

# TH SERIES

Related Information

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



[panasonic.net/id/pidsx/global](http://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	<b>TH-11CS</b>	NPN open-collector transistor
Long sensing range			 10 to 300 mm 0.394 to 11.811 in (Note)	<b>TH-12CS</b>	NPN open-collector transistor
				<b>TH-12CPS</b>	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.]

- FIBER SENSORS
- LASER SENSORS
- PHOTOELECTRIC SENSORS
- MICRO PHOTOELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS / SAFETY COMPONENTS
- PRESSURE / FLOW SENSORS
- INDUCTIVE PROXIMITY SENSORS
- PARTICULAR USE SENSORS**
- SENSOR OPTIONS
- SIMPLE WIRE-SAVING UNITS
- WIRE-SAVING SYSTEMS
- MEASUREMENT SENSORS
- STATIC ELECTRICITY PREVENTION DEVICES
- LASER MARKERS
- PLC
- HUMAN MACHINE INTERFACES
- ENERGY CONSUMPTION VISUALIZATION COMPONENTS
- FA COMPONENTS
- MACHINE VISION SYSTEMS
- UV CURING SYSTEMS
- Selection Guide
- Wafer Detection
- Liquid Leak Detection
- Liquid Level Detection
- Water Detection
- Color Mark Detection
- Hot Melt Glue Detection
- Ultrasonic
- Small / Slim Object Detection
- Obstacle Detection
- Other Products

**SPECIFICATIONS****TH-11CS**

Spot type

**Sensor head**

Item	Model No.	TH-11
Applicable controller		<b>TH-C1</b>
Sensing range		40 ±10 mm <b>1.575 ±0.394 in</b>
Sensing object		ø3 mm <b>ø0.118 in</b> or more hot melt glue (emissivity 0.9) at +85 °C <b>+185 °F</b> or more, under ambient temperature of +25 °C <b>+77 °F</b> (Note 2)
Ambient temperature		0 to +50 °C <b>+32 to +122 °F</b> (No dew condensation), Storage: -10 to +60 °C <b>+14 to +140 °F</b>
Visible targeting		Red LED
Material		Enclosure: Polycarbonate, Front cover: Sapphire glass
Weight		Net weight: 77 g approx.
Accessories		<b>MS-TH-1</b> (Sensor head mounting bracket): 1 set, <b>TH-B1</b> (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		<b>TH-11</b>
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"> <li>• Maximum sink current: 100 mA</li> <li>• Applied voltage: 30 V DC or less (between output and 0 V)</li> <li>• Residual voltage: 1 V or less (at 100 mA sink current) 0.4 V or less (at 16 mA sink current)</li> </ul>
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 <b>+32 to +122 °F</b> (No dew condensation), Storage: -10 to +60 °C <b>+14 to +140 °F</b>
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  
SENSORSLASER  
SENSORSPHOTO-  
ELECTRIC  
SENSORSMICRO  
PHOTO-  
ELECTRIC  
SENSORSAREA  
SENSORSLIGHT  
CURTAINS /  
SAFETY  
COMPONENTSPRESSURE /  
FLOW  
SENSORSINDUCTIVE  
PROXIMITY  
SENSORSPARTICULAR  
USE  
SENSORSSENSOR  
OPTIONSSIMPLE  
WIRE-SAVING  
UNITSWIRE-SAVING  
SYSTEMSMEASURE-  
MENT  
SENSORSSTATIC  
ELECTRICITY  
PREVENTION  
DEVICESLASER  
MARKERS

PLC

HUMAN  
MACHINE  
INTERFACESENERGY  
CONSUMPTION  
VISUALIZATION  
COMPONENTSFA  
COMPONENTSMACHINE  
VISION  
SYSTEMSUV  
CURING  
SYSTEMSSelection  
GuideWafer  
DetectionLiquid Leak  
DetectionLiquid Level  
DetectionWater  
DetectionColor Mark  
DetectionHot Melt Glue  
Detection

Ultrasonic

Small / Slim  
Object DetectionObstacle  
DetectionOther  
Products**TH**

FIBER SENSORS  
LASER SENSORS  
PHOTO-ELECTRIC SENSORS  
MICRO PHOTO-ELECTRIC SENSORS  
AREA SENSORS  
LIGHT CURTAINS / SAFETY COMPONENTS  
PRESSURE / FLOW SENSORS  
INDUCTIVE PROXIMITY SENSORS  
PARTICULAR USE SENSORS  
SENSOR OPTIONS  
SIMPLE WIRE-SAVING UNITS  
WIRE-SAVING SYSTEMS  
MEASUREMENT SENSORS  
STATIC ELECTRICITY PREVENTION DEVICES  
LASER MARKERS  
PLC  
HUMAN MACHINE INTERFACES  
ENERGY CONSUMPTION VISUALIZATION COMPONENTS  
FA COMPONENTS  
MACHINE VISION SYSTEMS  
UV CURING SYSTEMS  
Selection Guide  
Wafer Detection  
Liquid Leak Detection  
Liquid Level Detection  
Water Detection  
Color Mark Detection  
Hot Melt Glue Detection  
Ultrasonic  
Small / Slim Object Detection  
Obstacle Detection  
Other Products

## SPECIFICATIONS

### TH-12CS TH-12CPS

Long sensing range type

#### Sensor head

Item	Model No.	TH-12
Applicable controllers		<b>TH-C2, TH-C2P</b>
Sensing range		10 to 300 mm <b>0.394 to 11.811 in</b> (Note 2)
Sensing object		ø6 mm <b>ø0.236 in</b> (equivalent to 3 × 10 mm <b>0.118 × 0.394 in</b> ) or more hot melt glue (emissivity 0.9) at +100 °C <b>+212 °F</b> or more, under ambient temperature of +25 °C <b>+77 °F</b>
Pollution degree		3 (Industrial environment)
Ambient temperature		0 to +50 °C <b>+32 to +122 °F</b> (No dew condensation), Storage: -10 to +60 °C <b>+14 to +140 °F</b>
Material		Enclosure: Polycarbonate, Indicator: Polycarbonate, Lens: Silicone
Weight		Net weight: 120 g approx.
Accessories		<b>MS-TH-2</b> (Sensor head mounting bracket): 1 set, <b>TH-B2</b> (Heat shield): 1 pc., <b>OS-TH12</b> (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 <b>TH-12CS</b> )	PNP output (for <b>TH-12CPS</b> )
	Model No.	<b>TH-C2</b>	<b>TH-C2P</b>
Applicable sensor head		<b>TH-12</b>	
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 <b>7.874 in</b> or less: 1 ms or less (1 to 200 Hz), Sensing distance 300 mm <b>11.811 in</b> 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 <b>+32 to +122 °F</b> (No dew condensation), Storage: -10 to +60 °C <b>+14 to +140 °F</b>	
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.



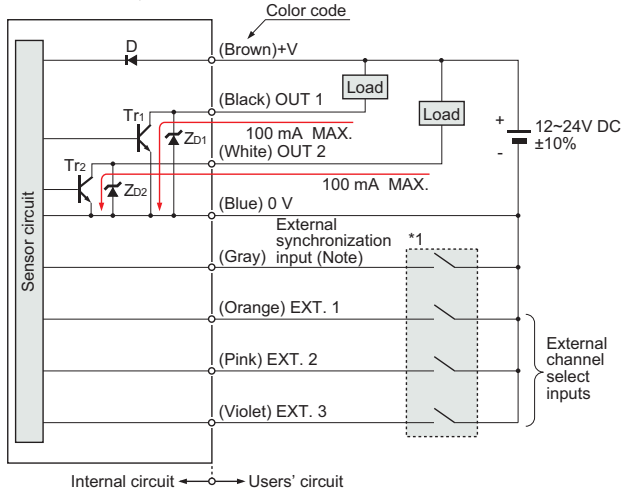
- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

## I/O CIRCUIT AND WIRING DIAGRAMS

## NPN output type

## I/O circuit diagram

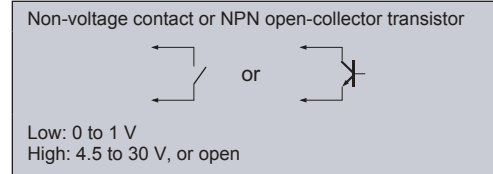
Controller / TH-C1, TH-C2



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

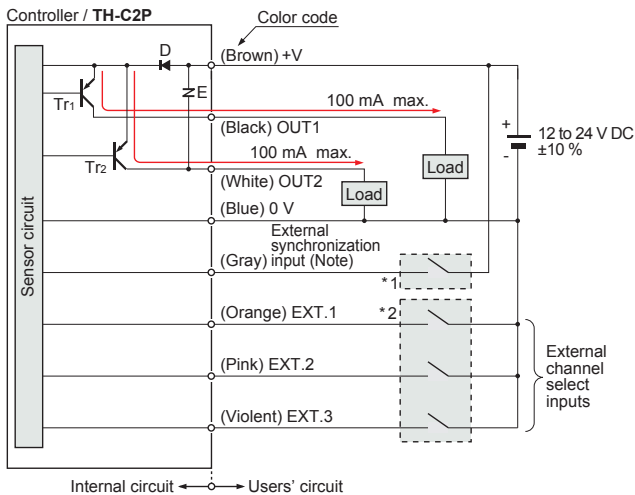
L: Low (0 to 1 V), H: High (4.5 to 30 V, or open)

- 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

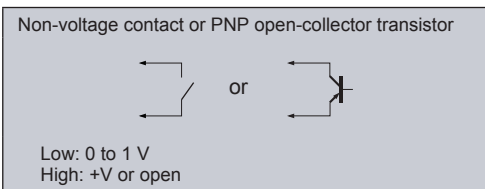
Controller / TH-C2P



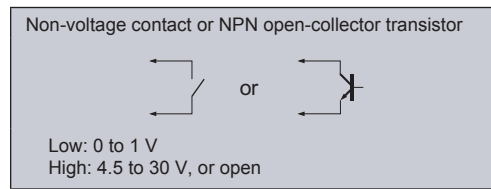
Note: The external synchronization input is active High.

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

\*1



\*2



## 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.

FIBER  
SENSORSLASER  
SENSORSPHOTO-  
ELECTRIC  
SENSORSMICRO  
PHOTO-  
ELECTRIC  
SENSORSAREA  
SENSORSLIGHT  
CURTAINS /  
SAFETY  
COMPONENTSPRESSURE /  
FLOW  
SENSORSINDUCTIVE  
PROXIMITY  
SENSORSPARTICULAR  
USE  
SENSORSSENSOR  
OPTIONSSIMPLE  
WIRE-SAVING  
UNITSWIRE-SAVING  
SYSTEMSMEASURE-  
MENT  
SENSORSSTATIC  
ELECTRICITY  
PREVENTION  
DEVICESLASER  
MARKERS

PLC

HUMAN  
MACHINE  
INTERFACESENERGY  
CONSUMPTION  
VISUALIZATION  
COMPONENTSFA  
COMPONENTSMACHINE  
VISION  
SYSTEMSUV  
CURING  
SYSTEMSSelection  
GuideWafer  
DetectionLiquid Leak  
DetectionLiquid Level  
DetectionWater  
DetectionColor Mark  
DetectionHot Melt Glue  
Detection

Ultrasonic

Small / Slim  
Object DetectionObstacle  
DetectionOther  
Products

TH

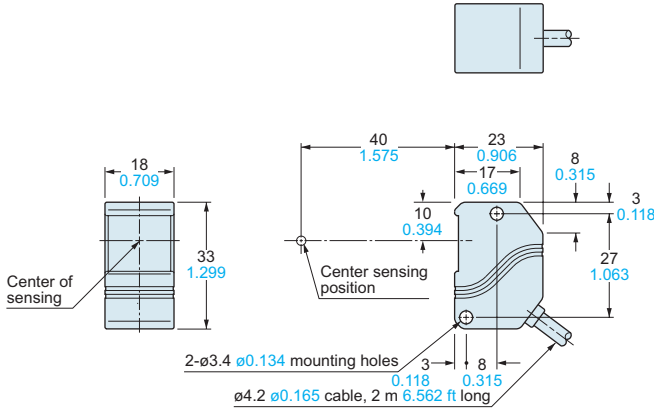
**DIMENSIONS (Unit: mm in)**

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

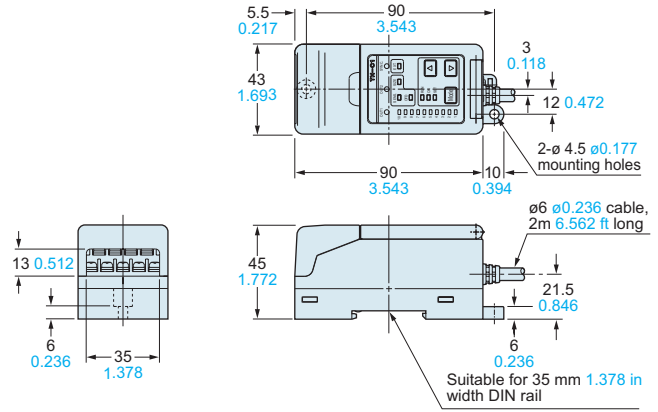
**TH-11CS**

Spot type

**Sensor head / TH-11**



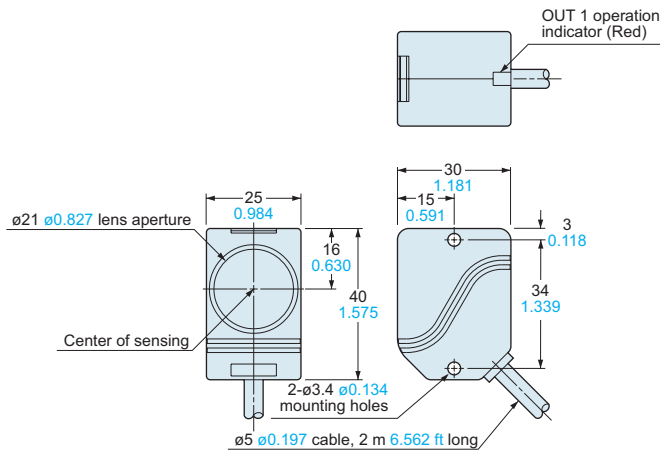
**Controller / TH-C1**



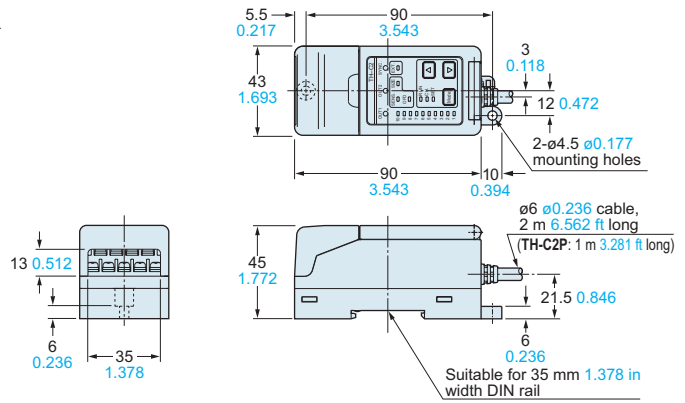
**TH-12CS TH-12CPS**

Long sensing range type

**Sensor head / TH-12**



**Controller / TH-C2 TH-C2P**

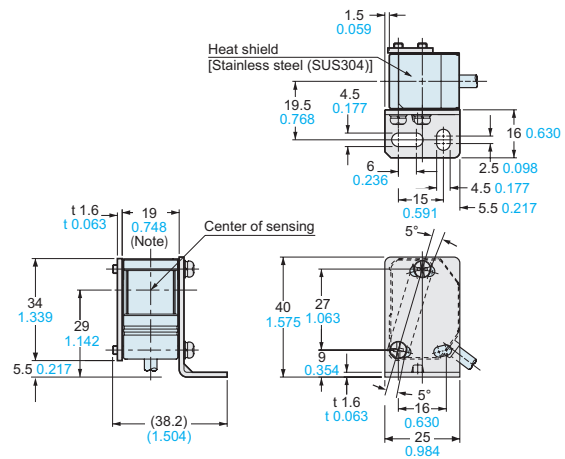
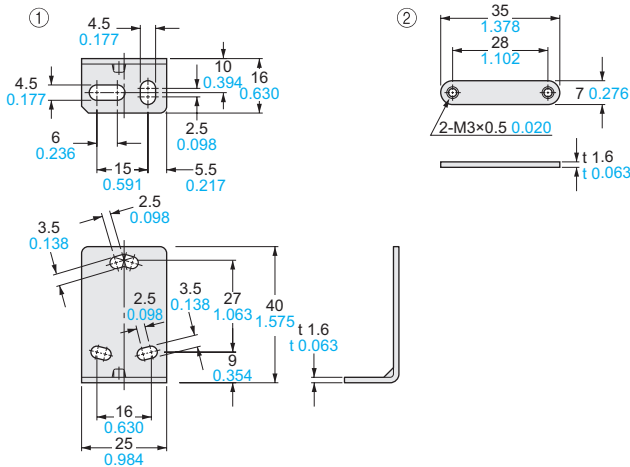


**MS-TH-1**

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.

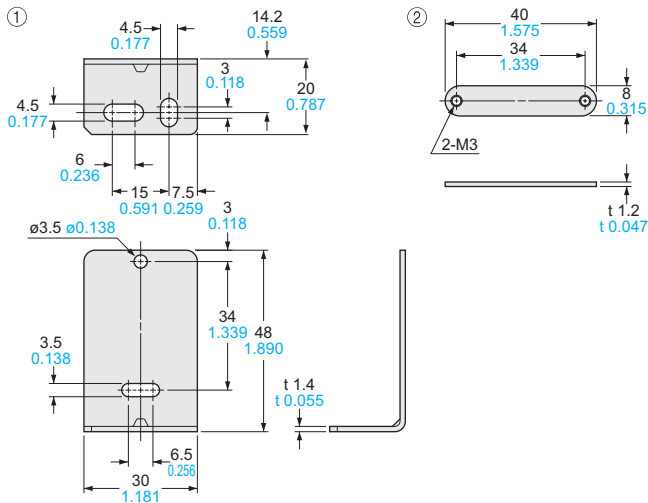
- FIBER SENSORS
- LASER SENSORS
- PHOTO-ELECTRIC SENSORS
- MICRO PHOTO-ELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS / SAFETY COMPONENTS
- PRESSURE / FLOW SENSORS
- INDUCTIVE PROXIMITY SENSORS
- PARTICULAR USE SENSORS
- SENSOR OPTIONS
- SIMPLE WIRE-SAVING UNITS
- WIRE-SAVING SYSTEMS
- MEASUREMENT SENSORS
- STATIC ELECTRICITY PREVENTION DEVICES
- LASER MARKERS
- PLC
- HUMAN MACHINE INTERFACES
- ENERGY CONSUMPTION VISUALIZATION COMPONENTS
- FA COMPONENTS
- MACHINE VISION SYSTEMS
- UV CURING SYSTEMS

**DIMENSIONS (Unit: mm in)**

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

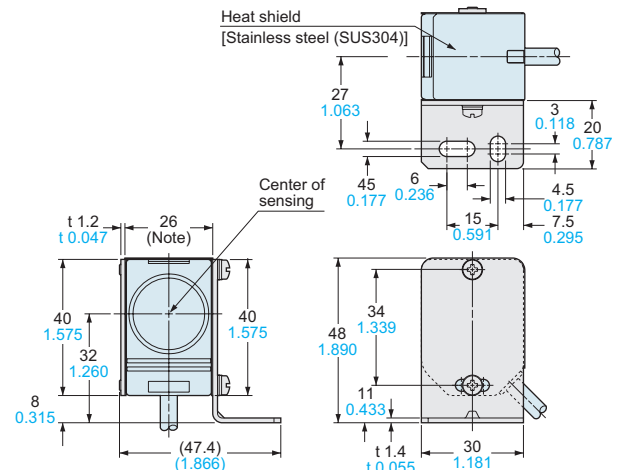
**MS-TH-2**

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



Material: Cold rolled carbon steel (SPCC)

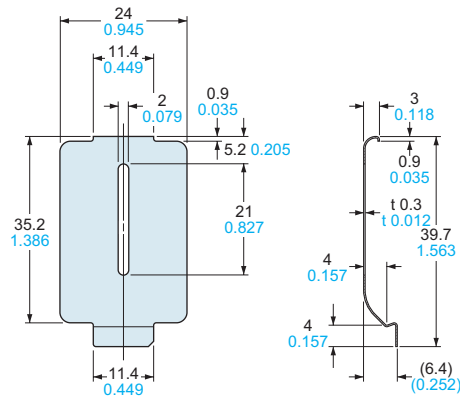
Two M3 (length 30 mm 1.181 in) screws with washers are attached.

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

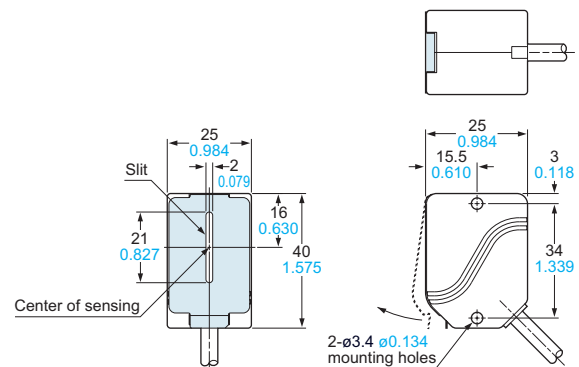
Note: 25 mm 0.984 in when the heat shield is not used.

**OS-TH12**

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



Material: Stainless steel (SUS304)

**Assembly dimensions**FIBER  
SENSORSLASER  
SENSORSPHOTO-  
ELECTRIC  
SENSORSMICRO  
PHOTO-  
ELECTRIC  
SENSORSAREA  
SENSORSLIGHT  
CURTAINS /  
SAFETY  
COMPONENTSPRESSURE /  
FLOW  
SENSORSINDUCTIVE  
PROXIMITY  
SENSORSPARTICULAR  
USE  
SENSORSSENSOR  
OPTIONSSIMPLE  
WIRE-SAVING  
UNITSWIRE-SAVING  
SYSTEMSMEASURE-  
MENT  
SENSORSSTATIC  
ELECTRICITY  
PREVENTION  
DEVICESLASER  
MARKERS

PLC

HUMAN  
MACHINE  
INTERFACESENERGY  
CONSUMPTION  
VISUALIZATION  
COMPONENTSFA  
COMPONENTSMACHINE  
VISION  
SYSTEMSUV  
CURING  
SYSTEMSSelection  
GuideWafer  
DetectionLiquid Leak  
DetectionLiquid Level  
DetectionWater  
DetectionColor Mark  
DetectionHot Melt Glue  
Detection

Ultrasonic

Small / Slim  
Object DetectionObstacle  
DetectionOther  
Products**TH**