



ION Electricals Pvt. Ltd.

OPERATING MANUAL

OF



MULTI PRO

- Make sure you read this operating manual before using the MULTI PRO.
- Store this operating manual safely so that you can use it in future.

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1.GETTING STARTED

THIS SECTION MAKES YOU FAMILIAR WITH OUR **MULTI PRO**.

1.1 FRONT PANEL

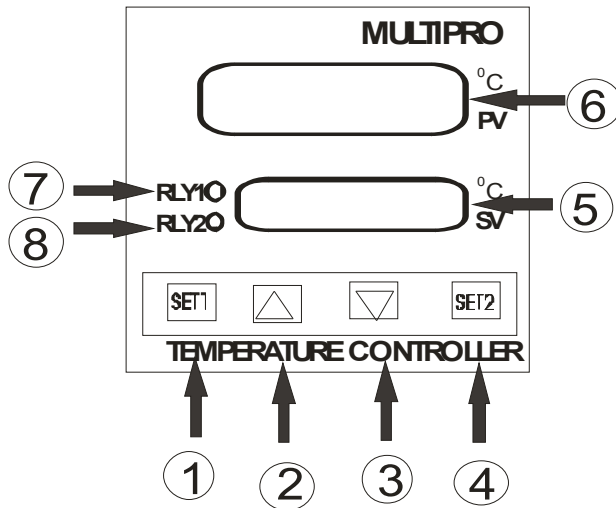


Figure 1: Front Panel of Multi Pro

- ① SET 1 KEY
 - ② INCREMENT KEY
 - ③ DECREMENT KEY
 - ④ SET 2 KEY
- ⑤ DISPLAY 2 FOR SET VALUE INDICATION
 - ⑥ DISPLAY 1 FOR PROCESS VALUE INDICATION
 - ⑦ RELAY 1 INDICATION
 - ⑧ RELAY 2 INDICATION

1.2 SIDE VIEW

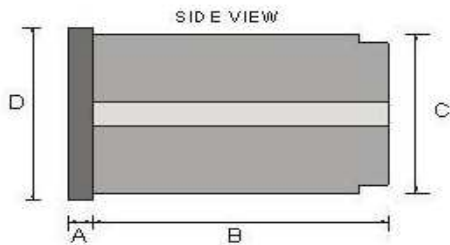


Figure 2: Side View of Multi Pro

Model	A	B	C	D
Multi Pro 48	5	125	45	48
Multi Pro 72	10	120	68	72
Multi Pro 96	12	118	88	96

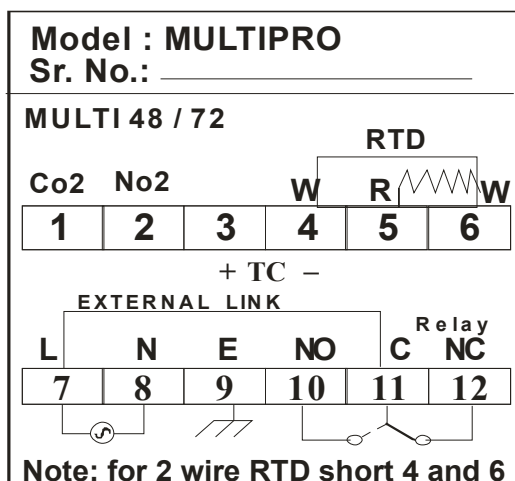
1.3 FEATURES

1. On/Off control & proportional action.
2. Proportional band adjustment by front keys.
3. Cycle time adjustment for proportional action by front keys.
4. Offset adjustment for proportional action by front keys.
5. Logic selection, heating / cooling (user selectable).
6. Input sensor selection by front keys.
7. Differential adjustment by front keys.
8. Time delay adjustment by front keys.
9. Range lock is provided.
10. 5 Amp relay contact for resistive load.
11. Flush panel mounting in 48 x 48 / 72 x 72 / 96 x 96.

1.4 SPECIFICATIONS

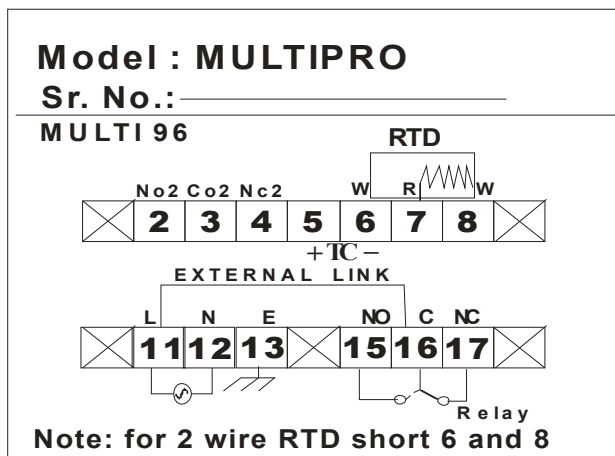
1. Input sensor : PT-100 (RTD), T-TYPE, J-type, K-type Thermocouple
2. Differential: 1 to 100 deg.
3. Proportional band: 0 to 100%.
4. Time Delay: 1 to 255 seconds.
5. Cycle time: 1 to 50 seconds.
6. Offset adjustment: 0 to 50.
7. Range: - 99 to 4000C for RTD, 0 to 7500C for J,
0 to 12000C / 0 to 9990C for K
8. Mounting: Panel mounting.
9. Cut-out: 46 x 46 mm / 70 x 70 mm / 91 x 91 mm.
10. Power consumption: 10 VA max.
11. Display: 3 digit / 4 digit 7-seg, red led display.

1.5 TERMINAL CONNECTIONS (Multipro 48/72)



- 3 - Positive of TC
- 4 - Negative of TC / White or Black of 3 wire RTD.
- 5 - RED of 3 wire RTD.
- 6 - White or Black of 3 wire RTD.
- 7 - Live (supply).
- 8 - Neutral (supply).
- 9 - Earth.
- 10 - Normally open contact of relay.
- 11 - Common contact of relay.
- 12 - Normally close contact of relay.

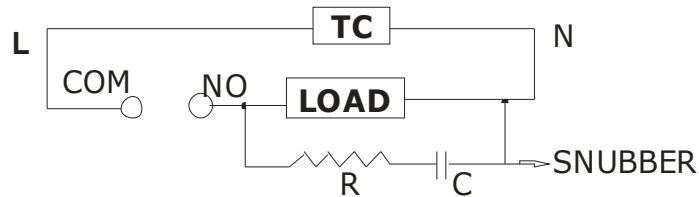
1.6 TERMINAL CONNECTIONS (Multipro 96)



- 5 - Positive of TC.
- 6 - Negative of TC / White or Black of 3 wire RTD.
- 7 - RED of 3 wire RTD.
- 8 - White or Black of 3 wire RTD.
- 11 - Live (supply)
- 12 - Neutral (supply)
- 13 - Earth
- 15 - Normally open contact of relay
- 16 - Common contact of relay
- 17 - Normally close contact of relay

1.7 NOTE 1:-

**If load is inductive,
connect snubber across load**



R=56 OHMS / 2 WATT.
C=0.1 MFD / 250 V AC
TC=TEMPERATURE CONTROLLER

1.8 NOTE 2:-

One can lock the sensor from back side. There is a dip switch given on the back side of the instrument.

- Dip 1 ON: Sensor will be "RTD" only.
- Dip 2 ON: Sensor will be "J" only.
- Dip 3 ON: Sensor will be "K" only.
- Dip 4 ON: Sensor will be "RTD 0.1" only.

2. LEARNING TO OPERATE

2.1 TO BEGIN WITH

- Check all the connections and switch ON the mains supply.
- Display will show the Process Temperature.
- Press the "SET1" key.
- Now display-2 will start flashing with the previous set no. Set it using the increment or decrement key to the desired value.
- After setting the new value, press "SET1" key again to store it. This is set value for relay-1.
Note: If no key is pressed in the set mode then the display will go to normal mode after 4 seconds (in which it shows the process temperature). So to store new value press SET1 key otherwise it will go to the normal mode by saving current value.
- Press "SET2" key.
- Now display-2 will start flashing with previous set no. Set it using the increment or decrement key to desired value.
- After setting the new value, press "SET2" key again to store it. This is set value for relay-2.
Note: If no key is pressed in the set mode then display will go to normal mode after 4 seconds (in which it shows the process temperature). So to store new value press SET2 key otherwise it will go to normal mode by saving current value.

2.2 HOW TO SET THE LOGIC?

- Press the decrement key, hold it & then press SET1 key. Hold both the keys for 5 seconds.
- "**SEn**" (on Display1) along with the type of sensor selected (on Display2) will flash simultaneously. Here one can select the required type of sensor by pressing the increment or decrement key from the given options.
(RTD: PT100 (RTD), RTD 0.1, J: J-type thermocouple, K: K-type thermocouple & T: T-type thermocouple).
- Press the SET1 key.
- Now "**SEt**" (on Display 1) and "**0001**" (on Display 2) will flash simultaneously. Here one can select the number of set points. Set it using increment or decrement key.
Set "**0001**" for 1-set controller.
Set "**0002**" for 2-set controller.
- Press the SET1 key.
- Now "**Pi**" (on Display 1) along with "**On/OFF**" (on Display 2) will flash simultaneously. Here one can set the control action.
Set "**On**" to enable the proportional action or "**OFF**" for simple on/off action.
Set it using the increment or decrement key.
- Press the SET1 key.
- Now "**Prb**" (on Display 1) with some number (on Display 2) will flash simultaneously. This is the proportional band. Set it using the increment or decrement key. (Settable from 1 to 100 %)

In on/off action “**hy1**” will appear instead of “Prb”. This is differential/hysteresis for set point 1. Set it using increment or decrement key. (Settable from 1 to 9 deg).

- Press the SET1 key.
- Now “**ht1**” (on Display 1) with some number (on Display 2) will flash simultaneously. This is the time delay in seconds. Set it using the increment or decrement key. (Settable up to 255 seconds).
- Press the SET1 key.
- Now “**CyL**” (on Display 1) will flash with some number (on Display 2). This is the cycle time in seconds for proportional logic. Set it by using the increment or decrement key. (Settable from 1 to 50 Seconds).
- Press the SET1 key.
- Now “**LG1**” (on Display 1) will flash with “**hE1/CO1**” (on Display2) simultaneously. Here one can set the logic from the given options.
(hE1: Heating logic & CO1: cooling logic). Set it using the increment or decrement key.
- Press the SET 1 key.
- Now “**hy2**” (on Display 1) with some number (on Display 2) will flash simultaneously. This is differential / hysteresis for set point 2. Set it using increment or decrement key. (Settable from 1 to 9 deg).
- Press the SET1 key.
- Now “**ht2**” (on Display 1) with some number (on Display 2) will flash simultaneously. This is the time delay in seconds. Set it using increment or decrement key. (Settable up to 255 seconds).
- Press the SET1 key.
- Now “**LG2**” (on Display 1) will flash with “**hE2/CO2**” (on Display 2) simultaneously. Here one can set the logic from the given options.
(hE2: Heating logic & CO2 : cooling logic). Set it using the increment or decrement key.
- Press the SET 1 key.
- Now “**rnG**” (on Display 1) will flash with some number (on Display 2) simultaneously. Here one can lock maximum limit of the range. Set it using the increment or decrement key.

Input Sensor	Control range
Pt – 100	-100°C to 400°C
J Type	0°C to 750°C
K Type	0°C to 1200°C / 0°C to 999°C
T Type	0°C to 400°C

- Press the SET 1 key to go to the normal mode where display will show the process temperature.

❖ **To set the OFFSET**

- Press the increment and decrement key simultaneously.
- "Ofs" will flash along with "0000". Set it using the increment or decrement key & press the set key again to go to normal mode. This is offset for proportional band.

❖ **To set the Sensor Error**

- Press the increment and SET1 key simultaneously.
- Sensor error will flash on display 1 with "0000" on display 2. Set it using the increment or decrement key. By default it is set to "0000".

3.TROUBLESHOOTING

1. Sensor open indication : Display shows "Err"
2. Sensor reverse :If thermocouple is not connected according to the polarity temperature goes on decreasing while heating
3. Not showing proper temperature : Loose connection on terminal or calibration problem.
4. Problem in relay operation – Check **ht1** (time delay) for relay operation. It should not be more than 4 secs for heating logic.