7563
Digital Thermometer

7563
213 × 88 × 350 mm 3 kg
(8-5/8 × 3-1/2 × 13-3/4" 6.6 lbs)

The **7563** Digital Thermometer has 16 ranges of temperature sensors and measuring functions of DC V and Ω. YOKOGAWA-original A/D converter (feedback pulse width modulation method) features superior noise immunity, stability and high-speed sampling. In addition, versatile functions are suitable for system use and cover a wide variety of applications from test to R & D.

FEATURES

- **High Accuracy, High Resolution and High-Speed Sampling**

· Temperature measurement:
  Accuracy: 0.006% (TC), 0.01% (RTD)
  Resolution: TC … 0.1°C (0.1°F),
  RTD … 0.01°C (0.01°F)
· DC V measurement:
  Accuracy: 0.0045% (2000 mV range)
  Resolution: 100 nV (200 mV range)
· Ω measurement:
  Accuracy: 0.006% (2000 Ω range)
  Resolution: 100 μΩ (200 Ω range)
· Sampling rate:
  Max. 100 times/s (4-1/2 digits)

For the temperature measurement (RTD), high resolution of 0.01°C (0.01°F) can be obtained. In DC V and resistance measurement, the resolution of 100 nV and 100 μΩ can be obtained with high stability (Figure 1).
In addition, the high-speed sampling rate of up to 10 ms are available for the study of biometeorology/medical development of electronic components where the rapid and precise temperature measurement are required.

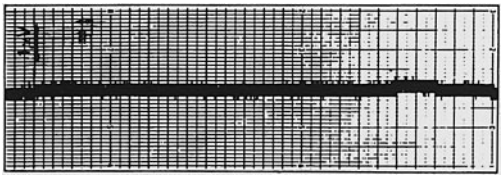


Fig. 1 Drift Data (zero point of DC V)

- **3 Measuring Functions: Temperature, DC V and Resistance**

4 types of RTD's (2-wire/3-wire/4-wire) and 12 types of TC's are available for use in a wide range of applications.
In addition, DC V and Resistance (2-wire/4-wire) measuring functions are also available in a single instrument.
TC: 12 types (R, S, B, K, E, J, T, L, U, N, W and KPvsAu7Fe)
RTD: 4 types (Pt100, JPt100, Pt1000 and J263*B)

- **High-Accuracy Reference Junction Compensation: Compensation accuracy (±0.2°C)**

Input terminals are provided on both front and rear panels, and an input site is switch selectable. The rear panel input terminal has an isothermal structure, and it is provided with windbreak cover of one-touch type. (Figure 2)

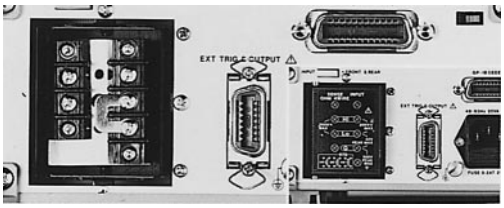


Fig. 2 Rear Side Input Terminals

The 7563 uses a YOKOGAWA-original transistor temperature sensor in the reference junction compensation circuit. A compensation accuracy of ±0.2°C (±0.4°F) is realized together with the isothermal structure of the input termainal. (Figure 3)

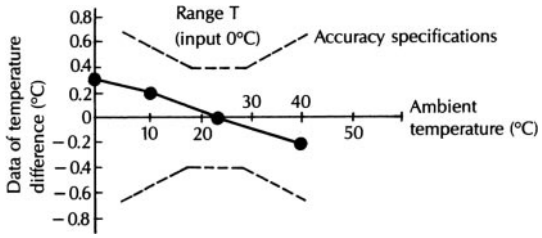


Fig. 3 Temperature Characteristics

- **Adjustment Function of R_0: Reference Resistance Value of RTD (at 0°C)**

Adjustment function of R_0 expands the 7563's input ranges. As adjustment range of this function covers 0 to 2000Ω with 0.001Ω resolution, the combination of this function and three ranges for Pt RTD sensor offers the customer to use almost all types of RTD sensors available in the world.

- **Two Types of External Reference Junction Compensation (RJC)**

· External RJC with adjustable reference function temperature.
  This function means that the user can use any type of reference temperature, such as H_2O (t), He (v), O_2 (t), Hg (t), Ga (m), Sn (f), Au (f), etc.
  Adjustment range covers all temperature ranges of 12 thermocouples with 0.1°C (0.1°F) resolution.
· Remote RJC utilizing Pt100 sensor (Program Mode).
  In this mode, Pt100 sensor measures the temperature of external input terminal, and the 7563 compensates the reference junction temperature of the thermocouple connected to the external input terminal.

- **IC Memory Card**

IC memory card expands the applicability. It is possible to save up to 8000 measured data as a buffer memory. It also allows you to save the panel setting conditions and read them automatically at power ON (AUTO LOAD). In addition, measuring parameters can be programmed in up to 20 steps into the IC memory card.

Fig. 4 IC Memory Card 3789

● **GP-IB Communication Interface (Standard)**
7563 incorporates a bidirectional communication function which supports the system use. Not only the measured data output, but also all the functions executed by panel key operation excluding only the power supply ON/OFF operation can be controlled from a host computer by a powerful set of commands.

● **Versatile Mathematical Functions**
In addition to the noise elimination by moving average function and offset compensation (NULL), a scaling function and comparator function are also available.
(Example) When TC is calibrated at a reference temperature (Ts), the correction for measured value (Tx) can easily be obtained by using the scaling function. (Figure 5)

Scaling function: (X-A)/B, provided that, A = 0, B = Tx/Ts

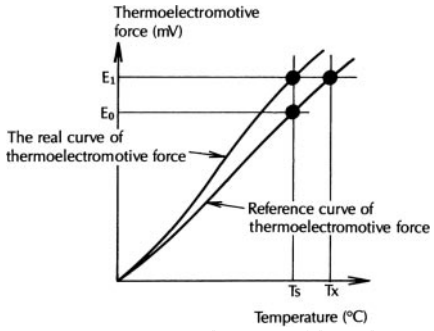


Fig. 5 Temperature Correction by Means of the Scaling Function

● **Software Calibration**
Calibration of DC V and Ω can be executed by simple panel key operation or via communication interfaces.
Calibration values for temperature measurement ranges are automatically calculated by only giving reference inputs for DC V and Ω ranges.

FUNCTIONS

■ MEASURING RANGE

● **Auto Range Mode**
When the display data increases more than 20,000/200,000, the range is automatically changed (increased), whereas when the display data goes down to less than 1,800/18,000, the range is automatically changed (decreased).

● **Manual Range Mode**
If the measuring range exceeds upper-limit setpoint, –oL– (overload) is displayed.

■ SAMPLING FUNCTIONS

● **Auto Mode (AUTO)**
Data is sampled at a preset integral time and measuring intervals.

● **Single Mode (SINGLE)**
One datum is sampled at the preset integral time every time a trigger signal is generated.

● **N-Reading Mode (N RDGS)**
Data are sampled in the cycles set by the integral time and measuring intervals.

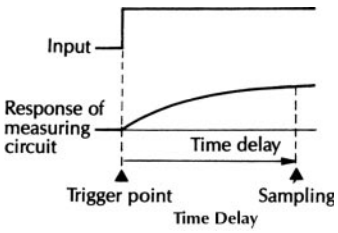
■ TRIGGER FUNCTIONS

The following three ways are available for generating trigger signals.
· Press the TRIG key on the front panel.
· Input a contact signal or TTL logic signal to the I/O signal connector (pin No. 1).
· Send the "E" or GET command through GP-IB or RS-232-C. In STORE mode, triggering performs three types of operations according to measurement modes as follows:
· In AUTO mode, data are written leaving NS-1 data before generating trigger signals and the STORE mode is automatically turned OFF when memory capacity is full. Amounts of data that are written depend on the built-in memory or IC card memory. (PRE-TRIGGER FUNCTION)
· In SINGLE mode, sampled data is stored every time a trigger signal is generated.
If NS data that are preset are stored, STORE mode is automatically turned OFF. (PRESET COUNTER FUNCTION)
· In N RDGS mode, each NS data is stored every time a trigger signal is generated.

STORE mode is in halt status until the next trigger signal is generated. The STORE mode is automatically turned OFF when memory capacity is full.
In RECALL mode, data are recalled whenever a trigger signal is generated according to measurement mode. In AUTO mode, data are automatically recalled at measurement intervals which have been set at the time of recall.

■ TIME DELAY FUNCTIONS

The time interval between a trigger signal generation and the sampling can be set from 0 to 60 minutes.
This allows accurate measurements when a signal source has dead-time or the measurement circuit shows a first-order lag response.



■ NULL FUNCTIONS

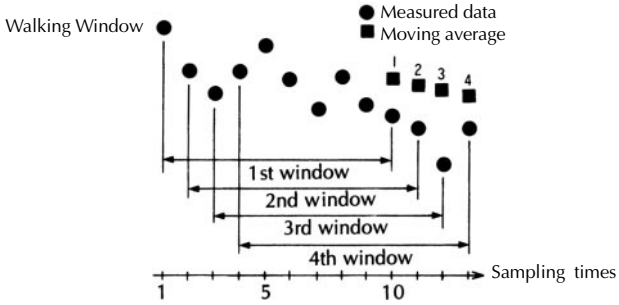
$Y = X - X_0$
Where; X_0 : initially set value (NULL value)
Y : computed value
X : measured value

Reset an initially set value (data being displayed) to zero as NULL value. Thereafter a value subtracted by a NULL value is displayed as a measured value. This null function is used to eliminate leadwire resistance or cancel initial values.

■ AVERAGING FUNCTION (AVG)

The AVG function is used to average the measured data. This comes into effect when noise components or variation of measured data at high-speed sampling must be eliminated from the measured value.
The calculation expression is given by:

$Y = (X_{AT} + X_{AT-1} + ... + X_1) / AT$
where AT : 2 to 100 (number of average data)
X : measured value
Y : computed value



Averaging Function (Number of averagings = 10)

■ SCALING FUNCTION

The scaling function serves not only to indicate a multiple with preset multiplying factors but also to determine deviation from a preset reference value.

$Y = (X - A) / B$,

where; Y : Computed value,
X : measured value,

A and B: constants,

where; $-1999999E9 \leq A \leq 1999999E9$
$-1999999E9 \leq B \leq 1999999E9, B \neq 0$

■ COMPARATOR FUNCTION

The comparator function compares a measured value (or null or averaging values) with the reference value to determine which value is larger or smaller if the measured value is within the limits.

$X \geq H$ ... High
$H > X > L$ ... Pass
$L \geq X$ ... Low
X: measured value,
H and L: constants,

where; $-1999999E9 \leq H \leq 1999999E9$
$-1999999E9 \leq L \leq 1999999E9$

■ STORING FUNCTION

Store the measured data in built-in memory or IC card memory. When an IC memory card is installed, the measured data is stored in the IC memory card.

The STORE function has three operations depending on measurement modes as follows:

- **In AUTO Mode:**
  In AUTO mode, press the STORE key to store data in memory. If the memory overflows, the oldest data are automatically erased and replaced by the newest data. If the STORE mode is OFF, data is no longer stored. In AUTO mode, if a trigger signal is generated, data can be written to the memory, leaving NS – 1 data before generating a trigger signal.
- **In SINGLE Mode:**
  In SINGLE mode, data measured in each sampling cycle are stored every time a trigger signal is generated. If NS data that was present are stored, STORE mode is automatically turned OFF.
- **In N RDGS Mode:**
  NS data are stored every time a trigger signal is generated. The STORE mode is in halt status until the next trigger signal is generated. If the memory overflows, the STORE mode is automatically turned OFF.

■ RECALL FUNCTION

Recalls the stored data from the memory. The recall functions are as follows:

- **In AUTO Mode:**
  Data are output at the preset measurement intervals. When the final data are output, the recall mode is automatically turned OFF.
- **In SINGLE Mode:**
  Data are recalled every time a trigger signal is generated. When the final data are output, the recall mode is automatically turned OFF.
- **In N RDGS Mode:**
  NS data are output at the preset measurement intervals whenever a trigger signal is generated. Then the mode is in the halt state. If the trigger key is pressed again, recalling of data is started. If the final data are output, the recall mode is automatically turned OFF.

■ IC MEMORY CARD

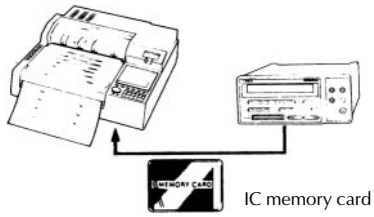
The 7563 is the first Digital Thermometer with IC memory card (optional).

IC memory card allows you to:

- Save up to 8000 measured data.
- Save functions, ranges, and mathematical functions ON/OFF, sample speed and so on.
- Store setting programs using the front panel keys and measured data.
- Automatic loading at power ON.

7563 is allowed more applications by the above memory card functions.

The data format of memory card is compatible with that of YOKOGAWA LR Series Recorders, so the measured data can be recorded in analog form on strip chart.



Connection Diagram for LR Series Recorder

■ AUTOMATIC LOADING

IC memory cards allow measurement parameters and conditions to be set without using the panel keys. If an IC memory card containing set data is inserted and then the power is turned ON, the memory contents are automatically read and programmings are set. This is very useful for measurements that are repeated under the same conditions, and this can be a powerful support tool such as in the production line.

■ PROGRAMMING FUNCTION

If an IC memory card is installed, up to 20 steps can be programmed either by front panel key operations or via communication interfaces.

The required functions, ranges, and mathematical functions can be set ON or OFF, and multichannel measurements can be performed in a combination with scanners.

■ AUTO ZERO FUNCTION

The AZ key turns ON or OFF AUTO ZERO. AUTO ZERO (AZ) compensates for zero drift which will be generated in the internal circuit every time sampling is executed. In high speed sampling mode, measurement time is decreased by eliminating AUTO ZERO functions.

■ CALIBRATION FUNCTION

The multimeters can be calibrated either by front panel key operations or via communication interfaces. The multi-meters are calibrated without opening the case and without any special calibration skills.

■ ANALOG OUTPUT (OPTIONAL)

This optional feature specifies any data of 3-1/2 or 3 digits on the display and converts it to the analog data with the range of ±500 mV or ±1 V.

This function is ideal for both long-time temperature measurement and small change of measurement.

■ MULTI-POINT MEASUREMENT OF UP TO 50 POINTS

By using a programmable scanner 750101 the multi-point measurement of up to 50 points is possible.

DIGITAL THERMOMETER

YOKOGAWA

7563

SPECIFICATIONS

■ DC VOLTAGE (DC V)

● **Ranges:**

* 16.7 ms shows 16.66 ....

	Integrating Time (500/200 ms)		Integrating Time (100/20/16.7 ms)*		Integrating Time (2.5 ms)		Input Resistance	Max. Input
	Max. Reading	Resolution	Max. Reading	Resolution	Max. Reading	Resolution		
200 mV	199.9999	100 nV	199.999	1 µV	199.99	10 µV	> 1 GΩ	±200 V peak between Hi and Lo. ±42 V peak between Lo and guard. ±500 V peak between guard and case.
2000 mV	1999.999	1 µV	1999.99	10 µV	1999.9	100 µV		
20 V	19.99999	10 µV	19.9999	100 µV	19.999	1 mV		
200 V	199.9999	100 µV	199.999	1 mV	199.99	10 mV	10 MΩ ±1%	

● **Accuracy (Integrating Time 500 ms):** ±(% of reading+digits)

Range	24 h, 23±1°C	90 days, 23±5°C	1 year, 23±5°C	Temperature Coefficient (/°C*)
200 mV	0.004+20(3) {4}	0.006+25(4) {4}	0.01+25(4) {4}	0.0007+5(.6) {.2}
2000 mV	0.0025+ 8(2) {3}	0.0045+10(2) {3}	0.0075+10(2) {3}	0.00055+1(.2) {.1}
20 V	0.003+ 8(2) {3}	0.005+10(2) {3}	0.009+10(2) {3}	0.00065+1(.2) {.1}
200 V	0.0045+10(2) {3}	0.009+15(2) {3}	0.016+15(2) {3}	0.00075+1(.2) {.1}

* Temperature range: 5 to 18, 28 to 40°C.

- Accuracy at 24 hours, 23±1°C is the value for the calibration standard.
- Auto Zero ON, Null.
- **Integrating time:** At 200 ms, 2 is added to the value (digits) in integrating time 500 ms.
- ( ) indicates the value (digits) in integrating time 100 ms. At 20/16.7 ms, 2 is added to the value (digits) in integrating time of ( ).
- { } indicates the value (digits) integrating time 2.5 ms.
- At Auto Zero OFF, temperature coefficient of ±(0.0015% of range ±25 µV)/°C is added (at 5 to 40°C).
- **Common Mode Rejection:** 120 dB or more. Integrating time: 500/200/100/20/16.7 ms. Rs = 1 kΩ, 50/60 Hz ±0.1%
  (Rs: signal source resistance.)
- **Normal Mode Rejection:** 60 dB or more. Integrating time: 500/200/100/20/16.7 ms, 50/60 Hz ±0.1%.

■ RESISTANCE (OHM)

● **Ranges:**

Range	Integrating Time (500/200 ms)		Integrating Time (100/20/16.7 ms)		Integrating Time (2.5 ms)		Current through Unknown
	Max. Reading	Resolution	Max. Reading	Resolution	Max. Reading	Resolution	
200 Ω	199.9999	100 µΩ	199.999	1 mΩ	199.99	10 mΩ	1 mA
2000 Ω	1,999.999	1 mΩ	1999.99	10 mΩ	1999.9	100 mΩ	1 mA
20 kΩ	19.99999	10 mΩ	19.9999	100 mΩ	19.999	1 Ω	100 µA
200 kΩ	199.9999	100 mΩ	199.999	1 Ω	199.99	10 Ω	10 µA
2000 kΩ	1,999.999	1 Ω	1999.99	10 Ω	1999.9	100 Ω	1 µA
20 MΩ	19.9999	100 Ω	19.9999	100 Ω	19.999	1 kΩ	100 nA

● **Accuracy (4-wire, Integrating Time 500 ms):** ±(% of reading+digits)

Range	24 h, 23±1°C	90 days, 23±5°C	1 year, 23±5°C	Temperature Coefficient (/°C*)
200 Ω	0.004+25(4) {4}	0.008+30(5) {4}	0.012+30(6) {4}	0.001+10(2) {0.5}
2000 Ω	0.003+15(3) {3}	0.006+25(4) {3}	0.01+25(5) {3}	0.00075+2(0.5) {0.1}
20 kΩ	0.003+15(3) {3}	0.006+25(5) {3}	0.01+25(5) {3}	0.00075+2(0.5) {0.1}
200 kΩ	0.005+20(3) {3}	0.008+30(5) {3}	0.012+30(5) {3}	0.00075+1(0.5) {0.1}
2000 kΩ	0.02+135(15) {20}	0.03+150(20) {30}	0.05+150(20) {30}	0.003+2(0.5) {0.1}
20 MΩ	0.2+30(30)	0.2+30(30)	0.02+30(30)	0.02+1(1)

* Temperature range: 5 to 18, 28 to 40°C.

- Accuracy at 24 hours, 23±1°C is the value for the calibration standard.
- Auto Zero ON, Null.
- **Integrating Time:** At 200 ms, 2 is added to the value (digits) in integrating time 500ms.
- ( ) indicates the value (digits) in integrating time 100 ms. For integrating time 20/16.7 ms, 2 is added to the value (digits) enclosed in the parentheses.
- { } indicates the value (digits) in integrating time 2.5 ms.
- For 20 MΩ at sampling interval 400 ms or more. Accuracy is not prescribed in integrating time 2.5 ms.
- At Auto Zero OFF, temperature coefficient on 200 Ω range is ±(0.013% of range)°C, on other ranges ±(0.003% of range/°C is added (at 5 to 40°C).
- For 2-wire system, 2 mΩ/°C is added.
- Excluding the influence of leadwires.
- **Open Circuit Voltage:** Max. 10 V.
- **Maximum Input Voltage:** ±200 V peak or 200 V rms (between Hi and Lo).
- **Response Time:** 0.4 s or less on 2000 kΩ/20 MΩ ranges (to final value).

DIGITAL THERMOMETER

YOKOGAWA

7563

■ TEMPERATURE (TC)

Range[*1]	Measurement Range		Resolution (500/200 ms)	Accuracy[*2] (Inegrating Time 500/200/100/20/16.7 ms): ± (% of rdg + °C)			Temperature Coefficient (common to Each Integrating Time) [*5]
				24 hours, 23±1°C [*4]	90 days, 23±5°C [*4]	1 year, 23±5°C [*4]	Temperature Coefficient [*4] (% of rdg + °C)/°C
R	– 50.0 to 0°C	– 58.0 to 32.0°F	0.1°C (0.1°F)	0.005 + 0.5 {0.7}	0.007 + 0.5 {0.7}	0.01 + 0.5 {0.7}	0.001 + 0.07
	0.0 to 100.0°C	32.0 to 212.0°F	0.1°C (0.1°F)	0.005 + 0.4 {0.5}	0.007 + 0.4 {0.5}	0.01 + 0.4 {0.5}	
	100.0 to 600.0°C	212.0 to 1,112.0°F	0.1°C (0.1°F)	0.005 + 0.3 {0.4}	0.007 + 0.3 {0.4}	0.01 + 0.3 {0.4}	
	600.0 to 1760°C	1112.0 to 3200.0°F	0.1·C (0.1°F)	0.005 + 0.2 {0.3}	0.007 + 0.2 {0.3}	0.01 + 0.2 {0.3}	
S	– 50.0 to 0°C	– 58.0 to 32.0°F	0.1°C (0.1°F)	0.005 + 0.6 {0.7}	0.007 + 0.6 {0.7}	0.01 + 0.6 {0.7}	0.001 + 0.07
	0.0 to 100.0°C	32.0 to 212.0°F	0.1°C (0.1°F)	0.005 + 0.4 {0.5}	0.007 + 0.4 {0.5}	0.01 + 0.4 {0.5}	
	100.0 to 600.0°C	212.0 to 1112.0°F	0.1°C (0.1°F)	0.005 + 0.3 {0.4}	0.007 + 0.3 {0.4}	0.01 + 0.3 {0.4}	
	600.0 to 1760.0°C	1112.0 to 3200.0°F	0.1°C (0.1°F)	0.005 + 0.2 {0.3}	0.007 + 0.2 {0.3}	0.01 + 0.2 {0.3}	
B	0.0 to 42°C	32.0 to 107.6°F	—	—	—	—	0.001 + 0.02
	42.0 to 100.0°C	107.6 to 212.0°F	0.1°C (0.1°F)	0.005 + 7.0 {9.0}	0.007 + 7.0 {9.0}	0.01 + 7.0 {9.0}	
	100.0 to 200.0°C	212.0 to 392.0°F	0.1°C (0.1°F)	0.005 + 1.5 {2.0}	0.007 + 1.5 {2.0}	0.01 + 1.5 {2.0}	
	200.0 to 300.0°C	392.0 to 572.0°F	0.1°C (0.1°F)	0.005 + 1.0 {1.2}	0.007 + 1.0 {1.2}	0.01 + 1.0 {1.2}	
	300.0 to 400.0°C	572.0 to 752.0°F	0.1·C (0.1°F)	0.005 + 0.7 {0.9}	0.007 + 0.7 {0.9}	0.01 + 0.7 {0.9}	
	400.0 to 1820.0°C	752.0 to 3308.0°F	0.1°C (0.1°F)	0.005 + 0.3 {0.4}	0.007 + 0.3 {0.4}	0.01 + 0.3 {0.4}	
K	– 270.0 to – 250.0°C	– 454.0 to – 418.0°F	0.1°C (0.1°F)	0.004 + 1.3 {2.5}	0.006 + 1.3 {2.5}	0.01 + 1.3 {2.5}	0.0007 + 0.02
	– 250.0 to – 200.0°C	– 418.0 to – 328.0°F	0.1°C (0.1°F)	0.004 + 0.5 {0.9}	0.006 + 0.5 {0.9}	0.01 + 0.5 {0.9}	
	– 200.0 to 0.0°C	– 328.0 to 32.0°F	0.1°C (0.1°F)	0.004 + 0.3 {0.4}	0.006 + 0.3 {0.4}	0.01 + 0.3 {0.4}	
	0.0 to 1370.0°C	32.0 to 2498.0°F	0.1°C (0.1°F)	0.004 + 0.2 {0.3}	0.006 + 0.2 {0.3}	0.01 + 0.2 {0.3}	
J	– 210.0 to – 200.0°C	– 346.0 to –328.0°F	0.1°C {0.1°F)	0.004 + 0.4 {0.6}	0.006 + 0.4 {0.6}	0.01 + 0.4 {0.6}	0.0007 + 0.01
	– 200.0 to –150.0°C	– 328.0 to –238.0°F	0.1°C (0.1°F)	0.004 + 0.3 {0.5}	0.006 + 0.3 {0.5}	0.01 + 0.3 {0.5}	
	– 150.0 to 0.0°C	– 238.0 to 32.0°F	0.1°C (0.1°F)	0.004 + 0.2 {0.4}	0.006 + 0.2 {0.4}	0.01 + 0.2 {0.4}	
	0.0 to 1200.0°C	32.0 to 2192.0°F	0.1°C (0.1°F)	0.004 + 0.2 {0.3}	0.006 + 0.2 {0.3}	0.01 + 0.2 {0.3}	
E	– 270.0 to – 250.0°C	– 454.0 to – 418.0°F	0.1°C (0.1°F)	0.004 + 0.8 {1.5}	0.006 + 0.8 {1.5}	0.01 + 0.8 {1.5}	0.0007 + 0.01
	– 250.0 to – 200.0°C	– 418.0 to – 328.0°F	0.1°C (0.1°F)	0.004 + 0.3 {0.6}	0.006 + 0.3 {0.6}	0.01 + 0.3 {0.6}	
	– 200.0 to 0.0°C	– 328.0 to 32.0°F	0.1°C (0.1°F)	0.004 + 0.2 {0.4}	0.006 + 0.2 {0.4}	0.01 + 0.2 {0.4}	
	0.0 to 1000.0°C	32.0 to 1832.0°F	0.1°C (0.1°F)	0.004 + 0.2 {0.3}	0.006 + 0.2 {0.3}	0.01 + 0.2 {0.3}	
T	– 270.0 to – 250.0°C	– 454.0 to – 418.0°F	0.1°C (0.1°F)	0.004 + 1.0 {1.5}	0.006 + 1.0 {1.5}	0.01 + 1.0 {1.5}	0.0007 + 0.02
	– 250.0 to – 200.0°C	– 418.0 to – 328.0°F	0.1°C (0.1°F)	0.004 + 0.3 {0.5}	0.006 + 0.3 {0.5}	0.01 + 0.3 {0.5}	
	– 200.0 to 400.0°C	– 328.0 to 752.0°F	0.1°C (0.1°F)	0.004 + 0.2 {0.3}	0.006 + 0.2 {0.3}	0.01 + 0.2 {0.3}	
U	– 200.0 to – 100.0°C	– 328.0 to –148.0°F	0.1°C (0.1°F)	0.004 + 0.3 {0.4}	0.006 + 0.3 {0.4}	0.01 + 0.3 {0.4}	0.0007 + 0.01
	– 100.0 to 0.0°C	– 148.0 to 32.0°F	0.1°C (0.1°F)	0.004 + 0.3 {0.4}	0.006 + 0.3 {0.3}	0.01 + 0.3 {0.4}	
	0.0 to 600.0°C	32.0 to 1112.0°F	0.1°C (0.1°F)	0.004 + 0.2 {0.3}	0.006 + 0.2 {0.2}	0.01 + 0.2 {0.4}	
L	– 200.0 to – 100.0°C	– 328.0 to – 148.0°F	0.1°C (0.1°F)	0.004 + 0.3 {0.4}	0.006 + 0.3 {0.4}	0.01 + 0.3 {0.4}	0.0007 + 0.01
	– 100.0 to 900.0°C	– 148.0 to 1652.0°F	0.1°C (0.1°F)	0.004 + 0.2 {0.3}	0.006 + 0.2 {0.3}	0.01 + 0.2 {0.3}	
N	0.0 to 1300.0°C	32.0 to 2372.0°F	0.1°C (0.1°F)	0.004 + 0.2 {0.3}	0.006 + 0.2 {0.3}	0.01 + 0.2 {0.3}	0.0007 + 0.02
W	0.0 to 2315.0°C	32.0 to 4199.0°F	0.1°C (0.1°F)	0.004 + 0.2 {0.4}	0.006 + 0.2 {0.4}	0.01 + 0.2 {0.4}	0.001 + 0.03
KPvsAu7Fe	0.0 tp 20.0 K	—	0.1K	[*2] 0.005 + 1.3 {0.4}	[*2] 0.007 + 0.3 {0.3}	[*2] 0.011 + 0.3 {0.3}	[*3] 0.001 + 0.05
	20.0 to 70.0K		0.1K	0.005 + 0.2 {0.3}	0.007 + 0.2 {0.2}	0.011 + 0.2 {0.2}	
	70.0 to 300.0K		0.1K	0.005 + 0.2 {0.2}	0.007 + 0.2 {0.2}	0.011 + 0.2 {0.2}	

[*1] As to the R, S, B, K, J, E, T and N, the provisions of IEC584-1 apply.
As to the U and L, those of DIN 43710 apply.
As to the W, those of Hoskins Mfg Co. (USA) apply.
As to the KPvsAu7Fe, those of NSB Vol. 76A apply.

[*2] KPvsAu7Fe: ± (% of rdg + K)

[*3] KPvsAu7Fe: ± (% of rdg + K)/°C

[*4] In case of accuracy and temperature coefficient of °F, multiply 1.8 × °C.

[*5] Condition: At ambient temperature of 5 to 18°C (41 to 64°F) and 28 to 40°C (82 to 104°F)

● Accuracy of Reference Junction Compensation

Range	Accuracy of Reference Junction Compensation (˚C)	Description
R, S, B, W, KPvsAu7Fe	±0.3˚C (±0.6˚F)	At the ambient temperature of 5 to 40˚C
K, J, E, U, L, N, T	±0.2˚C (±0.4˚F)	

- In case of internal compensation, the above accuracy of reference junction compensation should be added to measuring accuracy.
- The accuracy of Type B at 0 to 42˚C is not prescribed.

■ **Temperature unit:** Changeable among ˚C, ˚F, and K. Provided, however, that only K applies as to KPvsAu7Fe.

■ **Accuracy**

- The accuracy is in the case of REAR input, external RJC (reference junction temperature = 0˚C.)
- In case of FRONT input, 0.2˚C should be added.
- { } indicates the values in integrating time of 2.5 ms.
- Auto Zero ON.
- Accuracy of RJC is excluded.
- The accuracy for Type B at 0 to 42˚C is not prescribed.
- **Common mode rejection:** 120dB or more. Integrating time: 500, 200, 100, 20 and 16.7 ms, Rs=1 kΩ, 50/60 Hz ± 0.1%
- **Normal mode rejection:** 60 dB or more. Integrating time: 500, 200, 100, 20, and 16.7 ms, 50/60 Hz + 0.1%
- In case of integrating time 200 or 500 ms at measuring temperature, the response time is 100 ms by setting FILTER.

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■ TEMPERATURE (RTD)

*1 Range	Measurement Range	Resolution	Current through Unknown	*2 Accuracy (Integrating Time 500/200 ms): ± (% of rdg+°C)			Temperature Coefficient (Common to Each Integrating Time)*5
		500/200/100 ms		24 hours, 23 ± 1°C*4	90 days, 23 ± 5°C*4	1 year, 23 ± 5°C*4	Temperature Coefficient (% of rdg + °C)/°C*4
Pt100	–200.00 to 650.00°C (–328.00 to 1202.00°F)	0.01°C (0.01°F)	1 mA	0.005+0.07 (0.1) {0.3}	0.01+0.07 (0.1) {0.3}	0.014+0.07 (0.1) {0.3}	0.001+0.006
JPt100	–200.00 to 510.00°F (–328.00 to 950.00°F)	0.01°C (0.01°F)	1 mA	0.005+0.07 (0.1) {0.3}	0.01+0.07 (0.1) {0.3}	0.014+0.07 (0.1) {0.3}	0.001+0.004
Pt1000	–200.00 to 650.00°C (–328.00 to 1202.00°F)	0.01°C (0.01°F)	0.1 mA	0.005+0.05 (0.07) {0.2}	0.01+0.05 (0.07) {0.2}	0.014+0.05 (0.07) {0.2}	0.001+0.003
J263*B	2.0 to 300.0K	0.1K	1 mA	*2 0.005+0.1 (0.1) {0.2}	*2 0.012+0.1 (0.1) {0.2}	*2 0.016+0.01 (0.1) {0.2}	*3 0.001+0.003

*1 As to Pt100 , IEC751-1995 apply. As to JPt100, JIS1604-1989 apply. As to Pt1000, the prescription for Pt100 of IEC751-1995 applies.
*2 J263*B: ± (% of rdg+K)
*3 J263*B: ± (% of rdg+K)/°C.
*4 In case of accuracy and temperature coefficient of °F, multiply 1.8 × °C.
*5 Conditions: Ambient temperature 5 to 18°C (41 to 64°F), 28 to 40°C (82 to 104°F).

■ TEMPERATURE UNIT

Changeable among ˚C, ˚F and K, but as to J263*B only K applies.

■ ACCURACY

- Same accuracy for both FRONT and REAR input.
- Allowable conductor resistance: Less than 10 Ω.
- ( ) indicates the accuracy in integrating time of 100, 20, 16.7 ms.
- { } indicates the accuracy in integrating time of 2.5 ms.

■ TEMPERATURE COEFFICIENT

- For 3-wire Pt100, J263 ... 0.003˚C/˚C
  JPt100, Pt1000 ... 0.002˚C/˚C is added.

■ SAMPLING INTERVAL

10 ms to 60 min. (Resolution: 1 ms, 1 s at 3 s or more)

■ MINIMUM TIME OF THE FOLLOWING CONDITIONS

● DC V,OHM, RTD (2- or 4-wire), TC (reference junction compensation)

Integrating Time	Measuring Interval (Auto Zero OFF)	Measuring Interval (Auto Zero ON)
2.5 ms	10 ms	15 ms
16.7 ms	25 ms	45 ms
20 ms	35 ms	55 ms
100 ms	110 ms	215 ms
200 ms	210 ms	415 ms
500 ms	510 ms	1015 ms

● RTD (3-wire)

Integrating Time	Measuring Interval
2.5 ms	95 ms
16.7 ms	145 ms
20 ms	155 ms
100 ms	395 ms
200 ms	695 ms
500 ms	1595 ms

● TC

Integrating Time		
2.5 ms	70 ms	150 ms
16.7 ms	135 ms	215 ms
20 ms	150 ms	230 ms
100 ms	470 ms	550 ms
200 ms	870 ms	950 ms
500 ms	2070 ms	2150 ms

■ GENERAL SPECIFICATIONS

Operating Principle: Feedback pulse width modulation method.
Sample Mode: Auto/Single/N reading.
Maximum Reading: 1999999
Overrange Information: -oL- sign display.
Data Memory: 1000 data, measured data can be stored and recalled: (STORE/RECALL).
Ranging: AUTO, MANUAL, (remote control and programming possible).
Analog Output (D/A converter): Optional.
Burnout: TC burnout (defective connection or disconnection etc.) is automatically checked and indicated by alarm display (ON or OFF selectable).
2 kΩ or less (normal), if the value is higher than 30 kΩ, the connection is cut down. Current 2.2 μA or so. Pulse width detection; 2.4 ms or so.
Operating Temperature Range: 5 to 40˚C (41 to 104˚F).
Humidity Range: 20 to 80% relative humidity.
Warmup Time: Approx. 60 minutes to rated accuracy.
Power Requirements: 100/115 V AC ±10% (100/115 V: selectable by switch), 50 or 60 Hz (200/230 V must be specified, selectable)
Power Consumption: 20 VA max.
Dimensions (Approx.): 213(W) × 88(H) × 350(D) mm, (8-3/8 × 3-1/2 × 13-15/16")
Weight (Approx.): 3 kg (6.6 lbs)

● GP-IB Interface

Electrical & Mechanical Specifications: Conforms to IEEE St'd 488-1978.
Interface Function & Identification: SH1, AH1, L4, SR1, RL1, PP0, DC1, DT1, C0. Address mode, address and header ON/OFF are settable.

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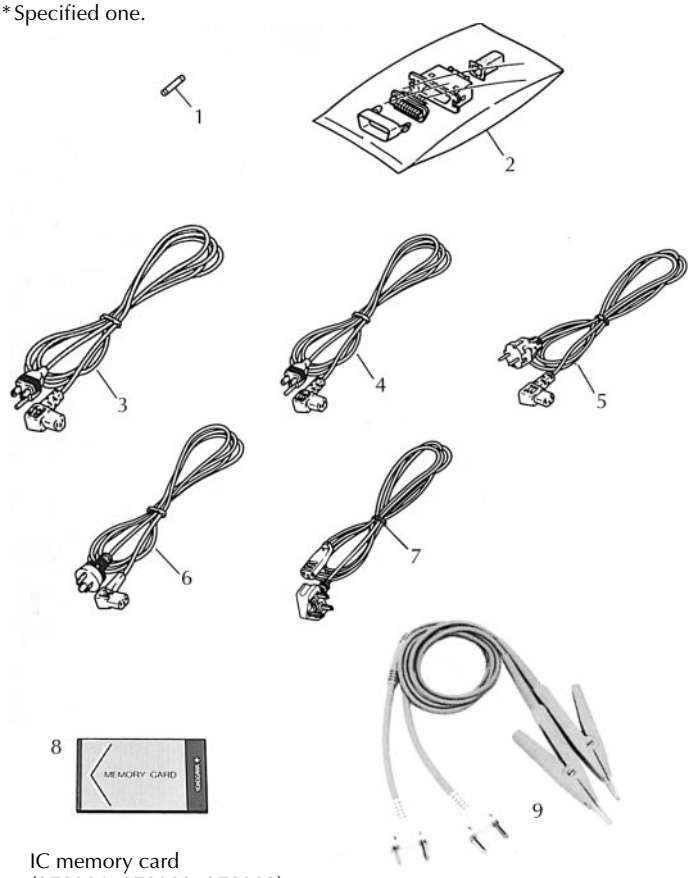
■ STANDARD ACCESSORIES

No.	Name	Part No.	Description	Q'ty
1	Fuse*	**A1105EF** **A1103EF**	0.2 A, 100 V 0.1 A, 200 V	1
2	Remote connector	**A1004JD**	—	1
—	Instruction manual	—	—	1
3	Power supply cord*	**A1007WD**	100 V series (JIS standard)	1
4		**A1006WD**	115 V series (UL standard)	1
5		**A1009WD**	200 V series (VDE standard)	1
6		**A1013WD**	230 V series (AS standard)	1
7		**A1023WD**	BS standard	1

*Specified one.



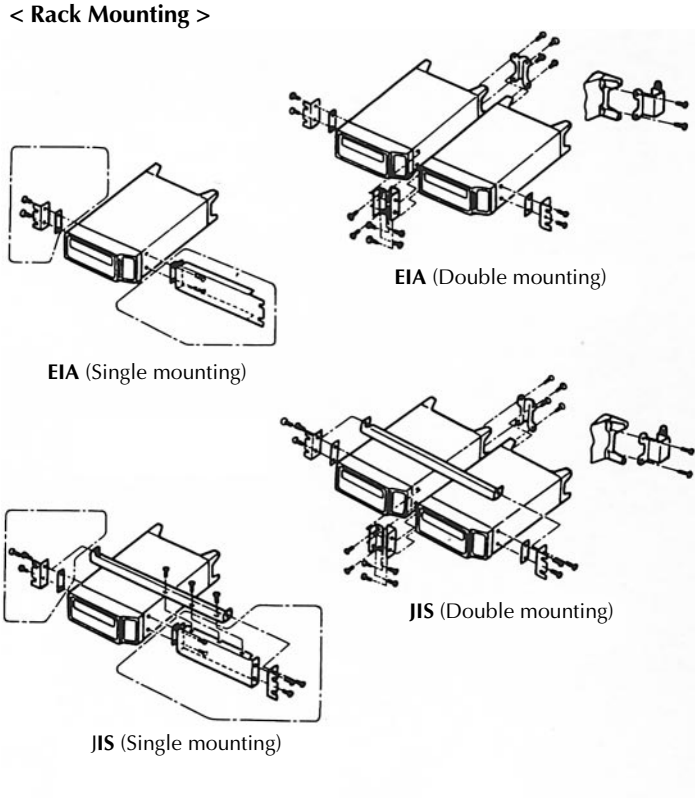
IC memory card
(378901, 378902, 378903)

4-wire resistance measuring lead
(751510)

■ OPTIONAL ACCESSORIES

No.	Name	Code	Description
8	Memory card (8 k bytes)	**378901**	Setting & measured data
	Memory card (16 k bytes)	**378902**	Setting & measured data
	Memory card (128 k bytes)	**378903**	Setting & measured data
—	Dummy card	**B9586NG**	Dust cap for memory card slot
—	Rack mounting kit	**751501**	EIA (single mounting)
—	Rack mounting kit	**751502**	EIA (double mounting)
—	Rack mounting kit	**751503**	JIS (single mounting)
—	Rack mounting kit	**751504**	JIS (double mounting)
9	4-wire resistance measuring lead	**751510**	0.6 m

< Rack Mounting >



EIA (Double mounting)

EIA (Single mounting)

JIS (Double mounting)

JIS (Single mounting)

AVAILABLE MODELS

Model	Suffix Codes		Description	
756301			6.5 digits	DC V, OHM, TEMP (TC & RTD) (GP-IB)
	-C		Always C (version code)	
Power Requirements	**-1**		100 V AC (50 & 60 Hz), 115 V AC changeable	
	-3		115 V AC (50 & 60 Hz), 100 V AC changeable	
	-5		200 V AC (50 & 60 Hz), 230 V AC changeable	
	-7		230 V AC (50 & 60 Hz), 200 V AC changeable	
Power Cord		**/B**	JIS standard	
		/D	UL standard	
		/F	VDE standard	
		/R	AS standard	
		/J	BS standard	
Optional Feature		**/DA**	D/A converter	

DIMENSIONS

Unit: mm (inch)