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TH SERIES

Related Information

- General terms and conditions..... F-7
- Sensor selection guide..... P.885~
- General precautions..... P.1501



panasonic.net/id/pidsx/global

Quick, non-contact detection of hot melt glue (infrared)

ORDER GUIDE

Type	Appearance		Sensing range	Set model No.	Output
	Sensor head	Controller			
Spot			 40 ±10 mm 1.575 ±0.394 in	TH-11CS	NPN open-collector transistor
Long sensing range			 10 to 300 mm 0.394 to 11.811 in (Note)	TH-12CS	NPN open-collector transistor
				TH-12CPS	PNP open-collector transistor

Note: Teaching is possible for this sensing range.
 However, the sensing range varies with the size of the sensing object and its temperature, ambient temperature, etc.

A sensor head and its respective controller comprise a set. Make sure to use the sensor head and the controller specified in the set model No. together as a set.
 [Please refer to "SPECIFICATIONS (p.946, 947)" for more details.]

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- Hot Melt Glue Detection
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- Small / Slim Object Detection
- Obstacle Detection
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SPECIFICATIONS**TH-11CS**

Spot type

Sensor head

Item	Model No.	TH-11
Applicable controller		TH-C1
Sensing range		40 ±10 mm 1.575 ±0.394 in
Sensing object		ø3 mm ø0.118 in or more hot melt glue (emissivity 0.9) at +85 °C +185 °F or more, under ambient temperature of +25 °C +77 °F (Note 2)
Ambient temperature		0 to +50 °C +32 to +122 °F (No dew condensation), Storage: -10 to +60 °C +14 to +140 °F
Visible targeting		Red LED
Material		Enclosure: Polycarbonate, Front cover: Sapphire glass
Weight		Net weight: 77 g approx.
Accessories		MS-TH-1 (Sensor head mounting bracket): 1 set, TH-B1 (Heat shield): 1 pc.

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C **+68 °F**.
 2) A hot melt drop at +60 °C **+140 °F** or higher can be detected if it is ø5 mm **ø0.197 in** or more.

Controller

Item	Model No.	TH-C1
Applicable sensor head		TH-11
Supply voltage		12 to 24 V DC ±10 % Ripple P-P 10 % or less
Current consumption		100 mA or less
Outputs (OUT 1, OUT 2)		NPN open-collector transistor <ul style="list-style-type: none"> • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1 V or less (at 100 mA sink current) 0.4 V or less (at 16 mA sink current)
Output operation		OUT 1: ON when hot melt adhesive is detected (Max. 1 sec. approx.), OUT 2: ON when the evaluated result is NG (Max. 1 sec. approx.)
Response time (operation freq.)		1 ms or less (1 to 200 Hz)
Warm-up time		40 sec. approx.
Sensitivity setting		Teaching method (Push-button operation)
Level storage function		Sensitivity levels of eight channels can be stored.
External channel select function		Incorporated
Timer function		Incorporated with approx. 40 ms fixed OFF-delay timer, switchable either effective or ineffective
Ambient temperature		0 to +50 °C +32 to +122 °F (No dew condensation), Storage: -10 to +60 °C +14 to +140 °F
Material		Enclosure: Heat-resistant ABS, Terminal cover: Heat-resistant ABS, Front cover: Polycarbonate
Weight		Net weight: 200 g approx.

Note: Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C **+68 °F**.

FIBER
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DetectionLiquid Level
DetectionWater
DetectionColor Mark
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SPECIFICATIONS

TH-12CS TH-12CPS Long sensing range type

Sensor head

Item	Model No.	TH-12
Applicable controllers		TH-C2, TH-C2P
Sensing range		10 to 300 mm 0.394 to 11.811 in (Note 2)
Sensing object		ø6 mm ø0.236 in (equivalent to 3 × 10 mm 0.118 × 0.394 in) or more hot melt glue (emissivity 0.9) at +100 °C +212 °F or more, under ambient temperature of +25 °C +77 °F
Pollution degree		3 (Industrial environment)
Ambient temperature		0 to +50 °C +32 to +122 °F (No dew condensation), Storage: -10 to +60 °C +14 to +140 °F
Material		Enclosure: Polycarbonate, Indicator: Polycarbonate, Lens: Silicone
Weight		Net weight: 120 g approx.
Accessories		MS-TH-2 (Sensor head mounting bracket): 1 set, TH-B2 (Heat shield): 1 pc., OS-TH12 (Slit mask): 1 pc.

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C **+68 °F**.
2) Teaching is possible for this detection range. However, the detection range varies with the size of the sensing object and its temperature, ambient temperature, etc.


Controllers

Item	Type	NPN output (for TH-12CS)	PNP output (for TH-12CPS)
	Model No.	TH-C2	TH-C2P
Applicable sensor head		TH-12	
Supply voltage		12 to 24 V DC ±10 % Ripple P-P 10 % or less	
Current consumption		100 mA or less	
Outputs (OUT 1, OUT 2)		NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1 V or less (at 100 mA sink current) 0.4 V or less (at 16 mA sink current)	PNP open-collector transistor • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 2 V or less (at 100 mA source current)
	Utilization category	DC-12 or DC-13	
Output operation		OUT 1: ON when hot melt adhesive is detected (Max. 1 sec. approx.), OUT 2: OFF when the evaluated result is NG (Max. 1 sec. approx.)	
Response time (operation freq.)		Sensing distance 200 mm 7.874 in or less: 1 ms or less (1 to 200 Hz), Sensing distance 300 mm 11.811 in or less: 1.5 ms or less (1 to 100 Hz)	
Warm-up time		40 sec. approx.	
Sensitivity setting		Teaching method (Push-button operation)	
Level storage function		Sensitivity levels of eight channels can be stored.	
External channel select function		Incorporated	
Timer function		Incorporated with approx. 40 ms fixed OFF-delay timer, switchable either effective or ineffective	
Pollution degree		3 (Industrial environment)	
Ambient temperature		0 to +50 °C +32 to +122 °F (No dew condensation), Storage: -10 to +60 °C +14 to +140 °F	
EMC		EN 60947-5-2	
Material		Enclosure: Heat-resistant ABS, Terminal cover: Heat-resistant ABS, Front cover: Polycarbonate	
Weight		Net weight: 200 g approx.	Net weight: 140 g approx.

Note: Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C **+68 °F**.

PRECAUTIONS FOR PROPER USE

Refer to p.1501 for general precautions.



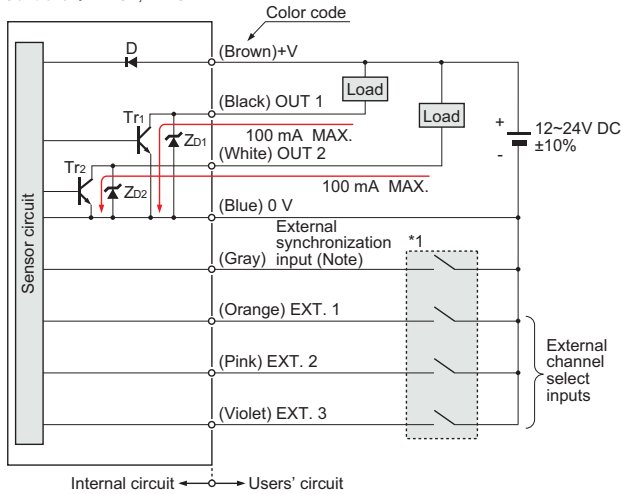
- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

I/O CIRCUIT AND WIRING DIAGRAMS

NPN output type

I/O circuit diagram

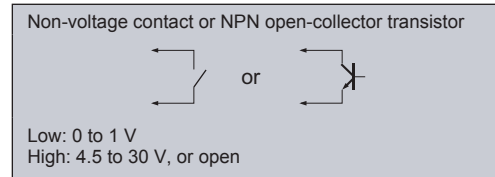
Controller / TH-C1, TH-C2



Note: The external synchronization input is active Low.

Symbols ... D: Reverse supply polarity protection diode
 ZD1, ZD2 : Surge absorption zener diode
 Tr1, Tr2 : NPN output transistor

*1



Specifying channel with external channel select inputs

Channel No.	Input	EXT.1 (Orange)	EXT.2 (Pink)	EXT.3 (Violet)
1		L	H	H
2		H	L	H
3		L	L	H
4		H	H	L
5		L	H	L
6		H	L	L
7		L	L	L
8		H	H	H

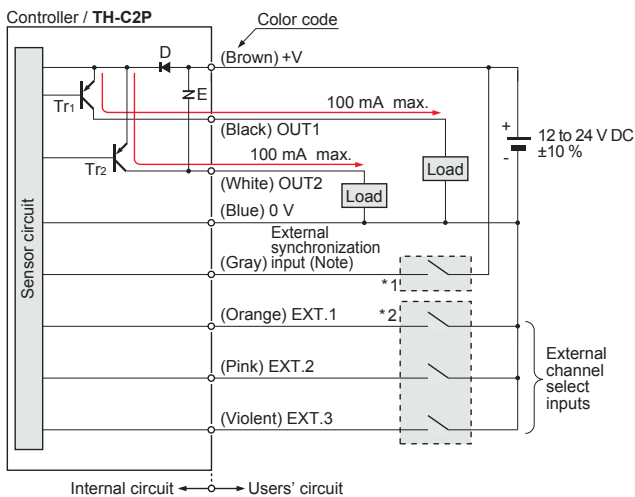
L: Low (0 to 1 V), H: High (4.5 to 30 V, or open)

- Notes: 1) The channel can be specified from the front panel only when all external channel select inputs (EXT.1, EXT.2, and EXT.3) are High (corresponding to Channel No. 8).
 2) The external channel select inputs take precedence over the front panel channel selection (except for Channel No. 8).
 3) If channel specification is changed from front panel operation to external channel select inputs and Channel No. 8 is to be selected by the external channel call inputs, make sure to specify a channel other than No. 8 before setting all the external channel select inputs (EXT.1, EXT.2, EXT.3) to High.
 If this operation is not done, channel specification by front panel operation gets precedence.

PNP output type

I/O circuit diagram

Controller / TH-C2P



Note: The external synchronization input is active High.

Symbols ... D: Reverse supply polarity protection diode
 E: Surge absorption varistor
 Tr1, Tr2: PNP output transistor

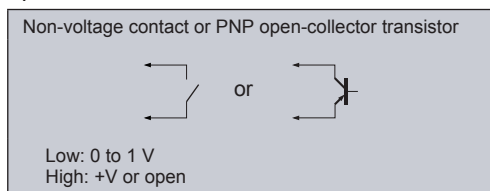
Specifying channel with external channel select inputs

Channel No.	Input	EXT.1 (Orange)	EXT.2 (Pink)	EXT.3 (Violet)
1		L	H	H
2		H	L	H
3		L	L	H
4		H	H	L
5		L	H	L
6		H	L	L
7		L	L	L
8		H	H	H

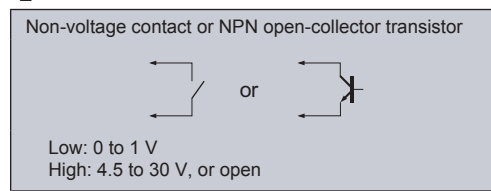
L: Low (0 to 1 V), H: High (4.5 to 30 V, or open)

- Notes: 1) The channel can be specified from the front panel only when all external channel select inputs (EXT.1, EXT.2, and EXT.3) are High (corresponding to Channel No. 8).
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 3) If channel specification is changed from front panel operation to external channel select inputs and Channel No. 8 is to be selected by the external channel call inputs, make sure to specify a channel other than No. 8 before setting all the external channel select inputs (EXT.1, EXT.2, EXT.3) to High.
 If this operation is not done, channel specification by front panel operation gets precedence.

*1



*2



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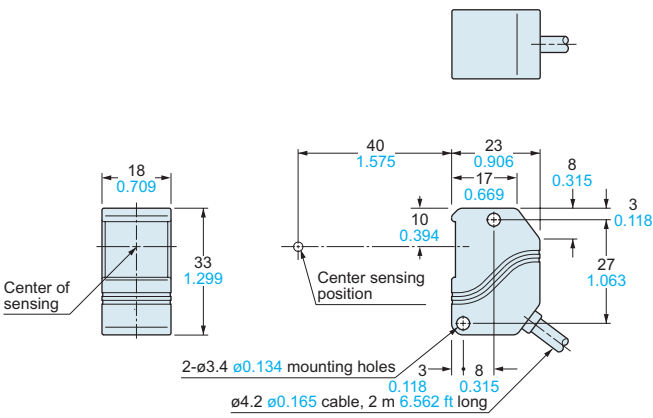
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DIMENSIONS (Unit: mm in)

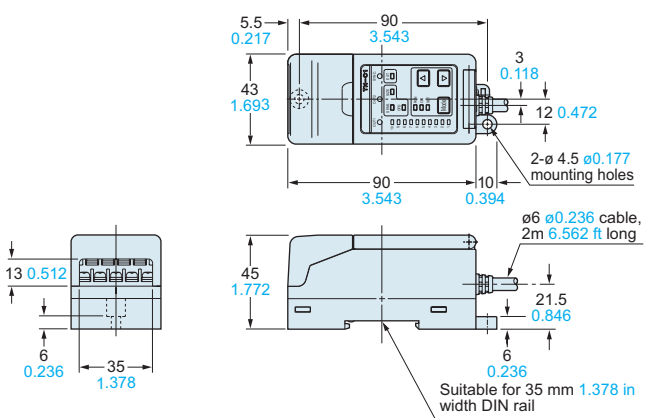
The CAD data in the dimensions can be downloaded from our website.

TH-11CS Spot type

Sensor head / TH-11

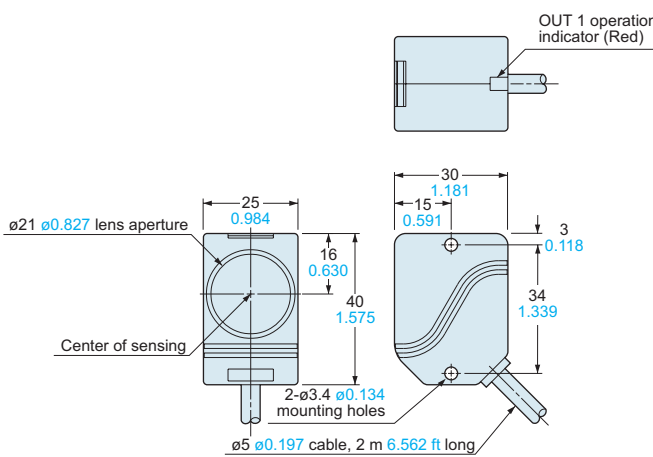


Controller / TH-C1

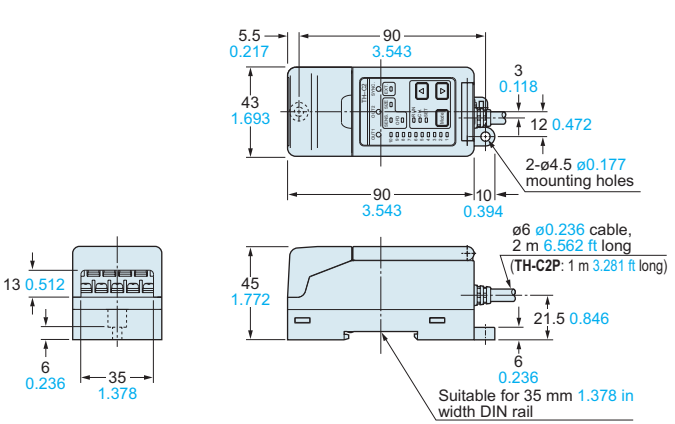


TH-12CS TH-12CPS Long sensing range type

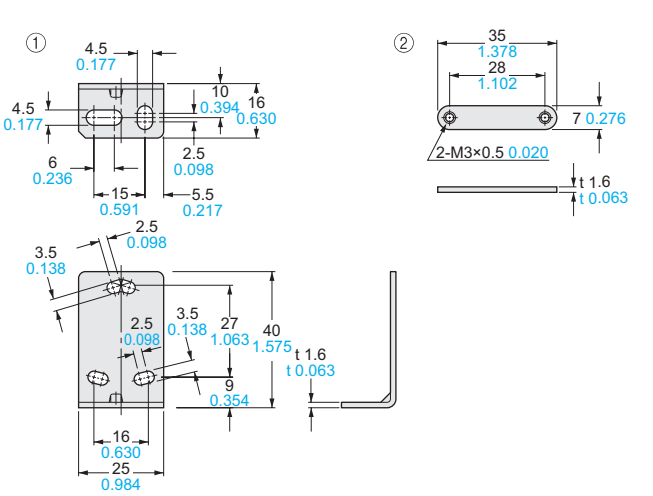
Sensor head / TH-12



Controller / TH-C2 TH-C2P

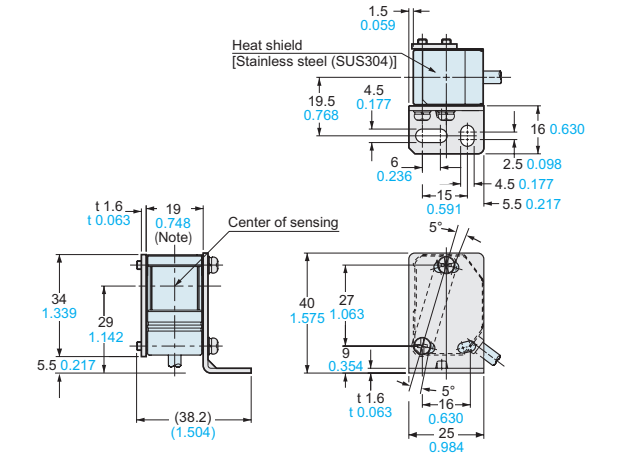


MS-TH-1 Sensor head mounting bracket for spot type (Accessory for TH-11)



Assembly dimensions

The drawing below shows **MS-TH-1** mounted on **TH-11** fitted with heat shield **TH-B1** (accessory).



Material: Cold rolled carbon steel (SPCC)
Two M3 (length 25 mm 0.984 in) screws with washers are attached.

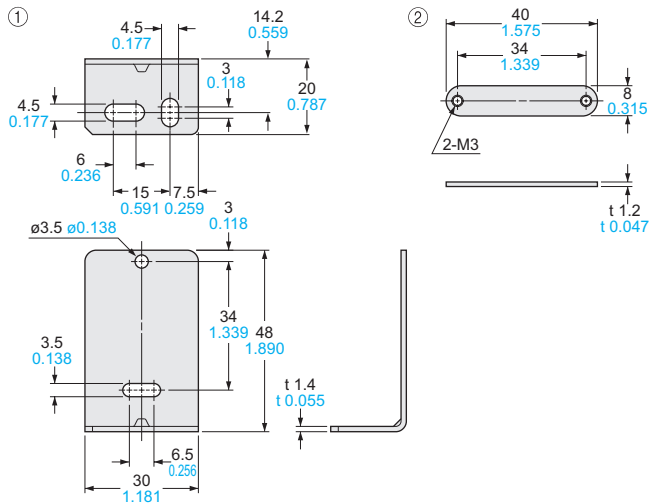
Note: 18 mm 0.709 in when the heat shield is not used.

DIMENSIONS (Unit: mm in)

The CAD data in the dimensions can be downloaded from our website.

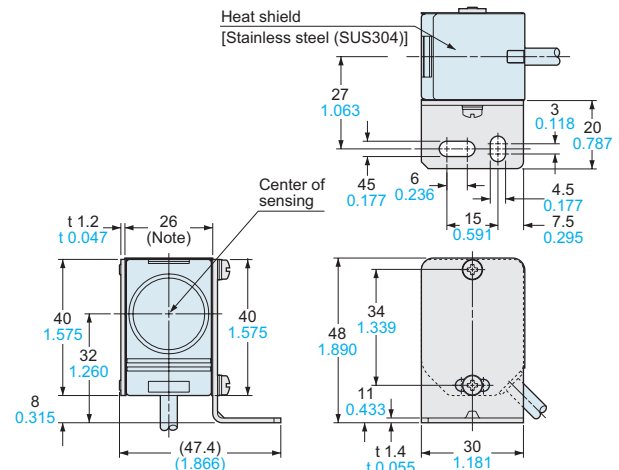
MS-TH-2

Sensor head mounting bracket for long sensing range type (Accessory for TH-12)



Material: Cold rolled carbon steel (SPCC)

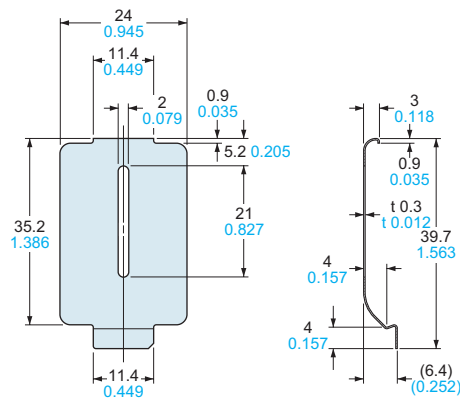
Two M3 (length 30 mm 1.181 in) screws with washers are attached.

Assembly dimensionsThe drawing below shows **MS-TH-2** mounted on **TH-12** fitted with heat shield **TH-B2** (accessory)

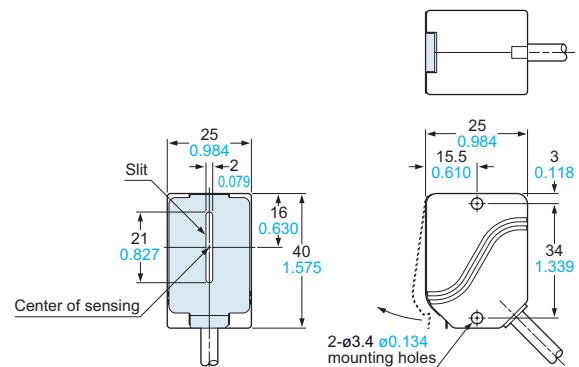
Note: 25 mm 0.984 in when the heat shield is not used.

OS-TH12

Slit mask for long sensing range type (Accessory for TH-12)



Material: Stainless steel (SUS304)

Assembly dimensionsFIBER
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