Caution

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

Disclaimer

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

Caution

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this Instruction Manual, may cause interference to radio communications. It has not been tested to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

Warning

These preset devices must be used with fail-safe backup equipment to prevent accidental runaway delivery of product. Failure to provide backup equipment could result in personal injury, property loss and equipment damage.

Warning

On initial power-up of a new unit or after installation of a new computer board, there are several alarms that will be triggered which cannot be cleared until the AccuLoad is programmed.

United States NIST Handbook 44 UR.3.5.1. and UR.3.5.2.

For compliance to United States NIST Handbook 44 UR.3.5.1. and UR.3.5.2., invoices printed using a mechanical numeric-only printer (e.g., Smith Load Printer) must contain in preprinted form, the following information:

a. Volume corrected to 60 degrees F
b. API/C of E _____
c. Temperature _____
d. Gross Volume _____

where the API/C of E, temperature, and gross volume may be hand-written on the ticket. Refer to Handbook 44, UR.3.5.1. and UR.3.5.2. for current requirements.

Table of Contents

This manual is to be used for the installation of the AccuLoad III Upgrade Kit into AccuLoad II housings. The manual will be divided into four sections: Introduction, Installation, Wiring, and Related Publications.

"Installation" describes step by step procedures for removal of the old boards and installation of the new AccuLoad III Kits.

"Wiring" covers the wiring of the kit to match the functions of the AccuLoad II.

"Related Publications" lists the literature that is associated with the AccuLoad III.

Special Note and Consideration

Any upgrade to the AccuLoad III.net capability/functionality (firmware revision II.01 or higher) can contain E proms with different revision levels. The firmware "software" revision (which can be retrieved through the diagnostics section), U5 and U6 display proms, BSE prom, and EAAI prom can all have unique revision levels associated with them. It is very typical to have different revision levels on the proms located in any AccuLoad III with the Ethernet functionality and software revision II.01 or higher.

Receipt of Equipment

When the equipment is received the outside packing case should be checked immediately for any shipping damage. If the packing case has been damaged, the local carrier should be notified at once regarding his liability. Carefully remove the unit from its packing case and inspect for damaged or missing parts.

If damage has occurred during shipment or parts are missing, a written report should be submitted to the Customer Service Department, FMC Technologies Measurement Solutions, Inc., 1602 Wagner Avenue, Erie, Pennsylvania 16510.

Before installation, the unit should be stored in its original packing case and protected from adverse weather conditions and abuse.

AccuLoad II Upgrade Installation

Warning
Do not install this upgrade kit unless the area is known to be non-hazardous. Failure to follow these in-structions may result in a risk of fire or explosion.

Tools Required:
1. 6 mm Allen wrench
2. Medium size screwdriver (from Upgrade Kit #645666403)
3. Split-blade screwdriver (not provided in Upgrade Kit)

1. Disconnect all AC power from the unit.
2. Make sure the area is safe to open the cover of the AccuLoad II.

Removal of the AccuLoad II Boards

3. Remove power from the AccuLoad and then remove the bolts from the cover of the housing. *(**Note:** This AccuLoad shows power applied.)*

4. Open the cover to expose the computer board and the I/O board.
5. Remove the six slotted head screws and the barrier mesh.
6. Disconnect the three ribbon cables by pressing the tabs.
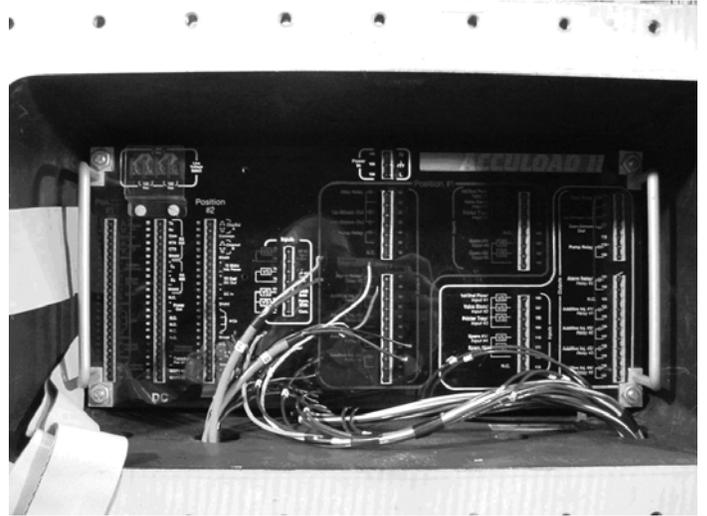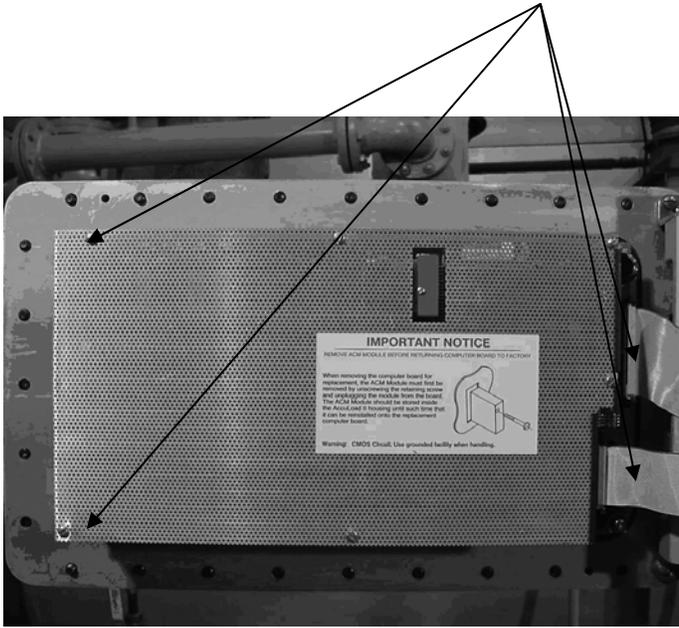
7. Unplug the two ribbon cables and remove the three screws and the computer board.
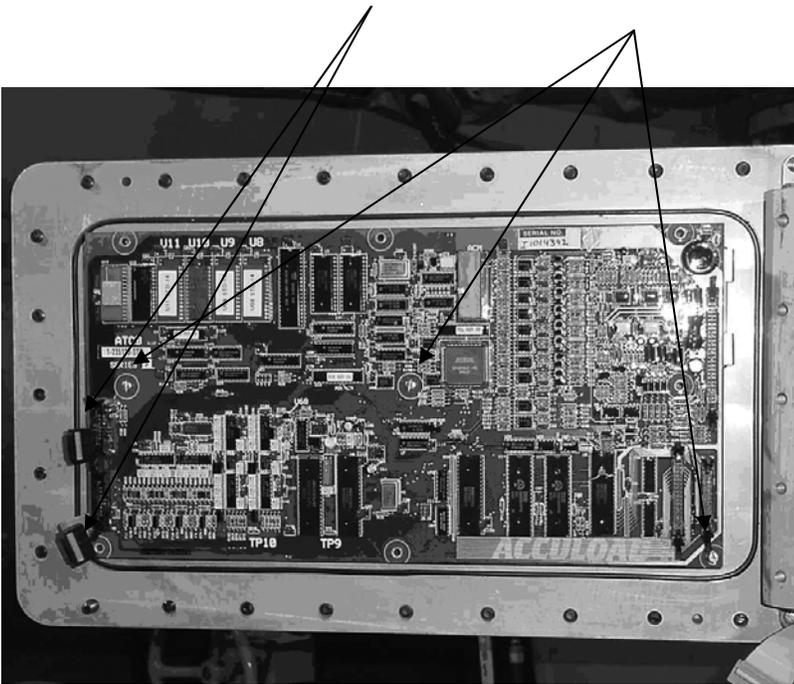
8. Remove the two screws and the display board.
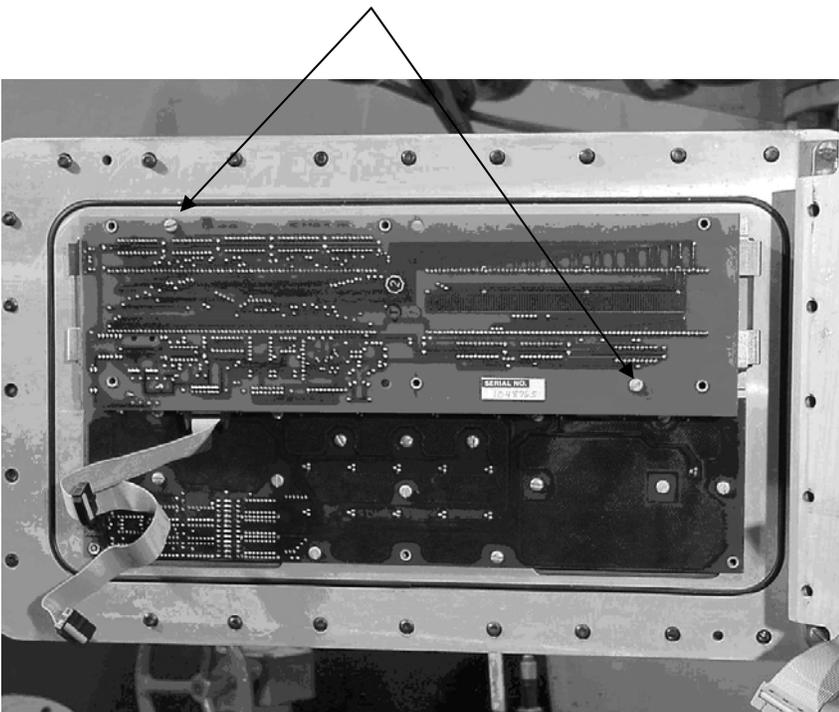
9. Before removing the I/O assembly, be sure all existing wiring connections are identified to make the wiring conversion to the AccuLoad III upgrade installation.
10. Remove the four screws and rotate the I/O board 90 degrees (top of I/O board) to expose the power supply board underneath.
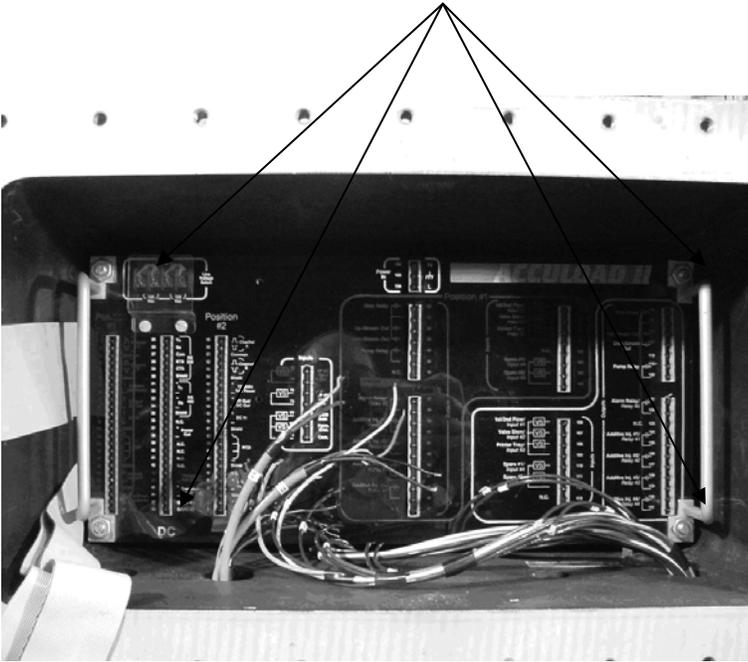
11. Unplug CN4 and the free-hanging AC power wiring assembly from the I/O board and remove the I/O board.
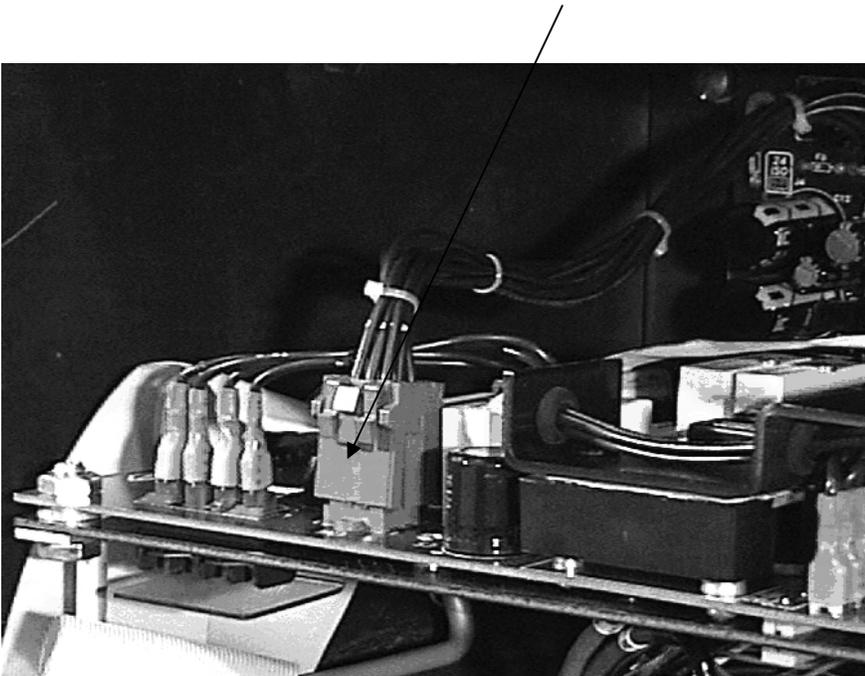
12. Remove the four bolts from the power supply assembly.
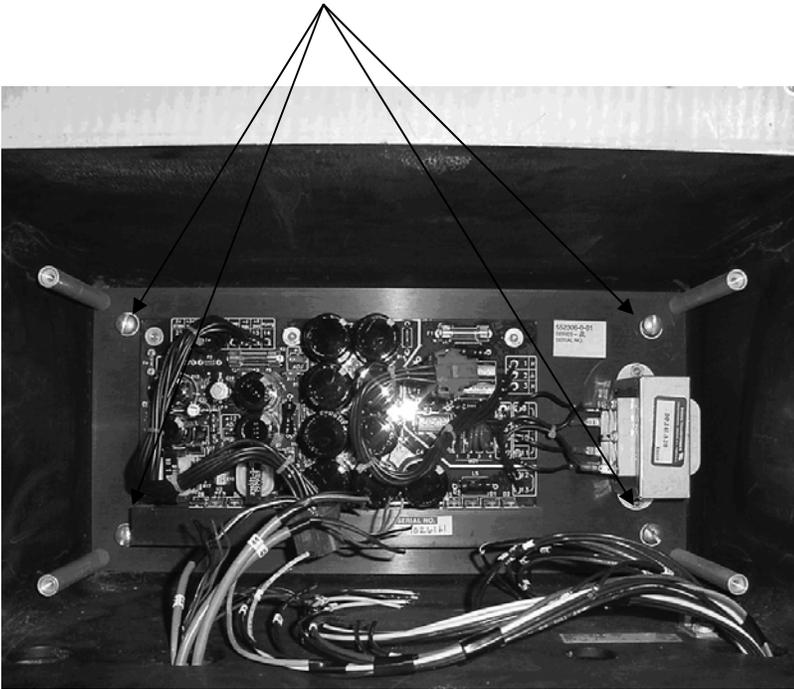
13. Removal of all boards except the keypad board is now complete. The keypad board remains on the door and is used in conjunction with the AccuLoad III boards.

Removing the Display Filters

Caution: This procedure must be performed only by a qualified service person.

Before proceeding, ensure that the surrounding area has been certified to be free from any explosive gasses and vapors. If so, the heat gun may be used on location to remove the AccuLoad II filters. If the surrounding area cannot be certified to be free from any explosive gasses and vapors the AccuLoad II cover assembly must be removed from the housing assembly and taken to a safe area.

Warning: Under NO circumstances should the display glass hold-down bracket screws be loosened or removed. This will void factory safety approvals.

Caution: Do not strike the glass with any object. Observe personal safety. Wear safety glasses and be aware of hot surfaces.

Required Equipment

1.   1500W automotive heat gun
2.   Flat-blade screwdriver from plug kit
3.   X-Acto knife
4.   Glass cleaner
5.   Cleaning wipe/cotton rag

Filter Removal Procedure

Note: The green display filter is secured with glue on the outside glass surface of the cover assembly at each end of the filter and with a bead of RTV around the perimeter of the filter. Heat is applied to the filter to soften the RTV, so the filter will lift from the glass surface more easily.

1.   Use the X-Acto knife to scribe around the perimeter of the filter.

2. Heat the display filter evenly side to side with the heat gun for approximately one minute until the filter starts to discolor or distorts.

3. Use the screwdriver to pry along the ends of the filter. ***Caution:*** *The filter may fracture if not adequately heated.*

4. Pry filter up off the glass with screwdriver.

5. If needed, apply more heat and repeat step 2.

6. Display filter should remove easily.

7. Remove any RTV on glass.

8. Clean both sides of glass with glass cleaner.

Installation of the AccuLoad III Upgrade Parts

Note: This installation manual shows the process of installing the AccuLoad III-S Hardware Upgrade Kit (#554457002). If installing the Accu-Load III-Q Hardware Upgrade Kit, #554457003, note that this upgrade kit is the same as the AccuLoad III-S Hardware Upgrade Kit but also has a complete BSE assembly and associated hardware. If an AccuLoad III-S Hardware Upgrade Kit was purchased and additional I/O is re-quired, a retrofit BSE upgrade option (#554451002) is available. See Optional BSE Board Installation on page 18.

1. The first step in the installation of the upgrade parts is to install the three short standoffs (#644732406) and the three long standoffs (#644732497). The three long standoffs are installed across the top of the cover and the three short standoffs are installed across the bottom on the keypad board.
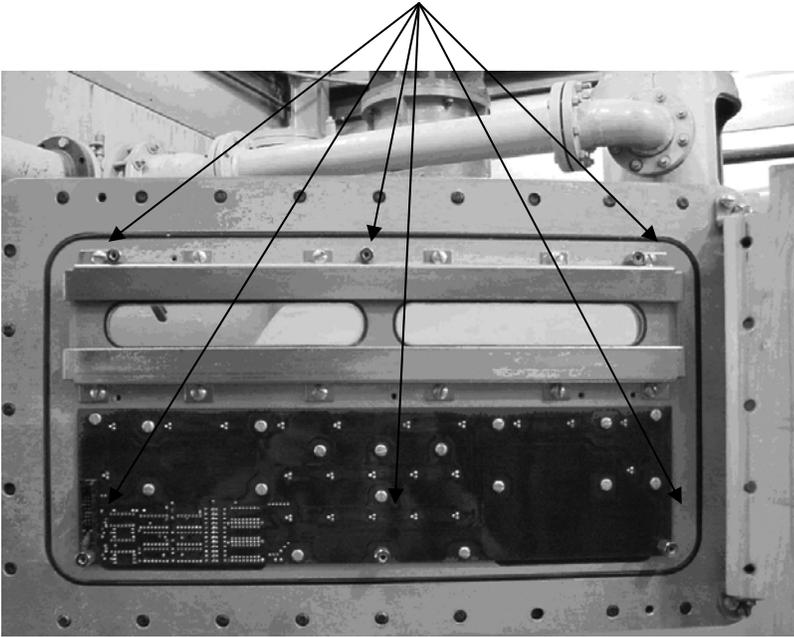
2. Take the cover conversion assembly (#554452002, which includes two LCD displays, a KDC board, and a conversion plate) and install it on the cover using the six screws (#645578445) from the installation kit.
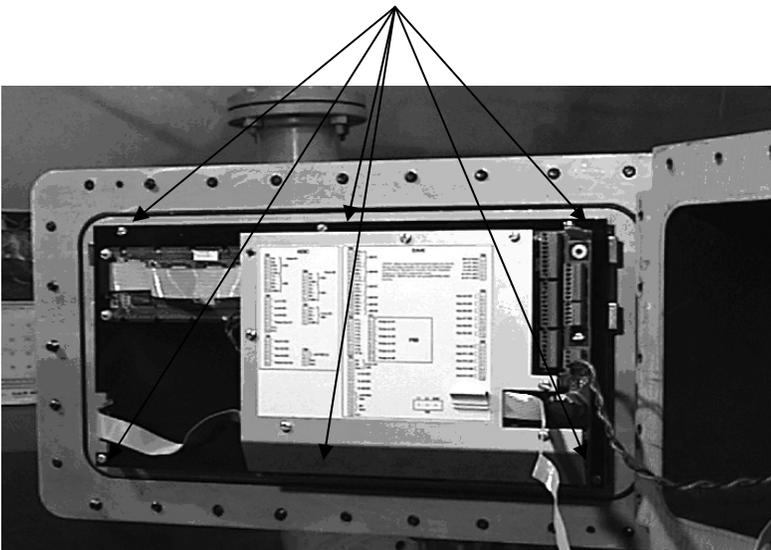
3. Remove the six screws from the KDC shield, which will be reinstalled in Step 7.
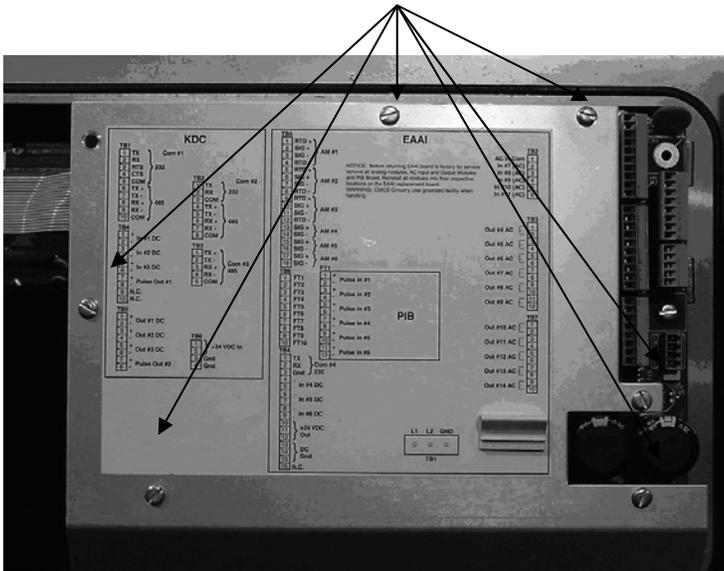
4. Remove the four 8-32 screws holding the EAAI on the conversion plate. Install the conversion plate and the four screws provided (#065159002) in the upgrade kit. Use a split blade holding screwdriver to install the four screws. *Note: For AccuLoad III-Q hardware, remove the four 8-32 screws holding the BSE on the conversion plate.*
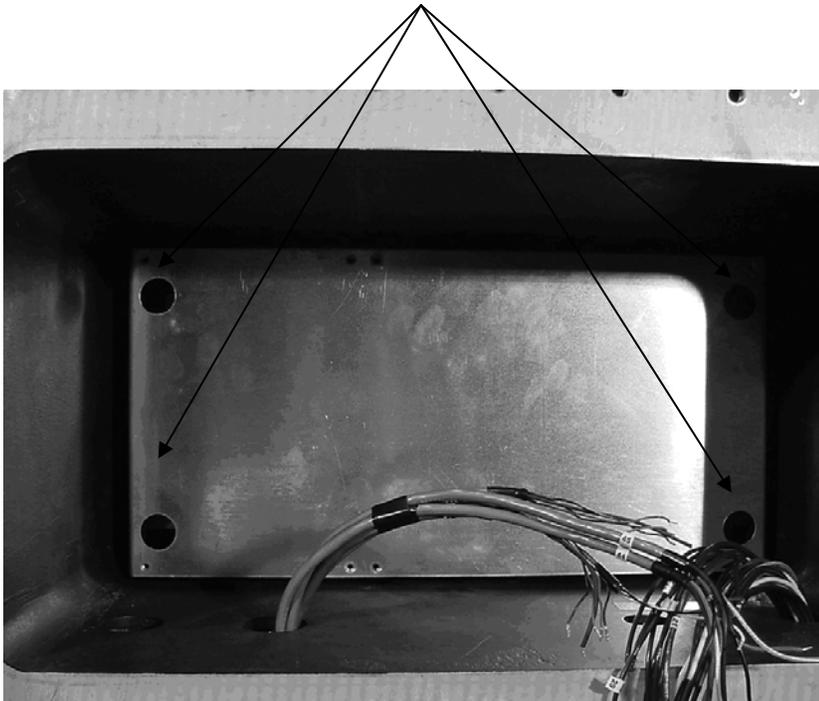
5. Install the EAAI board back onto the conversion plate using the four 8-32 screws. If using the optional AICB board, go to Step 1 on page 16 prior to installing the EAAI board. Loosen the left ground lug and rotate 180°, then re-tighten the screw. Cut the green protective earth ground wire approximately five inches long and terminate in EAAI TB1-3 EGND. *Note: For AccuLoad III-Q hardware, also install the BSE board back onto the conversion plate. See Optional BSE Installation on page 18.*

6. Install the twisted pair, 24 Vdc plug from the EAAI board, into KDC TB-6 and the ribbon cable from the EAAI board into KDC CN13. Use the keypad ribbon cable provided in the kit or re-use the existing ribbon cable. Install the cable from the ATKB into the KDC CN8 connector. *Note: For AccuLoad III-Q hardware, plug the BSE ribbon cable into KDC CN14.*

CN8   CN13   24 Vdc Plug
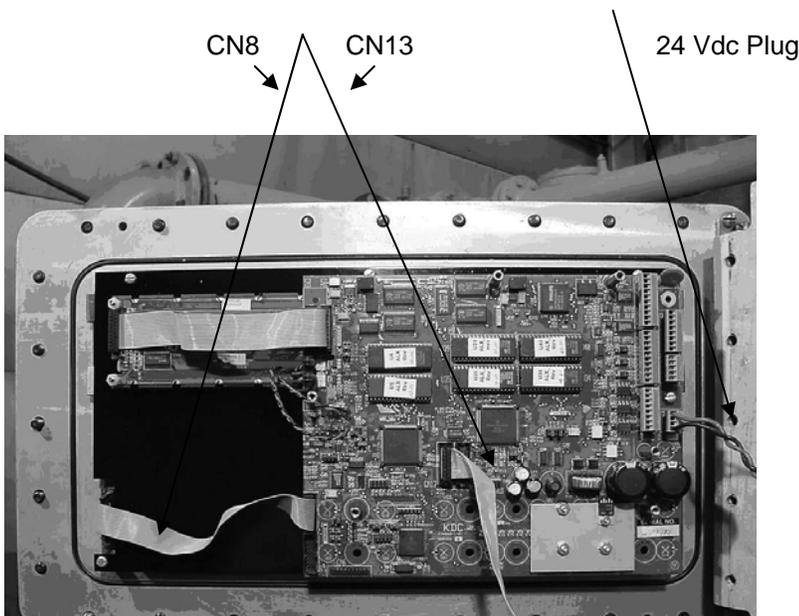
7. Install the shield using the six screws that were previously removed and set aside. To ensure that the ribbon cable between the cover and housing does not get crimped in between the housing and cover when it is closed, attach the cable to the cable clip on the back of the metal shield on the cover. When doing this, make sure the cover is fully open to ensure the correct length of ribbon cable is free between the housing and the cover.
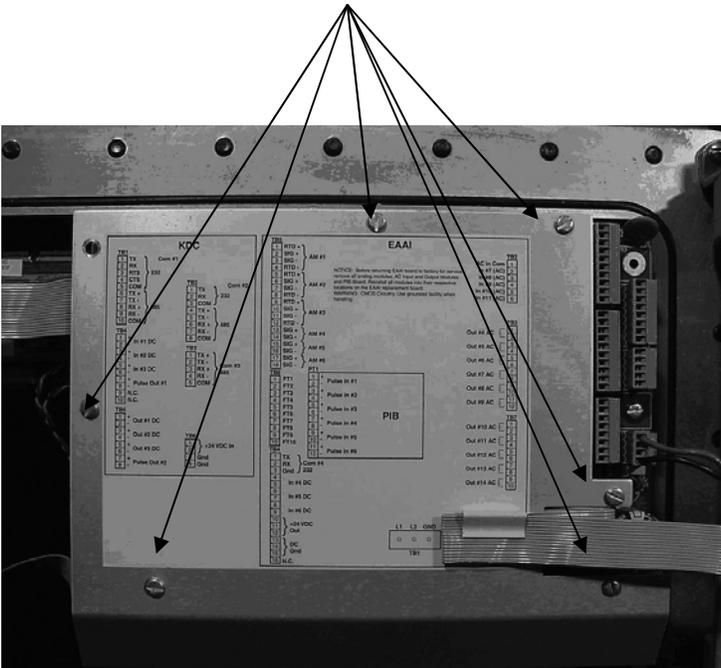
8. The installation of the new AccuLoad III upgrade kit is complete. Proceed to wiring the unit. (See Section III.) For AccuLoad III-Q hardware, a BSE board wiring diagram label (#236064103) is provided. Place the label on the left side inside housing. *Note: Inspect the joint surfaces and gaskets for damage. Damaged joints may result in a risk of fire or explosion.*
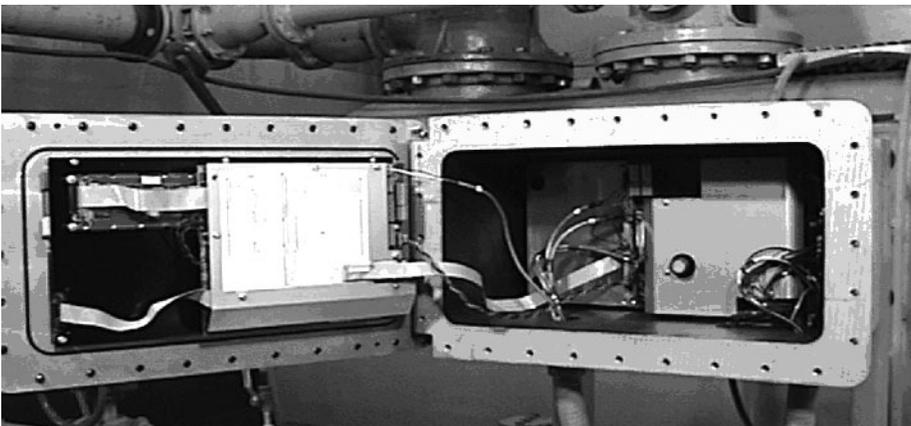
9. When the installation and wiring have been completed, the unit must be initialized. Follow the initialization procedure from the AccuLoad III manuals. In order to set up the relays to the optional default settings for the AccuLoad II installation, go to the Diagnostics Menu and locate the menu item for the default settings and press ENTER. The digital AC relays and analog I/O will be set up for AccuLoad II defaults as shown in Figure 2 in the wiring section.

P2412 Converter Installation

The P2412 Converter is supplied with the wires stripped on both ends. Butt-splices are also supplied for those customers who prefer this method of installation. Two methods of installation are shown in the diagrams. Photograph A shows direct wiring to the EAAI board. Photograph B shows the red and black wires connected to the EAAI board and the blue and black wires with butt-splices crimped on.

Note: The AccuLoad II-RBM Upgrade requires two P2412 converters; these are supplied in the kit.

Direct Installation

1. Remove the cover from the sticky back tape and locate the converter as shown on the mounting plate. The red and black twisted pair of wires is pointed toward the bottom of the housing.
2. Connect the red wire to terminal 11 (+24 Vdc) EAAI TB 4.
3. Connect the black wire to terminal 14 (DC GND) EAAI TB 4.
4. Connect the blue wire to terminal 16 (labeled N.C.) EAAI TB 4.
5. Connect the black wire to terminal 15 (DC GND) EAAI TB 4.
6. When wiring the +12 Vdc to the transmitter, insert the +Vdc wire into Terminal 16 and the –Vdc wire into Terminal 15.
7. Installation of the power converter and power to the transmitter is complete.
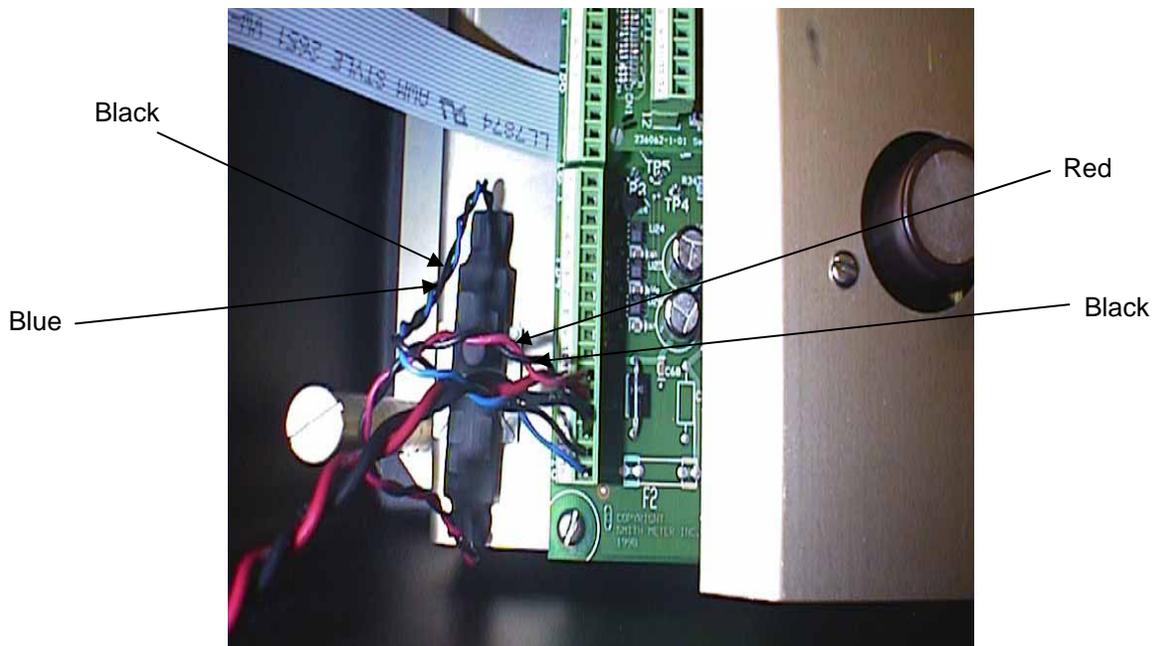
Photograph A

Butt-Splice Installation

1. Remove the cover from the sticky back tape and locate the converter as shown on the mounting plate. The red and black twisted pair of wires is pointed toward the bottom of the housing.
2. Connect the red wire to terminal 11 (+24 Vdc) EAAI TB 4.
3. Connect the black wire to terminal 14 (DC GND) EAAI TB 4.
4. Locate the butt-splice connectors from the kit.
5. Crimp the butt-splice connector to the blue wire.
6. Crimp the butt-splice connector to the black wire.
7. Connection the +12 Vdc transmitter wire to the blue wire connector, then connect the ground from the transmitter to the black wire connector.
8. Installation of the power converter and power to the transmitter is complete.
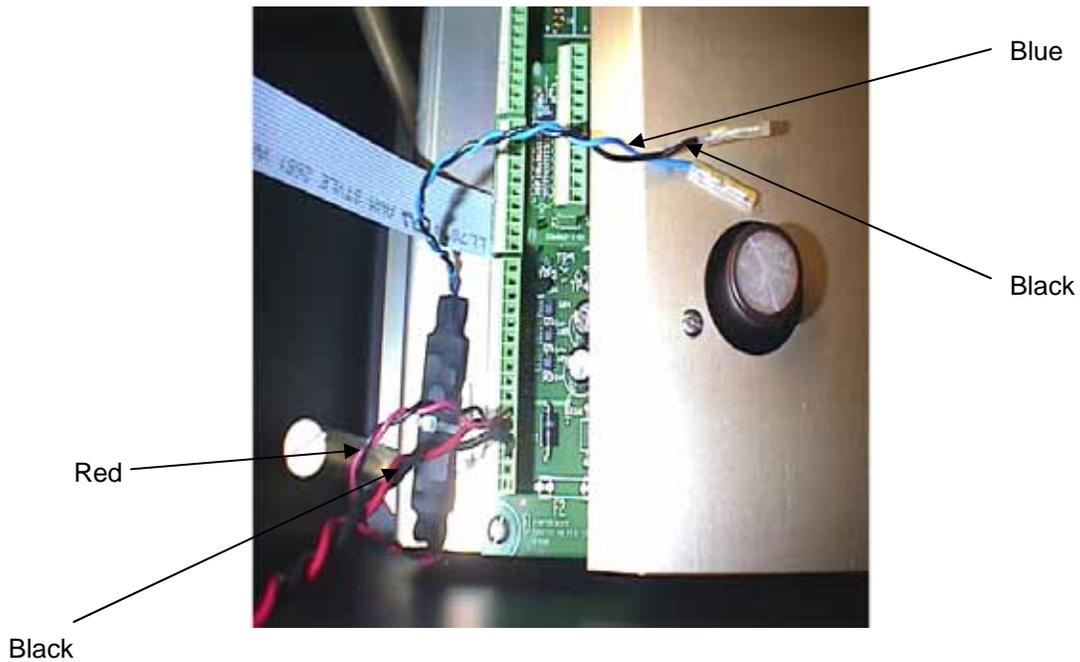
Photograph B

Optional Additive Board (AICB)

Installation of the Optional Additive Board (AICB) Kit

1. Locate the shield on the EAAI board. If the EAAI board is installed, remove all plugs and the four screws holding the EAAI on the conversion plate. Remove the EAAI board.
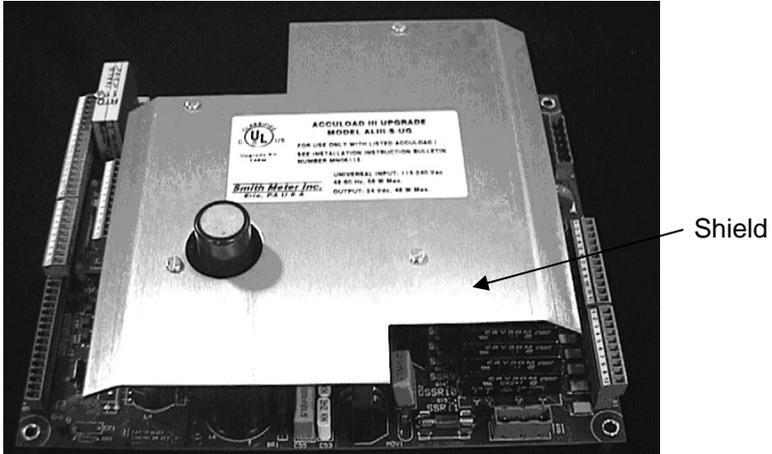
Shield

2. From the back side of the EAAI board, remove the four screws holding the shield and standoffs.
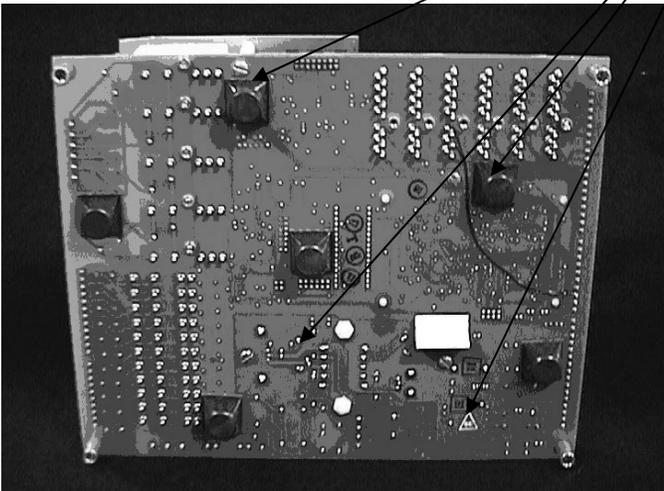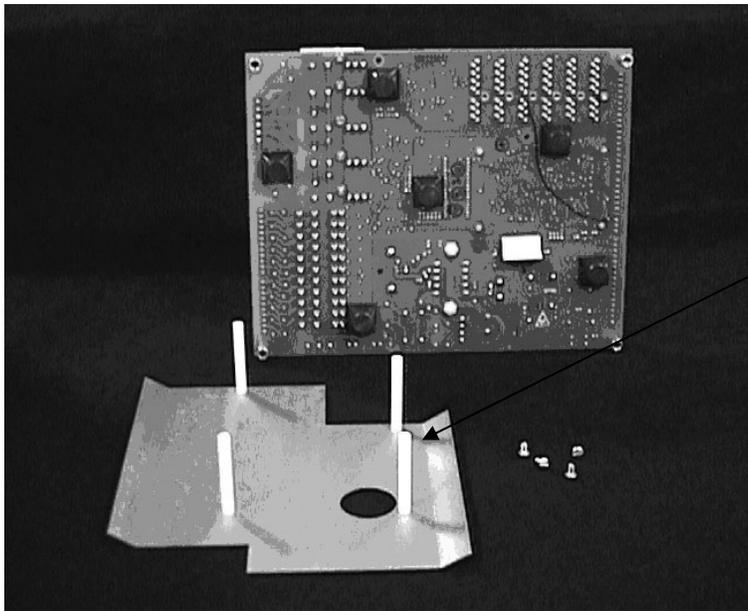
Shield and screws removed

3. Locate the AICB board and shield.
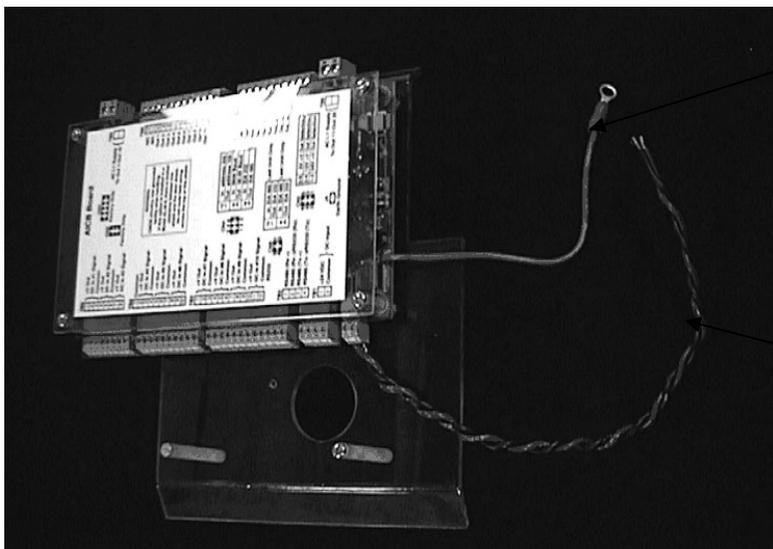
Ground Wire

DC Power Connection

4. From the back of the EAAI board, attach the AICB assembly and standoffs.
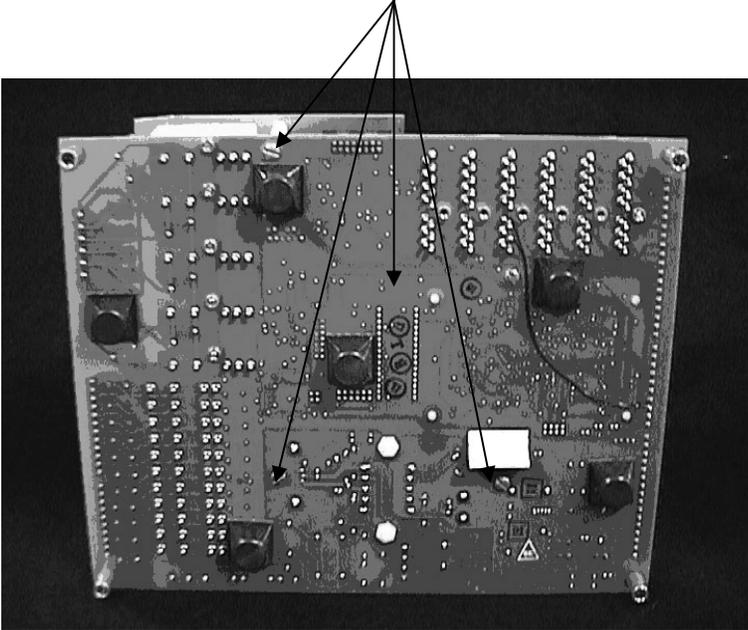
5. Place the EAAI/AICB assembly on the conversion plate and secure using the 8-32 screws except the lower right screw on the EAAI board.
6. Place the mounting screw through the ground-wire ring terminal from the AICB board and re-attach the screw to the EAAI board.
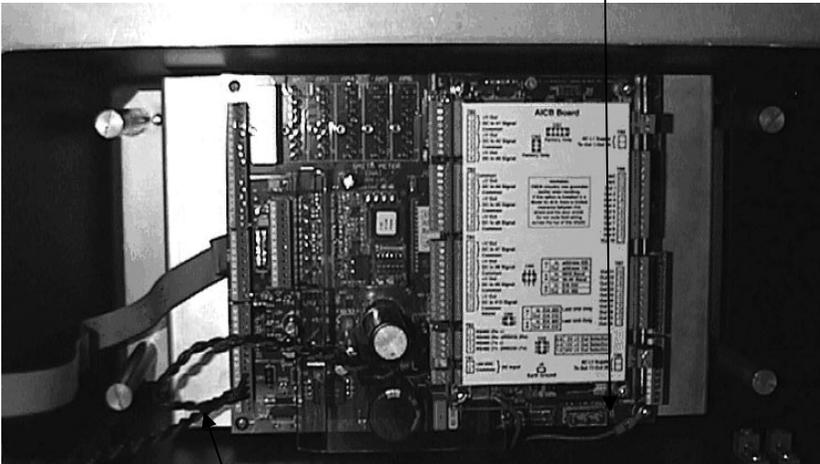
7. Connect the red and black wire from the AICB board to Terminal Block TB4 on the EAAI board. The red wire goes to TB4-11 and the black wire goes to TB4-14. For connecting communication wiring, connect wire assembly #236069106 as follows: (a) White wire from EAAI TB4-1 to AICB TB2-2; (b) Green wire from EAAI TB4-2 to AICB TB2-4; (c) Black wire from EAAI TB4-3 to AICB TB3-12. This completes the AICB installation.
8. For wiring connections, see Section III.

Optional BSE Board

Installation of the Optional BSE Kit

To install the optional BSE Kit (#554451002), do the following. *Note: This kit consists of a BSE board, AC input modules, AC output relays, PIB board, BIOB board, ribbon cable, plug kit, mounting hardware, and necessary DC wiring.*

1. Route the BSE ribbon cable under the BSE board and set the BSE board (#236077101) in place. Tighten the screw (#645578449) in each of the four corners of the board.
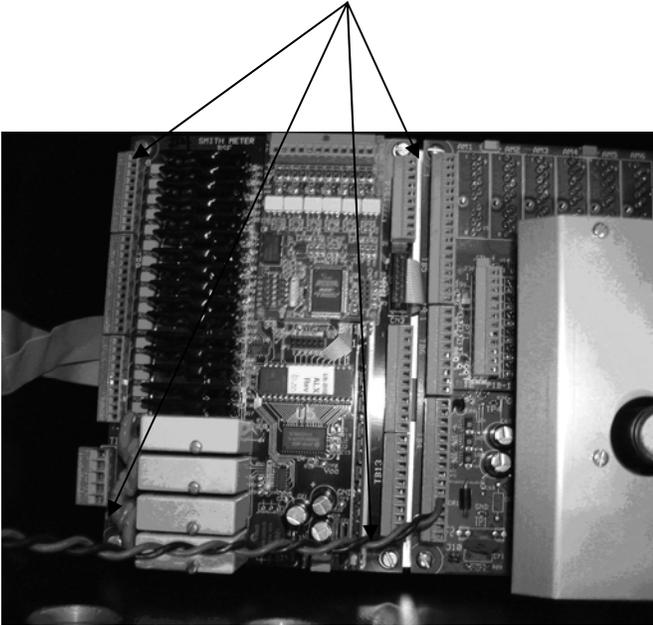
2. Plug the ribbon cable into the CN14 connector on the KDC board as shown in the figure below. The KDC board is located on the door.

The AccuLoad II to III upgrade kit has an initialization parameter that will set up the digital AC relays and analog I/O in the AccuLoad III to the same values that were set up in the AccuLoad II with STD firmware. Please note that this setup assumes there is a BSE board in the hardware. If using the limited hardware that does not include the BSE board, these relays can be set up with the aid of the AccuMate program.

Terminal Description AccuLoad II-STD		AccuLoad II Terminal Connection	AccuLoad III Terminal Connection	Terminal Description AccuLoad III
Program Switch	L1	78	EAAI TB2-2	AC Digital Input #7
Program Switch	Common	79	EAAI TB2-1	
Weights and Measures	L1	77	EAAI TB2-3	AC Digital Input #8
Weights and Measures	Common	79	EAAI TB2-1	
First/Second High Flow Arm 1	L1	98	EAAI TB2-4	AC Digital Input #9
Arm 1	Common	101	EAAI TB2-1	
First/Second High Flow Arm 2	L1	106	EAAI TB2-6	AC Digital Input #11
Arm 2	Common	109	EAAI TB2-1	
Additive Injector Pulser #1	Hot	89	EAAI TB3-1	AC Digital Output #4
Additive Injector Pulser #1	Switched	90	EAAI TD3-2	
Additive Injector Pulser #2	Hot	91	EAAI TB3-3	AC Digital Output #5
Additive Injector Pulser #2	Switched	92	EAAI TB3-4	
Upstream Solenoid Arm 1	Hot	80	EAAI TB3-5	AC Digital Output #6
Arm 1	Switched	82	EAAI TB3-6	
Downstream Solenoid Arm 1	Hot	80	EAAI TB3-7	AC Digital Output #7
Arm 1	Switched	83	EAAI TB3-8	
Alarm Relay 1	Hot	87	EAAI TB3-9	AC Digital Output #8
Alarm Relay 1	Switched	88	EAAI TB3-10	
Pump Arm 1	Hot	84	EAAI TB3-11	AC Digital Output #9
Arm 1	Switched	85	EAAI TB3-12	
Additive Injector Pulser #3	Hot	93	EAAI TB7-1	AC Digital Output #10
Additive Injector Pulser #3	Switched	94	EAAI TB7-2	
Additive Injector Pulser #4	Hot	95	EAAI TB7-3	AC Digital Output #11
Additive Injector Pulser #4	Switched	96	EAAI TB7-4	
Additive Injector Pulser #5	Hot	124	EAAI TB7-5	AC Digital Output #12
Additive Injector Pulser #5	Switched	125	EAAI TB7-6	
Additive Injector Pulser #6	Hot	126	EAAI TB7-7	AC Digital Output #13
Additive Injector Pulser #6	Switched	127	EAAI TB7-8	
Upstream Solenoid Arm 2	Hot	114	EAAI TB7-9	AC Digital Output #14
Arm 2	Switched	116	EAAI TB7-10	
Downstream Solenoid Arm 2	Hot	114	BSE TB10-1	AC Digital Output #15
Arm 2	Switched	117	BSE TB10-2	
Pump Arm 2	Hot	119	BSE TB10-3	AC Digital Output #16
Arm 2	Switched	120	BSE TB10-4	

Terminal Description AccuLoad II-STD	AccuLoad II Terminal Connection	AccuLoad III Terminal Connection	Terminal Description AccuLoad III
Additive Injector Pulser #7 Hot Additive Injector Pulser #7 Switched	128 129	BSE TB10-5 BS3 TB10-6	AC Digital Output #17
Additive Injector Pulser #8 Hot Additive Injector Pulser #8 Switched	130 131	BSE TB10-7 BS3 TB10-8	AC Digital Output #18
Analog I/O #1 Function Analog I/O #1 Arm Analog I/O #1 Type Temperature Probe Wire #1 Temperature Probe Wire #2 Temperature Probe Wire #3 Temperature Probe Wire #4	 14 15 16 17	 EAAI TB5-1 EAAI TB5-2 EAAI TB5-3 EAAI TB5-4	Temperature Arm 1 RTD RTD + (Arm #1) SIG + (Arm #1) SIG – (Arm #1) RTD – (Arm #1)
Analog I/O #2 Function Analog I/O #2 Arm Analog I/O #2 Type Temperature Probe Wire #1 Temperature Probe Wire #2 Temperature Probe Wire #3 Temperature Probe Wire #4	 62 63 64 65	 EAAI TB5-5 EAAI TB5-6 EAAI TB5-7 EAAI TB5-8	Temperature Arm 2 RTD RTD + (Arm #2) SIG + (Arm #2) SIG – (Arm #2) RTD – (Arm #2)

Additional Wiring Information			
Terminal Description AccuLoad II-STD	AccuLoad II Terminal Connection	AccuLoad III Terminal Connection	Terminal Description AccuLoad III
Instrument Power L1 Instrument Power Neutral Earth (Chassis) Ground	134 132 133	EAAI TB1-1 EAAI TB1-2 EAAI TB1-3	L1 L2 GND

EIA 232 Communication
  Transmit (Tx)
  Signal Ground
  Receive (Rx)
	
	25
	27
	26
		
		KDC TB1-1
		KDC TB1-5
		KDC TB1-2
			
			TX
			COM
			RX

EIA 485 Communication
  Transmit (+) Tx +
  Transmit (-) Tx –
  Receive (+) Rx +
  Receive (-) Rx –
	
	31
	32
	33
	34
		
		KDC TB2-4
		KDC TB2-5
		KDC TB2-6
		KDC TB2-7
			
			TX +
			TX –
			RX +
			RX –

Ticket Printer Arm 1 Output + Output –	 9 10	 KDC TB4-7 KDC TB4-8	 + –

Terminal Description AccuLoad II-STD		AccuLoad II Terminal Connection	AccuLoad III Terminal Connection	Terminal Description AccuLoad III
Ticket Printer Arm 2	Output+	57	KDC TB5-7	+
	Output –	58	KDC TB5-8	–
	12 V +	7	EAAI TB4-10, 11, 12	24 Vdc OUT
	12 V Ground	8	EAAI TB4-13, 14, 15	DC GND
Arm 1 (See Note 1)				
	12 V +	55	EAAI TB4-10, 11, 12	24 Vdc OUT
	12 V Ground	56	EAAI TB4-13, 14, 15	DC GND
Arm 2 (See Note 1)				

The typical wiring of the default AccuLoad II initialization listed above is shown in Figure 2 below. Figure 1 shows the connection between the EAAI board, the KDC board, and the BSE board. Note that the BSE board is not supplied in the limited I/O kit. Figure 3 shows additional wiring that can be connected to the KDC board if additional wires are pulled or if spare wires are available. The installation kit supplies splices that may be used to connect to the EAAI board if the wire sizes used to install the AccuLoad II were greater than 14 gauge.

Note that if the initialization process is not used to set up the AccuLoad II to III upgrade kit, care must be taken to ensure that the input and output assignments as programmed match the input and output wiring.

Note 1: *If the existing transmitters are 12 Vdc power only, a DC step-down converter, P2412, must be installed.*
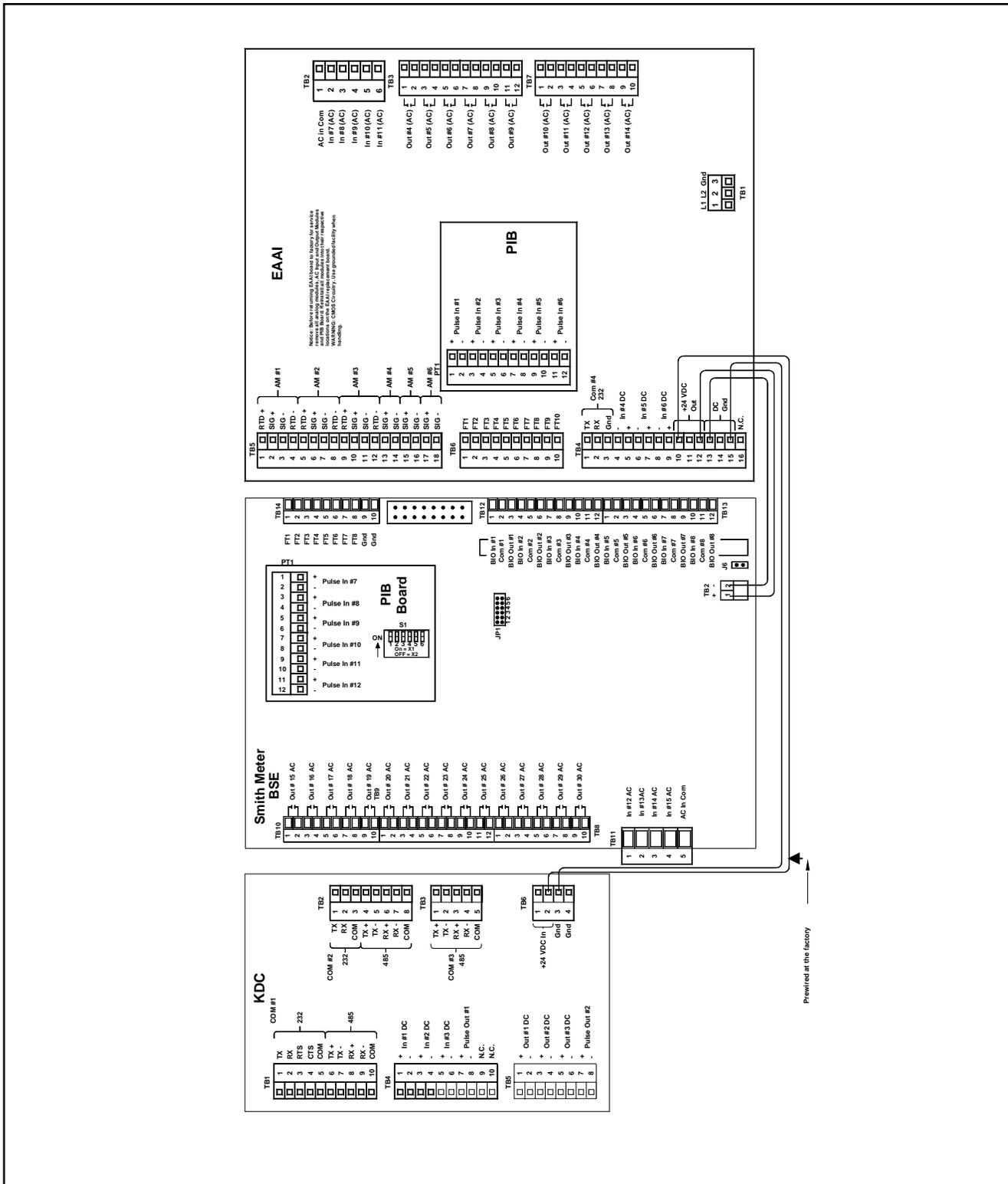
Figure 1. EAAI, BSE and KDC Boards

Note: For pulse doubling, see the AccuLoad III installation manual.
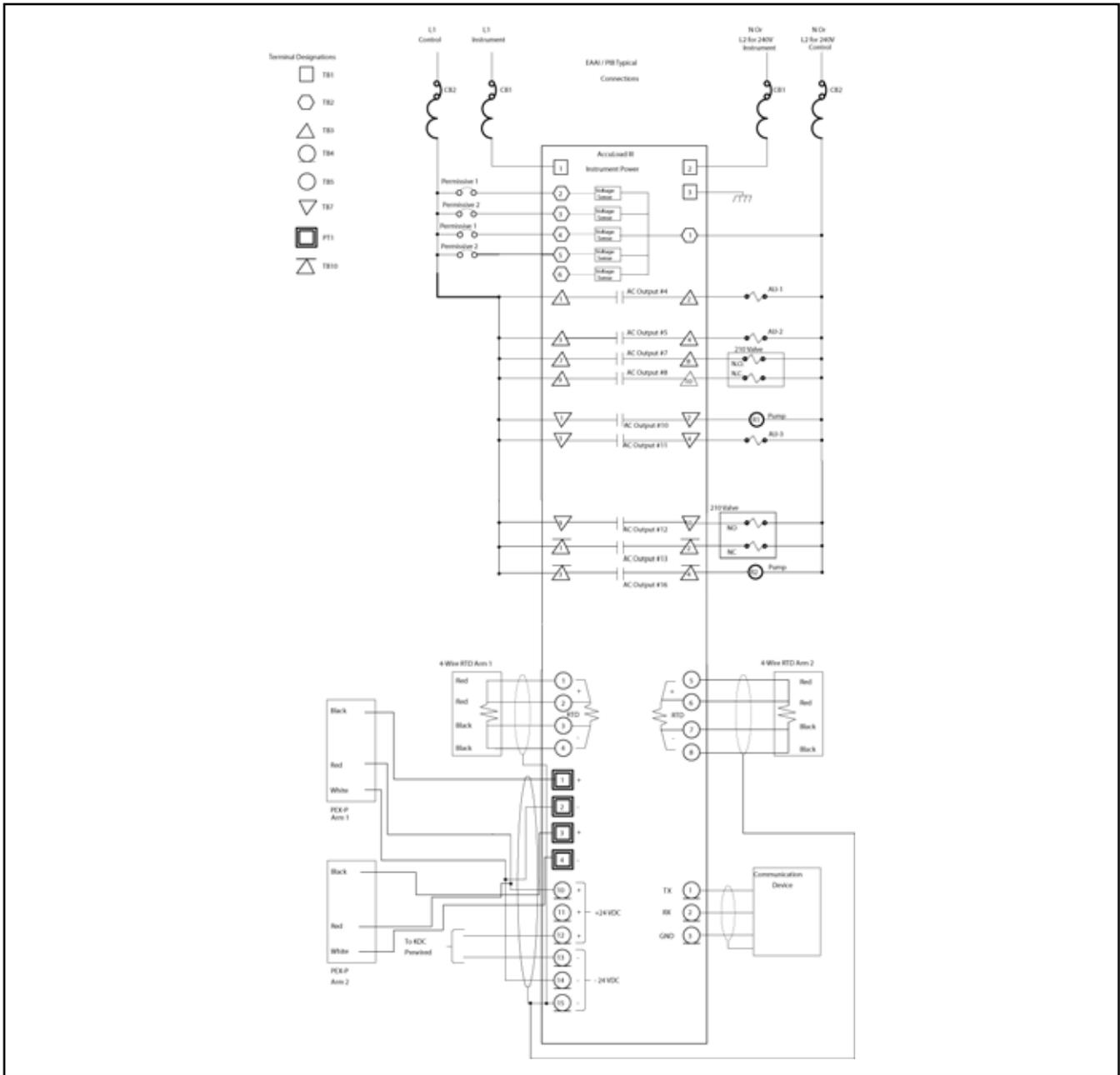
Figure 2. Wired to Match Default Programming
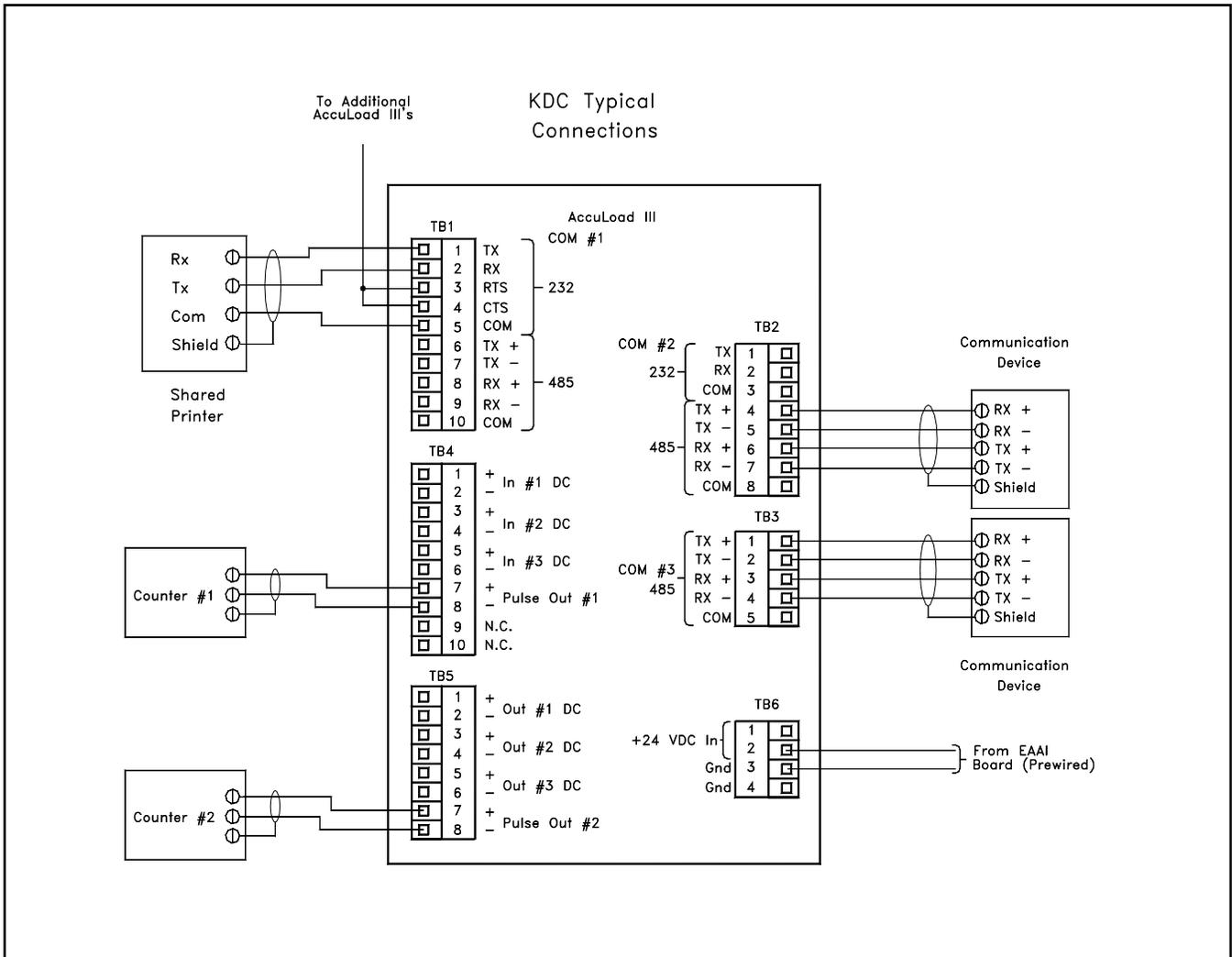
Figure 3. Optional Wiring

Optional AICB Board

Terminal connections for the optional AICB board are shown in Figure 4. Metered Additive Pulses 1, 2, 3 and 4 are wired into the PIB board on the EAAI/BS2 board as shown in the Installation Manual, MN06135. Metered Additives 5 through 14 are wired to the AICB board. Connections are shown in the table below.

Meter Pulses				
Injector #	**Terminal Block**	**+ Voltage**	**Signal**	**Common**
5	TB5	1	2	3
6	TB5	4	5	6
7	TB5, TB4	7 (TB5)	8 (TB5)	1 (TB4)
8	TB4	2	3	4
9	TB4	5	6	7
10	TB4	8	9	10
11	TB3	1	2	3
12	TB3	4	5	6
13	TB3	7	8	9
14	TB3	10	11	12

Additive Pumps 1, 2, 3 and 4 are wired to the programmed terminals on the EAAI board. Additive Pumps 5 through 14 are wired per the following table.

Additive Pumps		
Additive Pump #	**Signal Out**	**Terminal Block**
5	10	TB8
6	8	TB8
7	6	TB8
8	4	TB8
9	2	TB8
10	10	TB7
11	8	TB7
12	6	TB7
13	4	TB7
14	2	TB7

See Figure 7 for Wiring Diagram.

Additive Solenoids		
Additive Solenoid #	**Signal Out**	**Terminal Block**
5	9	TB8
6	7	TB8
7	5	TB8
8	3	TB8
9	1	TB8
10	9	TB7
11	7	TB7
12	5	TB7
13	3	TB7
14	1	TB7

(See Figure 7 for Wiring Diagram)

Communications

Communications				
Type	**Function**	**Terminal**	**Jumpers**	
			CN4	**CN5**
EIA - 232	TX	TB2 (4)	1-2 Out	1-2 Out
EIA – 232	RX	TB2 (2)	3-4 Out	3-4 Out
EIA – 232	Com	TB1 (2)	5-6 In	
EIA - 485	RX+	TB2 (1)	1-2 Out	1-2 In
EIA - 485	RX-	TB2 (2)	3-4 Out	3-4 In
EIA - 485	TX+	TB2 (3)	5-6 Out	
EIA - 485	TX-	TB2 (4)		

(See Figure 6 for typical EIA-232 Wiring)

Jumper Locations (see Figure 5)

Transmitter Power		
Designation	**Jumpers**	**Description**
CN2	1 – 2	24V – +V Out
CN2	3 – 4	12V – +V Out
CN2	5 – 6	5V – +V Out
Communications		
Address	**Baud Rate**	**Communications**
CN4	1 – 2	In Address 200, Out Address 100
CN4	3 – 4	In 9600 Baud, Out 38.4K Baud
CN4	5 – 6	In 232 Communications, Out 485 Communications
Last Unit Only (Termination of Communications with AccuLoad)		
Address	**Baud Rate**	**Communications**
CN5	1 – 2	In EIA 485, Out EIA 232
CN5	3 – 4	In EIA 485, Out EIA 232

Note: *Jumpers CN1 and CN3 for factory use only.*

AICB Board

TB5		
	1	+ V Out
	2	DC IN #1 Signal
	3	Common
	4	+ V Out
	5	DC IN #2 Signal
	6	Common
	7	+ V Out
	8	DC IN #3 Signal

TB4		
	1	Common
	2	+ V Out
	3	DC IN #4 Signal
	4	Common
	5	+ V Out
	6	DC IN #5 Signal
	7	Common
	8	+ V Out
	9	DC IN #6 Signal
	10	Common

TB3		
	1	+ V Out
	2	DC IN #7 Signal
	3	Common
	4	+ V Out
	5	DC IN #8 Signal
	6	Common
	7	+ V Out
	8	DC IN #9 Signal
	9	Common
	10	+ V Out
	11	DC IN #10 Signal
	12	Common

TB2		
	1	RS485 (Rx +)
	2	RS-485 (RX -)/RS232 (Rx)
	3	RS-485 (Tx +)
	4	RS-485 (Tx -)/RS232 (Tx)

TB1		
	1	+24 VDC
	2	Common

	TB9	
AC L1 Input	2	
To Out 1 - Out 10	1	

	TB8	
N/C	12	
N/C	11	
Out 1	10	
Out 2	9	
Out 3	8	
Out 4	7	
Out 5	6	
Out 6	5	
Out 7	4	
Out 8	3	
Out 9	2	
Out 10	1	

	TB7	
Out 11	10	
Out 12	9	
Out 13	8	
Out 14	7	
Out 15	6	
Out 16	5	
Out 17	4	
Out 18	3	
Out 19	2	
Out 20	1	

	TB6	
AC L1 Input	2	
To Out 11-Out 20	1	

Figure 4. Optional AICB Board
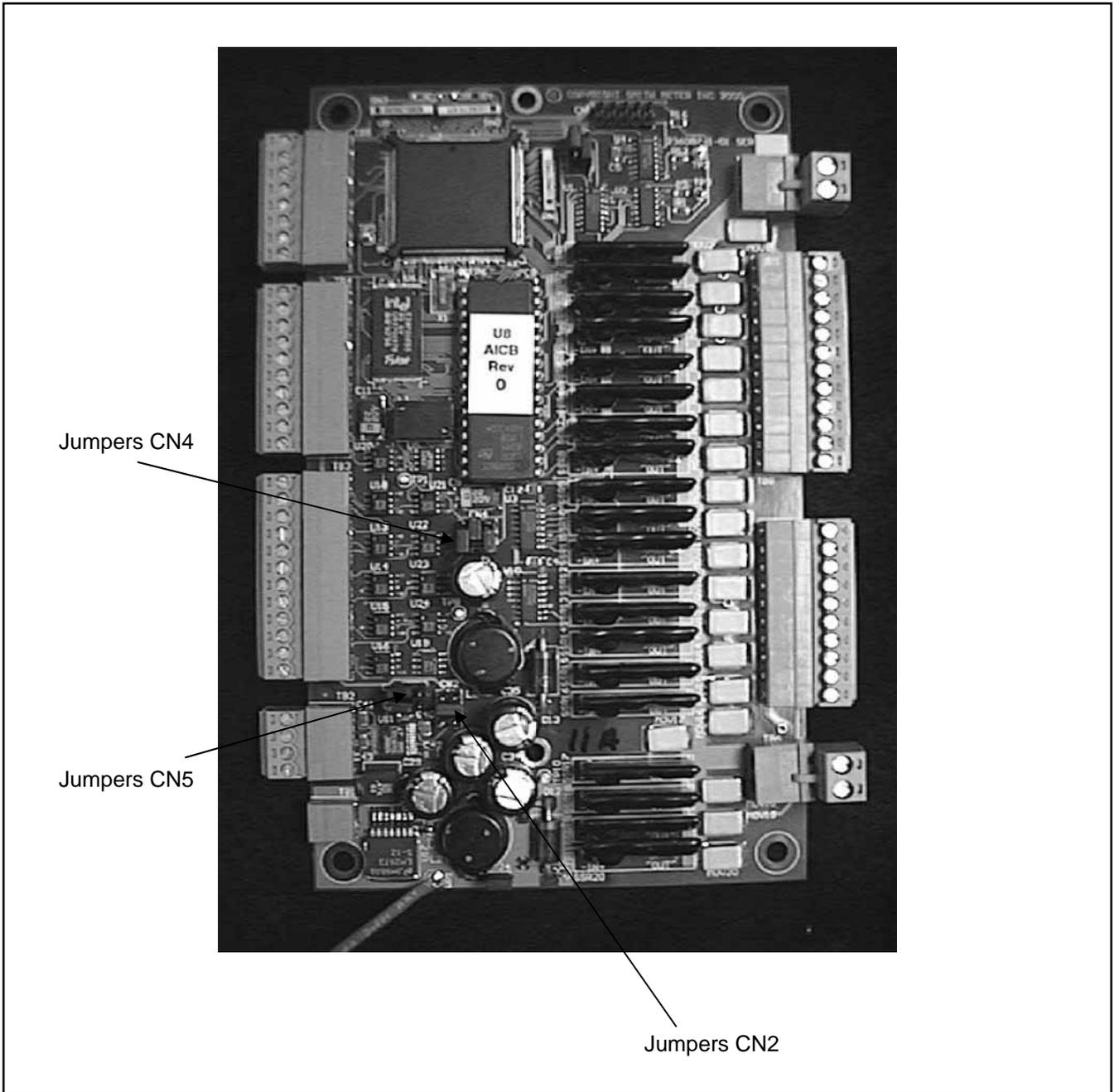
Figure 5. AICB Jumper Locations
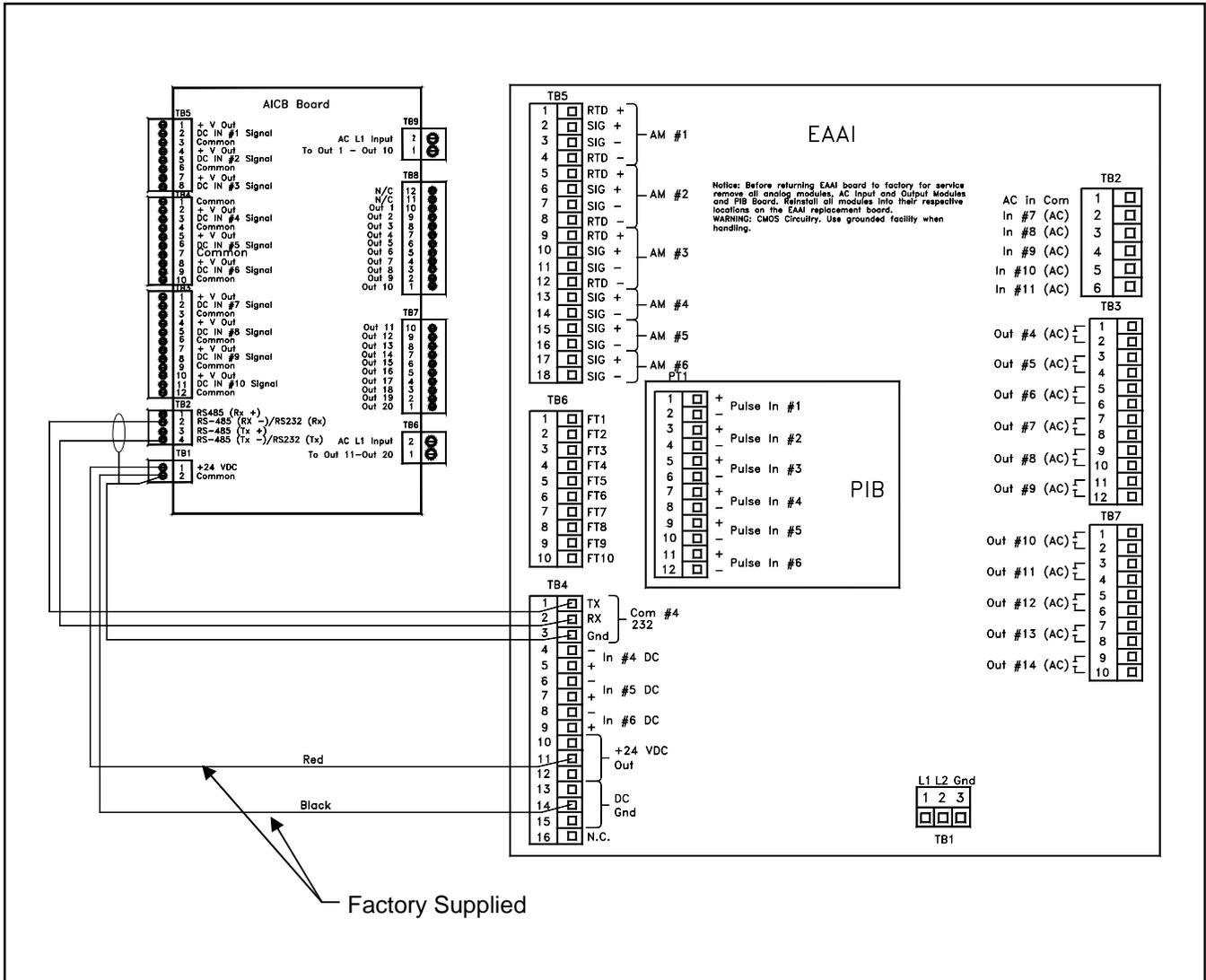
Figure 6. AICB Communications and DC Power
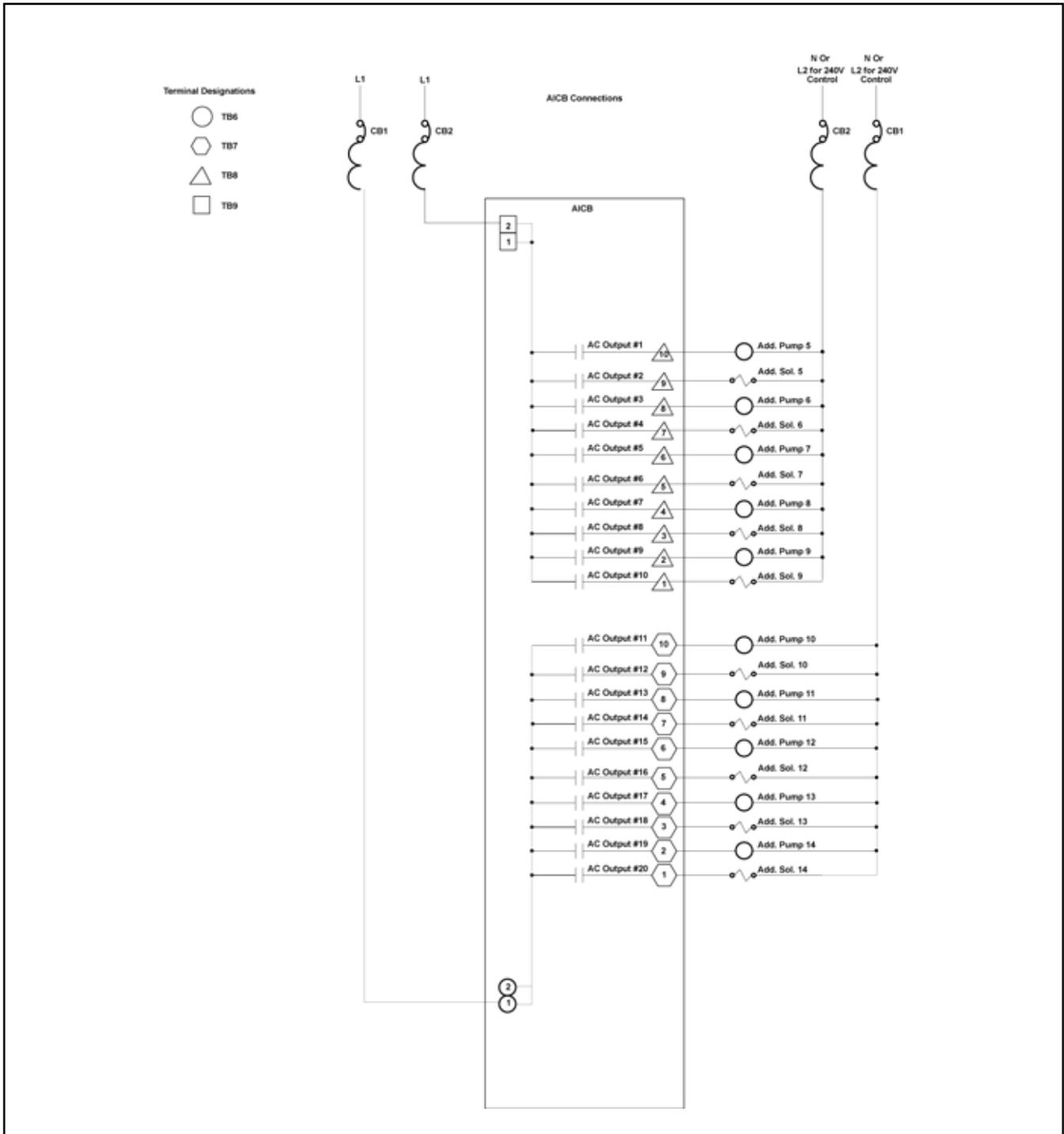
Figure 7. AICB Outputs

The operation of the AccuLoad after the upgrade kit has been installed will be the same as described in the Accu-Load III manuals except for items described in this section.

AccuLoad II Keypad Functions

The AccuLoad II keyboard is recognized when jumpers J2 and J3 are removed and jumper J8 is installed in the KDC board. When using the AccuLoad II upgrade kit, the units are limited to loading two arms simultaneously. The following AccuLoad II keys have dual functionality and will be interpreted by the AccuLoad III as indicated below.

AccuLoad II Key	AccuLoad III Software Assignment
SET	SET or +/-
1	1 or Down
2	2 or Up
3	3 or Right
4	4 or Left
Print	Print or "."

The decimal point is not available on the AccuLoad II keypad, so the PRINT key will be used to insert the decimal point in an input field. Note that leading zeroes will also be accepted by the AccuLoad, with automatic placement of the decimal point as an alternate means of entry.

To enter negative numbers with the AccuLoad II keypad, the SET key will be used.

The function keys (SET, START, STOP, CLEAR, ENTER and PRINT) will have an implied arm association. If the Side One function keys are pressed on the AccuLoad II keypad, the focus will be changed to Side One if not already there. If Side Two functions are pressed, the focus will be changed to Side Two, if not already there. The number keys will be applied to whichever arm is currently in focus.

Default RBU

Parameter	Description	
Configuration Directory		
001	Number of Load Arms	2
002	Arm 1 Config	2 Ratio
003	Arm 1 Product	3
004	Arm 2 Config	2 Ratio
005	Arm 2 Product	3
020	Number of Additives	08
201	Pulse Output 1 Function	1 Arm 1 Pulses
202	Pulse Output 1 Meter	1 Mtr 1 Pulses
203	Pulse Output 1 Pulses/Amount	10.00
206	Pulse Output 2 Function	2 Arm 2 Pulses
207	Pulse Output 2 Meter	1 Meter 1 Pulses
208	Pulse Out 2 Pulses/Amount	10.00
333	Input 9 (AC)	03 Permissive 1
337	Input 10 (AC)	04 Permissive 2

345	Input 12 (AC)	03 Permissive 1
346	Input 12 Arm	1 Arm 2
349	Input 13 (AC)	04 Permissive 2
350	Input 13 Arm	1 Arm 2
501	Output 1 (DC)	04 Alarm Relay 1
509	Output 3 (DC)	01 Pump
510	Output 3 Arm	1 Arm 2
511	Output 3 Mtr	2 Meter 3
513	Output 4 (AC)	33 Piston Inj
517	Output 5 (AC)	03 Upstream Solenoid
518	Output 5 Arm	1 Arm 2
519	Output 5 Mtr	2 Meter 3
521	Output 6 (AC)	34 Piston Inj 2
525	Output 7 (AC)	02 Upstream Solenoid, arm 1, mtr 1
529	Output 8 (AC)	03 Downstream Solenoid, arm1, mtr 1
533	Output 9 (AC)	01 Pump
534	Output 9 Arm	1 Arm 2
535	Output 9 Mtr	1 Meter 2
537	Output 10 (AC)	01 Pump, arm 1, mtr 1
541	Output 11 (AC)	40 Piston Inj 8
545	Output 12 (AC)	02 Upstream Solenoid, arm 1
547	Output 12 Mtr	1 Meter 2
549	Output 13 (AC)	03 Downstream Solenoid, arm 1
551	Output 13 Mtr	1 Meter 2
553	Output 14 (AC)	01 Pump, arm 1
555	Output 14 Mtr	1 Meter 2
557	Output 15 (AC)	39 Piston Inj 7
561	Output 16 (AC)	02 Upstream Solenoid
562	Output 16 Arm	1 Arm 2
563	Output 16 Mtr	1 Meter 2
565	Output 17 (AC)	03 Downstream Solenoid
566	Output 17 Arm	1 Arm 2
567	Output 17 Mtr	1 Meter 2
569	Output 18 (AC)	02 Upstream Solenoid, arm 1
571	Output 18 Mtr	2 Meter 3
573	Output 19 (AC)	03 Downstream Solenoid, arm 1
575	Output 19 Mtr	2 Meter 3

577	Output 20 (AC)	03 Downstream Solenoid
578	Output 20 Arm	1 Arm 2
579	Output 20 Mtr	2 Meter 3
581	Output 21 (AC)	01 Pump, arm 1
583	Output 21 Meter	2 Meter 3
585	Output 22 (AC)	35 Piston Inj 3
589	Output 23 (AC)	02 Upstream Solenoid
590	Output 23 Arm	1 Arm 2, mtr 1
593	Output 24 (AC)	03 Downstream Solenoid
594	Output 24 Arm	1 Arm 2, mtr 1
597	Output 25 (AC)	01 Pump
598	Output 25 Arm	1 Arm 2, mtr 1
601	Output 26 (AC)	36 Piston Inj 4
613	Output 29 (AC)	37 Piston Inj 5
617	Output 30 (AC)	38 Piston Inj 6
649	Output 38 (DC)	08 Stop Relay
901	Analog I/O 1 Function	1 Temp In, arm 1
905	Analog I/O 1 Type	1 4-20mA In
906	Analog I/O 1 Cal 1	12288
907	Analog I/O 1 Cal 2	53248
908	Analog I/O 1 Low Value	-5.00
909	Analog I/O 1 High Value	105.00
911	Analog I/O 2 Function	1 Temp In
913	Analog I/O 2 Mtr	1 Meter 2
915	Analog I/O 2 Type	1 4-20mA In
916	Analog I/O 2 Cal 1	12288
917	Analog I/O 2 Cal 2	53248
918	Analog I/O 2 Low Value	-5.00
919	Analog I/O 2 High Value	105.00
921	Analog I/O 3 Function	1 Temp In, arm 1
923	Analog I/O 3 Mtr	2 Meter 3
925	Analog I/O 3 Type	1 4-20mA In
926	Analog I/O 3 Cal 1	12288
927	Analog I/O 3 Cal 2	53248
928	Analog I/O 3 Low Value	-5.00
929	Analog I/O 3 High Value	105.00
931	Analog I/O 4 Function	1 Temp In

932	Analog I/O 4 Arm	1 Arm 2, mtr 1
935	Analog I/O 4 Type	1 4-20mA In
936	Analog I/O 4 Cal 1	12288
937	Analog I/O 4 Cal 2	53248
938	Analog I/O 4 Low Value	-5.00
939	Analog I/O 4 High Value	105.00
941	Analog I/O 5 Function	1 Temp In
942	Analog I/O 5 Arm	1 Arm 2
943	Analog I/O 5 Mtr	1 Meter 2
945	Analog I/O 5 Type	1 4-20mA In
946	Analog I/O 5 Cal 1	12288
947	Analog I/O 5 Cal 2	53248
948	Analog I/O 5 Low Value	-5.00
949	Analog I/O 5 High Value	105.00
951	Analog I/O 6 Function	1 Temp In
952	Analog I/O 6 Arm	1 Arm 2
953	Analog I/O 6 Mtr	2 Mtr 3
955	Analog I/O 6 Type	1 4-20mA In
956	Analog I/O 6 Cal 1	12288
957	Analog I/O 6 Cal 2	53248
958	Analog I/O 6 Low Value	-5.00
959	Analog I/O 6 High Value	105.00

Default A2 STD

Parameter	Description	
Configuration Directory		
001	Number of Load Arms	2
020	Number of Additives	3
201	Pulse Output 1 Function	1 Arm 1 Pulses
203	Pulse Out 1 Pulses/Amount	10
205	Pulse Out 1 Max Frequency	300
206	Pulse Out 2 Function	2 Arm 2 Pulses
208	Pulse Out 2 Pulses/Amount	10
210	Pulse Out 2 Max Frequency	300
325	Input 7 (AC)	03 Permissive 1

326	Input 7 Arm	1 Arm 2
329	Input 8 (AC)	04 Permissive 2
330	Input 8 Arm	1 Arm 2
333	Input 9 (AC)	03 Permissive 1, arm 1
337	Input 10 (AC)	04 Permissive 2, arm 1
501	Output 1 (DC)	04 Alarm Relay 1
505	Output 2 (DC)	05 Alarm Relay 2
513	Output 4 (AC)	33 Piston Inj 1
525	Output 7 (AC)	02 Upstream Solenoid, arm 1
529	Output 8 (AC)	03 Downstream Solenoid, arm 1
537	Output 10 (AC)	01 Pump, arm 1
541	Output 11 (AC)	35 Piston Inj 3
545	Output 12 (AC)	02 Upstream Solenoid
546	Output 12 Arm	1 Arm 2
549	Output 13 (AC)	03 Downstream Solenoid
550	Output 13 Arm	1 Arm 2
553	Output 14 (AC)	01 Pump
554	Output 14 Arm	1 Arm 2
601	Output 26 (AC)	36 Piston Inj 4
649	Output 38 (DC)	08 Stop Relay
901	Analog I/O Function	1 Temp In, arm 1
905	Analog I/O 1 Type	1 4-20mA In
906	Analog I/O 1 Cal 1	12288
907	Analog I/O 1 Cal 2	53248
908	Analog I/O 1 Low Value	-3.00
909	Analog I/O 1 High Value	97.00
911	Analog I/O 2 Function	3 Pressure In, arm 1
915	Analog I/O 2 Type	1 4-20mA In
916	Analog I/O 2 Cal 1	12288
917	Analog I/O 2 Cal 2	53248
918	Analog I/O 2 Low Value	32.00
919	Analog I/O 2 High Value	84.00
921	Analog I/O 3 Function	1 Temp In
922	Analog I/O 3 Arm	1 Arm 2
925	Analog I/O 3 Type	1 4-20 mA In
926	Analog I/O 3 Cal 1	12288
927	Analog I/O 3 Cal 2	53248

928	Analog I/O 3 Low Value	-3.00
929	Analog I/O 3 High Value	97.00
931	Analog I/O 4 Function	3 Pressure In
932	Analog I/O 4 Arm	1 Arm 2
935	Analog I/O 4 Type	1 4-20mA In
936	Analog I/O 4 Cal 1	12288
937	Analog I/O 4 Cal 2	53248
938	Analog I/O 4 Low Value	32.00
939	Analog I/O 4 High Value	84.00

Default A2 SEQ

Parameter	Description	
Configuration Directory		
001	Number of Load Arms	2
002	Arm 1 Configuration	1 Sequential
003	Arm 1 Product	2
004	Arm 2 Config	1 Sequential
005	Arm 2 Product	2
201	Pulse Output 1 Function	1 Arm 1 Pulses
203	Pulse Out 1 Pulses/Amount	10.00
205	Pulse Out 1 Max Frequency	300
206	Pulse Output 2 Function	2 Arm 2 Pulses
208	Pulse Out 2 Pulses/Amount	10.00
210	Pulse Out Max Frequency	300
313	Input 4 (DC)	12 Block Valve Fdbk
314	Input 4 Arm	1 Arm 2
316	Input 4 Product	1 Product 2
317	Input 5 (DC)	12 Block Valve Fdbk, arm 1
320	Input 5 Product	1 Product 2
321	Input 6 (DC)	12 Block Valve Fdbk
322	Input 6 Arm	1 Arm 2, prd 1
325	Input 7 (AC)	03 Permissive 1
326	Input 7 Arm	1 Arm 2
329	Input 8 (AC)	04 Permissive 2
330	Input 8 Arm	1 Arm 2
333	Input 9 (AC)	03 Permissive 1, arm 1

337	Input 10(AC)	04 Permissive 2, arm 1
341	Input 11(AC)	12 Block Valve Fdbk, arm 1, prd 1
505	Output 2(DC)	07 Block Valve
506	Output 2 Arm	1 Arm 2
508	Output 2 Product	1 Product 2
513	Output 4 (AC)	07 Block Valve, arm, 1 prd 1
517	Output 5 (AC)	07 Block Vlave, arm 1
520	Output 5 (Product)	1 Product 2
521	Output 6 (AC)	07 Block Valve
522	Output 6 Arm	1 Arm 2, prd 1
525	Output 7 (AC)	02 Upstream Solenoid, arm 1, mtr 1
529	Output 8 (AC)	03 Downstream Solenoid, arm 1, mtr 1
533	Output 9 (AC)	04 Alarm Relay
537	Output 10 (AC)	01 Pump, arm 1, mtr 1
545	Output 12 (AC)	02 Upstream Solenoid
546	Output 12 Arm	1 Arm 2, mtr 1
549	Output 13 (AC)	03 Downstream Solenoid
550	Output 13 Arm	1 Arm 2, mtr 1
553	Output 14 (AC)	01 Pump
554	Output 14 Arm	1 Arm 2, mtr 1
901	Analog I/O Function	1 Temp In, arm 1, mtr 1
905	Analog I/O 1 Type	1 4-20mA In
906	Analog I/O 1 Cal 1	12288
907	Analog I/O 1 Cal 2	53248
908	Analog I/O 1 Low Value	-3.00
909	Analog I/O High Value	97.00
911	Analog I/O 2 Function	3 Pressure In, arm 1, mtr 1
915	Analog I/O 2 Type	1 4-20mA In
916	Analog I/O 2 Cal 1	12288
917	Analog I/O 2 Cal 2	53248
918	Analog I/O 2 Low Value	32.00
919	Analog I/O 2 High Value	84.00
921	Analog I/O 3 Function	1 Temp In
922	Analog I/O 3 Arm	1 Arm 2, mtr 1
925	Analog I/O 3 Type	1 4-20mA In
926	Analog I/O 3 Cal 1	12288
927	Analog I/O 3 Cal 2	53248

928	Analog I/O 3 Low Value	-3.00
929	Analog I/O 3 High Value	97.00
931	Analog I/O 4 Function	3 Pressure In
932	Analog I/O 4 Arm	1 Arm 2, mtr 1
935	Analog I/O 4 Type	1 4-20mA In
936	Analog I/O 4 Cal 1	12288
937	Analog I/O 4 Cal 2	53248
938	Analog I/O 4 Low Value	32.00
939	Analog I/O 4 High Value	84.00

Default A2 SQR

Parameter	Description	
Configuration Directory		
001	Number of Load Arms	2
002	Arm 1 Configuration	1 Sequential
003	Arm 1 Product	2
004	Arm 2 Config	1 Sequential
005	Arm 2 Product	2
201	Pulse Output 1 Function	1 Arm 1 Pulses
203	Pulse Out 1 Pulses/Amount	10.00
205	Pulse Out 1 Max Frequency	300
206	Pulse Output 2 Function	2 Arm 2 Pulses
208	Pulse Out 2 Pulses/Amount	10.00
210	Pulse Out Max Frequency	300
313	Input 4 (DC)	12 Block Valve Fdbk
314	Input 4 Arm	1 Arm 2
316	Input 4 Product	1 Product 2
317	Input 5 (DC)	12 Block Valve Fdbk, arm 1
320	Input 5 Product	1 Product 2
321	Input 6 (DC)	12 Block Valve Fdbk
322	Input 6 Arm	1 Arm 2, prd 1
325	Input 7 (AC)	03 Premissive 1
326	Input 7 Arm	1 Arm 2
329	Input 8 (AC)	04 Permissive 2
330	Input 8 Arm	1 Arm 2

333	Input 9 (AC)	03 Permissive 1, arm 1
337	Input 10 (AC)	04 Permissive 2, arm 1
341	Input 11 (AC)	12 Block Valve Fdbk, arm 1
505	Output 2 (DC)	07 Block Valve, prd 1
506	Output 2 Arm	1 Arm 2
508	Output 2 Product	1 Product 2
513	Output 4 (AC)	07 Block Valve, arm 1, prd 1
517	Output 5 (AC)	07 Block Valve, arm 1
520	Output 5 Product	1 Product 2
521	Output 6 (AC)	07 Block Valve
522	Output 6 Arm	1 Arm 2, prd 1
525	Output 7 (AC)	02 Upstream Solenoid, arm 1, prd 1
529	Output 8 (AC)	03 Downstream Solenoid, arm 1, mtr 1
533	Output 9 (AC)	04 Alarm Relay 1
537	Output 10 (AC)	01 Pump, arm 1, mtr 1
545	Output 12 (AC)	02 Upstream Solenoid
546	Output 12 Arm	1 Arm 2, mtr 1
549	Output 13 (AC)	03 Downstream Solenoid
550	Output 13 Arm	1 Arm 2, mtr 1
553	Output 14 (AC)	01 Pump
554	Output 14 Arm	1 Arm 2, mtr 1
901	Analog I/O Function	1 Temp In, arm 1, mtr 1
905	Analog I/O Type	1 4-20mA In
906	Analog I/O 1 Cal 1	12288
907	Analog I/O 1 Cal 2	53248
908	Analog I/O 1 Low Value	-3.00
909	Analog I/O 1 High Value	97.00
911	Analog I/O 2 Function	3 Pressure In, arm 1, mtr 1
915	Analog I/O 2 Type	1 4-20mA In
916	Analog I/O 2 Cal 1	12288
917	Analog I/O 2 Cal 2	53248
918	Analog I/O 2 Low Value	32.00
919	Analog I/O 2 High Value	84.00
921	Analog I/O 3 Function	1 Temp In
922	Analog I/O 3 Arm	1 Arm 2, mtr 1
925	Analog I/O 3 Type	1 4-20mA In
926	Analog I/O 3 Cal 1	12288

927	Analog I/O 3 Cal 2	53248
928	Analog I/O 3 Low Value	-3.00
929	Analog I/O 3 High Value	97.00
931	Analog I/O 4 Function	3 Pressure In
932	Analog I/O 4 Arm	1 Arm 2, mtr 1
935	Analog I/O 4 Type	1 4-20mA In
936	Analog 4 Cal 1	12288
937	Analog I/O 4 Cal 2	53248
938	Analog I/O 4 Low Value	32.00
939	Analog I/O 4 High Value	84.00

Default A2 RBM

Parameter	Description	
Configuration Directory		
001	Number of Load Arms	2
002	Arm 1 Config	2 Ratio
003	Arm 1 Product	3
004	Arm 2 Config	2 Ratio
005	Arm 2 Product	3
020	Number of Additives	08
201	Pulse Output 1 Function	1 Arm 1 Pulses
205	Pulse Out 1 Max Frequency	300
210	Pulse Out 2 Max Frequency	300
333	Input 9 (AC)	03 Permissive 1, arm 1
337	Input 10 (AC)	04 Permissive 2, arm 1
345	Input 12 (AC)	03 Permissive 1
346	Input 12 Arm	1 Arm 2
349	Input 13 (AC)	04 Permissive 2
350	Input 13 Arm	1 Arm 2
501	Output 1 (DC)	04 Relay Alarm 1
509	Output 3 (DC)	01 Pump
510	Output 3 Arm	1 Arm 2
511	Output 3 Mtr	2 Meter 3
513	Output 4 (AC)	33 Piston Inj 1
517	Output 5 (AC)	02 Upstream Solenoid

518	Output 5 Arm	1 Arm 2
519	Output 5 Mtr	2 Mtr 3
521	Output 6 (AC)	34 Piston Inj 2
525	Output 7 (AC)	02 Upstream Solenoid, arm 1, mtr 1
529	Output 8 (AC)	03 Downstream Solenoid, arm 1, mtr 1
533	Output 9 (AC)	01 Pump
534	Output 9 Arm	1 Arm 2
535	Output 9 Mtr	1 Meter 2
537	Output 10 (AC)	01 Pump, arm 1, mtr 1
541	Output 11 (AC)	40 Piston Inj 8
545	Output 12 (AC)	02 Upstream Solenoid, arm 1
547	Output 12 Mtr	1 Meter 2
549	Output 13 (AC)	03 Downstream Solenoid, arm 1
551	Output 13 Mtr	1 Meter 2
553	Output 14 (AC)	01 Pump, arm 1
555	Output 14 Mtr	1 Meter 2
557	Output 15 (AC)	39 Piston Inj 7
561	Output 16 (AC)	02 Upstream Solenoid
562	Output 16 Arm	1 Arm 2
563	Output 16 Mtr	1 Meter 2
565	Output 17 (AC)	03 Downstream Solenoid
566	Output 17 Arm	1 Arm 2
567	Output 17 Mtr	1 Meter 2
569	Output 18 (AC)	02 Upstream Solenoid, arm 1
571	Output 18 Mtr	2 Meter 3
573	Output 19 (AC)	03 Downstream Soleniod, arm 1
575	Output 19 Mtr	2 Meter 3
577	Output 20 (AC)	03 Downstream Solenoid, arm 1
578	Output 20 Arm	1 Arm 2
579	Output 20 Mtr	2 Meter 3
581	Output 21 (AC)	01 Pump, arm 1
583	Output 21 Mtr	2 Meter 3
585	Output 22 (AC)	35 Piston Inj 3
589	Output 23 (AC)	02 Upstream Solenoid
590	Output 23 Arm	1 Arm 2, mtr 1
593	Output 24 (AC)	03 Downstream Solenoid
594	Output 24 Arm	1 Arm 2, mtr 1

597	Output 25 (AC)	01 Pump
598	Output 25 Arm	1 Arm 2, mtr 1
601	Output 26 (AC)	36 Piston Inj 4
613	Output 29 (AC)	37 Piston Inj 5
617	Output 30 (AC)	38 Piston Inj 6
649	Output 38 (AC)	8 Stop Relay
901	Analog I/O 1 Function	1 Temp In
905	Analog I/O Type	1 4-20mA In
906	Analog I/O 1 Cal 1	12288
907	Analog I/O 1 Cal 2	53248
908	Analog I/O 1 Lower Value	-5.00
909	Analog I/O 1 High Value	105.00
911	Analog I/O 2 Function	1 Temp In
913	Analog I/O 2 Meter	1 Meter 2
915	Analog I/O 2 Type	1 4-20mA In
916	Analog I/O 2 Cal 1	12288
917	Analog I/O 2 Cal 2	53248
918	Analog I/O 2 Low Value	-5.00
919	Analog I/O 2 High Value	105.00
921	Analog I/O 3 Function	1 Temp In
923	Analog I/O 3 Mtr	2 Meter 3
925	Analog I/O 3 Type	1 4-20mA In
926	Analog I/O 3 Cal 1	12288
927	Analog I/O 3 Cal 2	53248
928	Analog I/O 3 Low Value	-5.00
929	Analog I/O 3 High Value	105.00
931	Analog I/O 4 Function	1 Temp In
932	Analog I/O 4 Arm	1 Arm 2
935	Analog I/O 4 Type	1 4-20mA In
936	Analog I/O 4 Cal 1	12288
937	Analog I/O 4 Cal 2	53248
938	Analog I/O 4 Low Value	-5.00
939	Analog I/O 4 High Vlaue	105.00
941	Analog I/O 5 Function	1 Temp In
942	Analog I/O 5 Arm	1 Arm 2
943	Analog I/O 5 Mtr	1 Meter 2
945	Analog I/O 5 type	1 4-20mA In

946	Analog I/O 5 Cal 1	12288
947	Analog I/O 5 Cal 2	53248
948	Analog I/O 5 Low Value	-5.00
949	Analog I/O 5 High Value	105.00
951	Analog I/O 6 Function	1 Temp In
952	Analog I/O 6 Arm	1 Arm 2
953	Analog I/O 6 Mtr	2 Meter 3
955	Analog I/O 6 Type	1 4-20mA In
956	Analog I/O 6 Cal 1	12288
957	Analog I/O 6 Cal 2	53248
958	Analog I/O 6 Low Value	-5.00
959	Analog I/O 6 High Value	105.00

Default STD

Parameter	Description	
Configuration Directory		
201	Pulse Output 1 Function	1 Arm 1 Pulses
333	Input 9 (AC)	03 Permissive 1
337	Input 10 (AC)	04 Permissive 2
501	Output 1 (DC)	04 Alarm Relay 1
505	Output 2 (DC)	05 Alarm Relay 2
513	Output 4 (AC)	33 Piston Inj 1
521	Output 6 (AC)	34 Piston Inj 2
525	Output 7 (AC)	02 Upstream Solenoid
529	Output 8	03 Downstream Solenoid
649	Output 38 (DC)	08 Stop Relay
901	Analog I/O 1 Function	1 Temp In
905	Analog I/O 1 Type	1 4-20mA In
906	Analog I/O 1 Cal 1	12288
907	Analog I/O 1 Cal 2	53248
909	Analog I/O 1 High Value	95.00

Default SEQ

Parameter	Description	
Configuration Directory		
001	Number of Load Arms	2
002	Arm 1 Config	1 Sequential
003	Arm 1 Product	2
004	Arm 2 Config	1 Sequential
005	Arm 2 Product	2
201	Pulse Output 1 Function	1 Arm 1 Pulses
203	Pulse Out 1 Pulses/Amount	10
206	Pulse Out 2 Fuunction	2 Arm 2 Pulses
313	Input 4 (DC)	12 Block Valve Fdbk
314	Input 4 Arm	1 Arm 2
316	Input 4 Product	1 Product 2
317	Input 5 (DC)	12 Block Valve Fdbk
318	Input 5 Arm	0 Arm 1
320	Input 5 Product	1 Product 2
321	Input 6 (DC)	12 Block Valve Fdbk
322	Input 6 Arm	1 Arm 2
324	Input 6 Product	0 Product 1
325	Input 7 (AC)	03 Permissive 1
326	Input 7 Arm	1 Arm 2
328	Input 7 Product	0 Product 1
329	Input 8 (AC)	04 Permissive 2
330	Input 8 Arm	1 Arm 2
332	Input 8 Product	0 Product 1
333	Input 9 (AC)	03 Permissive 1
337	Input 10 (AC)	04 Permissive 2
341	Input 11 (AC)	12 Block Valve Fdbk
505	Output 2 (DC)	07 Block Valve
506	Output 2 Arm	1 Arm 2
508	Output 2 Product	1 Product 2
513	Ouput 4 (AC)	07 Block Valve
517	Output 5 (AC)	07 Block Valve
520	Output 5 Product	1 Product 2
521	Output 6 (AC)	07 Block Valve
522	Output 6 Arm	1 Arm 2

525	Output 7 (AC)	02 Upstream Solenoid
529	Output 8 (AC)	03 Downstream Solenoid
533	Output 9 (AC)	04 Alarm Relay 1
537	Output 10 (AC)	01 Pump
545	Output 12 (AC)	02 Upstream Solenoid
546	Output 12 Arm	1 Arm 2
549	Output 13 (AC)	03 Downstream Solenoid
550	Output 13 Arm	1 Arm 2
553	Output 14 (AC)	01 Pump
554	Output 14 Arm	1 Arm 2
901	Analog I/O 1 Function	1 Temp In
902	Analog I/O 1 Arm	0 Arm 1
903	Analog I/O 1 Mtr	0 Mtr 1
905	Analog I/O 1 Type	1 4-20mA In
906	Analog I/O 1 Cal 1	12288
907	Analog I/O 1 Cal 2	53248
908	Analog I/O 1 Low Value	-3.00
909	Analog I/O 1 High Value	97.00
911	Analog I/O 2 Function	3 Pressure In
912	Analog I/O 2 Arm	0 Arm 1
913	Analog I/O 2 Mtr	0 Meter 1
915	Analog I/O 2 Type	1 4-20mA In
916	Analog I/O 2 Cal 1	12288
917	Analog I/O 2 Cal 2	53248
918	Analog I/O 2 Low Value	32.00
919	Analog I/O 2 High Value	84.00
921	Analog I/O 3 Function	1 Temp In
922	Analog I/O 3 Arm	1 Arm 2
925	Analog I/O 3 Type	1 4-20mA In
926	Analog I/O 3 Cal 1	12288
927	Analog I/O 3 Cal 2	43248
928	Analog I/O 3 Low Value	-3.00
929	Analog I/O 3 High Value	97.00
931	Analog I/O 4 Function	3 Pressure In
932	Analog I/O 4 Arm	1 Arm 2
933	Analog I/O 4 Mtr	0 Mtr 1
935	Analog I/O 4 Type	1 4-20mA In

936	Analog I/O 4 Cal 1	12288
937	Analog I/O 4 Cal 2	53248
938	Analog I/O 4 Low Value	32.00
939	Analog I/O 4 High Value	84.00
945	Analog I/O 4 Type	1 4-20mA In
952	Analog 6 Arm	1 Arm 2
953	Analog I/O 6 Meter	0 Meter 1
955	Analog I/O 6 Type	1 4-20mA In

Communication Ports Default Settings:

A2 STD Field Test Initialize:
Com 1 : Mini Computer Host
Com 2 : Accu 2 Mini STD

A2 SEQ Field Test Initialize
Com 1 : Minicomputer Host
Com 2 : Accu 2 Mini SEQ

A2 SQR Field Test Initialize
Com 1 : Minicomputer Host
Com 2 : Accu 2 Mini SQR

A2 RBM Field Test Initialize
Com 1 : Minicomputer Host
Com 2 : Accu 2 Mini RBM

A2 Hardware Initialize
Com 1 : Minicomputer Host

AcculLoad III Initialization
Initialize the AccuLoad by selecting "AccuLoad II Hardware Init" from the diagnostic menu. The AccuLoad III will be configured with the parameters shown below.

Parameter	Description	Configuration
001	Number of Load Arms	2
020	Number of Additives	8
325	AC Digital Input #7	Security 1
329	AC Digital Input #8	Security 2
333	AC Digital Input #9	First/Second High Flow
334	AC Digital Input #9	Arm 1
341	AC Digital Input #11	First/Second High Flow
342	AC Digital Input #11	Arm 2

513	AC Digital Output #4	Additive Injector #1
517	AC Digital Output #5	Additive Injector #2
521	AC Digital Output #6	Upstream Solenoid
522	AC Digital Output #6	Arm 1
525	AC Digital Output #6	Downstream Solenoid
526	AC Digital Output #7	Arm 1
529	AC Digital Output #8	Alarm Relay
533	AC Digital Output #9	Pump
534	AC Digital Output #9	Arm 1
537	AC Digital Output #10	Additive Injector #3
541	AC Digital Output #11	Additive Injector #4
545	AC Digital Output #12	Additive Injector #5
549	AC Digital Output #13	Additive Injector #6
553	AC Digital Output #14	Upstream Solenoid
554	AC Digital Output #14	Arm 2
557	AC Digital Output #15	Downstream Solenoid
558	AC Digital Output #15	Arm 2
561	AC Digital Output #16	Pump
562	AC Digital Output #16	Arm 2
565	AC Digital Output #17	Additive Injector #7
569	AC Digital Output #18	Additive Injector #8
901	Analog I/O #1 Function	Temperature
902	Analog I/O #1 Arm	Arm 1
905	Analog I/O #1 Type	RTD

Parameter	Description	Configuration
911	Analog I/O #2 Function	Temperature
912	Analog I/O #2 Arm	Arm 2
915	Analog I/O #2 Type	RTD
156	Security In 1 Level	1
157	Security In 2 Level	2
810	Additive #1 Type	Piston
811	Additive #1 Arm	Arm 1
813	Additive #2 Type	Piston
814	Additive #2 Arm	Arm 1
816	Additive #3 Type	Piston
817	Additive #3 Arm	Arm 1
819	Additive #4 Type	Piston
820	Additive #34 Arm	Arm 1
822	Additive #5 Type	Piston
823	Additive #5 Arm	Arm 2
825	Additive #6 Type	Piston
826	Additive #6 Arm	Arm 2
828	Additive #7 Type	Piston
829	Additive #7 Type	Arm 2
831	Additive #8 Type	Piston
832	Additive #8 Arm	Arm 2

All other parameters will be initialized to the factory database default settings.

Security Levels

The following parameters will be initialized to Security Level 2, equivalent to the Weights and Measures security in AccuLoad II. All others will be initialized to Level 1 (Program).

Parameter	Description
Configuration Directory	
101	Pulse Input Channel Select
102	Pulse Input Transmitter Integrity
203	Pulse Output #1 Pulse/Volume
204	Pulse Output #1 Pulse Units
208	Pulse Output #2 Pulse/Volume
209	Pulse Output #2 Pulse Units
906	Analog #1 Calibration 1 Counts
907	Analog #1 Calibration 2 Counts
908	Analog #1 Low Value
909	Analog #1 High Value
910	Analog #1 RTD Offset
916	Analog #2 Calibration 1 Counts
917	Analog #2 Calibration 2 Counts
918	Analog #2 Low Value
919	Analog #2 High Value
920	Analog #2 RTD Offset
926	Analog #3 Calibration 1 Counts
927	Analog #3 Calibration 2 Counts
928	Analog #3 Low Value
929	Analog #3 High Value
930	Analog #3 RTD Offset
936	Analog #4 Calibration 1 Counts
937	Analog #4 Calibration 2 Counts
938	Analog #4 Low Value
939	Analog #4 High Value
940	Analog #4 RTD Offset
946	Analog #5 Calibration 1 Counts
947	Analog #5 Calibration 2 Counts
948	Analog #5 Low Value
949	Analog #5 High Value
950	Analog #5 RTD Offset

Parameter	Description
956	Analog #6 Calibration 1 Counts
957	Analog #6 Calibration 2 Counts
958	Analog #6 Low Value
959	Analog #6 High Value
960	Analog #6 RTD Offset
Systems Directory	
301	Volume Units
302	Mass Units
321	Auto Prove Select
322	Proving Counters
332	Preset Amount Type
333	Delivery Amount Type
401	Temperature Units
402	Reference Temperature
411	Density Units
501	Pressure Units
731	Communication Link Programming
740	Prompt Mode
741	Prompts Used
742	Prompt Timeout
743	Prompt #1 Message
744	Prompt #1 Input Type
745	Prompt #1 Length
746	Prompt #2 Message
747	Prompt #2 Input Type
748	Prompt #2 Length
749	Prompt #3 Message
750	Prompt #3 Input Type
751	Prompt #3 Length
752	Prompt #4 Message
753	Prompt #4 Input Type
754	Prompt #4 Length
755	Prompt #5 Message
756	Prompt #5 Input Type
757	Prompt #5 Length

Parameter	Description
802	Additive Pacing Units
Meter Directories	
301	K Factor
321	Dual Pulse Error Count
322	Dual Pulse Error Reset
323	Dual Pulse Flow Rate Cutoff
Product Directories	
302	Meter Factor #1
303	Meter Factor #1 Flow Rate
304	Meter Factor #2
305	Meter Factor #2 Flow Rate
306	Meter Factor #3
307	Meter Factor #3 Flow Rate
308	Meter Factor #4
309	Meter Factor #4 Flow Rate
310	Master Meter Factor
311	Linearized Factor Deviation
312	Meter Factor Variation Select
313	Meter Factor Percent Change/Degree
314	Meter Factor Variation Reference Temperature
401	Maintenance Temperature
411	API Table
412	Reference Density

To change these parameters, the weights and measures switch (Security 2) must be activated as well as the password assigned to Level 2 Security. Initially the passcode is defaulted to 0000.

Alarm Mapping

Not all alarms that exist in the AccuLoad II have a 1-to-1 correspondence with an existing AccuLoad III alarm. Some of these alarms, especially those related to report printing, are highly specific cases of an alarm that already exists in the AccuLoad III. No new alarms have been added to the AccuLoad III to support the AccuLoad II protocols; therefore, some alarms that exist in the AccuLoad II will never be indicated. In the case of printer alarms for example, all printer errors will be reported via the AccuLoad II E2/E4 general printer failure alarms.

Alarms related to S-Mass meters will never be reported since the AccuLoad III does not support S-Mass communications at this time.

In addition, there are alarms unique to the AccuLoad III that have no corresponding equivalent in the AccuLoad II. These alarms are mapped to the DA alarm when requests are made via the AccuLoad II protocols. The AccuLoad II "AR AA" command syntax will reset any alarms reported as DA alarms via the AccuLoad II protocols, assuming the alarm is normally clearable via AccuLoad III communications.

AR / RA Command Alarm Mapping – Resettable Alarms

Command arguments for resettable alarms valid for AR command, returned by RA command

AL3X	STD	SEQ/SQR	RBM	Condition
<no arg>	AA	AA d	AA d	Clear all alarms in specified directory (all alarms in all tables for STD)
SY DA AR DA Px DA Mx DA rr DA	DA [1]	DA d	DA dd=0-6	Aside from SY: Display Alarm these alarms are typically not clearable on the AccuLoad III. Any clearable AccuLoad III alarms that are reported via AccuLoad II protocols as a DA alarm will be clearable via the AA syntax.
SY CM	CM	CM 0	CM 0	Communications Alarm – Communications failure on one of the communications channels.
SY CV	DA	DA 0	DA 0	CIVACON Comm Failure – Indicates a failure on the communications line between the AccuLoad III and the CIVACON ground/overfill system
SY DA	DA	DA 0	DA 0	Display Alarm – Indicates a display failure.
SY PA	PA	PA 0	PA 0	Power-fail Alarm – The unit either had a power failure or a hardware reset occurred.
SY SP	SP	SP 0	SP 0	Shared Printer – An output was attempted to the shared printer but was unsuccessful because the shared printer remained busy longer than the programmed communications timeout.
SY A1	DA	DA 0	DA 0	Add-Pak Power-fail – Indicates that a power failure has occurred on Add-Pak #1.

AL3X	STD	SEQ/SQR	RBM	Condition
SY A2	DA	DA 0	DA 0	Add-Pak Power-fail – Indicates that a power failure has occurred on Add-Pak #2.
SY C1	AC	AC 0	AC 0	Add-Pak Communications Alarm – Communications failure on Add-Pak #1.
SY C2	AC	AC 0	AC 0	Add-Pak Communications Alarm – Communications failure on Add-Pak #2.
SY D1	DA	DA 0	DA 0	Add-Pak Diagnostic Alarm – Indicates a failure on Add-Pak #1.
SY D2	DA	DA 0	DA 0	Add-Pak Diagnostic Alarm – Indicates a failure on Add-Pak #2.
SY P1	DA	DA 0	DA 0	Add-Pak #1 Auto-Detect Failed – Indicates that the AccuLoad has failed to detect Add-Pak Board #1
SY P2	DA	DA 0	DA 0	Add-Pak #2 Auto-Detect Failed – Indicates that the AccuLoad has failed to detect Add-Pak Board #2
SY U1	DA	DA 0	DA 0	User Alarm #1
SY U2	DA	DA 0	DA 0	User Alarm #2
SY U3	DA	DA 0	DA 0	User Alarm #3
SY U4	DA	DA 0	DA 0	User Alarm #4
SY U5	DA	DA 0	DA 0	User Alarm #5
SY U6	DA	DA 0	DA 0	User Alarm #6
SY U7	DA	DA 0	DA 0	User Alarm #7
SY U8	DA	DA 0	DA 0	User Alarm #8
SY U9	DA	DA 0	DA 0	User Alarm #9
SY U0	DA	DA 0	DA 0	User Alarm #10
AR CA	DA	SEQ: DA 0 SQR: CA 0	DA 0	Additive Clean Line – The additive clean line volume delivered has under-run the additive clean line volume programmed.
AR CL	DA	CL 0	CL 0	Clean Line – The clean line volume delivered has under-run the clean line volume programmed by at least the amount of clean line alarm limit.
AR HF	HF	DA 0	DA 0	High Flow – Flow rate has exceeded limit set by Excess High Flow program parameter for more than 4 seconds.
AR OA	OA	OA 0	OA 0	Overrun – Volume delivered has exceeded the preset amount by at least the number of units set in the Overrun Limit program code.
AR TK	TK	TK	TK	Ticket – Ticket was cranked from ticket printer while the batch loading was in progress.
AR ZF	ZF	ZF 0	ZF x	Zero Flow – The AccuLoad did not see flow through the system before the zero flow timer expired.
Mx TM	DA	DA 0	DA x	Turbine Meter Diagnostics – There is a problem with the rotation of the Turbine Meter Rotor.

AL3X	STD	SEQ/SQR	RBM	Condition
Mx DR	DR	DR 0	DA x	Density Transducer – Density transducer failure or out-of-range condition
Mx PR	PR	PR 0	DA x	Pressure Transducer – Pressure transducer failure or out-of-range condition
Mx PS	PS	PS 0	PS x	Pulse Security – Used only with the security pulse option. Indicates that an excessive number of out-of-sequence errors in the A-B pulse stream have been detected.
Mx TP	TP	TP 0	TP x	Temperature Probe – Short or open condition in the temperature probe circuit.
Mx VF	VF	VF 0	VF x	Valve Fault – Indicates that the meter was still registering flow when the valve fault timer expired after the AccuLoad commanded the valve to close.
Mx XA	PC	PC 0	PS x	Indicates a collision in the incoming pulse stream. (The signals on A and A-bar or B and B-bar are the same.)
Px BH	DA	BH x	BH x	Blend High Alarm – An overflow on this product has caused a blend tolerance to be exceeded.
Px BL	DA	BL x	BL x	Blend Low Alarm – An underflow on this product has caused the blend tolerance to be exceeded.
Px BP	BP	BP x	BP x	Back Pressure - Back pressure per the entries set cannot be maintained during flow enough to maintain entry set in product program code.
Px BV	DA	BV x	DA x	Block Valve Alarm – The valve did not close within 10 seconds after receiving the signal to close.
Px HD	HD	HD x	DA x	High Density - Density transducer is out of range of the high alarm setting.
Px HF	HF	HF x	HF x	High Flow Alarm - Flow rate has exceeded limit set by Excess High Flow program code for more than 4 seconds.
Px HP	HP	HP x	DA x	High Pressure - Pressure transducer is out of range of the high alarm setting.
Px HT	HT	HT x	HT x	High Temperature - Temperature probe or transducer is out of range of the high alarm setting.
Px LD	LD	LD x	DA x	Low Density - Density transducer is out of range of the low alarm setting.
Px LF	LF	LF x	LF x	Low Flow Alarm - Flow rate was at or below the minimum flow rate established by Low Flow Limit program code for longer that 8 seconds.
Px LP	LP	LP x	DA x	Low Pressure - Pressure transducer is out of range of the low alarm setting.
Px LT	LT	LT x	LT x	Low Temperature - Temperature probe or transducer is out of range of the low alarm setting.

AL3X	STD	SEQ/SQR	RBM	Condition
Px OA	OA	OA x	OA x	Overrun Alarm – Volume delivered has exceeded the preset amount by at least the number of units set in the overrun limit program code.
Px UF	DA	DA x	UF x	Unauthorized Flow – The AccuLoad has detected unauthorized flow.
Px ZF	ZF	ZF 0	ZF x	Zero Flow – The AccuLoad did not see flow through the system before the zero flow timer expired.
IN xx AD	DA	DA	DA	Auto-Detect Failed – Indicates that a specific Smart Injector was unable to be located on any comm port.
IN xx FA	Fx x=1-4	Fx x=1-7	Fx x=1-8	Additive Feedback Error – Indicates that the additive feedback has exceeded the programmed number of errors.
IN xx AC	AC	AC	AC	Additive Communications Error – Indicates a failure on the master/slave communications line between the AccuLoad III and the Additive Injector Subsystem.
IN xx KA	Kx x=1-4	Kx x=1-7	Kx x=1-8	Low Additive Error – Indicates that not enough additive was injected during one cycle or an average of several cycles.
IN xx MA	Mx x=1-4	Mx x=1-7	Mx x=1-8	Excessive Additive Pulses Error – Indicates that too many additive flow meter pulses were detected.
IN xx NA	Nx x=1-4	Nx x=1-7	Nx x=1-8	No Additive Pulses Error – Indicates that the additive flow meter's pulses were not detected.
IN xx RA	Rx x=1-4	Rx x=1-7	Rx x=1-8	Additive Frequency Error – Indicates that the additive volume is too high for the rate selected; a second dose of additive is being requested before delivery of the first dose completes.
IN xx UA	Ux x=1-4	Ux x=1-7	Ux x=1-8	"Unauthorize" Error – Indicates that the unauthorize command failed at the end of the batch for an additive. Authorization may have to be removed manually (by power cycling the additive system) to prevent unwanted additive in subsequent batches/transactions.
IN xx GA	Fx x=1-4	Fx x=1-7	Fx x=1-8	General Additive Error – Indicates that there is an additive injector error.
IN xx OR	Rx x=1-4	Rx x=1-7	Rx x=1-8	Overspeed Injector – Indicates that the meter on the metered injector has exceeded its specified maximum frequency.
IN xx CR	AC	AC 0	AC 0	Command Refused Error – Indicates that the command from the AccuLoad to the injector was rejected.

Note 1: *Alarms related to features unique to AccuLoad III are mapped to the DA alarm on the AccuLoad II protocols. Clearable alarms of this nature can be cleared via the AccuLoad II protocol using the special "AR AA" syntax (clear all resettable totals.)*

Note 2: AccuLoad alarms not in the above list will not occur and any reset requests will result in NO03 – Value Rejected.

Section V – Related Publications

The following literature can be obtained from FMC Technologies Measurement Solutions Literature Fulfillment at johno@gohrs.com or online at *www.fmctechnologies.com*. When requesting literature from Literature Fulfillment, please reference the appropriate bulletin number and title.

AccuMate for AccuLoad III

AccuLoad III-X

AccuLoad II to III Upgrade

Visit our website at www.fmctechnologies.com/measurementsolutions