

Model PAX[®] 2D - 1/8" DIN Digital Input Panel Meter Installation Guide



See the Red Lion website at www.redlion.net for a complete user manual

SPECIFICATIONS

POWER:

- AC Power: 40 to 250 VAC, 50/60 Hz, 20 VA
- DC Power: 21.6 to 250 VDC, 8 W
- Isolation: 2300 Vrms for 1 min. to all inputs and outputs.

INPUTS A and B:

- DIP switch selectable to accept pulses from a variety of sources including switch contacts, TTL outputs, magnetic pickups and all standard RLC sensors.
- LOGIC: Input trigger levels $V_{IL} = 1.2$ V max.; $V_{IH} = 3.75$ V min.
- Current sinking: Internal 7.8 K Ω pull-up to +5 VDC, $I_{MAX} = 0.7$ mA.
- Current sourcing: Internal 3.9 K Ω 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: 3.9 K Ω @ 60 Hz; Must also have SRC switch ON. (Not recommended with counting applications.)
- Maximum input voltage: ± 40 V peak, 28 Vrms

DUAL COUNT MODES:

When any dual count mode is used, then User Inputs 1 and/ or 2 will accept the second signal of each signal pair. The user inputs do not have the Logic/Mag, HI/LO Freq, and Sink/Source input setup switches. The user inputs are inherently a logic input with no low frequency filtering. Any mechanical contacts used for these inputs in a dual count mode must be debounced externally. The user input may only be selected for sink/source by the User Jumper placement.

SENSOR POWER:

+18 VDC, $\pm 5\%$ @ 60 mA max.; short circuit protected

USER INPUTS:

Three programmable user inputs
 Max. Continuous Input: 30 VDC
 Isolation To Sensor Input Common: Not isolated.

PRESCALER OUTPUT:

NPN Open Collector: $I_{SNK} = 100$ mA max. @ $V_{OL} = 1$ VDC max.
 $V_{OH} = 30$ VDC max. Duty cycle 25% min. and 50 % max.

ENVIRONMENTAL CONDITIONS:

- Operating Temperature Range: 0 to 50 °C
- Storage Temperature Range: -40 to 60 °C
- Vibration to IEC 68-2-6: Operational 5-150 Hz, 2 g
- Shock to IEC 68-2-27: Operational 25 g (10 g relay)
- Operating and Storage Humidity: 0 to 85% max. RH non-condensing
- Altitude: Up to 2000 meters

CERTIFICATIONS AND COMPLIANCES:

- CE Approved
- EN 61326-1 Immunity to Industrial Locations
- Emission CISPR 11 Class A
- IEC/EN 61010-1
- RoHS Compliant
- UL Listed: File #E179259
- Type 4X Indoor Enclosure rating (Face only)
- IP65 Enclosure rating (Face only)
- IP20 Enclosure rating (Rear of unit)

CONNECTIONS:

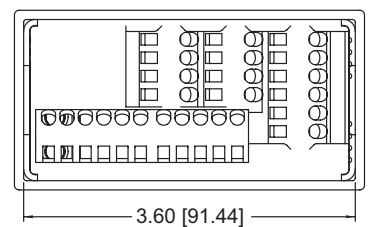
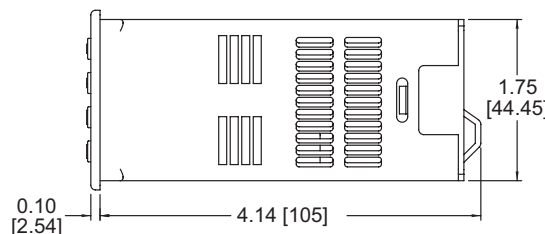
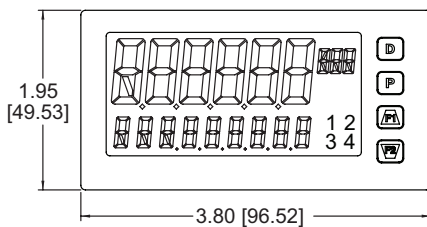
- High compression cage-clamp terminal block
- Wire Strip Length: 0.3" (7.5 mm)
- Wire Gauge Capacity: One 14 AWG (2.55 mm) solid, two 18 AWG (1.02 mm) or four 20 AWG (0.61 mm)

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

WEIGHT: 8 oz. (226.8 g)

DIMENSIONS In inches [mm]

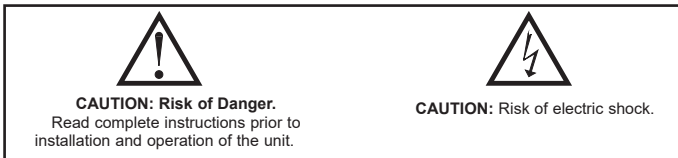
Note: Recommended minimum clearance (behind the panel) for mounting clip installation is 2.1" [53.4] H x 5.5" [140] W.



SAFETY SUMMARY

All safety related regulations, local codes as well as instructions that appear in this document or on equipment must be observed to ensure personal safety and to prevent damage to either the device or equipment connected to it.

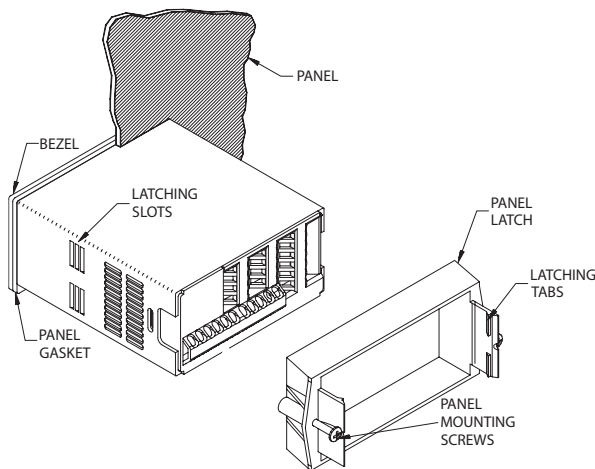
Do not use these products to replace proper safety interlocking. No software-based device (or any other solid-state device) should ever be designed to be responsible for the maintenance of personnel safety or consequential equipment not equipped with safeguards. Red Lion disclaims any responsibility for damages, either direct or consequential, that result from the use of this equipment in a manner not consistent with these specifications.



METER INSTALLATION

The PAX2D meets NEMA 4X/IP65 requirements 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 from the unit. 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.

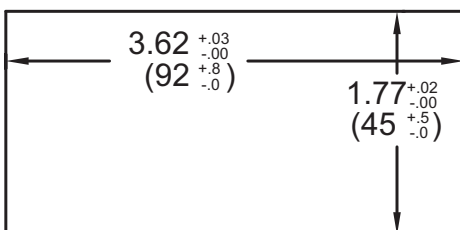
While holding the unit in place, push the panel latch over the rear of the unit so that the tabs of the panel latch engage in the slots on the case. The panel latch should be engaged in the farthest forward slot possible. To achieve a proper seal, tighten the latch screws evenly until the unit is snug in the panel (Torque to approximately 7 in-lbs [79N-cm]). Do not over-tighten the screws.



Installation Environment

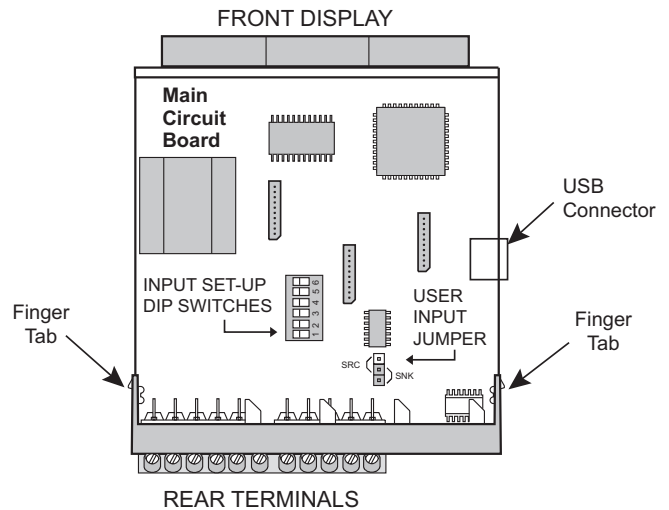
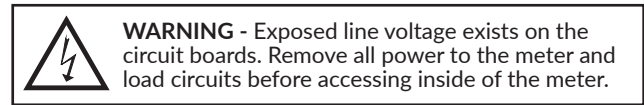
The unit should be installed in a location that does not exceed the operating temperature and provides good air circulation. Placing the unit near devices that generate excessive heat should be avoided.

PANEL CUT-OUT



SETTING THE DIP SWITCHES

To access the switches, remove the meter base from the 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.



Setting the Input Dip Switches

The meter has six DIP switches for Input A and Input B terminal set-up that must be set before applying power.

Input B LO Freq.	<input type="checkbox"/>	6	HI Freq.
Input B SRC.	<input type="checkbox"/>	5	SNK.
Input B MAG.	<input type="checkbox"/>	4	Logic
Input A LO Freq.	<input type="checkbox"/>	3	HI Freq.
Input A SRC.	<input type="checkbox"/>	2	SNK.
Input A MAG.	<input type="checkbox"/>	1	Logic
	<input checked="" type="checkbox"/>	ON	

■ Factory Setting

SWITCHES 1 and 4

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

MAG: 200 mV peak input sensitivity; 100 mV hysteresis; maximum voltage:

$\pm 40 \text{ V peak (28 Vrms)}$; Input impedance: $3.9 \text{ K}\Omega @ 60 \text{ Hz}$; Must also have SRC switch ON. (Not recommended with counting applications.)

SWITCHES 2 and 5

SNK.: Adds internal $7.8 \text{ K}\Omega$ pull-up resistor to +5 VDC, $I_{MAX} = 0.7 \text{ mA}$.

SRC.: Adds internal $3.9 \text{ K}\Omega$ pull-down resistor, $7.3 \text{ mA max. @ 28 VDC}$, $V_{MAX} = 30 \text{ VDC}$.

SWITCHES 3 and 6

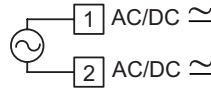
HI Frequency: Removes damping capacitor and allows max. frequency.

LO Frequency: Adds a damping capacitor for switch contact bounce. Also limits input frequency to maximum 50 Hz and input pulse widths to minimum 10 msec.

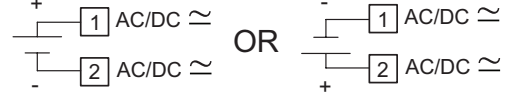
POWER WIRING

The power supplied to the meter shall employ a 15 Amp UL approved circuit breaker for AC input and a 1 Amp, 250 V UL approved fuse for DC input. It shall be easily accessible and marked as a disconnecting device to the installed unit. This device is not directly intended for connection to the mains without a reliable means to reduce transient over-voltages to 1500 V.

AC Power



DC Power



INPUT SIGNAL 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.

If you are wiring Input B, connect signal to Terminal 6 instead of 5, and set DIP switches 4, 5, and 6 to the positions shown for 1, 2, and 3.

<p>Magnetic Pickup</p>	<p>AC Inputs From Tach Generators, Etc.</p>	<p>Two Wire Proximity, Current Source</p>
<p>Current Sinking Output</p>	<p>Current Sourcing Output</p>	<p>Interfacing With TTL</p>
<p>Switch or Isolated Transistor; Current Sink</p>	<p>Switch or Isolated Transistor; Current Source</p>	<p>Emitter Follower; Current Source</p>
<p>Quad; Current Sink Output</p> <p>If using single Counter B, then wire signal to 6, and Quad/Direction to 9. Set switches as shown.</p>	<p>Dual Quad/Count; Current Sink Output</p>	<p>Dual Quad/Quad; Current Sink Output</p>

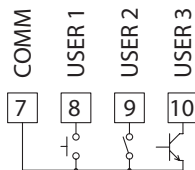
Shaded areas not recommended for counting applications.

USER INPUT WIRING

If User Input 1 and/or 2 are wired for quadrature or directional counting, an additional switching device should not be connected to that User Input terminal. User Input terminal does not need to be wired in order to remain in inactive state.

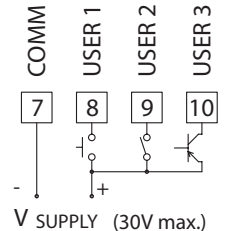
Sinking Logic (USER_{ACK} LO)

When the *USER_{ACK}* parameter is programmed to *LO*, the user inputs of the meter are internally pulled up to +3.3 V with 20 KΩ resistance. The input is active when it is pulled low (<1.1 V).

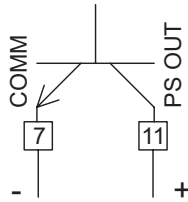


Sourcing Logic (USER_{ACK} HI)

When the *USER_{ACK}* parameter is programmed to *HI*, the user inputs of the meter are internally pulled down to 0 V with 20 KΩ resistance. The input is active when a voltage greater than 2.2 VDC is applied.



PRESCALER OUTPUT WIRING (NPN O.C.)



**SETPOINT (ALARMS) WIRING
SERIAL COMMUNICATION WIRING
ANALOG OUTPUT WIRING**

} *See appropriate plug-in card bulletin for wiring details.*

ORDERING INFORMATION

DESCRIPTION	PART NUMBER
Digital Input Panel Meter	PAX2D000
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
RS485 Serial Communications Card with Terminal Block	PAXCDC10
Extended RS485 Serial Communications Card with Dual RJ11 Connector	PAXCDC1C
RS232 Serial Communications Card with Terminal Block	PAXCDC20
Extended RS232 Serial Communications Card with 9 Pin D Connector	PAXCDC2C
DeviceNet Communications Card	PAXCDC30
Profibus-DP Communications Card	PAXCDC50
Analog Output Card	PAXCDL10

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Support: support.redlion.net
 Website: www.redlion.net
 Inside US: +1 (877) 432-9908
 Outside US: +1 (717) 767-6511

Red Lion Controls, Inc.
 35 Willow Springs Circle York, PA 17406

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(b) The Company shall not be liable for a breach of the warranty set forth in paragraph (a) if (i) the defect is a result of Customer's failure to store, install, commission or maintain the Product according to specifications; (ii) Customer alters or repairs such Product without the prior written consent of Company.

(c) Subject to paragraph (b), with respect to any such Product during the Warranty Period, Company shall, in its sole discretion, either (i) repair or replace the Product; or (ii) credit or refund the price of Product provided that, if Company so requests, Customer shall, at Company's expense, return such Product to Company.

(d) **THE REMEDIES SET FORTH IN PARAGRAPH (c) SHALL BE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDY AND COMPANY'S ENTIRE LIABILITY FOR ANY BREACH OF THE LIMITED WARRANTY SET FORTH IN PARAGRAPH (a).**

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