

TMHX-C series Specifications sheet



Features	General purpose			Minute points		Long distance:500mm
Photo						
Model	TMHX -CNE0500 -0035E1.6	TMHX -CNE0500 -0070E003	TMHX -CNE0500 -0120E5.5	TMHX -CSE0500 -0100E001	TMHX -CSE0500 -0040H0.7	TMHX -CLE1350 -0500B009
Temperature range	<p>0 ~ 500°C</p>			<p>0 ~ 500°C</p>		<p>0 ~ 1350°C</p>
Spectral range	2.0 ~ 6.8μm			2.0 ~ 6.8μm	5.0 ~ 6.8μm	3.0 ~ 5.6μm
Measurement distance	35mm	70mm	120mm	100mm	40mm	500mm
Spot size *2	<p>∅ 1.6mm</p>	<p>∅ 3mm</p>	<p>∅ 5.5mm</p>	<p>∅ 1mm</p>	<p>∅ 0.7mm</p>	<p>∅ 9mm</p>
Accuracy *1	<p>< 300°C: ±3.0°C ≥ 300°C: measured value ±1%</p>			<p>± 5°C</p>	<p>< 300°C: ±3.0°C ≥ 300°C: measured value ±1%</p>	<p>< 300°C: ±3.0°C ≥ 300°C: measured value ±1%</p>
Repeatability *1	±0.5°C			±2°C	±1°C	±1°C
Resolution *1	≤ 0.5°C			<p>< 100°C: ≤ 3°C ≥ 100°C: ≤ 1.5°C</p>	<p>< 50°C: ≤ 1°C ≥ 50°C: ≤ 0.5°C</p>	<p>< 50°C: ≤ 1°C ≥ 50°C: ≤ 0.5°C</p>
Response Time	0.01 ~ 5s (0 ~ 95% analog output) configurable by smoothing function			0.05 ~ 5s (0 ~ 95% analog output) configurable by smoothing function	0.01 ~ 5s (0 ~ 95% analog output) configurable by smoothing function	0.01 ~ 5s (0 ~ 95% analog output) configurable by smoothing function *3
Warm-up time	1min			1min	3min	1min
Dimension category	HX-C1			HX-C2a	HX-D4	HX-C2b
Weight (cable not included)	80g			85g	190g	90g
Cable	2m Direct leading out			2m Direct leading out	2m With a connector	2m Direct leading out
Accessory category	A			B	C	B *4

*1	Ambient temperature 23±5°C, Emissivity 1.0, Averaging time 0.05s.
*2	Check the optics diagrams for spot sizes outside of the ranges in the measurement distance section above. It shows the area where 90% of the total energy is included.
*3	The response time may be longer by 0.001s when switching the internal range.
*4	Water cooling jacket the TMWX-A3 is available.



Features	Quick response : 1ms		Ultra quick response : 0.1ms	Glass					
	Photo								
Model	TMHX -CHE0500 -0100B3.5	TMHX -CHE0500 -0200B007	TMHX -CUE0500 -0200H008	TMHX -CGE1200 -0180E007	TMHX -CGE1200 -0500E020	TMHX -CGE2400 -0150H2.2	TMHX -CGE2400 -0300H4.5	TMHX -CGE2400 -1500H020	
Temperature range	 0 ~ 500°C		 0 ~ 500°C	 50 ~ 1200°C		 50 ~ 2400°C			
Spectral range	2.0 ~ 6.8μm		2.0 ~ 6.8μm	5.0 ~ 5.6μm					
Measurement distance	100mm	200mm	200mm	180mm	500mm	150mm	300mm	1500mm	
Spot size *2	 ø 3.5mm	 ø 7mm	 ø 8mm	 ø 7mm	 ø 20mm	 ø 2.2mm	 ø 4.5mm	 ø 20mm	
Accuracy *1	< 350°C: ±3.5°C ≥ 350°C: measured value ±1%		< 400°C: ±4.0°C ≥ 400°C: measured value ±1%	< 300°C: ±3.0°C ≥ 300°C: measured value ±1%		< 300°C: ±3.0°C ≥ 300~1200°C: measured value ±1% ≥ 1200°C: measured value ±2% *5			
Repeatability *1	±1°C		±0.5°C	±1°C		Measured value ±0.2% ±2°C			
Resolution *1	< 50°C: ≤ 1.5°C ≥ 50°C: ≤ 0.7°C		< 50°C: ≤ 4°C ≥ 50°C: ≤ 3°C	< 100°C : ≤ 1°C ≥ 100°C : ≤ 0.5°C					
Response Time	0.001 ~ 5s (0~95% analog output) configurable by smoothing function		0.0001 ~ 5s (0~95% analog output) configurable by smoothing function	0.05 ~ 5s (0~95% analog output) configurable by smoothing function *3		0.01 ~ 5s (0~95% analog output) configurable by smoothing function *4			
Warm-up time	1 min		3 min	1 min		3 min			
Dimension category	HX-C2a		HX-D4	HX-C1		HX-D4			
Weight (cable not included)	85g		190g	80g		190g			
Cable	2m Direct leading out		2m With a connector	2m Direct leading out		2m With a connector			
Accessory category	B		C	A		C			

*1	Ambient temperature 23±5°C, Emissivity 1.0, Averaging time 0.001s.	Ambient temperature 23±5°C, Emissivity 1.0, Averaging time 0.0001s.	Ambient temperature 23±5°C, Emissivity 1.0, Averaging time 0.05s.					
*2	Check the optics diagrams for spot sizes outside of the ranges in the measurement distance section above. It shows the area that 90% of the total energy is included.							
*3	The response time may be longer by 0.001s when switching the internal range.							
*4	The response time may be longer by 0.002s when switching the internal range.							
*5	Accuracy not guaranteed for the temperature higher than 2,000°C.							



Features	Mirror surface		Film	Through quartz		Lamp heating	Through flame	Flame detection
Photo								
Model	TMHX -CME0250 -0020E004	TMHX -CME0250 -0050H003	TMHX -CFE0350 -0200E012	TMHX -CQE0500 -0200E011	TMHX -CQE0500 -0200H004	TMHX -CPE1200 -0180E007	TMHX -CVE1300 -0200H4.5	TMHX -CBE1500 -0300E018
Temperature range	 1500°C 1000°C 500°C 0°C 50 ~ 250°C		 80 ~ 350°C	 50 ~ 500°C		 0 ~ 1200°C	 200 ~ 1300°C	 150 ~ 1500°C
Spectral range	2 ~ 6.8μm		3.4μm	3.0 ~ 4.0μm	2.8 ~ 3.9μm	5.0 ~ 6.8μm	3.9μm	4.3μm
Measurement distance	20mm *Note5	50mm *Note5	200mm	200mm		180mm	200mm	300mm
Spot size *2	 ∅ 4mm	 ∅ 3mm	 ∅ 12mm	 ∅ 11mm	 ∅ 4mm	 7mm	 ∅ 4.5mm	 ∅ 18mm
Accuracy *1	±5°C	±4°C	±4°C	< 300°C: ±3.0°C ≥ 300°C: measured value ±1%	< 300°C: ±4.0°C ≥ 300°C: measured value ±1.5%	< 300°C: ±3.0°C ≥ 300°C: measured value ±1%	< 300°C: ±3.0°C ≥ 300~1200°C: measured value ±1% ≥ 1200°C: measured value ±2%	none
Repeatability *1	±2°C		±1°C	±1°C		±0.5°C	Measured value ±0.2% ±0.2°C	±5°C
Resolution *1	≤ 2°C		< 120°C: ≤ 1°C ≥ 120°C: ≤ 0.5°C	< 100°C: ≤ 1°C ≥ 100°C: ≤ 0.5°C	≤ 0.5°C	≤ 0.5°C	< 300°C: ≤ 1°C ≥ 300°C: ≤ 0.5°C	≤ 1°C
Response time	0.05 ~ 5s (0~95% analog output) configurable by smoothing function		0.05 ~ 5s (0~95% analog output) configurable by smoothing function	0.05 ~ 5s (0~95% analog output) configurable by smoothing function *3		0.01 ~ 5s (0~95% analog output) configurable by smoothing function *3	0.01 ~ 5s (0~95% analog output) configurable by smoothing function *4	0.05 ~ 5s (0~95% analog output) configurable by smoothing function
Warm-up time	3 min		1 min	1 min	3 min	1 min	3 min	1 min
Dimension category	HX-C1 + Light shielding hood	HX-D5	HX-C1	HX-C1	HX-D4	HX-C1	HX-D4	HX-C1
Weight (cable not included)	110g	210g	80g	80g	190g	80g	190g	80g
Cable	2m Direct leading out	2m With a connector	2m Direct leading out	2m Direct leading out	2m With a connector	2m Direct leading out	2m With a connector	2m Direct leading out
Accessory category	A	C	A	A	C	A	C	A

*1	Ambient temperature 23±5°C, Emissivity 0.05, Averaging time 0.5s.	Ambient temperature 23±5°C, Emissivity 1.0, Averaging time 0.5s.	Ambient temperature 23±5°C, Emissivity 1.0, Averaging time 0.1s.		Ambient temperature 23±5°C, Emissivity 1.0, Averaging time 0.05s.	Ambient temperature 23±5°C, Emissivity 1.0, Averaging time 0.05s.	Ambient temperature 23±5°C, Emissivity 1.0, Averaging time 1s.	
*2	Check the optics diagrams for spot sizes outside of the ranges in the measurement distance section above. It shows the area that 90% of the total energy is included							
*3	The response time may be longer by 0.001s when switching the internal range.							
*4	The response time may be longer by 0.002s when switching the internal range.							
*5	Valid measurement distance; ±10mm.							

Common Specifications

Detective Element	InSb (Indium antimonide)	
Sight	Red LED sight *switchable on/off	
Output	Analog output (non-isolated)	
	Output type (selective)	Output Range
	0 ~ 1V	≥ 30mV
	mV/°C	≥ 30mV (30°C)
	0 ~ 20mA	≥ 0.2mA
	4 ~ 20mA	≥ 4.0mA
	Output Accuracy *1	
	±1.5mV	
±1.5mV		
±0.02mA		
±0.02mA		
RS232C output (non-isolated)		
output swing: approx. ±4V baud rate: 4800, 9600, 19200, 38400, 57600, 115200bps		
Alarm output (non-isolated)		
open-drain: 27VDC, 0.2A hysteresis: 0 ~ 99.9°C		
Peak Hold	reset (switchable)	time: 0.01 ~ 10s (configurable) discharge: time 0.01 ~ 10s, level 0.2 ~ 1.0
Emissivity correction	guaranteed range ; 0.3 ~ 1.0 *2 setting range ; 0.05 ~ 1.000 (setting resolution:0.001) ☉ reflected correction function	
Sensor correction function	span:0.500 ~ 2.000 / zero: -50 ~ +50(°C or °F selectable)	
Temperature indication	none	
Cable length	2m (standard)	
Protection class	same quality as IP67, not included:e-con connector	
Ambient temperature	0 ~ 50°C *3	
Ambient humidity	30 ~ 85%RH (non-condensing)	
Storage temperature	-15 ~ 70°C *3	
Supply voltage	DC4.7 ~ 27V、 0.1A max.	

CE Aquired CE marking (EMC EN61326-1:2013,RoHS EN50581:2012)

*1 : Static error is reflected in the accuracy rating.

*2 : The TMHX-CME, guaranteed range is 0.05 ~ 1.0.

*3 : The TMHX-CME250-0020E004, ambient temperature 0 ~ 70°C, storage temperature -15 ~ 80°C.

Ordering information	Cable length	-00	2m (standard)	Analog output mV/°C 4 - 20mA 0 - 20mA switchable	0	0 ~ 1V (standard)
		-05	5m		5	0 ~ 5V (built-in resistor)
		-10	10m		1	0 ~ 10V (built-in resistor)

Operations

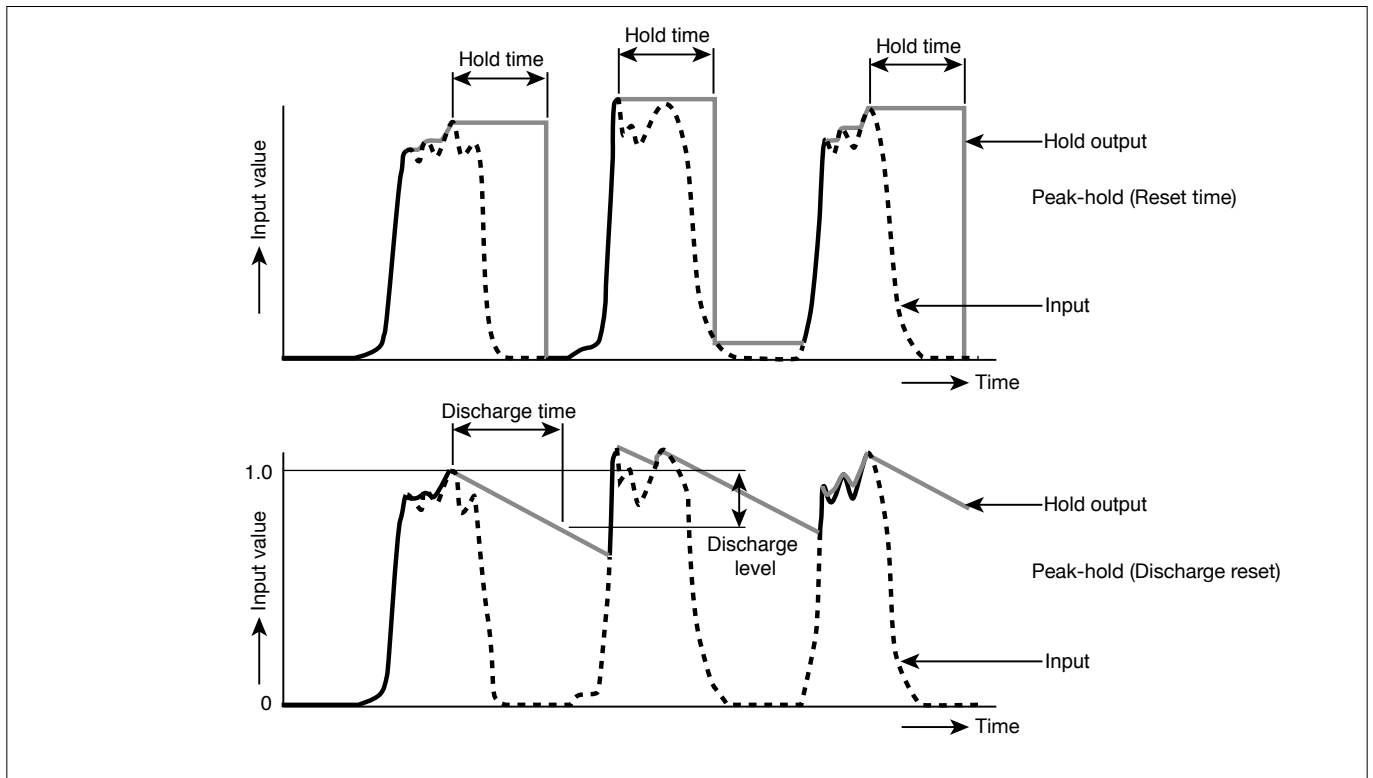
Alarm outputs

Mode No.	Alarm name	Measurement temperature			
		← Low	Low set point	High set point	High →
1	High ON				█
2	High OFF	█			
3	Low ON	█			
4	Low OFF		█		
5	Band ON		█		
6	Band OFF	█			█
7	Error ON	█			█
8	Error OFF				

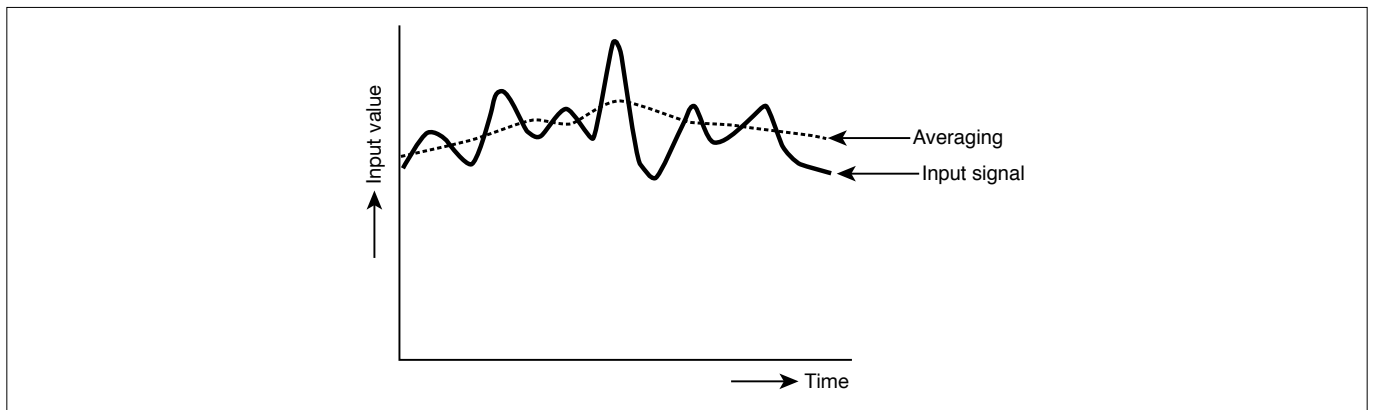
*Error : an inner voltage malfunction

ON █

Peak-hold operation

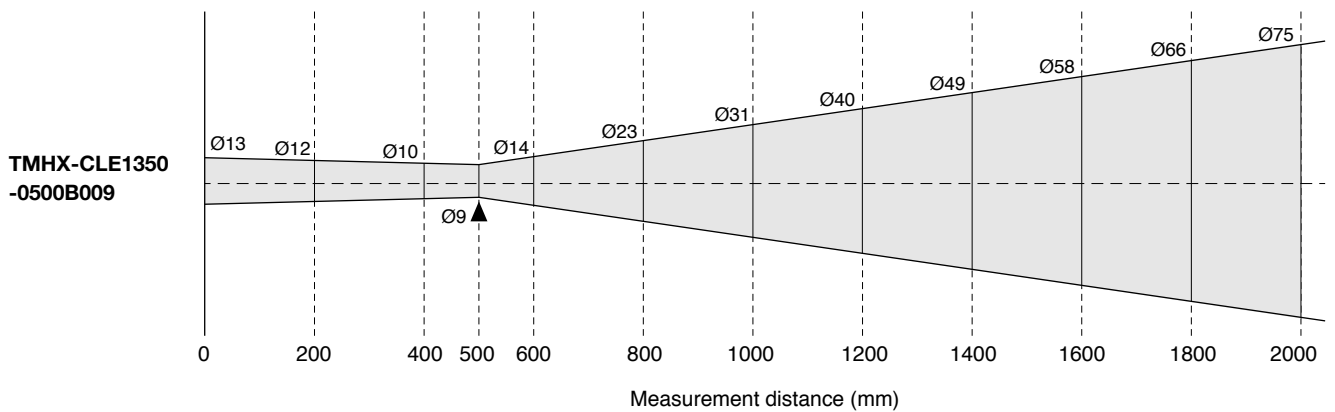
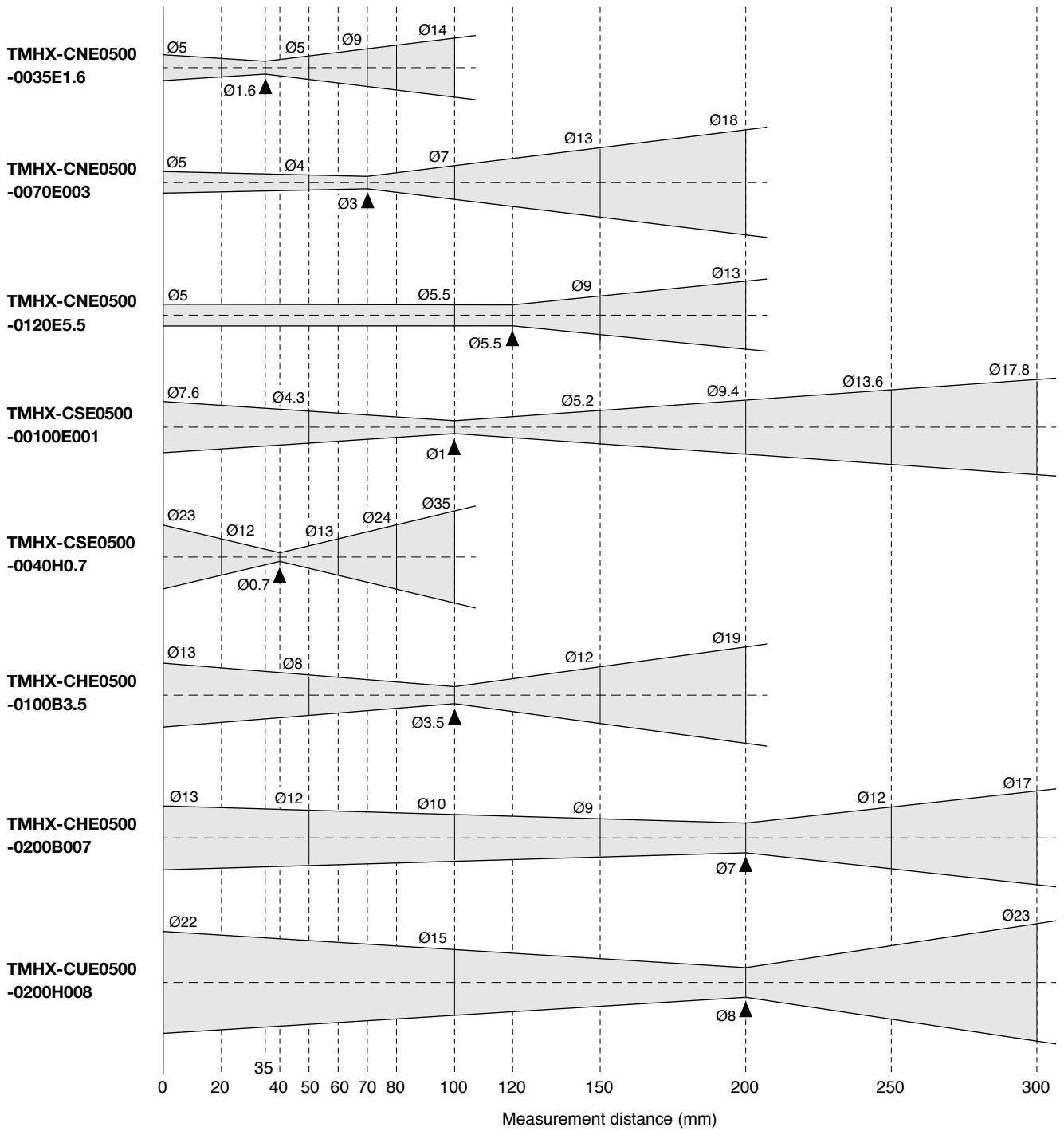


Averaging time



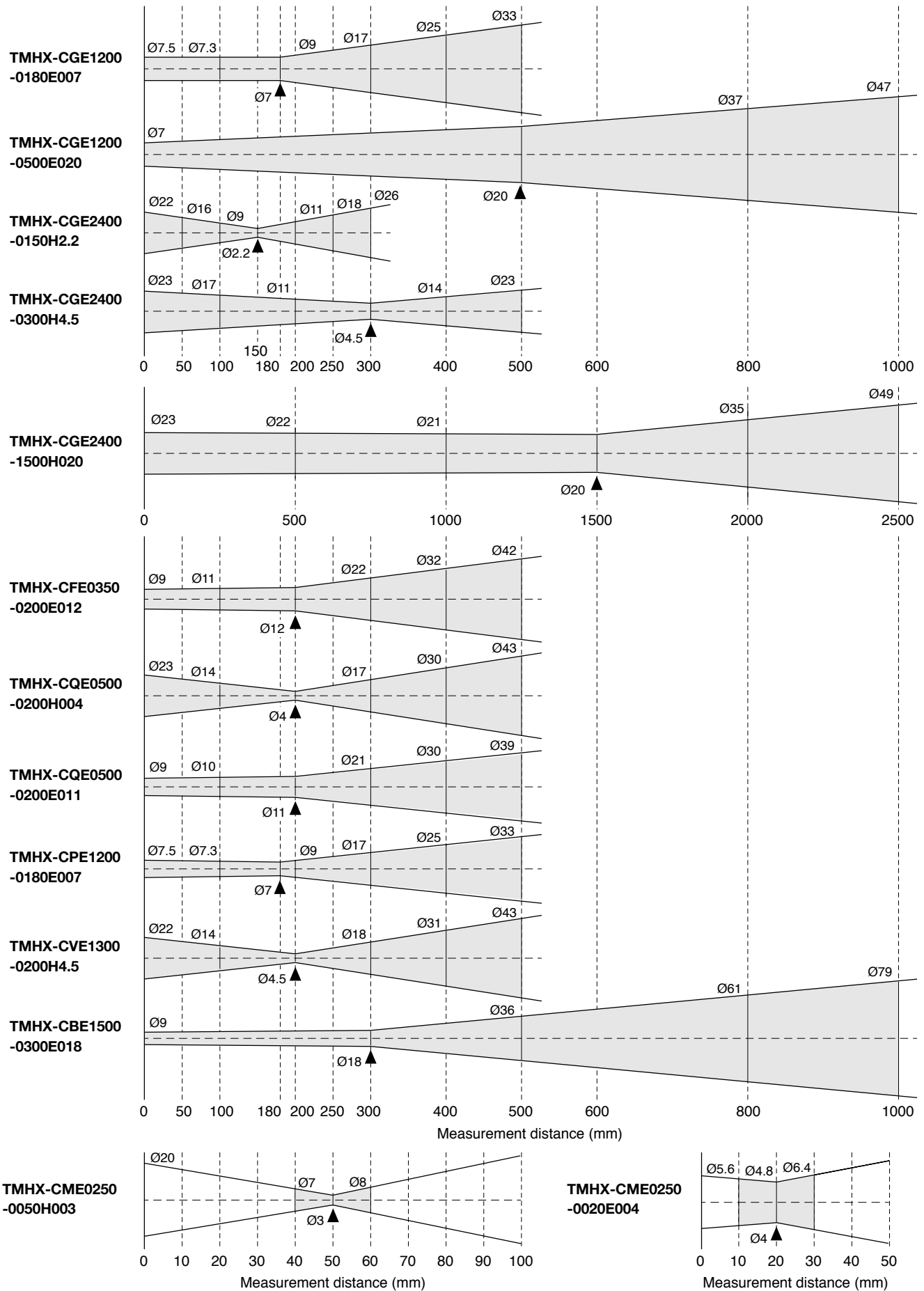
Optics diagram

It shows the area that 90% of the total energy is included.



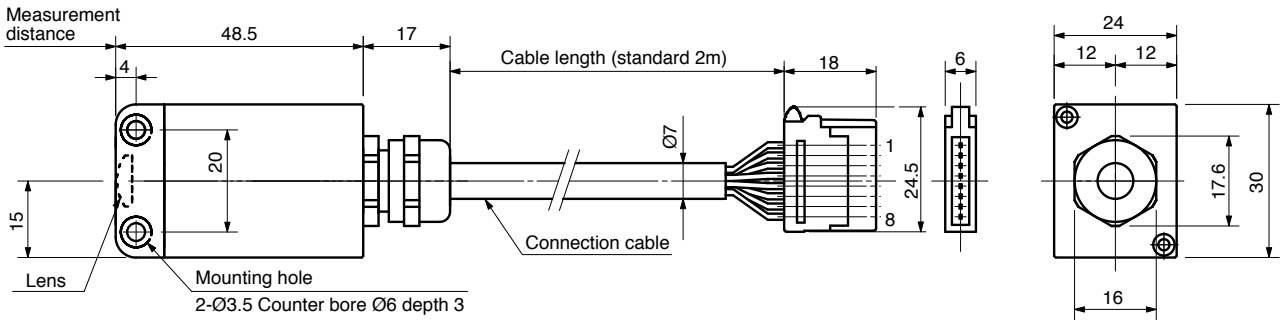
Optics diagram

It shows the area that 90% of the total energy is included.



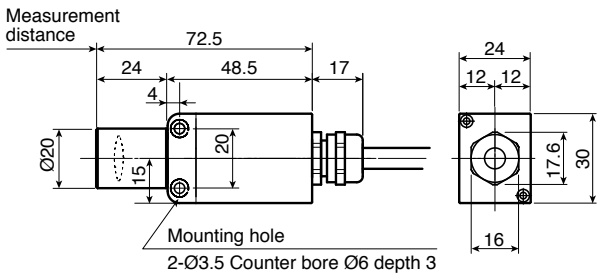
Sensor head dimensions (mm)

HX-C1



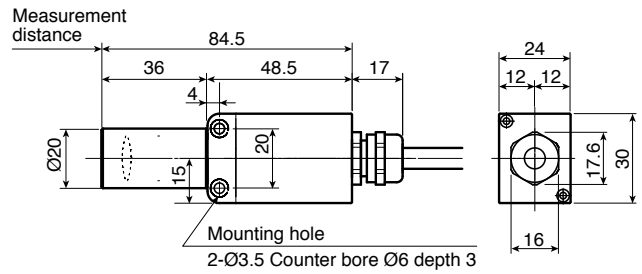
Weight: Sensor head 80g, Cable 150g

HX-C2a



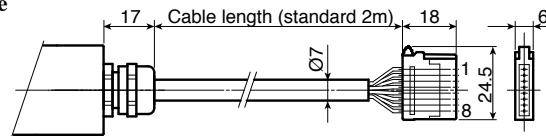
Weight: Sensor head 85g

HX-C2b



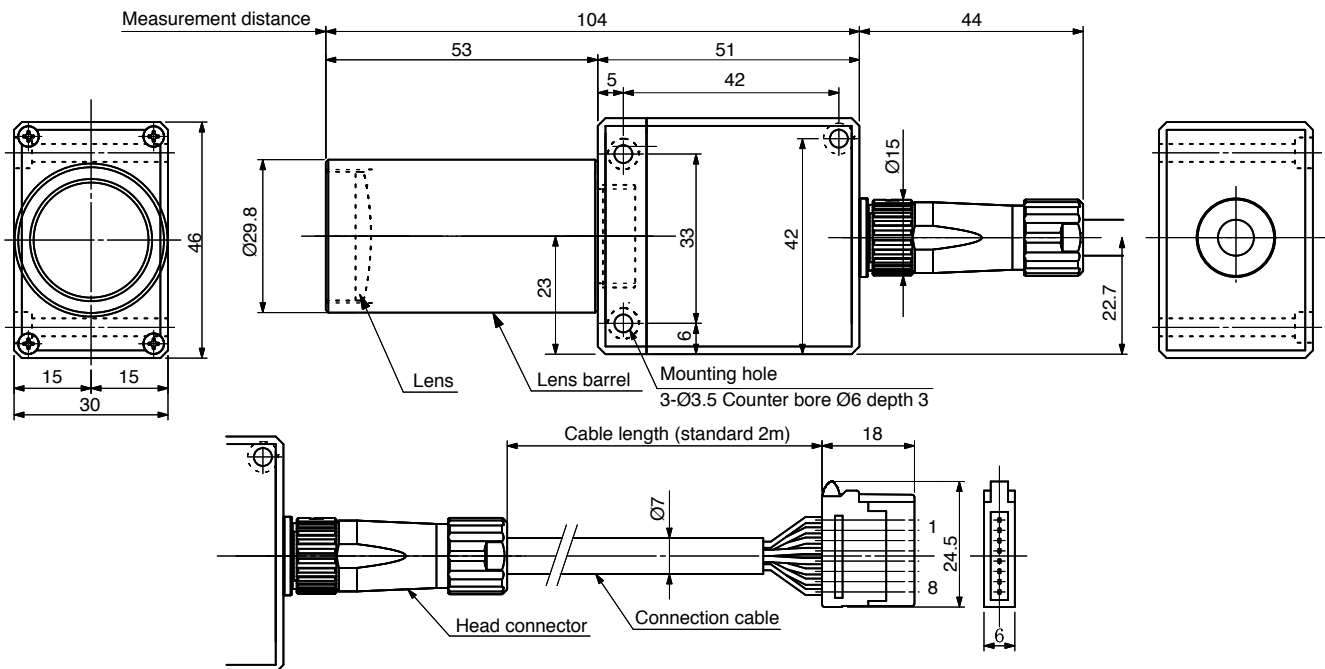
Weight: Sensor head 90g

HX-C2a / HX-C2b Alternative cable



Weight: Cable 150g

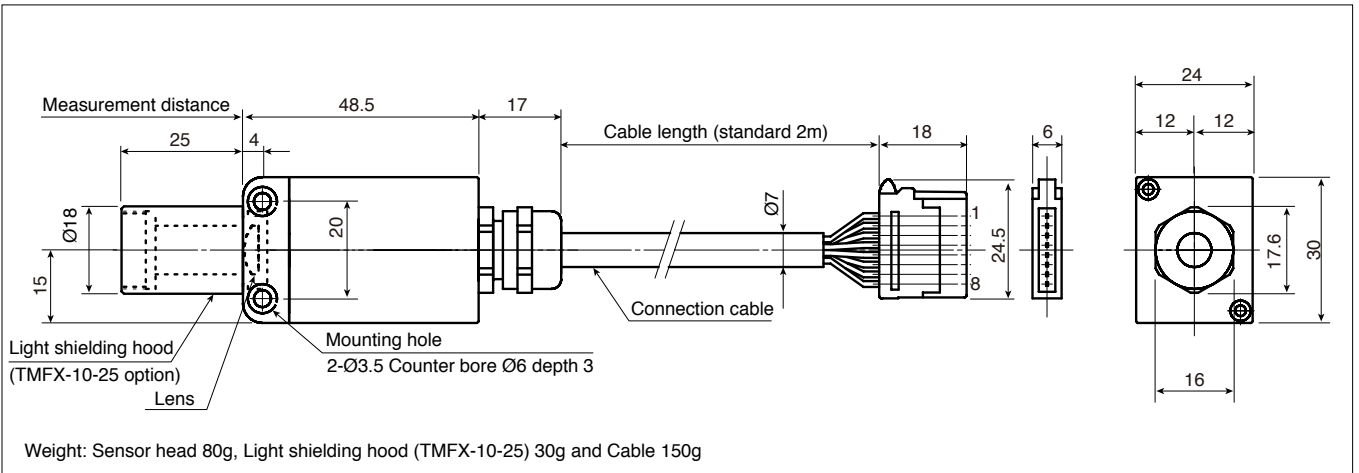
HX-D4



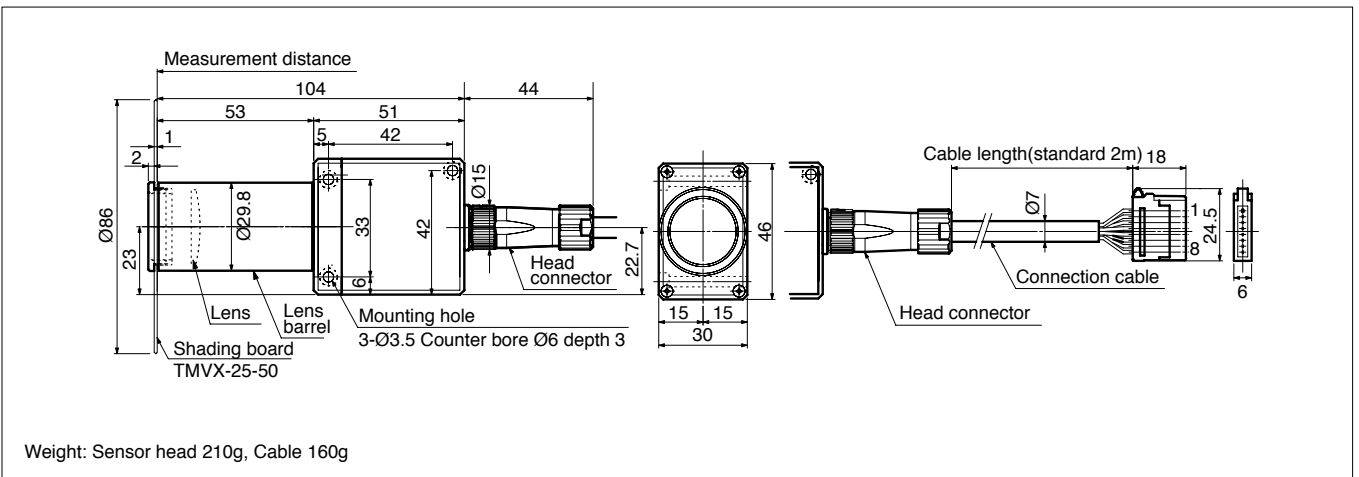
Weight: Sensor head 190g, Cable 160g

Sensor head dimensions (mm)

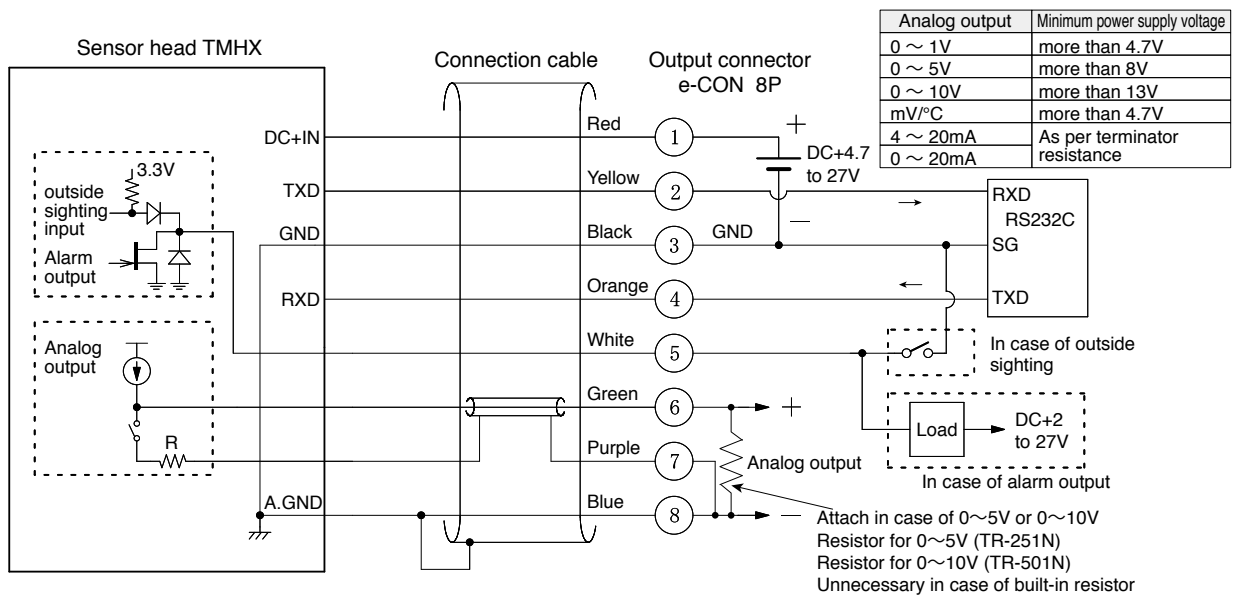
HX-C1+Shading hood



HX-D5



Wiring (in case the thermometer is used alone)



Accessories

Mounting bracket TMAX-A

Bracket for sensor head installation Accessory : A,B

t 2.0
Weight : 45g

Mounting bracket TMAX-B

Bracket for sensor head installation Accessory : C

t 2.0
Weight : 85g

Protective window TMDX-A1C / TMDX-15C / TMDX-25C

Use with the lens to prevent contamination and damage.

Model	A	B	C	D	Accessories
TMDX-A1C	Ø20.5	7	12	M16P2	A
TMDX-15C	Ø20.5	7	10	M16P0.75	B
TMDX-25C	Ø30.5	9	12	M26P0.75	C

Air purge hood TMPX-A1 / TMPX-15 / TMPX-25

Use with the lens to prevent dust and condensation.

Model	A	B	C	D	E	F	Accessories
TMPX-A1	Ø18	Ø10	35	40	M16P2	24.5	A
TMPX-15	Ø20	Ø17	50	53	M16P0.75	27	B
TMPX-25	Ø30	Ø25	75	79	M26P0.75	32	C

Airless dust protector TMNX-A1 / TMNX-15 / TMNX-25

Use with the lens to prevent dust. No air supply required.

Model	A	B	C	D	Accessories
TMNX-A1	Ø28	50	54.5	M16P2	A
TMNX-15	Ø40	70.5	73.5	M16P0.75	B
TMNX-25	Ø66	107	112.5	M26P0.75	C

Right angle mirror TMLX-A1C / TMLX-15C / MLX-25C

Reflects sensor field of view by 90 degrees.


Model	A	B	C	D	E	F	G	Optical path	Accessories
TMLX-A1C	23.8	20	5	14.9	M16P2	34	29.8	34.9	A
TMLX-15C	23.8	20	3	14.9	M16P0.75	34	29.8	34.9	B
TMLX-25C	36	30	5	22	M26P0.75	50	45	52	C

Accessories

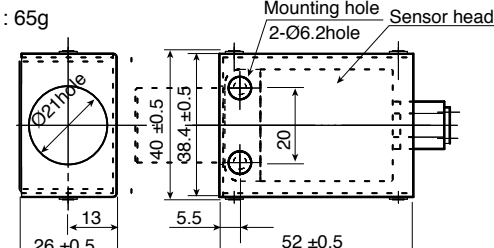
Shield case **TMSX-A**

Use with the sensor head to protect from electromagnetic at applications such as high frequency heating.

Accessory : A,B



Weight : 65g


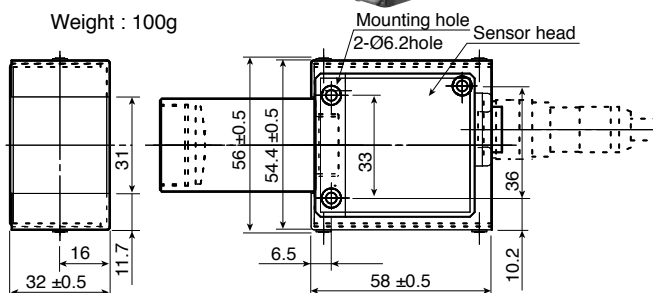


Shield case **TMSX-B4**

Use with the sensor head to protect from electromagnetic at applications such as high frequency heating.


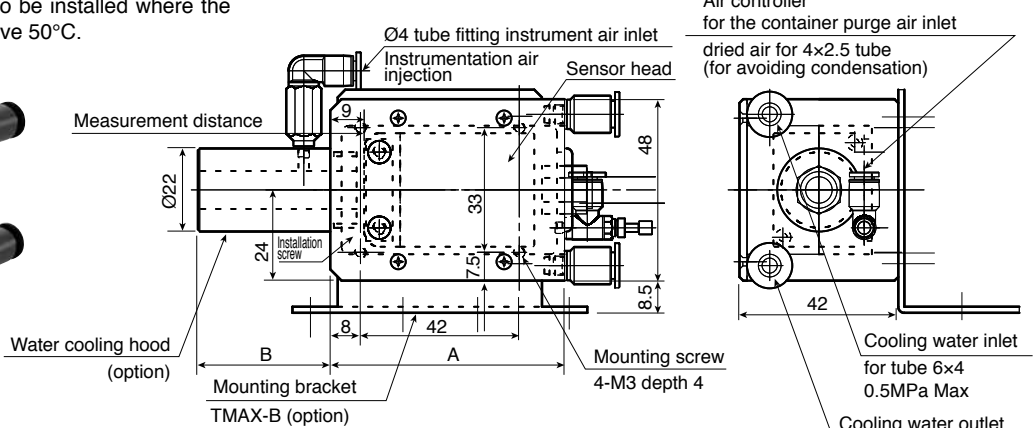
Accessory : C

Weight : 100g

Water cooling jacket **TMWX-A1 / TMWX-A2 / TMWX-A3**

Use with the sensor head to be installed where the ambient temperature is above 50°C.


Model	A	B	Accessories	Hood Model
TMWX-A1	62	35	A	TMPX-10W
TMWX-A2	86	50	B ※	TMPX-15W
TMWX-A3	98	50	TMHX-CLE	TMPX-15W

※not included : TMHX-CLE

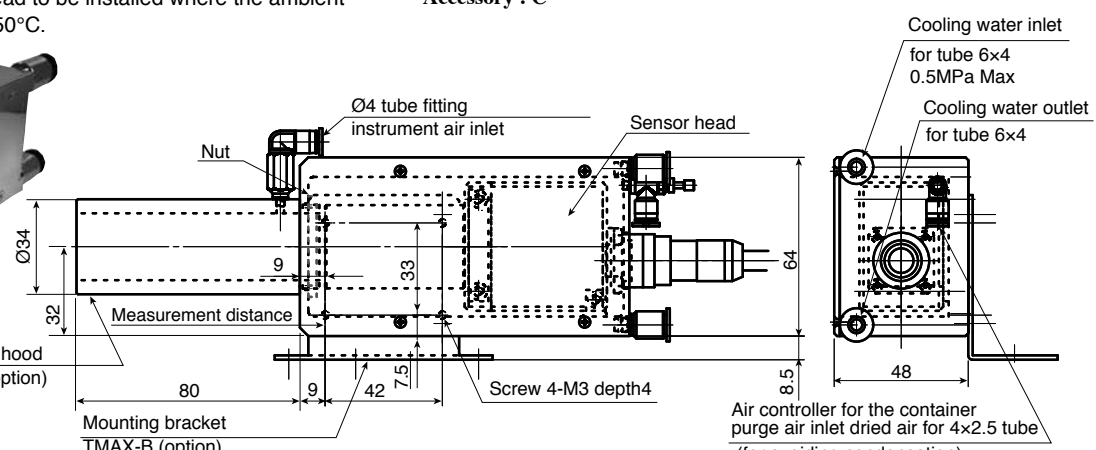
Water cooling jacket **TMWX-B4**

Use with the sensor head to be installed where the ambient temperature is above 50°C.


Accessory : C





*Image

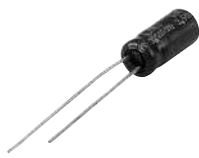



Accessories

Extension cable	TMBX-E05
Extension cable : 5m e-con female / e-con male	Accessory : A,B,C
	
Weight : 390g	

Branch cable	TMBX-B01
For setting unit when thermometer is used alone. e-con branch	Accessory : A,B,C
	
Weight : 85g	

Resistor	TR-251N / TR-501N
Analog output TR-251N : 0 ~ 5V TR-501N : 0 ~ 10V To change from current to voltage : 0 ~ 20mA	Accessory : A,B,C
	
Weight : 0.5g	

Capacitor	TC-105N
Noise suppressor for analog.	Accessory : A,B,C
	
Weight : 0.5g	

Ferrite core	FC-2032
For power noise. Install to cables.	Accessory : A,B,C
	
Weight : 23g	

•The contents described in this catalog are subject to change for improvement without notice.

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•If you have any questions, contact us at the address or links shown below.