red lion

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MODEL PAXR-1/8 DIN RATE PANEL METER

- *5-DIGIT LED DISPLAY*
- *RATE INDICATION*
- *PROGRAMMABLE FUNCTION KEYS / USER INPUTS*
- *FOUR SETPOINT ALARM OUTPUTS (W/Plug-in card)*
- *NEMA 4X/IP65 SEALED FRONT BEZEL*

CE

**UL Recognized Component,
File # E179259**

GENERAL DESCRIPTION

The PAXR (PAX Rate Panel Meter) offers many features and performance capabilities to suit a wide range of industrial applications. The optional Plug-in Setpoint Alarm Cards allow the opportunity to configure the meter for alarms if that is a requirement.

The PAXR meter accepts digital inputs from a variety of sources including outputs from CMOS or TTL circuits and all standard RLC sensors. The maximum input signal is 34 KHz.

The meter provides three different display indications. These include a Rate Display, Max Display, and Min Display. Annunciators indicate which display is being shown.

The front panel keys and three user inputs are programmable to perform various meter functions. One of the functions includes exchanging parameter lists, allowing double the number of programmable setpoint.

The meter can have up to four setpoint outputs, determined by the Plug-in cards. The Plug-in cards provide dual FORM-C relays (5 A), quad FORM-A relays (3 A) or either quad sinking or quad sourcing open collector logic outputs. The outputs are assigned to the rate display value. The outputs can also be independently configured to suit a variety of control and alarm requirements.
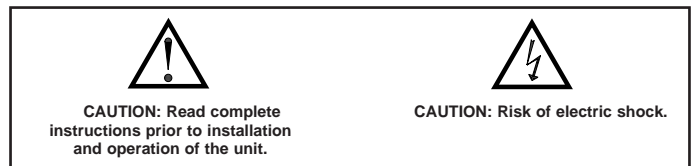
Once the meter has been initially configured, the parameter list may be locked out from further modification entirely, or only the setpoint can be made accessible. This lockout is possible through a security code or user input.

The meter has been specifically designed for harsh industrial environments. With a NEMA 4X/IP65 sealed bezel and extensive testing to meet CE requirements, the meter provides a tough yet reliable application solution.
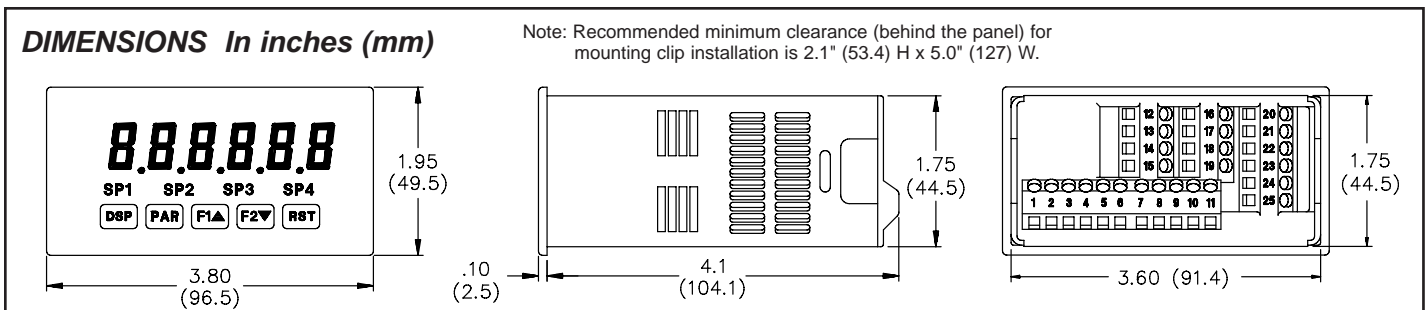
SAFETY SUMMARY

All safety related regulations, local codes and instructions that appear in this literature or on equipment must be observed to ensure personal safety and to prevent damage to either the instrument or equipment connected to it. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Do not use this meter to directly command motors, valves, or other actuators not equipped with safeguards. To do so can be potentially harmful to persons or equipment in the event of a fault to the unit.

! CAUTION: Read complete instructions prior to installation and operation of the unit.

⚡ CAUTION: Risk of electric shock.

SPECIFICATIONS

1. **DISPLAY**: 5 digit, 0.56" (14.2 mm) red LED
2. **POWER**:
   AC Versions (PAXR0000):
   AC Power: 85 to 250 VAC, 50/60 Hz, 12 VA
   Isolation: 2300 Vrms for 1 min. to all inputs and outputs. (300 V working)
   DC Versions (PAXR0010):
   DC Power: 11 to 36 VDC, 7 W
   AC Power: 24 VAC, ± 10%, 50/60 Hz, 9 VA
   Isolation: 500 Vrms for 1 min. to all inputs and outputs (50 V working)
3. **SENSOR POWER**: 12 VDC, ±10%, 100 mA max. Short circuit protected.
4. **ANNUNCIATORS**:
   r - Rate
   H - Maximum (High) Rate
   L - Minimum (Low) Rate
   SP1 - Setpoint 1 Output State
   SP2 - Setpoint 2 Output State
   SP3 - Setpoint 3 Output State
   SP4 - Setpoint 4 Output State
5. **KEYPAD**: 3 programmable function keys, 5 keys total.
6. **RATE DISPLAY**:
   Accuracy: ± 0.01%
   Minimum Frequency: 0.01 Hz
   Maximum Frequency: 34 KHz
   Maximum Display: 5 digits: 99999
   Adjustable Display (low) Update: 0.1 to 99.9 seconds
   Over Range Display: "r OLOL"

DIMENSIONS In inches (mm)

Note: Recommended minimum clearance (behind the panel) for mounting clip installation is 2.1" (53.4) H x 5.0" (127) W.

SP1   SP2   SP3   SP4

DSP PAR F1▲ F2▼ RST

1.95 (49.5)

3.80 (96.5)

.10 (2.5)

4.1 (104.1)

1.75 (44.5)

3.60 (91.4)

1.75 (44.5)

7. **INPUT A**:

DIP switch selectable to accept pulses from a variety of sources including switch contacts, outputs from CMOS or TTL circuits, magnetic pickups and all standard RLC sensors.

LOGIC: Input trigger levels V_{IL} = 1.5 V max.; V_{IH} = 3.75 V min.

Current sinking: Internal 7.8 KΩ pull-up to +12 VDC, I_{MAX} = 1.9 mA.

Current sourcing: Internal 3.9 KΩ pull-down, 7.3 mA max. @ 28 VDC, V_{MAX} = 30 VDC.

Filter: Damping capacitor provided for switch contact bounce. Limits input frequency to 50 Hz and input pulse widths to 10 msec. minimum.

MAGNETIC PICKUP:

Sensitivity: 200 mV peak

Hysteresis: 100 mV

Input impedance: 3.9KΩ @ 60 Hz

Maximum input voltage: ± 40 V peak, 30 Vrms

8. **USER INPUTS**: Three programmable user inputs

Max. Continuous Input: 30 VDC

Isolation To Sensor Input Commons: Not isolated

Logic State: Jumper selectable for sink/source logic

INPUT STATE	SINKING INPUTS 5.1 KΩ pull-up to +12 V	SOURCING INPUTS 5.1 KΩ pull-down
Active	V_{IN} < 0.7 VDC	V_{IN} > 2.5 VDC
Inactive	V_{IN} > 2.5 VDC	V_{IN} < 0.7 VDC

Response Time: 6 msec. typical; function dependent. Certain resets, stores and inhibits respond within 25 µsec if an edge occurs with the associated counter or within 6 msec if no count edge occurs with the associated counter. These functions include ᴴᶫ𝐫𝐒𝐭ᶫ, ᴴᶫ𝐫𝐒𝐭𝐄, 𝐢𝐧ᴴ 𝐢𝐛𝐭, and 𝐒𝐭𝐎𝐫𝐄. Once activated, all functions are latched for 50 msec min. to 100 msec max. After that period, another edge/level may be recognized.

9. **SETPOINT OUTPUT CARD**:

Dual Relay Card:

Type: Two FORM-C relays

Isolation To Sensor & User Input Commons: 2300 Vrms for 1 min.
Working Voltage: 240 Vrms

Contact Rating:

One Relay Energized: 5 amps @ 120/240 VAC or 28 VDC (resistive load), 1/8 HP @ 120 VAC, inductive load

Total current with both relays energized not to exceed 5 amps

Life Expectancy: 100 K cycles min. at full load rating. External RC snubber extends relay life for operation with inductive loads

Response Time: 5 msec. nominal with 3 msec. nominal release

Time Accuracy: ± 0.01% + 20 msec.

Quad Relay Card:

Type: Four FORM-A relays

Isolation To Sensor & User Input Commons: 2300 Vrms for 1 min.
Working Voltage: 250 Vrms

Contact Rating:

One Relay Energized: 3 amps @ 250 VAC or 30 VDC (resistive load), 1/10 HP @ 120 VAC, inductive load

Total current with both relays energized not to exceed 4 amps

Life Expectancy: 100 K cycles min. at full load rating. External RC snubber extends relay life for operation with inductive loads

Response Time: 5 msec. nominal with 3 msec. nominal release

Time Accuracy: ± 0.01% + 20 msec.

Quad Sinking Open Collector Card:

Type: Four isolated sinking NPN transistors

Isolation To Sensor & User Input Commons: 500 Vrms for 1 min.
Working Voltage: 50 V. Not isolated from all other commons.

Rating: 100 mA max. @ V_{SAT} = 0.7 V max. V_{MAX} = 30 V

Response Time: Low Update time

Time Accuracy: ± 0.01% + 20 msec.

Quad Sourcing Open Collector Card:

Type: Four isolated sinking PNP transistors

Isolation To Sensor & User Input Commons: 500 Vrms for 1 min.
Working Voltage: 50 V. Not isolated from all other commons.

Rating: Internal supply: 24 VDC ± 10%, 30 mA max. total

External supply: 30 VDC max. 100 mA each output

Response Time: Low Update time

Time Accuracy: ± 0.01% + 20 msec.

10. **MEMORY**: Non-volatile E^{2}PROM retains all programming parameters and display values.

11 **CERTIFICATIONS AND COMPLIANCE**:

SAFETY

UL Recognized Component, File #E179259, UL3101-1, CSA 22.2 No. 1010-1 Recognized to U.S. and Canadian requirements under the Component Recognition Program of Underwriters Laboratories, Inc.

Type 4X Enclosure rating (Face only), UL50

IECEE CB Scheme Test Certificate #UL2540C-179259/USA, CB Scheme Test Report #98ME60961-000098 Issued by Underwriters Laboratories, Inc.

IEC 1010-1, EN 61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 1.

IP65 Enclosure rating (Face only), IEC 529

IP20 Enclosure rating (Rear of unit), IEC 529

ELECTROMAGNETIC COMPATIBILITY

Immunity to EN 50082-2

Electrostatic discharge	EN 61000-4-2	Level 3; 8 Kv air
Electromagnetic RF fields	EN 61000-4-3	Level 3; 10 V/m 80 MHz - 1 GHz
Fast transients (burst)	EN 61000-4-4	Level 4; 2 Kv I/O Level 3; 2 Kv power
RF conducted interference	EN 61000-4-6	Level 3; 10 V/rms 150 KHz - 80 MHz

Emissions to EN 50081-2

RF interference	EN 55011	Enclosure class A Power mains class A

Note:

Refer to the EMC Installation Guidelines section of this bulletin for additional information.

12. **ENVIRONMENTAL CONDITIONS**:

Operating Temperature Range: 0 to 50°C

Storage Temperature range: -40 to 60°C

Operating and Storage Humidity: 0 to 85% max. non-condensing

Altitude: Up to 2000 meters

13. **CONNECTIONS**: High compression, cage-clamp terminal block

Wire Strip Length: 0.3" (7.5 mm)

Wire Gauge Capacity: One 14 AWG (2.55 mm) solid, two 18 AWG (1.02 mm), or four 20 AWG (0.61 mm).

14. **CONSTRUCTION**: This unit is rated for NEMA 4X/IP65 indoor use. IP20 Touch safe. Installation Category II, Pollution Degree 2. One piece bezel/case. Flame resistant. Synthetic rubber keypad. Panel gasket and mounting clip included.

15. **WEIGHT**: 10.1 oz (295 g)

ORDERING INFORMATION

TYPE	MODEL NO.	DESCRIPTION	PART NUMBERS
Meter	PAXR	Rate Panel Meter, Upgradeable, AC Powered	PAXR0000
		Rate Panel Meter, Upgradeable, DC/24 VAC Powered	PAXR0010
Optional Plug-In Cards	PAXCDS	Dual Setpoint Relay Output Card	PAXCDS10
		Quad Setpoint Relay Output Card	PAXCDS20
		Quad Setpoint Sinking Open Collector Output Card	PAXCDS30
		Quad Setpoint Sourcing Open Collector Output Card	PAXCDS40

OPTIONAL PLUG-IN CARDS

SETPOINT ALARMS PLUG-IN CARDS (PAXCDS)

The PAXR series has four setpoint alarm output plug-in cards. Only one of these cards can be installed at a time. (Logic state of the outputs can be reversed in the programming.) These plug-in cards include:

Dual relay, FORM-C, Normally open & closed
Quad relay, FORM-A, Normally open only

Isolated quad sinking NPN open collector
Isolated quad sourcing PNP open collector

The card can be installed initially or at a later date. Each optional plug-in card is shipped with complete installation instructions, however, programming should be reviewed in Module 6.

1.0 INSTALLING THE METER

Installation

The PAX meets NEMA 4X/IP65 requirements for indoor use when properly installed. The unit is intended to be mounted into an enclosed panel. Prepare the panel cutout to the dimensions shown. Remove the panel latch and cardboard sleeve from the unit and discard the cardboard sleeve. Slide the panel gasket over the rear of the unit to the back of the bezel. The unit should be installed fully assembled. Insert the unit into the panel cutout.
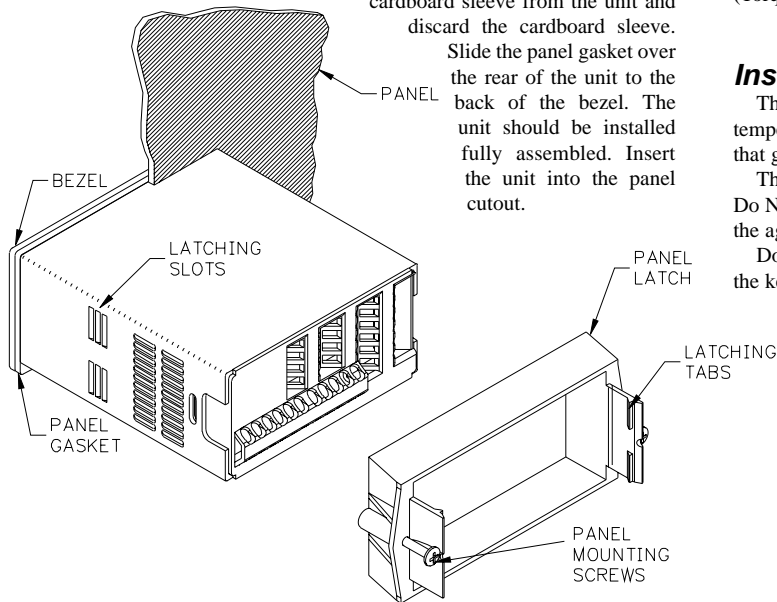
While holding the unit in place, push the panel latch over the rear of the unit so that the tabs of the panel latch engage in the slots on the case. The panel latch should be engaged in the farthest forward slot possible. To achieve a proper seal, tighten the latch screws evenly until the unit is snug in the panel (Torque to approximately 7 in-lbs [79N-cm]). Do not over-tighten the screws.

Installation Environment

The unit should be installed in a location that does not exceed the operating temperature and provides good air circulation. Placing the unit near devices that generate excessive heat should be avoided.

The bezel should only be cleaned with a soft cloth and neutral soap product. Do NOT use solvents. Continuous exposure to direct sunlight may accelerate the aging process of the bezel.

Do not use tools of any kind (screwdrivers, pens, pencils, etc.) to operate the keypad of the unit.

PANEL CUT-OUT

$3.62 \, ^{+.03}_{-.00}$
$(92 \, ^{+.8}_{-.0})$

$1.77 \, ^{+.02}_{-.00}$
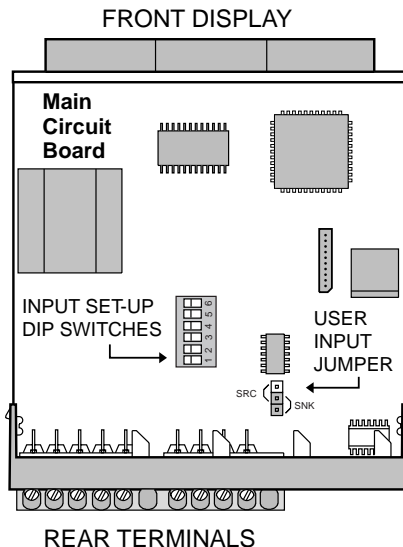$(45 \, ^{+.5}_{-.0})$
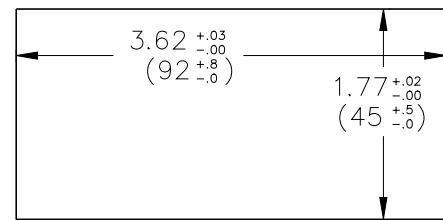
2.0 SETTING THE JUMPER AND DIP SWITCHES

To access the jumper and switches, remove the meter base from the meter case by firmly squeezing and pulling back on the side rear finger tabs. This should lower the latch below the case slot (which is located just in front of the finger tabs). It is recommended to release the latch on one side, then start the other side latch.

Warning: Exposed line voltage exists on the circuit boards. Remove all power to the meter and load circuits before accessing inside of the meter.

2.1 SETTING THE JUMPER

The meter has one jumper for user input logic. When using the user inputs, this jumper must be set before applying power. The Main Circuit Board figure shows the location of the jumper and DIP switches.

The user input jumper determines signal logic for the user inputs, when they are used with user functions or for input signal direction. All user inputs are set by this jumper.

2.2 SETTING THE INPUT DIP SWITCH

The meter has three DIP switches for Input A terminal set-up that must be set before applying power. Switches 4, 5, and 6 are not used.

Input A LO Freq. — 3 — HI Freq.
Input A SRC. — 2 — SNK.
Input A MAG. ON — 1 — Logic

■ Factory Setting
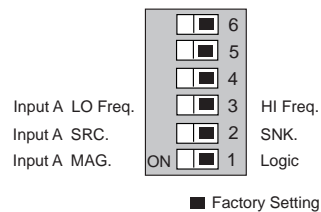
SWITCH 3

HI Frequency: Removes damping capacitor and allows max. frequency.

LO Frequency: Limits input frequency to 50 Hz and input pulse widths to 10 msec.

SWITCH 2

SRC.: Adds internal 3.9 KΩ pull-down resistor, 7.3 mA max. @ 28 VDC, V_{MAX} = 30 VDC.

SNK.: Adds internal 7.8 KΩ pull-up resistor to +12 VDC, I_{MAX} = 1.9 mA.

SWITCH 1

**LOGIC**: Input trigger levels V_{IL} = 1.5 V max.; V_{IH} = 3.75 V max.

MAG: 200 mV peak input (must also have SRC on)

3.0 INSTALLING PLUG-IN CARDS

The Plug-in cards are separately purchased optional cards that perform specific functions. These cards plug into the main circuit board of the meter. The Plug-in cards have many unique functions when used with the PAXR. The literature that comes with these cards should be discarded, unless it specifically states in the Plug-in Card literature that the information applies to the PAXR.

⚠️ **CAUTION**: The Plug-in card and main circuit board contain static sensitive components. Before handling the cards, discharge static charges from your body by touching a grounded bare metal object. Ideally, handle the cards at a static controlled clean workstation. Also, only handle the cards by the edges. Dirt, oil or other contaminants that may contact the cards can adversely affect circuit operation.


TOP VIEW
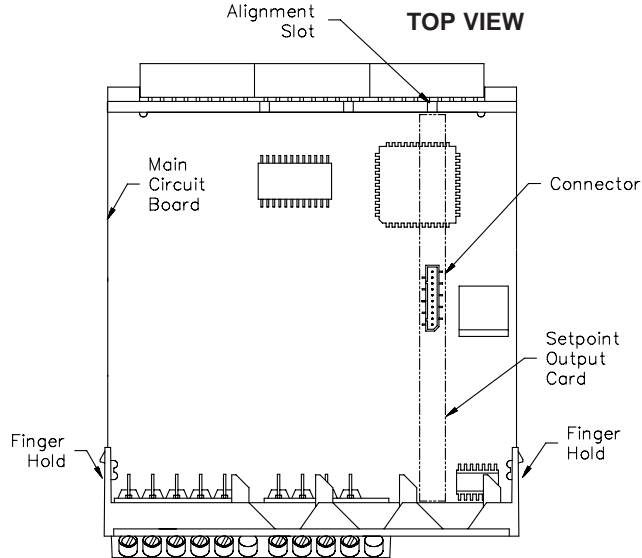
To Install:

1. With the case open, locate the Setpoint Plug-in card connector for the card to be installed. When installing the card, hold the meter by the rear terminals and not by the front display board.*
2. Install the Plug-in card by aligning the card terminals with the slot bay in the rear cover. Be sure the connector is fully engaged and the tab on the Plug-in card rests in the alignment slot on the display board.
3. Slide the meter base back into the case. Be sure the rear cover latches fully into the case.
4. Apply the Plug-in card label to the bottom side of the meter. Do Not Cover the vents on the top surface of the meter. The surface of the case must be clean for the label to adhere properly. Apply the label to the area designated by the large case label.

Quad Sourcing Open Collector Output Card Supply Select

* If installing the Quad sourcing Plug-in Card (PAXCDS40), set the jumper for internal or external supply operation before continuing.
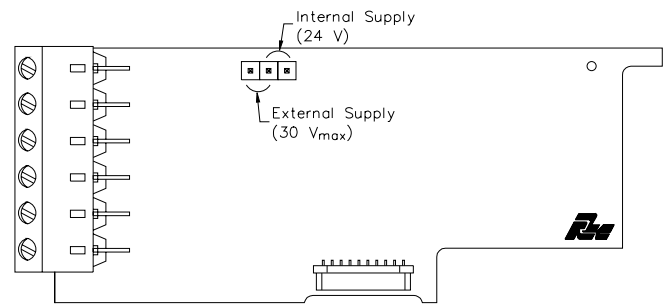
4.0 WIRING THE METER

WIRING OVERVIEW

Electrical connections are made via screw-clamp terminals located on the back of the meter. All conductors should conform to the meter's voltage and current ratings. All cabling should conform to appropriate standards of good installation, local codes and regulations. It is recommended that the power supplied to the meter (DC or AC) be protected by a fuse or circuit breaker.

When wiring the meter, compare the numbers embossed on the back of the meter case against those shown in wiring drawings for proper wire position. Strip the wire, leaving approximately 0.3" (7.5 mm) bare lead exposed (stranded wires should be tinned with solder.) Insert the lead under the correct screw-clamp terminal and tighten until the wire is secure. (Pull wire to verify tightness.) Each terminal can accept up to one #14 AWG (2.55 mm) wire, two #18 AWG (1.02 mm), or four #20 AWG (0.61 mm).

EMC INSTALLATION GUIDELINES

Although this meter is designed with a high degree of immunity to Electro-Magnetic Interference (EMI), proper installation and wiring methods must be followed to ensure compatibility in each application. The type of the electrical noise, source or coupling method into the meter may be different for various installations. The meter becomes more immune to EMI with fewer I/O connections. Cable length, routing, and shield termination are very important and can mean the difference between a successful or troublesome installation. Listed below are some EMC guidelines for successful installation in an industrial environment.

1. The meter should be mounted in a metal enclosure, which is properly connected to protective earth.
2. Use shielded (screened) cables for all Signal and Control inputs. The shield (screen) pigtail connection should be made as short as possible. The connection point for the shield depends somewhat upon the application. Listed below are the recommended methods of connecting the shield, in order of their effectiveness.
   a. Connect the shield only at the panel where the unit is mounted to earth ground (protective earth).
   b. Connect the shield to earth ground at both ends of the cable, usually when the noise source frequency is above 1 MHz.
   c. Connect the shield to common of the meter and leave the other end of the shield unconnected and insulated from earth ground.
3. Never run Signal or Control cables in the same conduit or raceway with AC power lines, conductors feeding motors, solenoids, SCR controls, and heaters, etc. The cables should be run in metal conduit that is properly grounded. This is especially useful in applications where cable runs are long and portable two-way radios are used in close proximity or if the installation is near a commercial radio transmitter.
4. Signal or Control cables within an enclosure should be routed as far away as possible from contactors, control relays, transformers, and other noisy components.
5. In extremely high EMI environments, the use of external EMI suppression devices, such as ferrite suppression cores, is effective. Install them on Signal and Control cables as close to the unit as possible. Loop the cable through the core several times or use multiple cores on each cable for additional protection. Install line filters on the power input cable to the unit to suppress power line interference. Install them near the power entry point of the enclosure. The following EMI suppression devices (or equivalent) are recommended:
   Ferrite Suppression Cores for signal and control cables:
      Fair-Rite # 0443167251 (RLC# FCOR0000)
      TDK # ZCAT3035-1330A
      Steward # 28B2029-0A0
   Line Filters for input power cables:
      Schaffner # FN610-1/07 (RLC# LFIL0000)
      Schaffner # FN670-1.8/07
      Corcom # 1 VR3
   Note: Reference manufacturer's instructions when installing a line filter.
6. Long cable runs are more susceptible to EMI pickup than short cable runs. Therefore, keep cable runs as short as possible.
7. Switching of inductive loads produces high EMI. Use of snubbers across inductive loads suppresses EMI.
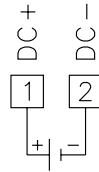   Snubber: RLC# SNUB0000.

4.1 POWER WIRING

AC Power
Terminal 1: VAC
Terminal 2: VAC
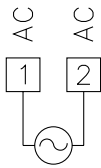
DC Power
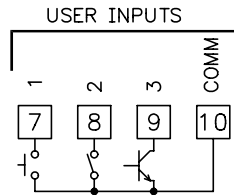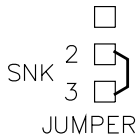Terminal 1: +VDC
Terminal 2: -VDC

4.2 USER INPUT WIRING

Before connecting the wires, the User Input Logic Jumper should be verified for proper position. Only the appropriate User Input terminal has to be wired.

Sinking Logic

Terminals 7-9 } Connect external switching device between the
Terminal 10 } appropriate User Input terminal and User Comm.

The user inputs of the meter are internally pulled up to +12 V with 5.1 K resistance. The input is active when it is pulled low (<0 .7 V).

USER INPUTS
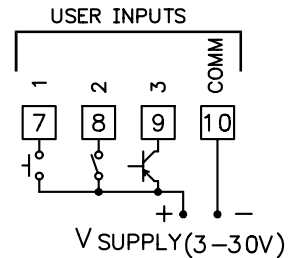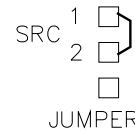
SNK 2 3 JUMPER

Sourcing Logic

Terminals 7-9:
   + VDC through external switching device
Terminal 10:
   -VDC through external switching device

The user inputs of the meter are internally pulled down to 0 V with 5.1 K resistance. The input is active when a voltage greater than 2.5 VDC is applied.

USER INPUTS

SRC 1 2 JUMPER

V SUPPLY(3-30V)

4.3 INPUT WIRING

CAUTION: Sensor input common is NOT isolated from user input common. In order to preserve the safety of the meter application, the sensor input common must be suitably isolated from hazardous live earth referenced voltage; or input common must be at protective earth ground potential. If not, hazardous voltage may be present at the User Inputs and User Input Common terminals. Appropriate considerations must then be given to the potential of the user input common with respect to earth ground; and the common of the isolated plug-in cards with respect to input common.

Magnetic Pickup	AC Inputs From Tach Generators, Etc.	Two Wire Proximity, Current Source
MAGNETIC PICKUP	Resistor to limit current to 2.5 mA MAX.	2.2K Ω
Current Sinking Output	**Current Sourcing Output**	**Interfacing With TTL**
NPN O.C.	PNP O.C.	DIODE +5V COMM
Switch or Isolated Transistor; Current Sink	**Switch or Isolated Transistor; Current Source**	**Emitter Follower; Current Source**

✻ *Switch position is application dependent*

5

4.4 SETPOINT (ALARMS) WIRING

SETPOINT PLUG-IN CARD TERMINALS

DUAL RELAY PAXCDS10

20	⊣⊢
21	⊣⁄⊢ RLY1
22	
23	⊣⊢
24	⊣⁄⊢ RLY2
25	

QUAD RELAY PAXCDS20

20	RLY1
21	COMM
22	RLY2
23	RLY3
24	COMM
25	RLY4

QUAD SINKING PAXCDS30

20	– COMMON
21	– O1 SNK.
22	– O2 SNK.
23	– O3 SNK.
24	– O4 SNK.
25	– COMMON

QUAD SOURCING PAXCDS40

20	– EXTERNAL SUPPLY
21	– O1 SRC.
22	– O2 SRC.
23	– O3 SRC.
24	– O4 SRC.
25	– COMMON

SOURCING OUTPUT LOGIC CARD

+24V
EXTERNAL SUPPLY (30 V MAX.)
ISOLATION
SOURCE OUT
COMM.

SINKING OUTPUT LOGIC CARD

SINK OUT (30 V MAX.)
ISOLATION
COMM.

5.0 REVIEWING THE FRONT BUTTONS AND DISPLAY

r 160.5
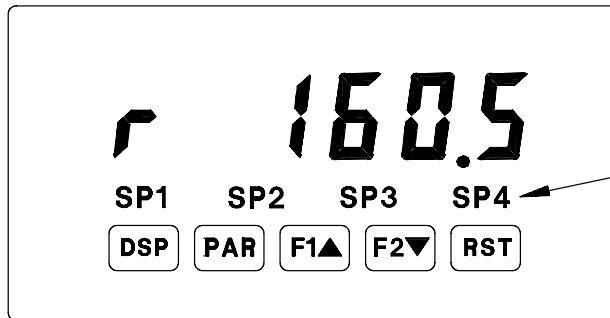
SP1 SP2 SP3 SP4 ← Setpoint Alarm Annunciators

[DSP] [PAR] [F1▲] [F2▼] [RST]

KEY	DISPLAY MODE OPERATION	PROGRAMMING MODE OPERATION
DSP	Index display through Rate, Max., and Min.	Quit programming and return to Display Mode
PAR	Access Programming Mode	Store selected parameter and index to next parameter
F1▲	Function key 1; hold for 3 seconds for Second Function 1 *	Increment selected parameter value or selections
F2▼	Function key 2; hold for 3 seconds for Second Function 2 *	Decrement selected parameter value or selections
RST	Reset (Function key) **	Advances digit location in parameter values

* Factory setting for the F1, and F2 keys is NO mode.
** Factory setting for the RST key is *d5Pr5t* (Reset Display)

6.0 PROGRAMMING THE METER

OVERVIEW

DISPLAY MODE

PAR

NO

PROGRAMMING MENU

Pro

F1/F2 Keys

User Input/ Function Key Parameters	Display/ Program Lock-out Parameters	Rate Input Parameters	Setpoint* (Alarm) Parameters	Factory Service Operations

PAR
1-- - - | *2-FNC* | *3-LOC* | *4-rtE* | *5-- - -* | *6-SPt* | *7-- - -* | *8-- - -* | *9-FCS*
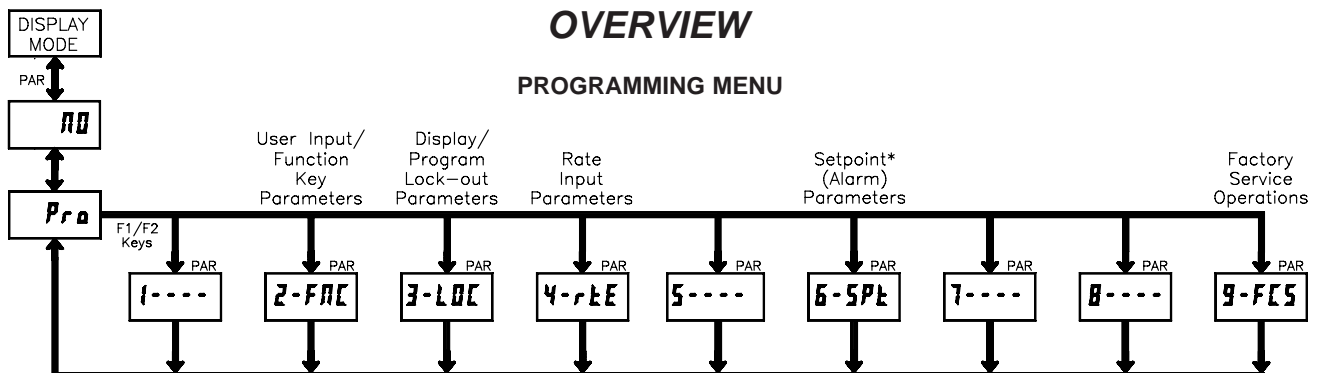
* Only accessible with plug-in card.

PROGRAMMING MODE ENTRY (PAR KEY)

The meter normally operates in the Display Mode. No parameters can be programmed in this mode. The Programming Mode is entered by pressing the **PAR** key. If it is not accessible, then it is locked by either a security code, or a hardware lock.

Two types of programming modes are available. Quick Programming Mode permits only certain parameters to be viewed and/or modified. All meter functions continue to operate except the front panel keys change to Programming Mode Operations. Quick Programming Mode is configured in Module 3. Full Programming Mode permits all parameters to be viewed and modified. In this mode, incoming signals may not be recognized correctly, the front panel keys change to Programming Mode Operations, and certain user input functions are disabled. Throughout this document, Programming Mode (without Quick in front) always refers to "Full" Programming.

MODULE ENTRY (ARROW & PAR KEYS)

The Programming Menu is organized into five modules. These modules group together parameters that are related in function. The display will alternate between *Pro* and the present module. The arrow keys (**F1** and **F2**) are used to select the desired module. The displayed module is entered by pressing the **PAR** key.

MODULE MENU (PAR KEY)

Each module has a separate module menu (which is shown at the start of each module discussion). The **PAR** key is pressed to advance to a particular parameter to be changed, without changing the programming of preceding parameters. After completing a module, the display will return to *Pro NO*. Programming may continue by accessing additional modules.

SELECTION / VALUE ENTRY (ARROW & PAR KEYS)

For each parameter, the display alternates between the present parameter and the selections/value for that parameter. The arrow keys (**F1** and **F2**) are used to move through the selections/values for that parameter. Pressing the **PAR** key, stores and activates the displayed selection/value. This also advances the meter to the next parameter.

PROGRAMMING MODE EXIT (DSP KEY or at *Pro NO* PAR KEY)

The Programming Mode is exited by pressing the **DSP** key (from anywhere in the Programming Mode) or the **PAR** key (with *Pro NO* displayed). This will commit any stored parameter changes to memory and return the meter to the Display Mode. If a parameter was just changed, the **PAR** key should be pressed to store the change before pressing the **DSP** key. (If power loss occurs before returning to the Display Mode, verify recent parameter changes.)
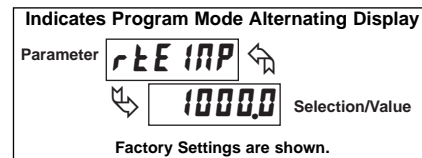
PROGRAMMING TIPS

It is recommended to start with Module 4 for rate. If lost or confused while programming, press the **DSP** key and start over. When programming is complete, it is recommended to record the parameter programming on the Parameter User Chart and lock out parameter programming with a user input or lock-out code.
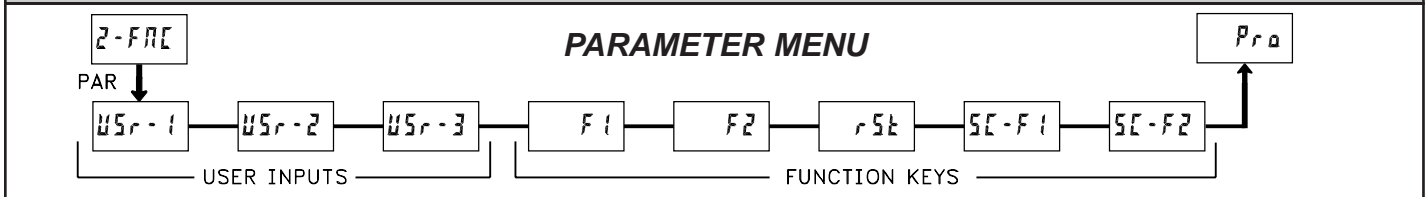
FACTORY SETTINGS

Factory Settings may be completely restored in Module 9. This is a good starting point for programming problems. Most parameters can be left at their Factory Settings without affecting basic start-up. These parameters are identified throughout the module explanations.

ALTERNATING SELECTION DISPLAY

In the explanation of the modules, the following dual display with arrows will appear. This is used to illustrate the display alternating between the parameter on top and the parameter's Factory Setting on the bottom. In most cases, selections and values for the parameter will be listed on the right.

```
┌─────────────────────────────────────────────┐
│  Indicates Program Mode Alternating Display   │
│                                               │
│ Parameter │ rtE INP │⇦                         │
│                                               │
│         ⇨ │ 1000.0 │ Selection/Value          │
│                                               │
│         Factory Settings are shown.           │
└─────────────────────────────────────────────┘
```

6.1 MODULE 2 - User Input and Front Panel Function Key Parameters (2-FNC)

```
┌──────┐                                              ┌─────┐
│2-FNC │        PARAMETER MENU                        │ Pro │
└──────┘                                              └─────┘
  PAR ↓                                                  ↑
┌──────┐ ┌──────┐ ┌──────┐  ┌────┐ ┌────┐ ┌────┐ ┌─────┐ ┌─────┐
│USr-1 │ │USr-2 │ │USr-3 │  │ F1 │ │ F2 │ │ rSt│ │SC-F1│ │SC-F2│
└──────┘ └──────┘ └──────┘  └────┘ └────┘ └────┘ └─────┘ └─────┘
└──── USER INPUTS ────┘      └────────── FUNCTION KEYS ──────────┘
```

Module 2 is the programming for rear terminal user inputs and front panel function keys.

Three rear terminal user inputs are individually programmable to perform specific meter control functions. While in the Display Mode, the function is executed when the user input transitions to the active state. (Refer to the user input specifications for active state response times.) Certain user input functions are disabled in "full" Programming Mode.

Three front panel function keys (**F1**, **F2** and **RST**) are also individually programmable to perform specific meter control functions. While in the Display Mode, the primary function is executed when the key is pressed. Holding the **F1** or **F2** function key for three seconds executes a secondary function. It is possible to program a secondary function without a primary function. The front panel key functions are disabled in both Programming Modes.

In most cases, if more than one user input and/or function key is programmed for the same function, the maintained (level trigger) actions will be performed while at least one of those user inputs or function keys are activated. The momentary (edge trigger) actions are performed every time any of those user inputs or function keys transition to the active state. All functions are available to both user inputs and function keys.

Some of the user functions have a sublist of parameters. The sublist is accessed when **PAR** is pressed at the listed function. The function will only be performed for the parameters entered as *YES*. If a user input or function key is configured for a function with a sublist, then that sublist will need to be scrolled through each time to access the following user inputs or function keys parameters.

NO FUNCTION

```
│ USr-1 │⇦              │  F1 │⇦
⇨ │  NO  │           ⇨ │  NO  │
```

With this selection, NO function is performed. This is the factory setting for all user inputs and function keys except the Reset (**RST**) Key.

PROGRAMMING MODE LOCK-OUT

```
│ USr-1 │⇦
⇨ │ PLOC │
```

Programming Mode is locked-out, as long as activated (maintained action). In Module 3, certain parameters can be setup where they are still accessible during Programming Mode Lockout. A security code can be configured to allow complete programming access during user input lockout. Function keys should not be programmed for *PLOC*.

ADVANCE DISPLAY

`USr-1` ⇪
↳ `dSPSEL`

`F1` ⇪
↳ `dSPSEL`

When activated (momentary action), the display advances to the next display that is not locked out from the Display Mode.
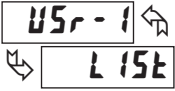
RESET DISPLAY

`USr-1` ⇪
↳ `dSPrSt`

`F1` ⇪
↳ `dSPrSt`
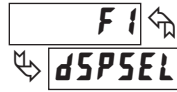
When activated (momentary action), the shown display is reset. This is the factory setting for the Reset (**RST**) Key.

EXCHANGE PARAMETER LISTS

`USr-1` ⇪
↳ `LISt`

`F1` ⇪
↳ `LISt`

Two lists of values are available for `SP-1`, `SP-2`, `SP-3`, and `SP-4`. The two lists are named `LISt-A` and `LISt-b`. If a user input is used to select the list then `LISt-A` is selected when the user input is not active and `LISt-b` is selected when the user input is active, (maintained action). If a front panel key is used to select the list then the list will toggle for each key press, (momentary action). The meter will suspend ALL operations for approximately 1 msec. while the new values are loaded. The display will only indicate which list is active when the list is changed or when entering any Programming Mode.

To program the values for `LISt-A` and `LISt-b`, first complete the programming of all the parameters. Exit programming and switch to the other list. Re-enter programming and enter the values for `SP-1`, `SP-2`, `SP-3`, `SP-4`. If any other parameters are changed, then the other list values must be reprogrammed.
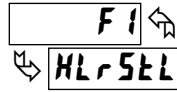
MAINTAINED (LEVEL) RESET AND INHIBIT
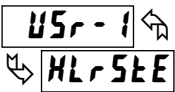
`USr-1` ⇪
↳ `HLrStL`

`F1` ⇪
↳ `HLrStL`
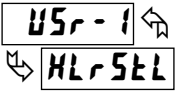
The meter performs a reset and inhibits the displays configured as `YES`, as long as activated (maintained action).

DISPLAY	DESCRIPTION	FACTORY
`HI`	Maximum	`no`
`LO`	Minimum	`no`

MOMENTARY (EDGE) RESET

`USr-1` ⇪
↳ `HLrStE`

`F1` ⇪
↳ `HLrStE`
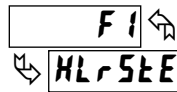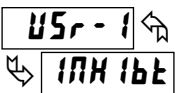
When activated (momentary action), the meter resets the displays configured as `YES`. (Momentary resets improve maximum input frequencies over maintained resets.)

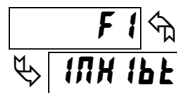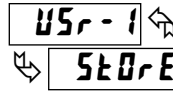| DISPLAY	DESCRIPTION	FACTORY
`HI`	Maximum	`no`
`LO`	Minimum	`no`

INHIBIT

`USr-1` ⇪
↳ `INHIbt`

`F1` ⇪
↳ `INHIbt`

The meter inhibits the displays configured as `YES`, as long as activated (maintained action).

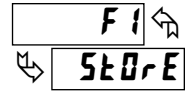| DISPLAY	DESCRIPTION	FACTORY
`HI`	Maximum	`no`
`LO`	Minimum	`no`

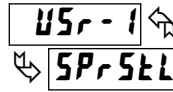## STORE DISPLAY

`USr-1` ⇪
↳ `StOrE`

`F1` ⇪
↳ `StOrE`

The meter holds (freeze) the displays configured as `YES`, as long as activated (maintained action). Internally the maximum and minimum values continue to update.

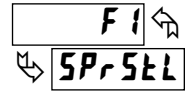| DISPLAY	DESCRIPTION	FACTORY
`HI`	Maximum	`no`
`LO`	Minimum	`no`

DEACTIVATE SETPOINT MAINTAINED (LEVEL)

`USr-1` ⇪
↳ `SPrStL`

`F1` ⇪
↳ `SPrStL`

The meter deactivates the setpoints configured as `YES`, as long as activated (maintained action). This action only functions with a Setpoint plug-in card installed.

DISPLAY	DESCRIPTION	FACTORY
`SP-1`	Setpoint 1	`no`
`SP-2`	Setpoint 2	`no`
`SP-3`	Setpoint 3	`no`
`SP-4`	Setpoint 4	`no`

DEACTIVATE SETPOINT MOMENTARY (EDGE)

`USr-1` ⇪
↳ `SPrStE`

`F1` ⇪
↳ `SPrStE`

When activated (momentary action), the meter deactivates the setpoints configured as `YES`. This action only functions with a Setpoint plug-in card installed.

DISPLAY	DESCRIPTION	FACTORY
`SP-1`	Setpoint 1	`no`
`SP-2`	Setpoint 2	`no`
`SP-3`	Setpoint 3	`no`
`SP-4`	Setpoint 4	`no`
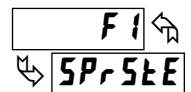
HOLD SETPOINT STATE

`USr-1` ⇪
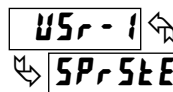↳ `SPHOLd`

`F1` ⇪
↳ `SPHOLd`
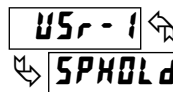
The meter holds the state of the setpoints configured as `YES`, as long as activated (maintained action). This action only functions with a Setpoint plug-in card installed.

DISPLAY	DESCRIPTION	FACTORY
`SP-1`	Setpoint 1	`no`
`SP-2`	Setpoint 2	`no`
`SP-3`	Setpoint 3	`no`
`SP-4`	Setpoint 4	`no`

6.2 MODULE 3 - Display and Program Lock-out Parameters (3-LOC)

PARAMETER MENU

3-LOC → PAR → rAtE — HI — LO — SP-n — COdE → Pro

Rate Display Lock-out | Max Dislay Lock-out | Min Display Lock-out | Setpoint 1—4 Access | Security Code

n = Setpoints 1 to 4

Module 3 is the programming for Display lock-out and "Full" and "Quick" Program lock-out.

When in the Display Mode, the three displays can be read consecutively by repeatedly pressing the **DSP** key. An annunciator indicates the display being shown. These displays can be locked from being visible. It is recommended that the display be set to LOC when the corresponding function is not used.
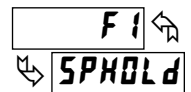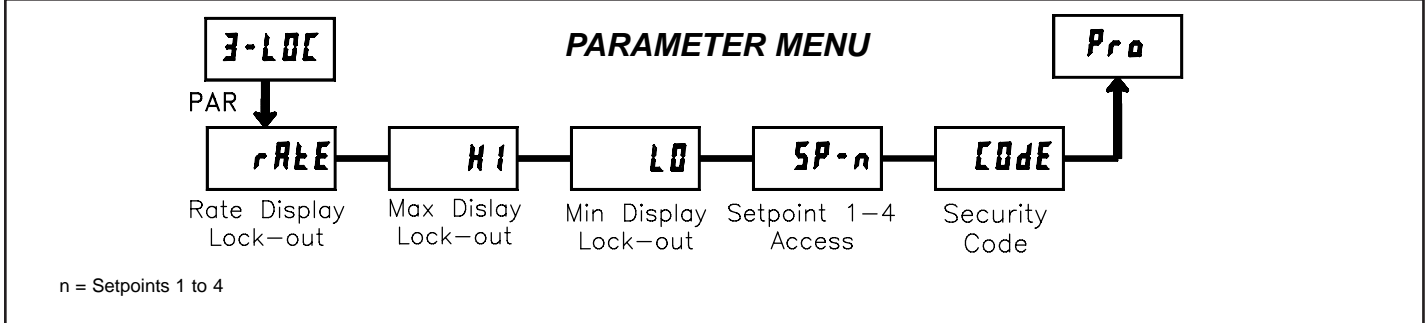
SELECTION	DESCRIPTION
rEd	Visible in Display Mode
LOC	Not visible in Display Mode

"Full" Programming Mode permits all parameters to be viewed and modified. This Programming Mode can be locked with a security code and/or user input. When locked and the **PAR** key is pressed, the meter enters a Quick Programming Mode. In this mode, setpoint values can still be read and/or changed per the selections below.

SELECTION	DESCRIPTION
rEd	Visible but not changeable in Quick Programming Mode
ENt	Visible and changeable in Quick Programming Mode
LOC	Not visible in Quick Programming Mode

RATE DISPLAY LOCK-OUT *
MAX. MIN. DISPLAY LOCK-OUT *
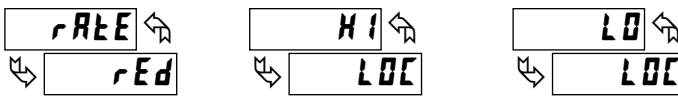
These displays can be programmed for LOC or rEd.

SETPOINT 1 to 4 ACCESS LOCK-OUT *
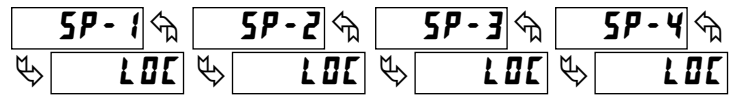
The setpoint displays can be programmed for LOC, rEd, or ENt (See the following table). Accessible only with the Setpoint Plug-in card installed.

SECURITY CODE *

000 to 999

Entry of a non-zero value will cause the prompt COdE to appear when trying to access the "Full" Programming Mode. Access will only be allowed after entering a matching security code or universal code of 222. With this lock-out, a user input would not have to be configured for Program Lock-out. However, this lock-out is overridden by an inactive user input configured for Program Lock-out.

* *Factory Setting can be used without affecting basic start-up.*

PROGRAMMING MODE ACCESS

SECURITY CODE	USER INPUT CONFIGURED	USER INPUT STATE	WHEN PAR KEY IS PRESSED	"FULL" PROGRAMMING MODE ACCESS
0	not PLOC	———	"Full" Programming	Immediate access.
>0	not PLOC	———	Quick Programming	After Quick Programming with correct code # at COdE prompt.
>0	PLOC	Active	Quick Programming	After Quick Programming with correct code # at COdE prompt.
>0	PLOC	Not Active	"Full" Programming	Immediate access.
0	PLOC	Active	Quick Programming	No access
0	PLOC	Not Active	"Full" Programming	Immediate access.

Throughout this document, Programming Mode (without Quick in front) always refers to "Full" Programming (all meter parameters are accessible).

6.3 MODULE 4 - Rate Input Parameters (4-rtE)

PAR ↓

LO-Udt	**HI-Udt**	**rtEdP**	**rtEdSP**	**rtE INP**	**rOUNd**	**LOCUt**	**HI-t**	**LO-t**
Low Update Time	High Update Time	Rate Decimal Position	Rate Scaling Display	Rate Scaling Input	Rate Display Rounding	Min. Low Cut—out	Max. Capture Delay Time	Min. Capture Delay Time
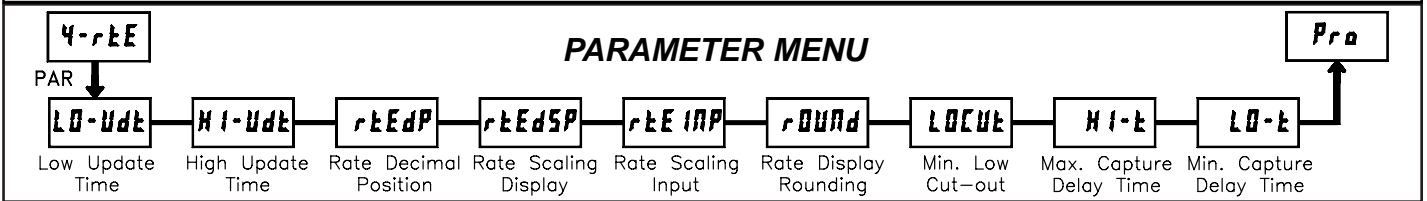
Module 4 is the programming for the Rate parameters. The Rate value is shown with an annunciator of 'r' in the Display Mode.

LOW UPDATE TIME (DISPLAY UPDATE) *

LO-Udt   0.1 to 99.9 seconds
1.0

The Low Update Time is the minimum amount of time between display updates for the Rate display. Values of 0.1 and 0.2 seconds will update the display correctly but may cause the display to appear unsteady. The factory setting of 1.0 will update the display every second minimum.

HIGH UPDATE TIME (DISPLAY ZERO) *

HI-Udt   0.2 to 99.9 seconds
2.0

The High Update Time is the maximum amount of time before the Rate display is forced to zero. The High Update Time **must** be higher than the Low Update Time and higher than the time between pulses of the slowest readable speed. (For more explanation, refer to Input Frequency Calculation.) The factory setting of 2.0, will force the display to zero for speeds below 0.5 Hz or a pulse every 2 seconds.

RATE DECIMAL POSITION

rtE dP   0   0.00   0.0000
0   0.0   0.000

This selects the decimal point position for Rate, Minimum and Maximum rate displays and any setpoint value assigned to these displays. This parameter does not affect rate scaling calculations.

RATE SCALING DISPLAY

rtEdSP   1 to 99999
1000

Enter the Rate Scaling Display value that corresponds to the Rate Scaling Input value. (Details on Rate scaling are explained at the end of this section.)

RATE SCALING INPUT

rtE INP   0.1 to 99999.9 Hz
1000.0

Key-in Method:
Enter the Rate Scaling Input value that corresponds to the entered Rate Scaling Display value by pressing the **F1** or **F2** keys. This value is always in pulses per second (Hz). (Details on Rate scaling are explained at the end of this section.)

Applied Method:
Apply an external rate signal to the appropriate input terminals. Press and hold the **F1** and **F2** keys at the same time. The applied input frequency (in Hz) will appear on the display. (To verify correct reading wait for at least the length of the Low Update Time. Then press and hold the **F1** and **F2** keys at the same time again. The new value should be ± 0.1% of the previous entered value.) Press **PAR** to enter the displayed frequency as the Rate Scaling Input. To prevent the displayed value from being entered, press **DSP**. This will take the meter out of Programming Mode and the previous Rate Scaling Input value will remain. (Details on Rate scaling are explained at the end of this section.)

RATE DISPLAY ROUND *

rOUNd   1   5   20   100
1   2   10   50

Rounding values other than one round the Rate display to the nearest increment selected (e.g. rounding of '5' causes 122 to round to 120 and 123 to round to 125). Rounding starts at the least significant digit of the Rate display.

LOW CUT OUT *

LOCUt   0 to 999999
0

The Low Cut Out value forces the Rate display to zero when the Rate display falls below the value entered.

MAXIMUM CAPTURE DELAY TIME *

HI-t   0.0 to 999.9 seconds
2.0

When the Rate value is above the present Maximum rate value for the entered amount of time, the meter will capture that Rate value as the new Maximum value. A delay time helps to avoid false captures of sudden short spikes. The Maximum rate value is shown with an annunciator of 'H' in the display and will continue to function independent of being displayed.

MINIMUM CAPTURE DELAY TIME *

LO-t   0.0 to 999.9 seconds
2.0

When the Rate value is below the present Minimum rate value for the entered amount of time, the meter will capture that Rate value as the new Minimum value. A delay time helps to avoid false captures of sudden short spikes. The Minimum rate value is shown with an annunciator of 'L' in the display and will continue to function independent of being displayed.

* *Factory Setting can be used without affecting basic start-up.*

RATE DISPLAY EXCEEDED

If the rate of the input signal causes a display that exceeds the capacity of the Rate display (5 digits, 99999), then the display will indicate an overflow condition by showing "r $OLOL$". During this overflow condition, the Minimum and Maximum rate values will stay at their values even during resets.

RATE SCALING

To scale the Rate, enter a Scaling Display value with a corresponding Scaling Input value. (The Display and Input values can be entered by Key-in or Applied Methods.) These values are internally plotted to a Display value of 0 and Input value of 0 Hz. A linear relationship is formed between these points to yield a rate display value that corresponds to the incoming input signal rate. The PAXR is capable of showing a rate display value for any linear process.

KEY-IN SCALING METHOD CALCULATION

If a display value versus input signal (in pulses per second) is known, then those values can be entered into Scaling Display ($rtEdSP$) and Scaling Input (rtE inP). No further calculations are needed.

If only the number of pulses per 'single' unit (i.e. # of pulses per foot) is known, then it can be entered as the Scaling Input value and the Scaling Display value will be entered as the following:

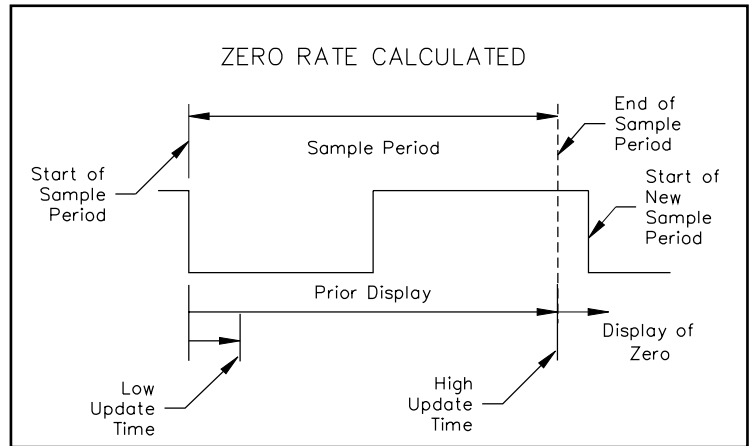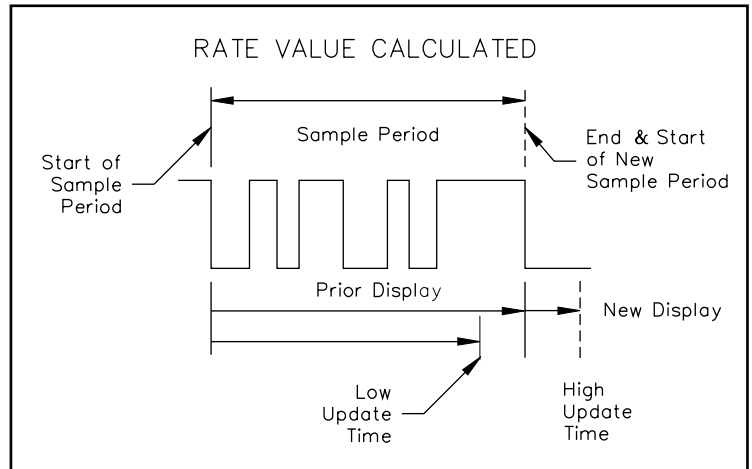| RATE PER	DISPLAY ($rtEdSP$)	INPUT (rtE inP)
Second	1	# of pulses per unit
Minute	60	# of pulses per unit
Hour	3600	# of pulses per unit

NOTES:
1. If # of pulse per unit is less than 10, then multiply both Input and Display values by 10.
2. If # of pulse per unit is less than 1, then multiply both Input and Display values by 100.
3. If the Display value is raised or lowered, then Input value must be raised or lowered by the same proportion (i.e. Display value for per hour is entered by a third less (1200) then Input value is a third less of # of pulses per unit). The same is true if the Input value is raised or lowered, then Display value must be raised or lowered by the same proportion.
4. Both values must be greater than 0.0.

EXAMPLE:
1. With 15.1 pulses per foot, show feet per minute in tenths. Scaling Display = 60.0 Scaling Input = 15.1.
2. With 0.25 pulses per gallon, show whole gallons per hour. (To have greater accuracy, multiply both Input and Display values by 10.) Scaling Display = 36000 Scaling Input = 2.5

INPUT FREQUENCY CALCULATION

The meter determines the input frequency by summing the number of falling edges received during a sample period of time. The sample period begins on the first falling edge. At this falling edge, the meter starts accumulating time towards Low Update and High Update values. Also, the meter starts accumulating the number of falling edges. When the time reaches the Low Update Time value, the meter looks for one more falling edge to end the sample period. If a falling edge occurs (before the High Update Time value is reached), the Rate display will update to the new value and the next sample period will start on the same edge. If the High Update Time value is reached (without receiving a falling edge after reaching Low Update Time), then the sample period will end but the Rate display will be forced to zero. The High Update Time value must be greater than the Low Update Time value. Both values must be greater than 0.0. The input frequency calculated during the sample period, is then shown as a Rate value determined by either scaling method.

RATE VALUE CALCULATED

ZERO RATE CALCULATED

6.4 MODULE 6 - Setpoint (Alarm) Parameters (6-SPt)

PARAMETER MENU

6-SPt

PAR ↓

SPSEL	L it-n	OUt-n	SUP-n	ACt-n	SP-n	trC-n	tYP-n
Setpoint Select	Setpoint Annunciators	Output Logic	Power—up State	Setpoint Action	Setpoint Value	Setpoint Tracking	Boundary Type

Pro

PAR ↓

| Stb-n	HYS-n	tOFF-n	tON-n	tOUt-n
Standby Operation	Setpoint Hysteresis	Off Time Delay	On Time Delay	Time—out Value
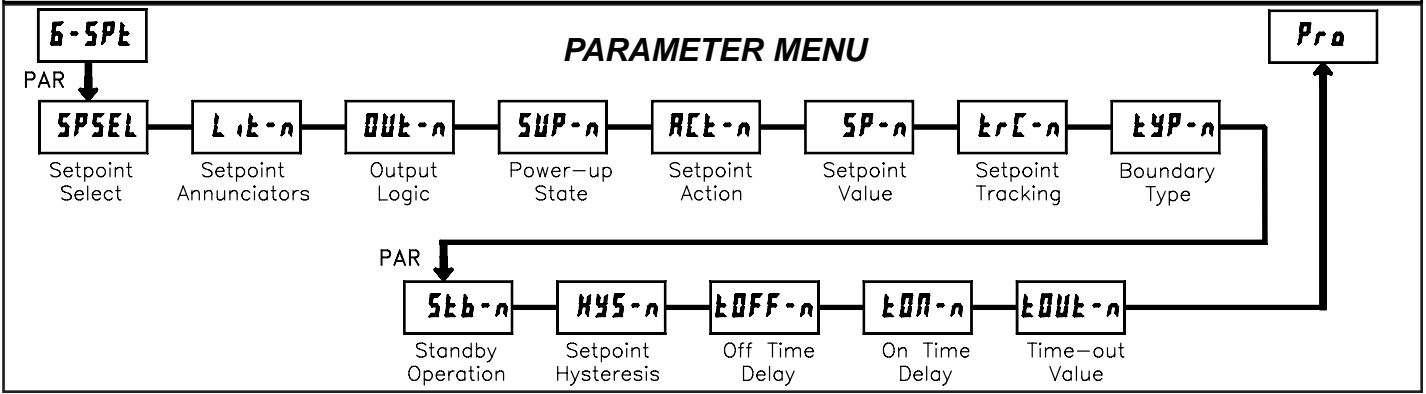
Module 6 is the programming for the setpoint (alarms) output parameters. To have setpoint outputs, a setpoint Plug-in card needs to be installed into the PAXR (see Ordering Information). Depending on the card installed, there will be two or four setpoint outputs available. This section replaces the bulletin which comes with the setpoint plug-in card. Please discard the separate literature when using the Plug-in card with the PAXR. For maximum input frequency, unused Setpoints should be configured for OFF action.

The setpoint action determines certain setpoint feature availability. The chart below illustrates this.

SETPOINT PARAMETER AVAILABILITY

PARAMETER	DESCRIPTION	SETPOINT ACTION		
		TIMED OUT tOUt	BOUNDARY bOUNd	LATCH LAtCH
L it-n	Annunciators	Yes	Yes	Yes
OUt-n	Output Logic	Yes	Yes	Yes
SUP-n	Power Up State	Yes	Yes	Yes
SP-n	Setpoint Value	Yes	Yes	Yes
trC-n	Setpoint Tracking	Yes	Yes	Yes
tYP-n	Boundary Type	Yes	Yes	Yes
Stb-n	Standby Operation	Yes	Yes	Yes
HYS-n	Setpoint Hysteresis	No	Yes	No
tOFF-n	Setpoint Off Delay	No	Yes	No
tON-n	Setpoint On Delay	Yes	Yes	Yes
tOUt-n	Setpoint Time Out	Yes	No	No

SETPOINT SELECT

SPSEL / **NO**

NO   SP-1   SP-2
SP-3   SP-4
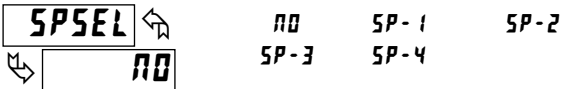
Select a setpoint (alarm output) to open the remaining module menu. (The "n" in the following parameters will reflect the chosen setpoint number.) After the chosen setpoint is programmed, the display will default to SPSEL NO. Select the next setpoint to be programmed and continue the sequence for each setpoint. Pressing **PAR** at SPSEL NO will exit Module 6.

SETPOINT ANNUNCIATORS*

L it-n / **NOr**

OFF   NOr   rEU   FLASH

OFF disables the display of the setpoint annunciator. Normal (NOr) displays the corresponding setpoint annunciator of an "on" alarm output. Reverse (rEU) displays the corresponding setpoint annunciator of an "off" alarm output. FLASH flashes the corresponding setpoint annunciator of an "on" alarm output.
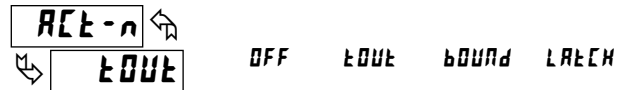
SETPOINT OUTPUT LOGIC *

OUt-n / **NOr**

NOr   rEU

Normal (NOr) turns the output "on" when activated and "off" when deactivated. Reverse (rEU) turns the output "off" when activated and "on" when deactivated.

SETPOINT POWER UP STATE *

SUP-n / **OFF**

SAUE   ON   OFF

SAUE will restore the output to the same state it was at before the meter was powered down. ON will activate the output at power up. OFF will deactivate the output at power up.

SETPOINT ACTION

ACt-n / **tOUt**

OFF   tOUt   bOUNd   LAtCH

OFF   When not using a setpoint, it should be set to OFF (no action).

tOUt   With Timed Out action, the setpoint output cycles when the rate value is greater than or equal to (for tYP = H i) or less than or equal to (for tYP = LO) the setpoint value. The Setpoint Time Out (tOUt-n) and Setpoint On Delay (tON-n) values determine the cycling times.

bOUNd   With Boundary action, the setpoint output activates when the rate value is greater than or equal to (for tYP = H i) or less than or equal to (for tYP = LO) the setpoint value. The setpoint output will deactivate (Auto reset) as determined by the hysteresis value.

LAtCH   With Latch action, the setpoint output activates when the rate value is equal to the setpoint value. The setpoint output remains active until reset. If after reset, the rate value is greater than or equal to (for tYP = H i) or less than or equal to (for tYP = LO) the setpoint value, the output will reactivate.

SETPOINT VALUE

SP-n / **100**

0 to 99999

Enter the desired setpoint value. Setpoint values can also be entered in the Quick Programming Mode when the setpoint is configured as ENt in Module 3. (See Module 2 for Exchange Parameter Lists explanation.)

* Factory Setting can be used without affecting basic start-up.

SETPOINT TRACKING *

`trC-n` ⇧
⇩ `NO`

| NO | SP-1 | SP-2 |
| SP-3 | SP-4 | |

If a selection other than NO is chosen, then the value of the setpoint being programmed ("n") will track the entered selection's value. Tracking means that when the selection's value is changed (in the Quick Programming Mode), the "n" setpoint value will also change (or follow) by the same amount.

SETPOINT BOUNDARY TYPE

`tYP-n` ⇧
⇩ `LO`

HI   LO

HI activates the output when the rate display value equals or exceeds the setpoint value. LO activates the output when the rate display value is less than or equal to the setpoint.

SETPOINT STANDBY OPERATION *

`Stb-n` ⇧
⇩ `NO`

YES   NO

Selecting YES will disable low acting setpoints at a power up until the display value crosses into the alarm "off" area. Once in the alarm "off" area, the setpoint will function according to the configured setpoint parameters.

SETPOINT HYSTERESIS *

`HYS-n` ⇧
⇩ `0`

0 to 9999
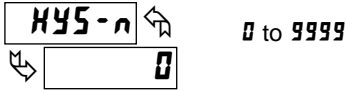
The hysteresis value is added to (for tYP = LO), or subtracted from (for tYP = HI), the setpoint value to determine at what value to deactivate the associated setpoint output. Hysteresis is only available for setpoints programmed for boundary action.

SETPOINT OFF DELAY *

`tOFF-n` ⇧
⇩ `0.00`

0.00 to 99.99 seconds

This is the amount of time the Rate display must meet the setpoint deactivation requirements (below hysteresis for high acting and above hysteresis for low acting) before the setpoint's output deactivates. This applies only to setpoints programmed for boundary action.

SETPOINT ON DELAY *

`tON-n` ⇧
⇩ `0.00`

0.00 to 99.99 seconds

This is the amount of time the Rate display must meet the setpoint activation requirements (below setpoint for tYP = LO and above setpoint for tYP = HI) before the setpoint's output activates. If the setpoint action is Timed Out, this is the amount of time the output is off during the on / off output cycling.

SETPOINT TIME OUT *

`tOUt-n` ⇧
⇩ `0.00`

0.00 to 99.99 seconds

If the setpoint action is Timed Out, this is the amount of time the output is on during the on / off output cycling.

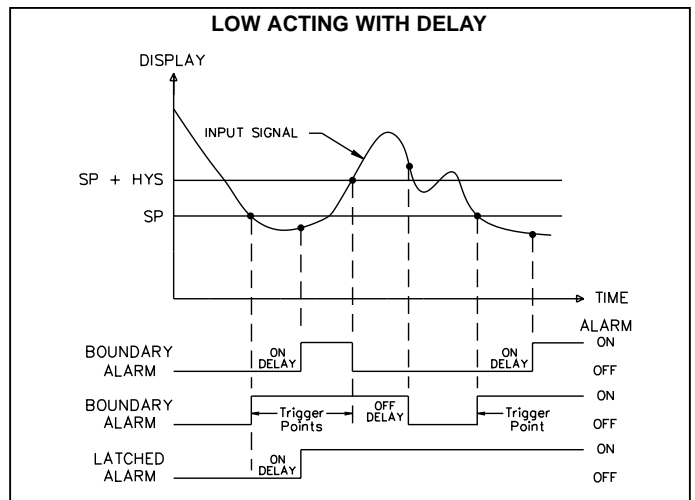** Factory Setting can be used without affecting basic start-up.*

SETPOINT (ALARM) FIGURES FOR RATE

(For Reverse Action, The Alarm state is opposite.)

LOW ACTING WITH NO DELAY

LOW ACTING WITH DELAY

HIGH ACTING WITH NO DELAY

HIGH ACTING WITH DELAY

HIGH ACTING WITH TIMEOUT

LOW ACTING WITH TIMEOUT
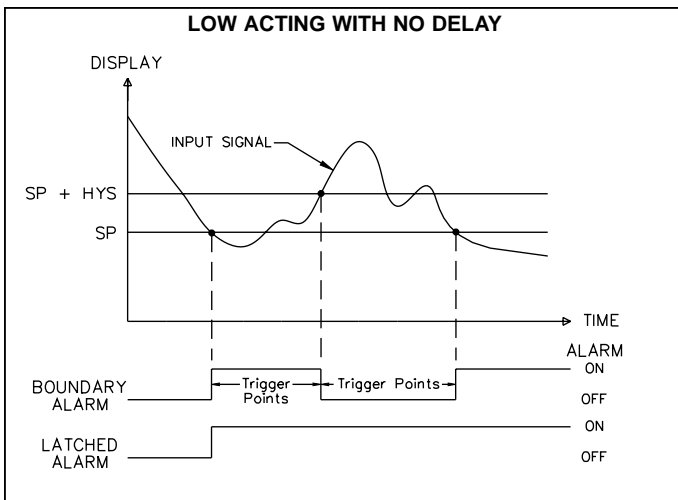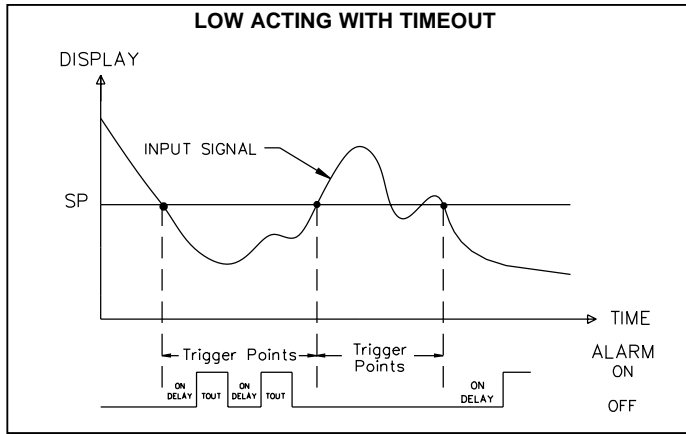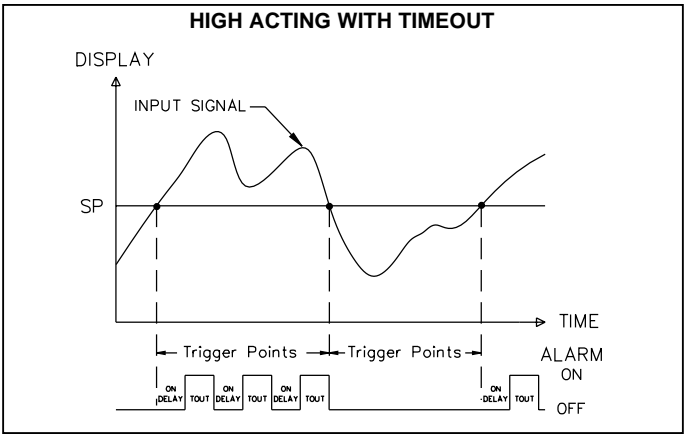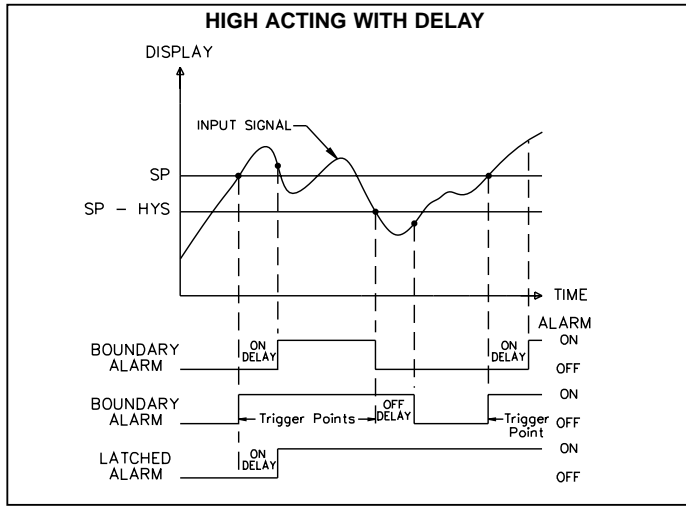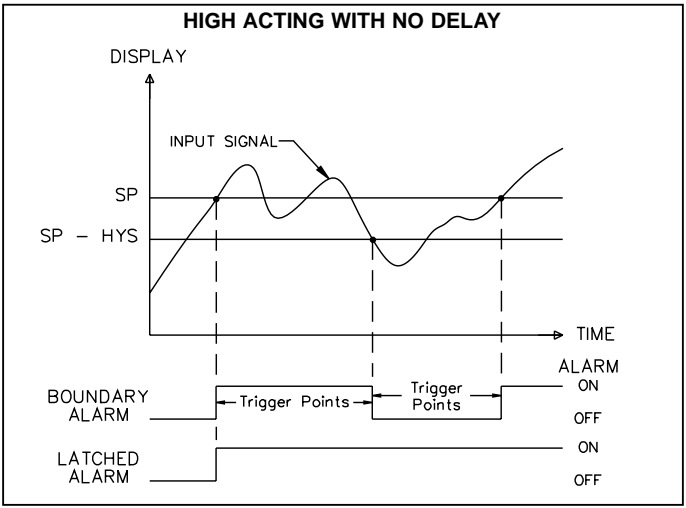
6.5 MODULE 9 - Factory Service Operations (9-FCS)

PARAMETER MENU

9-FCS → Pro

PAR ↓

COdE

Factory
Service Code
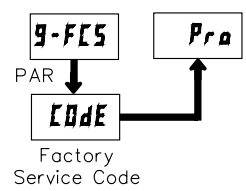
RESTORE FACTORY DEFAULTS

CODE ⇦
⇨ 66

Use the arrow keys to display *CODE 66* and press **PAR**. The meter will display *rESEt* and then returns to *CODE 50*. Press **DSP** key to return to the Display Mode. This will overwrite all user settings with the factory settings.

Pressing the **PAR** and **DSP** keys at the same time on power-up will load the factory settings and display *Err4*. This allows operation in the event of a memory failure or corrupted data. Immediately press the **RST** key and reprogram the meter. If the meter is powered down again before pressing the **RST** key, the existing dynamic data will not be overwritten.

TROUBLESHOOTING

For further assistance, contact technical support at the appropriate company numbers listed.

PROBLEM	REMEDIES
NO DISPLAY	CHECK: Power level, power connections
PROGRAM LOCKED-OUT	CHECK: Active (lock-out) user input ENTER: Security code requested
CERTAIN DISPLAYS ARE LOCKED OUT	CHECK: Module 3 programming
INCORRECT DISPLAY VALUE	CHECK: Input wiring, DIP switch setting, input programming, input signal level, user input jumper, lower input signal frequency
USER INPUT NOT WORKING CORRECTLY	CHECK: User input wiring, user input jumper, Module 2
OUTPUT DOES NOT WORK	CHECK: Corresponding plug-in card installation, output configuration, output wiring
JITTERY DISPLAY	CHECK: Wiring is per EMC installation guidelines, input signal frequency, signal quality, scaling, update time, DIP switch setting
"r OLOL" RATE	CHECK: Lower input signal frequency, reduce rate scaling
MODULES or PARAMETERS NOT ACCESSIBLE	CHECK: Corresponding plug-in card installation, related controlling parameter selected
ERROR CODE (Err 1-4)	PRESS: Reset key (if unable to clear contact factory.)

PARAMETER VALUE CHART   Programmer _____ Date _____
PAXR Rate Meter   Meter# _____ Security Code _____

2-FNC User Input and Function Key Parameters

DISPLAY	PARAMETER	FACTORY SETTING	USER SETTING
USr-1	USER INPUT 1	NO	_____
USr-2	USER INPUT 2	NO	_____
USr-3	USER INPUT 3	NO	_____
F1	FUNCTION KEY 1	NO	_____
F2	FUNCTION KEY 2	NO	_____
rSt	RESET KEY	dSPrSt	_____
Sc-F1	2nd FUNCTION KEY 1	NO	_____
Sc-F2	2nd FUNCTION KEY 2	NO	_____

4-rtE Rate Input Parameters

DISPLAY	PARAMETER	FACTORY SETTING	USER SETTING
LO-Udt	LOW UPDATE TIME	1.0	_____
HI-Udt	HIGH UPDATE TIME	2.0	_____
rtE dP	RATE DECIMAL POINT	0	_____
rtEdSP	RATE SCALING DISPLAY	1000	_____
rtE INP	RATE SCALING INPUT	1000.0	_____
rOUNd	RATE DISPLAY ROUNDING	1	_____
LOCUt	MINIMUM LOW CUT OUT	0	_____
HI-t	MAX CAPTURE DELAY TIME	2.0	_____
LO-t	MIN CAPTURE DELAY TIME	2.0	_____

3-LOC Display and Program Lockout Parameters

DISPLAY	PARAMETER	FACTORY SETTING	USER SETTING
rAtE	RATE DISPLAY LOCK-OUT	rEd	_____
HI	MAX DISPLAY LOCK-OUT	LOC	_____
LO	MIN DISPLAY LOCK-OUT	LOC	_____
SP-1	SETPOINT 1 ACCESS LOCK-OUT	LOC	_____
SP-2	SETPOINT 2 ACCESS LOCK-OUT	LOC	_____
SP-3	SETPOINT 3 ACCESS LOCK-OUT	LOC	_____
SP-4	SETPOINT 4 ACCESS LOCK-OUT	LOC	_____
COdE	SECURITY CODE	0	_____

6-SPt Setpoint (Alarm) Parameters

DISPLAY	PARAMETER	SP-1 FACTORY SETTING	SP-1 USER SETTING	SP-2 FACTORY SETTING	SP-2 USER SETTING	SP-3 FACTORY SETTING	SP-3 USER SETTING	SP-4 FACTORY SETTING	SP-4 USER SETTING
L It-n	SETPOINT ANNUNCIATORS	NOr	_____	NOr	_____	NOr	_____	NOr	_____
OUt-n	SETPOINT OUTPUT LOGIC	NOr	_____	NOr	_____	NOr	_____	NOr	_____
SUP-n	SETPOINT POWER UP STATE	OFF	_____	OFF	_____	OFF	_____	OFF	_____
ACt-n	SETPOINT ACTION	OFF	_____	OFF	_____	OFF	_____	OFF	_____
SP-n	SETPOINT VALUE (A)	100	_____	100	_____	100	_____	100	_____
	SETPOINT VALUE (B)*	100	_____	100	_____	100	_____	100	_____
trC-n	SETPOINT TRACKING	NO	_____	NO	_____	NO	_____	NO	_____
tYP-n	SETPOINT BOUNDARY TYPE	HI	_____	HI	_____	HI	_____	HI	_____
Stb-n	STANDBY OPERATION	NO	_____	NO	_____	NO	_____	NO	_____
HYS-n	SETPOINT HYSTERESIS	0	_____	0	_____	0	_____	0	_____
tOFF-n	SETPOINT OFF DELAY	0.00	_____	0.00	_____	0.00	_____	0.00	_____
tON-n	SETPOINT ON DELAY	0.00	_____	0.00	_____	0.00	_____	0.00	_____
tOUt-n	SETPOINT TIME OUT	1.00	_____	1.00	_____	1.00	_____	1.00	_____

See Module 2, Exchanging Parameter Lists, for details on programming this value.

PAXR PROGRAMMING QUICK OVERVIEW

`Pro`

Module	Code	Description
`Pro`	`1-`	F1/F2 Keys

USER INPUTS

`USr-1`	`USr-2`	`USr-3`

FUNCTION KEYS

`F1`	`F2`	`rSt`	`SC-F1`	`SC-F2`

`2-FNC`

`rAtE`	`HI`	`LO`	`SP-n`	`CodE`
Rate Display Lock-out	Max Display Lock-out	Min Display Lock-out	Setpoint 1-4 Access	Security Code

`3-LOC`

`LO-UPt`	`HI-UPt`	`rtE dP`	`rtEdSP`	`rtE InP`	`round`	`LOCUt`	`HI-t`	`LO-t`
Low Update Time	High Update Time	Rate Decimal Position	Rate Scaling Display	Rate Scaling Input	Rate Display Rounding	Min. Low Cut-out	Max. Capture Delay Time	Min. Capture Delay Time

`4-rtE`

`5----`

`SPSEL`	`Lit-n`	`Out-n`	`SUP-n`	`ACt-n`	`SP-n`	`trC-n`	`tYP-n`	`Stb-n`
Setpoint Select	Setpoint Annunciators	Output Logic	Power-up State	Setpoint Action	Setpoint Value	Setpoint Tracking	Boundary Type	Standby Operation

`HYS-n`	`tOFF-n`	`tON-n`	`tOUt-n`
Setpoint Hysteresis	Off Time Delay	On Time Delay	Time-out Value

`6-SPt`

`7----`

`8----`

`SErS`	`EPOS`
	Factory Service Code

n = Setpoint number