

**OPERATING MANUAL  
OF  
PROSESS INDICATOR  
MODEL : SMIT-236**

SMIT-236

**Samyak Instrumentation Pvt. Ltd.**

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## INTRODUCTION:

This is a Microcontroller based universal Process Indicator controller unit.

The set Parameters are stored in serial NVRAM. No battery back up is required.

## General Specifications of this unit are:

- This is a Microcontroller based unit
- Mains Supply: 230VAC From Terminals of unit
- Output Options:  
Transmitter Power Supply: +24V DC +/- 5%, 50mA
- Analog Input: 4-20mA
- Indication: Six Digit 2.3 Inch Seven Segment Red LED
- Key board: Four keys membrane like
- Accuracy: 0.2% + +/- 1 digit
- Warm up time: 15 minutes
- Configuration Data are stored in serial NVRAM
- Mechanical data:

Mounting : Wall Mount  
Dimension : 385mm (W) x 110mm (H) x 100 mm (Depth)

## SYSTEM DESCRIPTION:

With the help of the keypad and display, unit allows to set and modify various configuration parameters and calibration.

## HARDWARE DESCRIPTION:

The unit consists of a CPU card and Display card.

The CPU and Display card has necessary hardware for:

- Driving Six digit multiplexed Display on CPU card
- Watch dog circuit in CPU card
- Four key keypad interface
- DC regulated supply: +5V, +24V.

The CPU card is connected with Display card through connector.

## INSTALLATION GUIDE:

- ❖ Unpack the instrument from the packing box carefully.
- ❖ Mount the instrument in the panel.

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- ❖ Refer the Connection details which are given on the unit.
- ❖ Make sure that no wire is connected loosely to avoid generation of spark and RFI. Before connecting the mains, check the mains configuration on the unit.

## OPERATING DETAILS:

The following paragraphs give detailed description of how to operate the unit. Before using the instrument, make sure to study and understand this section.

## DISPLAY & KEYBOARD:

It displays Process variable/Flow.

Unit has 4 key membrane keypad organized as 1 x 4 matrix.

List of keys and their functions:

Keys	Function
Index	Enter into data entry/verification mode Select parameter
Enter	Save New data and Terminate Edit mode
Digit Select (▶)	Select Next digit
Increment (▲)	Increment selected digit value

## EDIT MODE:

In this mode user can verify or modify various parameters. Entry into Edit mode is protected by Password.

Press 'Index' key to enter into edit mode. The display window will show 'PASS' for a moment and then it will start displaying '0000' with flashing Left most digit .The unit is prompting for Password. Password is a four digit no. There are two different passwords.

Operator's Password: **0101**

Enter any one of the above password using data entry keys. When 'Enter' key is pressed, the validity of Password is checked. If wrong password is entered the unit comes out of edit mode and displays engineering value.

Press 'Index' key again if you want to enter into edit mode.

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If correct password is entered, then also the unit starts Indicating Engineering value of input. Now press 'Index' key, the display will show name of the parameter to be modified and its value after a moment.

Pressing the 'Index' key again will display next parameter. The various parameters that will appear on the display with successive depression of the 'Index' key are:

Parameter description	Display	Values
Password	PASS	0101
Decimal Point	DP	0, 0.0,0.00
Zero	Zero	000000 to 999999
Full Scale	FS	000000 to 999999
ADC Count	COUNT	5000 ( 4 mA) 25000 (20 mA)

When a parameter is selected, its name will be first displayed for a moment and then current value is displayed in the same field of display. The left most digit will start flashing.

Use Increment (Up arrow) key, if you want to modify the flashing digit.

Press increment key, flashing digit will increment up to 9 and rolls back to 0 when it reaches at 9.

Once desired digit is set, press digit select key (Right arrow) to select next digit. The next selected digit will flash. Set it to desired value as per the above step.

Once all the four digits are set, press 'Enter' key. The parameter value will be modified as per new set value. Display will start indicating Input.

When in data entry/EDIT mode, if no key is pressed for 30 Seconds, the unit will terminate data entry mode automatically and start indicating Process value.

Press 'Index' key to go to next parameter. If 'Index' key is not pressed for more then 30 seconds, the unit will terminate 'Edit' mode automatically and start indicating Process value. To enter into 'Edit' mode, one has to enter Password again.

## **CALIBRATION PROCEDURE:**

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The Instrument is duly calibrated at the factory. For any reason, if re-calibration is required follow the procedure as defined below.

As explained earlier, One can do calibration thro' the keyboard itself, no trimming of potentiometer is required. The Zero and Full-scale values are stored in NVRAM. The calibration is allowed only in Engineer's Password mode.

### **INPUT CALIBRATION:**

1. Switch on the instrument and allow 15 minutes of warm up time before starting calibration.
2. Connect External source to input terminals (4 &5) of the unit.
3. Calibration of ZERO
  - ❖ Press Index key.
  - ❖ Now enter engineers; Password '0101'.
  - ❖ Press INDEX key after entering this Password.
  - ❖ The parameter 'ZERO ' for Zero will be displayed.
  - ❖ This parameter is use for calibration of zero.
  - ❖ At that time Apply 4 mA from External source.
  - ❖ Now Set Value in ZERO Parameter & press 'Enter' Key.
  - ❖ This Value will be stored as ZERO reading.
4. Calibration of SPAN
  - ❖ The parameter 'FS ' for Span will be displayed.
  - ❖ This parameter is use for calibration of Span.
  - ❖ At that time Apply 20mA from External source.
  - ❖ Now Set Value in FS Parameter & press 'Enter' Key.
  - ❖ This Value will be stored as SPAN reading.

Now the instrument is calibrated.

For again entering into calibration mode, you have to wait till the instruments go to normal mode. After that go to EDIT mode thro' Engineers' Password and perform calibration.

### **OBSERVATION TABLE:**

**RESPONSE TO INPUT:** (1) ZERO = 0.00  
(2) FS = 100.00

Analog Input	Indication
4.00 mA	0.00
8.00 mA	25.00
12.00 mA	50.00
16.00 mA	75.00
20.0 mA	100.00

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**TERMINAL DETAILS: SMIT-236**

<b>SERIAL NO.</b> <b>1507040331</b>	
<b>MAINS SUPPLY 230V AC</b>	
<b>1</b>	<b>EARTH</b>
<b>2</b>	<b>NEUTRAL</b>
<b>3</b>	<b>PHASE</b>
<b>Analog I/P 4-20 mA</b>	
<b>4</b>	<b>I/P +Ve</b>
<b>5</b>	<b>I/P -Ve</b>
<b>6</b>	<b>+24V DC</b>

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