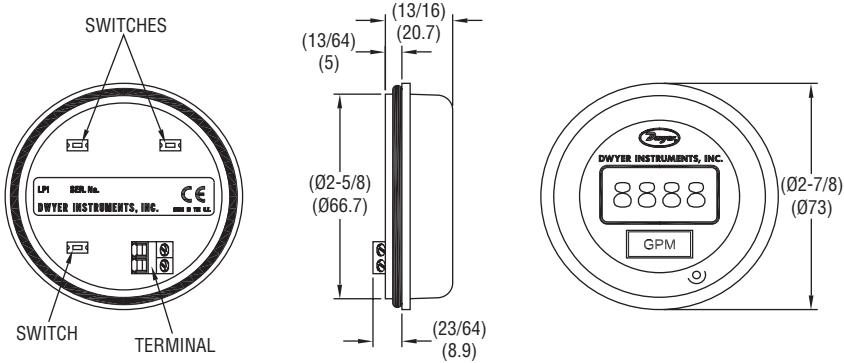




## Series LPI Loop Powered Indicator

### Specifications - Installation and Operating Instructions



**The Series LPI is a loop powered indicator** with a 4-digit red LED display. The Series LPI accepts a 4-20 mA input signal and displays the associated process variable. The instrument configuration settings are selectable via a simple to use menu system, which is navigated by the use of three push-button keys located on the rear of the display. The entire assembly is sealed into a cap that fits directly onto the connecting heads.

Please inspect the packaging and instrument thoroughly for any signs of transit damage. If the instrument has been damaged, please notify your supplier immediately.

#### INSTALLATION

The maximum current rating for this device is 100 mA for 1 minute. Exceeding this value will destroy the device. Fuse protection of the current loop to which this device is connected is highly recommended.

This unit must only be series connected to 4 to 20 mA current loop. This device will be destroyed if connected directly across any supply with a current output greater than 100 mA.

Ensure the instrument is installed with adequate protection against the environment. IP67 rating must be maintained.

Try to avoid installing the equipment close to sources of extreme temperature and electrical or electromagnetic interference.

**Configuration** - Connect the device to a 4 to 20 mA loop, set at any value between 4 and 20 mA. To configure the device follow the simple configuration menus printed on the reverse side of this sheet. Fit the correct units legend to the front panel face.

**Enclosure** - All external cabling/sensor entries must maintain IP67 rating.

#### SPECIFICATION @ 68°F (20°C)

**Input:** 4 to 20 mA.

**Maximum Input Current:** 100 mA for 1 minute.

**Accuracy:**  $\pm 0.02\%$  of full scale.

**Stability:** Zero: 0.002%/ $^{\circ}$ C; Span: 100 ppm/ $^{\circ}$ C.

**Power Requirements:** 2-wire 4-20 mA loop powered.

**Display:** 4-digit, 7.6 mm (high) red LED.

**Maximum Display Range:** -1999 to 9999.

**Ambient Operating Temperature:** -4 to 167°F (-20 to 75°C).

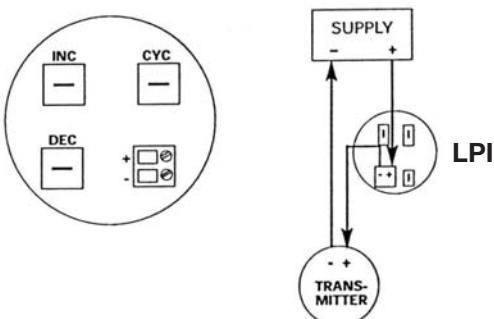
**Storage Temperatures:** -58 to 185°F (-50 to 85°C).

**Weight:** 6.0 oz (170 g).

**Front Panel Protection:** NEMA 4X (IP65).

**Agency Approvals:** CE.

#### Wiring and switch location (viewed looking at connector) LPI Typical Wiring



#### CONFIGURATION MENU

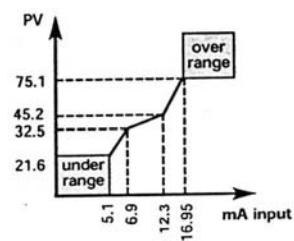
The prime function of the Series LPI device is to sink a 4-20 mA current input and display the associated process variable (PV) in appropriate engineering units.

The section below describes the menus accessible on the LPI. By accessing these menus, the user can modify the instrument configuration in many ways. The following section refers to the configuration menu to describe how to configure the input scaling.

The instrument needs to know at least 2 co-ordinate pairs to define the relationship between mA input and display PV. The default method is to have SCAL (scaling) set to STND (standard). This allows the user to edit the ENLO (engineering low) and ENHI (engineering high) PV values that correspond to 4 mA and 20 mA input values, respectively. The default values for ENLO and ENHI are 0 & 100, respectively, giving a linear display range of 0-100 for 4-20 mA input.

Alternatively, the user may not know the exact PV values at 4 & 20 mA. You can choose R<sub>LO</sub> scaling to solve this problem. This allows the user to edit EN<sub>LO</sub> and EN<sub>HI</sub> PV values that correspond to LO mA and HI mA input values, respectively. When the user accesses the SCAL (scale low) menu entry, the display flashes IP<sub>LO</sub> (input low) to prompt the user to apply the LO mA value. Once the correct input signal is present and stable, the user should press ENT to store. The user is then prompted to apply the HI mA value (in SCH/PHI). The user can choose LIN (linearization type) to NONE, S<sub>qr</sub>t, r<sub>t32</sub>, r<sub>t52</sub> or USE<sub>r</sub>.

- NONE is the default, and sets a straight linear relationship between mA input and PV. The input will go under/over-range at 3.8/21.5 mA.
- S<sub>qr</sub>t (square root), r<sub>t32</sub> (root 3/2) and r<sub>t52</sub> (root 5/2) set a X1/2, X3/2, or X5/2 relationship, intended for flow applications where, for example, the flow is proportional to the square root of level. The input will go under/over-range at 3.8/21.5 mA.
- USE<sub>r</sub> allows user-defined linearization using up to 20 co-ordinate pairs. For example, if the user wanted to apply a 3-segment set of interpolated co-ordinate points as shown below, you would select LIN = USE<sub>r</sub>, then set SEGS = 3. The user would then set the mA interpolation points as IN1, IN2, IN3, IN4 = 5.1, 6.9, 12.3, 16.95. The corresponding PV interpolation points would be set as OUT1, OUT2, OUT3, OUT4 - 21.6, 32.5, 42.5, 75.1. The input would then go under/over-range at 5.1/16.95 mA.



Once the input has been scaled using any of these methods, the user can choose to apply a constant offset to the PV, using the OFST setting. The user can also select the display resolution using the DECP setting. A menu access passcode can be set using the PRSS setting. The menu timeout period can be changed using the tOUT setting.

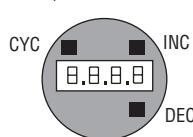
## MAINTENANCE

Apart from configuration this equipment requires no maintenance. If recalibration is required please contact your supplier for further information. Any cleaning of the instrument should be carried out using a mild detergent and a soft cloth. No solvents or abrasive cleaner should be used.

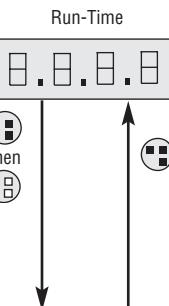
The Series LPI Loop Powered Indicator is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

## SERIES LPI CONFIGURATION MENU GUIDE

There are three buttons, which the operator must press in various combinations in order to configure the device. These buttons are located on the underside of the indicator's circuit board. Viewed from the front, the three buttons (CYCle , INCrement , and DECrement ) are shown in the diagram to the left. Pressing 2 buttons simultaneously causes ENTER or ESCape actions.



When cycling around menu, the title (e.g. LIN, SCAL, etc.) is displayed for a second, then the menu entry is displayed ready for editing.



If no buttons are pressed for a minute or more, the device assumes run-time mode. The display shows the PV (if the input is in range) or shows or to indicate over/under range. In order to access menu configuration mode, the user must press ENTer followed immediately by CYCle . In order to exit the menu and return to run-time, a user must press ESCape .

CYCle around menu

LIN	SCAL	EN <sub>LO</sub>	EN <sub>HI</sub>	SL0	SH1	SE95	IN1	OUT1	IN2	OUT2	etc. up to 20 pairs	OFST	DECP	PRSS	tOUT
NONE S <sub>qr</sub> t rt32 rt52 USER	Stnd R <sub>LO</sub> O	Choose Stnd (standard, where electrical hi/lo values are given by 4/20mA) or R <sub>LO</sub> O (where electrical hi/lo scaling is given by SCLO & SCH)	Low/high values for PV scaling	IP <sub>LO</sub>	IP <sub>HI</sub>	Apply low/high scale electrical input, i.e. the electrical low/high values which correspond to the EN <sub>LO</sub> / EN <sub>HI</sub> values entered	2	88.88	88.88	88.88	88.88	88.88	88.88	88.88	605 HOUR
Only shown if USE <sub>r</sub> linearization type is NOT selected						etc. . .	3								
							18								
							19								
Choose number of interpolated segments (SEGS) for user-linearization. Then enter co-ordinate pair values which are to be interpolated. INx values correspond to the electrical input. OUTx values correspond to the displayed PV.												The PV is offset by the number entered here.			
Only shown if USE <sub>r</sub> linearization type selected												Choose the position of the decimal point in run-time			
<i>Every effort has been taken to ensure the accuracy of this specification, however we do not accept responsibility for damage, injury, loss or expense resulting from errors and omissions, and we reserve the right of amendment without notice.</i>															