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Introduction

This manual is to be used for the installation of the Smith Meter AccuLoad III Virtual Load Rack Simulator Kit onto a PC-based computer system. The manual is divided into four sections: Introduction, Installation, Operation, and Related Publications.

"Installation" describes step-by-step procedures for installing the VLR program on the PC-based computer system.

"Operation" describes the functions and operation of the VLR program.

"Related Publications" lists the literature associated with the AccuLoad III products.

Product Description

The VLR (Virtual Load Rack Simulator) is a Windows-based application designed to simulate the functions of the meter, valve, additives, temperature transducer, pressure transducer, density transducer, and truck grounding and overfill systems. The state-of-the-art simulator is used to demonstrate the functions of the AccuLoad III.

Receipt of Equipment

The VLR Simulator is shipped with every AccuLoad III Demo unit. It consists of the following:

ALS1/ALD1

- 3 program diskettes
- a simulator board mounted on the EAAI board
- a simulator PROM (U8) installed on the EAAI board
- a cable from the EAAI board (TB6) to the PC for the simulator
- a cable for the KDC (TB1) to the PC for the AccuMate.

ALQ1, ALQ3, ALQ4

- 3 program diskettes
- a simulator board mounted on the EAAI board
- a simulator board mounted on the BSE board
- a simulator PROM (U8) for the EAAI board
- a simulator PROM (U5) for the BSE board
- a cable for the EAAI board (TB6) and the BSE (TB14) to the PC for VLR simulation
- a cable for the KDC (TB1) to the PC for AccuMate.

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 liability. Carefully remove the unit from its packing case and inspect for damaged or missing parts.

If damage has occurred during shipment or if parts are missing, a written report should be submitted to the Customer Service Department, FMC Measurement Solutions, 1602 Wagner Avenue, Erie, Pennsylvania 16514.

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

Section II - Installation

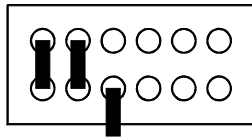
System Requirements

The VLR will operate on an IBM PC-compatible (Pentium 90 MHz or better) computer operating in a Windows environment (Windows 95 or later) with at least 4M of memory, one 3-1/2" floppy disk drive, and a mouse. The hard drive should have at least 4M of free disk space.

EAAI Requirements

The EAAI board must be set up as follows to operate the VLR Simulator (see Figure 1):

- 232 Plug-in board installed in CN4
- VLR_EAAI PROM installed in U8
- Jumpers J4 and J5 removed
- JP1 configuration for analog inputs and outputs (4 Ain and 2 Aout)
 - JP1:7-8 Open
 - JP1:9-10 Shorted
 - JP1:11-12 Shorted



Communication Wiring

The communication wiring between the PC and the AccuLoad III should be set up as follows:

ALS1/ALD1

PC (9-pin)	AccuLoad III
2	TB6-1 (Tx)
3	TB6-2 (Rx)
5	TB6-3 (Gnd)

ALQ1, ALQ3, ALQ4

PC (9-pin)	AccuLoad III - EAAI
2	TB6-1 (Tx)
3	TB6-2 (Rx)
5	TB6-3 (Gnd)
Jumper from EAAI	AccuLoad III BSE
TB6-1 (Tx)	TB14-1 (Tx)
TB6-2 (Rx)	TB14-2 (Rx)
TB6-3 (Gnd)	TB14-3 (Gnd)

Program (VLR) Installation

Note: Be certain to close all other programs before installation.

To install the VLR program:

1. Insert the VLR diskette marked Number 1 into the floppy drive (typically the a:\ drive).
2. Click on the "Start" button at the lower left-hand side of the screen.
3. Select "Run" from the popup menu.
4. Click on "Setup.exe". The installation program will guide the operator through the installation process with a series of prompts.
5. A message will appear on the screen during the installation process, prompting the operator to select a location for the program. A default destination will be suggested. If the default is acceptable, click "Next." Otherwise, specify another destination and folder for the program.
6. The program will automatically install and will prompt the user to select "Finish" when installation is complete.

Click on the "AccuLoad III VLR" in the program menu to launch the program and configure for use.

Section II – Installation

AccuLoad I/O Functions

The AccuLoad III's inputs and outputs should be programmed as follows to simulate all the functions that are available on the VLR. These parameters can be programmed manually through the keypad along with the other parameters that are being used for the demonstration, or they can be downloaded using the AccuMate for the AccuLoad III. The AccuMate includes three demonstration files: VLR-2 Product Ratio Blending, VLR-2 Sequential Blending Arms, and VLR-2 Straight Product Arms.

The factory default for these files is Imperial Units (gallons, pounds, etc.). To display SI units (liters, kilograms, etc.) on the ALS1 and ALD1 firmware only, do the following:

1. Click on "Configure" at the lower right-hand side of the VLR display
2. Choose "Misc."
3. A dialog box will appear. Position the cursor in the checkbox beside "Metric Units." Click with the mouse to obtain a checkmark, indicating that "Metric Units" is selected
4. Click on "OK."

To return to Imperial units, repeat steps 1 through 4 above. Clicking in a box with a checkmark will eliminate the checkmark and deselect the option.

Single Arm Standard AccuLoad/Function	
Analog #1	Product Temperature
Analog #2	Product Pressure
Analog #3	Product Density
AC In #7	Weights and Measures Switch
AC In #8	Program Enable Switch
AC In #9	Ground Switch
AC In #10	Overfill Switch
AC Out #4	Additive Injector #1
AC Out #5	Alarm 2 Out
AC Out #6	Additive Injector #2
AC Out #7	Upstream Solenoid
AC Out #8	Downstream Solenoid
AC Out #9	Alarm 1 Out
AC Out #11	Additive Injector #3

Single Arm Standard (Continued) AccuLoad/Function	
AC Out #12	Additive Injector #4
AC Out #13	Spare Out #1
AC Out #14	Spare Out #2
DC In #5	Spare In #1
DC In #6	Spare In #2
DC Out #1	Spare Out #3 (KDC Terminals)
DC Out #2	Spare Out #4 (KDC Terminals)
DC Out #3	Spare Out #5 (KDC Terminals)

Single Arm Ratio AccuLoad/Function	
Analog #1	Product #1 Temperature
Analog #2	Product #1 Pressure
Analog #3	Product #2 Temperature
Analog #4	Product #2 Pressure
AC In #7	Security Switch
AC In #9	Ground Switch
AC In #10	Overfill Switch
AC Out #4	Additive Injector #1, Product #1
AC Out #5	Additive Injector #1, Product #2
AC Out #6	Additive Injector #2, Product #1
AC Out #7	Upstream Solenoid, Product #1
AC Out #8	Downstream Solenoid, Product #1
AC Out #9	Alarm Out
AC Out #11	Additive Injector #2, Product #2
AC Out #12	Upstream Solenoid, Product #2
AC Out #13	Downstream Solenoid, Product #2
DC In #4	Spare In #1
DC In #5	Spare In #2
DC In #6	Spare In #3
DC Out #1	Spare Out #1
DC Out #2	Spare Out #2
DC Out #3	Spare Out #3

Section II - Installation

Single Arm Sequential AccuLoad/Function	
Analog #1	Product Temperature
Analog #2	Product Pressure
AC In #7	Security Switch
AC In #8	Spare In #1
AC In #9	Ground Switch
AC In #10	Overfill Switch
AC In #11	Block Valve Feedback #1 Enable
AC Out #4	Block Valve #1 Status
AC Out #5	Block Valve #2 Status
AC Out #6	Block Valve #3 Status
AC Out #7	Upstream Solenoid
AC Out #8	Downstream Solenoid
AC Out #9	Alarm Out
AC Out #10	Block Valve #4 Status
DC In #4	Block Valve Feedback #2 Enable
DC In #5	Block Valve Feedback #3 Enable
DC In #6	Block Valve Feedback #4 Enable
DC Out #1	Additive Injector #1
DC Out #2	Additive Injector #2
DC Out #3	Spare Out #1

Dual-Arm Standard 1 + 1 AccuLoad/Function	
Analog #1	Product Temperature #1
Analog #2	Product Pressure #1
Analog #3	Product Temperature #2
Analog #4	Product Pressure #2
AC In #7	Ground Switch #2
AC In #8	Overfill Switch #2
AC In #9	Ground Switch #1
AC In #10	Overfill Switch #1
AC In #11	Spare In #1
AC Out #4	Spare Out #2
AC Out #5	Spare Out #3
AC Out #6	Spare Out #4

Dual-Arm Standard 1 + 1 (Continued) AccuLoad/Function	
AC Out #7	Upstream Solenoid #1
AC Out #8	Downstream Solenoid #1
AC Out #9	Alarm Out
AC Out #11	Spare Out #6
AC Out #12	Upstream Solenoid #2
AC Out #13	Downstream Solenoid #2
DC In #4	Spare In #4
DC In #5	Spare In #2
DC In #6	Spare In #3
DC Out #1	Spare Out #1
DC Out #2	Spare Out #5
DC Out #3	Spare Out #7

Dual-Arm Sequential 2 + 2 AccuLoad/Function	
Analog #1	Product Temperature #1
Analog #2	Product Pressure #1
Analog #3	Product Temperature #2
Analog #4	Product Pressure #2
AC In #7	Ground Switch #2
AC In #9	Ground Switch #1
AC In #11	Block Valve Feedback #1 Enable
AC Out #4	Block Valve Status #1
AC Out #5	Block Valve Status #2
AC Out #6	Block Valve Status #3
AC Out #7	Upstream Solenoid #1
AC Out #8	Downstream Solenoid #1
AC Out #9	Alarm Out
AC Out #12	Upstream Solenoid #2
AC Out #13	Downstream Solenoid #2
DC In #4	Block Valve Feedback #4 Enable
DC In #5	Block Valve Feedback #2 Enable
DC In #6	Block Valve Feedback #3 Enable
DC Out #1	Spare Out
DC Out #2	Block Valve Status #4

Section II – Installation

Dual-Arm Sequential 3 + 1 AccuLoad/Function	
Analog #1	Product Temperature #1
Analog #2	Product Pressure #1
Analog #3	Product Temperature #2
Analog #4	Product Pressure #2
AC In #7	Ground Switch #2
AC In #8	Overfill Switch #2
AC In #9	Ground Switch #1
AC In #10	Overfill Switch #1
AC In #11	Block Valve Feedback #1 Enable
AC Out #4	Block Valve Status #1
AC Out #5	Block Valve Status #2
AC Out #6	Block Valve Status #3
AC Out #9	Alarm Out
DC In #4	Security Switch
DC In #5	Block Valve Feedback #2 Enable
DC In #6	Block Valve Feedback #3 Enable
DC Out #1	Spare Out #1
DC Out #2	Spare Out #2

Quad-Arm Standard AccuLoad/Function	
Analog #1	Product #1 Temperature
Analog #2	Product #2 Temperature
Analog #3	Product #3 Temperature
Analog #4	Product #4 Temperature
AC In #7	Product #2 Ground
AC In #8	Product #2 Overfill
AC In #9	Product #1 Ground
AC In #10	Product #1 Overfill
AC In #11	Spare Input #1
AC In #12	Product #4 Ground
AC In #13	Product #4 Overfill
AC In #14	Product #3 Ground
AC In #15	Product #3 Overfill
AC Out #4	Product #1 Additive Injector #1
AC Out #5	Spare Output #4
AC Out #6	Product #1 Additive Injector #2

Quad-Arm Standard AccuLoad/Function	
AC Out #7	Product #1 Upstream Solenoid
AC Out #8	Product #1 Downstream Solenoid
AC Out #9	Alarm #1
AC Out #10	Product #1 Pump
AC Out #11	Spare Output #5
AC Out #12	Product #2 Upstream Solenoid
AC Out #13	Product #2 Downstream Solenoid
AC Out #14	Product #2 Pump
AC Out #15	Spare Output #6
AC Out #16	Spare Output #7
AC Out #17	Spare Output #8
AC Out #18	Product #3 Upstream Solenoid
AC Out #19	Product #3 Downstream Solenoid
AC Out #20	Alarm #2
AC Out #21	Product #3 Pump
AC Out #22	Product #2 Additive Injector #1
AC Out #23	Product #4 Upstream Solenoid
AC Out #24	Product #4 Downstream Solenoid
AC Out #25	Product #4 Pump
AC Out #26	Product #2 Additive Injector #2
AC Out #27	Product #3 Additive Injector #1
AC Out #28	Product #3 Additive Injector #2
AC Out #29	Product #4 Additive Injector #1
AC Out #30	Product #4 Additive Injector #2
DC In #4	Spare Input #4
DC In #5	Spare Input #2
DC In #6	Spare Input #3
DC Out #1	Spare Output #1
DC Out #2	Spare Output #2
DC Out #3	Spare Output #3
BIO DC In/Out #1	Spare BIOB #1
BIO DC In/Out #2	Spare BIOB #2
BIO DC In/Out #3	Spare BIOB #3
BIO DC In/Out #4	Spare BIOB #4

Section II - Installation

Quad-Arm Standard AccuLoad/Function	
BIO DC In/Out #5	Spare BIOB #5
BIO DC In/Out #6	Spare BIOB #6
BIO DC In/Out #7	Spare BIOB #7
BIO DC In/Out #8	Spare BIOB #8

Dual-Arm Standard and 2-Product Sequential AccuLoad/Function	
Analog #1	Arm #1 Product Temperature
Analog #2	Arm #2 Product Temperature
Analog #3	Arm #3 Product Temperature
AC In #7	Arm #2 Ground
AC In #8	Arm #2 Overfill
AC In #9	Arm #1 Ground
AC In #10	Arm #1 Overfill
AC In #11	Spare Input #1
AC In #12	Arm #3 Product #1 Block Valve Feedback
AC In #13	Arm #3 Product #2 Block Valve Feedback
AC In #14	Arm #3 Ground
AC In #15	Arm #3 Overfill
AC Out #4	Arm #1 Additive Injector #1
AC Out #5	Spare Output #4
AC Out #6	Arm #1 Additive Injector #2
AC Out #7	Arm #1 Upstream Solenoid
AC Out #8	Arm #1 Downstream Solenoid
AC Out #9	Alarm #1
AC Out #10	Arm #1 Pump
AC Out #11	Spare Output #5
AC Out #12	Arm #2 Upstream Solenoid
AC Out #13	Arm #2 Downstream Solenoid
AC Out #14	Arm #2 Pump
AC Out #15	Spare Output #6

Dual-Arm Standard and 2-Product Sequential AccuLoad/Function	
AC Out #16	Spare Output #7
AC Out #17	Spare Output #8
AC Out #18	Arm #3 Upstream Solenoid
AC Out #19	Arm #3 Downstream Solenoid
AC Out #20	Alarm #2
AC Out #21	Arm #3 Product #1 Pump
AC Out #22	Arm #2 Additive Injector #1
AC Out #23	Arm #3 Product #1 Block Valve
AC Out #24	Arm #3 Product #2 Block Valve
AC Out #25	Arm #3 Product #2 Pump
AC Out #26	Arm #2 Additive Injector #2
AC Out #27	Arm #3 Additive Injector #1
AC Out #28	Arm #3 Additive Injector #2
AC Out #29	Arm #3 Additive Injector #3
AC Out #30	Arm #3 Additive Injector #4
DC In #4	Spare Input #4
DC In #5	Spare Input #2
DC In #6	Spare Input #3
DC Out #1	Spare Output #1
DC Out #2	Spare Output #2
DC Out #3	Spare Output #3
BIO DC In/Out #1	Spare BIOB #1
BIO DC In/Out #2	Spare BIOB #2
BIO DC In/Out #3	Spare BIOB #3
BIO DC In/Out #4	Spare BIOB #4
BIO DC In/Out #5	Spare BIOB #5
BIO DC In/Out #6	Spare BIOB #6
BIO DC In/Out #7	Spare BIOB #7
BIO DC In/Out #8	Spare BIOB #8

Section II – Installation

4-Product Ratio AccuLoad/Function	
Analog #1	Product #1 Temperature
Analog #2	Product #2 Temperature
Analog #3	Product #3 Temperature
Analog #4	Product #4 Temperature
AC In #7	Spare Input #5
AC In #8	Spare Input #6
AC In #9	Ground
AC In #10	Overfill
AC In #11	Spare Input #1
AC In #12	Spare Input #7
AC In #13	Spare Input #8
AC In #14	Spare Input #9
AC In #15	Spare Input #10
AC Out #4	Product #1 Additive Injector #1
AC Out #5	Spare Output #4
AC Out #6	Product #1 Additive Injector #2
AC Out #7	Product #1 Upstream Solenoid
AC Out #8	Product #1 Downstream Solenoid
AC Out #9	Alarm #1
AC Out #10	Product #1 Pump
AC Out #11	Spare Output #5
AC Out #12	Product #2 Upstream Solenoid
AC Out #13	Product #2 Downstream Solenoid
AC Out #14	Product #2 Pump
AC Out #15	Spare Output #6
AC Out #16	Spare Output #7
AC Out #17	Spare Output #8
AC Out #18	Product #3 Upstream Solenoid
AC Out #19	Product #3 Downstream Solenoid
AC Out #20	Alarm #2
AC Out #21	Product #3 Pump
AC Out #22	Product #2 Additive Injector #1
AC Out #23	Product #4 Upstream Solenoid
AC Out #24	Product #4 Downstream Solenoid
AC Out #25	Product #4 Pump
AC Out #26	Product #2 Additive Injector #2
AC Out #27	Product #3 Additive Injector #1
AC Out #28	Product #3 Additive Injector #2

4-Product Ratio AccuLoad/Function	
AC Out #29	Product #4 Additive Injector #1
AC Out #30	Product #4 Additive Injector #2
DC In #4	Spare Input #4
DC In #5	Spare Input #2
DC In #6	Spare Input #3
DC Out #1	Spare Output #1
DC Out #2	Spare Output #2
DC Out #3	Spare Output #3
BIO DC In/Out #1	Spare BIOB #1
BIO DC In/Out #2	Spare BIOB #2
BIO DC In/Out #3	Spare BIOB #3
BIO DC In/Out #4	Spare BIOB #4
BIO DC In/Out #5	Spare BIOB #5
BIO DC In/Out #6	Spare BIOB #6
BIO DC In/Out #7	Spare BIOB #7
BIO DC In/Out #8	Spare BIOB #8

Standard and 3-Product Ratio AccuLoad/Function	
Analog #1	Arm #1 Product Temperature
Analog #2	Arm #2 Product #1 Temperature
Analog #3	Arm #3 Product #2 Temperature
Analog #4	Arm #2 Product #3 Temperature
AC In #7	Arm #2 Ground
AC In #8	Arm #2 Overfill
AC In #9	Arm #1 Ground
AC In #10	Arm #1 Overfill
AC In #11	Spare Input #1
AC In #12	Spare Input #5
AC In #13	Spare Input #6
AC In #14	Spare Input #7
AC In #15	Spare Input #8

Section II - Installation

Standard and 3-Product Ratio AccuLoad/Function	
AC Out #4	Arm #1 Additive Injector #1
AC Out #5	Spare Output #4
AC Out #6	Arm #1 Additive Injector #2
AC Out #7	Arm #1 Upstream Solenoid
AC Out #8	Arm #1 Downstream Solenoid
AC Out #9	Alarm #1
AC Out #10	Arm #1 Pump
AC Out #11	Spare Output #5
AC Out #12	Arm #2 Product #1 Upstream Solenoid
AC Out #13	Arm #2 Product #2 Downstream Solenoid
AC Out #14	Arm #2 Product #1 Pump
AC Out #15	Spare Output #6
AC Out #16	Spare Output #7
AC Out #17	Spare Output #8
AC Out #18	Arm #2 Product #2 Upstream Solenoid
AC Out #19	Arm #2 Product #2 Downstream Solenoid
AC Out #20	Alarm #2
AC Out #21	Arm #2 Product #2 Pump
AC Out #22	Arm #2 Product #1 Additive Injector #1
AC Out #23	Arm #2 Product #3 Upstream Solenoid
AC Out #24	Arm #2 Product #3 Downstream Solenoid
AC Out #25	Arm #2 Product #3 Pump
AC Out #26	Arm #2 Product #1 Additive Injector #2
AC Out #27	Arm #2 Product #2 Additive Injector #1
AC Out #28	Arm #2 Product #2 Additive Injector #2
AC Out #29	Arm #2 Product #3 Additive Injector #1
AC Out #30	Arm #2 Product #3 Additive Injector #2
DC In #4	Spare Input #4
DC In #5	Spare Input #2

Standard and 3-Product Ratio AccuLoad/Function	
DC In #6	Spare Input #3
DC Out #1	Spare Output #1
DC Out #2	Spare Output #2
DC Out #3	Spare Output #3
BIO DC In/Out #1	Spare BIOB #1
BIO DC In/Out #2	Spare BIOB #2
BIO DC In/Out #3	Spare BIOB #3
BIO DC In/Out #4	Spare BIOB #4
BIO DC In/Out #5	Spare BIOB #5
BIO DC In/Out #6	Spare BIOB #6
BIO DC In/Out #7	Spare BIOB #7
BIO DC In/Out #8	Spare BIOB #8

Six-Product Sequential AccuLoad/Function	
Analog #1	Product Temperature
Analog #2	Product Pressure
AC In #7	Spare Input #1
AC In #8	Spare Input #2
AC In #9	Ground
AC In #10	Overfill
AC In #11	Product #1 Block Valve Feedback
AC In #12	Product #5 Block Valve Feedback
AC In #13	Product #6 Block Valve Feedback
AC In #14	Spare Input #3
AC In #15	Spare Input #4
AC Out #4	Product #1 Block Valve
AC Out #5	Product #2 Block Valve
AC Out #6	Product #3 Block Valve
AC Out #7	Upstream Solenoid
AC Out #8	Downstream Solenoid

Section II – Installation

Six-Product Sequential AccuLoad/Function	
AC Out #9	Alarm #1
AC Out #10	Product #4 Block Valve
AC Out #11	Product #1 Pump
AC Out #12	Product #2 Pump
AC Out #13	Product #3 Pump
AC Out #14	Product #4 Pump
AC Out #15	Product #5
AC Out #16	Product #6 Pump
AC Out #17	Product #5 Block Valve
AC Out #18	Product #6 Block Valve
AC Out #19	Spare Output #2
AC Out #20	Alarm #2
AC Out #21	Spare Output #3
AC Out #22	Spare Output #4
AC Out #23	Spare Output #5
AC Out #24	Spare Output #6
AC Out #25	Spare Output #7
AC Out #26	Spare Output #8
AC Out #27	Spare Output #9
AC Out #28	Spare Output #10
AC Out #29	Additive Injector #3
AC Out #30	Additive Injector #4
DC Out #1	Additive Injector #1
DC Out #2	Additive Injector #2
DC Out #3	Spare Output #1
DC In #4	Product #2 Block Valve Feedback
DC In #5	Product #3 Block Valve Feedback
DC In #6	Product #4 Block Valve Feedback
BIO DC In/Out #1	Spare BIOB #1
BIO DC In/Out #2	Spare BIOB #2
BIO DC In/Out #3	Spare BIOB #3
BIO DC In/Out #4	Spare BIOB #4
BIO DC In/Out #5	Spare BIOB #5

Six-Product Sequential AccuLoad/Function	
BIO DC In/Out #6	Spare BIOB #6
BIO DC In/Out #7	Spare BIOB #7
BIO DC In/Out #8	Spare BIOB #8

Analog Inputs, Single Arm Standard AccuLoad/Function	
1	Input – Not defined
2	Input 4-20 mA Temperature 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
3	Input 4-20 mA Pressure 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm ² , 20mA = 7.4 kg/cm ²)
4	Input 4-20 mA Density 4mA = 696 kg/M ³ , 20mA = 1080 kg/M ³ (4mA = 696 kg/M ³ , 20mA = 1080 kg/M ³)
5	Input – Not defined
6	Input – Not defined

Analog Inputs, Single Arm Ratio AccuLoad/Function	
1	Arm #1 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
2	Arm #1 Pressure Input 4-20 mA, 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm ² , 20mA = 7.4 kg/cm ²)
3	Arm #1 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
4	Arm #1 Pressure Input 4-20 mA, 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm ² , 20mA = 7.4 kg/cm ²)
5	Input – Not defined
6	Input – Not defined

Section II - Installation

Analog Inputs, Single Arm Sequential AccuLoad/Function	
1	Arm #1 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
2	Arm #1 Pressure Input 4-20 mA, 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm2, 20mA = 7.4 kg/cm2)
3	Input – Not defined
4	Input – Not defined
5	Input – Not defined
6	Input – Not defined

Analog Inputs, Dual-Arm Standard 1 + 1 AccuLoad/Function	
1	Arm #1 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
2	Arm #1 Pressure Input 4-20 mA, 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm2, 20mA = 7.4 kg/cm2)
3	Arm #2 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
4	Arm #2 Pressure Input 4-20 mA, 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm2, 20mA = 7.4 kg/cm2)
5	Input – Not defined
6	Input – Not defined

Analog Inputs, Dual Arm Sequential 2 + 2 AccuLoad/Function	
1	Arm #1 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
2	Arm #1 Pressure Input 4-20 mA, 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm2, 20mA = 7.4 kg/cm2)
3	Arm #2 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
4	Arm #2 Pressure Input 4-20 mA, 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm2, 20mA = 7.4 kg/cm2)
5	Input – Not defined
6	Input – Not defined

Analog Inputs, Dual-Arm Sequential 3 + 1 AccuLoad/Function	
1	Arm #1 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
2	Arm #1 Pressure Input 4-20 mA, 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm2, 20mA = 7.4 kg/cm2)
3	Arm #2 Temperature Input 4-20, mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
4	Arm #2 Pressure Input 4-20 mA, 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm2, 20mA = 7.4 kg/cm2)
5	Input – Not defined
6	Input – Not defined

Analog Inputs, Quad Standard AccuLoad/Function	
1	Arm #1 Product #1 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
2	Arm #2 Product #2 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
3	Arm #3 Product #3 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
4	Arm #4 Product #4 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
5	Input – Not defined
6	Input – Not defined

Section II – Installation

Analog Inputs, Dual Standard and 2-Product Sequential AccuLoad/Function	
1	Arm #1 Product Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
2	Arm #2 Product Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
3	Arm #3 Product Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
4	Input – Not defined
5	Input – Not defined
6	Input – Not defined

Analog Inputs, Standard and 3-Product Ratio AccuLoad/Function	
1	Arm #1 Product Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
2	Arm #2 Product #1 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
3	Arm #2 Product #2 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
4	Arm #2 Product #3 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
5	Input – Not defined
6	Input – Not defined

Analog Inputs, 4-Product Ratio AccuLoad/Function	
1	Product #1 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
2	Product #2 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
3	Product #3 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
4	Product #4 Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
5	Input – Not defined
6	Input – Not defined

Analog Inputs, 6-Product Sequential AccuLoad/Function	
1	Product Temperature Input 4-20 mA, 4mA = -4.4 deg F, 20mA = 98 deg F. (4mA = -17.2 C., 20mA = 34.0 deg C.)
2	Product Pressure Input 4-20 mA, 4mA = 32.8 PSI, 20mA = 84 PSI (4mA = 2.28 kg/cm ² , 20mA = 7.4 kg/cm ²)
3	Input – Not defined
4	Input – Not defined
5	Input – Not defined
6	Input – Not defined

Note: Temperature, pressure, and density settings are shown in Imperial Units, with Metric Units in parentheses.

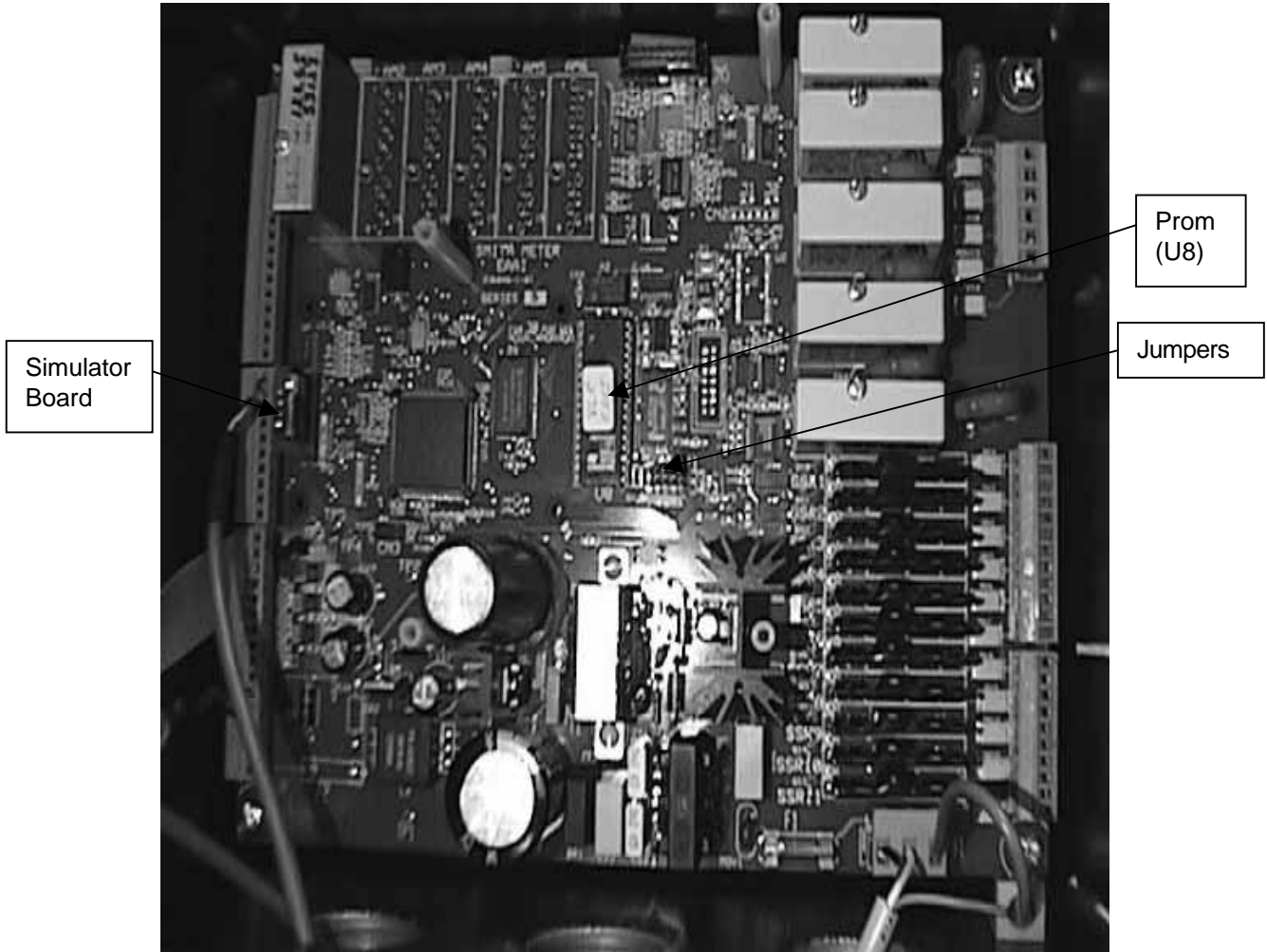


Figure 1. EAI Board

Section II – Installation

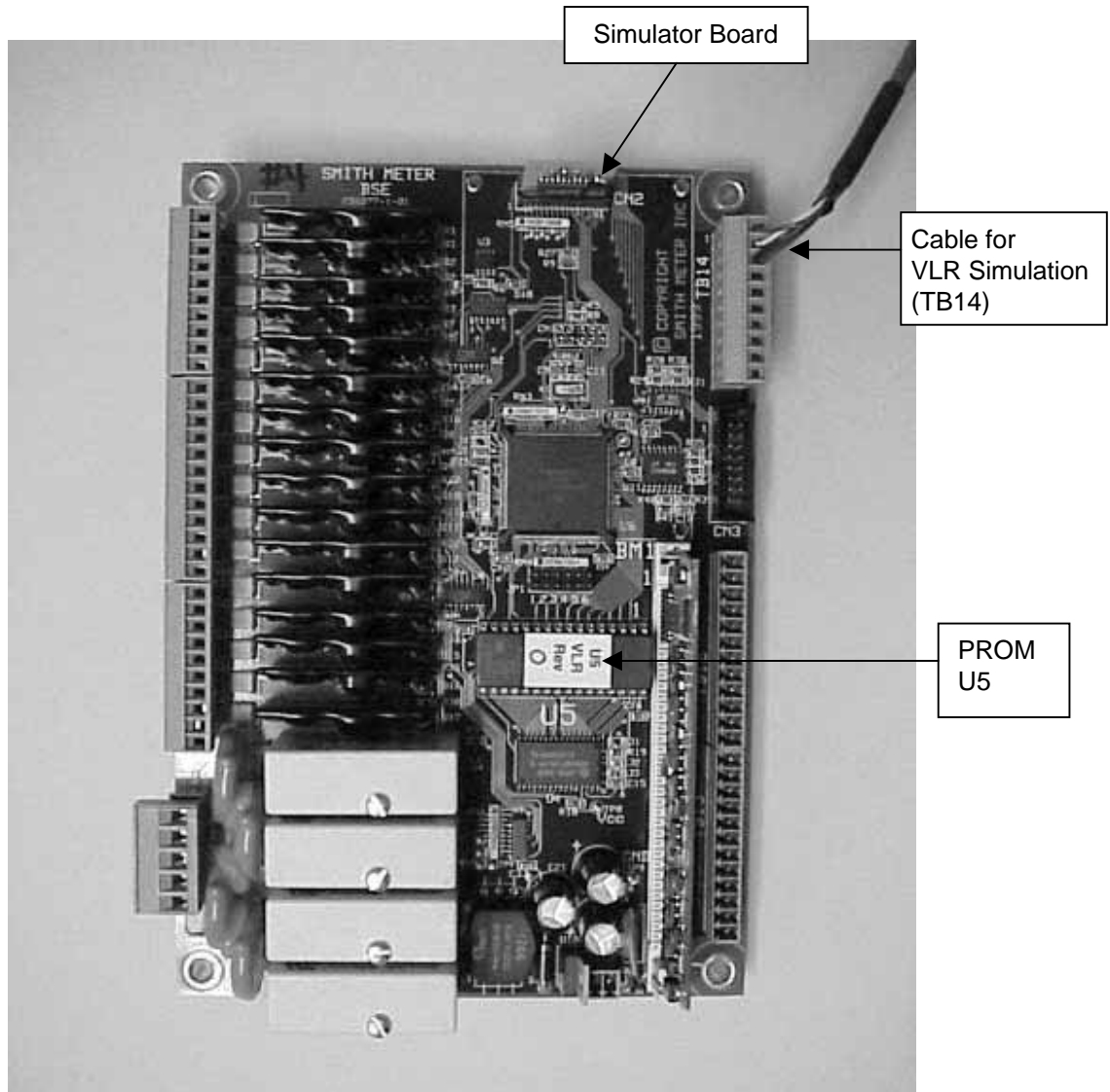


Figure 2. BSE Board

Section III - Operation

After the VLR Simulator has been installed on the PC and the PC is wired to the AccuLoad III, the system is ready to operate. If the AccuLoad III is not yet programmed either manually through the keypad or through the AccuMate that was provided with the demo unit, download one of the VLR programs to the AccuLoad III.

The system is now ready for operation. Press the SET key on the keypad while the AccuLoad is in RUN mode. The AccuLoad will prompt the operator to set a batch on the AccuLoad III. After the batch has been preset, press the START key to initiate the loading process. If there is a sound card in the PC, you will hear the simulator start loading the truck. In addition to sound, the simulator will indicate loading via a pulse counter and lights on the control valve that change to green denoting the solenoid operation on the valve.

Each simulated configuration on the VLR has its own set of switches that can be turned on and off using the mouse. Possible switches include Weights and Measures (W&M); Program Enable Relay (PE); spare inputs and outputs; security; and ground and overflow switches. Also available with some configurations are one or two alarms, and temperature, pressure, and density indicators. The table below indicates the primary indicators available on each of the configuration screens. Note that all Quad configurations include eight BIOB DC input/output switches, in addition to those switches shown on the table.

On those screens with temperature, pressure, and density indicators, increase or decrease the readings by clicking the needles with the mouse and dragging them to new positions on the dials. These can be used to simulate high and low alarms, or to show a change in the factors used for compensation.

	W&M	PE	Spare Inputs	Ground	Overflow	Security	Spare Outputs	Temp	Pressure	Density	Alarms
Single Arm Standard	1	1	2	1	1	--	5	1	1	1	2
Single Arm Ratio	--	--	3	1	1	1	3	2	2	--	1
Single Arm Sequential	--	--	1	1	1	1	1	1	1	--	1
Dual Arm Standard 1 + 1	--	--	4	2	2	--	7	2	2	--	1
Dual Arm Sequential 2 + 2	--	--	1	2	2	--	--	2	2	--	1
Dual Arm Sequential 3 + 1	--	--	--	2	2	1	2	2	2	--	1
Quad Arm Standard	--	--	4	4	4	--	8	4	--	--	2
Dual Standard + 2-Product Sequential	--	--	4	3	3	--	8	3	--	--	2
4-Product Ratio	--	--	10	1	1	--	8	4	--	--	2
Standard + 3-Product Ratio	--	--	8	2	2	--	8	4	--	--	2
6-Product Sequential	--	--	4	1	1	--	10	1	1	--	2

Section III – Operation

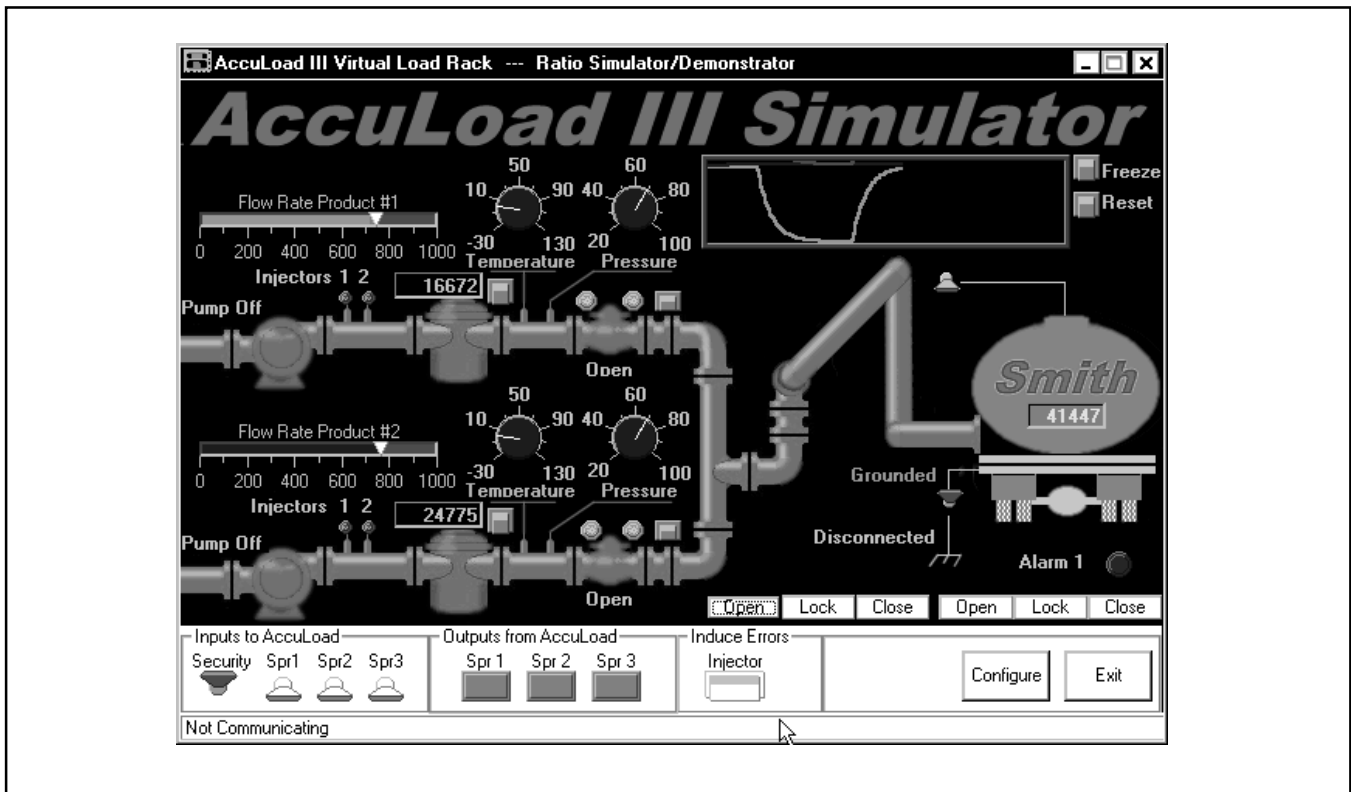


Figure 3

Click with the mouse on the "Configure" button at the lower right-hand corner of the simulator display to set up sounds and dynamics for the system, a flow echo strip chart, and the communication port to be used by the computer. Metric units are selectable only on the ALS1 and ALD1 configurations.

From the "Sounds" dialog box, the simulator can be set up to allow the sound of the meter turning to accompany flow. "Click Sound Enable" adds the sound of valve solenoids clicking on and off as these actions occur. "Audible Alarm Enable" provides the sound of an alarm as it occurs. These settings will not be active until the "Apply" or "OK" button is clicked. Select "OK" to leave the screen.

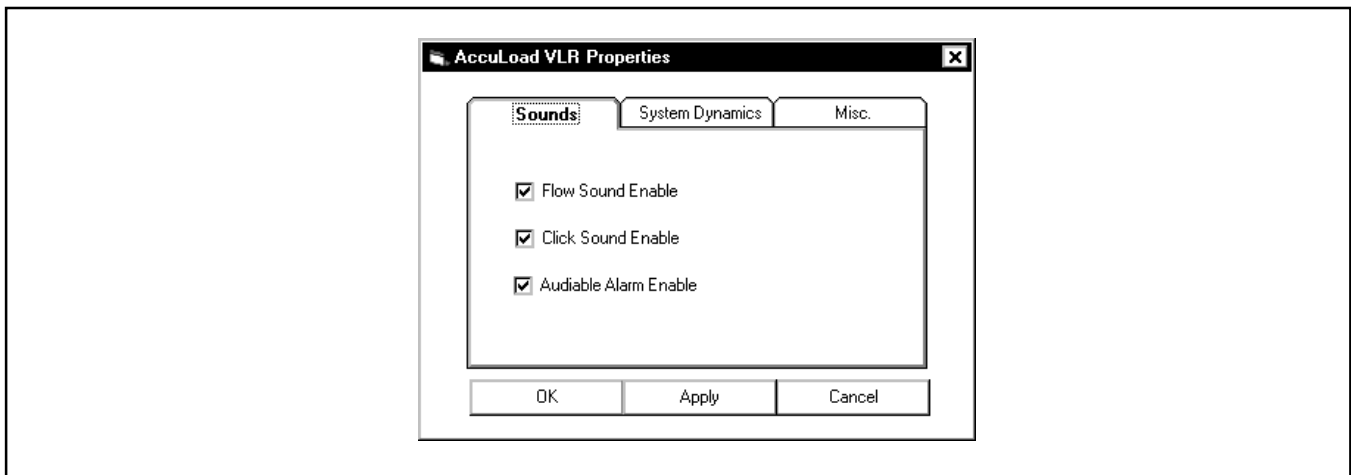


Figure 4

Section III - Operation

The "System Dynamics" display allows the operator to set the Valve Time Constant. The Valve Time Constant default is 0.875, which allows for smooth valve opening and closing. Change valve opening and closing speeds by adjusting this factor. The higher the factor, the more quickly the valve responds to commands to open and close. Again, changing these settings will not take effect until the "Apply" or "OK" button has been clicked with the mouse. Press "OK" to leave the screen.

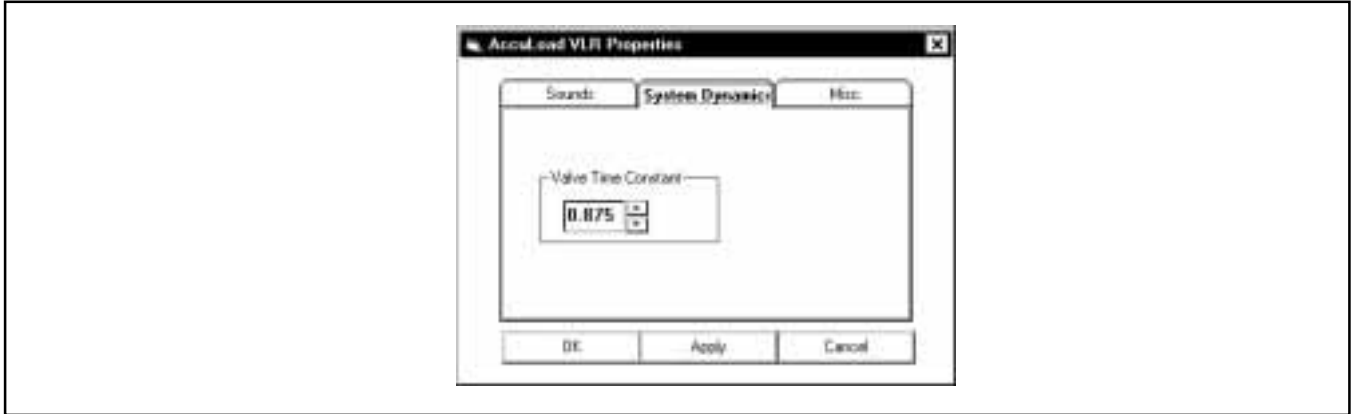


Figure 5

The "Misc." (Miscellaneous) dialog box shown in Figure 6 below allows the operator to set the simulator to display a flow rate strip chart, change to metric units, and select the communication port out of the PC. (See Figure 3 to see the simulator with the flow rate strip chart.) The chart will indicate the changes in flow rate as they occur when the AccuLoad III is running. The dialog box in Figure 6 is applicable only to ALS1 and ALD1 configurations; the Quad box is identical, except that there is no option for metric selection. Selecting metric units in the simulator changes the scales and units. The AccuLoad III should also be changed to metric units, either through the keypad or through the AccuMate. Changes are not complete without using the mouse to click on the "Apply" or "OK" button. Click on "OK" to close the dialog box.



Figure 6

Section III – Operation

The figure below displays the flow rate recorder, the number of meter pulses that have been output by the meter, and the current flow rate in GPM. Note that in the bottom left-hand corner of the simulator is the message "Communication Established." This indicates that the simulator is currently communicating with the AccuLoad III. It is also possible to use the simulator in an offline mode, in which case the message will be "Not Communicating." Valves may be manually opened to simulate product flow.

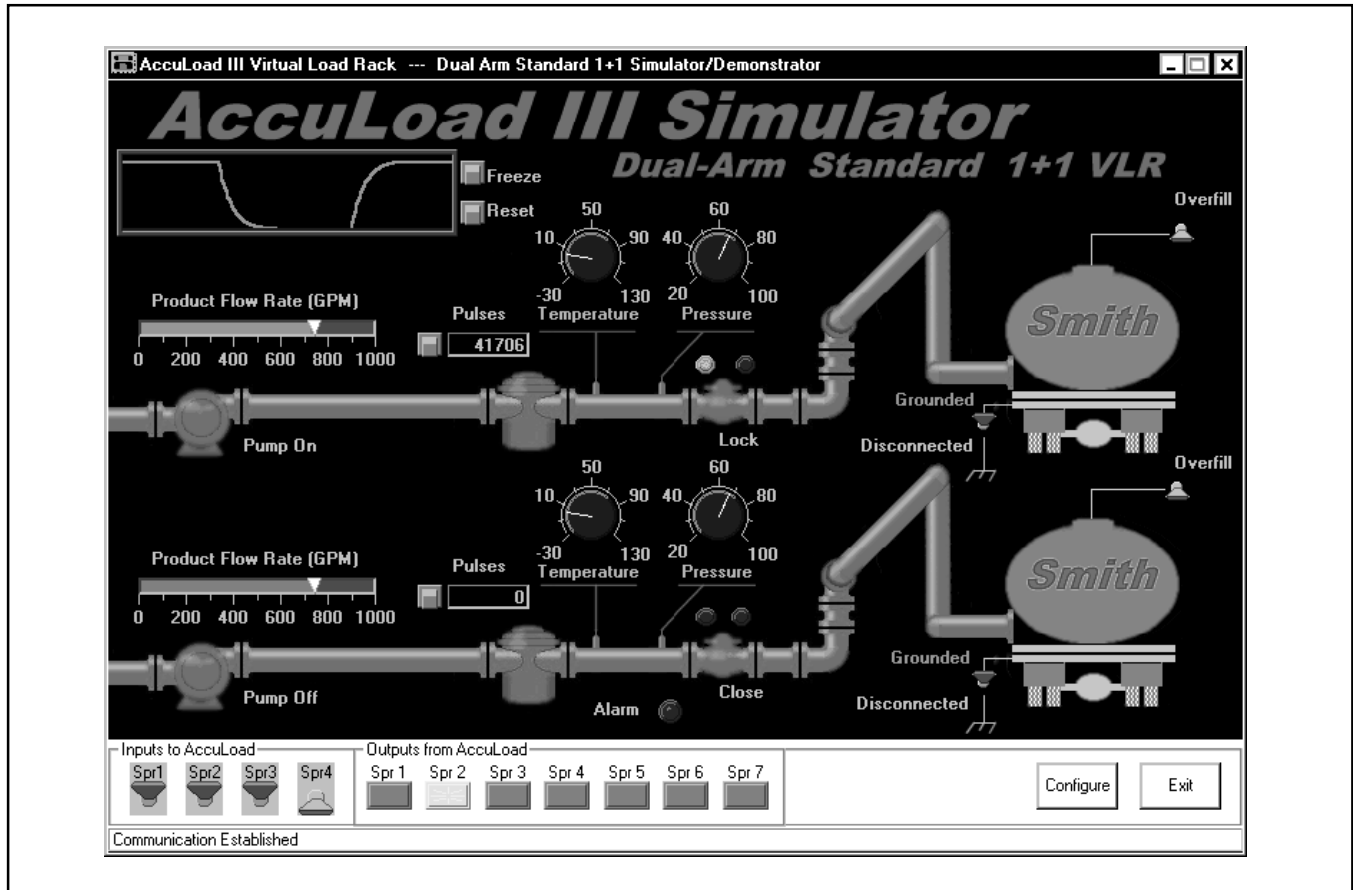


Figure 7

Also available on some of the simulator displays is the ability to induce pulse errors and to cause additive injector errors. Clicking and holding the mouse on either of the buttons will induce errors in the system. If the AccuLoad is programmed to alarm on these errors, an alarm will occur. If a relay is set up in the AccuLoad III for alarm output, the alarm will appear on the AccuLoad III display and the simulator Alarm 1 or Alarm 2 will light, indicating an alarm in the system.

Section IV – Related Publications

The following literature can be obtained from the FMC Measurement Solutions Literature Fulfillment Department, by e-mail: johno@gohrs.com; by fax: 814/454-2718; or by mail: FMC Measurement Solutions Fulfillment Center, 1107 Hess Avenue, Erie, Pennsylvania 16503, Phone 814/874-0364.

AccuLoad III ALS

Installation.....	Bulletin MN06108
Operator Reference	Bulletin MN06110
Communications.....	Bulletin MN06112L
Modbus Communications	Bulletin MN06111L

Accumate for AccuLoad III

Specifications	Bulletin SS06032
Installation/Operation	Bulletin MN06114

AccuLoad III (ALS1, ALD1)

Specification	Bulletin SS06030
Installation	Bulletin MN06108
Operator Reference.....	Bulletin MN06118
Communications.....	Bulletin MN06119L
Modbus Communications	Bulletin MN06120

AccuLoad III (ALQ1, ALQ3, ALQ4)

Specification	Bulletin SS06034
Installation	Bulletin MN06125
Operator Reference.....	Bulletin MN06122
Communications.....	Bulletin MN06119L
Modbus Communications	Bulletin MN06124

AccuLoad III Upgrade (ALS)

Specification	Bulletin SS06033
Installation	Bulletin MN06115

Revisions included in MN06116 Issue/Rev. 0.2 (7/00):

Added explanatory information for ALQ1, ALQ3, and ALQ4 configurations.

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

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