TMHX series

TASHIKA - JAPAN

TMHX-**CH**

By InSb(Indium antimonide);the new developed element, **a super -high-speed,1mS,response which is the fastest in the world.**

※At the ambient temperature measurement

TMHX-**CN**

The lowest cost models in the instruments to set the parameter of the emissivity.

TMHX-**CL**

⁎ All models common standard

The solid and dust-proof body of the equivalency to **IP67 by using aluminum body*. Its heat-resistance and the chemical-resistance are also improved. it is possible to measure the long-distance such as 500mm(0-1350°C).**

TMHX-**CS**

It is possible to measure the super petit target size of φ0.7.

The function much improves by InSb (indium antimonide) element adoption.

The measurement by super-high speed with direct conversion.

The response time was limited because the conventional thermopile element needs to change the electrical signals after changing infrared rays into heat. As for TMHX series, InSb (indium antimonide) makes infrared rays to change the electrical signal directly. It resulted the fastest response time in the world and it made its measure time much shorter.

Thermopile method
(conventional products)

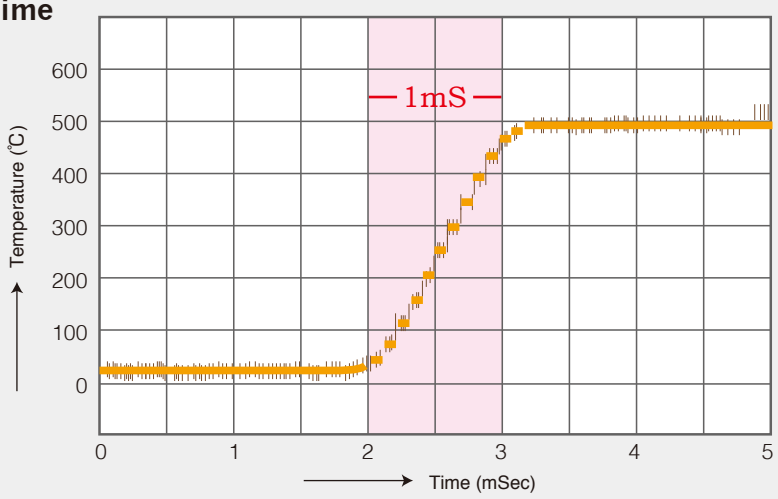
Infrared rays ▸ Heat ▸ Thermocouple ▸ Voltage

TMHX series

Infrared rays ▸ ***Direct conversion*** ▸ Electric current

TMHX-**CH**=1mS (0.001sec) TMHX-**CN/CL/CS**=10mS (0.01sec)

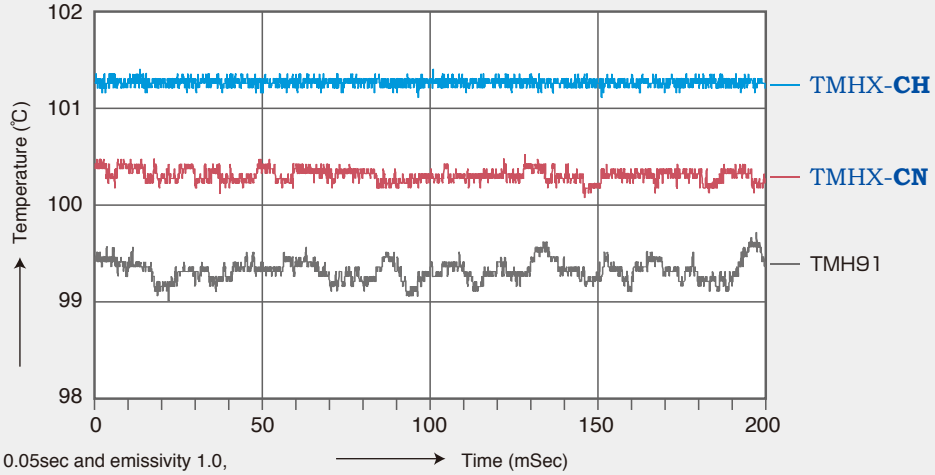
Response time



The stability also largely improves.

Compared with TMH91using conventional thermopile element, its stability largely improves(cf.lower graph). Because of using a short wavelength of 2-6.8μm, it is expected the value of the emissivity which is almost twice as conventional. And it is also anticipated the further stabilities.

Stability (representative figure)



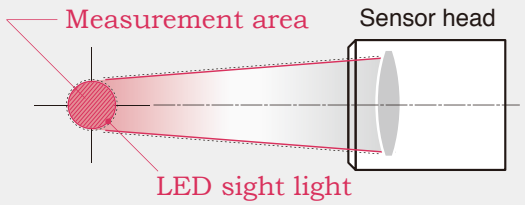
At smoothing time 0.05sec and emissivity 1.0,

Pursuit of the solidity and good performance .

Easy installation by the optical coaxial LED sight method.

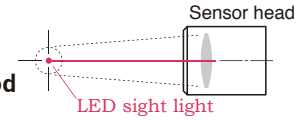
The radiation thermometer has to merge the measurement area to a measurement part of the work. Therefore it gives sight light from a sensor head and show a thermometry area. On this occasion, the sensor read as the lower temperature than exact one when the measurement area is not merged appropriately by a measurement part of the work. It is easier to fix the position because of "the optical coaxial LED sight method". It is near the situation looking with human-eyes. ∗Lights out is possible

Optical coaxial LED sight method



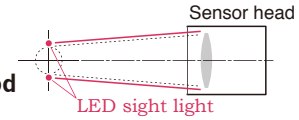
It is possible to fix the position as looking with eyes because it shows almost of the measuring area.

One point of laser sight method



Because of showing only the center of the measure area, it can not read all of the measuring area.

Two point of laser sight method



Because of showing only the both sides, it can not read all of the measuring area. And when it shift from the focus position the error of the position is bigger.

The micro spot measurement of target size 0.7mm in diameter at the minimum.

The micro spot measurement of target size 0.7mm in diameter at the minimum. The target size can be chosen to a use from 0.7mm to 9.0mm.

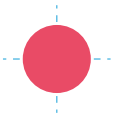
Images for the measurement size

TMHX-**CS** Ø 0.7mm

TMHX-**CN** Ø 1.6mm

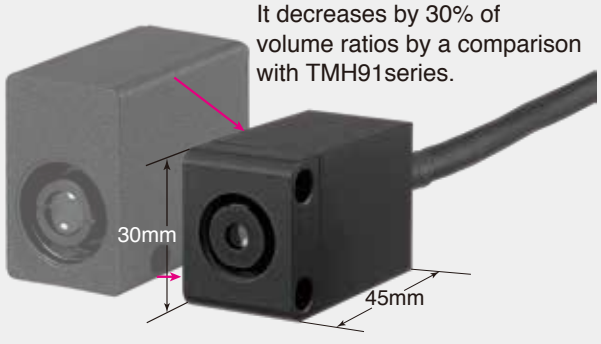
TMHX-**CH** Ø 3.5mm

TMHX-**CL** Ø 9.0mm



The high durability of the equivalency to the IP67 by using aluminum body.

Its solidity, heat-resistance and chemical-resistance are improved by using the aluminum body and it is a dust-proof of the equivalency to IP67. Compared with the conventional products, it is largely downsized around 30%. Its symmetric design made it easy to locate. In addition, its cable improved to be more thick as a measure for the disconnection.



The treatment for the several using situations

As for TMHX series, we prepare the indicating setter, the parameter setter depending on the using situation, for example the way to indicate temperature, to input emissivity, of the data telecommunication etc. It is possible for you to built the system by purchasing the thermometer only. Please refer the catalog of the indicating setter as for the details.

It is possible to combine with all models of TMHX.

Indicating setter TMCX-ND

→ RS232C communication
Analog output

→ Analog output
Alarm output
Emissivity input

Indicating setter TMCX-HA/HD

→ RS232C communication
Analog output

→ Analog output
Alarm output
Emissivity input
RS485 communication

Parameter setter PWCX

→ RS232C communication

Battery movement

Parameter setting set PWZX
PC software installation
<Paid Edition> PWSX
<Free Edition> PWSX-F

→ RS232C communication

Parameter writer adapter PWUX

→ RS232C communication
Analog output
Alarm output

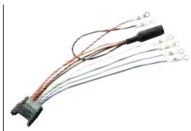
Temperature controller	Data logger
PLC	PC	Recorder

Outline of Specifications

Basic model	TMHX-**CN**0500			TMHX-**CH**0500		TMHX-**CL**1350	TMHX-**CS**0500
	-0035E1.6	-0070E003	-0120E5.5	-0100B3.5	-0200B007	-0500B009	-0040H0.7
Measuring Range			0 to 500°C			0 to 1350°C	0 to 500°C
Effectiveness wavelength	2 to 6.8μm					3 to 5.6μm	5 to 6.8μm
Standard measurement distance	35mm	70mm	120mm	100mm	200mm	500mm	40mm
Standard target size	Ø 1.6mm	Ø 3.0mm	Ø 5.5mm	Ø 3.5mm	Ø 7.0mm	Ø 9.0mm	Ø 0.7mm
Response time	10mSec to			1mSec to		10mSec to	
Analog output	0 to 1V / 4 to 20mA / 0 to 20mA /mV/°C Changeable						
Alarm output	One point of open drain DC27V、0.2A						
Communication	RS232C conformity Non-insulation						
Power supply	DC4.7 to 27V、0.1A max.						

Abundant accessories group

Shield case	Mounting bracket	Window materials	Air purge food	Airless food	Right angle mirror	Water-cooled jacket
TMSX-A TMSX-B4	TMAX-A TMAX-B	TMDX-A1C TMDX-15C	TMPX-A1 TMPX-15	TMNX-A1 TMNX-15	TMLX-A1C TMLX-15C	TMWX-A1 TMWX-A2
						
Influence reduction of the magnetic field for high frequency heating	Installation of the sensor head	Dirt prevention of the lens	Protection against dust of the lens. Purge of the dust or smoke on the light path	Protection against dust of the lens without air	Bend of the light path to 90 degrees	Cooling of the sensor head

Extension cable	Relay cable for PWC1	Relay cable for TMC9	Conversion resistance for 0-5V/10V	Terminal condenser for Analog output	Ferrite core	Divergence cable
TMBX-E05	TMBX-A	TMBX-R	TR-251N TR-501N	TC-105N	FC-2032	TMBX-B01
						
For extension of the connection cable (5m) e-CON	For connection to PWC1	For connection to TMC9	For the analog output 0-5V/10V	For noise measures of the analog output	For power supply noise measures	For thermometer only use

TMHX series

Radiation Thermometer

Specifications sheet

Special point	General purpose /Low price			High-speed reply 1mS		Long distance 500mm	Micro spot size 0.7mm
Appearance							
Model	**TMHX** -CN0500 -0035E1.6	**TMHX** -CN0500 -0070E003	**TMHX** -CN0500 -0120E5.5	**TMHX** -CH0500 -0100B3.5	**TMHX** -CH0500 -0200B007	**TMHX** -CL1350 -0500B009	**TMHX** -CS0500 -0040H0.7
Measuring Range	 0 to 500°C			0 to 500°C		0 to 1350°C	0 to 500°C
Effectiveness wavelength	2 to 6.8μ			2 to 6.8μ		3 to 5.6μ	5 to 6.8μ
Standard measurement distance	35mm	70mm	120mm	100mm	200mm	500mm	40mm
Standard target size *Note2	Ø 1.6mm	Ø 3.0mm	Ø 5.5mm	Ø 3.5mm	Ø 7.0mm	Ø 9.0mm	Ø 0.7mm
Accuracy *Note1	0 to 300°C；±3.0°C 300°C to；Measured Value±1%			0 to 350°C；±3.5°C 350°C to；Measured Value ±1%		0 to 300°C；±3°C 300°C to；Measured Value±1%	
Repeatability *Note1	±0.5°C			±1°C			
Measuring Resolution *Note1	less than 0.5°C			0 to 50°C；less than 1.5°C 50°C to；less than 0.7°C		0 to 50°C；less than 1°C 50°C to；less than 0.5°C	
Response Time	0.01 to 5sec (0 to 95% analog output) Changeable by smoothing function			0.001 to 5sec (0 to 95% analog output) Changeable by smoothing function		0.01 to 5sec (0 to 95% analog output) Changeable by smoothing function	
Warm-up time	1minute						3minute
Power supply voltage	DC4.7 to 27V、0.1A max.						
Outward form. (11/14page)	HX-A1			HX-A2		HX-A2	HX-B4
Weight (without cable)	60g			65g		70g	190g
Cable	2m Direct lead out						2m Connector connection

*Note1	Ambient Temperature 23±5°C Emissivity 1.0 Smoothing time 0.05sec	Ambient Temperature 23±5°C Emissivity 1.0 Smoothing time 0.001sec	Ambient Temperature 23±5°C Emissivity 1.0 Smoothing time 0.05sec
*Note2	The target size except the standard measurement distance refers to a figure of light path (9/14page)		

Common Specifications

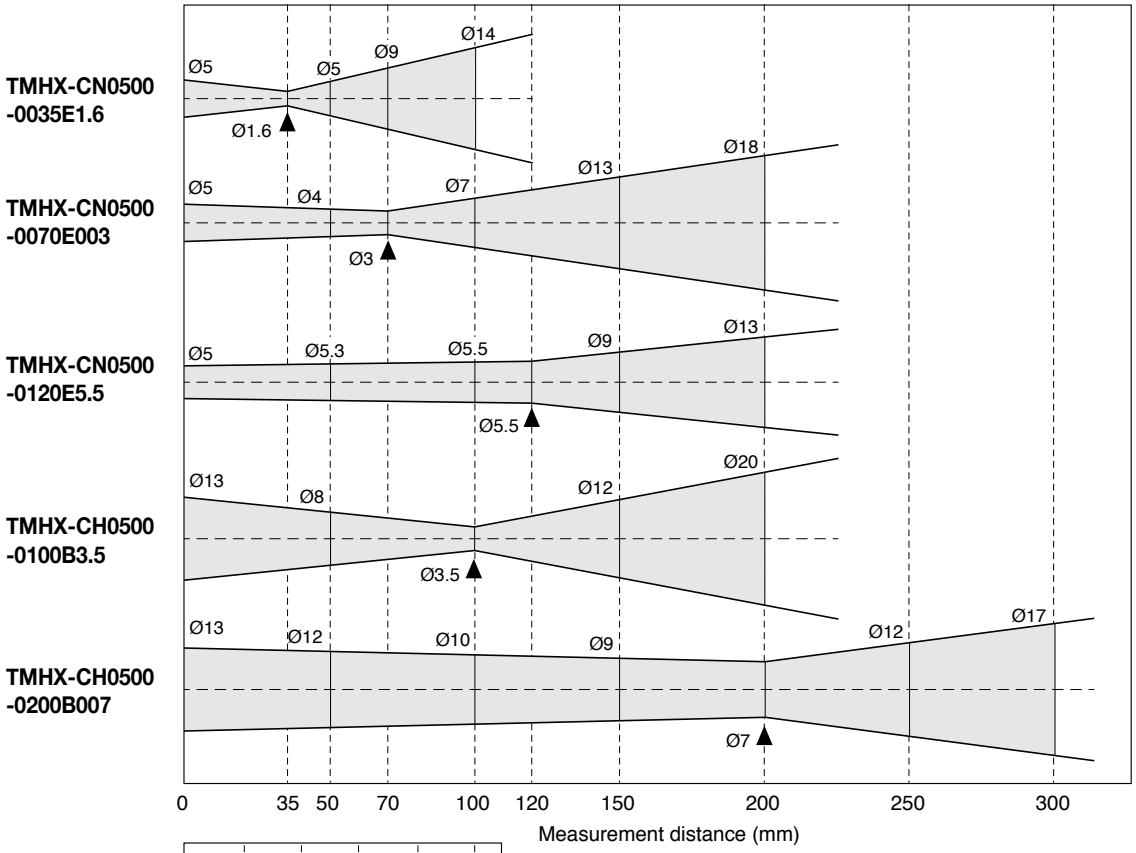
Detective Element	InSb (Indium antimonide)		
Sight	LED Sight(red) *Lights out is possible		
Output	Analog output (Non-isolation)		
	Output type (select)	Output Effective Range	Output Accuracy *Note3
	0 to 1V	More than 30mV	±1.5mV
	mV/°C	More than 30mV (30°C)	±1.5mV
	0 to 20mA	More than 0.2mA	±0.02mA
	4 to 20mA	More than 4.0mA	±0.02mA
	RS232C output (RS232C conformity、Non-isolation)		
	Output swing range ; about±4V Baud rate ; 4800, 9600, 19200, 38400, 57600, 115200 BPS		
	Alarm Output (Non-isolation)		
	One open drain output DC27V, 0.2A Hysteresis setting width ; 0 to 99.9°C		
Peak Hold	Reset Method (selection)	Time Changeable 0.01 to 10 sec Discharge ; Time 0.01 to 10 sec, Level 0.2 to 0.1	
Emissivity	Guaranteed range ; 0.3 to 1.0 Setting range ; 0.05 to 1.000 (Setting resolution 0.001) With reflection correction		
Sensor Correction Function	Span ; 0.500 to 2.000 / Zero ; -50 to +50°C (°F)		
Display	Nothing		
Cable length	2m (Normal)		
Structure	Dust-proof (IP67 equivalency), without the output connector part		
Operating Ambient temp.	0 to 50°C		
Operating Ambient Hum.	30 to 85% RH (without dew drop)		
Storage Temperature	-15 to 70°C		
Supply Voltage	DC4.7 to 27V, 0.1A max.		

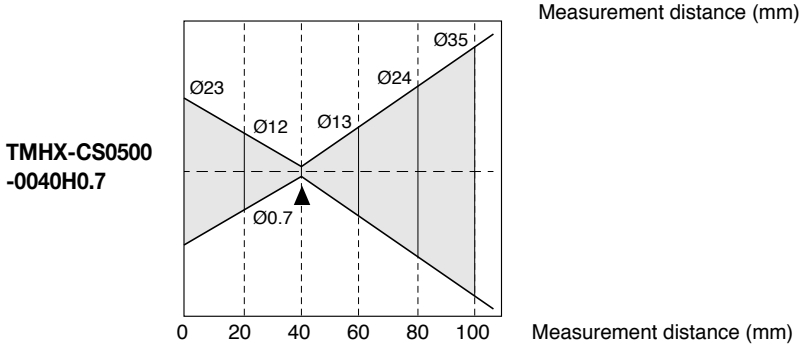
*Note.3 ; The above output accuracy (the static error) is added to the accuracy (temperature).

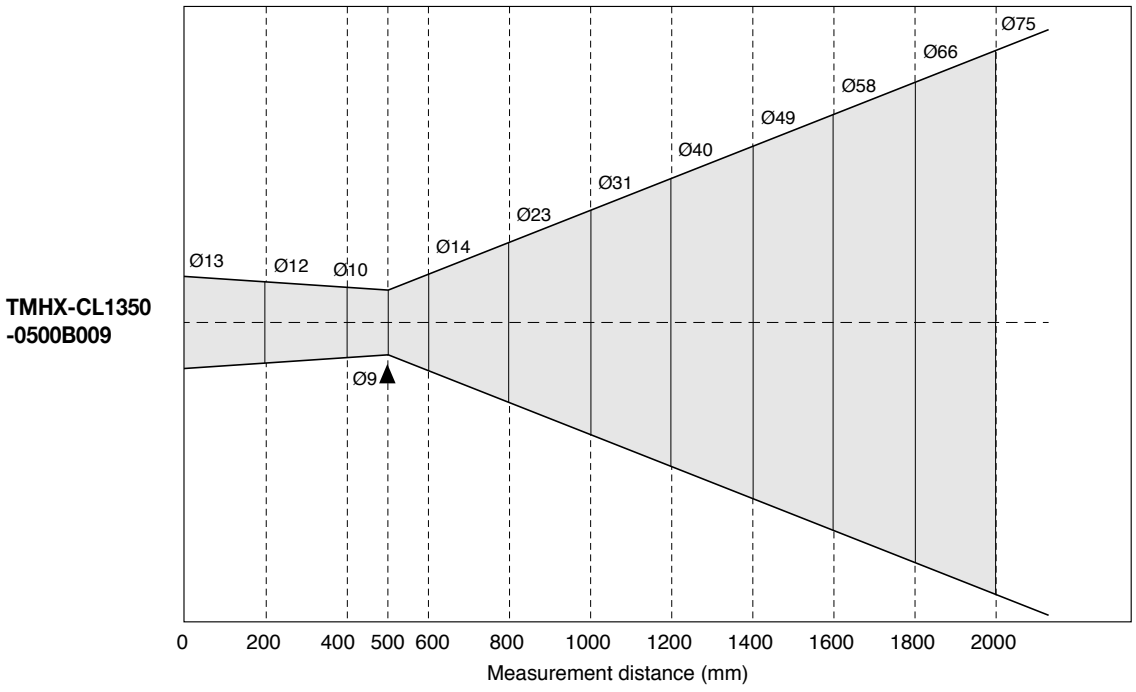
Model option (Add a number to the standard model end)			
Cable length	-00	2m (Normal)	
	-05	5m	
	-10	10m	
Analog output mV/°C 4 to 20mA 0 to 20mA changeable	0	0 to 1V (Normal)	
	5	0 to 5V (Resistor bult-in type)	
	1	0 to 10V (Resistor bult-in type)	
Head connector Only CS type applies	-0	Straight (Normal)	
	-1	Angle	

*Note : 0 (Normal) is delectable

Figure of light path







Movement

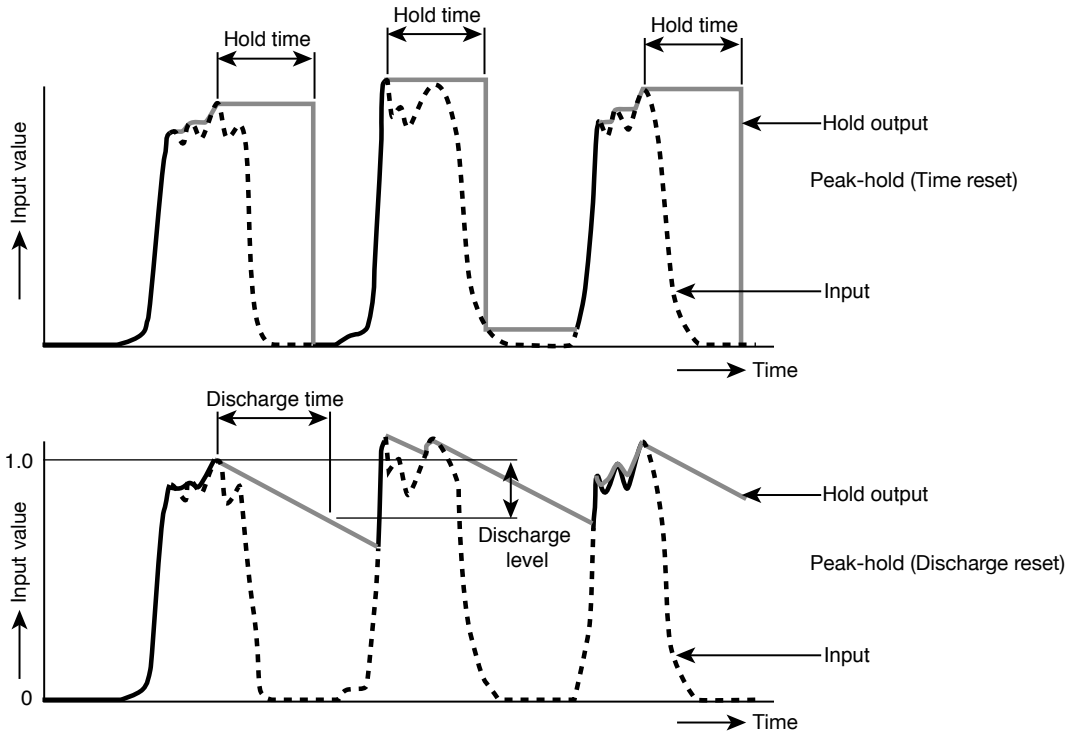
Alarm output movement

Mode No.	Mode name	Measurment temperature
		⇦ Low temperature　Alarm L set value　Alarm H set value　High temperature ⇨
1	Upper On	
2	Upper Off	
3	Lower On	
4	Lower Off	
5	Up-Low On	
6	Up-Low Off	
7	Error On	
8	Error Off	

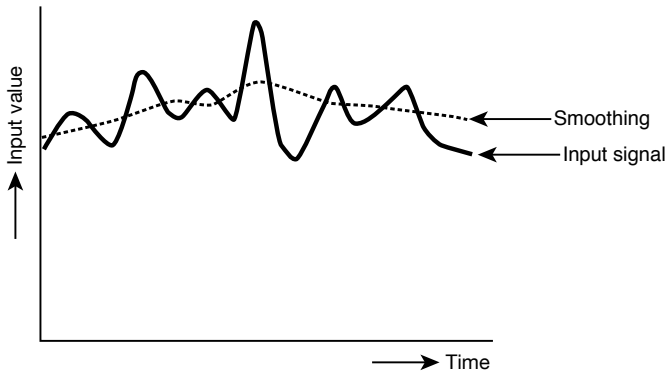
*Error contents：Inner voltage malfunction

ON

Peak-hold movement



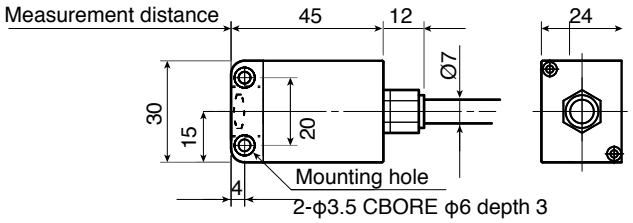
Smoothing movement



Sensor head outward form (mm)

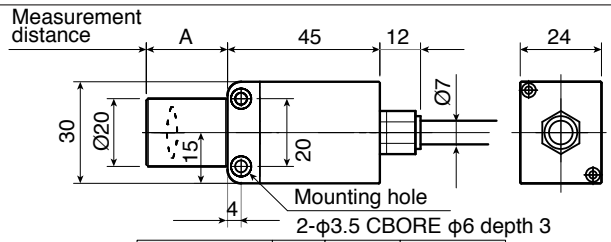
HX-A1

Model : TMHX-CN

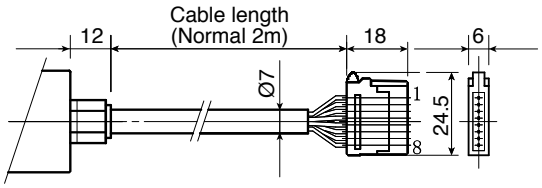


Weight : 60g

HX-A2

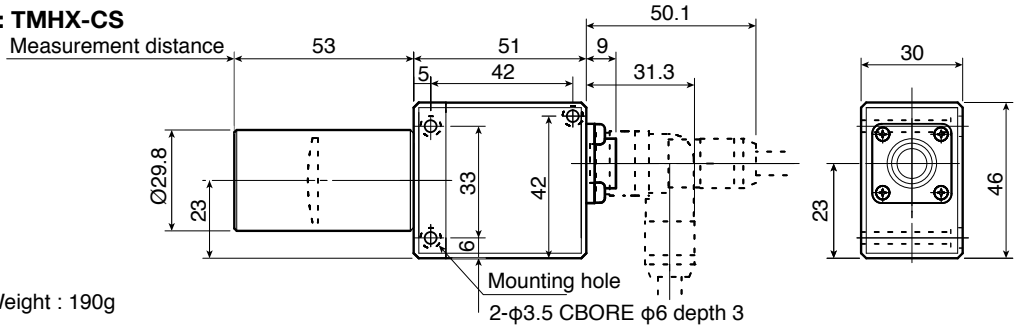


Model	A	Weight	outward
TMHX-CH	24	65g	HX-A2a
TMHX-CL	36	70g	HX-A2b

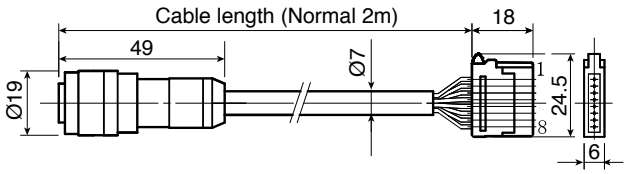


HX-B4

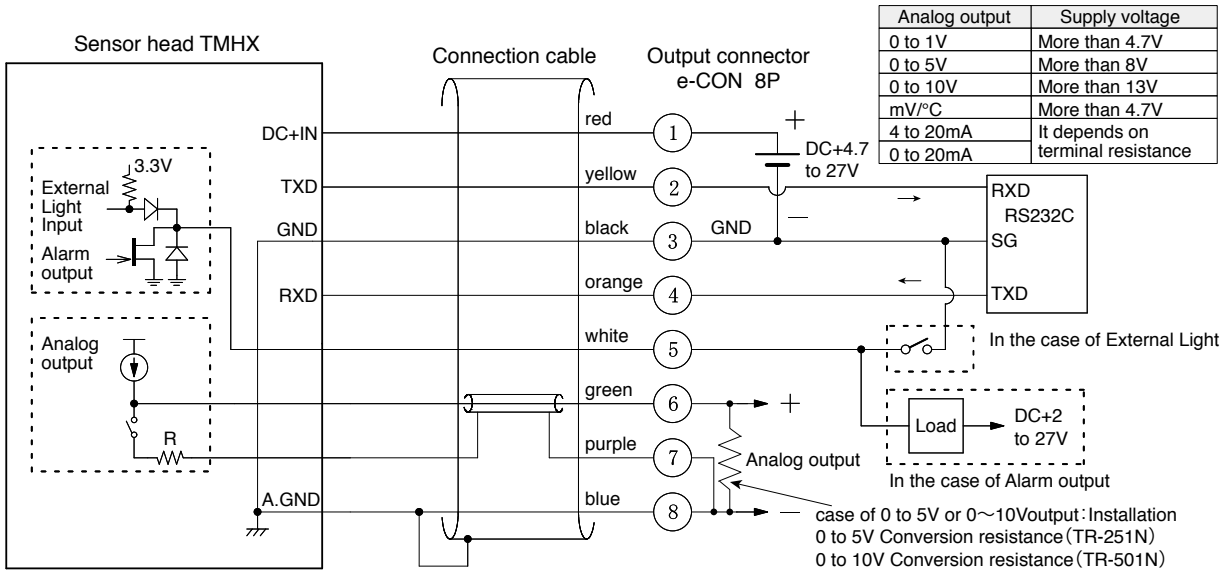
Model : TMHX-CS



Weight : 190g



Connection diagram (In the case of thermometer simple substance use)



Analog output	Supply voltage
0 to 1V	More than 4.7V
0 to 5V	More than 8V
0 to 10V	More than 13V
mV/°C	More than 4.7V
4 to 20mA	It depends on terminal resistance
0 to 20mA	

Accessories

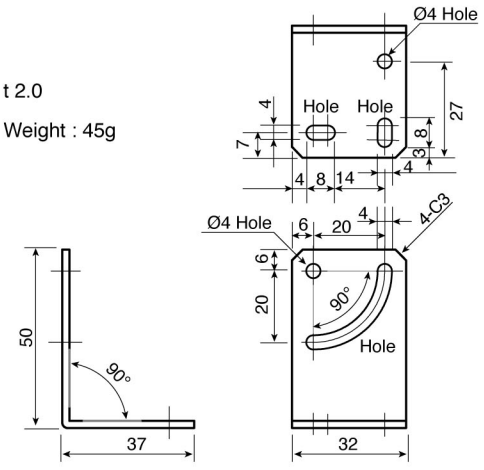
Mounting bracket — TMAX-A

Installation of the sensor head

For TMHX-CN type
For TMHX-CH type
For TMHX-CL type

t 2.0

Weight : 45g



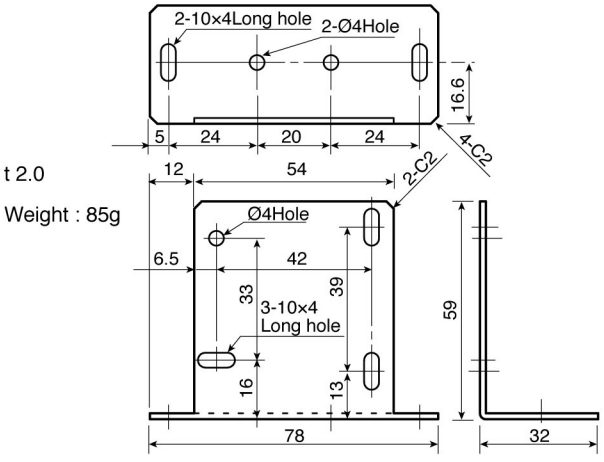
Mounting bracket — TMAX-B

Installation of the sensor head

For TMHX-CS type

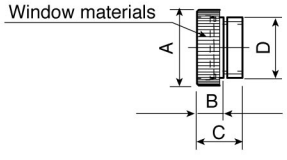
t 2.0

Weight : 85g



Window materials — TMDX-A1C / TMDX-15C

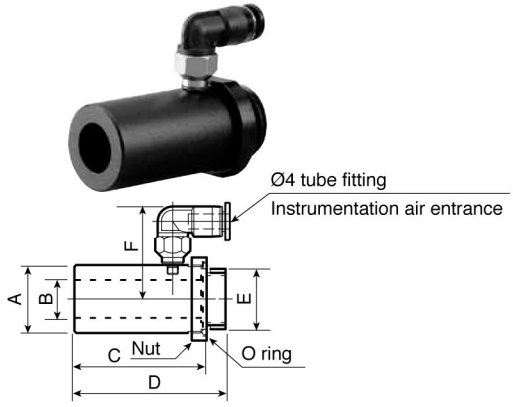
Dirt prevention of the lens



Model	A	B	C	D	Weight	Application thermometer
TMDX-A1C	Ø20.5	7	12	M16P2	6g	TMHX-CN
TMDX-15C	Ø20.5	7	10	M16P0.75	5g	TMHX-CH/CL

Air purge food — TMPX-A1 / TMPX-15

Protection against dust of the lens
Purge of the dust or smoke on the light path

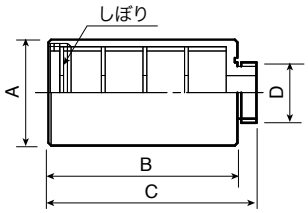


Model	A	B	C	D	E	F	Weight	Application thermometer
TMPX-A1	Ø18	Ø10	35	40	M16P2	24.5	25g	TMHX-CN
TMPX-15	Ø22	Ø18	50	53	M16P0.75	27	35g	TMHX-CH/CL

Accessories

Airless food — TMNX-A1 / TMNX-15

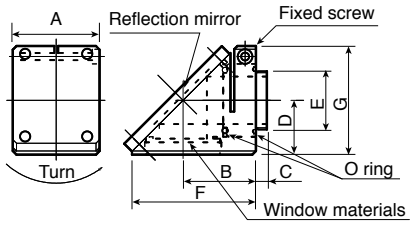
Protection against dust of the lens
Air unnecessary



Model	A	B	C	D	Weight	Application thermometer
TMNX-A1	Ø28	50	54.5	M16P2	50g	TMHX-CN
TMNX-15	Ø40	70.5	73.5	M16P0.75	70g	TMHX-CH/CL

Right angle mirror — TMLX-A1C / TMLX-15C

Bend of the light path
to 90 degrees



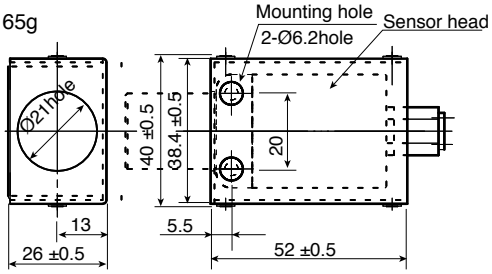
Model	A	B	C	D	E	F	G	Light path length	Weight	Application thermometer
TMLX-A1C	23.8	20	5	14.9	M16P2	34	29.8	34.9	40g	TMHX-CN
TMLX-15C	23.8	20	3	14.9	M16P0.75	34	29.8	34.9	40g	TMHX-CH/CL

Shield case — TMSX-A

Influence reduction of the magnetic field for high frequency heating

For TMHX-CN type
For TMHX-CH type
For TMHX-CL type

Weight : 65g

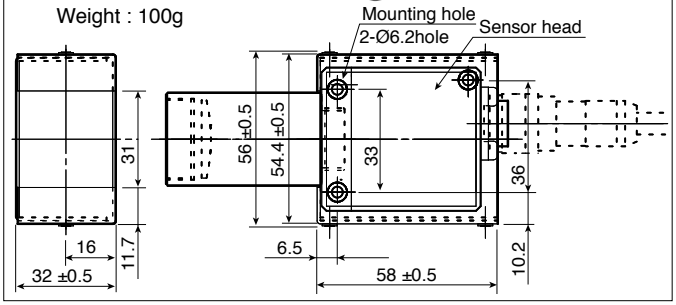


Shield case — TMSX-B4

Influence reduction of the magnetic field for high frequency heating

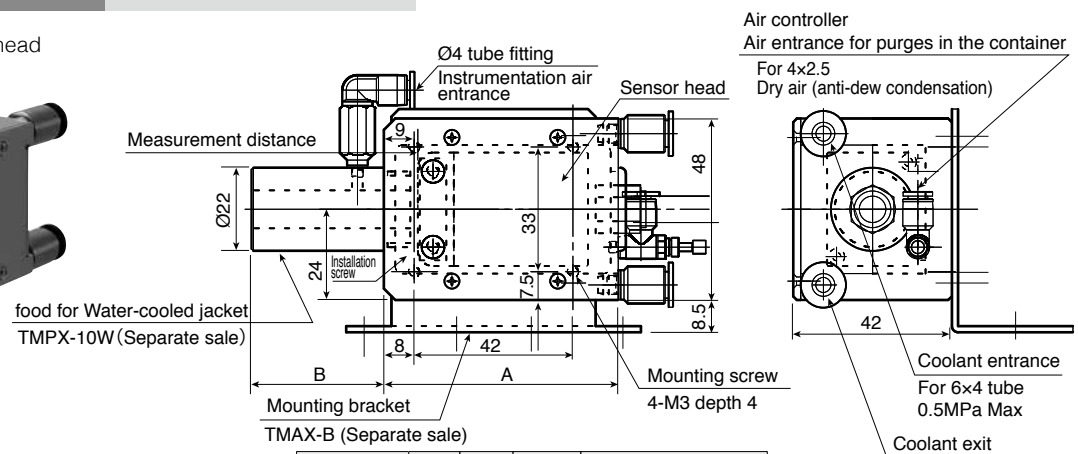
For TMHX-CS type

Weight : 100g



Water-cooled jacket — TMWX-A1 / TMWX-A2

Cooling of the sensor head



Model	A	B	Weight	Application thermometer
TMWX-A1	62	35	475g	TMHX-CN
TMWX-A2	86	50	680g	TMHX-CH

Accessories

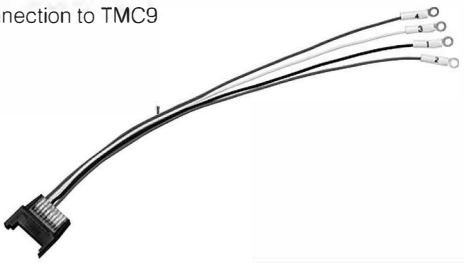
Extension cable — TMBX-E05

For extension of the connection cable (5m)
e-con Female / e-con Male

Divergence cable — TMBX-B01

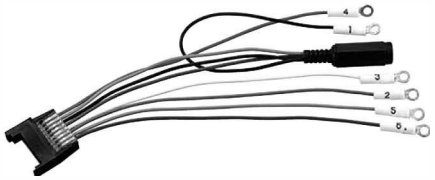
Relay cable for TMC9 — TMBX-R

For connection to TMC9



Relay cable for PWC1 — TMBX-A

For connection to PWC1



Conversion resistance for 0-5V/10V — TR-251N / TR-501N

Analog output
For 0 to 5V (TR-251N)
For 0 to 10V (TR-501N)
Convert from 0-20mA

Terminal condenser for Analog output — TC-105N

For noise measures of the analog output
Connects with the analog signal reception terminate

Ferrite core — FC-2032

For power supply noise measures
Possess the thermometer side of the connection cable

DUE TO CONTINUOUS PRODUCT IMPROVEMENT, THE DESIGN AND TECHNICAL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

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