



RS Stock No.712-6039

Instruction Manual

RS-1315

Data Logger Thermometer

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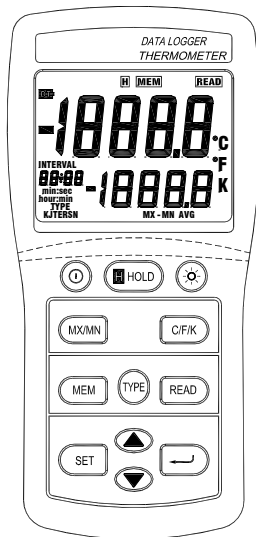


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1. INTRODUCTION

This instrument is a digital thermometer for use with J, K, T, E, N, R and S-type thermocouples as the temperature sensor.

Temperature indication follows the international temperature scale of 1990. (ITS-90)

- ❑ Read the following information carefully before attempting to operate or service the meter. When servicing the meter, use only specified replacement parts.
- ❑ Environment conditions
 - ① Altitude up to 2000 meters
 - ② Relatively humidity 80% max.
 - ③ Operating ambient temperature: 0 to 50°C (32 to 122°F)

U.S. Pat. No. 446,135

Safety symbols



Complies with EMC Directive 89/336/EEC

2. SPECIFICATIONS

2-1 Electrical specifications

Measurement range:

J - type: -150.0 to +1090.0°C (-200.0 to +1994.0°F)

K - type: -150.0 to +1370.0°C (-200.0 to +1999.9°F)

T - type: -150.0 to +400.0°C (-200.0 to +752.0°F)

E - type: -150.0 to +870.0°C (-200.0 to +1598.0°F)

N - type: -150.0 to +1300.0°C (-200.0 to +1999.9°F)

R - type: 2.0 to +1767.0°C (+35 to +1999.9°F)

S - type: 2.0 to +1767.0°C (+35 to +1999.9°F)

Resolution:

J-, K-, T-, E-, and N-type: 0.1°C/°F/K

R- and S-type: 1.0°C/°F/K (0.1°C/°F/K only for reference)

Measurement accuracy:

J-, K-, T-, E-, and N-type: $\pm[0.05\%$ of reading +0.5°C (0.9°F)

[Below -100°C (-148°F: add 0.15% of reading for J, K, E, and N; 0.45% of reading for T]

R-and S-type: $\pm[0.05\%$ of reading +2°C (4°F)

NOTE

This basic accuracy specification does not include the error of the temperature probe. Please refer to the temperature probe accuracy specification for additional details.

Temperature coefficient:

0.01% of reading +0.03°C per °C (0.06°F per °F)

Outside the specified +18°C to 28°C (+64°F to 82°F) range.

[Below -100°C (-148°F): add 0.04% of reading for J-, K-, E- and N-type; 0.08% of reading for T-type]

Input protection: 20V maximum.

Manual data memory capacity: 98 sets.

Continuous data logging capacity: 4200 sets.

2-2 General specifications

Power supply: Qty. 6 AAA batteries.

Battery life: approx. 200 hours (carbon zinc battery).

Auto power-off: 30 minutes. (If no key is pressed).

Low battery indication: The (**BT**) symbol is displayed when the battery voltage drops below the operating voltage.

Measurement rate: Once per 1.5 seconds.

Weight: 235 gms. (8.29 oz)

Dimensions: 150x72x35mm

Operating temperature: 0 to 50°C (32 to 122°F)

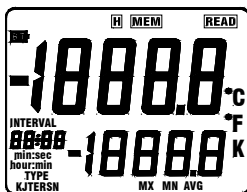
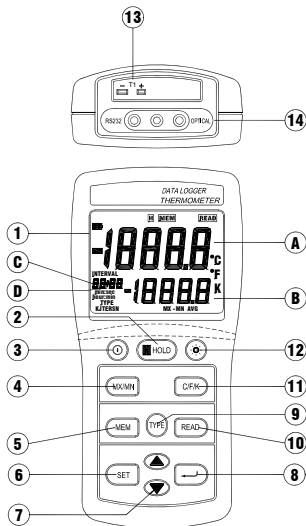
Operating humidity: Below 80% RH

Storage temperature: -10 to 60°C, 14 to 140°F

Operating humidity: Below 70% RH

Supplied accessories: Qty 6 AAA batteries, Instruction manual, CD software and optical RS-232 to USB cable.

3. FRONT PANEL DESCRIPTION



(1). LCD Display:

- A. Main display: Temperature reading.
- B. Secondary display: Temperature MAX, MIN or AVG reading.
- C. Time display: Time display (100-hour clock) shows elapsed time when MAX, MIN or AVG occurs.
- D. Auto power-off mark (:).

(2). [H] HOLD key: Press “[H]” HOLD key to freeze or unfreeze the display reading.

(3). ① Power key: Press “①” key to turn the meter on or off.

(4). MX/MN key:

- ① Press "MX/MN" key to read the maximum, minimum, and average readings alternately.
- ② Press "MX/MN" key for 2 seconds to exit MX/MN mode.

(5). MEM key:

- ① Press "MEM" key to store a single set of readings in memory.
- ② Press "MEM" key for 2 seconds to enter the continuous data-logging mode. Press again to exit this mode.

(6). SET key:

- ① Press "SET" key to enter to the interval time setting for continuous data-logging mode.
- ② Press "↵" key to enter to the alarm high-limit value setting mode.
- ③ Press "↵" key to enter to the alarm low-limit value setting mode.

(7). ▲ ▼ Key:

- ① Press ▲ or ▼ key to increase or decrease the data logging interval time setting and alarm high/low limit value setting.
- ② Press ▲ or ▼ key to increase or decrease the READ mode memory location.

(8). ↵ key:

- ① Press "↵" key to store interval time setting and alarm high/low limit value setting.
- ② Press "↵" key to toggle between the "hour:min" and "min:sec" elapsed time display in MX/MN mode.

(9). TYPE key: Press "TYPE" key to select the thermocouple type (K, J, E, T, R, S or N).

(10). READ key: Press "READ" key to show manual memory logged readings. Press again to exit this mode.

(11). C/F/K key: Press C/F/K key to select Celsius (°C), Fahrenheit (°F) or Kelvin (K) temperature scale.

(12). ☼ key : Press backlight key to turn the backlight on and off. The backlight turns off after 13 seconds automatically.

(13). Input: Miniature thermocouple connector.

(14). RS232 to USB optical interface jack.

4. OPERATION INSTRUCTIONS

WARNING

- To avoid electrical shock or personal injury, do not apply more than 20Vrms, between the thermocouple input, or between thermocouple and earth ground.

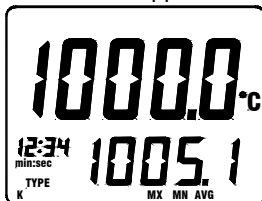
4-1 Temperature measurement

- ① Press "①" key to turn on the thermometer.
- ② Plug the thermocouple into the thermocouple connector. If no thermocouple is plugged into the connector or the thermocouple is "open circuit", the display will show "- - - -".
- ③ Press "C/F/K" key to select the desired temperature scale.
- ④ Press "TYPE" key to select the required thermocouple type.
- ⑤ To measure the temperature, touch the probe sensor on the object whose temperature is to be measured.
- ⑥ Read the temperature on the display. The display shows "OL" (overload) when the temperature being measured is outside the meter valid range.

4-2 MAX, MIN and AVG Function Operations

- ① Press "MX/MN" key to enter to MX/MN mode and to step through the maximum (MAX), minimum (MIN) or the true average (AVG is a true 9.7 hours recording average) readings. Auto power off function will be automatically disabled.

- ② Press "↓" key to toggle showing the elapsed time "hour:min" and "min:sec" on LCD display. The elapsed time since entering reading mode, or the time at which the MAX, MIN or AVG occurred appears on the time display.



- ③ Press "MX/MN" key for 2 seconds to exit MX/MN mode. In MX/MN mode, the "C/F/K" and "TYPE" key are not active.

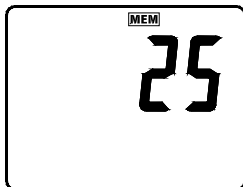
4-3 To erase the memory of datalogger

- ① Press "ⓘ" key to turn off the meter.
- ② Press and hold down "MEM" key then press "ⓘ" key to turn on the meter. The LCD display will show "CLr" and all readings in memory will be cleared.



4-4 To trigger "One-by-One datalogging"

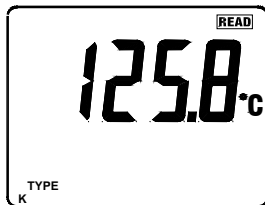
- ① Press the "MEM" key once and one set of readings will be stored in memory. The LCD display shows "MEM" and a memory location number (01 to 98).



- ② Press "READ" key to enter the manual memory data mode. The LCD display will show "READ" and a memory location number.

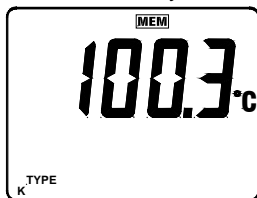


- ③ Press "▲" or "▼" key to scroll through the logged readings.
④ Press "READ" key again to exit READ mode.



4-5 To Trigger "Continuous Data Logging"

- ① To enter logging interval time setting mode, press "SET" key once then release it. The LCD display will show "INTERVAL", "MEM" and interval time.
- ② Press "▲" or "▼" key until the display shows the required logging interval (3 to 255 seconds) and then press "↵" key 3 times to select.
- ③ Press "MEM" key for 2 seconds to start logging. The LCD display will show "MEM" and the auto power-off function will be disabled. The "MEM" mark will flicker each time a set of data is stored into memory.



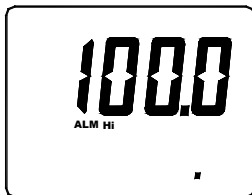
When the memory is full (4200 data sets), the "FULL" symbol will appear on the display and the meter will stop datalogging.

- ④ In the continuous data-logging mode, the MAX, MIN and AVG function can be used.
- ⑤ Press "MEM" key to stop logging. The continuously logged data can only be read after it is downloaded to a PC. It cannot be read using the "READ" function to show the data on the display.

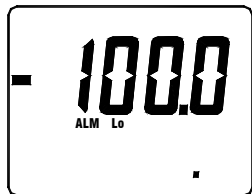
4-6 Alarm Function Operations

The ALARM function only operates on the main display temperature value. The resolution of the set value is one degree and independent the temperature units.

- ① Press "SET" key once and then the press "↵" key once to enter to alarm high limit value setting mode. The LCD display will show "ALM Hi" mark.



- ② Press "▲" or "▼" key until the display shows the desired alarm high limit value and then press "↵" key to store the high limit value. Repeat ① to enter the alarm low limit value setting and the LCD display will show "ALM Lo" mark.



- ③ Press "▲" or "▼" key until the display shows the desired alarm low limit value and then press "↵" key to store the low limit value and exit the setting mode.

- ④ To enter ALARM mode, press the "SET" key for 2 seconds then release it. The LCD display will show the "ALM" mark. When the main display measured temperature value is greater than the setting high temperature value or below the setting low temperature value, the beeper will sound continuously.



- ⑤ To exit the ALARM function, press the "SET" key for 2 seconds then release it.

4-7 How to disable Auto Power-off Function

The meter will automatically turn off if no key press occurs for 30 minutes.

- ① Press "ⓘ" key to turn off the meter.
- ② Press and hold down the "↵" key then press "ⓘ" key to turn on the meter and the auto power-off function will be disabled. The auto power-off mark ":" on the time display will not be visible.

Auto power-off mode is automatically re-enabled each time the meter is turned on. It is automatically disabled in "MX/MN" and continuous data-logging modes.

5. MAINTENANCE

5-1 Cleaning:

Periodically clean the case with a damp cloth and mild detergent.

Do not use abrasives or solvents. Clean and dry as required.

5-2 Battery replacement:

When the LCD display shows “**BT**”, the battery has insufficient power to support an accurate test. Replace the batteries with Qty. 6 type AAA cells.

6. RECALIBRATION PROCEDURE

The thermometer should be calibrated once a year to ensure its continued accuracy. Contact RS Components for further details of calibration service. The address is given at the end of these instructions.