Samyak

OPERATING MANUAL
FOR
PROCESS INDICATOR CONTROLLER
MODEL : SMIT 302

Manufactured By:

SAMYAK INSTRUMENTATION PVT. LTD.
F-4, Memnagar Complex,
Opp. Petrol Pump, Memnagar, Ahmedabad-380 052
Phone: +91-79-27495500/5600 FAX : +91-79-27417997

INTRODUCTION:

This is a microcontroller based universal Process Indicator controller/Pulse counter unit. It is highly versatile, accurate and different from the conventional indicators.

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

***General Specifications of this unit are*:**

- This is a Microcontroller based unit.
- Power Supply: 230VAC/115VAC is field selectable from back panel

- Output Options:
  - ☐ Transmitter Power Supply: +24V DC +/- 5%, 50mA
  - ☐ Relay Output: 1 nos. 1 C/O type 2A/12 VDC contact rating

- Indication: Counter: Four Digit Seven Segment Red LED
- Key board: Four keys membrane like
- Accuracy: 0.2% + +/- 1 digit
- Warm up time: 15 minutes
- Configuration Data & Integrated total are stored in serial NVRAM
- Mechanical data:

  Mounting: Panel mounting
  Cut-out size: 92mm x 92 mm
  Outer dimension: 96mm x 96mm x 90mm (Depth)

SYSTEM DESCRIPTION:

The unit is based on an 8-bit Micro-controller. It counts and displays no. of pulse received.

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 and KB/Display card.

The CPU card has necessary hardware for:

- Driving Four digit multiplexed Display
- Four key keypad interface.
- Watch dog circuit
- DC regulated supply: +5V, +24V,
- The transformer is fitted on this PCB on two mounting screws thro' a clamp.

The connectors are accessible from back panel cutout.
Mating female connectors are supplied along with the instrument.

The card is soldered with KB/Display card and it slides in frame of the enclosure. No mounting screws are required. The KB/Display card is fixed with front bezel.

Mains selection for 110V/220V is to be done from back panel. There are total three terminals for mains connection. One of them is for Earthing. Necessary connection for configuration of 230V/115V mains is indicated on the sticker on the back panel.

ENCLOSURE:

This is general purpose Powder coated metallic enclosure suitable for panel mounting.

Panel mounting is to be done using side brackets.

KB/DISPLAY CARD AND FRONT PANEL:

A display/KB card has a Four-digit display for Process indication

Four keys are also mounted on this card. The card is soldered with CPU card. The card is fitted with the bezel. An overlay is provided on the front side.

INSTALLATION GUIDE:

- Unpack the instrument from the packing box carefully.
- Mount the instrument in the panel cut-out of 92mm * 92mm.
- Fix the instrument with the panel using two side brackets.

- All the electrical connections to be done at the back panel on screw type terminals
- Refer the Appendix for back panel layout.
- 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 back panel.
- Earth the instrument properly.

Applying Input:

- The instrument takes input form back panel
- Transmitter supply is available in printed in back plate

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/counter.

Unit has 4 key membrane keypad organized as 4 x 1 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 also can be used as Stop key.
Digit Select (→)	Select next digit and also can be used as Start key.
Increment (↑)	Increment selected digit value ans also can be used as Reset key

Normal Mode of Operation:

When ever mains is switched on to the unit,

It counts and displays no. of pulse received and set scale factor (SF discussed below).

Display count = No of pulse received / Scale Factor

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/ 1234

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.

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 it's value after a moment.

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

Parameter description	Display	Values
Password	PASS	1234 / 0101
Calibration zero	CAL Z	0000/9999
Calibration Span	CAL S	0000/9999
Out put zero	OUT Z	0000/9998
Out put span	OUT S	0000/9998
Zero	Zero	0 to 3999
Full Scale	F.L.	0 to 3999
Decimal Point	D.P.	0, 0.1,0.01
Unit no	U-NO	00/31
REALY 1	RL1	0 to 3999
REALY 2	RL2	0 to 3999

Following the above process, one can select any of the above listed parameters.

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. In case of the left most digit it scrolls between 0,1,2 and 3.

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 25 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 25 seconds, the unit will terminate 'Edit' mode automatically and start indicating Process value. To enter into 'Edit' mode, one has to enter Password again.

RELAY SELECTION: (OPTIONAL)

Select Relay type as per required . i.e. LoHi, LoLo, HiHi. If Relay Type is selected as LoHi; then Relay 1 will work as Lo relay & Relay 2 will work as Hi relay. If Relay Type is selected as LoLo; then both the Relay 1 & Relay 2 will work as Lo relay. If Relay Type is selected as HiHi; then both the Relay 1 & Relay 2 will work as Hi relay.

RELAY OPERATION:

Two relays are provided. Relay will operate on basis of Flow value. If ALRL (relay selection) is selected as LoHi then Relay 1(LO) & Relay 2(HI). Relay1 will remain ON till Flow value is less then relay1 value, Relay 1 will turn OFF when flow value is more then equal to relay1 value ; Relay 2 will ON when Flow value will more than relay2 value. Relay 2 will OFF when Flow value will equal to or less then relay2 value.

If ALRL (relay selection) is selected as LoLo then Relay 1(LO) & Relay 2(LO). Relay1 will remain ON till Flow value is less then relay1 value, Relay 1 will turn OFF when flow value is more then equal to relay1 value . Relay2 will remain ON till Flow value is less then relay2 value, Relay 2 will turn OFF when flow value is more then equal to relay2 value.

If ALRL (relay selection) is selected as HiHi then Relay 1(HI) & Relay 2(HI). Relay 1 will ON when Flow value will more than relay1 value. Relay 1 will OFF when Flow value will equal to or less then relay1 value. Relay 2 will ON when Flow value will more than relay2 value. Relay 2 will OFF when Flow value will equal to or less then relay2 value.

Retransmission Output: (Optional)

4-20 mA current output is available from the instrument. This output is proportional to process variable (4.00 mA for Zero display) and 20.0 mA for Full scale display. Output calibration is can be done thro' software using keypad and standard DMM.

Serial Interface: (Optional)

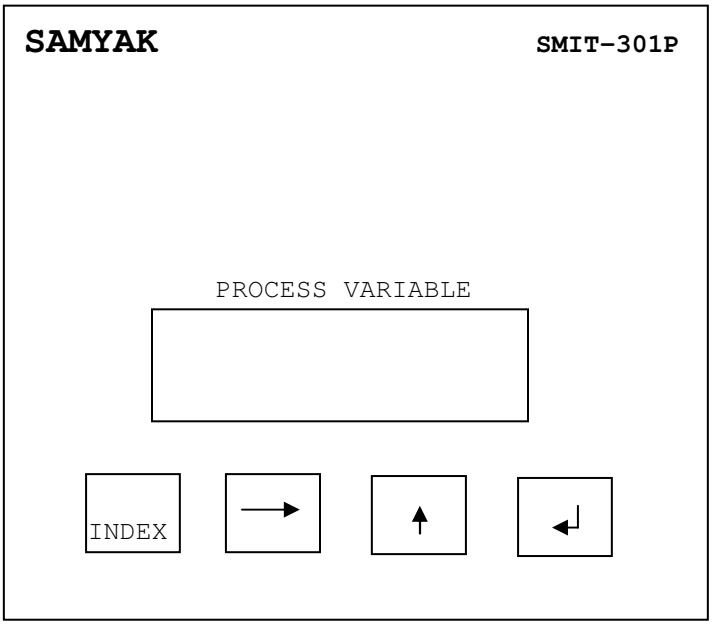
Unit can interface with Smitsoft Application by RS232 or RS-485 interface.

Note :- Baud Rate is fix on 2400 bps.

INDICATION:

The indication of the unit under normal operating mode will be the counted pulses since last reset given to the unit.

FRONT LAYOUT:



BACK PANEL DETAILS:

Pin No.	Signal	
1	Line	
2	Neutral	
3	Earth	
10	I/P+ VE	
11	I/p- VE	
12	+24v/50mA	
15	RX O/P+VE	
16	RX O/P-VE	
19	NC	Alaram
20	C	1Relay
21	NO	
22	NC	Alaram
23	C	2 Relay
24	NO	