INSTRUCTION MANUAL

DI – 10 – 230

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1.0 INTRODUCTION :

The Epoch Instruments **"DI - 10"** is a microcontroller based, versatile process controller instrument. This precision instrument is ideally suited for industrial and laboratory applications. The instrument is designed to accept signals from load cells..

This manual contains the information about **DI - 10**. Please go through this manual carefully before operating the instrument.

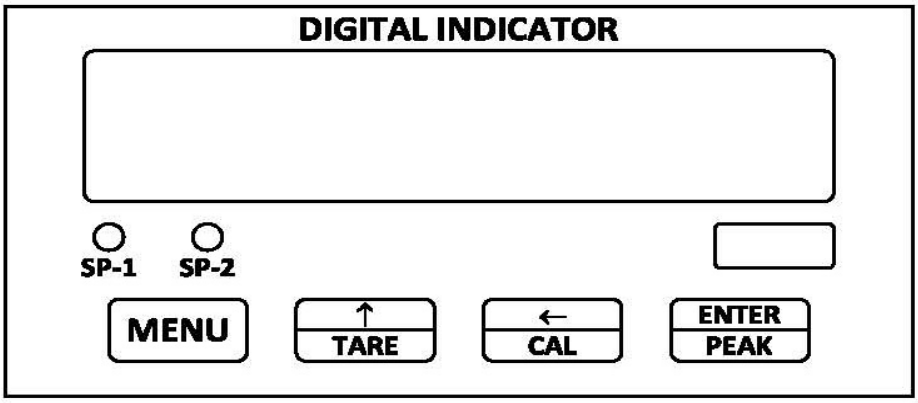
2.0 SPECIFICATIONS :

Input Type	Strain Gauge Full Bridge Sensors
Input Range	Selectable : a) ± 20 mV e) ± 320 mV b) ± 40 mV f) ± 640 mV c) ± 80 mV g) ± 1.28 V d) ± 160 mV h) ± 2.56 V
Resolution/Counts	± 20000 Counts
Accuracy	± 1 digit (± 0.01% full scale)
Thermal Drift	<100 ppm/°C
Excitation Voltage	5 VDC (± 1%)
Min Bridge Resistance	85 Ω (4 off 350 Ω Sensors in Parallel)
Power	230 V AC / 24V DC (Optional)
Update Rate	Variable from 4 Samples/sec To 100 Samples/sec.
Display Type	6 digits RED 0.56" Seven Segment LED.
Settable Parameters	Input range, Update rate, Gain, Offset, 4-20 mA O/P Range, etc.
Front Panel Keys	❖ Menu : To scroll through the menus. ❖ Inc/Tare : Increments the displayed menu parameter. ❖ Shift/CAL : To shift the blinking digit. ❖ Enter/Peak : Stores configuration/Toggle between Peak & Normal mode.
Physical Dimensions	48 x 96 x 110 mm
Proportional Output	0 – 10 V (Load Resistance < 150 Ω)
Enclosure Type	ABS Plastic Case
Operating Temp	0°C to 50°C

3.0 KEYPAD DESCRIPTION :

The front panel of the instrument consists of 4 keys whose description is given below :

FRONT PANEL



3.1 MENU :

Pressing the menu key repeatedly enables the user to scroll through the different menus available in the instrument. The sequence in which the menus appear is shown below (See section 4.0 for description of Menus).

i. **Γ or Fxxxxx** --------- For 0 V Output.
ii. **L xxxxx** --------- For 10 V Output.
iii. **Stor** --------- Saving User menu settings.

3.2 INC/TARE :

'INC' or Increment key is used to increment the value of the blinking digit in menu. In the normal mode, when not in menu, this key is used for resetting the Peak value and if it is pressed for more than 3 sec, it will Tare the reading.

3.3 SHIFT/CAL :

'SHIFT' key is used to shift the blinking digit.

3.4 ENTER/PEAK :

This key is used to store all the settings in the non volatile memory and it will be loaded while powering up. Press enter key to save the changes made in the menus. When 'ENTER' is pressed the display will blink once to indicate that the settings have been stored. In the normal mode, when not in menu, this key is used to switch between normal display and peak display.

4.0 DESCRIPTION OF MENUS:

4.1 0 Volt Output (Γ xxxxx) :

To set 0.00 Volts Output. This setting will determine the minimum value at which 0 Volt output is available.

4.2 10 Volt Output (L xxxxx) :

To set 10.00 Volts Output. This setting will determine the maximum value at which 10 Volt output is available.

4.3 SAVING USER MENU SETTINGS (Stor):

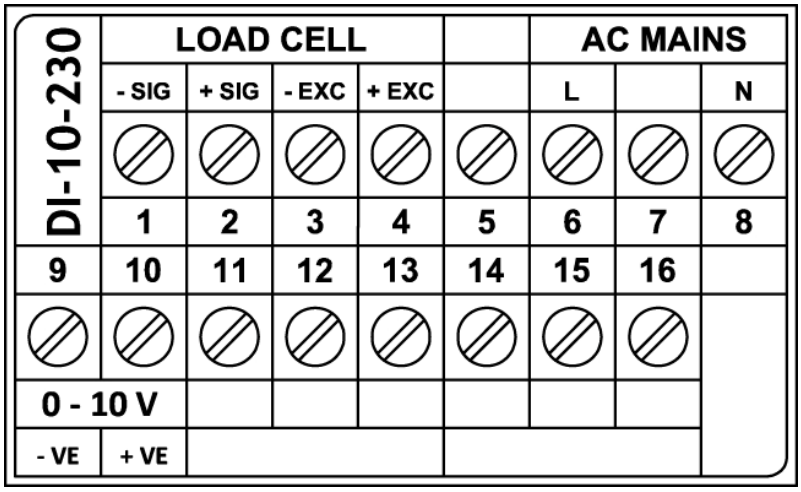
This menu is used to store all the settings in the non-volatile memory to avoid the lose of setup when power fails. Press **ENTER** key when 'Stor' appears on the display to save the changes made in the menus.

5.0 INSTRUMENT SETUP :

Connect the Input Sensor (e.g. Load Cell) to the back panel connector. The Back panel connection diagram is shown below.

BACK PANEL

***CAUTION: CONNECT AS PER THE STICKER ATTACH TO THE INDICATOR. THE DRAWING GIVEN BELOW IS A TYPICAL DIAGRAM. CHECK THE CONNECTIONS PROPERLY BEFORE POWERING THE INSTRUMENT.**



- Switch on the Power supply.
- Calibrate the instrument if needed. (See section 6.0 for Calibration).
- Output is displayed on the LED display.

6.0 INSTRUMENT CALIBRATION:

The instrument is to be calibrated properly before you start using it. The process of calibration involves the process of applying an input of known quantity to the instrument and setting the display to get the required reading.

***For Example** : Calibrating with 5 Kg, to get a reading of 5.000*

1. Connect the load cell to the instrument as described in the "Instrument Setup".
2. Set the menus to appropriate values.
3. Without placing any weight, TARE the reading. So that display shows zero.
4. Place the known weight (5 Kg) over the load cell.
5. Press ‘SHIFT’ and ‘ENTER’ keys together.
6. The display will show ‘P 01’ and starts counting up.
7. Now enter password If the password is ‘1234’ then press these keys in sequence-‘MENU’ ‘INC’ ‘SHIFT’ ‘ENTER’ if the password entered is wrong. It shows ‘FAIL’ and goes back to normal mode. If the password entered matches then the display will show ‘PASS’ and then shows some reading and the last digit starts blinking.
8. Using ‘INC’ key & ‘SHIFT’ key set the display to the required value.(in this example set it to 5.000)
9. Now press ‘MENU’ key. The instrument automatically calculates the calibration coefficients and stores them in non-volatile memory. This completes the calibration.
10. Keep different weights and check whether showing proper results.

7.0 ANALOG OUTPUT CALIBRATION :

The analog o/p calibration is simple, it can be done even without the sensor if required 0 V o/p for display reading of '0000'and 10 V o/p is required for display reading of '10000'. The steps are as follows

1. Set the Analog o/p Low set menu 'F 00000' and Analog o/p High set menu 'L 10000'.
2. Set the menu 'tESt x' to 'tESt S'.
3. Now the display will not sense the input. Instead it will show the value set in the menu Relay 1 set point 'ixxxxx'.
4. Connect the multimeter and measure the Voltage in the back panel.
5. Set the relay 1 set point menu 'ixxxxx' to 'i00000'.
6. Vary and adjust the Analog o/p offset menu 'A xxxx' to get a reading of 0 V in the meter.
7. Now Set the relay 1 set point menu 'ixxxxx' to 'i10000'
8. Vary and adjust the Analog o/p offset menu 'b xxxx' to get a reading of 10 V in the meter
9. Repeated the steps 5-8 one or two times till you get the required o/p.
10. Now set the menu 'tESt x' back to tESt n'.

NOTE :

1. Pressing 'Enter' key will toggle the display between normal value, the PEAK (Max.) value and the Valley (Min) value. When PEAK is displayed, a 'P' will be displayed in front of the value and when Valley is displayed, 'u' will be displayed in front of the value. Since sign is displayed in the same digit as 'P' and 'u', for positive values, the middle segment of 'P' will disappear and for negative values, 'u' will look like 'o'.
2. Pressing 'INC' key will reset the PEAK.
3. To Tare the value, press 'INC' key for 3 Seconds.