

# PD6622/PD6624

Loop Leader Loop-Powered Rate/Totalizers

PD6622 Decimal Display



PD6624 Decimal Display w/Bargraph



**Loop Leader**  
Series

LOOP-POWERED PROCESS

- Loop-Powered Rate/Totalizer
- Loop-Powered Backlight with Red Backlight for Alarm Conditions
- Display Rate & Total Simultaneously
- Total Display Includes Commas for More Intuitive Readings
- 1.5 Volt Drop (4.5 Volt Drop w/ Backlight)
- IP65 Front
- -40 to 167°F (-40 to 75°C) Operating Temperature Range
- Five Digit Top Line
- Alphanumeric Tag Names
- Total, Grand Total, or Non-Resettable Grand Total
- Up To 13-Digit Total & Grand Total
- Dual Line Display
- 1/8 DIN Shallow Depth Case
- Optional Loop-Powered Solid State Relays
- Optional 4-20 mA Analog Output
- Open Collector Output Standard

**PRECISION  
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# PD6622/24 Loop Leader Loop-Powered Rate/Totalizers



▲ PD6624 with Bargraph Shown

## INTRODUCTION

The Loop Leader PD6622 and PD6624 are loop-powered, 1/8 DIN flow rate/totalizers designed for demanding process control applications. The four front panel buttons make setup and programming of the meter simple and intuitive. A dual-line display featuring five digits on the top line and eight digits on the bottom line, preprogrammed engineering units, and optional bargraph display (PD6624) provide a clear and attractive presentation of the process. The units of measure can be changed as needed (e.g. gal/second to liters/second) without the need to re-scale the meter.

The dual-line display can be customized by the user to operate in such a way as to satisfy a specific application. Typically, the top line is used for the rate while the bottom line is used for the total, grand total, or engineering units. Three programmable function keys and a digital input come standard and allow the meter to be customized for use in specialized applications.

All models come equipped with two open collector outputs and are available with two solid state relays and a 4-20 mA analog output. These outputs can be programmed for alarm indication, signal retransmission via pulse or analog signal, pump control, and more.

The fact that this meter is loop-powered means that there is no need to run additional, costly power lines; the meter gets all of the power it needs from the 4-20 mA loop. The Loop Leader loop-powered rate/totalizer is built in a shallow-depth case with an IP65 front and features loop-powered back-lighting and a wide -40 to 65°C operating temperature range. It doesn't matter if it's indoors or outdoors, in bright sunlight or a dimly lit plant, or in an area that is wet, dirty, hot, or cold, the Loop Leader can go just about anywhere.

## KEY FEATURES

### Display with Bargraph Option

The Loop Leader offers not only the typical decimal display, but it offers another model with an added bargraph to provide a clear and attractive presentation of the process. This makes reading your process quick, convenient, and easy-to-understand.



PD6622 Decimal Display

PD6624 Decimal w/Bargraph

### Front Panel Buttons for Setup, Programming, and Other Functions



The PD6622/24 Loop Leader process meter includes four front panel buttons for setup and programming. Three of these buttons are also function keys that can be programmed to trigger certain events (i.e. acknowledge alarms, reset max and/or min, disable/enable output relays, or hold current relay states), provide direct menu access points, and more.

### Easy to Program

The user friendly dual-line display makes the Loop Leader PD6622/24 easy to set up & program. No jumpers to set for input selection. All setup & programming are done via the front panel.



Input Setup



Display Setup

### Display Flow Rate, Total or Grand Total

Typically, the top line on the display can be programmed to display flow rate and the bottom line total, grand total, or engineering units. See below for some examples of how you can set up the meter.



PD6622 Flow Rate Indicator



PD6624 Flow Totalizer



PD6624 Rate & Total



PD6622 Total & Grand Total

# PD6622/24 Loop Leader Loop-Powered Rate/Totalizers

## Install Just About Anywhere

Indoors, outdoors, bright sunlight, dimly lit plant, wet, dirty, hot or cold, these indicators go just about anywhere. Their shallow-depth case, IP65 front, loop-powered backlighting, and wide operating temperature range are all standard features.

## Password Protection

A password can be set for programming security to prevent unauthorized changes to the programmed parameter settings. There are three password types available: Main, Total, and Grand Total. The Main password prevents access to the meter Programming Mode. Total and Grand Total passwords prevent resetting of changes to the total and grand total, respectively.



## Max/Min Display

The max & min readings (peak & valley) reached by the process can be displayed either continuously or momentary:

1. Display briefly by pressing the F1 key (default) or assigning to any of the other function keys or to the digital input in the User menu.
2. Display continuously by assigning either display to max/min through the Display menu.

Any of the F1-F3 function keys (buttons) and the digital input can be programmed to reset the max & min readings.

## Predefined and Custom Units

The meter has six available preprogrammed unit classes, *volume*, *height*, *temperature*, *pressure*, *weight*, and *rate*. When the desired unit class or unit of measure within a class is not available, a custom unit may be programmed by using the (CUSTOM) menu.

## Change Between Units without Needing to Re-scale the Meter

It is possible to change the display units within the selected unit class without the need to re-scale the meter. When selecting a new unit from within the DISPLAY menu (e.g. changing from gallons (GAL) to liters (L)), the meter will automatically convert the display values to display the new unit. If entering a custom unit (CUSTOM), a custom conversion factor will need to be entered.

## Red Backlight for Alarm Indication

The Loop Leader PD6622/24 comes with a red backlight for alarm conditions. When the meter is programmed for alarm states, you have the option to use the red LED backlight. This red backlight starts flashing when the alarm is tripped. The display will also flash the rate, total, or grand total value (rate, total, or grand total alarms only), and a programmable alarm message. There also an alarm indicator (!) in the bottom right of the display.



## Represent Rate or Total with Bargraph

The PD6624 comes equipped with a bargraph display for applications where a visual representation of the rate, or total's percentage of full scale is desirable. This feature can be changed to represent either rate or total, or disabled, using the Bargraph menu (BARGRAPH). If the bargraph is set to represent total, the total full scale will need to be set.



Bargraph Based on Rate



Bargraph Based on Total

## OUTPUTS

### Open Collector Outputs

The Loop Leader is equipped with two NPN open collector outputs that may be set up for pulse outputs, alarms, timed pulses, or turned off. Pulse outputs can be set to transmit the PV value (PV1 or PV2 if meter is in dual-scale mode). Output 2 may be used to generate a quadrature output based on the other open collector output. An output test mode is also selectable to generate pulses at a constant programmable frequency. Alarms are available based on the PV value or the digital input. The alarm status will show on the display even if the output is not wired

### Optional Solid State Relay Outputs

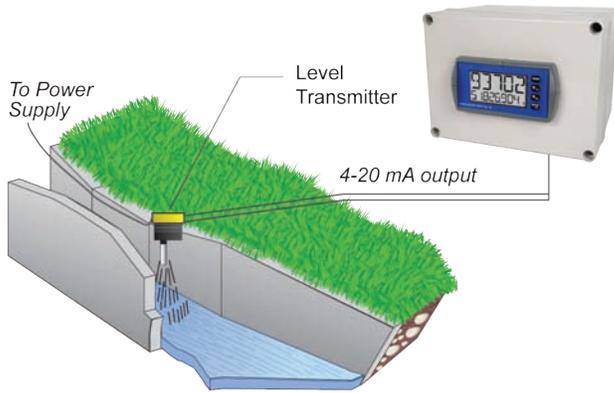
The meter is optionally equipped with two solid state relays that may be set up for alarms, timer, or pump control. Alternatively, they may be disabled. Alarms are available based on the PV value or the digital input. The alarm status will show on the display even if the output is not wired. A timer output turns the relay on and off at a specified frequency to act as a timer. Pump control allow the relay to turn on and off a pump at specified set and reset points. This can be done using only one of the relays to control one pump (ON-OFF), or using both relays in tandem to alternate between two different pumps (ALTERNATE). The output may be disabled by selecting (DISABLE). The alarm outputs may be assigned to the PV or the digital input to perform the following actions:

- Automatic (AUTO): Alarm will reset automatically once the alarm condition has cleared.
- Automatic/Manual (AUTOMAN): Alarm will reset automatically once the alarm condition has cleared but can also be reset using the Enter button (or whichever function key is set to acknowledge).
- Latching (LATCH): Alarm will not reset automatically even if the alarm condition is cleared. Press the Enter button at any time to clear the alarm.
- Latching w/ Clear (L-CLEAR): Alarm will not reset automatically. Press the Enter button once the alarm condition has cleared to reset the alarm.

# PD6622/24 Loop Leader Loop-Powered Rate/Totalizers

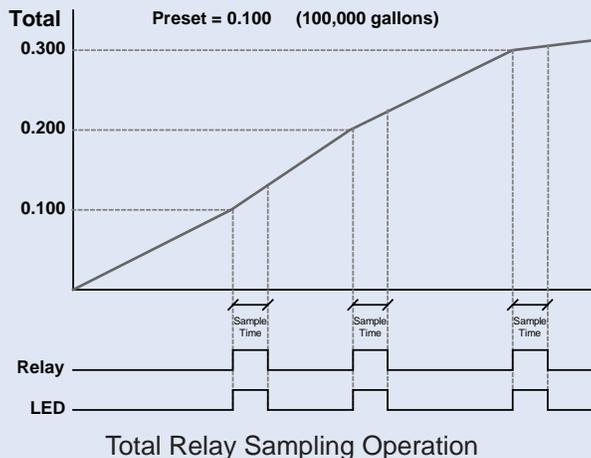
## APPLICATIONS

### Open Channel Flow



The PD6622/24, in combination with an ultrasonic level transmitter, makes for an economical way to measure and display open channel flow rate and total in most weirs and flumes and take periodic samples. All the user needs to do is enter the exponent for the weir or flume into the PD6622/24 and the meter automatically raises the input signal to that power. Sampling can be based on the total flow or the flow rate. For instance, to display open channel flow rate and total from a 3 inch Parshall flume and take a one pint sample every 100,000 gallons, the user would program the PD6622/24 as follows:

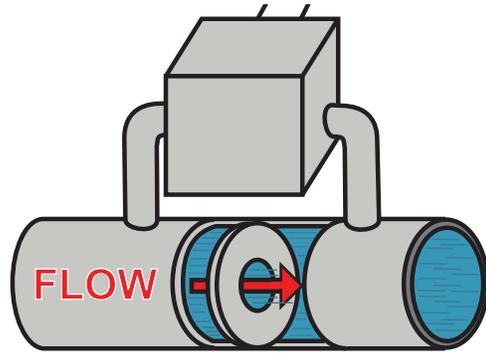
Function	Desire	Programming
Open Channel Flow	3" Parshall flume	Set Programmable Exponent to 1.547
Flow Rate	Millions of Gallons per Day (MGD)	Set 4 mA = 0 & 20 mA = 3.508 Time base = Day
Total	Millions of Gallons	Set Totalizer Conversion Factor = 1 (password protect total reset)
Non-Resettable Grand Total	Program meter so grand total can never be reset	Set non-resettable grand total password
Display	Display Flow Rate and Total at the same time	Set upper display for Grand Total and lower display to toggle between rate and total.
Sampling	Take a 1 pint sample every 100,000 gallons	Set up relay for sampling and to trip every 0.1 million gallons. Set up sampling time such that 1 pint is sampled.



### Differential Pressure Flow

The PD6622/24 can display flow rate and total by extracting the square root from the 4-20 mA signal from a differential pressure transmitter. The user selectable low-flow cutoff feature gives a reading of zero when the flow rate drops below a user selectable value.

- Display Flow Rate
- User Selectable Low-Flow Cutoff
- Only 2 Calibration Points Required



## NEMA 4 & 4X FIELD ENCLOSURES

Precision Digital offers a variety of rugged enclosures that provide a high degree of protection against harsh operating environments. Thermoplastic and stainless steel NEMA 4X, and painted steel NEMA 4X enclosures for up to 10 Loop Leader meters are available.

Low-Cost  
NEMA 4X  
Enclosures



NEMA 4X Enclosures  
are Available in Plastic,  
Steel, & Stainless Steel

See Our Complete Offering and  
Enclosure Selection Utility  
at [www.predig.com/esu](http://www.predig.com/esu)



## SPECIFICATIONS

Except where noted all specifications apply to operation at +25°C.

### General

**Display:** Top: 0.7"(17.8 mm), Bottom: 0.4"(10.2 mm); 14-segment alphanumeric, Top: 5 digits -9999 to 99999, Bottom: 8 digits -9,999,999 to 99,999,999, Bottom line separated by commas

**Display Update Rate:** Ambient > -10°C: 1 Update/Second  
Ambient > -20°C: 1 Update/2 Seconds

Ambient -40°C: 1 Update/10 Seconds

**Overrange:** Top: 99999; Bottom: 99,999,999 (flashing)

**Underrange:** Top: -9999; Bottom: -9,999,999 (flashing)

**Programming Method:** Front panel

**Noise Filter:** 1, 2, 4, 8, 16 sec.

Noise Filter Bypass: 0.1 to 99.9% FS

**Recalibration:** Recalibration is recommended at least every 12 months.

**Max/Min Display:** Max/min readings reached by the process are stored until reset by the user or until power to the meter is turned off.

**Password:** Programmable password restricts modification of programmed settings.

**Non-Volatile Memory:** All programmed settings are stored in non-volatile memory for a minimum of ten years if power is lost.

**Normal Mode Rejection:** 64 dB at 50/60 Hz

**Environmental:** *Operating temperature range:* -40 to 75°C

*Storage temperature range:* -40 to 85°C

*Relative humidity:* 0 to 90% non-condensing

**Connections:** Removable screw terminals accept 12 to 22 AWG wire

**DI Digital Input Contacts:** 2.1 VDC on contact. Connect normally open contacts across DI+ to DI-

**DI Digital Input Logic Levels:** *Logic High:* 2.4 to 30 VDC (max)  
*Logic Low:* 0 to 0.9 VDC

**Enclosure & Materials:** 1/8 DIN, high impact plastic, NORYL® Polyphenylene Ether & Polystyrene blend (PP EPS) Resin, UL 94V-0, *Color:* gray, *Gasket:* Silicone Rubber, *Faceplate:* LEXAN® Polycarbonate (PC) Film, IP65 Front,

*Buttons:* Silicone rubber; *Color:* black

**Mounting:** 1/8 DIN panel cutout required. Two panel mounting bracket assemblies provided

**Tightening Torque:** *Screw terminal connectors:* 4.5 lb-in (0.5 Nm)

*Mounting screws:* 8.0 lb-in max. (0.9 Nm)

**Overall Dimensions:** 4.68"x 2.45"x 3.79"  
(119 mm x 62 mm x 96 mm) (W x H x D)

**Weight:** 8.7 oz (247g) w/ option board

**Warranty:** 3 years parts and labor

### Process Input

**Accuracy:** ±0.02% of span ±1 count, Square root and programmable exponent: 10-100% FS

**Function:** Linear, square root, or programmable exponent

**Low-Flow Cutoff:** 0.0 to 999,999.9

**Temperature Drift:** 25 PPM/°C from -40 to 75°C ambient

**Decimal Point:** Up to four decimal places on top, up to seven decimal places on bottom

**Scaling and Display Range:** *Input:* 4-20 mA, *Scaling Range:* -999,999.9 to 999,999.9, *Display Range:* -9999 to 99999 on top line; -9,999,999 to 99,999,999 on bottom line

**Voltage Drop:** *Without Backlight:* 1.5 V max, *With backlight:* 4.5 V max

**Equivalent Resistance:** *With backlight off:* 75 Ω @ 20 mA

*With backlight on:* 225 Ω @ 20 mA

**Input Overload:** Over current protection to 1 A maximum

### Rate/Totalizer

**Rate Display Indication:** -9999 to 99999, top display -9,999,999 to 99,999,999, bottom display

**Total Display & Total Overflow:** -9999 to 99999, top display -9,999,999 to 99,999,999, bottom display "T" LCD segment shows while displaying total "G T" LCD segments show for grand total. (non-bargraph display version only) Up to 9,999,999,999,999 with 13-digit feature. Total or grand total flashes and a truncated value is shown. Press display button to view full number.

**Total Decimal Point:** Up to four decimal places on top, up to seven decimal places on bottom. Total decimal point is independent of rate decimal point.

**Totalizer:** Calculates total based on rate and rate units to display total in engineering units. A custom factor must be programmed if using custom defined units.

**Totalizer Rollover:** Totalizer rolls over when display exceeds 99,999,999 (9,999,999,999,999 if 13-digit limit enabled). Relay status reflects display.

**Total Reset:** Via front panel button or external contact closure on digital input

**Total Reset Password:** Total and grand total passwords may be entered to prevent resetting the total or grand total from the front panel.

**Non-Resettable Total:** Total and grand total reset may be disabled through the meter interface

### Open Collector Output

**Rating:** Two NPN, Isolated open collector, 30 VDC @ 90 mA max

**Output Assignment:** Pulse, Alarm, Timer, or Disable

**Pulse Output Source:** Rate, Total, Grand Total, or Test Frequency

**Pulse Output Factor:** 0.000001 to 999,999.9

**Pulse Width:** 2 ms; 50% duty cycle

**Pulse Output Frequency:** 250 Hz maximum

**Quadrature Pulse Output:** Available for Output 2 (90° behind Output 1)

**Alarm Output Source:** Assign to Rate, Total, Grand Total or Digital Input

**High or Low Alarm:** User programmable for high or low alarm

**Alarm Deadband:** 0-100% FS, user programmable

**On & Off Time Delay:** 0 to 9,999 seconds

**Fail-Safe Operation:** Independent for each relay

**Alarm Operation:** Auto, Auto-man, Latch, Latch w/clear

**Alarm Indication:** Red backlight, Flashing display, Alarm Message, Alarm symbol (!)

**Alarm Message:** On or Off; User programmable, 8 characters maximum, displayed every 10 sec for 1 sec on bottom

**Alarm Acknowledge:** Front panel ACK button or external digital input resets output and screen indication

**Auto Initialization:** When power is applied to the meter, relays will reflect the state of the input to the meter

**Timer Output:** One-shot or Continuous

*Off Time Delay:* 1 sec to 99:59:59 (hrs:min:sec)

*On Time:* 1 sec to 99:59:59 (hrs:min:sec)

### Solid State Relays

**Rating:** *Resistive Load:* 250 VAC/DC @ 1 Amp

*Inductive Load:* 1/10 HP @ 125/250 VAC/DC

**Noise Suppression:** MOVs

**Relay Assignment:** Alarm, Pump Control, Timer, or Disable

**Pump Alternation Time:** 0 to 999:59 (hrs:min)

**Alarm Output Source:** Assign to Rate, Total, Grand Total, or Digital Input

**High or Low Alarm:** User programmable for high or low alarm

**Alarm Deadband:** 0-100% FS, user programmable

**On & Off Time Delay:** 0 to 9,999 seconds

**Fail-Safe Operation:** Independent for each relay

**Alarm Operation:** Auto, Auto-man, Latch, Latch w/clear

### 4-20 mA Transmitter Output

**Output Source:** Rate, total, re-transmit; reverse scaling allowed

**Scaling Range:** 1.00 to 23.0 mA

**Disable:** High impedance state, less than 1 mA

**Calibration:** Factory calibrated 4.00 to 20.00 mA

**Underrange:** 1.0 mA, 3.5 mA, or 3.8 mA (If input < 3.5 mA); or Off

**Overrange:** 20.5 mA, 20.8 mA, or 23.0 mA (If input > 20.5 mA); or Off

**Accuracy:** ±0.05% FS ±0.001mA

**Temperature Drift:** 0.5 µA/°C max from -40 to 75°C ambient

**External Loop Power Supply:** 7.0 VDC to 30.0 VDC maximum

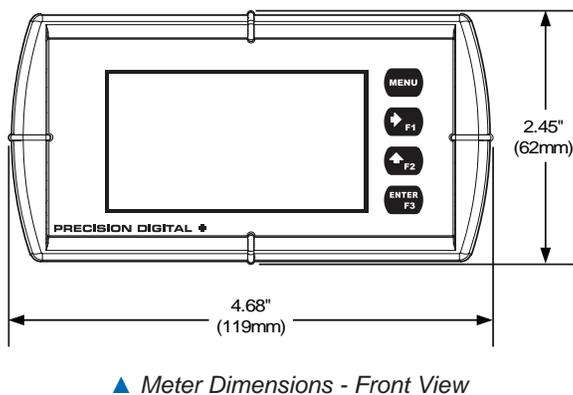
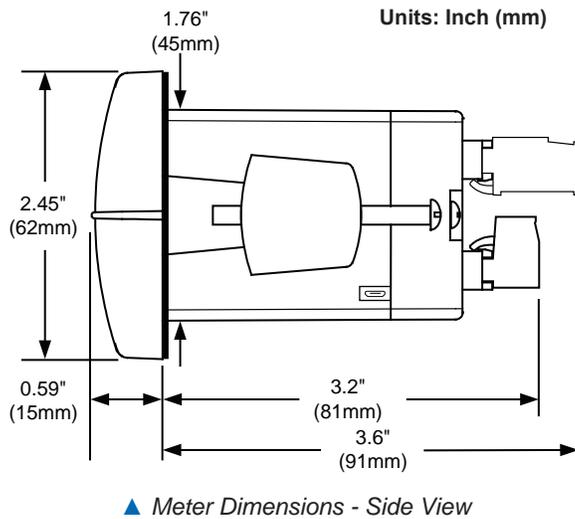
**Output Loop Resistance:** 10-750 Ω @ 24 VDC;

100-1100 Ω @ 30 VDC

**Isolation:** 500 V

# PD6622/24 Loop Leader Loop-Powered Rate/Totalizers

## MOUNTING DIMENSIONS



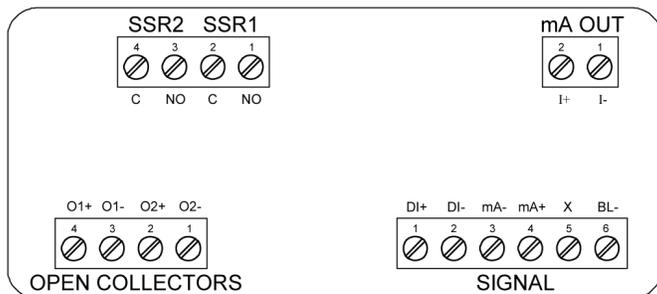
### Notes:

1. Panel cutout required: 1.772" x 3.622" (45 mm x 92 mm)
2. Panel thickness: 0.040 - 0.250" (1.0 mm - 6.4 mm)
3. Mounting brackets lock in place for easy mounting
4. Clearance: Allow 6" (152 mm) behind the panel

## CONNECTIONS

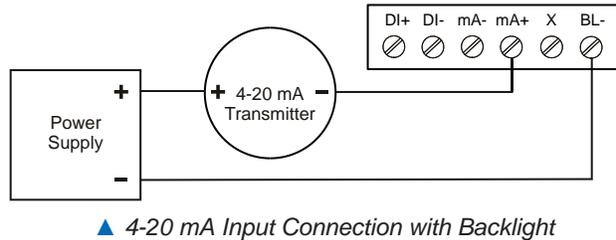
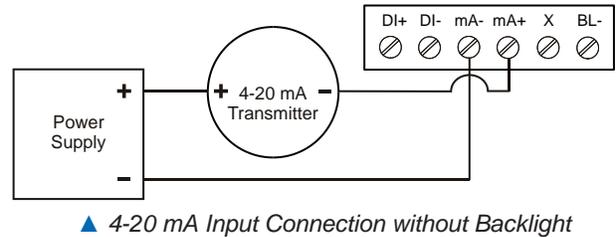
### Connectors Labeling

The connectors' label, affixed to the meter, shows the location of all connectors available with requested configuration.



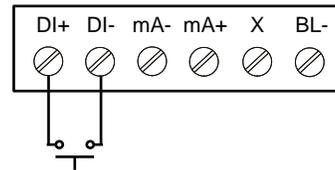
### Current Loop (4-20 mA) Connections

The following figures show a 4-20 mA current loop connected to the meter. The first figure shows the connection with the backlight disabled and the second shows the connection with the backlight enabled. The meter is powered by the 4-20 mA current loop.



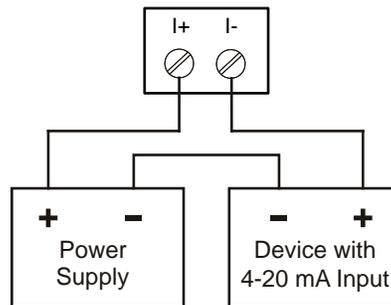
### Digital Input Connection

A digital input is standard on the meter. This digital input is connected with a normally open contact across DI+ and DI-, or with an active low signal applied to DI+.



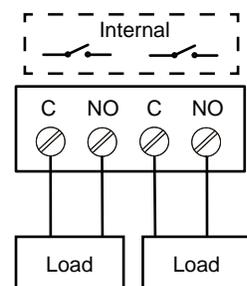
### 4-20 mA Output Connections

Connections for the 4-20 mA transmitter output are made to the connector terminals labeled MA OUT. The 4-20 mA output must be powered from an external power supply.



### Relay Connections

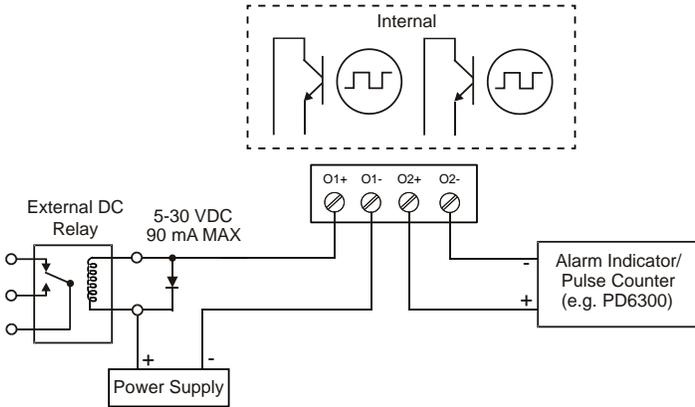
Relay connections are made to two four-terminal connectors. Each relay's C terminal is common only to the normally open (NO) contact of the corresponding relay.



# PD6622/24 Loop Leader Loop-Powered Rate/Totalizers

## Open Collector Outputs

Open collector output 1 and 2 connections are made to terminals labeled O1+ and O1-, and O2+ and O2-. Connect the alarm or pulse input device as shown below.



Let Us Help You Select the Right Loop Leader For Your Application



Try our convenient meter selection utility for all models at [www.predig.com/msu](http://www.predig.com/msu)

## ORDERING INFORMATION

### Loop Leader PD6622 • Standard Decimal Models

Model	Description
PD6622-LNN*	Loop-Powered, No Options
PD6622-L2N	Loop-Powered, Two Solid State Relays
PD6622-L3N	Loop-Powered, 4-20 mA Analog Output
PD6622-L5N*	Loop-Powered, Two Solid State Relays and 4-20 mA Analog Output

Note: All models come with two open collector outputs standard.

\* Quick Shipment Program product, typically ships within 2 working days.

### Loop Leader PD6624 • Standard Decimal/Bargraph Models

Model	Description
PD6624-LNN*	Loop-Powered, No Options
PD6624-L2N	Loop-Powered, Two Solid State Relays
PD6624-L3N	Loop-Powered, 4-20 mA Analog Output
PD6624-L5N	Loop-Powered, Two Solid State Relays and 4-20 mA Analog Output

Note: All models come with two open collector outputs standard.

\* Quick Shipment Program product, typically ships within 2 working days.

Your Local Distributor is:

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