DUAL THERMOMETER

Model : TM-916HA

Your purchase of this DUAL THERMOMETER marks a step forward for you into the field of precision measurement.

Although this THERMOMETER is a complex and delicate instrument, its durable structure will allow many years of use if proper operating techniques are developed. Please read the following instructions carefully and always keep this manual within easy reach.

QUALITY ASSURED FIRM ISO 9001 SGS

UKAS QUALITY MANAGEMENT 005

OPERATION MANUAL

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1. FEATURES

* Microprocessor circuit assures high accuracy and provides various functions and features.
* Super large LCD display, easy reading.
* Dual channel meter's display.
* Heavy duty & compact housing case.
* Records Maximum, Minimum readings with RECALL.
* Data hold.
* Powered by 006P DC 9V battery.
* Multi functions, dual Temp. input socket, differential Temp. measurement, 蚓/蚌, 0.11degree, data hold.
* Suitable for standard type K(NiCr-NiAl) probe.
* Standard type K input socket.
* Build in temperature linearity compensation circuit, high accuracy and wide measurement.
* Build in precision cold junction compensation circuit.
* Thermocouple sensor for Temp. measurement, fast response time.
* Use the durable, long-lasting components including a strong, light weight ABS-plastic housing case.

2. SPECIFICATIONS

2-1 General Specifications

Circuit	Custom one-chip of microprocessor LSI with thermocouple linearity correction circuit.
Display	Dual channel meter's display, 13 mm(0.5"), Super large LCD display with indicator.
Measurement	Two channel Temp. input (T1, T2), differential Temp. measurement(T1 -T2), 蚓/蚌, 0.11degree.
Measurement Range	- 50蚓 to 1230蚓/ - 58蚌 to 1999蚌.
Polarity	Automatic switching, '-' indicates negative polarity.
Sensor Type	Thermocouple K(NiCr-NiAl).
Input Impedance	10 Mega ohm.
Sampling Time	Approx. 3 seconds.
Memory Recall	Records Maximum, Minimum readings with RECALL.
Over input indication	Indication of "- - - -".
Operating Temperature	0 蚓 to 50 蚓(32 蚌 to 122 蚌).
Operating Humidity	Max. 80% RH.

Power Supply	006P DC 9V battery(Heavy duty type).
Power Current	Approx. DC 6.2 mA.
Weight	275 g/0.61 LB (included batteries & probe)
Size	Main instrument: 185 x 78 x 38 mm(7.3 x 3.1 x 1.5 inch).
Accessories Included	Instruction Manual ..... 1 PC.
Optional Accessories	Temperature probe, carrying case. (not included, please see ref. page 8)

2-2 Electrical Specifications (23 5 蚓)

TEMP. RANGE		RESOLUTION		ACCURACY
蚓	-50 蚓 to 1230 蚓	0.1 蚓	-50 蚓 to 199.9 蚓	(1 % + 1 蚓)
		1 蚓	-50 蚓 to 1000 蚓	
			1001 蚓 to 1230 蚓	
蚌	-58 蚌 to 1999 蚌	0.1 蚌	-50 蚌 to 199.9 蚌	(1 % + 2 蚌)
		1 蚌	-50 蚌 to 1999 蚌	
蚓	T1 - T2			(1 % + 2 蚓)
蚌	T1 - T2			(1 % + 3 蚌)
* The above accuracy specification applies only to the instrument itself and allowance must be made for limits of error permitted in thermocouple.				

3. FRONT PANEL DESCRIPTION

Fig. 1

3-1 Display
3-2 Power On button
3-3 Data Hold Button
3-4 蚓/ 蚌 button
3-5 Power Off button
3-6 Memory "Record" Button
3-7 Memory "Call" Button
3-8 Function Button (T1, T2, T1-T2)
3-9 10.1Button
3-10 Battery Compartment /Cover
3-11 T1 Input Socket
3-12 T2 Input Socket

4. MEASURING PROCEDURE

4-1 Temperature Measurement

(1) Push the "Power On Button"(3-2, Fig. 1) to power on the instrument.

(2) Determine temperature unit ℃ or ℉ by push the "℃/ ℉ push button"(3-4, Fig. 1) and then the display will show the temperature unit of "℃" or "℉".

(3) Determine the display resolution to 0.1or 1by push 10.1Button(3-9, Fig. 1)

(4) One probe measurement:
Insert one Temp. probe plug into the socket T1(3-11), then push the "Function Button"(3-8, Fig. 1) until the display show the marker "T1". Temperature will be shown on the display that measured from the probe.

(5) Two probe(dual channel) & differential measurement:
a. Insert first Temp. probe plug into the "T1 Socket" (3-11, Fig. 1).
b. Insert second Temp. probe plug into the "T2 Socket" (3-12, Fig. 1).
c. The main display(upper display) will show the temperature reading of first probe(T1) & the lower display will show the temperature reading of second probe(T2), if push the "Function Button"(3-8, Fig. 1) until the display show the marker "T1".
d. The main display(upper display) will show the temperature reading of second probe(T2) & the lower display will show the temperature reading of first probe(T1), if push the "Function Button"(3-8, Fig. 1) until the display show the marker "T2".

e. The main display(upper display) will show the differential temperature reading of the first & second probe(T1 - T2) & the lower display will show the temperature reading of first probe(T1), if push the "Function Button"(3-8, Fig. 1) until the display show the marker "T1 - T2".

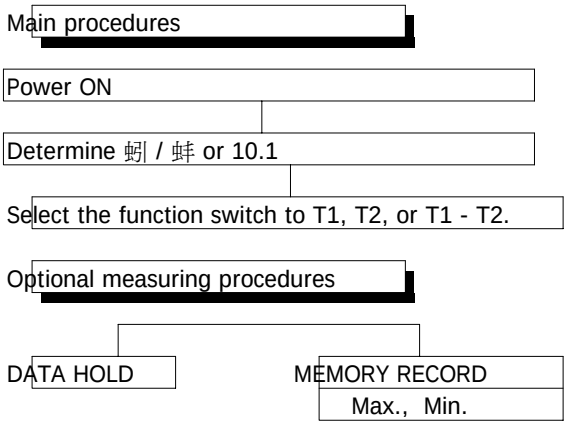
4-2 Data Hold

(1) During the measurement, push the "Data Hold Button"(3-3, Fig. 1) will hold the display values & LCD will show the "D.H" marker.
(2) Push the "Data Hold Button" again will exit the data hold function.

4-3 Data Record(Max., Min. reading)

(1) The DATA RECORD function displays the maximum, and minimum readings. To start the DATA RECORD function by pressing the "Record Button"(3-6, Fig. 1) once. "REC" marker will appear on the LCD display.
(2) When the "REC" marker on the display.
   (a) Push the "CALL Button"(3-7, Fig. 1) once, then the "Max" marker along with the maximum values will appear on the LCD display.
   (b) Push the "CALL Button" once, then the "Min" marker along with the minimum values will appear on the LCD display.
   (c) When running the "Record" function, push the "Record Button" once again will stop the "Record" function.
   After the "Record" function stopped, the marker of "REC", "Max", "Min" will disappear.

4-4 Following are the block diagrams for quick measuring procedures



5. MEASURING CONSIDERATION

* When insert the probe plug into the Temp. input socket T1(3-11) or T2(3-12), please pay attention to the correct polarity.
* When the probe plug is inserted into the thermometer socket(T1,T2), or when replace a new probe, the plug must be allowed to stabilize until the temperature same as the socket. Because this is a thermal contact cold junction compensation device, for the greatest accuracy to be achieved. This will take a couple of minutes and only applies when the probe plug has previously been exposed to an ambient temperature that is different from the thermometer socket.

6. BATTERY REPLACEMENT

(1) When the left corner of LCD display show " LBT ", it is necessary to replace the battery. However, in-spec measurement may still be made for several hours after low battery indicator appears
(2) Slide the Battery Cover(3-10, Fig. 1) away from the instrument and remove the battery.
(3) Replace with 9V battery (heavy duty type) and reinstate the cover.
(4) Make sure the battery cover is secured after change the battery.

7. OPTIONAL TEMPERATURE PROBE & & OTHER ACCESSORIES

Thermocouple Probe (Type K) TP-01	* Measure Rage: -40 蚓 to 250 蚓, -40 蛙 to 482 蛙. * Max. short-tern operating Temperature: 300 蚓 (572 蛙). * It is an ultra fast response naked-bead thermocouple suitable for many general purpose application.
Thermocouple Probe (Type K), TP-02A	* Measure Range: -50 蚓 to 900 蚓, -50 蛙 to 1650 蛙. * Dimension: 10cm tube, 3.2mm Dia.
Thermocouple Probe (Type K), TP-03	* Measure Range: -50 蚓 to 1200 蚓, -50 蛙 to 2200 蛙. * Dimension: 10cm tube, 8mm Dia.
Surface Probe (Type K), TP-04	* Measure Range: -50 蚓 to 400 蚓, -50 蛙 to 752 蛙. * Size : Temp. sensing head - 15 mm Dia. Probe length - 120 mm.