

# DIGITAL LOOP POWERED INDICATOR

## MODEL: MPX-408

### DESCRIPTION

The Model MPX-408 Digital process Indicator is a compact, rugged and reliable indicating instrument which is specifically designed for accurate process measurement applications in areas without power availability.

The Indicator accepts an industrial standard current input signal of 4 to 20 mA DC and displays the actual process value calibrated in the desired units, on a linear scale. The process value is displayed on a 4-1/2 Digit seven-segment LCD digital display module. There is no necessity of any external Power Supply.

The instrument is fully configurable and can be calibrated on any scale range from -19999 to +19999 units. Decimal Point setting is also provided in the instrument. The field mounted unit has no potentiometers to adjust and all parameters can be set using the three-key membrane switch-pad that is provided on the front panel.

The MPX-408 Indicator is therefore an ideal single unit substitute to conventional analog indicators because of its easy set up procedure and inherent accuracy in process control, besides other superior characteristics like immunity to Shocks, Dust, Ambient temperatures, Humidity and Corrosive atmospheres. Its main advantage is that it is completely current loop-driven, eliminating the requirement of any external power supply source and associated cabling.

The instrument is manufactured using selected high-grade components which guarantee its reliability and long operational parts. There are no moving parts and no potentiometers that may drift over time and in high vibration applications.

### INSTALLATION

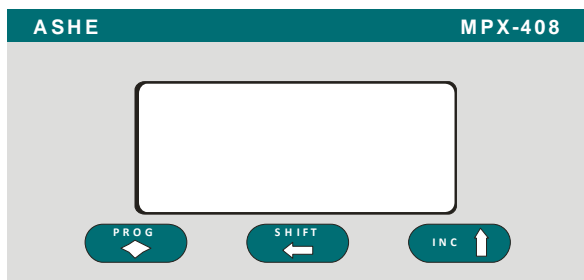
The instrument should be mounted in the cutout (68 x 138 mm) on the panel using the mounting clamps provided. All inter-connections to the instrument should be made with strong multi-strand wire of the order of 2.5 sq.mm. The ends of the wires should be properly ferruled and suitably terminated.

The Cables carrying the Input Signal should be properly isolated from Power Line cables (even separate router channels), to prevent any electromagnetic interferences in the Input Signal readings from disturbances in the Mains Power Line.

There is no requirement of power supply or earthing. It is recommended that the polarities of the input signal be double-checked for correctness before energizing the instrument. After connecting the input signal to a suitable source, the instrument must first be configured and then calibrated (see sections below).

### OPERATION & SETTINGS

The front panel of the MPX-408 Digital Indicator is as shown below:



The Controller has one display window on the front panel for indication of Process value.

### CONTROL KEYS

The instrument has three keys on the front panel, the functions of which are described below:

	The PROGRAM key is the central co-ordinating key for accessing the settings of the instrument. Pressing this Key, one can sequentially view, change and save the parameters such as Zero & Span settings, Decimal Points, Relay Set-points for control action, Hysterisis, etc.
	The SHIFT key allows the operator to shift the display during setting to the left by one digit per activation. This key should be used in conjunction with the INC (incrementing) key to set the desired control. This key is also used to shift the decimal point position to the left with each key-press.
	The INC or Incrementing key allows the operator to select the numeral in the digit being set. The digit will sequentially display 0, 1, 2....9 on each pressing of the INC key. This may be used to set the Zero/Span and Set-points of the displays.

### CALIBRATION

KEY PRESSED	DISPLAY	FUNCTION
POWER ON	Actual Process Value	Initialization of internal controller
PROG	+LLLL	Low (Zero) setting of Calibration Range. Feed 0 mA DC at input.
	00.00	Flashing Digit shifts Left by one space
SHIFT	00.00	
INC	00.10	Flashing Digit increments by one count
PROG	1HHH	High (Span) setting of Calibration Range. Feed 20 mA DC.
	20.00	Flashing Digit shifts Left by one space.
SHIFT	20.00	
INC	20.10	Flashing Digit increments by one count
PROG	PPPP	Decimal Point position selection
SHIFT	00.00	Decimal Point position shifts Left by one space
SHIFT	0.000	Decimal Point position shifts Left by one space

## CALIBRATION

INC key toggles the Polarity sign cyclically from + to –.

This completes the entire settings of the Loop Powered Digital Indicator. (Note: All parameters to be shifted/selected using SHIFT and INC keys).

## TECHNICAL SPECIFICATIONS

Model	:	MPX-408
Type	:	Micro-controller based Digital Loop-powered Display.
Input Signal	:	4 to 20 mA DC.
System	:	Two-wire.
Indication	:	4-1/2 digit seven-segment LCD display.
Overall Display height	:	1".
Forward Voltage Drop	:	5.6 Volts @ 20 mA.
Sensing Resistance	:	10.0 Ohms.
Range	:	–19999 to +19999.
Calibration Range	:	Configurable by Membrane Keyboard.
Over-Range indication	:	Indication of "1" on display [polarity preserved]
Polarity	:	Auto-Sensing.
Calibration	:	By three-key Membrane Keypad.
Power Supply	:	Nil (Loop-powered).
Settings	:	Zero cal, Span cal, Decimal point.
Response time	:	Typically 20 mS.
Linearity	:	± 0.1% FS.
Resolution	:	± 0.1%, ± 1 digit.
Bezel Dimensions	:	144 x 72 x 150 mm [W x H x D].
Cut-out Dimensions	:	138 x 68 mm.
Execution	:	Panel Mounting.
Ambient temperature	:	0 to 50°C.

## TERMINAL DIAGRAM

### TERMINAL BLOCK

1	2
+	-
4-20 mA IN	

### TERMINAL DETAILS

TERMINAL NO.	NOTATION	DETAILS
1	+	4-20 mA DC (IN)
2	-	