CENTURY METERING SYSTEMS & CONTROLS
 # 34 1B , First Floor, 4th Main, 3rd Phase, Peenya Industrial Area,
Bangalore – 560058
E-mail: century.metering@gmail.com **Web: www.centurymetering.com**

FAN FAILURE AND TEMPERATURE DETECTION UNIT (FFTDU)
CMSC-7913 ver 1.0
Instruction Manual

1. Introduction

Fan Failure and Temperature Detection Unit (CMSC-7913) is a combined unit which monitors temperature at a single point and the status of the impedance protected cooling fan of around 20W.

By default, the fan relays will be OFF. The Fan Relays will go ON when the measured temperature exceeds the **SET VALUE 1**

FANS will be OFF when Temperature <= (SET VALUE 1 – HYSTERESIS 1)
FANS will be ON when Temperature >= SET VALUE 1

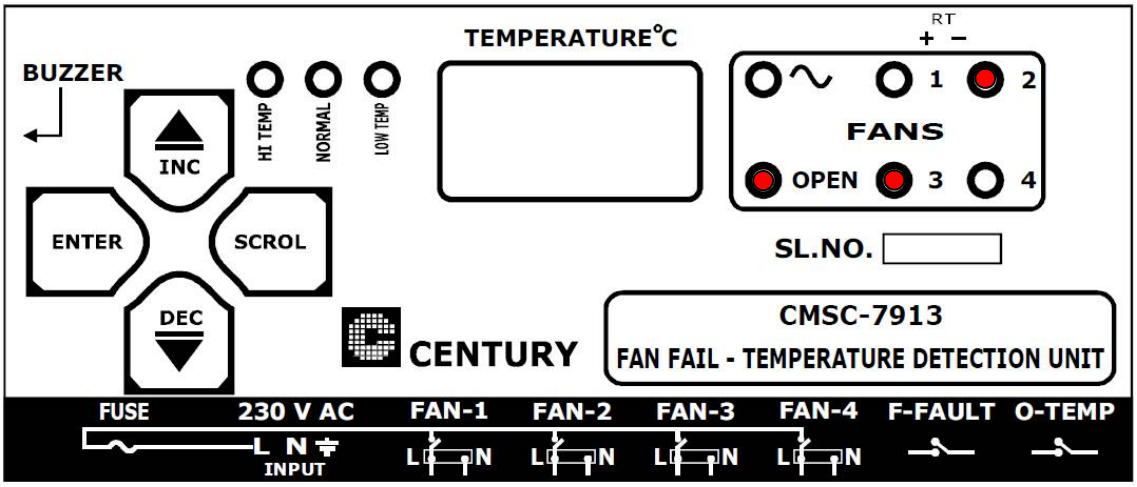
Programming the **SET VALUE 1 to zero** will disable the above feature and the unit will process the measured temperature only to turn ON/OFF the OVER TEMPERATURE RELAY, in which case the fan relays will always be ON irrespective of the temperature measured.

The statuses of the four fans are monitored to determine if they are running normally / open circuited.

FAN OPEN:
On detecting the open circuit of a given fan, the FAULT Relay operates along with indication of

- an LED – FAN OPEN and
- One or more LEDs – indicating the channel number(s) of fan(s) open.

An example of the open fault indication on front panel is shown below. In this example Fans 2 and 3 are OPEN.



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Briefed below are the features of FFTDU CMSC-7913

- Measures ambient temperature
- 3 Seven Segment displays to indicate ambient temperature
- 6 LEDs:
  - Four LEDs to indicate fault status of individual Fans
  - One LED to indicate FAN STALL-common to all fans
  - One LED to indicate FAN OPEN- common to all fans
- 6 relays:
  - Four relays to control Fans
  - One relay to indicate FAN FAULT condition
  - One relay to indicate OVER TEMPERATURE condition.
- 4 keys to program Temperature set value & other functional parameters
- Buzzer to annunciate Sensor fault
- Works for a wide operating voltage range of 88V AC to 257 V AC
- Mounted on standard DIN RAIL profile
- Assured galvanic isolation for the user interface keypad even when Phase and Neutral are interchanged
- Weighs less than 1kg
- Measures 45mm X 78mm X 180 mm (excluding DIN rail mount).

Advanced features:

- Measures FAN parameters in RUN/STALL condition
- Programmable NO/NC relay operation (Fault Relays).
- Facility to characterize individual fan motors
- Evaluates the fan RUN/STALL conditions under varying supply voltages
- Saves power and heating of impedance protected motors
- Rechecks the stalled motor condition once a minute
- Programmable set value for turning ON the fans **(Set Value 1).**
- Programmable High set vale for each Fan separately.
- Programmable Stall Selection

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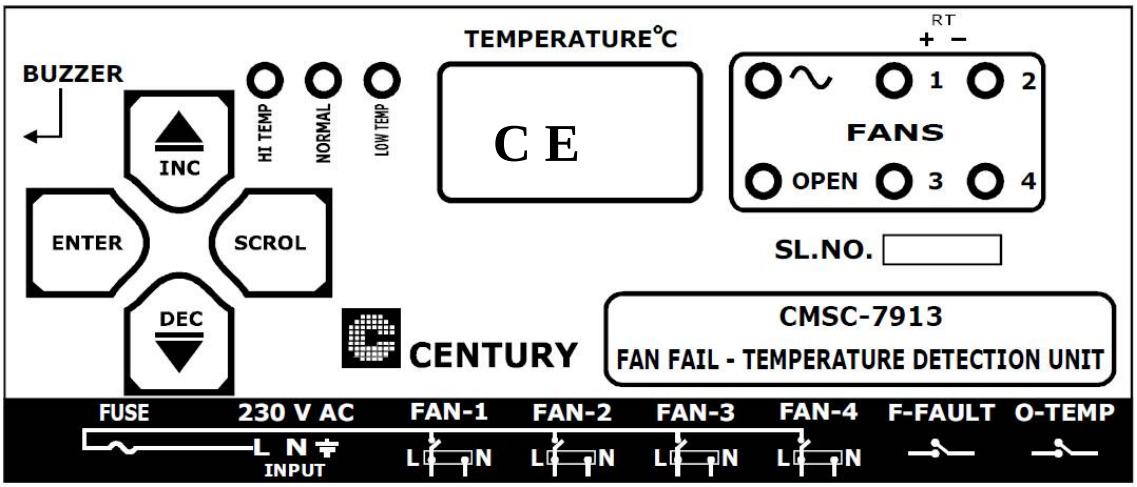
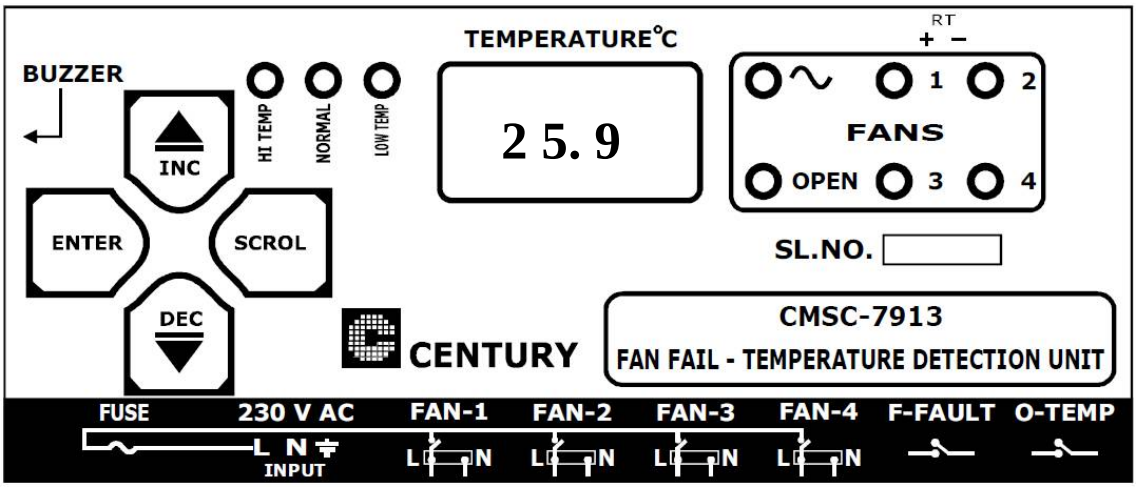
2. Operating the equipment

On Power ON, the unit displays ' C E n ' and firmware Version number will be displayed on the front panel as shown below



Then the ambient temperature will be displayed on the front panel as shown below.

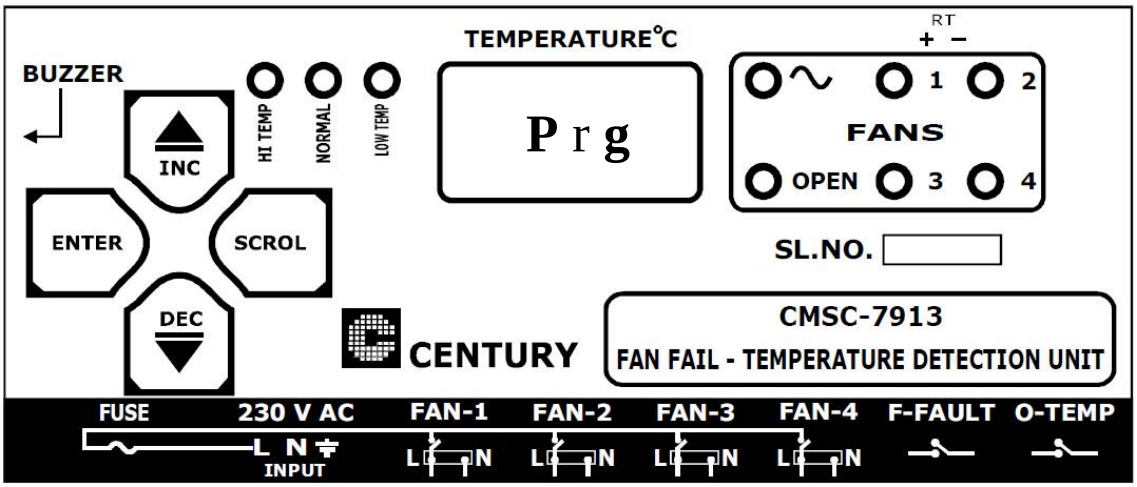


This is the DEFAULT mode of CMSC-7913.

2.1 Program Mode:

PROGRAM Mode will enable you to change the parameters of the system.

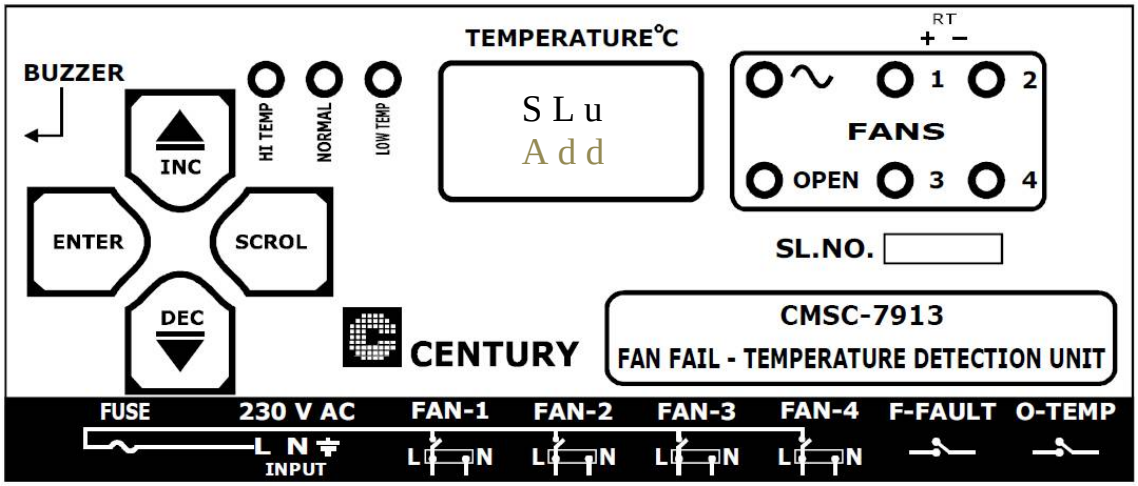
When the equipment is in DEFAULT Mode, press SCROL Key. 'PRGM' will be displayed on the front panel as shown below



Press ENTER to enter Program Mode.

2.1.0 To program the Slave Address:

1. Once you enter the PROGRAM MODE, the first programmable parameter which is Slave address. You will see 'S L U' and 'A d d' toggling on the front panel as shown below.
will be displayed on the front panel as shown below



Press ENTER key to program the slave address.

2. The previously programmed value of the parameter will be displayed with its first digit (most significant digit) blinking as shown below.

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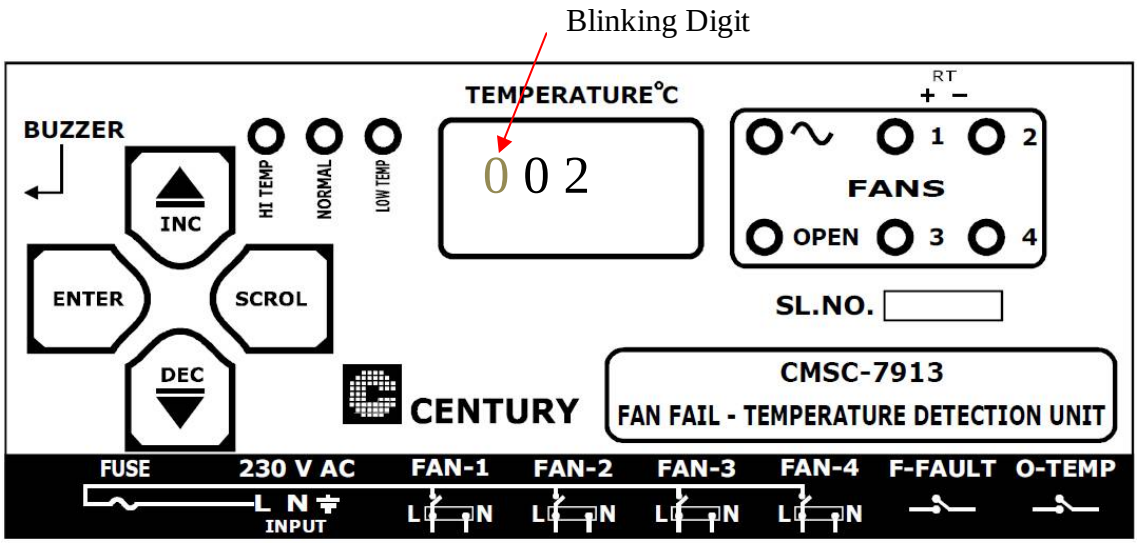
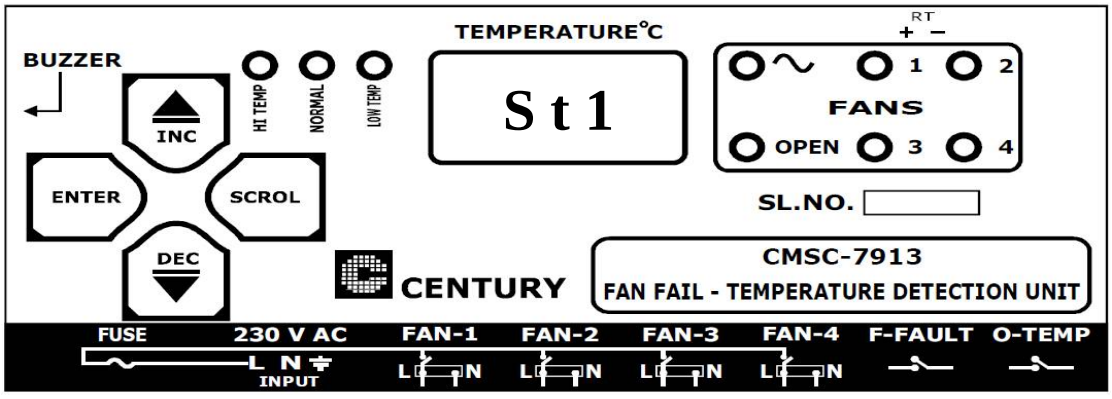


3. Use INC or DEC key to change the value of the digit. Once you have set the digit to desired value, press ENTER to go to next digit.
4. Similarly set 2nd and 3rd digits one by one to desired value and then press ENTER to store the programmed parameter. (Pressing SCROL key will not store the newly programmed value).

2.1.1 To program the temperature SET VALUE – 1, HYSTERESIS - 1 :

1. Once you enter the PROGRAM MODE, the first programmable parameter which is Slave address will be displayed on the front panel as ' S L U' and 'A d d'. Press SCROL key to scroll through Slave address. The next programmable parameter which is program 'Set value 1'(Temperature Set Value-1) will appear on the front panel as seen here



Press ENTER key to program the set value - 1.
2. The previously programmed value of the parameter (which is 10.0 in the example below) will be displayed with its first digit (most significant digit) blinking as shown below.

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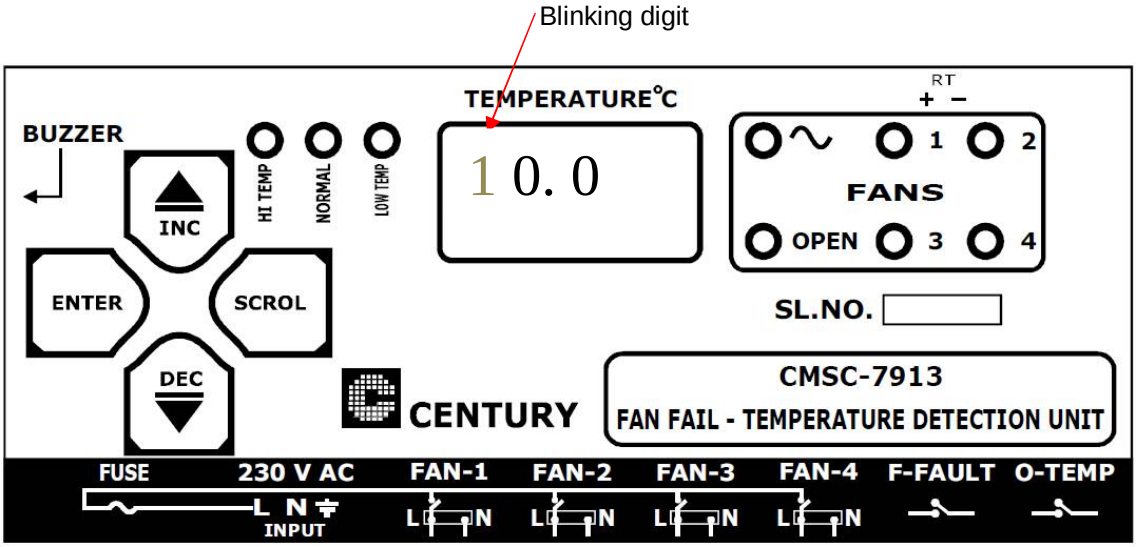
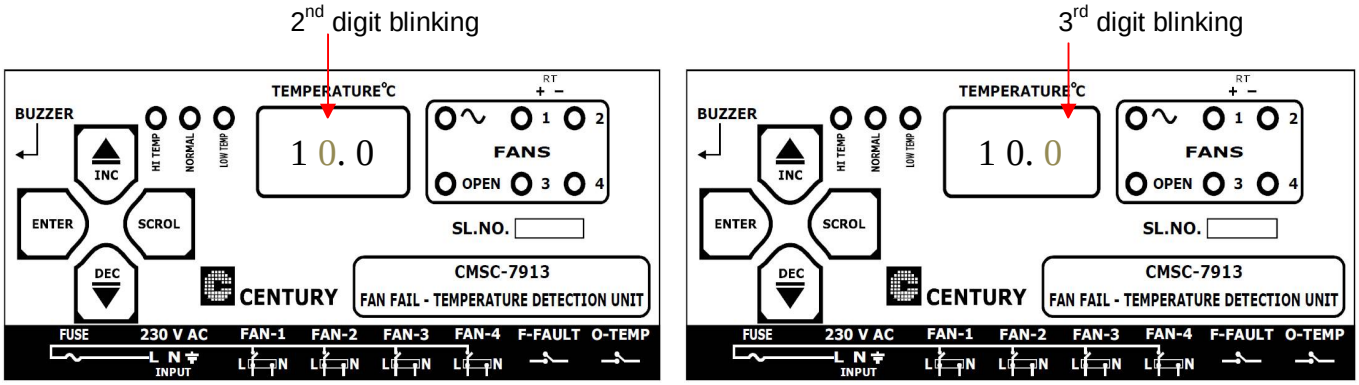


3. Use INC or DEC key to change the value of the digit. Once you have set the digit to desired value, press ENTER to go to next digit.
4. Similarly set 2nd and 3rd digits one by one to desired value and then press ENTER to store the programmed parameter. (Pressing SCROL key will not store the newly programmed value).



5. The next parameter is HYSTERESIS -1. It will be displayed on front panel as shown below

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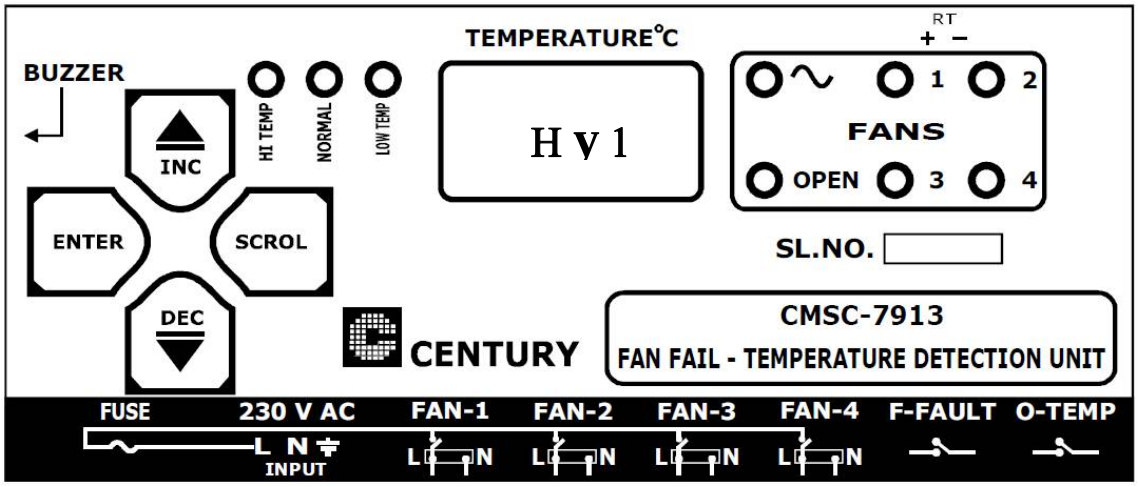
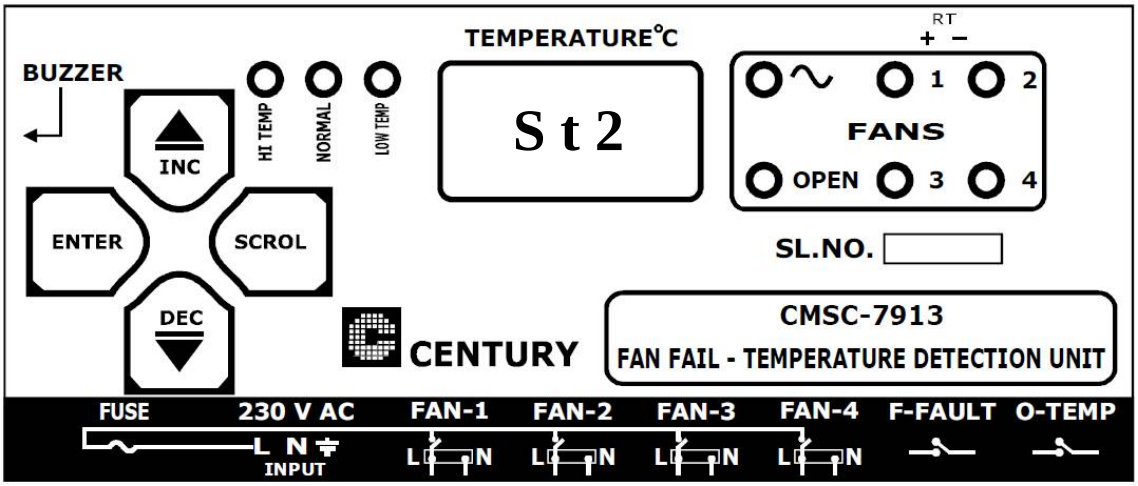


6. Press ENTER to program the Hysteresis (1 to 10 deg C).
7. Refer steps 2 to 4 to change the value of Hysteresis.

You can either press INC+DEC Keys together to return to DEFAULT mode or continue programming other parameters as described in section 2.1.2.

2.1.2 To program the temperature SET VALUE – 2/ Program the each fan Set value , HYSTERESIS - 2 :

1. Once you enter the PROGRAM MODE, the first programmable parameter which is slave address will be displayed on the front panel as 'S L U' and 'A d d'**.** Press SCROL key three times to scroll through slave address, Set Value -1 and Hysteresis-1. The next programmable parameter which is program 'S t 2'(Temperature Set Value-2) will appear on the front panel as seen here



Press ENTER key to program the Fan High Set vale (set value -2).

2. The previously programmed value of the parameter (which is 50.0 in the example below) will be displayed with its first digit (most significant digit) blinking as shown below.

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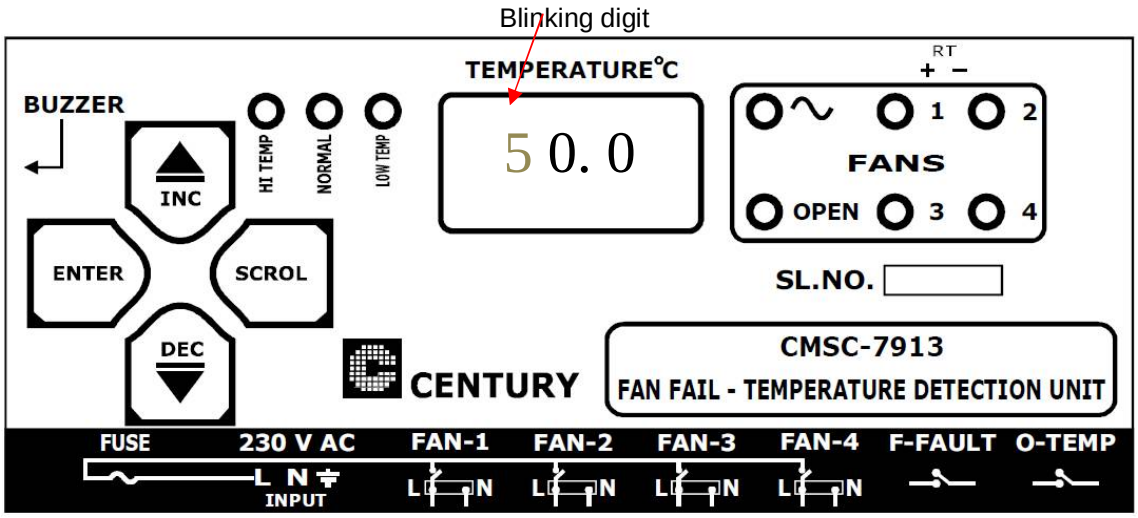
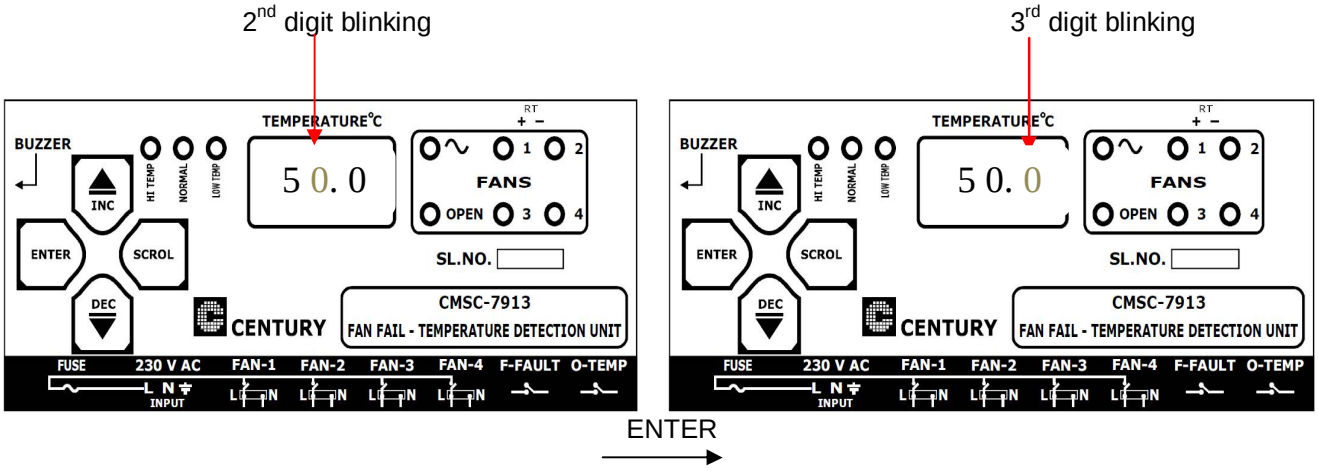


3. Use INC or DEC key to change the value of the digit. Once you have set the digit to desired value, press ENTER to go to next digit.

4. Similarly set 2nd and 3rd digits one by one to desired value and then press ENTER to store the programmed parameter. (Pressing SCROL key will not store the newly programmed value).



5. The next parameter is HYSTERESIS 2. It will be displayed on front panel as shown below

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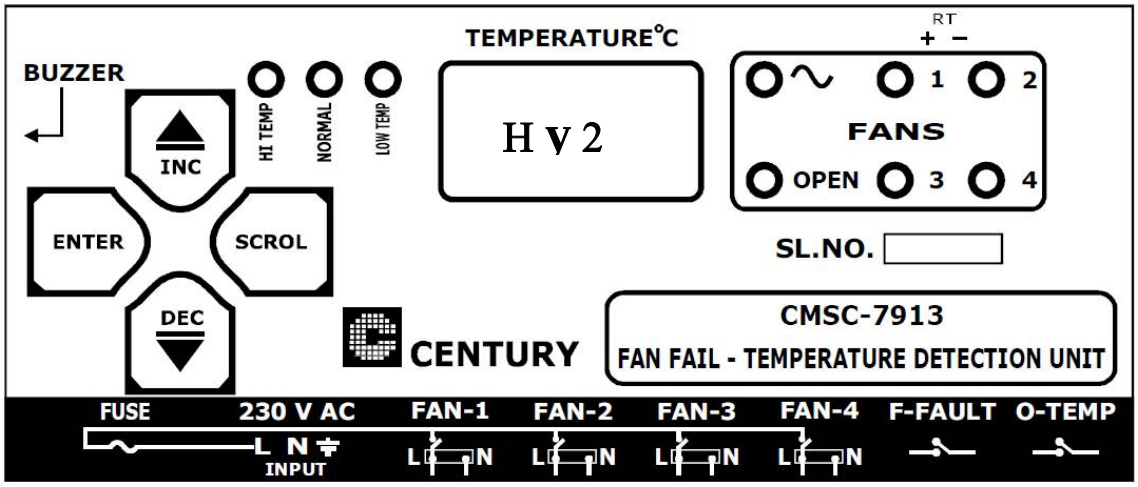
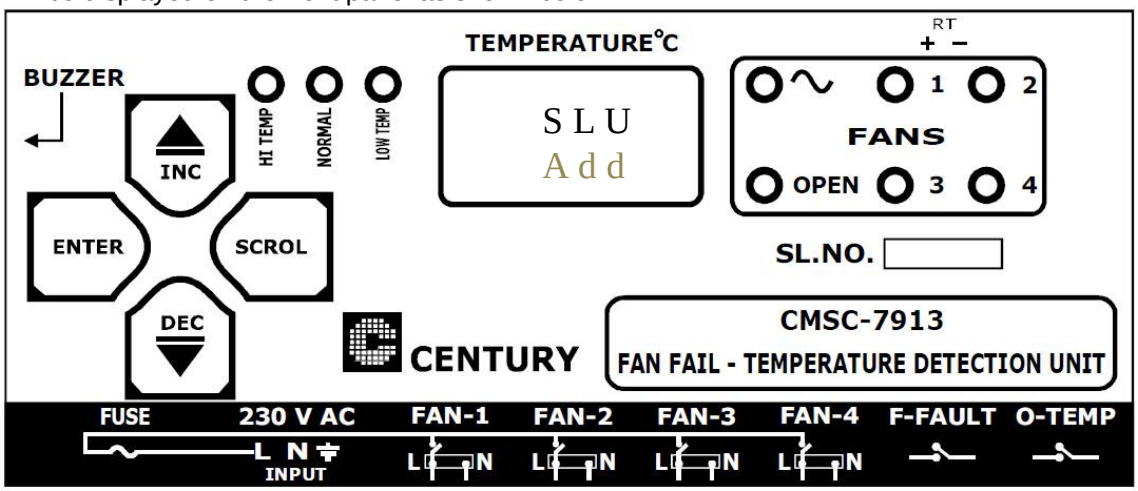


6. Press ENTER to program the Hysteresis (1 to 10 deg C).
7. Refer steps 2 to 4 to change the value of Hysteresis.

You can either press INC+DEC Keys together to return to DEFAULT mode or continue programming other parameters as described from #3 of section 2.1.3.

2.1.3 To enable / disable individual Fan Relays:

1. Once you enter the PROGRAM MODE, the first programmable parameter which is Temperature Slave address will be displayed on the front panel as shown below



2. Press SCROL key 5 times to skip programming Slave address, Set Value 1, Hysteresis -1, Set Value 2 and Hysteresis 2.
3. Now you can see ‘F n 1’ (fan channel No.1) on the front panel as shown below.

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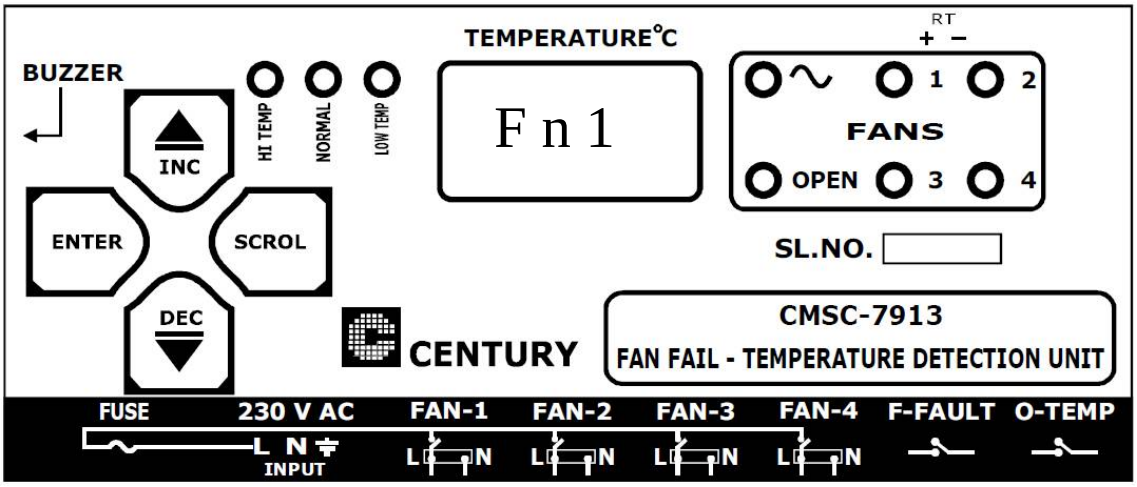
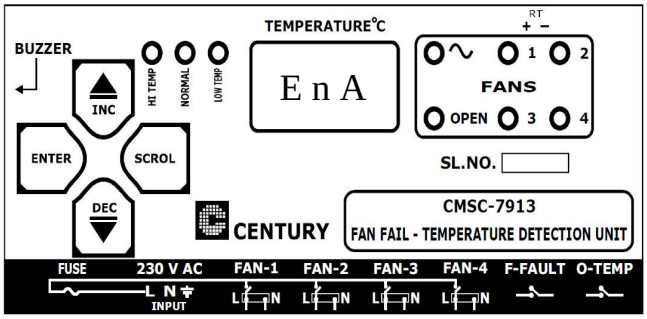
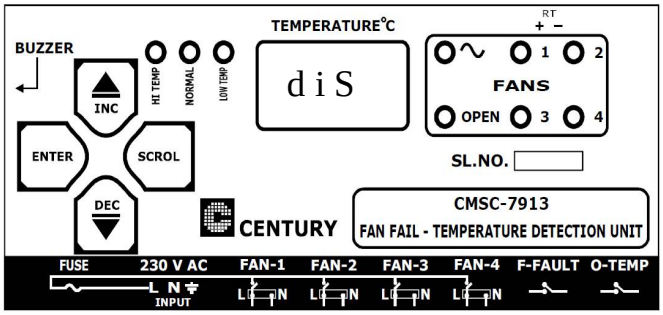


4. Press ENTER to change the enable/disable status of Fan channel #1 or SCROL key to go to next channel.
5. If you press ENTER, previously programmed enable/disable status of the channel is displayed on the front panel as shown below



Or



6. Use INC or DEC key to change the enable / disable status of the fan channel and press ENTER to store.
7. Similarly program the status of the other three fans.
8. Continue programming other parameters or press INC+DEC keys together to return back to DEFAULT mode.

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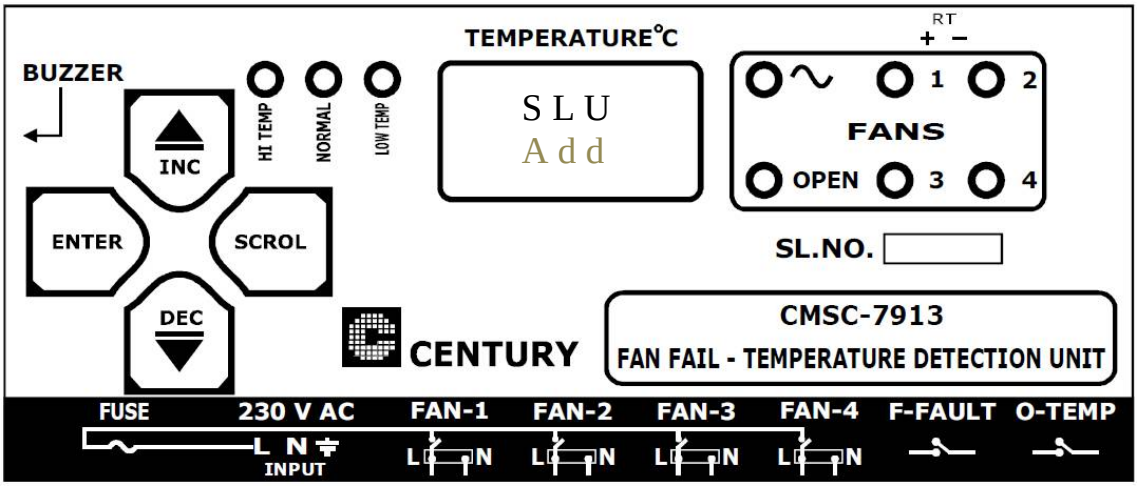
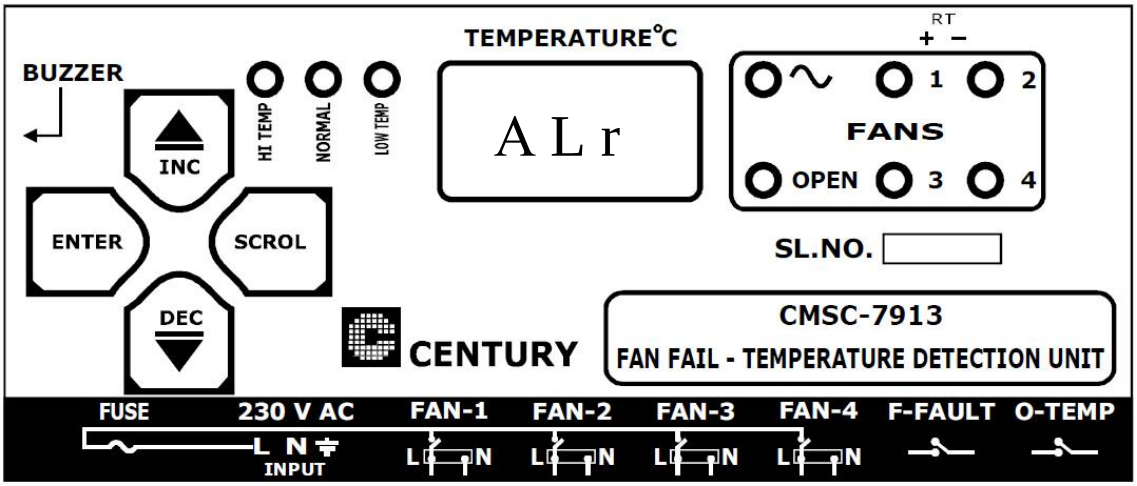
2.1.4 To Enable/Disable Buzzer:

1. Once you enter the PROGRAM MODE, the first programmable parameter which is Slave Address will be displayed on the front panel as shown below



2. Tap SCROL multiple times till you reach Alarm Option. (or continue from #4 of sec 2.1.4) You will see 'A L r' on the front panel as shown below.



3. Press ENTER to change the enable/disable status of ALARM (or SCROL key to go to next parameter).

4. If you press ENTER, previously programmed enable/disable status of the Buzzer is displayed on the front panel as shown below

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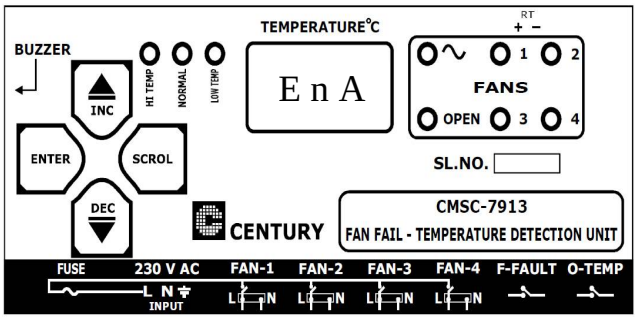
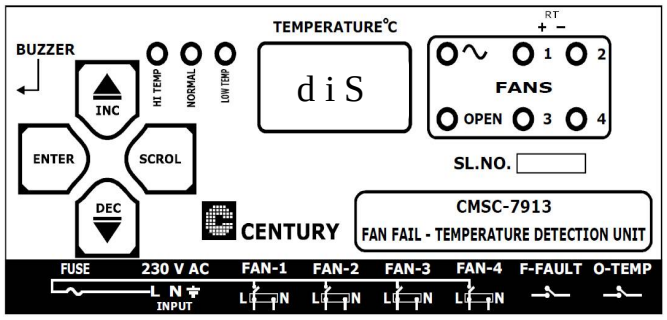


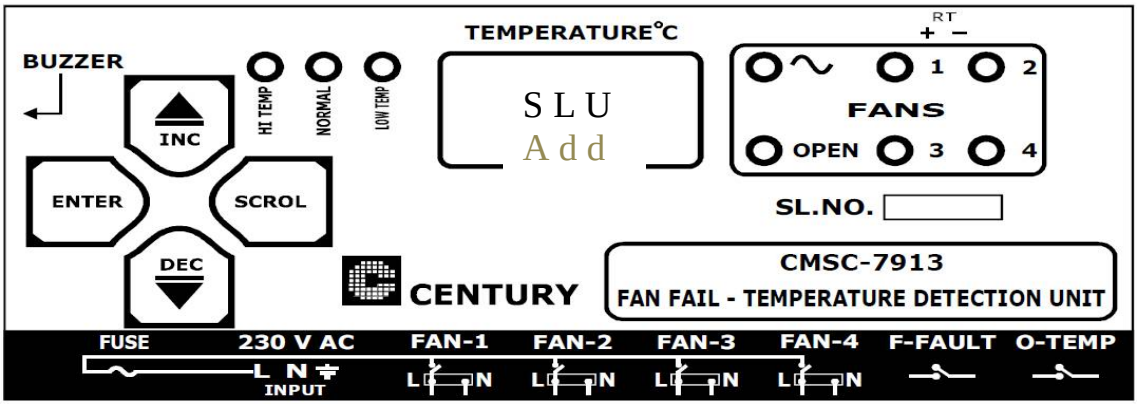
Or



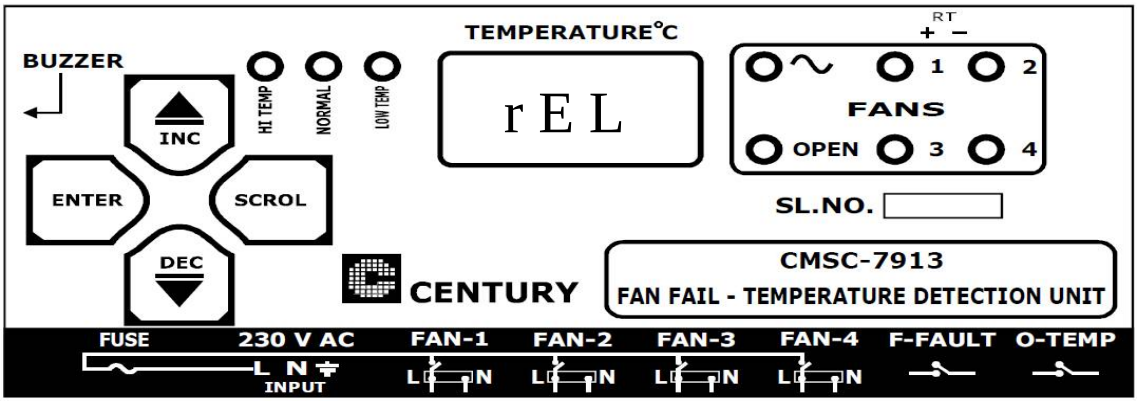
5. Use INC or DEC key to change the enable / disable status of the Buzzer and press ENTER to store.
6. Continue programming other parameters or press INC+DEC keys together to return back to DEFAULT mode.

2.1.5 To program Relay Operation (NO/NC) :

1. Once you enter the PROGRAM MODE, the first programmable parameter which is Slave Address will be displayed on the front panel as shown below



2. Tap SCROL multiple times till you reach Relay Option. (or continue from #6 of sec 2.1.5). You will see ‘r E L’ on the front panel as shown below.



3. Press ENTER to change the relay operation type (or SCROL key to go to next parameter).

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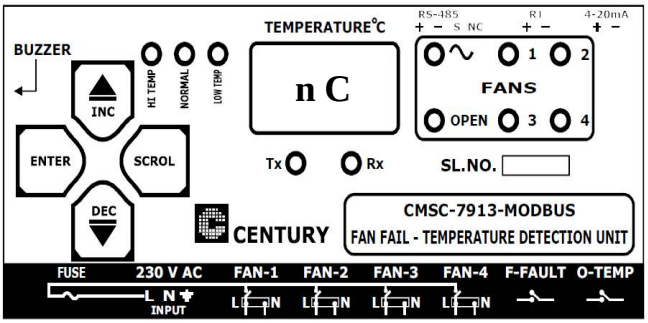
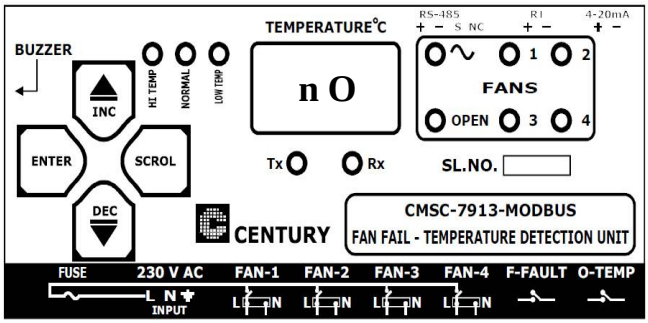
4. If you press ENTER, previously programmed relay operation type is displayed on the front panel as shown below



Or



5. Use INC or DEC key to change between NO and NC relay operation types and press ENTER to store.

3. Error Messages:

Sl No.	Error message	Possible cause
1	**F L t**	Temperature sensor is not connected properly or sensor is faulty
2	**O u r**	**Over Voltage:** AC Supply voltage is greater than 150V while the programmed FAN type is 110V
3	**L o**	When measured temperature is less than (Set Value1 – Hysteresis 1)

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Connection Diagram