OPERATING MANUAL
FOR
COUNTOR

MODEL : SMIT1101

Manufactured By:

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1. INTRODUCTION

This is a microcontroller based universal Totalizer/Preset counter unit. It is highly versatile, accurate and different from the conventional counter.

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:
  - ☐ Power Supply: +24V DC +/- 5%, 50Ma
  - ☐ One relay 2A/230 VAC Contact rating
- Indication: Eight Digit 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: Panel mounting
  Cut-out size: 138mm x 68 mm
  Outer dimension: 144mm x 72mm x 100mm (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.

2. HARDWARE DESCRIPTION

The unit consists of a CPU and KB/Display card.

The CPU and KB/Display card has necessary hardware for:

- Driving 8-digit multiplexed Display on CPU card.
- Watch dog circuit CPU card.
- Four key keypad interface on KB/Display card.
- One count Relay

The CPU card is fitted with KB/Display card through connector. The KB/Display card is fixed with front bezel using mounting screws.
This is 110-230VAC operated unit.

3. INSTALLATION GUIDE

1) Unpack the instrument from the packing box carefully.
2) Mount the instrument in the panel cut-out of 138mm * 68mm.
3) Fix the instrument with the panel using two side brackets.
4) All the electrical connections to be done at the back panel on detachable screw type terminals
5) Refer the Appendix for back panel layout.
6) 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.

4. 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 Total Counts.

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

List of keys and their functions:

Keys	Function
Reset/ Enter	Save new data in Edit mode & Reset the counter value
Index	Select the parameters.
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.

Operator's Password: 0101

Enter 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 counter value.

Press 'Index' key 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 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
Filter Value	F-UAL	00 to 19
K Factor	K-FAC	0 to 99999999
Set point	SET POINT	000000.00
Decimal	DESIMAL	0,1,2

Following the above process, one can select any of the above listed parameters. After Password is displayed in engineers 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 digits 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 digits 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 30 Seconds, the unit will terminate data entry mode automatically and start indicating counter value.

Now, all parameters are described in details here in next section:

i. PASSWORD

To set the parameters of the digital counter "**0101"** password is to be given.

ii. K-FACTOR

For every pulse input, value of counter is incremented by the value set in K factor parameter.

If value set in K factor parameter is 1.25 and initially value of counter is 0 (on display)
And there is 1 pulse input, and then counter will be incremented by 1.25.

iii. SETPOINT

This is 8-digit editable value, which is compared with counter value to ON relay.

iv. DECIMAL POINT

Two decimal points selection is given.

Select	Value	Decimal position
0	0	No decimal
1	0.1	One decimal
2	0.01	Two decimals

Note:
By selecting **Decimal point 0 (0)**, **K-Factor and set point values** will be **"nnnn" and "nnnnnnnn"**.
By increasing the value of decimal point, both the parameters will get affected of the decimal point value.

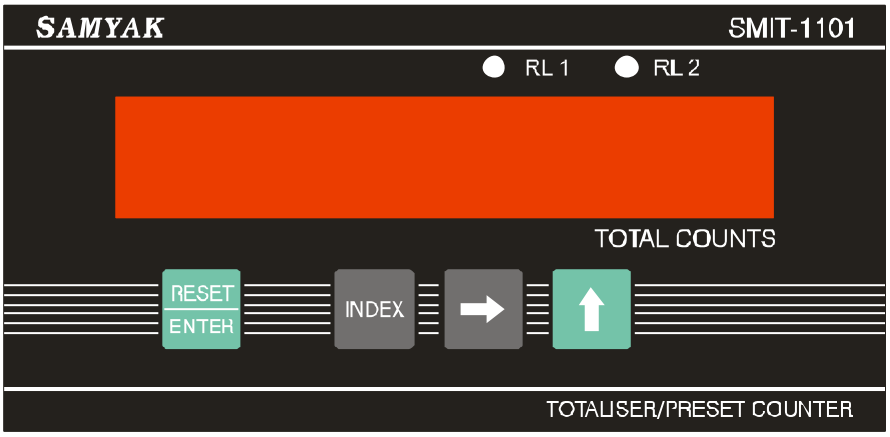
I.e. **if decimal point** is selected to **1 (0. 1), K-Factor and set point value** will be **"nnn.n" and "nnnnnnn.n".**

I.e. **if decimal point** is selected to **2 (0.01), K-Factor and set point value** will be **"nn.nn" and "nnnnnn.nn".** (Where n = 0 to 9)

RELAY FUNCTION
Operation of relay depends on the value of the set point. When display count value reaches to set point value, relay will be. **OFF**
When press the reset key, relay will be. **ON** and count value reset.

HOW TO RESET COUNT VALUE
We are Reset the Count Value From front to Press Reset Key.
Counter can be reset by shorting **RESET (pin 1)** & **COMMON (pin 3)**
Note: F-VALUE (filter value) should not be changed from 00.

5. FRONT LAYOUT



6. BACK PANEL DETAILS

PROXIMITY DIGITAL INPUT	
1	Reset
2	INH. Reset
3	Common
4	Prox. -ve
5	+24 VDC
6	Common
7	Prox. +ve

MAINS 110/230 VAC		
8	N2	**230VAC: Sort N1-L2 110VAC: Sort N2-N1, L2-L1 SUPPY GIVEN BETWEEN : N2-L1**
9	N1	
10	L2	
11	L1	
12	EARTH	

RELAY TARMINAL	
13	NC
14	COMMON
15	NO

PIN CONNECTION:

NPN PROXIMITY WIRING			PNP PROXIMITY WIRING		
3 or 6	Proxy GND	BLUE	3 or 6	Proxy GND	BLUE
4	Proxy –ve (i/p)	BLACK	7	Proxy +ve (i/p)	BLACK
5	24v	BROWN	5	24v	BROWN
5 & 7	Short		4 & 6	Short	