Stationary-type non-contact thermometer
Sensor/amplifier separate type

Measurement range

0 to 500°C (32 to 932°F)

THERMO-HUNTER®

BS series

Sensor head

<Wide-angle area type> **BS-30T**

<Small spot type> **BS-05T**

Amplifier unit

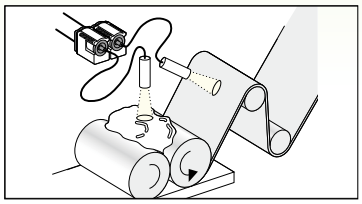
Use in combination with a sensor head

<4 to 20 mA output type> **BS-A**

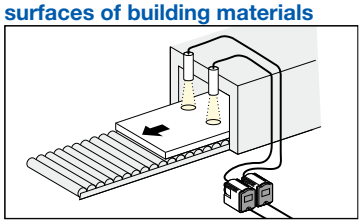
<1 mV/°C output type> **BS-V**



Temperature control for rubber kneading



Temperature control for painted surfaces of building materials



CE

Environmental-resistant | IP67 sensor head | Heat-resistant to 150°C (302°F) with purge unit | Digital display on amplifier | Emissivity teaching | 8 m heat-resistant extension cable

Features

Sensor/amplifier separate type for flexible mounting

The sensor/amplifier separate design provides improved environmental resistance. The compact sensor features a stainless-steel body and a special steel structure for IP67-level waterproofing. A detachable connector cable is used between the sensor and the amplifier.
This design reduces the effort needed for changing the installation location or when performing maintenance.



IP67 waterproof sensor head

In harsh manufacturing lines, water and dust can cause sensors to fail, so environmental resistance is a must. The BS series is the first thermometer in its class to offer IP67 waterproofing and dustproofing.



Heat-resistant up to 150°C (302°F) (with use of optional accessories)

Using the optional BS-WP1 air purge/water-cooling jacket provides even greater environmental resistance. With water-cooling, the product can handle temperatures up to 150°C (302°F). The BS-WP1 can also be used for air purging, where air is blown onto the lens to protect against dust and dirt.



Built-in easy-to-configure digital display

The amplifier of the BS series is equipped with a digital display. The digital display allows users to easily check various function settings and measurement values.

Simple emissivity adjustment: Teaching function

This product is equipped with a TEACH function that allows users to calculate and store emissivity automatically by inputting a temperature. This allows for drastic reductions in time spent on configuring settings.

Two types of analog output

The lineup includes a voltage output type that can be easily connected to a panel meter, and a current output type that is ideal for long-range transmissions. Users are able to select the desired type when selecting a model.

Type key

● Sensor head

BS-□□T

- [Field of view]: 30: ø30 mm/500 mm; 05: ø5 mm/100 mm
- [Type]: BS Sensor/amplifier separate type

● Amplifier unit

BS-□

- [Output]: A: 4 to 20 mA output; V: 1 mV/°C output

Specifications

■ Sensor head

Model	BS-30T	BS-05T
Measurement range	0 to 500°C (32 to 932°F) (Display: –20 to 520°C (–4 to 968°F))	
Field of view	ø30 mm/500 mm (Refer to field of view)	ø 5 mm/100 mm (Refer to field of view)
Optics	Silicone lens	
Sensing element/ spectral response	Thermopile/8 to 14 µm	
Response time	0.5 sec./90%	
Accuracy (ε≈1.0)	±1% or ±2°C (3.6°F) of reading, whichever is greater	
Repeatability	±1°C (1.8°F) of reading	
Emissivity (ε) adjustment	0.10 to 1.20 (0.01 per step)	
Ambient temperature	0 to 65°C (32 to 149°F), With air purge/water-cooling jacket installed: Air-cooled: 0 to 80°C (32 to 176°F), Water-cooled: 0 to 150°C (32 to 302°F)	
Ambient humidity	35 to 85% RH (no condensation)	
Storage temperature	–20 to 70°C (–4 to 158°F)	
Vibration resistance	3G (20 to 50 Hz, according to JIS C0911)	
Degree of protection	IP67 (equivalent to Grade 7 in the JIS protection rating)	
Weight	Approx. 300 g (including connector cable)	
Material	Aluminum	
Standard included accessories	–	

*Note that specifications are subject to change without prior notice for product improvement purposes.

■ Amplifier unit

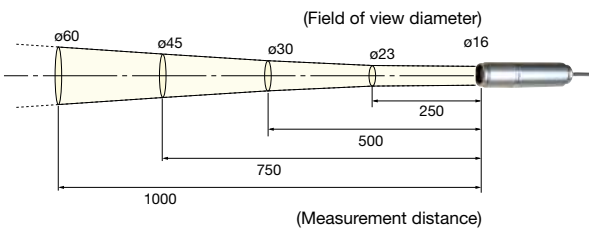
Model	BS-A	BS-V
Analog output	4 to 20 mA	1 mV/°C
Analog output resolution	0.2°C (32.4°F)	
Analog display resolution	1°C (33.8°F) (digital display on back of amplifier)	
Functions	Simple emissivity adjustment: TEACH function Response time selection (DELAY) function: 1 (0.5 sec.) to 200 (approx. 10 sec.)	
Supply voltage/ current consumption	12 to 24 VDC ±10%/100 mA or less (at max. load)	
Ambient temperature	0 to 50°C (32 to 122°F)	
Ambient humidity	35 to 85% RH (no condensation)	
Storage temperature	–20 to 60°C (–4 to 140°F)	
Vibration resistance	3G (20 to 50 Hz, according to JIS C0911)	
Degree of protection	IP65 (equivalent to Grade 5 in the JIS protection rating)	
Weight	Approx. 320 g (including cable)	
Material	Ring/housing: Glass-filled PBT, Rear / Cover: PC	
Standard included accessories	Amplifier mounting bracket ×1, amplifier mounting screw (M4) ×2	

*Note that specifications are subject to change without prior notice for product improvement purposes.

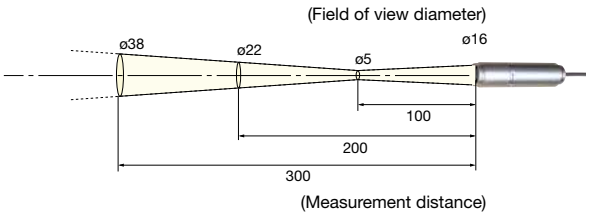
Field of view

●BS-30T/BS-30T

(Unit: mm)

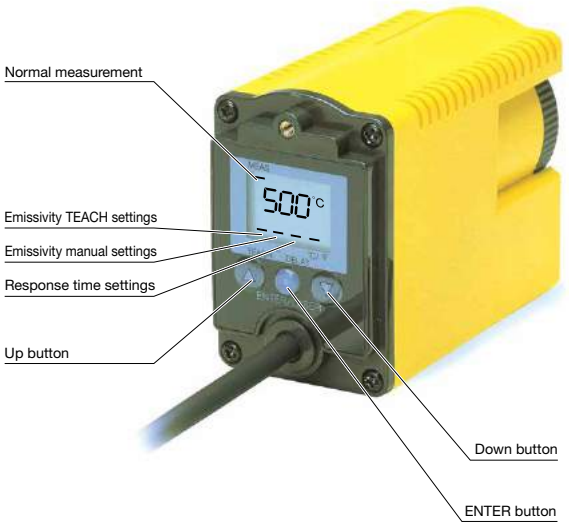


●BS-05T/BS-05T



The field of view stated above are measurement diameters with an optical response of 90%. The size of the measurement target must be sufficiently larger than the figures shown in the above diagram.

Operating panel

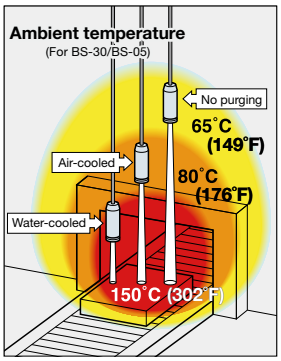


Options/Accessories

Air purge/water-cooling jacket

BS-WP1



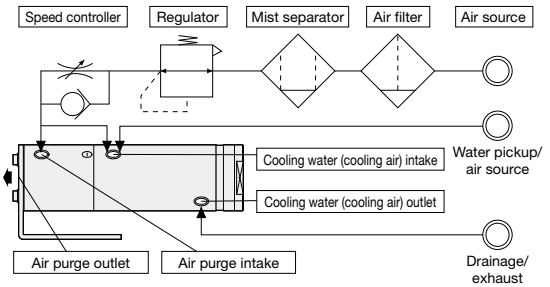


Attaching an air purge/water-cooling jacket to the sensor head provides greatly improved environmental resistance.
*Instrumentation air or coolant is required.
*There is no need for sensor head fixture NB-SH30A when using BS-WP1.

● Specifications

Air-cooled	Water-cooled
Air is blown onto the lens of the surface during cooling to prevent the adhesion of dust. Ambient temperature: Up to 80°C (176°F) Air flow rate: 50 to 150 Nl/min. Air temperature: 20°C (68°F) Air pressure: 0.2 Mpa (2 kgf/cm^2) or less (limited to instrumentation air)	Used for cooling only. Use in combination with air cooling can cause scattering of dust. Ambient temperature: Up to 150°C (302°F) Flow rate: 0.5 to 2 l/min. Temperature: 30°C (86°F) Pressure: 0.1 Mpa (1 kgf/cm^2) or less

● Piping example



Sensor-to-amplifier extension cable

BS-EC8



Connecting the optional BS-EC8 cable (8 m) to the standard connector cable (2 m) between the sensor and the amplifier provides up to 10 m of extension. Both standard and optional cables can handle temperatures up to 150°C (302°F).

Sensor head fixture

NB-SH30A



This base is used to fix cylindrical-type sensor heads.
It is a convenient accessory for installation.
* Cannot be used in combination with BS-WP1.

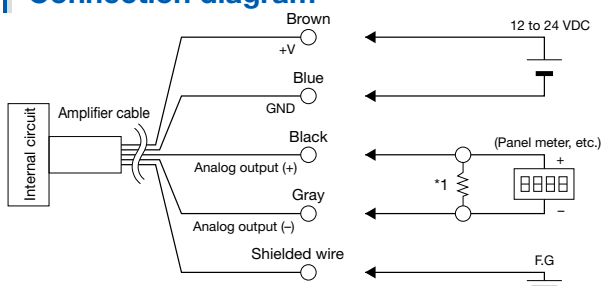
Black tape for glossy objects

HB-250



When attached to the surface of an object with unknown emissivity or a glossy object, this tape provides an emissivity of 0.95, enabling accurate non-contact temperature measurement. When using the tape, set the emissivity to ε = 0.95. The tape is built with material resistant to heat up to 250°C (482°F).
Total area: 60 mm × 2000 mm

Connection diagram

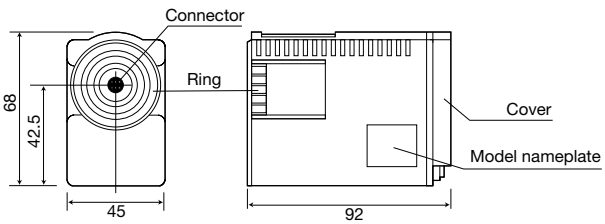


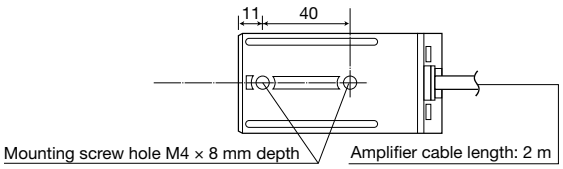
Notes regarding connections

1. Use a power supply within the rated range, and pay careful attention to polarity.
2. For the meter and other products when connecting analog output for a voltage output type (BS-30TV/BS-05TV), use products with a power impedance of 100 kΩ or more.
3. When connecting analog output from a current output type (BS-30TA/BS-05TA) to a meter or other product, connect with a load resistance of 250 Ω or less (*1).
4. Do not connect the analog output (–) to GND or the like. Doing so will result in an error.
5. Do not short-circuit the analog output (+).
6. Using the same piping for parallel wiring with wiring input/output lines, power lines, or high-voltage lines may cause malfunctions due to EMI noise. Use shielded wire or a separate metal conduit.

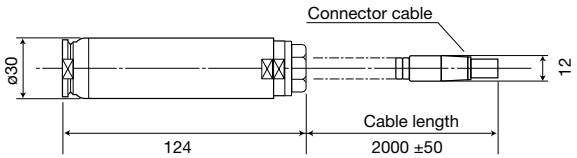
Dimensions

● Amplifier

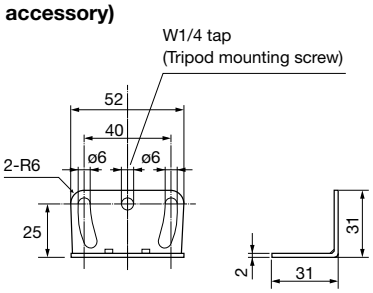




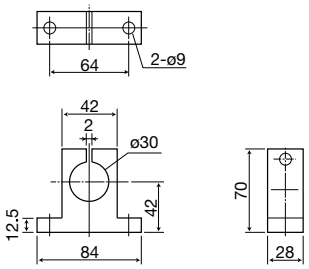
● Sensor head



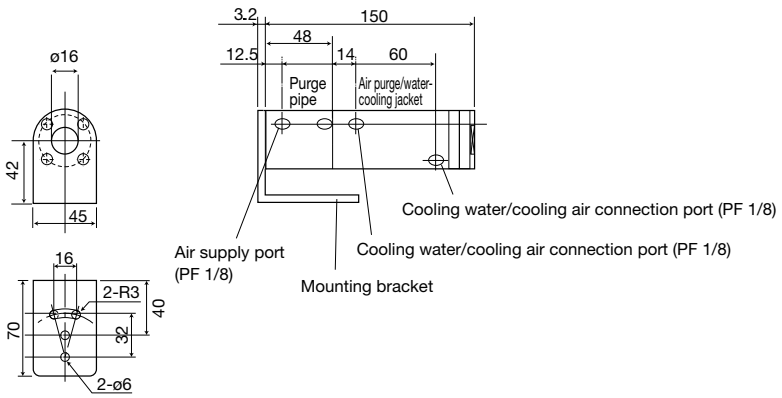
● Amplifier mounting bracket (Included accessory)



● Sensor head fixture NB-SH30A (sold separately)



● Air purge/water-cooling jacket BS-WP1 (sold separately)



(Unit: mm)

Correct use

■ Situations where measurement may be difficult

- When measuring a mirror-like surface such as shiny metal.
  *(Measure after attaching optional accessory HB-250 or after creating a matte finish using paint or the like.)
- When measuring through glass.

■ Exporting

- CE Mark: All Optex FA non-contact thermometers are available with CE compatibility.

■ Correct use

- Be sure to read the instruction manual thoroughly before using the product.
- This instrument is not a thermometer for taking body temperatures. It is not intended for use in medical practices.
- Sudden changes in ambient temperature can cause measurement errors. Please ensure the product is not subject to sudden temperature changes during use.
- Do not use the product near objects that generate strong electromagnetic waves, or in environments with corrosive gases or explosive gases.
- Use only the rated power supply with the product. Using the product outside of the 12 to 24 VDC range may cause malfunction, short-circuiting, fire, or injury.
- Do not touch the product to the measurement target. This product is a non-contact thermometer. Contact with a high-temperature surface may result in deformation, the need for repairs, and measurement errors.