

# Infrared Thermometer

Thermo Spot Sensor

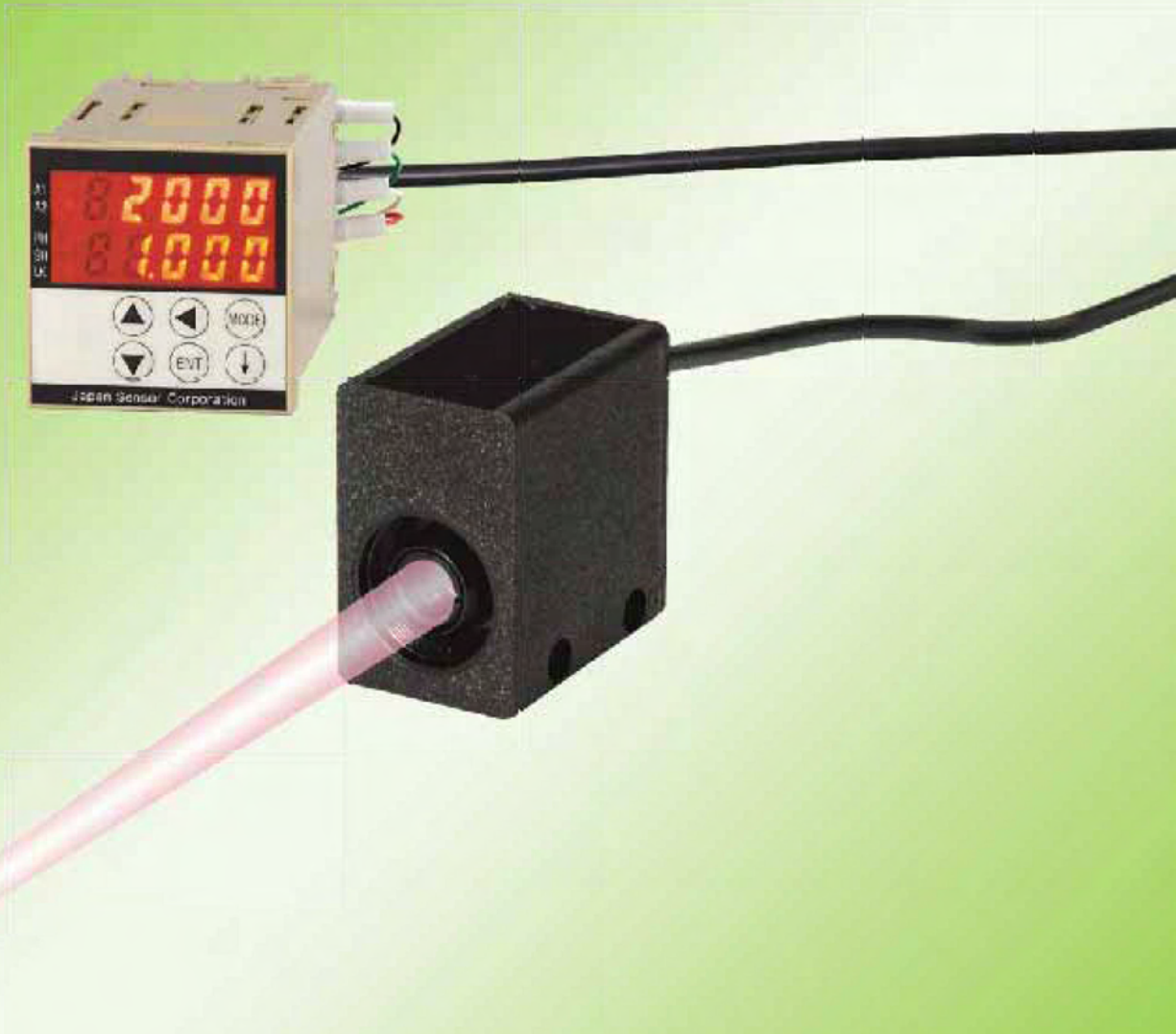
## *TMZ9 series*



Non-Contact

Volume sales types • General types

Light-weight & Small size



# Very Small and Lightweight, Non-contact Infrared Thermometer

For middle/high temp. & Fiber less type, suitable for cost down than Fiber type.  
 For very small and lightweight, the setting is easy.  
 Heat-resistant of sensor head is 70 (20 UP - ratio of our products)  
 Sensor unit has the linear output, so it is possible to input the data to some temperature controller directly.  
 When the sensor unit uses only, it is possible to select the analog output or RS232C.



**Indicating Setter**  
 Model : TMC9-EPN

The output of the sensor head is accessible only at the time of RS232C output. Alarm output 1point is standard equipment. Analog output etc. is selectable as option.

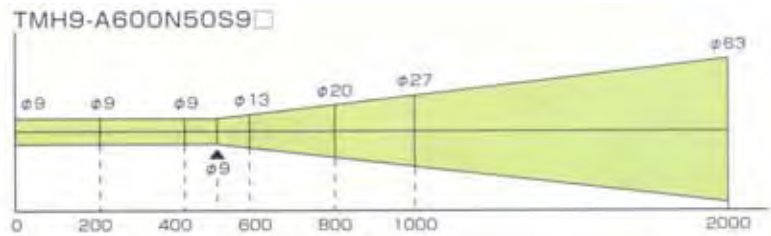
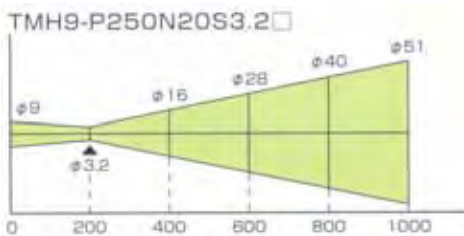
## For usage of sensor unit only.

The setting is not possible with the sensor unit only. Please change the setting by Handy Type Parameter Setter, Model:PWC1. Choosing RS232C output type, you should program the communication software for the setting by PC (Personal Computer) and/or PLC (Programmable Logic Controller).



**Parameter setter**  
 Model :PWC1  
 (AA battery type)

## CHART OF OPTICAL PATH (VOLUME SALES TYPE)



## ORDER INFORMATION

Model of Series combination

Model of Sensor Head

Spec of Indicating Setter

T M 9 - N - E

**Division**  
 Z: With Indicating Setter  
 H: Sensor Unit only  
 C: Indicating Setter

**Special order**  
 - : Standard  
 S : Special order

**Detecting element**  
 A : Si  
 P : InGaAs

**Minimum temperature**

**Mesuring distance(cm)**

**Sighting**  
 S : 10 LED  
 B : 10 Laser

**Target size (mm)**

**Output of sensor unit (\*1)**  
 A : Analog output(0 ~ 1V)  
 F : Analog output(0 ~ 5V)  
 T : Analog output(0 ~ 10V)  
 R : RS232C output

\*1 When the sensor unit is connected with indicating setter, the output should be RS232C.

**Cable length**  
 - : Normal(2m) 30 : 30m  
 5 : 5m 40 : 40m  
 10 : 10m 50 : 50m  
 20 : 20m

**Alarm output 1**  
 P : Photo coupler (normal)  
 R : Relay

**Style, Power Source**  
 N : No option (Standard)  
 B : Analog output1 / Outside emittance / outside timing / Alarm output 2  
 A : Analog output1 / Analog output2 / outside timing / Alarm output 2  
 R : Analog output1 / Outside emittance / Alarm output 2 relay  
 P : Analog output1 / Outside emittance / Alarm output 2 (isolated)

\* is spec. of analog voltage.

1 : 0 ~ 1V(normal)  
 2 : 0 ~ 5V  
 0 : 0 ~ 10V

For analog output type : switchable to mV, 4 ~ 20mA, 0 ~ 20mA.

## Spec. of Volume Sales Types

Model	Range	Distance	Spot size	Sighting	Spectral	Element
TMZ9-P250N20S3.2R-EPN	250 ~ 2000	200mm	3.2mm	LED(only)	0.8 ~ 1.6 $\mu$ m	InGaAs
TMZ9-A600N50S9R-EPN	600 ~ 2000	500mm	9.0mm		0.8 ~ 1.0 $\mu$ m	Si

## Spec. of General Types (Special specs. can be accepted.)

Model	Range	Distance	Spot size	Sighting	Spectral	Element
TMZ9-P250N30S5R-EPN	250 ~ 2000	300mm	5.0mm	LED(standard) Laser is available.	0.8 ~ 1.6 $\mu$ m	InGaAs
TMZ9-P250N50S9R-EPN		500mm	9.0mm			
TMZ9-P250N100S18R-EPN		1000mm	18.0mm			
TMZ9-A600N20S3.2R-EPN	600 ~ 2000	200mm	3.2mm		0.8 ~ 1.0 $\mu$ m	Si
TMZ9-A600N30S5R-EPN		300mm	5.0mm			
TMZ9-A600N100S18R-EPN		1000mm	18.0mm			

## SPECIFICATIONS

### Sensor Head

Accuracy (*1) Refer to Note 1	Under 800 : $\pm 4$ 800 ~ 1,200 : Measured value $\pm 0.5\%$ 1200 ~ 2000 : Measured value $\pm 1.0\%$
Repeatability (*1)	$\pm 0.2\% \pm 2$
Measuring(*1) resolution	Under min. temperature + 50 : less than 3 Under min. temperature + 100 : less than 1 More than min. temperature + 100 : less than 0.5
Response time	0.001 ~ 600sec changeable (0 ~ 95% analog output) 0.003 ~ 600sec changeable (RS232C temp. output) (*2) (At the change of inner range, addition 0.001sec)
Parameter setting	By Indicating Setter and Parameter setter(PWC).
Material of case	Polycarbonate resin
Ambient temp.	0 ~ 70 (Cable : 105 ) Laser sighting : 0 ~ 50
Ambient humidity	30 ~ 85% RH (without dew drop)
Storage temp.	-15 ~ 80
Supply voltage	DC4.7 ~ 27V, 0.5VA (*3)
Warm up Time	1 minutes

(\*1) at Environmental Temp.  $23 \pm 5$  , emissivity 1.0, smoothing time of 0.05sec  
 (\*2) When cable length is over 10m, response time becomes more than 0.003sec.  
 (\*3) Lower limit voltage is when analog output(0 ~ 1V) or RS232C output at the cable length 2m.

### The input and output items of Indicating Setter

	N (Nomal)	B (*2)	A (*2)	R (*2)	P (*2)
Analog output 1 (*1)	-				
Analog output 2 (*1) (The voltage same as output1)	-	-		-	-
Alarm output 1 (*3) Photo coupler (isolated)					
Alarm output 2 Photo coupler (isolated)	-	-	-	-	
Alarm output 2 Photo coupler (non-isolated)	-			-	-
Alarm output 2 Relay	-	-	-		-
The external emissivity input	-		-		
The external timing input	-			-	-

(\*1) Analog output : voltage(\*2), mV/ , 0 ~ 20mA , 4 ~ 20mA switchable  
 (\*2) is selectable of voltage.  
 1 : 0 ~ 1V(Standard voltage)  
 2 : 0 ~ 5V  
 3 : 0 ~ 10V  
 (\*3) Relay output is also selectable. (Option)

### Indicating Setter

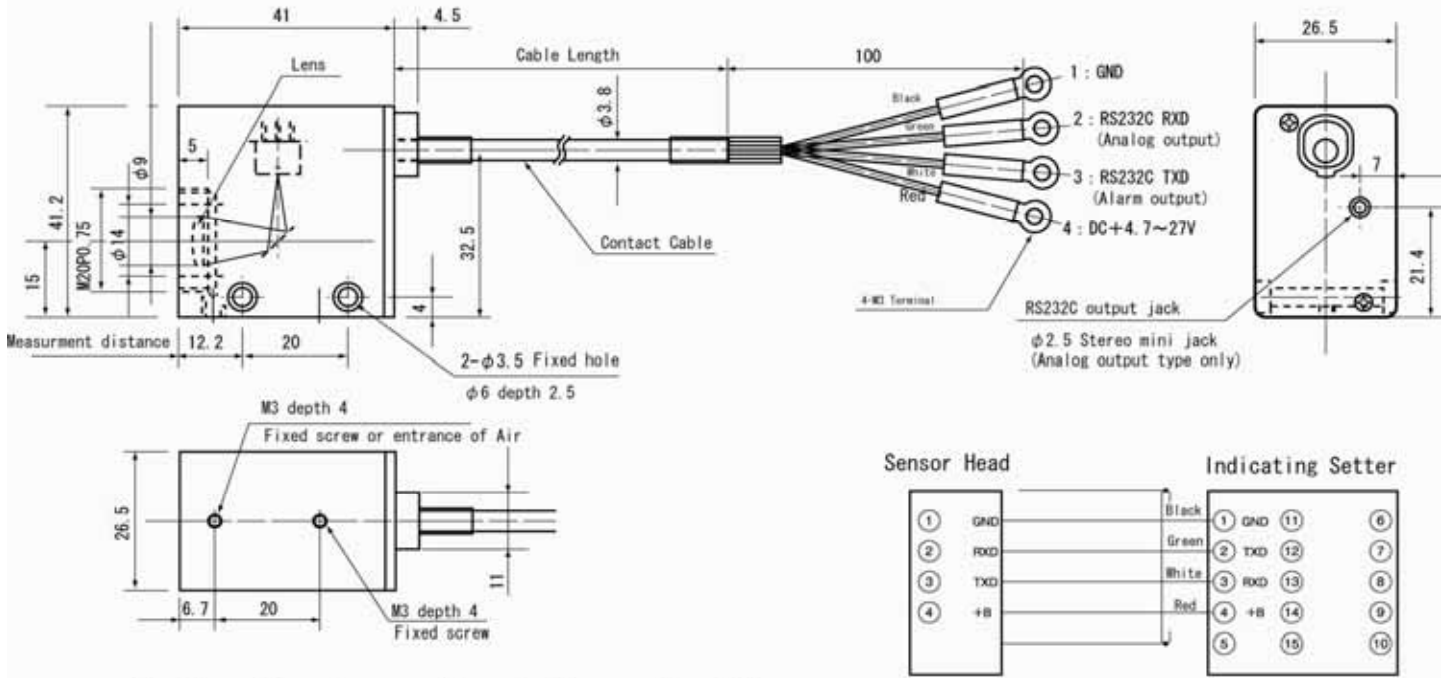
Model	TMC9-E	
Form	Panel mount	
Supply voltage	DC10 ~ 27V, less than 12VA	
Communication with Temp. converter	RS232C (Output swing width $\pm 4V$ )	
Emissivity	Guaranteed range 0.3 ~ 1.0 (With Reflex calibration function) Setting range 0.050 ~ 1.000(Setting resolution 0.001) Option Function of setting by external analog input is equipped. (0 ~ 5V corresponds to emissivity 0 ~ 1.0)	
Analog output (Option) See Note 1	Changeable to 0 ~ 1V, mV/ , 0 ~ 20mA, 4 ~ 20mA with Scaling function Optional output : 0 ~ 5V, 0 ~ 10V	
Alarm output	1 point, hysteresis setting width: Temperature range 0 ~ $\pm 5\%$ , resolution 0.1% Photo coupler DC30V, 0.2A max. Option: Relay contact Alarm output1 : AC125V, 0.3A max. Alarm output2 : AC250V, 1A max.	
Peak hold	Reset function (selection)	Time : 0.01 ~ 10sec changeable Discharge : time 0.01 ~ 10sec, Level 0.20 ~ 1.00 Option External signal : dry contact or open collector
Sample hold(Optional)	External timing signal input: dry contact or open collector	
Sensor calibration function	Span : 0.50 ~ 1.50 Zero : -50.0 ~ +50.0 ( ° F)	
Selection of indication measuring mode	Upper display : temp./alarmH/alarmL/blank Lower display : temp. unit/emssivity/alarmH/alarmL/blank	
Self-diagnosis	Internal supply voltage, Temperature converter abnormality	
Display resolution	Changeable to 1 or 0.1	
Indication unit	Changeable to or ° F	
Ambient temp.	0 ~ 50	
Ambient humidity	30 ~ 85% RH (without dew drop)	
Storage temp.	-15 ~ 50	

### Note 1

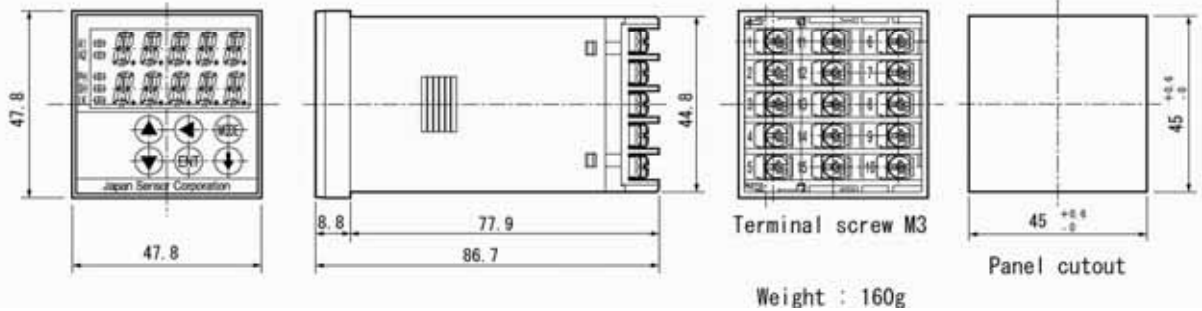
	Output effective range	Analog output error
0 ~ 1V	More than 30mV	$\pm 1.5mV$
mV/	More than 30mV(30 )	$\pm 1.5mV$
0 ~ 20mA	More than 0.2mA	$\pm 0.02mA$
4 ~ 20mA	More than 4.0m	$\pm 0.02mA$

# TEMPERATURE CONVERTER & INDICATING SETTER

## 《Sensor Head》

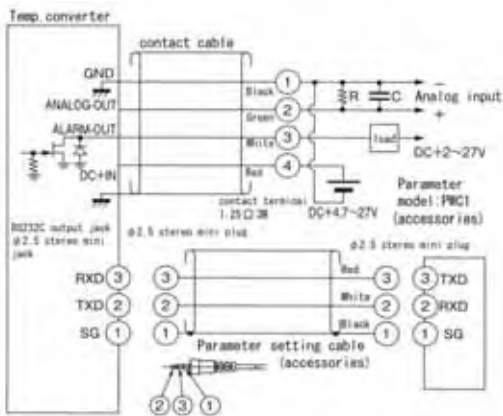


## 《Indicating Setter (Panel Mount Type)》



## WIRING DRAWING (SENSOR UNIT)

### Analog output

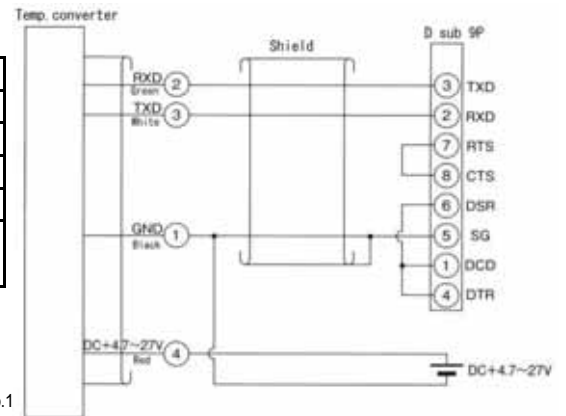


Output	Output type	R	Voltage
0 ~ 1V	0 ~ 1V	150	Over 4.7V
0 ~ 5V	0 ~ 20mA	250	Over 8V
0 ~ 10V	0 ~ 20mA	500	Over 13V
mV/	mV/	150	Over 4.7V
4 ~ 20mA	4 ~ 20mA	-	
0 ~ 20mA	0 ~ 20mA	-	

Supply power DC+4.7 ~ 27V connect with cable No.4+, No.1- .

Analog output comes from cable No.2+ and No.1  
In case the output of 0 ~ 1V or mV/ output, put resistor and capacitor with the end terminals cable.

### RS232C output



For improving the products, Information in this catalog may be subject to change without notice

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