MANUAL

DIGITAL FORCE INDICATOR

FOR

SDTORK CONTROLS PVT LTD,
DHANORE, PUNE - 412 105

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INTRODUCTION

SDTORK Controls has designed micro controller based Digital Force Indicator for digital display of load sensor signal. This unit works on12V DC as well as 230 Volt AC/50 Hz supply.

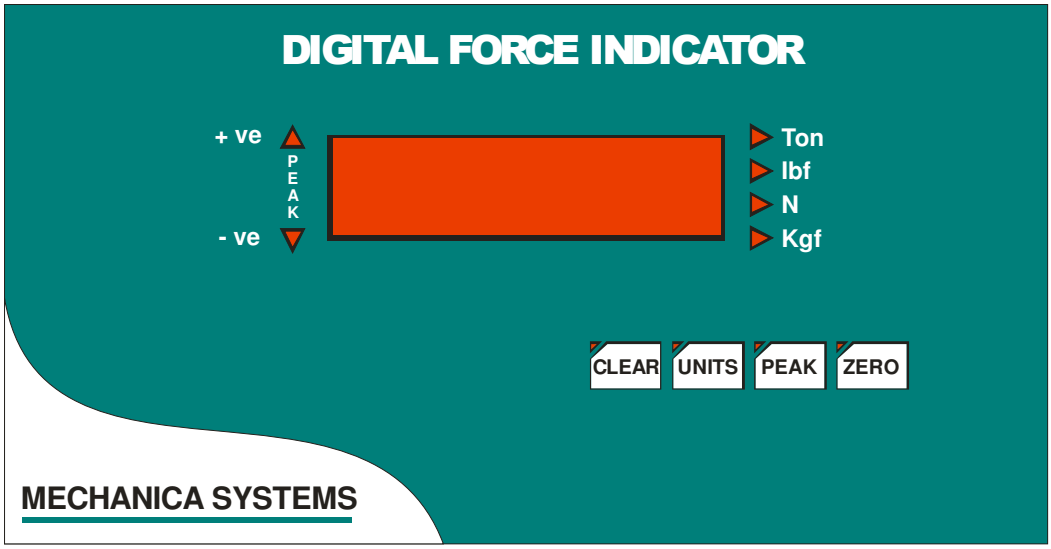
The indicator has many features and functions such as engineering unit selection, peak hold, clear and auto zero. It has 16 bit ADC, hence offers high accuracy of readings. The peak hold function designed in such a way that it holds maximum peak (Positive and Negative direction) force value in given time window.

The maximum force value gets stored till another high value does not occur during operation. The peak values gets stored automatically even the user is viewing data on instantaneous mode.

Detailed description of each function is given in subsequent pages.

DESCRIPTION: DIGITAL FORCE INDICATOR

FRONT PANEL FUNCTION KEYS



Please refer the photograph of the front panel.

Four feather touch key CLEAR, UNITS PEAK ZERO are provided.

Also LED display is provided at Right and Left hand side of the main LED display for peak and engineering unit indication. The main display has 6 digits, 7 segment display with negative sign indication.

FRONT PANEL: FUNCTION OF KEYS

ZERO

It is auto zero function. This is to be used for making zero of the preload/initial load due to fitment/assembly/or any dead weight on the load sensor. Please press the zero function, after assembly of the load cell.

PEAK

This key is used to read the maximum and minimum peak values stored, during the cycle. It holds maximum /minimum value stored during the cycle till it doesn't superseded by next higher value. The peak hold function designed in such a way that it holds maximum peak (Positive and Negative direction) force value in given time window.

The maximum force value gets stored till another high value does not occur during operation. The peak values gets stored automatically even the user is viewing data on instantaneous mode. Also if desired, user can select appropriate peak hold mode during testing. Only maximum and successively experiencing higher/maximum value of force will be stored & displayed.

The PEAK key has three settings in same key i.e. instantaneous, positive peak (+ve) and negative (-ve). When no peak indication LED glow either on +ve or –ve peak of left hand side of display window, then main display is on INSTANTANEOUS MODE.

If you press PEAK once again, the +ve peak LED glows. It shows maximum value stored in the memory subsequently by next pressing the key display indicates –ve peak value stored in memory.

CLEAR

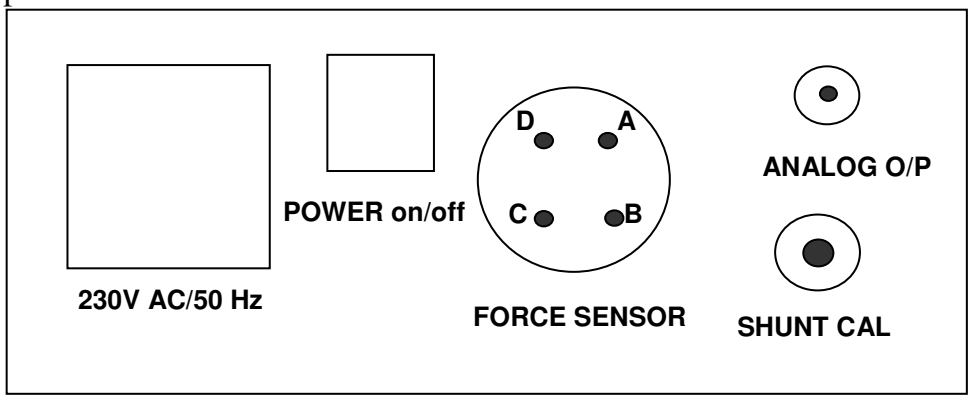
The CLEAR key is to be used for clearing/deleting stored peak readings. If user wishes to take fresh set of readings of typical loading cycle, it is recommended to press 'clear' key to delete earlier peak value stored.

UNITS

Various engineering units indicated could be selected just by pressing UNITS key successively i.e. kg, N, lbf, or Ton

REAR PANEL: FUNCTION OF KEYS

The rear panel looks like as follows:



The connector details are shown:

FUNCTIONS -:

1. **230V AC/50 Hz** – The 230V AC/50 Hz is connected to the unit by a mains cord.
2. **Power on /off** – This is to switch ON/OFF the power supply.
3. **Load/ Force Sensor** – This connector is provided to connect load cell to the indicator.
4. **SHUNT CAL** – This push to ON switch is provided to electronically simulate mechanical loading without full scale application of physical rated load for calibration. It is very effective way to cross check the sensor and electronic functionality. It gives you one particular figure which remains almost constant through out its life.
   For this unit shunt cal is 24490.
   Operation: - To check functioning, connect the sensor to the Indicator. Make indicator 'ON' atleast 10 minutes. Do not subject force sensor to any additional assembly load. Theoretically the sensor should be free from any external loading. Press ZERO and the display will show the reading 0000 in no load condition of the sensor. Press SHUNT CAL switch. Now the display will show the Shunt Calibration figure .This figure indicates that the calibration of the force Sensor is undisturbed.

5. **The connector details:**

Load sensor			**Indicator**	
Pin no.	Function	Wire colour	Pin no.	Description
A	+Ve Excitation	(Red)	A	(Red)
B	- Ve Signal	(Green)	B	(Green)
C	+Ve Signal	(White)	C	(White)
D	Gnd	(Black)	D	(Black)

OPERATING INSTRUCTIONS

1. Connect the 230V AC/50 Hz mains cord to Digital Force Indicator.
2. Connect the sensor to indicator by sensor cable provided. Properly align the sensor at right direction for sensing the load.
3. Make the indicator ON.
4. Keep Load cell and Indicator 'ON' at least 15-20 minutes prior to taking any reading.
5. Place the sensor at respective location and ensure the zero by pressing zero 

key.
6. Also press the 'CLEAR' 

key before taking any fresh reading to erase the earlier peak values stored in memory.
7. Handle the sensor and cable gently. The sensor is delicate.
8. DO NOT OVERLOAD the sensor beyond its rated capacity; otherwise this will yield the strain gauges.

IMPORTANT NOTES / CAUTION

A. Digital Force Indicator :-

- While making initially power 'ON' wait for 30 seconds for initialization.
- Please keep instrument 'ON' along with cable connection to load cell for atleast 15 minutes before actual / final loading to remove the electronic drift if any.
- Do not subject each unit of instrument to shock or vibration and keep it away from hot (60° and above) and extremely humid places. Also avoid the exposure of water splashes or rain. It may short the tiny electrical / electronics placed inside.

B. Load Cell :-

- The sensor is set to read 20000 kgf load only of capacity of 20000 kg beyond this load the display will get locked and will not read any further load.
- Never overload the sensor beyond its rated capacity; otherwise this will permanently damage the sensor.

C. Cables & Connectors :-

- Please do not stretch or twist the cable.
- Avoid any splash of water over load cell, cable & inside connector contacts.
- The connector contact may corrode and variation in display reading may occur.

DO'S & DON'TS:

DO'S:

1. While making initially power 'ON' wait for 30 seconds for initialization.

   Please keep instrument 'ON' atleast 15 minutes before actual/ final loading or before auto zero.
2. Also avoid the exposure of water splashes or rain. It may short the tiny electricals / electronics placed inside.
3. Keep instrument 'OFF' immediately after completion of job to avoid draining of battery life.
4. Store the whole unit at dry & humid free location.

DON'TS:

1. Never overload the sensor beyond its rated capacity; otherwise this will permanently damage the sensor. Beyond the rated load capacity the display will get locked and will not read any further load.
2. Do not subject each unit of instrument to shock or vibration and keep it away from hot (+ 55°C and above) and extremely humid places.
3. Please do not stretch or twist the cable at connector ends.
4. Don't expose to direct splash of water over load cell, digital force indicator cable & inside connector contacts otherwise connector contact may corrode and variation in display reading may occur.