Display: 4-1/2 digit LCD
LCD illustration (see below)

Fig-1

T1-T2, T2, T1	Reflects the selected temperature display configuration
MAX, MIN, AVG	Maximum, Minimum or Average reading display Avg = ½ (Previous reading + Current reading)
K , J , E , T	Thermocouple types
HI ALARM	Temperature exceeds high alarm limit (setpoint)
LO ALARM	Temperature exceeds low alarm limit (setpoint)
BT	Low battery symbol
▬	Negative polarity; positive polarity assumed
℃, ℉	Celsius and Fahrenheit temperature units
🖶	Printer active
▶, ▪	Interval printing Start /Stop symbol
TIME	Calendar time
INTV	Interval printing symbol
h:m	Hour : Minutes
m:s	Minute: Seconds
m-d	Month – Day
yy	Calendar year
🮮	Seven segment display digit
Over Range	OL or -OL appears.
BT	Low battery indicator
Sampling Rate	1 reading per second (approx.)

Printer   Thermo-printing type with 16 characters per line using 38mm width plain thermo-paper.

Instant printing: Print on demand (button press)
Interval printing: Print at desired interval from 00:00:03 to 23:59:59

Measurement Range:

Type K: -200 ~ 1333℃ (-328 ~ 2431℉)
Type J: -200 ~ 760℃ (-328 ~ 1400℉)
Type E: -200 ~ 703℃ (-328 ~ 1297℉)
Type T: -200 ~ 400℃ (-328 ~ 752℉)
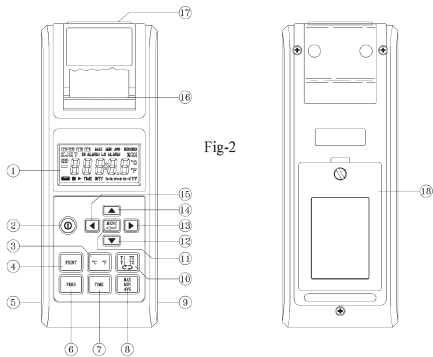
Resolution : 0.1℃/0.1℉

Fig-2

1. LCD
   Displays readings, units, symbols, and decimal points

2. POWER
   Powers the unit on/off

3. UNIT
   Selects the temperature units (℃ / ℉)

4. PRINT
   ① Prints current measurement (print format shown below):

   LINE 1   1 0 : 5 1 : 1 2   1 1 - 0 2
   LINE 2   T 1   K - 0 0 2 3 . 0   ℃

   Line 1: (Time) Hour: minute: second, month- day

   Line 2: Measurement channel, thermocouple type, temp., and unit.

   ② Stops interval printing at any time and prints current reading.

   ③ Press for 2 seconds to enable interval printing. Unit will remain in the interval printing mode until this button is pressed again or the FEED button is pressed.

5. 9V-ADAPTOR SOCKET

6. FEED PAPER (Fig-3) :
   ① Advances the thermo-paper one line.
   ② Cancels printing.

7. TIME :
   Calendar program button.

8. MAX / MIN / AVG :
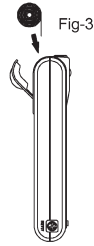   Press to scroll through maximum, minimum and average readings for channels T1 / T2 / T1-T2.

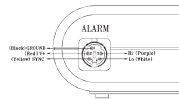
Fig-3

9. High / Low Alarm output connector

Fig-4

Pin 1: GND (external supply low voltage)

Pin 2: VCC (external supply high voltage)

Pin 3: SYNC (external trigger signal)
   Pin4 (High Alarm) and pin5 (Low Alarm) signals must be synchronized with pin3. Pin5 and pin4 will not function (always low) unless SYNC (pin3) is high. If SYNC is low, then pin4 and pin5 will be low.

Pin4[1]: High Alarm
   If the reading is higher than the high alarm setpoint, then (pin 4) will be high, otherwise, it will be low.

Pin 5[1]: Low Alarm
   If the reading is less than or equal to the low alarm limit, (pin 5) will go high.

[1]The Pin 4 and 5 outputs may be delayed 0.4 seconds due to the datalogger's A/D scanning time.

Description of the DIN cable:
   ① Red wire   VCC (external supply high voltage)
   ② Black wire   GND (external supply low voltage)
   ③ Yellow   SYNC (external trigger signal)
   ④ White   High Alarm
   ⑤ Purple   Low Alarm

Note: voltage VCC to GND is 16V Maximum, 5V Minimum.

$GND \leqq SYNC \leqq VCC$
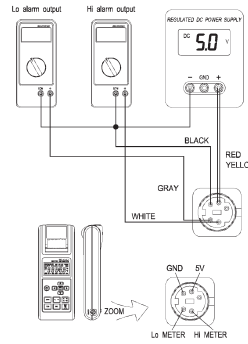
Example :

   High Alarm= 1300.5℃   Low Alarm= -50.5℃

   If reading $\geqq$ 1300.5℃

   Result : High Alarm output reading approx 5V
            Low Alarm output reading approx 0V

   If reading $\leqq$ -50.5℃

   Result : Low Alarm output reading approx 5V
            High Alarm output reading approx 0V

Example :

   Hi alarm= 25.5℃   Lo alarm= 25.5℃

   If reading = 25.5℃

   Result : Hi Alarm output reading approx 5V
            Lo Alarm output reading approx 5V

10. T1/T2/T1-T2measurements :
    Press to select the display method, T1, T2, T1-T2.

11. MENU :
    Press to enter and step through the set-up mode. (Hold down the key to scroll quickly).

12. UP：Press to increase the value of a parameter.

13. RIGHT：Press to move to a desired parameter.

14. DOWN：Press to decrease a parameter's value.

15. LEFT：Press to move to a desired parameter.

   Parameters (in sequence):
   K/J/E/T (thermocouple types)
   00/01 Interval printing enable (01) and disable (00)
   ℃/℉ (Temperature units)
   High/Low Alarm (high and low alarm limits)
            Ex: K Type (1333.3 ~ -200.0℃)
                 J Type (760.5 ~ -200.0℃)
   INTV (printing interval range: 00h:00m:03s to 23h:59m:59s)
   Interval printing start / stop time (range: 00h:00m to 23h:59m)
   Calendar year (range up to 2999)
   Calendar month-day (ranges from 01-01 to 12-31)
   Calendar hour-minute (ranges from 00h:00m to 23h:59m)
   Calendar minute-second (ranges from 00m:00s to 59m:59s)

16. Out of Thermo-paper.

17. Temperature probe sockets.

18. Battery compartment and cover

Press the ⏻ button to power the meter. If "OL" appears, check that the probe is connected properly and that it is operational.

To enter the programming mode, press the "↵" button, to exit, press it again. Use the left and right arrow buttons (◀ or ▶) to select a parameter for editing; Use the up and down buttons (▲ or ▼) to increase or decrease the value of a parameter. When modifing a parameter, the parameter's symbol will blink.

The available parameters in sequence:

1. INTERVAL PRINTING STATUS (01/ENABLE, 00/DISABLE):
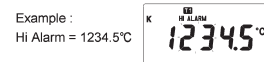   See LCD display example below

2. TYPE OF THERMOCOUPL (K/J/E/T) :

3. ALARM UNIT (℃/℉):

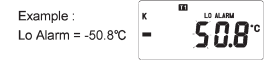4. FIRST THREE DIGITS IN HI ALARM (-399 ~ 399):

   Example :
   Hi Alarm = 1234.5℃

5. LAST TWO DIGITS IN HI ALARM (00 ~ 99):

6. FIRST THREE DIGITS IN LO ALARM (-399 ~ 399):

   Example :
   Lo Alarm = -50.8℃

7. LAST TWO DIGITS IN LO ALARM (00 ~ 99):

8. HOUR OF INTERVAL PRINTING (00 ~ 23):

9. MINUTE OF INTERVAL PRINTING (00 ~ 59):

10. SECOND OF INTERVAL PRINTING (00 ~ 59):

11. HOUR OF START INTERVAL PRINTING TIME (00 ~ 23):

12. MNUTE OF START INTERVAL PRINTING TIME(00 ~ 59):

NOTE : Print time START must be before print time STOP.

13. HOUR OF STOP INTERVAL PRINTING TIME (00 ~ 23) :

14. MINUTE OF STOP INTERVAL PRINTING TIME (00 ~ 59):

15. FIRST TWO DIGITS OF CALENDAR YEAR (19 ~ 29):

16. LAST TWO DIGITS OF CALENDAR YEAR (00 ~ 99):

17. MONTH DIGITS OF CALENDAR MONTH-DAY (01 ~ 12):

18. DAY DIGITS OF CALENDAR MONTH-DAY (01 ~ 31):

19. HOUR DIGITS OF CALENDAR HOUR-MINUTE (00 ~ 23):

20. MINUTE DIGITS OF CALENDAR HOUR-MINUTE (00 ~ 59):

21. SECOND DIGITS OF CALENDAR MINUTE-SECOND (00 ~ 59) :

If interval printing is enabled in the programming mode, the printer will print as in the examples below:

```
11 : 54 : 00    11-02
INTV : 00 : 00 : 10
```

First two lines:
    Line 1: hour:minute:second   month-day (start printing time)
    Line 2: interval printing time   hour:minute:second
Following two lines:
    Line 1: hour:minute:second   month-day (interval printing time)
    Line 2: measurement channel, thermocouple type, reading, and unit.
Last two lines:
    Line 1: hour:minute:second   month-day (stop pointing time)
    Line 2: interval printing time   hour:minute:second

    NOTE : If the print button is pressed during this period the last two lines will not be printed.

If the print button is held for 2 seconds, the printer will print as follows:

```
12 : 58 : 18    11-02
INTV : 00 : 00 : 10

12 : 58 : 28    11-02
T1    K – 0039.5 ℃

12 : 58 : 38    11-02
T1    K –   0L. ℃

12 : 58 : 48    11-02
T1    K –   0L. ℃

12 : 58 : 58    11-02
T1    K – 0035.2 ℃

12 : 59 : 08    11-02
T1    K –   0L. ℃

12 : 59 : 18    11-02
T1    K – 0037.0 ℃

12 : 59 : 20    11-02
T1    K –   0L. ℃
```

First two lines:
    Line 1: hour:minute:second   month-day
    Line 2: interval printing time   hour:minute:second
Following lines:
    Line 1: hour:minute:second   month-day (interval printing time)
    Line 2: function test channel, type and reading with polarity,
            decimal point and unit.

To stop printing, press the Print or the Feed button.

1. SETUP INTERVAL PRINT (with 24 hour maximum interval limit).
① Enter the Menu mode by pressing the MENU button.
② Enable interval printing using the [▲] / [▼] buttons (01 is enable).

③ Use the [◄] / [►] buttons to scroll through the available editing parameters

④ Setup Interval/Start/Stop print time by pressing [▲] / [▼] buttons
    Note that the START print time must be before the STOP time.

⑤ Press the MENU button to return to normal operating mode. The INTV symbol will be shown on LCD indicating that interval printing is active.

2. SETUP INTERVAL PRINT (without 24 hour limit)
① Enter the Menu mode by pressing the MENU button.
② Disable Interval Printing using the [▲] / [▼] buttons (00 is disable).

③ Set Interval Print Time using the [▲] / [▼] buttons

④ Press MENU again to return to normal operation.
⑤ Press and hold the PRINT button for about 3 seconds, the INTV symbol will be shown on LCD indicating that interval printing is active.

3. During the Interval Print period, no buttons can be used except the PRINT and FEED button. When the PRINT button is pressed, one more line will be printed before the interval printing session is aborted. Pressing the FEED button aborts interval printing immediately.

---

1. When battery power falls low, the **BT** will appear on the LCD. Replace the six 1.5V 'AAA' batteries

2. After the temperature probe(s) have been disconnected and the meter power turned off, remove the rear battery cover.

3. Remove batteries from the holder and replace with six 1.5V 'AAA' alkaline batteries.

4. Secure the battery cover.

PRINTING THERMOMETER INSTRUCTIONS
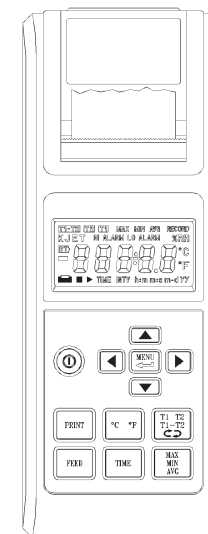
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