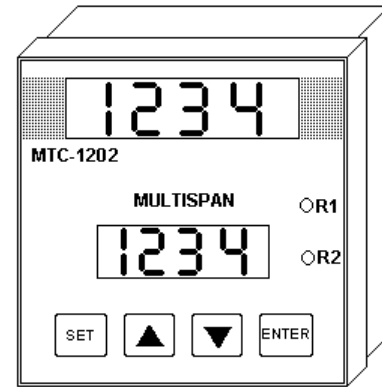**SPECIFICATIONS:**

1. Micro controller based. Double Display.
2. Size: 96 x 96 x 100 mm
   Panel Cut-Out: 92 X 92 mm
3. Supply: 100 to 250V AC, 50 Hz (SMPS).
4. Input Sensor: K Type thermocouple.
5. Output: 2 Relays, 5A, 230V AC Relay contact.
   R1 = For control purpose
   R2 = For alarm purpose

DISPLAYS: There are two Displays.

A) **Display 1** : Upper 4 digit display in RED colour indicates current process temperature value (PV).
B) **Display 2** : Lower 4 digit display in GREEN colour indicates current SET POINT (SP).
C) **LED's** : 1) A small Red LED in upper right hand side as R1.
     2) A small Red LED in lower right hand side as R2.

FRONT KEYS: SET ▲ ▼ ENT

These front keys can be used to see and change current values of

FUNCTION	DISPLAY	RANGE
1. RATE 1	rAt1	0.1 to 9.9 °C/min
2. SET POINT 1	SEt1	0 – 1200 °C
3. HOLD TIME 1	HLd1	H001 to H999 (1 to 999 Hr) or min00 to min59 (0 to 59 Min)
4. RATE 2	rAt2	0.1 to 9.9°C/min
5. SET POINT 2	SEt2	0 – 1200 °C
6. HOLD TIME 2	HLd2	H001 to H999 (1 to 999 Hr) or min00 to min59 (0 to 59 Min)
7. RATE 3	rAt3	0.1 to 9.9°C/min
8. SET POINT 3	SEt3	0 – 1200 °C
9. HOLD TIME 3 Min)	HLd3	H001 to H999 (1 to 999 Hr) or min00 to min59 (0 to 59
10. RATE 4	rAt4	0.1 to 9.9°C/min
11. SET POINT 4	SEt4	0 – 1200 °C
12. HOLD TIME 4 Min)	HLd4	001H to H999 (1 to 999 Hr) or min00 to min59 (0 to 59
13. RATE 5	rAt5	0.1 to 9.9°C/min
14. SET POINT 5	SEt5	0 – 1200 °C
15. HOLD TIME 5	HLd5	H001 to H999 (1 to 999 Hr) or min00 to min59 (0 to 59 Min)
16. RATE 6	rAt6	0.1 to 9.9°C/min
17. SET POINT 6	SEt6	0 – 1200 °C
18. HOLD TIME 6 Min)	HLd6	H001 to H999 (1 to 999 Hr) or min00 to min59 (0 to 59
19. RATE 7	rAt7	0.1 to 9.9°C/min
20. SET POINT 7	SEt7	0 – 1200 °C
21. HOLD TIME 7	HLd7	H001 to H999 (1 to 999 Hr) or min00 to min59 (0 to 59 Min)
22. RATE 8	rAt8	0.1 to 9.9°C/min
23. SET POINT 8	SEt8	0 – 1200 °C
24. HOLD TIME 8 Min)	HLd8	H001 to H999 (1 to 999 Hr) or min00 to min59 (0 to 59
25. RATE 9	rAt9	0.1 to 9.9°C/min
26. SET POINT 9	SEt9	0 – 1200 °C

27. HOLD TIME 9 Min)	HLd9	H00 I to H999 (1 to 999 Hr) or ⁻ın00 to ⁻ın59 (0 to 59
28. ALARM	ALrⁿ	0 – 1200 °C
29. HYSTERESIS	HYSt	0 – 99 °C
30. NO OF STAGE	StA9	0 – 10

ADJUSTMENT OF PARAMETERS:

Press $\boxed{\text{SET}}$ key for 2 seconds.

Upper Display will show **PA9E_**

Lower Display will show page number. Set the page number whose parameters you want to change by $\boxed{\blacktriangle}$ and $\boxed{\blacktriangledown}$ keys.

Now press the $\boxed{\text{ENT}}$ key to change the **rAtE_ SEt** and **HLd** parameters of selected Page by following Procedure.

(a) RATE1:
- ♦ You are in SET MODE, which you have entered the appropriate page.
- ♦ Display 1 will show **rAt I_**
- ♦ Display 2 will indicate current value of set point. Range is **0.1 to 9.9 °C/min**
- ♦ You can change current value of this set point by following PROCEDURE.
    - ➢ Increase the parameter by $\boxed{\blacktriangle}$ key.
    - ➢ Decrease the parameter by $\boxed{\blacktriangledown}$ key.
    - ➢ Press $\boxed{\text{ENT}}$ to store it in memory or press $\boxed{\text{SET}}$ for next step.
- ∗ If No key is pressed for 5 seconds previous value of parameter is retained and controller goes in control mode.

(b) SET POINT-1:
- ♦ Press $\boxed{\text{SET}}$ key for 4 seconds.
- ♦ You are in SET MODE.
- ♦ Display 1 will show **SEt I_**
- ♦ Display 2 will indicate current value of set point. Range is **0 °C to 1200 °C**
- ♦ You can change current value of this set point by following PROCEDURE.
    - ➢ Increase the parameter by $\boxed{\blacktriangle}$ key.
    - ➢ Decrease the parameter by $\boxed{\blacktriangledown}$ key.
    - ➢ Press $\boxed{\text{ENT}}$ to store it in memory or press $\boxed{\text{SET}}$ for next step.
- • If No key is pressed for 5 seconds previous value of parameter is retained and controller goes in control mode.

(c) HOLD TIME-1:
- ♦ Press $\boxed{\text{SET}}$ key for 6 seconds.
- ♦ You are in SET MODE.
- ♦ Display 1 will show **HLd I_**
- ♦ Display 2 will indicate current value of set point. Range is 1 to 999 Hour.
- ♦ To change the Hold Time in Minutes, Press $\boxed{\text{SET}}$ Key. By Pressing $\boxed{\text{SET}}$ Key, you can change the hold Time in Minutes from 1 to 59 Minutes.
- ♦ You can change current value of this set point by following PROCEDURE.
    - ➢ Increase the parameter by $\boxed{\blacktriangle}$ key.
    - ➢ Decrease the parameter by $\boxed{\blacktriangledown}$ key.
    - ➢ Press $\boxed{\text{ENT}}$ to store it in memory or press $\boxed{\text{SET}}$ for next step.
- ∗ If No key is pressed for 5 seconds previous value of parameter is retained and controller goes in control mode.

🔵 In last page, you can set Alarm Set Point, Hysteresis and No of Stage.

(a) ALARM SET POINT:

- ♦ Press $\boxed{\text{SET}}$ key for 2 seconds.
- ♦ You are in SET MODE.
- ♦ Display 1 will show ALrm
- ♦ Display 2 will indicate current value of set point. Range is **0 to 1200 ℃.**
- ♦ You can change current value of this set point by following PROCEDURE.
  - ➢ Increase the parameter by $\boxed{\blacktriangle}$ key.
  - ➢ Decrease the parameter by $\boxed{\blacktriangledown}$ key.
  - ➢ Press $\boxed{\text{ENT}}$ to store it in memory or press $\boxed{\text{SET}}$ for next step.
- ∗ If No key is pressed for 5 seconds previous value of parameter is retained and controller goes in control mode.

(b) HYSTERESIS:

- ♦ Press $\boxed{\text{SET}}$ key for 4 seconds.
- ♦ You are in SET MODE.
- ♦ Display 1 will show HYSt
- ♦ Display 2 will indicate current value of set point. Range is **1 to 9 ℃.**
- ♦ You can change current value of this set point by following PROCEDURE.
  - ➢ Increase the parameter by $\boxed{\blacktriangle}$ key.
  - ➢ Decrease the parameter by $\boxed{\blacktriangledown}$ key.
  - ➢ Press $\boxed{\text{ENT}}$ to store it in memory or press $\boxed{\text{SET}}$ for next step.
- ∗ If No key is pressed for 5 seconds previous value of parameter is retained and controller goes in control mode.

(c) NO OF STAGE:

- ♦ Press $\boxed{\text{SET}}$ key for 6 seconds.
- ♦ You are in SET MODE.
- ♦ Display 1 will show StAg
- ♦ Display 2 will indicate current value of no of stage.
- ♦ You can change current value of this set point by following PROCEDURE.
  - ➢ Increase the parameter by $\boxed{\blacktriangle}$ key.
  - ➢ Decrease the parameter by $\boxed{\blacktriangledown}$ key.
  - ➢ Press $\boxed{\text{ENT}}$ to store it in memory or press $\boxed{\text{SET}}$ for next step.
- ∗ If No key is pressed for 5 seconds previous value of parameter is retained and controller goes in control mode.

WORKING:

1) Make all connection as shown in connection diagram and turn on the instrument.

2) As the Power turns ON, Upper Display shows Room Temperature/ Process Temperature. Lower Display shows value of Set Point–1.

3) Relay-R1 is for controlling the temperature and relay-R2 is for alarm.

4) When process temperature reach at Set1 value during that period RELAY 1 will turn off and hold time for that relay1 starts. Again when it reaches **SEt - HYS,** it will turn ON again RELAY (R1).

5) Alarm will (relay-R2) turn ON at alarm setting point.

6) When hold-1 time is over, stage-2 process starts and process temperature increase @ rate of RATE-2. This 9-stage process continues as process temperature varies.

7) By pressing both $\boxed{\blacktriangle}$ & $\boxed{\blacktriangledown}$ keys one can see on the lower display which particular rate or which particular hold time is going on.

Note # 1: When you operate this unit first time, you can freely play with $\boxed{\text{SET}}$ $\boxed{\blacktriangle}$ $\boxed{\blacktriangledown}$ key to understand key operations, previously set parameter will remain unaffected as long as you don't press $\boxed{\text{ENT}}$ key.

CONNECTION DIAGRAM:

R1   NO C NC   NO C NC   R2

100 To 250V AC
SUPPLY
L   N   + T/C −