOTE: When load scheduling is enabled, or remote authori- zation is enabled in standalone mode and communi- cation with the TAS fails, the site manager can enter a master ID to override the communications failure to allow one complete load. Once the load is complete the unit will revert back to its original mode. This can be done as long as the communications failure exists.

- Hardware Test Via '8' Key—If enabled, allows entry to the hardware test mode using the '8' key and the appropriate password. See "Entering Hardware Test Mode" of the 1010CB Service Manual.

  If disabled, you must use the switch on the instrument to access the hardware test mode.

  Select one of the following options:

  - Enable*
  - Disable

4.2.9 Timeouts

Allows the operator to set the keyboard timeout and the Clear/ Reconnect timers.

Constraints: Allow to set 4 to 20mA output values only if 4 to 20 mA enabled in the factory setting.

- Keyboard Timeout—An operator must enter information or respond to a question within the timeout period, or the instrument will return to the default display.

  Enter a value in the following range:

  - 0 to 6000 seconds (60*)

- Clear/Reconnect Timeout—If a fault is detected on the overfill/ground, vapour recovery, or programmable permissive input, the load is immediately paused. The operator must correct the fault within the timeout period or the instrument terminates the load.

  Enter a value in the following range:

  - 0 to 999 seconds (300*)

- Before And After Ack—In remote loading, TAS sends all compartments details to 1010CB via SC command to start all batches one after another. This is the time delay before and after the batch confirmation screen so that TAS gets time to synchronize with 1010CB for next ready batch.

  Enter a value in the following range:

  - 0 to 99 seconds (0*)

4.2.10 Bay Number

Allows the operator to set the bay number.

- Bay Number—Sets the bay number of the instrument.

  Enter a value in the following range:

  - 1 to 250 (1*)

4.2.11 Show Officer Card

If enabled, officer card validation mandatory to reset alarms. Select one of the following options:

- Enable
- Disable*

If enabled, following individual alarms allows to enabled/disabled to show officer card for reset alarm.

- Dual Error
- No Flow Timeout

- Temperature Error
- Additive Volume Error
- Additive No Activity
- No Additive Flow
- Stopped Remotely
- Phase Error Meter
- Pressure Error Arm
- Additive Firmware Failure
- Additive EPROM Failure
- Additive Coms Failure
- No Additive Response
- Slow Flow Error
- High Flow High
- High Flow Low
- Low Flow High
- Low Flow Low
- Overrun Error
- Blend Tolerance High
- Blend Tolerance Low
- Density
- Unauthorised Flow
- ESD Error
- Arm Inputs
- System Inputs

- Permissive Inputs
- RIT Stop

4.2.12 4 to 20 mA Output

Allows the operator to set the DAC(Digital to Analog Converter) counts at 4mA and 20mA Outputs.

Constraints: Allow to set 4 to 20mA output values only if 4 to 20 mA enabled in the factory setting.

- DAC Counts at 4mA Output—Sets the DAC (Digital to Analog Converter) counts at 4mA outputs. Follow 4-20mA output calibration process.

  Enter a value in the following range:

  - 0 to 2000 (786*)
- DAC Counts at 20mA Output—Sets the DAC (Digital to Analog Converter) counts at 20mA outputs. Follow 4-20mA output calibration process.

  Enter a value in the following range:

  - DAC counts at 4mA to 4090 (3953*)
- No Flow Current—Sets mA current at zero flowrate (idle state).

  Enter a value in the following range:

  - 3.5 to 10.0 (4.0*)
- Full Flow Current—Set mA current at full flowrate.

  Enter a value in the following range:

  - 12.0 to 20.5 (20.0*)

4.2.13 Generic Option

Allow operator to set specific operation like power failed resume, push button.

- Restart After Power Failed—If enabled, allows to resume the batch if power failed occurs during loading.

If disabled, transaction automatically gets closed if power failed occur during loading.

Select one of the following options:

- Enable
- Disable*

- Power Restart Cancel Enabled—If enabled, allows option to cancel for resuming last power failed batch.

  Constraints: Only if Restart After Power Failed is Enabled.

  Select one of the following options:

  - Enable
  - Disable*

- Push Button Station—If enabled, after permissives connected, 1010CB waits for push button to proceed for the loading. During waiting screen show “Acknowledge Safety Checks”. To use this function, configure GP input for push button.

  Select one of the following options:

  - Enable
  - Disable*

- Remote Push Button—If enabled, in load schedule loading mode, after permissives connected, 1010CB will be in "PB" state and display "Please Wait" on screen and waits for remote push button authorization (PB command) to proceed for the loading.

  Select one of the following options:

  - Enable
  - Disable*

- Battery Switch Off—If enabled, in load schedule mode and "PB" state, BCU waits for Battery Switch to connect to proceed for the loading. During waiting, screen

show "Batt Switch Off Checks". To use this function, configure GP input for Battery Switch.

Constraints: Only if Remote Push Button is enabled.

Select one of the following options:

- Enable
- Disable*

- Fire Extinguisher Placed—If enabled, in load schedule mode and "PB" state, BCU waits for Fire Extinguisher Switch to connect to proceed for the loading. During waiting, screen show "Fire Extinguisher Placed Checks". To use this function, configure GP input for Fire Extinguisher Switch.

  Constraints: Only if Remote Push Button is enabled.

  Select one of the following options:

  - Enable
  - Disable*

- Hand Breaks Applied—If enabled, in load schedule mode and "PB" state, BCU waits for Hand Breaks Applied Switch to connect to proceed for the loading. During waiting, screen show "Hand Breaks Applied Checks". To use this function, configure GP input for Hand Break Applied Switch.

  Constraints: Only if Remote Push Button is enabled.

  Select one of the following options:

  - Enable
  - Disable*

4.2.14 Rail Loading

Allow the operator to set a specific configuration for rail loading applications.

- Rail Loading—If enabled, it allows for the configuration of specific rail loading configurations.

  Select one of the following options:

  - Enable
  - Disable*

- Other LS LAPS Feedback Check—If enabled, allows you to check the LAPS feedback of other loadspots during preload and loading operations.

  Select one of the following options:

  - Enable
  - Disable*

- Max Loadspots Per Arm—Sets maximum loadspots allowed per arm.

  Enter a value in the

  - 1 to3 (2*)

- Loadspot Name—Allows a 10-character numeric description to be entered for the loadspot, for example, “1” “2”.

  constraints: 10 characters, numeric

- Outlet SDV Turn On Delay—In the preload sequence, after all feedback input has been checked, this is the time delay to turn on outlet SDV.

  Enter a value in the following range:

  - 0 to 600 seconds (5*)

- OLSDV Feedback Wait Time—Time delay to check Outlet SDV feedback after the Outlet SDV turned on.

  Enter a value in the following range:

  - 0 to 90 seconds (5*)

- SDV to DCV Time Delay—Time delay to turn on DCV after outlet SDV is turned on.

  Enter a value in the following range:

  - 0 to 90 seconds (5*)

- DCV to SDV Time Delay—During post-load sequence, this is the time delay to turn off outlet SDV after DCV has closed.

  Enter a value in the following range:

  - 0 to 90 seconds (5*)

4.3 Loading Options (22)

Use the Loading Options sub-menu of the System menu to set operating prompts and system options.

- Test Mode—If Test Mode is enabled, the 6 second timeout for displaying load parameters is disabled. The display will indefinitely show parameters selected using the Arm and Display keys when the service display is active. The keyboard entry timeout is also disabled.

  Select one of the following options:

  - Enable
  - Disable*

- Demo Mode—Demonstration mode simulates flowmeter input pulses. Demonstration Mode is only available via the W&M key to prevent inadvertent access.

  Select one of the following options:

  - Enable
  - Disable*

- Automated Proving—Enable this function only immediately prior to a Proving Run.

  Constraints: Only available when you use the Weights and Measures switch on the instrument to enter programming mode.

  Only one arm is allowed to load whilst this function is enabled, even if Simultaneous Arm Loading is enabled.

For more information, see “Automated Proving” in the Operator Manual. Select one of the following options:

- Enable
- Disable*

- Illegal Access—If enabled, the instrument locks out any further use if a preprogrammed number of invalid PINs, Touch Keys or NextWatch cards are read within 5 minutes.

  Select one of the following options:

  - Enable
  - Disable*

- Illegal Retries—The number of access attempts allowed before an illegal access is registered.

  Constraints: Only if Illegal Access is enabled. Enter a value in the following range:

  - 3 to 6 (3*)

- Alarm on Fault—If enabled, under any fault condition (Deadman Terminate, Flow Error, Temp Error, etc) Programmable GP Output (System Alarm) is closed.

  Select one of the following options:

  - Enable
  - Disable*

- Ask Compart. No.—If enabled, the instrument prompts for the Compartment Number while setting up a load.

  Ask Compart No prompt is disabled when RIT is enabled. Users can enable the prompt.

  Select one of the following options:

  - Enable
  - Disable*

- Ask Return Qty.—If enabled, the instrument prompt asks if there is already product in the target compartment. In stand-alone mode, this quantity is deducted from the total required to give the preset quantity. The return quantity is not deducted when in load scheduling mode.

  Select one of the following options:

  - Enable
  - Disable*

- Ask Load Number—If enabled, the operator is prompted to enter a load number. The Ask Load No prompt is disabled when RIT is enabled. Users can enable the prompt.

  Select one of the following options:

  - Enable*
  - Disable

- Ask Truck Number—The truck number prompt is only available when the instrument is in standalone mode. It is used when a TAS would normally handle the authorisation of the personnel or vehicle. This allows entry of a truck number when the TAS is unavailable. The truck number can be reconciled by the TAS at a later stage with the company who received the product, thus providing correct invoicing.

  Select one of the following options:

  - Enable*
  - Disable

- Simultaneous Arm Loading—If enabled, allows more than one arm/product to be loaded at a time.

  If disabled only one arm/product may be loaded at a time. This may be used when top loading of tankers is required.

  Constraints: Only if number of arms is greater than 1 Select one of the following options:

- Enable*
- Disable

- Multiple Loads per Arm—If enabled, the operator is prompted whether to load another compartment at the end of each batch. If disabled, only one batch per arm per transaction is allowed.

  Select one of the following options:

  - Enable*
  - Disable

- Ask Preset quantity—If enabled, the operator is prompted to enter a preset value for the load.

  The Ask Preset Quantity prompt is disabled when RIT is enabled.

  Users can enable the prompt.

  Select one of the following options:

  - Enable*
  - Disable

- Max Preset Quantity—If enabled, it restricts the maximum batch size an operator can load.

  If disabled, there is no restriction on batch size. This would typically be used for bowser type applications.

  Select one of the following options:

  - Enable*
  - Disable

- Max Preset Quantity—If enabled, it restricts the maximum batch size an operator can load.

  If disabled, there is no restriction on batch size. This would typically be used for bowser type applications.

  Select one of the following options:

- Enable
- Disable*

- Ask Loading Type—If enabled, the operator is prompted to select top or bottom loading type. Based on the selection corresponding isolation value will get active during loading.

  Select one of the following options:

  - Enable
  - Disable*

- Ask Cooling Cycle—If this is enabled and the Cooling Quantity is non zero value, the operator is prompted to select cooling cycle for LNG loading. Based on the selection, cooling cycle has been operated by instrument before truck filling start.

  If this is disabled and the Cooling Quantity is non zero value, the operator is not prompted, but the instrument consider cooling cycle.

  To disable the cooling cycle state, set Cooling Quantity to zero value.

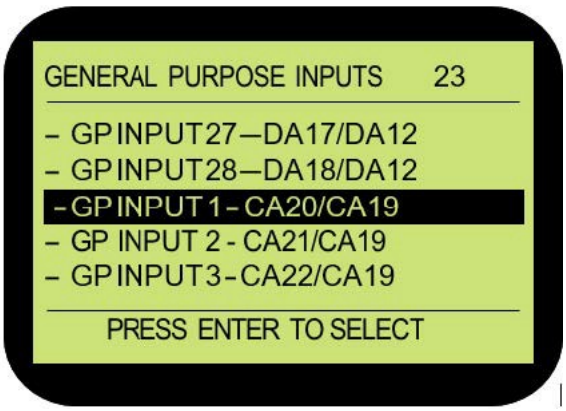
  Constraints: Only applicable for Sales Code K (LNG loading application).

  Select one of the following options:

  - Enable
  - Disable*

4.4 General Purpose Inputs (23)

The General Purpose Inputs sub-menu of the Systems menu covers the setting of the 28 General Purpose Inputs.



- GP Input 1 Input Type—GP Input 1 type is programmed to PERMISSIVE TYPE
- Input Function—GP Input 1 is programmed to emergency stop input.

GP Input	Terminal
1	CA20/CA19

A normally closed contact must be maintained across terminals CA20 to CA19 to allow normal operation of the instrument.

The following option is available:

- Emergency Stop

- GP Input n—Options and descriptions are common to GP Inputs 2 to 28.

GP Input	Terminal
2	CA21/CA19
3	CA22/CA19
4	CA23/CA19
5	CA25/CA24
6	CA26/CA24
7	CA27/CA24
8	CA28/CA24
9	CB20/CA19
10	CB21/CA19
11	CB22/CA19

GP Input	Terminal
12	CB23/CA19
13	CB25/CA24
14	CB26/CA24
15	CB27/CA24
16	CB28/CA24
17	DA13/DA12
18	DA14/DA12
19	DA15/DA12
20	DA16/DA12
21	DA17/DA12
22	DA18/DA12
23	DB13/DA12
24	DB14/DA12
25	DB15/DA12
26	DB16/DA12
27	DB17/DA12
28	DB18/DA12

- Input Type—The Input type sub-menu of the General Purpose Inputs menu allows selection of type of input.

  Select one of the following options:

  - None
  - Permissive
  - System Input
  - Arm Input'
  - Push Button
  - Battery Switch Off
  - Fire Extinguisher Placed

- Hand Breaks Applied
- RIT Input (Available if RIT panel is enabled)

- Input Function—The Input function sub-menu of the General Purpose Inputs menu allows selection of function for that input. Available input functions will depend on the input type selected.

  Select one of the following options for Input Type as Permissive:

  - Vapour Recovery—Input assigned to monitor the vapour recovery hose park switch.
  - Overfill/Ground—Input is assigned to monitor a vehicle grounding and overfill system such as a Scully or Liquid system.
  - Programmable Permissive—Allows the selection of an additional permissive input and its associated messages. The message is defined under the Configure Messages menu item. See Section 4.8: Configure Messages (27).

    The Permissive must be active to allow loading to take place.

  Select one of the following options for input type as System input:

  - Programmable Input 1
  - Programmable Input 2
  - Programmable Input 3
  - Programmable Input 4
  - Programmable Input 5
  - Programmable Input 6

  Select one of the following options for input type as Arm Input:

  - Arm Input 1
  - Arm Input 2
  - Arm Input 3
  - Arm Input 4

- Arm Input 5
- Arm Input 6
- Overspill 1
- Overspill 2

Select one of the following options for input type as RIT Input and assign that input to desired arm:

- RIT Start
- RIT Stop
- RIT ACK

- Loading Effect Constraints—Not applicable to Emergency stop.

  Select one of the following options:

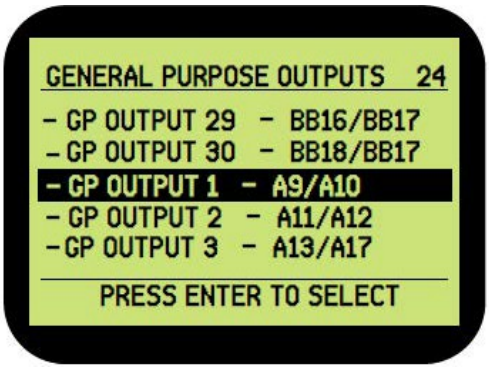
  - None*—Input not used. The status of this input can still be read via SLIP command GI.
  - Timeout Loading—After removal of the input and the closure of the flow control valve, loading is paused for the time set with the Clear/Reconnect timer. However the operator is given the option of restarting the load once the input is restored to an active state. The load is terminated as soon as the timer expires, and can not be restated without performing the initial authorisation process.
  - Pause—Loading is paused indefinitely by the removal of the input, and the flow control valve is closed. Loading can be resumed or discon- tinued on reconnection of the input/permissive.
  - Terminate—The load is terminated as soon as the input is disconnected, and cannot be restarted without going through the initial authorisation process.
  - Manager Reset—After the removal of the input and closure of the flow control valve, loading is paused for the time set within the Clear/Reconnect timer. However the operator is given the option of restarting the load once the input is restored to an active state prior to the Clear/ Reconnect expiry. Once the timer expires the loading computer is locked out from loading until

a Manager Reset is performed by entering the Manager Reset password (see Section 4.2.8: Authorisations/Pins) into the instrument at the password prompt or sending the MR SLIP command.

> NOTE: If emergency stop input is disconnected during loading the load is terminated. A new load cannot be started unless the Manager Reset Password is entered into the instrument at the Password Prompt.

4.5 General Purpose Outputs (24)

Use the General Purpose Outputs sub-menu of the System menu to assign the available General Purpose Outputs to a range of available functions.



- GP Output n—Options and descriptions common to GP outputs 1 to 30.

GP Input	Relay	Terminal
1	A1	A9/A10
2	A2	A11/A12
3	A3	A13/A17
4	A4	A14/A17
5	A5	A15/A17
6	A6	A16/A17
7	B1	BA1/BA2
8	B2	BA2/BA3
9	B3	BA4/BA5
10	B4	BA5/BA6
11	B5	BA7/BA8
12	B6	BA9/BA8
13	B7	BA10/BA11
14	B8	BA12/BA11
15	B9	BA13/BA14
16	B10	BA15/BA14
17	B11	BA16/BA17
18	B12	BA18/BA17
19	B13	BB1/BB2
20	B14	BB3/BB2
21	B15	BB4/BB5
22	B16	BB6/BB5
23	B17	BB7/BB8
24	B18	BB9/BB8
25	B19	BB10/BB11
26	B20	BB12/BB11
27	B21	BB13/BB14
28	B22	BB15/BB14
29	B23	BB16/BB17

GP Input	Relay	Terminal
30	B24	BB18/BB17

Four stream control isolation valve type added in menu:

System | General Purpose Outputs | GP Output x | Stream Control | Isolation Valve | <Liquid/Vapour/Cooling/Drain>

Constraints: configurations for LNG/LPG loading.

- Output type—GP OUTPUT # n allows selection of the type of output.

> NOTE: Refer to the Application Pack for the default settings of GP outputs.

Select one of the following options:

- None
- Alarm
- Stream Control
- Control Valve
- Genral Purpose
- External Additive
- RIT

If Output type is selected as Alarm, one of the following function can be assigned to the selected output:

- None
- Device Alarms
- Arm Alarms

If Output type is selected as Device Alarms, one of the following function can be assigned to the selected output:

- None
- Deadman Indicator—Output Relay closes when the first (warning) Deadman timeout period expires.
- Deadman Bell—Output Relay closes when the second (pause) Deadman timeout period expires.
- Deadman Callout—Output Relay closes when the third (terminate) Deadman timeout period expires.
- System Alarm—Output Relay status closes when the instrument is in a system alarm state.
- Instrument Alarm—Output Relay closes when the instrument is in a critical or instrument alarm state.
- Bay Active—Output Relay closes when the Overfill/Grounding Permissives connected for the loading operation and continue to close until transaction complete and permissives disconnected.
- Emergency Stop—Output Relay is closed when the instrument has an ESD Status.
- Push Button
- Battery Switch Off
- Fire Extinguisher Place
- Hand Breaks Applied—If Output type is selected as Arm Alarms, one of the following function can be assigned to the selected output:
  - Alarm Output 1
  - Alarm Output 2
  - Alarm Output 3
  - Alarm Output 4

  If the Alarm Output #n is selected, one of the Alarm Loading Effect is assigned to the selected output:
- Alarm Loading Effect. Refer to Section 4.10: Alarm Loading Effect.

If Output type is selected as stream control, one of the following functions can be assigned to the selected output. This output is then assigned to any of the available streams.

- Pump Demand—Control Output for Product Supply Pump.
- Isolation Valve—Control Output for Arm Gantry Isolation Valve.

If Output type is selected as external additive, one of the following functions can be assigned to the selected output.This output is then assigned to any of the available arms.

- Ext Addtv Pulse—Provides a Pulse per unit volume of product.

If Output type is selected as control valve, one of the following functions can be assigned to that output. This output is then assigned to any of the available streams.

- DCV INLET/ SLOW FLOW
- DCV OUTLET / HIGH FLOW

If Output type is selected as internal additive, one of the following functions can be assigned to that output. This output is then assigned to any of the available internal additives.

- INT ADDTV PULSE
- INT ADDTV PUMP

If output type is selected as General Purpose, one of the following options can be assigned to that output. This output is then assigned to any of the available streams.

- None
- Comms Mode
- Top Loading ARM 1
- Bottom Loading ARM 1
- Top Loading ARM 2

- Bottom Loading ARM 2
- Batch Complete

If output is selected as RIT, one of the following options can be assigned to that output. This output is then assigned to any of the available arms.

- RIT Red
- RIT Green
- RIT Amber

- GP Output #n Condition
  - Normally Open—Normally Open will force the relay output to be open when the output is not active.
  - Normally Closed—Normally Closed will force the relay output to be closed when the output is not active.

> NOTE: For DCV Inlets/Outlets and Internal additive pulse output, GP output condition is fixed to Normally Open.

4.6 Configure Deadman (25)

Use the Configure Deadman sub-menu of the System menu to set the Deadman System time-outs.

- Deadman Timer—If enabled, the operator must repeatedly (within the settable timeout period) press a key on the keypad of the instrument to prevent the Deadman system being triggered.

  Constraints: Any key apart from STOP

  Select one of the following options:

  - Enable
  - Disable*

- Deadman Warning Timeout—Sets the time after the activation of the Deadman warning indicator within which an instrument key must be pressed to prevent the load being paused.

  If the timeout expires the Deadman Indicator (GP Output) is activated and continue without interrupting the loading..

  Constraints: Only if Deadman enabled

  It is common practice to have a visual indicator activated by this output contact.

  Enter a value in the following range:

  - 10 to 999 seconds (150*)

- Deadman Pause Timeout—If the timeout expires the Deadman Bell (GP Output) is activated and loading is paused.

  An audible alarm (bell or siren) may be activated by this output contact.

  Constraints: Only if Deadman is enabled. Enter a value in the following range:

  - 10 to 999 seconds (30*)

- Deadman Terminate Timeout—Sets the time after the activation of the load pause sequence during which an instrument key must be pressed to prevent a load being terminated. If the load is terminated by activation of the Deadman system the Deadman Callout (GP Output) relay is activated.

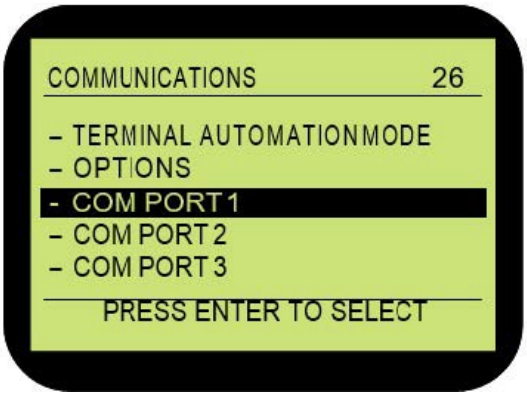
  The Deadman Callout output may be used to interlock with the bay or site emergency shutdown system.

  Constraints: Only if Deadman is enabled. Enter a value in the following range:

  - 10 to 999 (120*).

4.7 Communications (26)

Use the Communications sub-menu of the System menu to configure the communications ports of the instrument and set the terminal automation mode.



4.7.1 Com port n

Use the Com ports sub-menu to configure the communication ports of the instrument.

- Comms. Device—Assigns a particular function to the port.

  The following options are available:

  - COMPUTER
  - INTELLIGENT ADDITIVES
  - CARD READER
  - WEIGHBRIDGE

- Protocol—Assigns a particular function to the port.

  The following options are available:

  - PROTOCOL (SLIP)*
  - PROTOCOL (MODBUS)
  - PROTOCOL (COMMS TEST)

  In case of CARD READER:

  The following options are available:

  - OSDP
  - SNET

- CUSTOM OSDP

In Case of OSDP and CUSTOM OSDP:

Enable Facility Code: Use to enable or disable a Facility Code.

Select one of the following options:

- Enable
- Disable

- Comms Mode—Selects the type of communications interface to be used with the PC.

  Constraints: The comms mode is fixed to RS485 for NEXWATCH and INTELLIGENT ADDITIVE.

  Select one of the following options:

  - RS232 (Comm. Port 1 Only)
  - RS485*

- Baud Rate—Selects the baud rate for the communications interface.

  Constraints: Baud rate is fixed to 9600 for NEXWATCH and INTELLIGENT ADDITIVE.

  Select one of the following options:

  - 1200
  - 2400
  - 4800
  - 9600*
  - 19200
  - 38400

- Parity—Selects the parity for the communications interface.

  Constraints: Parity is fixed to None for NEXWATCH and INTELLIGENT ADDITIVE.

Select one of the following options:

- Odd*
- Even
- None

- Stop Bits—Selects the number of stop bits for the communications interface.

  Constraints: Stop bits is fixed to One for NEXWATCH and INTELLIGENT ADDITIVE.

  Select one of the following options:

  - 1*
  - 2

- Card Reader Card Format—In case “CARD READER” is selected for COMMS. DEVICE: Select one of the following options:

  - RAW DATA
  - WIEGAND 26
  - CUSTOM

- Weighbridge Comms Timeout—Enter weighbridge communication timeout. This is the time interval where 1010 checks the weighbridge communication status.

  Constraints: Only if Comms Device = WEIGHBRIDGE. Enter a value in the following range:

  - 1 to 600 seconds (60*).

- Weighbridge Status Timeout—Enter weighbridge status timeout. This is the duration where 1010 waits for steady status of the weighbridge in preload sequence.

  Constraints: Only if Comms Device = WEIGHBRIDGE. Enter a value in the following range:

  - 1 to 600 seconds (10*).

- Weighbridge Status Retries—Enter weighbridge status retries where number of times 1010 retries for steady status.

  Constraints: Only if Comms Device = WEIGHBRIDGE. Enter a value in the following range:

  - 1 to 99 (3*).

- Weighbridge Moving Hold Time—Enter weighbridge moving hold time. This is the duration where weighbridge 1010 should continue the steady state to record the Tare weight.

  Constraints: Only if Comms Device = WEIGHBRIDGE. Enter a value in the following range:

  - 1 to 99 seconds (5*).

    Constraints: Only if Comms Device = WEIGHBRIDGE. Enter a value in the following range:

- Unexpected Weight—During loading, if there is sudden increase of loaded quantity, instrument assume driver/operator stand on weighbridge. In this case, instrument raise alarm and pause the loading. This feature disabled if this parameter configure to zero (0).

  Constraints: Only if Comms Device = WEIGHBRIDGE.

  Enter a value in the following range:

  - 0 to 100 kg (0*).

- Unit Address—Selects the unit address of the Port for computer communications.

  Constraints: Only if Comms Device = Computer

  This address is not used if the port is assigned as intelligent additive or NEXWATCH.

  Enter a value in the following range:

  - 1 to 127 for SLIP
  - 1 to 247 for Modbus

> NOTE: Required port settings for the Fusion4 Portal can be configured in this menu with the Comms Device = Computer

4.7.2 Ethernet port n

Use the Ethernet ports sub-menu to configure the ethernet ports of the instrument.

- IP Address—Assign IP address to the Ethernet port

  Enter IP address:

  - 192.168.1.100* for Port 1
  - 192.168.1.101 for Port 2

- Subnet Mask—Assign Subnet mask to the Ethernet port

  Enter Subnet Mask:

  - 255.255.255.0*

- Gateway—Assign Gateway to the Ethernet port

  Enter Gateway:

  - 192.168.1.1*

- Port—Assign Port to the Ethernet port

  Enter Port:

  - 502*

- Protocol—Assigns a protocol type to the Ethernet port.

  The following options are available:

  - SLIP
  - MODBUS*

> NOTE: If any of the Ethernet port parameter changed, after configuration saved, power cycled the instrument once so that instrument initialized Ethernet port with new setting.

4.7.3 Terminal Automation Mode

Use this sub-menu to set the operating mode for terminal automation.

- Terminal Automation Mode—Selects whether the instrument will use load details as entered by the operator, or request load details from the Terminal Automation System (TAS).

  Select one of the following options:

  - Standalone*
  - Load Scheduling

- Remote Authorise—Selects whether the instrument will use remote authorising of personnel and/or vehicle. This is typically used when there are greater than 2750 personnel or vehicle authorisation numbers and they cannot all be stored in the instrument. For more information, see the “Remote Authorisation in the 1010CB Protocol Manual.

  Authorisation type must be configured for either personnel or vehicle.

  Constraints: Authorisation type must be configured for either personnel or vehicle.

  Select one of the following options:

  - Enable
  - Disable*

- Comms Timeout—Sets the time allowed for no communications between the instrument and the computer before a communications timeout error is triggered. A comms timeout of 0 disables the communications timeout error.

  Constraints:Only if Terminal Automation Mode = Load Scheduling or if Remote Authorisation is enabled.

Enter a value in the following range:

- 0 to 600 (0*)

4.7.4 Options

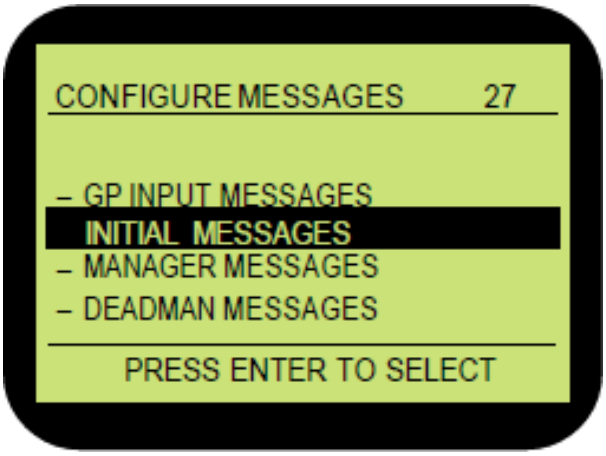
The Options sub menu of the Communication menu allows selection of a debug option. If enabled, the SLIP command will return the error status code along with the NAK. Refer to the Protocol Manual for more details.

Select one of the following options:

- Enable
- Disable*

4.8 Configure Messages (27)

Use the Configure Messages sub-menu of the System menu to configure the prompt or advice messages that appear on the display of the instrument.



4.8.1 Initial Messages

Use the Initial Messages sub-menu to configure the default display message that appears on the display when the status of the instrument is idle.

> NOTE: When setting up permissives initially via this menu, their loading effect will be set to TIMEOUT LOADING, unless it is already setup via the GP Inputs menu to another loading effect type.

- Initial Message—Selects the message to display prior to loading.

  Select one of the following options:

  - System Available* = SYSTEM AVAILABLE PRESS ENTER
  - Connect Ground/Overfill = CONNECT OVERFILL/GROUND
  - Connect Vapour Rec'y = CONNECT VAPOUR RECOVERY
  - Connect Prog Permissive = CONNECT PROG PROGRAMMABLE PERMISSIVE
  - Custom = As entered under the edit line.
  - Selected Permissives = Allows each selected permissive to be either enabled or disabled. For more information, see "General Purpose Inputs (23)".

- Edit Line 1—Use to compose an initial message of 20 characters to display on the top line of the screen message area.

  Constraints: Only if Initial Message = Custom

  - Top Line

    20 character alphanumeric message

- Edit Line 2—Use to compose a custom initial message of 20 characters to display on the bottom line of the screen message area.

  Constraints: Only if Initial Message = Custom.

  - Bottom Line

    20 character alphanumeric message

- Selected Permissive—Allows each selected permissive to be either enabled or disabled.
- Overfill/Ground Permissive—Allows the Overfill/Ground permissive to be either enabled or disabled.

Constraints: Only if Initial Message = Selected Permissive, if loading effect of Overfill/Ground is not none.

Select one of the following options:

- Enable*
- Disable

- Vapour Recovery—Allows the Vapour Recovery permissive to be either enabled or disabled.

  Constraints: Only if Initial Message = Selected Permissive, if loading effect of Vapour Recovery is not None.

  Select one of the following options:

  - Enable*
  - Disable

- Programmable Permissive—Allows the programmable permissive to be either enabled or disabled.

  Constraints:Only if Initial Message = Selected Permissive, if loading effect of Programmable permissive is not none.

  Select one of the following options:

  - Enable*
  - Disable

4.8.2 Manager Messages

Use the Manager Messages sub-menu to set messages for the Manager Reset function.

- Manager Reset Message—Selects which message is displayed prior to any loading taking place.

  Select one of the following options:

- Standard* (Contact Manager)
- Custom (As entered under edit line)

- Contact Manager Message Edit Line 1—Use to compose a custom message of 20 to display on the top line of the screen message area.

  Constraints: Only if Manager Reset Message = Custom.

  - Top Line (20 Character alphanumeric Message)

- Manager Reset Message Edit Line 1—Use to compose a custom message of 20 to display on the top line of the screen message area.

  Constraints: Only if Manager Reset Message = Custom.

  - Top Line (20 Character alphanumeric Message)

- Manager Reset Message Edit Line 2—Use to compose a custom message of 20 to display on the bottom line of the screen message area.

  Constraints: Only if Manager Reset Message = Custom.

  - Bottom Line (20 Character alphanumeric Message)

- Wait for Manager Message Edit Line 1—Use to compose a custom message of 20 to display on the top line of the screen message area.

  Constraints:Only if Manager Reset Message = Custom.

  - Top Line (20 Character alphanumeric Message)

4.8.3 Deadman Messages

Use the Deadman Messages sub-menu to set messages for the Deadman function.

Constraints: Deadman timer must be enabled.

- Deadman Message—Select one of the following options:
  - Standard* (Deadman Timeout)
  - Custom (As entered under Edit Line)

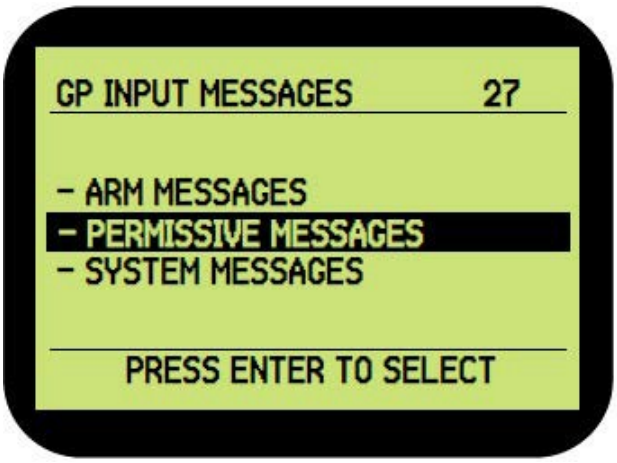
- Deadman Timeout Message Edit Line 1—Use to compose a custom message of 20 to display on the top line of the screen message area.

  Constraints: Only if Deadman Timeout Message = Custom.

  - Top Line (20 Character alphanumeric Message)
  - Deadman Timer needs to be enabled prior to editing custom messages

4.8.4 GP Input Messages

Use the GP Input Messages sub-menu to select the input message for a particular arm or system input. Selection of either the fixed or standard message is possible for these inputs. Following table lists different available messages for arm and system inputs. This menu also allows operator to select the permissive message that you wish to configure.



The following table explains the messages for arm and system inputs.

		Reconnect	Restart	Error
Standard Arm	Line 1	RECONNECT OR	ARM INPUT # n	ARM INPUT # n REMOVED
	Line 2	CLEAR ARM INPUT # n	RESTART YES/NO?	PRESS ENTER

		Reconnect	Restart	Error
Standard System	Line 1	RECONNECT OR	PROGRAMMABLE INPUT #n	PROG'ABLE INPUT #n REMOVED
	Line 2	CLEAR PROG'ABLE INPUT #n	RESTART YES/NO?	PRESS ENTER
Arm Position	Line 1	RECONNECT OR	ARM POSITION	ARM POSITION FAULT
	Line 2	REPOSITION ARM	RESTART YES/NO?	PRESS ENTER
Arm Park	Line 1	RECONNECT OR	ARM PARK	ARM PARK FAULT
	Line 2	PARK ARM	RESTART YES/NO?	PRESS ENTER
Vapor System	Line 1	RECONNECT OR	VAPOUR SYSTEM	VAPOUR SYSTEM REMOVED
	Line 2	CLEARVAPOUR SYSTEM	RESTART YES/NO?	PRESS ENTER
Valve Position	Line 1	RECONNECT OR	VALVE POSITION	VALVE POSITION FAULT
	Line 2	REPOSITION VALVE	RESTART YES/NO?	PRESS ENTER
Additive Alarm	Line 1	CLEAR	ADDITIVE ALARM	ADDITIVE ALARM ACTIVE
	Line 2	ADDITIVE ALARM	RESTART YES/NO?	PRESS ENTER

4.8.5 Permissive Messages

The Permissive Messages sub-menu allows the selection of either the standard message for that permissive, or a custom message may be entered.

- Permissive Message—Use the Permissive Messages sub-menu to either select the standard message for that permissive or enter a custom message.

  Select one of the following options:

- Overfill/Gnd Messages
- Vapour Rec'y Messages
- Prog Permissive Msg's
- Emergency Stop Messages

- Selected Permissive Message—Sets the Selected Permissive Message to either standard or custom.

  Select one of the following options:

  - Standard*
  - Custom

- Permissive Restart Message Edit Line 1—A custom restart message of 20 characters may be composed for display on the top line on the screen message area. The message is displayed during the loading process if the pemissive is reconnected within the timeout period.

  Constraints: Only if Selected Message = Custom Not for emergency stop.

  This menu is available if loading effect for the selected input is not NONE.

  - Top Line (20 Character alphanumeric Message)

- Permissive Connect Message Edit Line 1—Use to compose a custom initial message of 20 characters to display on the top line of the screen message area. The instrument displays this message at the start of the loading process to prompt the operator to take action to clear the permissive.

  Constraints: Only if Selected Message = Custom

  This menu is available if loading effect for the selected input is not NONE.

  - Top Line (20 Character alphanumeric Message)

- Permissive Connect Message Edit Line 2—Use to compose a custom initial message of 20 characters to display on the bottom line of the screen message area. The instrument displays this message at the start of the loading process to prompt the operator to take action to clear the permissive.

  Constraints: Only if Selected Message = Custom.

This menu is available if loading effect for the selected input is not NONE.

- Bottom Line (20 Character alphanumeric Message)

- Permissive Reconnect Message Edit Line 1—A custom reconnect message of 20 characters may be composed for display on the top line on the screen message area. The message is displayed during the loading process if the permissive become inactive after the START button is pressed. This message will not appear on the screen if the loading effect is terminate loading.

  Constraints: Only if Selected Message = Custom Not available for Emergency Stop.

  This menu is available if loading effect for the selected input is not NONE.

  - Top Line (20 Character alphanumeric Message)

- Permissive Reconnect Message Edit Line 2—A custom reconnect message of 20 characters may be composed for display on the bottom line on the screen message area. The message is displayed during the loading process if the permissive becomes inactive after the START button is pressed.

  Constraints: Only if Selected Message = Custom Not for Emergency Stop

  This menu is available if loading effect for the selected input is not NONE.

  - Bottom Line (20 Character alphanumeric Message)

- Permissive Error Message Edit Line 1—A custom reconnect message of 20 characters may be composed for display on the top line on the screen message area. The message is displayed during the loading process if reconnect prompt is not addressed within the timeout period or if permissive with terminate loading effect is disconnected.

  Constraints: Only if Selected Message = Custom Not for Emergency Stop.

  This menu is available if loading effect for the selected input is not NONE.

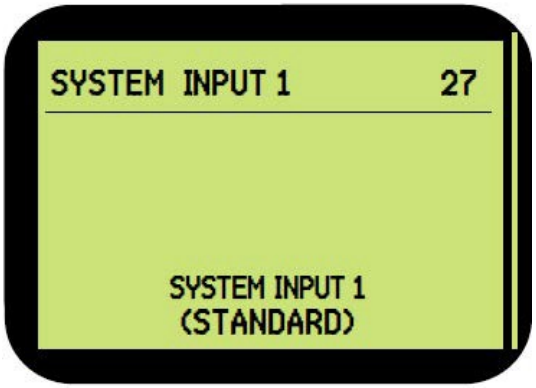
  - Top Line (20 Character alphanumeric Message)

4.8.6 System Messages

Use the System Messages sub-menu to select message from either the fixed or custom message list for that system input.

Select one of the following options:

- System Input 1
- System Input 2
- System Input 3
- System Input 4
- System Input 5
- System Input 6
- SYSTEM INPUT n—After selecting a system input from the SYSTEM MESSAGES menu, instrument displays the following screen.



This screen allows selection of an entry from a list of choices. Scroll through list using the DISPLAY key. The list contains standard and fixed messages.

Select one of the following options:

- Standard*
- Vapour System
- Valve Position
- Additive Alarm

- Arm Park
- Arm Position

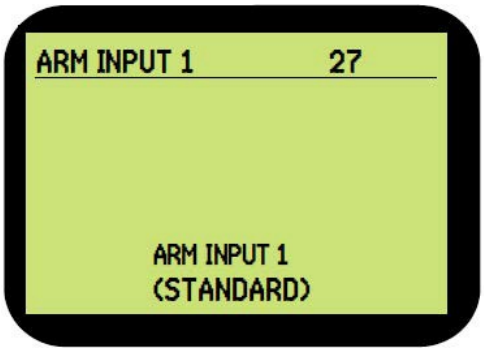
4.8.7 Arm Messages

Use the ARM MESSAGES sub-menu to select a message from either the fixed or standard message list for that arm input.

Select one of the following options:

- Arm Input 1
- Arm Input 2
- Arm Input 3
- Arm Input 4
- Arm Input 5
- Arm Input 6
- Arm Input 7
- Arm Input 8
- Arm Input 9
- Arm Input 10
- Arm Input 11
- Arm Input 12
- Arm Input 13
- Arm Input 14
- Arm Input 15
- Arm Input 16
- Arm Input 17
- Arm Input 18

- ARM INPUT n—After selecting any arm input from the ARM MESSAGES menu, the instrument displays the following screen.



This screen allows selection of an entry from a list of choices. Scroll through list using the DISPLAY key. The list contains standard and fixed messages.

Select one of the following options:

- Standard*
- Vapour System
- Valve Position
- Additive Alarm
- Arm Park
- Arm Position
- Custom

4.9 Opto Outputs (28)

The Opto Outputs sub-menu of the System menu allows the operator to configure the various opto outputs.

> NOTE: This a global parameter. For example, if this parameter is set to Flow meter B pulses, all Opto Outputs will output the Flow B pulse from their respective flow meter.

- Opto Outputs—Select one of the following options:
  - Flow meter A

    Flow meter A pulses can be provided at the output
  - Flow meter B

    Flow meter B pulses can be provided at the output.

4.10 Alarm Loading Effect

- Alarm Function—The alarm loading effect submenu allow to configure loading effect of the following alarms:
  - Dual Error
  - No Flow TimeOut
  - Temperature Error
  - Leaking Additive
  - Additive Volume Error
  - Additive No Activity
  - No Additive Flow
  - Stopped Remotely
  - Phase Error Meter
  - Pressure Error Arm
  - Additive Firmware Failure
  - Additive EPROM Failure
  - Additive Comms Failure
  - No Additive Response
  - Slow Flow Error

- High Flow High
- High Flow Low
- Low Flow High
- Low Flow Low
- Overrun Error
- TAS Comms Failure
- Density Error
- Blend Tolerance

- Loading Effect Constraints—Select one of the following options:
  - None*—Input not used. The status of this input can still be read via SLIP command GI.
  - Timeout Loading—After removal of the input and the closure of the flow control valve, loading is paused for the time set with the Clear/Reconnect timer. However the operator is given the option of restarting the load once the input is restored to an active state. The load is terminated as soon as the timer expires, and can not be restated without performing the initial authorisation process.
  - Pause—Loading is paused indefinitely by the removal of the input, and the flow control valve is closed. Loading can be resumed or discon- tinued on reconnection of the input/permissive.
  - Terminate—The load is terminated as soon as the input is disconnected, and cannot be restarted without going through the initial authorisation process.
  - Manager Reset—After the removal of the input and closure of the flow control valve, loading is paused for the time set within the Clear/Reconnect timer. However the operator is given the option of restarting the load once the input is restored to an active state prior to the Clear/ Reconnect expiry. Once the timer expires the loading computer is locked out from loading until a Manager Reset is performed by entering the Manager Reset password (see Section 4.2.8: Authorisations/Pins) into the instrument at the password

prompt or sending the MR SLIP command.

- Manager Reset—After the removal of the input and closure of the flow control valve, loading is paused for the time set within the Clear/Reconnect timer. However the operator is given the option of restarting the load once the input is restored to an active state prior to the Clear/ Reconnect expiry. Once the timer expires the loading computer is locked out from loading until a Manager Reset is performed by entering the Manager Reset password (see Section 4.2.8: Authorisations/Pins) into the instrument at the password prompt or sending the MR SLIP command.

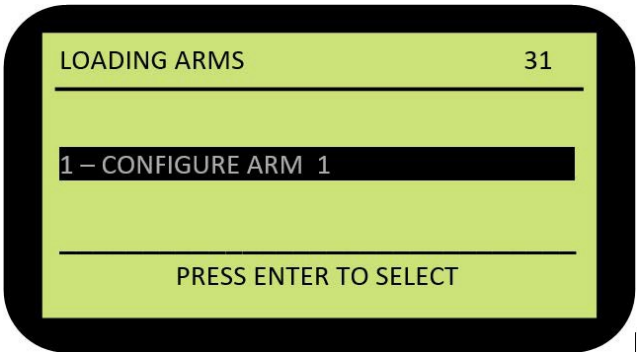
> NOTE: If emergency stop input is disconnected during loading the load is terminated. A new load cannot be started unless the Manager Reset Password is entered into the instrument at the Password Prompt.

5 LOADING ARMS (3)

5.1 Description

From the Loading Arms menu you can select an available loading arm to configure. You can program general parameters relating to the arm such as Product Name, Additive Setup, and Additive Recipe, or you can enable or disable the arm.

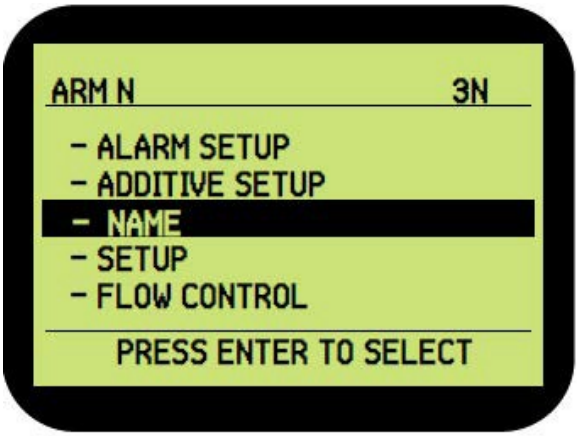
The maximum number of arms available with the instrument depends on the sales code.



5.2 Configure Arm n (3n)

5.2.1 Description

Use the CONFIGURE LOADING ARM menu to enter the general parameters related to the arm such as Name, Additive Setup, Flow control, and Alarm setup for the arm. You can also enable or disable the arm.



5.2.2 Name

Use the NAME sub-menu for entering an arm name.

Use to select the type of arm name to be displayed for this arm. Select one of the following options:

- DEFAULT* (ARM n)
- EDIT
- ULP
- PULP
- AVGAS
- ADF
- Edit Arm Name—If enabled allows an 8 character alphanumeric description to be entered for the arm, for example “ULP”, “Diesel”, “Kero”.

  Constraints: Select Arm Name = EDIT

  - 8 character alphanumeric
- Edit HM Classification—Use to select the HM classification number.

  Enter a value in the following range:

  - 1 to 3500 (1*)

5.2.3 Setup

Use the Setup sub-menu to enable or disable an arm, select the display unit for an arm, select between mass or volume based preset, or set the maximum preset for an arm.

- Enable Arm n—If enabled, the arm is available for use.

  If disabled, the arm will not be available for use. This is typically used when a particular arm should not be used, for example, when a pump fails or a tank is empty.

  Constraints: Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

  Select one of the following options:

  - Enable*
  - Disable

- Units—Selects the Metric - ISO units that are displayed for the particular arm.

  Constraints:

  - Only if Units under General Setup (21) = Metric - ISO Units.
  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

  Select one of the following options:

  - L & L/min* (Litre, Litre/min, °C, kPa)
  - m3 & m3/h (metre^3, metre^3/hour, °C, kPa)
  - kg & kg/min (kilogram, kilogram/ minute)
  - t & t/hour (tonne & tonne/hour)
  - g & g/min (gram, gram/minute)

- Units—Selects the US units that are displayed for the particular arm.

Constraints: Only if Units under General Setup (21) = US Units.

Select one of the following options:

- Gal & Gal/min* (Gallon, Gallon/min, °F, psi)
- lb & lb/min (pound, pound/ minute)

- Preset Prompt Arm n—Allows the operator to select between a Mass or Volume based preset when mass has been selected for the arm units.

  Constraints: Only available if the selected arm is single product straight loading arm and the selected unit is mass unit.

  Select one of the following options:

  - Mass *
  - Volume

- Preset Unit Arm 1—Displays the unit displayed in preset prompt.

  Constraints: Only available if the selected arm is single product straight loading arm and the selected unit is mass unit and the preset unit is selected as volume unit.

- Maximum Preset—Sets a maximum preset for the associated arm.

  Constraints: Only available when you use the Weights and Measures switch on the instrument to enter programming mode.

  > NOTE: To limit the probability of a major overfill, set the maximum preset close to the volume of the largest compartment or tank to be filled.

  - Enter a value in the following range:
  - 0 to 9999999 (9999999*)

5.2.4 Flow Control

- Cooling Flowrate—Sets the desired flow rate for cooling cycle (re-circulation) state. This flow rate is set at start of the loading for the LNG loading application. Refer 1010CB Software Manual for LNG loading application.

Constraints: Only applicable for Sales Code K (LNG loading application).

- 0 to 300 (180*)

- Cooling Quantity—Sets the desired quantity for cooling cycle (re-circulation) state. This quantity is set at start of the loading for the LNG loading application. Refer 1010CB Software Manual for LNG loading application.

  Constraints: Only applicable for Sales Code K (LNG loading application)

  Enter a value in the following range:

  - 0 to 9999 (50*)

- Arm Slow Flow—Sets the desired arm slow flow rate. Flow is set to slow flow rate at start of the load and continue until delivered quantity reached slow start quantity.

  Constraints: Only applicable when the arm is configured for ratio blending.

  Enter a value in the following range:

  - 0 to 800 (300*)

- Slow Start Quantity—Sets the desired quantity for slow start state. This is the amount of product that must be delivered into the compartment at the Slow Flow Rate to ensure that the risk of static discharge is eliminated.

  Enter a value in the following range:

  - 0 to 9999 (300*)

- Arm Top Loading Full Flow—Sets the desired flow rate when top loading full flow is required. Flow is set to full flow rate after delivered quantity reaches the slow start quantity and remains at this flow rate until the delivered quantity has reached the preset less the pre-stop quantity.

  Constraints: Only applicable when the arm is configured for ratio blending.

  Enter a value in the following range:

  - (Slow Flow) to 9999 (2000*)

- Arm Bottom Loading Full Flow—Sets the desired flow rate when bottom loading full flow is required. Flow is set to full flow rate after delivered quantity reaches the slow start quantity and remains at this flow rate until the delivered quantity has reached the preset less the pre-stop quantity.

  Constraints: Only applicable when the arm is configured for ratio blending.

  Enter a value in the following range:

  - (Slow Flow) to 9999 (2000*)

- Rest Flowrate—Sets the desired arm rest flow rate (quantity control flowrate). Flow is set to rest flow rate at end of the load to even slow the flowrate more to close the control valve accurately maintain accuracy of the delivered quantity.

  Enter a value in the following range:

  - 0 to 300 (0*)

- Rest Flow Quantity—Sets the desired arm rest flow quantity (quantity control quantity). Rest flow start when delivered quantity equals to Preset quantity - Rest flow quantity. Rest flow state continue till end of the load.

  Enter a value in the following range:

  - 0 to 800 (0*)

- Resume To Slow Flow—If enabled, in high flow state when batch resume from pause state, the instrument first resume with slow flowrate and then followed by full flowrate.

  Select one of the following options:

  - Enable
  - Disable*

5.2.5 Alarm Setup

- Blend Tolerance Alarm—If enabled, the instrument will trigger the blend tolerance alarm when blend percentage is less than low percentage or greater than high percentage.

  Select one of the following options:

- Enable
- Disable*

Constraints: Not available for straight loading arm.

- Low Percentage—The instrument triggers the blend tolerance low alarm if the blend ratio is below the LOW PRECENTAGE and the blend tolerance alarm is enabled.

  Enter a value in the following range:

  - 0.10 to 20.00 (1.00*)

- High Percentage—The instrument triggers the blend tolerance high alarm if the blend ratio deviation is greater than HIGH PRECENTAGE and the blend tolerance alarm is enabled.

  Enter a value in the following range:

  - 0.10 to 20.00 (1.00*)

- Minimum Blend Volume—The instrument waits for minimum blend volume before triggering the blend alarm.

  Enter a value in the following range:

  - 0 to 999 (100*)

- Slow Flow Alarm—If enabled, the instrument will issue an alarm if the arm flow is less than the low percentage or greater than the high percentage.

  Select one of the following options:

  - Enable
  - Disable*

- Low Percentage—The instrument triggers the slow flow low alarm if the arm slow flow is less than LOW PRECENTAGE and the slow flow alarm is enabled.

  If low percentage set to 0, instrument disabled slow flow low alarm. Enter a value in the following range:

  - 0 to 50.0 (1.0*)

- High Percentage—The instrument trigger the slow flow high alarm if the arm slow flow exceeds HIGH PRECENTAGE and the slow flow alarm is enabled.

  If low percentage set to 0, instrument disabled slow flow low alarm.

  Enter a value in the following range:

  - 0 to 50.0 (1.0*)

- Slow Flow Alarm Delay—The instrument waits until the volume reaches SLOW FLOW ALARM DELAY before triggering the slow flow alarm.

  Enter a value in the following range:

  - 10 to 300 (10.0*)

- Slow Flow Alarm Timeout—The instrument triggers slow flow alarm if the arm flow is less than low percentage or greater than high percentage continuously for a period of slow flow alarm timeout.

  Constraints: Only available when slow flow alarm is enabled.

  Enter a value in the following range:

  - 0 to 90 sec (5 sec*)

- High Flow Alarm—If enabled, the instrument will trigger an alarm if the arm high flow is less than the low percentage or greater than the high percentage.

  Select one of the following options

  - Enable
  - Disable*

- Low Percentage—The instrument triggers the high flow low alarm if the arm high flow is less than LOW PRECENTAGE and the high flow alarm is enabled.

  If low percentage set to 0, instrument disabled high flow low alarm. Enter a value in the following range:

  - 0 to 50.0 (1.0*)

- High Percentage—The instrument triggers the high flow high alarm if the arm high flow is greater than HIGH PRECENTAGE and the high flow alarm is enabled.

If low percentage set to 0, instrument disabled high flow high alarm.

Enter a value in the following range:

- 0 TO 50.0 (1.0*)

- High Flow Alarm Delay—The instrument waits until the volume reaches HIGH FLOW ALARM DELAY before triggering high flow alarm.

  Enter a value in the following range:

  - 10 to 300 (10.0*)

- High Flow Alarm Timeout—The instrument triggers high flow alarm if the arm flow is less than low percentage or greater than high percentage continuously for a period of high flow alarm timeout.

  Constraints: Only available when high flow alarm is enabled.

  Enter a value in the following range:

  - 0 to 90 sec (5 sec*)

- Low Flow Alarm—If enabled, the instrument issues an alarm if the low flow limits are exceeded.

  Select one of the following options

  - Enable
  - Disable*

- Low Percentage—The instrument triggers the low flow low alarm if the arm low flow is less than LOW PRECENTAGE and the low flow alarm is enabled.

  If low percentage set to 0, instrument disabled low flow low alarm.

  Enter a value in the following range:

  - 0 to 50.0 (1.0*)

- High Percentage—The instrument triggers the low flow high alarm if the arm low flow exceeds HIGH PRECENTAGE and the low flow alarm is enabled.

  If low percentage set to 0, instrument disabled low flow high alarm.

Enter a value in the following range:

- 0 to 50.0 (1.0*)

- Low Flow Alarm Delay—The time that the instrument waits until the volume reaches (LOW FLOW ALARM DELAY) before triggering low flow alarm.

  Enter a value in the following range:

  - 10 to 300 (10.0*)

- Low Flow Alarm Timeout—The instrument triggers low flow alarm if the arm flow is less than low percentage or greater than high percentage continuously for a period of low flow alarm timeout.

  Constraints: Only available when low flow alarm is enabled.

  Enter a value in the following range:

  - 0 to 90 sec (5 sec*)

- Flow Alarm Timeout—The time after the batch start or resume, the instrument waits until the timer expires to check for flow rate alarms.

  Constraints: Only available if Slow Flow Alarm or High Flow Alarm or Low Flow Alarm enabled.

  Enter a value in the following range:

  - 1 sec to 60 sec (10* sec)

5.2.6 Additive Setup

Use the Additive Setup sub-menu to set the volume of product that must pass through the loading arm for each Additive Injection.

- Continue Add Batch on alarm—Allows enabling or disabling the Continue Additive Batch on alarm feature. When enabled, the additive exception results in an alarm being registered via the AL command, but the batch will be paused and the instrument displays an option to restart without the faulty additive.

  Constraints: Only available if the arm has internal additives assigned and enabled.

  - Enable
  - Disable*

- Manual Product Pacing—Allows the use of product pacing quantity.

  Constraints: Only available if additive type is selected as external additive.

  Select one of the following options:

  - Enable
  - Disable*

- Arm n Additive Flush Volume—When using additives, such as dyes, selecting an additive flush volume makes sure that the final volume does not contain any additive. Select 0 to disable flush volume.

  Enter a value in the following range:

  - 0 to 999 (0*)

  Constraints: Only available if additive is configured as pulsed additive.

  > NOTE: If a flush volume is entered, the injections will occur more frequently before the flush volume. Once the flush volume is reached, no additive is injected.
  >
  > Additive flush volume for other types of additive injectors is entered as part of the Arm Recipe under the Recipes menu.

- Arm x Product Pacing Qty—Sets how often an additive injection will occur. For example, enter “200” to inject additive once for every 200L of product, at 100L, 300L, 500L etc.

  Enter a value in the following range:

  - 0 to 9999 (200*)

NO ADDITIVE PULSE OUTPUT CONFIGURED FOR THIS ARM

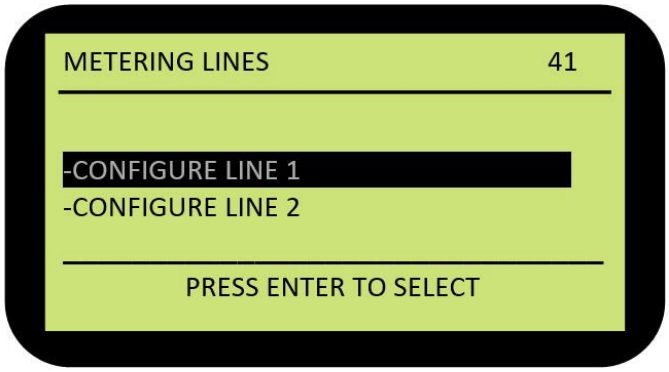
6 Metering Lines (4)

6.1 Description

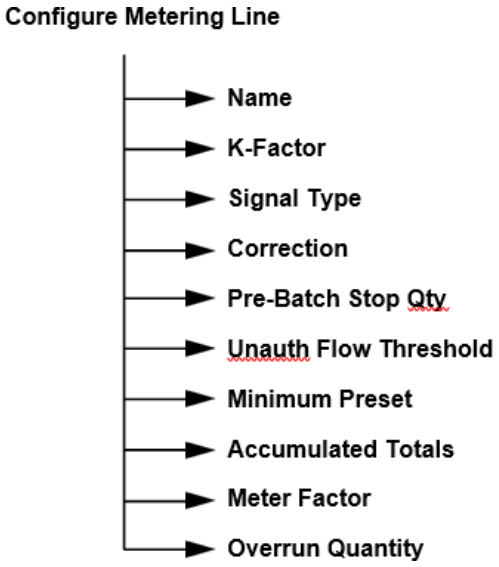
The Metering Line menu allows the operator to select an available metering line for configuration. General parameters relating to the meter, such as Meter Factor, can be programmed from this menu.

The maximum number of meters available with the instrument depends on the sales code.

Example: For sales code K, instrument shows maximum two metering lines. First metering line for liquid line and other one is for vapour line.



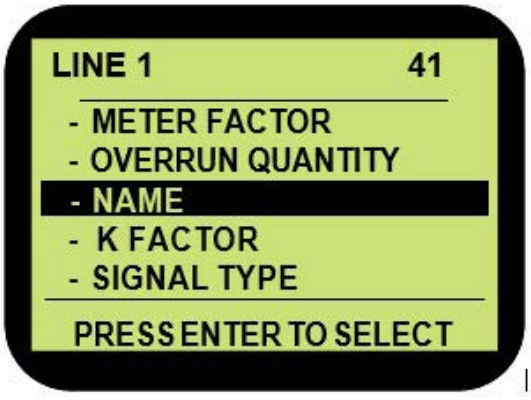
The following diagram shows the detailed menu structure for metering line configuration.



6.2 Configure Line n (4n)

6.2.1 Description

Use the Configure Line menu to enter the general parameters relating to the metering line such as K Factor, Signal Type, and temperature and pressure correction.



6.2.2 Name

If enabled allows an 8 character alphanumeric description to be entered for the meter, for example “METER 1”, “METER 2”, “XYZ”.

Constraints: 8 character alphanumeric

6.2.3 K Factor

Constraints: K-factor prompts are only available to modify when you use the Weights and Measures switch on the instrument and Weights and Measures password to enter programming mode.

- K-Factor Type—Use to select the K-Factor type for this meter input. For more information, see the 1010CB Software Manual.

  Select one of the following options:

  - Linear*—Single K-Factor for the whole flow range
  - Non-Linear—Multiple K-Factors based on different flow rates

- K-Factor—Use to set the K-Factor for the flow meter (normally stamped on the data plate of the flow meter) in pulses/unit.

  Constraints: Linear only.

  Enter a value in the following range:

  - 0.001 to 50000.0 (1.0*)

- Max Non-Linear K-Factors—Allow to set numbers of Non-Linear k-Factor points.

  Constraints: Non-linear only.

  Enter a value in the following range:

  - 1 to 10 (5*)

- K-Factor 1 (0 Hz)—Allows entry of up to number of K-Factors entered for non-linear flow meters.

  Constraints: Non-linear only.

  Enter a value in the following range:

  - 0.001 to 50000.0 (1.0*)

- Frequency n (2 - n)—Sets the next frequency point of the next non-linear Kfactor.

  Constraints: Non-linear only.

Enter a value in the following range:

- 0 to 2000 (1 Hz*)

- K-Factor n (2 - n)—Sets the K-Factor at the corresponding frequency point.

  Constraints: Non-linear only.

  Enter a value in the following range:

  - Range is displayed on instrument which is ±5% of K-Factor 1

6.2.4 Signal Type

- Minimum Linear Flow rate—The minimum linear flow rate for the flow meter as specified by the flow meter manufacturer in units/min.

  Constraints: Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

  For more information, see chapter 15 “Setting Cut-Off Frequency” in the 1010CB Software Manual.

  Constraints: Dual signal only. Enter a value in the following range:

  - 0 to X—X calculated by the instrument (200*)

- Signal Type Meter n—Selects the flow meter output type. SINGLE has one pulse output and DUAL has two pulse outputs (sometimes called Quadrature, and used to monitor signal integrity, but does not detect reverse flow).

  Constraints: Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

  Select one of the following options:

  - Single*
  - Dual

- Cutoff Meter n—Signal input frequency (Hz) below which the signal integrity of a dual pulse type flow meter is not monitored.

  For more information, see chapter 15 “Setting Cut-Off Frequency” in the 1010CB Software Manual.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Dual signal only.

  Enter a value in the following range:

  - 1 to X Hz—X - calculated by the instrument (1*)

  > NOTE: This value must be set to a realistic value as described in the “Setting Cut- Off Frequency” chapter of the Software Manual. Leaving this value at the default of 1 may cause unnecessary faults being reported, resulting in delays at the loading terminal until the value is changed.

- Flowmeter Input Meter n—Selects the type of meter input connected to the instrument.

  Select one of the following options:

  - RESISTOR PULL UP* (for open collector type inputs)
  - RESISTOR PULL DOWN (for Namur type inputs)

- Flowmeter Filter Meter n—Selects whether filtering is applied to the meter input connection.

  Select one of the following options:

  - DEBOUNCE INACTIVE*
  - DEBOUNCE ACTIVE

6.2.5 Corrections

Selects which product type is associated with this metering line if temperature, pressure or density correction or live information is required.

If the arm is configured for Mass units with volume preset the operator can setup a density probe. Please refer to "Mass units with volume preset" for the menu.

For, mass units, live temperature, pressure and density can be enable to monitor these information.

- Meter n Live Temperature—Allows enable or disable the live temperature associated with the metering line.

  Constraints:

  - Only if arm is configured for Mass units.
  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

  Select one of the following options:

  - Enable
  - Disable*

- Meter n Live Pressure—Allows enable or disable the live pressure associated with the metering line.

  Constraints:

  - Only if arm is configured for Mass units.
  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

  Select one of the following options:

  - Enable
  - Disable*

> NOTE: For sales code K (LNG loading), BCU ask for enable/ disable live temperature and pressure for Meter 3 which is used for sensor present at loading arm.

- Meter n Commodity Type—Selects the commodity type associated with this metering line if temperature, pressure or density correction is required ASTM D1250- 4 Appendix 11.1.6.1 is used for refined, lube oils, and crude oils based products. ASTM-IP-API Table 54 Petroleum Measurement Tables are used for NGL and LPG liquiare used for NGL and LPG.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only available with volumetric load

  Select one of the following options:

  - None
  - Crude Oils (A)
  - Refined (B)
  - Special (C)
  - Lube Oils (D)
  - NGL AND LPG (E)
  - FAME (F)

- Meter n Temp Sensor Type—Selects which type of temperature sensor to be used for temperature correction.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

- Only if commodity type is not none or live temperature enabled for mass units.

Select one of the following options:

- 4-20 mA*
- RTD

- Meter n 4 mA Temp—The temperature that corresponds to a 4 mA reading from the temperature probe associated with this metering line.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if commodity type is not none or live temperature enabled for mass units.
  - Only if Temp. Sensor = 4-20 mA

  Enter a value in the following range:

  - Refer to the following table:

Table 6-1: Meter n 4 mA Temp

Units	Base Temp	Crude Oils (A)	Refined (B)	Special (C - thermal exp.)	Lube Oils (D)	NGL and LPG (E)	FAME
°F	60 °F	-58.0 to 302.0				-50.8 to 199.4	N/A
°C	15 °C	-50.00 to 150.00				-46 to 93	20 to 60
	20 °C						N/A

NOTE: Use the Arm key to toggle between negative and positive values.

For mass units (LNG application), temperature range allow to set in the range from -200 °C to -50 °C. This value is not meets the MID standards and

> ıse only for live information and alarm if temperature is out of range or ›robe error.

- Meter n 20 mA Temp—The temperature that corresponds to a 20 mA reading from the temperature probe associated with this metering line.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if commodity type is not none or live temperature enabled for mass units.
  - Only if Temp. Sensor = 4-20 mA

  Enter a value in the following range (Whichever of the following options is lesser):

  - 4 mA setting to 4 mA setting +100 °C (for METRIC units)
  - mA setting + 212 °F (for US units) Or
  - mA setting to Max range in Table 6-1: Meter n 4 mA Temp.
- Meter n Min Error Limit—The minimum allowed temperature range. A temperature below this value flags an error when loading.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if commodity type is not none or live temperature enabled for mass units.
  - Only if Temp. Sensor = RTD Enter a value in the following range:
  - Refer to Table 6-1: Meter n 4 mA Temp.

> NOTE: Use the Arm key to toggle between negative and positive values.

- Meter n Max Error Limit—The maximum allowed temperature range. A temperature above this value flags an error when loading.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if commodity type is not none or live temperature enabled for mass units.
  - Only if Temp. Sensor = RTD

  Select one of the following options:

  - Min Error Limit to Max range in Table 6-1: Meter n 4 mA Temp

- Meter n Temperature Offset—Set temperature offset for RTD.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and the Weights and Measures password to enter programming mode.
  - Only when the commodity type is not None or when live temperature is enabled for mass units.
  - Only if Temp. Sensor = RTD

  Enter a value in the following range:

  - -9.90 to 10 (0.00*)

- Breakdown Temperature—Allows enabling or disabling the breakdown temperature.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

- Only if commodity type is not none.
- Only if temperature correction is enabled.

Select one of the following options:

- Enable
- Disable*

> NOTE: When the break down value is enabled the unit no longer meets the MID standard.

- Meter n Breakdown Temperature—Allows entering the breakdown temperature. This value is used for correction calculations if the temperature probe fails.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if temperature correction and breakdown temperature are enabled.

  Enter a value in the following range:

  - 4 mA Temp Setting to 20 mA Temp setting (Only if Temp. Sensor = 4-20 mA)

    Or

  - Min Error Limit to Max Error Limit (Only if Temp. Sensor = RTD)

- Meter n Density correction—Allows enabling or disabling the density correction.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only with volumetric load
  - Not available for commodity type Special (C)

Select one of the following options:

- Enable
- Disable*

- Meter n 4mA Density—The density that corresponds to a 4 mA reading from the density probe associated with this metering line.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if density correction is enabled.

  Enter a value in the following range:

  - Refer to the following table.

Table 6-2: Meter n 4mA Density

Units	Base Temp	Crude Oils (A)	Refined (B)	Special (C - thermal exp.)	Lube Oils (D)	NGL and LPG (E)	FAME
Relative Density (RD60	60 °F	0.61120 to 1.16464		N/A	0.80168 to 1.1646	0.3500 to 0.6880	N/A
kg/m3	15 °C	610.6 to 1163.5		N/A	800.9 to 1163.5	351.7 to 687.8	610.6 to 1163.5
	20°C			N/A		331.7 to 683.6	N/A

- Meter n 20mA Density—The density that corresponds to a 20 mA reading from the density probe associated with this metering line.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming

mode.

- Only if density correction is enabled

Enter a value in the following range:

- 4 mA setting to Max range in Table 6-2: Meter n 4mA Density.

- Breakdown Density—Allows enabling or disabling the breakdown density.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if density correction is enabled

  Select one of the following options:

  - Enable
  - Disable*

  > NOTE: When the break down value is enabled the unit no longer meets the MID standard.

- Meter n Breakdown Density—Allows entering the breakdown density. This value is used for correction calculations if the density probe fails.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if density correction and breakdown density is enabled

  Enter a value in the following range:

  - 4 mA Density Setting to 20 mA Density setting

- Manual Density—Allows entering of the manual density.

  Constraints:

- Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
- Only if density correction is disabled.

Enter a value in the following range:

- Refer to Table 6-2: Meter n 4mA Density.

- Meter n Pressure Correction—Enable to take pressure correction into account when calculating net volumes.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if Commodity Type selected is Crude Oils (A), Refined (B) or Lube Oils (D) or NGL and LPG (E) with Regulated PM not used.
  - Only if 4-20 mA input is available after configuring the temperature and density analogue probes.

  Select one of the following options:

  - Enable
  - Disable*

- Meter n 4 mA Pressure—The pressure that corresponds to a 4 mA reading from the pressure transmitter for the meter.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if commodity type is not none or live pressure enabled for mass units.
  - Available only if pressure correction is enabled.

  Enter a value in the following range:

- Refer to the following table.

Table 6-3: Meter n 4 mA Pressure

Units	Base Temp	Crude Oils (A)	Refined (B)	Special (C - thermal exp.)	Lube Oils (D)	NGL and LPG (E)	FAME
PSI	60 °F	0 to 1500		N/A	0 to 1500	100 to 2200	N/A
kPa	15 °C 20°C	0 to 10340		N/A	0 to 10340	689.48 to 15168.47	N/A

NOTE: For mass units (LNG application), pressure range allow to set in the range from 0 to 10340 kPa. This value is not meets the MID standards and use only for live information and alarm if pressure is out of range or probe error

- Meter n 20 mA Pressure—The pressure that corresponds to a 20 mA reading from the Pressure Transmitter for the Meter.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Available only if pressure correction is enabled.
  - Only if commodity type is not none or live pressure enabled for mass units.

  Enter a value in the following range (Whichever of the following options is lesser):

  - 4 mA setting to 4 mA setting + 1000 kPa (for METRIC units)
  - 4 mA setting to 4 mA setting + 145 psi (for US units) Or
  - 4 mA setting to Max range in Table 6-3: Meter n 4 mA Pressure

- Breakdown Pressure—Allows enabling or disabling the breakdown pressure.

  Constraints:

- Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
- Available only if pressure correction is enabled.
- Only if commodity type is not none.

Select one of the following options:

- Enable
- Disable*

> NOTE: When the break down value is enabled the unit no longer meets the MID standard.

- Meter n Breakdown Pressure—Allows entering of the breakdown pressure. This value is used for correction calculations if the pressure probe fails.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if pressure correction and breakdown pressure is enabled

  Enter a value in the following range:

  - 4 mA Pressure Setting to 20 mA Pressure setting

- Min Vapour Line Pressure—Allows to set minimum vapour line pressure for LNG loading application. The LNG line and Vapour line isolation valve turn on based vapour pressure. Refer 1010CB Software Manual for detail LNG loading application.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

- Available only for Sales Code-K.
- If selected meter is Meter 2.
- If Meter 2 live pressure enabled.

Enter a value in the following range:

- 50 to 2000 (200.0*)

- Max Vapour Line Pressure—Allows to set maximum vapour line pressure for LNG loading application. The LNG line and Vapour line isolation valve turn on based vapour pressure. Refer 1010CB Software Manual for detail LNG loading application.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Available only for Sales Code-K.
  - If selected meter is Meter 2.
  - If Meter 2 live pressure enabled.

  Enter a value in the following range:

  - Min Vapour Line Pressure to 2000 (600.0*)

- Drain Line Pressure—Allows to set drain line pressure for LNG loading application. The drain line isolation valve turn on when loading arm pressure is more than this configured drain line pressure. Refer 1010CB Software Manual for detail LNG loading application.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Available only for Sales Code-K.

- If selected meter is Meter 1.
- If Meter 3 live pressure enabled.

Enter a value in the following range:

- 50 to 2000 (1600.0*)

- Meter n Special Type—Allows to select special commodity type

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Commodity Type selected is Special (C)

  Select one of the following options:

  - Manual Entry
  - MTBE
  - Gasohol

- Expansion Coefficient—Enter the expansion coefficient as a thermal expansion factor for the product associated with this metering line.

  Constraints: Commodity type is Special (C). Enter a value in the following range:

  - Refer to the following table.

Table 6-4: Special Commodity Type

Units	Base Temp	Entry Ranges	MTBE	Gasohol
°F	60 °F	230.0×10-6 to 930.0×10-6	789.0×10-6	714.34×10-6
°C	15 °C	414.0×10-6 to 1674.0×10-6	1420.20×10-6	1285.81×10-6
	20°C			

> NOTE: For MTBE and GASOHOL the value is fixed, and can be manually entered only if Special type selected is Manual entry.

- Meter n Regulated PM—Select whether the pressure at the meter (Pm) is regulated or not.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Available only if commodity type is NGL and LPG (E)

  Select one of the following options:

  - Yes
  - No*

- Meter n Manual DP—If the Pm is regulated, enter the manual value for Dp.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Available only if commodity type is NGL and LPG(E) and
  - Regulated PM is selected as YES. Enter a value in the following range:
  - Refer to the following table.

  Table 6-5: Manual DP

Units	Base Temp	Entry Ranges	
		Equilibrium Pressure (Pe)	Manual Entry of Dp
Psig	60 °F	0 to 2200.0	0 to 2200.0
kPa	15 °C	0 to 15168.47	0 to 15168.47
	20°C		

- Meter n Calculate FP—Selects whether to calculate the Compressibility Factor or not.

  Constraints:

- Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
- Available only if commodity type is NGL and LPG(E) and
- Regulated PM is selected as NO.

Select one of the following options:

- Yes
- No*

- Meter n Manual FP—This prompt allows entry of the manual value for the compressibility factor (F)

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode and Commodity type is NGL and LPG(E) and Regulated PM is selected as YES.

    Or

  - Regulated PM is selected as NO and calculate FP is selected as NO.

  Enter a value in the following range:

  - Refer to the following table.

Table 6-6: Manual FP Entry Ranges

Units	Base Temp	Entry Ranges Entry Ranges Compressibility Factor (F)
Psig	60 °F	0 to 65.8×10-6
kPa	15 °C	0 to 454.4×10-6
	20°C	

- Meter n Calculate PE—When pressure correction is selected for commodity group E (NGL and LPG), the prompt allows selecting whether to calculate the Equilibrium Pressure or not.

Constraints:

- Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
- Available only if commodity type is NGL and LPG (E) and Regulated Pm is selected as NO.

Select one of the following options:

- Yes
- No*

- Meter n Manual PE—If the Pe value is not to be calculated, enter the manual value for the Equilibrium Pressure (Pe).

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Available only if commodity type is NGL and LPG and Calculate PE is selected as NO

  Enter a value in the following range:

  - Refer to Table 6-5: Manual DP.

  Mass units with volume preset If the arm is configured for Mass units with volume preset the operator can setup a density probe.

- Meter n Density Input—Selects which density input mode to be used for density measurement.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if mass meter used with volume preset

Select one of the following options:

- Manual Entry*
- Densitometer

- Meter n 4 mA Density—The density that corresponds to a 4mA reading from the density probe associated with this metering line.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if Meter-n Density Input mode is densitometer.

  Enter a value in the following range:

  - 1.0 to 3000.0 (500.0*)

- Meter n 20 mA Density—The density that corresponds to a 20mA reading from the density probe associated with this metering line.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if Meter-n Density Input mode is Densitometer

  Enter a value in the following range:

  - 4 mA setting to 3000.0 (1500.0*)

- Breakdown Density—Allows enabling or disabling the breakdown density.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if density input type is densitometer.

Select one of the following options:

- Enable
- Disable*

> NOTE: When the break down value is enabled the unit no longer meets the MID standard.

- Meter n Breakdown Density—Allows entering the breakdown density. This value is used for correction calculations if the density probe fails.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if density input type is densitometer and breakdown density is enabled

  Enter a value in the following range:

  - 4 mA Density Setting to 20 mA Density setting

- Manual Density—Allows entering of the manual density.

  Constraints:

  - Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.
  - Only if density input type is manual entry.

  Enter a value in the following range:

  - 1.0 to 3000.0 (1500.5*).

6.2.6 Pre-Batch Stop Quantity

- Meter n Pre-Batch Stop Quantity—The Pre-Batch Stop quantity is the amount of product that flows during the time it takes the flow control valve to close.

The instrument signals the flow control valve to close when the quantity delivered equals the preset quantity less the pre-batch stop quantity.

Enter a value in the following range:

- 0 to 250 (0*)

6.2.7 Unauthorised Flow

- Unauthorised Flow Threshold—Sets the threshold above which unauthorised flow is recorded.

  Enter a value in the following range:

  - 0 to 250 (10*)

  If Unauthorised Flow Threshold is set to a value greater than zero and the unauthorised flow is less than this value, the instrument does not record the unauthorised flow.

  If Unauthorised Flow Threshold is set to a value greater than zero and the unauthorised flow exceeds that value, the instrument records the total flow, including the unauthorised flow.

  If Unauthorised Flow Threshold is set to 0, the reporting of unauthorised flow is disabled and input pulses received by the flow meter input are ignored. The arm's accumulated totals will not be incremented.

  If a transaction is currently in progress, the amount of flow is added to the Batch & Accumulated Totals and the Batch Status is reported as 100.

  If a transaction is not in progress, a new transaction is created with the Unauthorised Flow being added to the Arms Accumulated Total and shown as the Batch Quantity.

  The Unauthorised Quantity is allocated to Compartment-0 and the Batch Status is reported as 100.

6.2.8 Minimum Preset

- Meter n Minimum Preset—Sets the minimum allowable preset for the associated metering line. This value will depend on other factors, for example, the flow meter response time.

  Constraints: Only available when you use the Weights and Measures switch on the instrument to enter programming mode.

  Enter a value in the following range:

  - 0 to 9999999 (100*)

6.2.9 Accumulated Totals

- Meter n Gross Accumulated Totals—Use to enter the current accumulated total in the event of a CPU card replacement.

  Constraints: Only available when you use the Weights and Measures switch on the instrument to enter programming mode.

  Enter a value in the following range:

  - 0 to 99,999,999 (0*)

- Meter n Net Accumulated Totals—Use to enter the current net accumulated total in the event of a CPU card upgrade.

  Constraints: Only available when you use the Weights and Measures switch on the instrument to enter programming mode.

  Enter a value in the following range:

  - 0 to 99,999,999 (0*)

6.2.10 Meter Factor

- Meter n Factor—Use to manually enter the correction factor to take into account variations in the calibration of the Flow meter. The correction factor is applied to the Meter K-FACTOR. The Meter Factor may be calculated automatically by the instrument or entered manually. For more information, see

"Automated Proving" in the Operator Manual.

Constraints: Only available when you use the Weights and Measures switch on the instrument and Weight and Measures password to enter programming mode.

Enter a value in the following range:

- 0.5 to 1.5 (1.0*)

6.2.11 Overrun Quantity

- Meter n Overrun Quantity—Overrun alarm generate if delivered quantity is greater than preset quantity plus the overrun quantity.

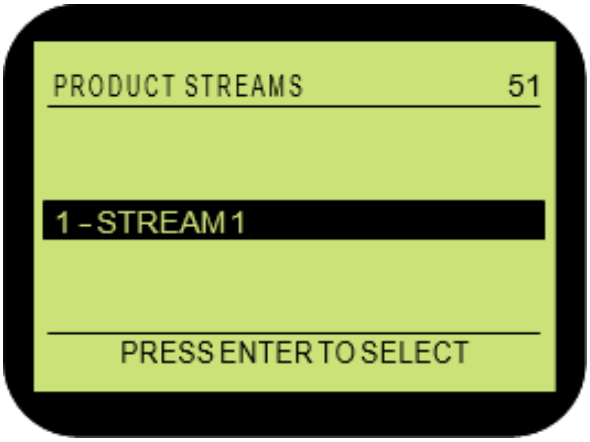
  Enter a value in the following range:

  - 0 to 250 (0*)

7 Product Streams (5)

7.1 Description

The PRODUCT STREAMS menu allows the operator to enter valve and flow settings.



7.2 Configure Streams

- No Flow Timeout—If there is an absence of pulses for a time exceeding this setting during a load, the instrument will terminate the load and display an error.

  Enter a value in the following range:

  - 0 to 999 seconds (5*)

- Valve Type—Selects the type of flow control valve to be used on the Meter Run.

  - Digital*
  - On/Off or 2 Stage
  - Analog (Analog Control Valve).

  Constraints: For blending arm only digital valves can be used.

- Deadband—If the measured flow rate is within the deadband of the required flow rate, no adjustments are made to the flow rate. This prevents continuous adjustments to the flow valve, thereby minimising wear.

  For example, for a desired flow rate of 300 and a deadband of 60, no adjustment is made if the flow rate is between 240 and 360.

  Constraints: Only for Valve Type = Digital or Analog.

  Enter a value in the following range:

  - 0 to (Slow Flow - Minimum Linear Flow Rate) (60*)

- Valve Slow Flow —The desired flow rate when slow flow is required at the start of a batch.

  Constraints: Only for Valve Type = Digital or Analog. Enter a value in the following range:

  - (Minimum Linear Flow Rate + Dead Band) to 800 (300*)

- Valve Low Flow—The desired flow rate of the product when the amount of delivered product is greater than the following (Batch Preset Volume - Prestop Volume) is determined.

  Constraints: Only for Valve Type = Digital or Analog.

  Enter a value in the following range:

  - (Minimum Linear Flow Rate + Dead Band) to 800 (300*)

- Valve Response—Valve response is a measure of the magnitude of adjustment made to the flow control valve. A value of 0.2 results in a slower change of flow rate than a value of 1.

  Constraints: Only for Valve Type = Digital or Analog.

  Enter a value in the following range:

  - 0.1 to 1.0 (0.7*)

- Prestop Quantity—Sets the point near the end of the load at which the flow will switch from high to low. A low flow at the end of the load helps prevent pipe stresses and gives a more accurate cut-off.

Enter a value in the following range:

- 0 to 999 (300*)

- Auto High Flow—When enabled, if the actual flow rate does not reach the target flow rate within the High Flow Timeout period, the target flow rate is reduced by the deadband and the High Flow Timeout is restarted. This sequence continues until the target flow rate matches the actual flow rate allowing for the dead band setting.

  Once the reduced target flow rate has been achieved and has been stable for the high flow timeout period the instrument will then try increasing the flow rate. For more details see the Software Manual.

  Constraints: Only for Valve Type = Digital.

  Select one of the following options:

  - Enable*
  - Disable

- Valve Full Flow—Sets the desired flow rate when full flow is required. Flow is set to full flow rate after the start time has elapsed, and remains at this flow rate until the delivered quantity has reached the preset less the pre-stop quantity.

  Constraints: Only for Valve Type = Digital or Analog.

  Enter a value in the following range:

  - (Slow Flow) to 9999 (1800*)

- High Flow Timeout—The time allowed for the actual flow rate to reach the target flow rate before the target flow rate is reduced by the deadband.

  Constraints: Only for Valve Type = Digital and Auto High flow enabled.

  Enter a value in the following range:

  - 1 to 300 second (10*)

- Pump Off Delay—Sets a time period between loads during which the pump may continue to run. This reduces the number of pump starts.

This is applicable only during the same transaction, that is, for multiple batches. The pump will shut down immediately if the transaction is terminated.

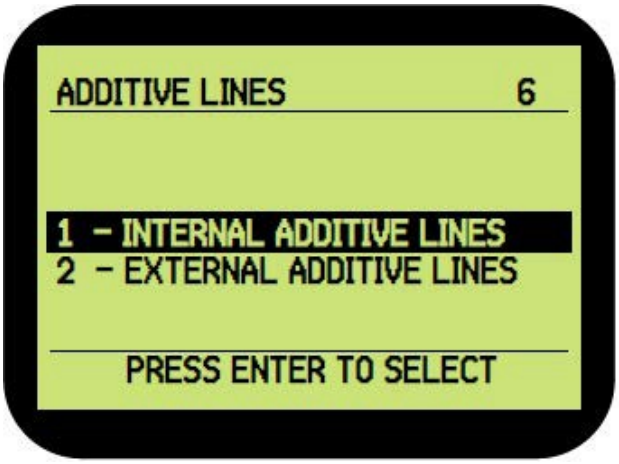
Enter a value in the following range:

- 0 to 999 seconds (0*)

8 Additive Lines (6)

8.1 Description

The Additive Lines menu allows the set up of the operating parameters for the additive injection system in use.



8.2 Configure Additive

Additive Lines (6) Selects the type of additive system from the Additive Line sub-menu.

Select one of the following options:

- INTERNAL ADDITIVE LINES
- EXTERNAL ADDITIVE LINES

8.3 External Additive Lines (621)

Selects the type of additive system from the Additive Type sub-menu. If you select INTELLIGENT as the additive type, the instrument displays the Intelligent Inject

Type prompt.

- Additive Inject—Selects the type of additive injection to use. INTELLIGENT refers to the EFT Mini-Pak. PULSE OUTPUT refers to the outputs used to provide additive injector pacing pulses.

  Select one of the following options:

  - None*
  - EFT Mini-Pak
  - PULSE OUTPUT

- Additive Pulse—The additive pulse width in seconds.

  Constraints: Additive Inject = Pulse Output Enter a value in the following range:

  - 0.5 to 10 (2.0*)

- No of Injection Points—Sets the total number of Injector Lines available

  Constraints: Only for Additive Inject = EFT Mini-Pak Enter a value in the following range:

  - 1 t o 18 (1*)

8.4 Additive Line Setup (622)

8.4.1 Description

Configures the operating parameters of the selected additive line of the EFT Mini-Pak.

8.4.2 EFT Mini-Pak

- Injector No n Arm Number n—Assigns an injector number (n) to an arm number. If you do not wish to assign an additive injector, select NONE.

  Changing an injector load arm will erase the arm's recipes. Constraints: Only for Additive Inject = EFT Mini-Pak.

Enter a value in the following range:

- 0 to 4 (1*)

- Injector No n Address—Sets the Injector programming address for injector line number n.

  Constraints: Only for Additive Inject = EFT Mini-Pak.

  Enter a value in the following range:

  - 1 to 997 (1*)

- Edit Additive n Code—Use to enter a 9 character alphanumeric description of the additive being used on injector line n.

  Constraints: Only for Additive Inject = EFT Mini-Pak.

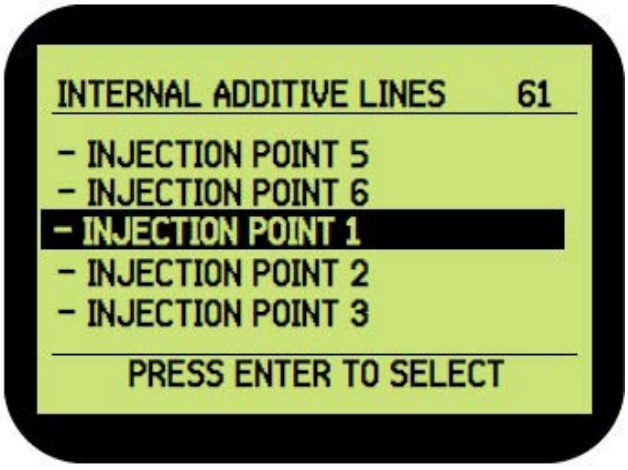
  Select one of the following options:

  - 9 Character alphanumeric

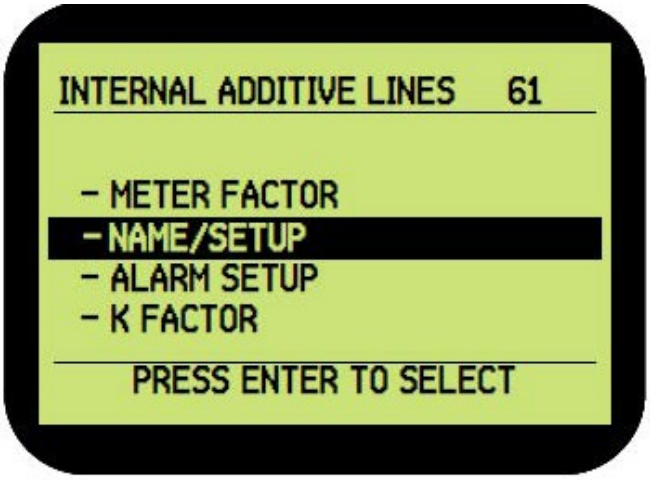
8.5 Internal additive Lines (61)

The Internal Additive Lines menu allows configuration of each internal additive. The number of injection points available depends upon the sales code.

> NOTE: Not available for sales codes G, H, J and K.



Once an injection point is selected, the following menu, which allows configuration of different parameters of the injection point, is displayed.



8.5.1 Name/Setup Menu

- Enable Injection No n—Enables or disables the injection point.

  Select one of the following options:

  - Enable
  - Disable*

- Injector No n—Assigns an injector number (n) to an arm number. If you do not wish to assign an additive injector, select NONE. Changing an injector load arm will erase the arm's recipes.

  Constraints: Available only when the injector point is enabled.

  Select one of the following options:

  - NONE to max available arm number (NONE*)

- Edit Additive n—Code Allows entry of a 10-character alphanumeric description for the injection point.

  Constraints: Available only when the injector point is enabled and assigned an arm.

  Select one of the following options:

- 10 Character alphanumeric

- Pacing volume—Sets how often an additive injection will occur. For example, enter “200” to inject additive once for every 200 L of product, at 100 L, 300 L, 500 L and so on.

  Constraints: Available only when the injector point is enabled and assigned an arm.

  Enter a value in the following range:

  - 1 to 9999 (200*)

- Pump Off Delay—Sets a time period in seconds between injections during which the pump may continue to run. This reduces the number of pump starts. This is applicable only during the same batch, that is, for multiple batches. The pump will shut down immediately if the transaction is terminated.

  Enter a value in the following range:

  - 0 to 999 seconds (0*)

8.5.2 Alarm Setup

- Inj n Leaking Solenoid—Enables or disables the Leaking Solenoid alarm for an injection point.

  Constraints: Available only when the injection point is enabled and assigned an arm.

  Select one of the following options:

  - Enable
  - Disable*

- Leaking Solenoid Time Period—Enter the time period in seconds after which the leaking solenoid alarm should be re-ported in the case where the flow exceeds the leaking solenoid volume limit.

  Constraints: Available only when the injection point is enabled and assigned an arm and leaking solenoid alarm is enabled.

Enter a value in following range:

- 0 to 9 (5*)

- Leaking Solenoid Vol Limit—Enter the volume, that when detected within the leaking solenoid time period, will result in an alarm.

- Constraints:

  - Available only when the injection point is enabled and assigned an arm.

  - Leaking solenoid alarm is enabled.

  Enter a value in following range:

  - 0 to 999 (100*)

  > NOTE: The units for leaking solenoid volume limit will be ml in case of Metric units and cc in case of US units.

- Inj n No Flow Alarm—Enables or disables the No Flow Alarm for an injection point. If there is no additive flow detected in the stipulated time after opening the solenoid for the additive injection, the injector will increment the solenoid retry count and wait for flow. If this continues to occur, when the solenoid retry count exceeds the configured no of solenoid retries then no additive flow timeout will be indicated.

  Constraints:

  - Available only when the injection point is enabled and assigned an arm.

  Select one of the following options:

  - Enable

  - Disable*

- No Additive Flow Timeout—Enter the no flow timeout for additive in seconds.

  Constraints:

  - Available only when the injection point is enabled and assigned an arm.

  - No Flow Alarm is enabled.

Enter a value in following range:

- 1 to 9 (2*)

- No Flow Solenoid Retries—Enter the maximum number of retries after which a no flow timeout error is reported.

  Constraints:

  - Available only when the injection point is enabled and assigned an arm.
  - No Flow Alarm is enabled.

  Enter a value in the following range:

  - 0 to 2 (2*)

- Inj n Additive Deviation—Enables or disables the additive deviation alarm for an injection point.

  Constraints:

  - Available only when the injection point is enabled and assigned an arm.

  Select one of the following options:

  - Enable
  - Disable*

- Additive Deviation Basis—Enter the number of cycles over which an average is calculated.

  Constraints:

  - Available only when the injection point is enabled and assigned an arm.
  - Additive Deviation alarm enabled

  Enter a value in following range:

  - 1 to 20 (10*)
  - 1 to 100 (10*)

- Additive Volume deviation—Enter the additive deviation percentage. If the average of the additive amount injected exceeds or is lower than the additive deviation percentage specified for that injection point, additive alarm will be recorded.

  Constraints:

  - Available only when the injection point is enabled and assigned an arm.
  - Additive Deviation alarm enabled

  Enter a value in following range:

8.5.3 K-Factor Menu

- K Factor—Sets the K-Factor for the additive flow meter in pulses/product unit.

  Constraints: Available only when the injection point is enabled and assigned an arm.

  Enter a value in the following range:

  - 0.01 to 99999.99 (2600.0)

8.5.4 Meter Factor Menu

- Meter Factor—Use to manually enter the correction factor to take into account variations in the calibration of the Flow meter.

  The correction factor is applied to the Meter K-FACTOR. The Meter Factor may be calculated automatically by the instrument or entered manually. For more information, see “Automated Proving” in the Operator Manual.

  Constraints: Only available when the injection point is enabled and assigned an arm.

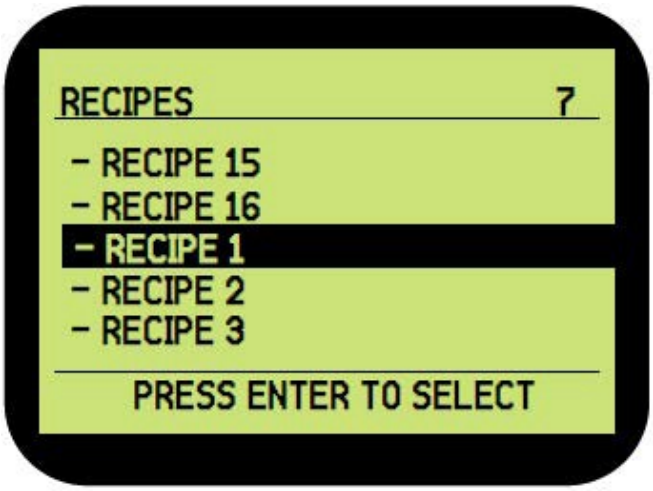
  Enter a value in the following range:

  - 0.5 to 1.5 (1.0*)

9 Recipes (7)

9.1 Description

Use the Additive Recipe sub-menu to set the number, name, and the amount of additive associated with the selected loading arm.



9.2 Configure Recipe (7)

- Select Recipe n—Use to select and edit up to 16 additive recipes.

  Enter a value in the following range:

  - Recipe 1 to Recipe 16

- Edit Recipe Name—Use to enter a 12 digit alphanumeric identifier for each recipe

  - 12 Digit alphanumeric

- Enable Recipe n—Use to enable or disable a recipe.

  Select one of the following options:

- Enable
- Disable*

- Associated Loading Arm—Use to enter the arm number to which particular recipe will be assigned.

  Enter a value in the following range:

  - First arm number to max available arm (First arm number*)

  Use to enter the target blend percentage for the arm.

  > NOTE: The Summary page will display the arm number along with arm type.

- Target Blend Percentage—Use to enter the target blend percentage for the arm.

  Constraints: Not available for straight loading arm.

  Enter a value in the following range:

  - 0.0 to 100.0% (0.0*)

  > NOTE: The Summary page will display percentage of base and blend product.

- Pre-Blend Volume % of preset—Sets the amount of the unblended main product at the start of the batch.

  Constraints: Target Blend % > 0%

  Enter a value in the following range:

  - 0 to 20 % (0*)

- Post-Blend Volume % of preset—Sets the amount of the unblended main product at the end of the batch.

  Constraints: Target Blend % > 0%

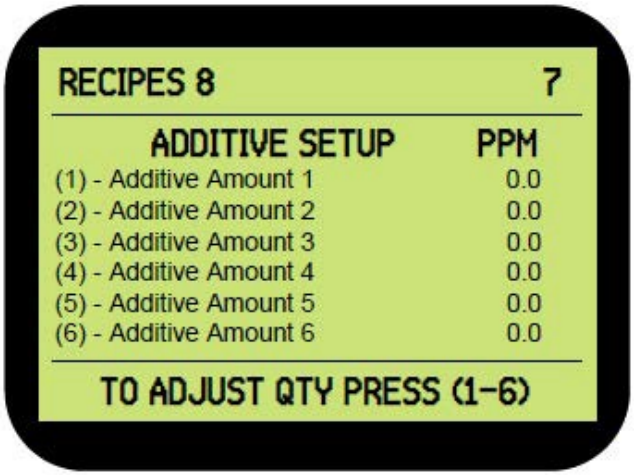
  Enter a value in the following range:

  - 80 to 100 % (100*)

- Adjust Additive Quantity—Use to enter the additive amount to be injected per batch. Pressing the corresponding key to select an injector.

  Enter a value in the following range:

  - 1 to number of assigned injectors (4 max)



- Injector No n Quantity—After pressing the corresponding key in the “Additive Setup” menu, to select an injector, enter the total additive amount to be injected per batch.

  Enter a value in the following range:

  - 0 to 9999 PPM/mls/cc (0*)

- Additive Flush Volume—When using additives, such as dyes, selecting an additive flush volume makes sure that the final volume does not contain any additive. Select 0 to disable flush volume.

  > NOTE: For volumetric presets the unit will be ppm, but in mass loading units will be ml or cc and the amount entered will be the amount per injection.

  Enter a value in the following range:

  - 0 to 999 (0*)

- Summary page—When recipe configuration is finished, the instrument displays the Summary page. The Summary page displays the Slow Flow, High Flow, Low Flow, and error status for both the base and the blend meters along with the

minimum preset and Recipe status.

NO RECIPE REQUIRED RECIPE DISABLED

Constraints: Not available for straight loading ARM.

> NOTE: For a straight arm that has no internal or external additives assigned it, the recipe will be disabled by giving a prompt.

10 Authorisation Entry Mode

10.1 Description

To limit the entry to, or the use of, a loading gantry to authorised personnel and vehicles, the instrument provides the following identification methods:

- Touch keys
- PINs of four to eight digits
- NexWatch cards.

If no restrictions are required, select 'NONE' for the personnel and vehicle authorisations options within the GENERAL SETUP sub-menu of the SYSTEMS menu.

If authorisation is to be used for personnel and/or vehicles, the desired authorisation type must be configured under the GENERAL SETUP sub-menu of the SYSTEMS menu before the PIN or Touch Key numbers can be programmed.

The ID numbers for personnel and vehicle authorisation may be downloaded to the instrument from an external computer, or entered using the instrument keyboard.

Each ID number is associated with an index number, which is used to identify the personnel or vehicle without revealing the PIN.

10.2 Entering Authorisation Entry Mode

1. Do one of the following:
   - Hold the '8' key down for five seconds.

     After using this method, you cannot alter certain parameters for W&M.
   - Use the switch on the instrument.

On the Model 1010 the switch is located on the right hand side of the enclosure. This switch may be fitted with a tamper seal for W&M requirements.

Figure 10-1: Model 1010A instrument switch

If the instrument is not idle (for example, the instrument is in use by an operator, or a vehicle overfill or earth system is connected) it displays the following:

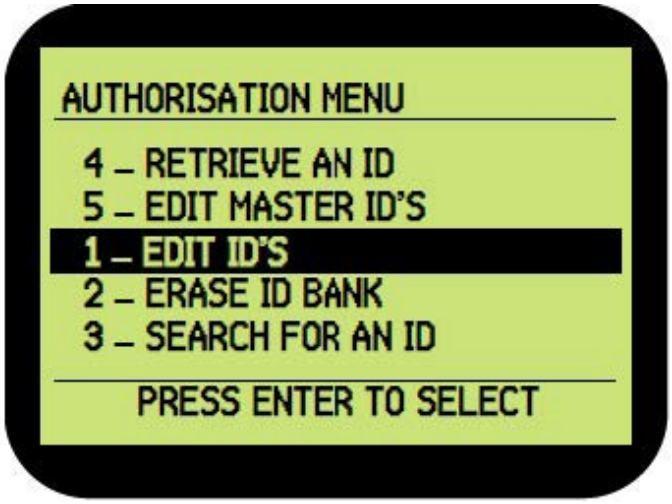
- In this case, either disconnect the permissives to bring the instrument to the idle state, or wait until loading is complete and then enter your password.

  If password mode is available, the instrument displays the following:

Enter a valid setup password.

The factory default for this password is 1234 but it may be changed under the GENERAL SETUP sub-menu of the SYSTEM menu (see Section 4.2: General Setup (21)).

If the password entered matches the setup password programmed in the instrument, the instrument displays the Authorisation menu.



The Authorisation sub-menus found in the instrument are as follows:

1. Edit ID's

   Allows for the entry or editing of personnel and vehicle IDs. For more information, see Section 10.3.1: Edit ID's.

2. Erase ID Bank

   Allows for the bulk erasure of groups (Master, vehicle or personnel) IDs. See Section 10.3.2: Erase ID Bank.

3. Search for an ID

   Allows the operator to search for an ID. For more information, see Section 10.3.3: Search For an ID.

4. Retrieve an ID

   Allows the operator to search against an index number and so retrieve the ID. For more information, see Section 10.3.4: Retrieve an ID.

5. Edit master IDs

Allows for the Entry or Editing of master IDs. For more information, see Section 10.3.5: Edit Master IDs.

10.3 Navigating in Authorisation Entry Mode

- To scroll down the menu, press the Display key. To scroll up the menu, press the Arm key.
- To select the highlighted item, press the Enter key.
- To select a menu item, press the number of that item.
- To return to the previous menu, press the Cancel key. If you are in the Authorisation menu, press Cancel to save the current setup and return the instrument to operating mode.

10.3.1 Edit ID's

Use Edit ID's to enter or edit personnel and vehicle IDs. This involves assigning media (touch key, NexWatch card, proximity card) or PIN numbers to index numbers. The instrument can store 2750 personnel and 2750 vehicle IDs. The index number is the position of the entry in the list of 2750. The following steps apply to both personnel and vehicle IDs. If both personnel and vehicle authorisation is used, enter the Personnel IDs first.

1. From the Authorisation menu, select Edit ID's.

   If both personnel and vehicle authorisation are enabled, the display for personnel index will appear. Otherwise, if personnel authorisation is disabled and vehicle authorisation is only enabled, that display will appear.

   - If an ID has not been entered for the index number displayed, the instrument displays a line on the bottom line of the display.

- If an ID has been entered for the index number displayed, the ID number is displayed on the bottom line.

2. Display the required index number by one of the following methods:
   - Press the Display key to increment the index number by one.
   - Select an index number using the numeric keys and the Enter key.
3. Press Enter to edit the currently displayed index number.

   Use the Cancel key is used to move from Personnel ID entry to Vehicle ID entry (if required) or to exit Edit ID's: if only personnel ID is enabled, pressing Cancel exits the EDIT IDs menu; if both personnel and vehicle iD is enabled, pressing Cancel displays Vehicle ID entry and pressing Cancel again exits the EDIT IDs menu.

   The instrument displays one of the following messages, depending on the type of authorisation media, where 'n' is the index number.

4. Change the current ID number by one of the following methods:
   - Press Cancel or Clear to remove the current ID Number.
   - Touch the ID media onto the ID reader
   - Type in the ID number via the numeric keypad
5. Press the Enter key to save the currently displayed ID number.

   The instrument displays the index number and ID. Return to step 2.

10.3.2 Erase ID Bank

Once selected and the Enter key pressed, the selected ID bank is deleted after the operator responds to a confirmation prompt.

Constraints: Not available for straight loading ARM.

> NOTE: For a straight arm that has no internal or external additives assigned it, the recipe will be disabled by giving a prompt.

1. From the Authorisation menu, select ERASE ID BANK. The instrument displays the SELECT BANK TYPE prompt.
2. Select one of the following options and then press Enter.
   - NONE*
   - Master
   - VEHICLE
   - PERSONNEL
   - ALL

     The instrument displays a message asking for confirmation of the deletion.
3. Select Yes.

   The instrument deletes the selected ID bank and then displays the SELECT BANK TYPE prompt.

10.3.3 Search For an ID

1. From the Authorisation menu, select SEARCH FOR AN ID. The instrument displays the SELECT TYPE prompt.
2. Select an option.

   The instrument displays ENTER ID ^.
3. Enter an ID number.
   - f the instrument finds the ID it displays “ID FOUND AT master INDEX n”, where ‘n’ is the index number.
   - If the instrument cannot locate the ID it displays “ID NOT FOUND”. After a small delay the menu appears.

10.3.4 Retrieve an ID

1. From the Authorisation menu, select SEARCH FOR AN ID. The instrument displays the SELECT TYPE prompt.
2. Select an option.

   The instrument displays ENTER INDEX >
3. Enter an index number.
   - If the instrument cannot find the index number, it displays the following:

     INDEX: n TYPE: NONE

     ID: nnnn
   - If the instrument finds the index number, it displays the number and type of ID matching the index number.

     INDEX: n

     TYPE: aaaaaaaaa ID: nnnn
4. Press the Cancel key to display the main menu.

10.3.5 Edit Master IDs

1. From the Authorisation menu, select EDIT master ID's.
2. If an ID is programmed for the index number currently displayed the ID number is displayed on the bottom line.

3. Display the required index number by one of the following methods:
   - Press Display to increment the index number by one.
   - Select an index number using the numeric keys and the Enter key.

   Press Enter to edit the currently displayed index number.

   One of the following messages is displayed depending on the type of authorisation media, where 'n' is the index number.

Change the current ID number by one of the following methods:

- Press Cancel to remove the current ID Number.
- Touch the ID media onto the ID reader

4. Press the Enter key to save the currently displayed ID number. The instrument displays the index number and ID. Return to step 2.

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