

ST03 Infrared Non-Contact Temperature Transmitter

Introduction

The infrared temperature sensor can calculate the surface temperature of an object without contacting it, by measuring the intensity of the infrared radiation emitted by the target. Non-contact temperature measurement is the greatest advantage of infrared thermometers, allowing users to easily measure targets that are difficult to access or moving.

The ST03 infrared non-contact temperature transmitter is an integrated infrared temperature sensor, combining the sensor, optical system, and electronic circuitry into a stainless steel housing. The ST03 is easy to install, with standard threads on the metal housing enabling quick connection to the mounting point.

Additionally, the ST03 offers various optional accessories (such as purging collars, mounting brackets, adjustable mounting brackets, and purging protection sleeves) to meet the requirements of different working conditions and applications.



Specification

Protection rating	IP65 (NEMA-4)
Ambient temperature	0~60°C
Storage temperature	-20~80°C
Relative humidity	10~95% (non-condensing)
Material	Stainless steel
Cable length	1.5m(standard) , Other special specifications (customized)
Relative humidity	10~95% (non-condensing)
Maximum current	50mA
Spectral range	8~14μm
Temperature range	0-100/200/300/500/600/800/1000/1200°C
Optical resolution	20:1
Response time	240ms (95%)
Temperature accuracy	The measured value is $\pm 1\%$ or $\pm 1.5^{\circ}\text{C}$, whichever is greater.
Repeatability	The measured value is $\pm 0.5\%$ or $\pm 1^{\circ}\text{C}$, whichever is larger.
Dimensions	113mm × $\phi 18\text{mm}$ (length * diameter)
Emissivity	0.95 (factory default)

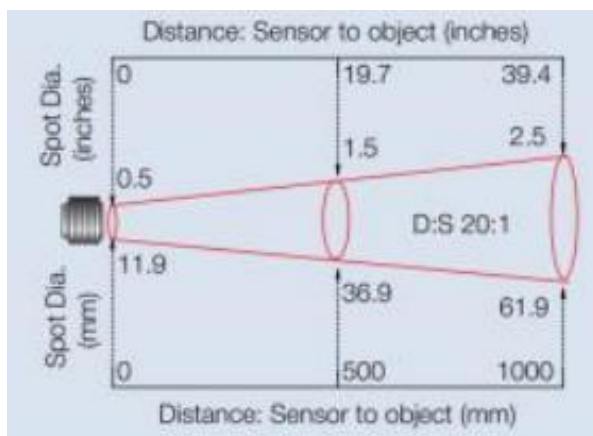
Output Signals

2-wire current	4~20mA
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Power Supply

Output signals	Power supply
4~20mA	6~30 VDC

Optical path diagram



Working principle and precautions

➤ Infrared Thermometry Principle

All objects radiate infrared energy, and the intensity of this radiation changes with temperature. Infrared thermometers typically use infrared radiation energy with wavelengths ranging from 0.8μm to 18μm. An infrared temperature sensor is a photoelectronic sensor that receives infrared radiation and converts it into an electrical signal. After amplification, linearization, and signal processing by electronic circuitry, the signal is displayed or output as the temperature.

➤ Maximum distance and size of the measured point

The size of the target and the optical characteristics of the infrared thermometer determine the maximum distance between the target and the measuring head. To avoid measurement errors, the target should fill the field of view of the probe as much as possible. Therefore, the measured point should always be smaller than the object being measured, or at least the same size as the target.

➤ Ambient temperature

The ST03 infrared non-contact temperature transmitter can operate within an ambient temperature range of 0~60°C. Otherwise, please use a cooling protective sleeve or another high-temperature resistant sensor.

➤ Lens cleaning

The lens of the instrument must be kept clean to avoid measurement errors or even damage to the lens due to dust, soot, or other contaminants. If the lens is dusty, it can be wiped with lens paper dampened with anhydrous alcohol.

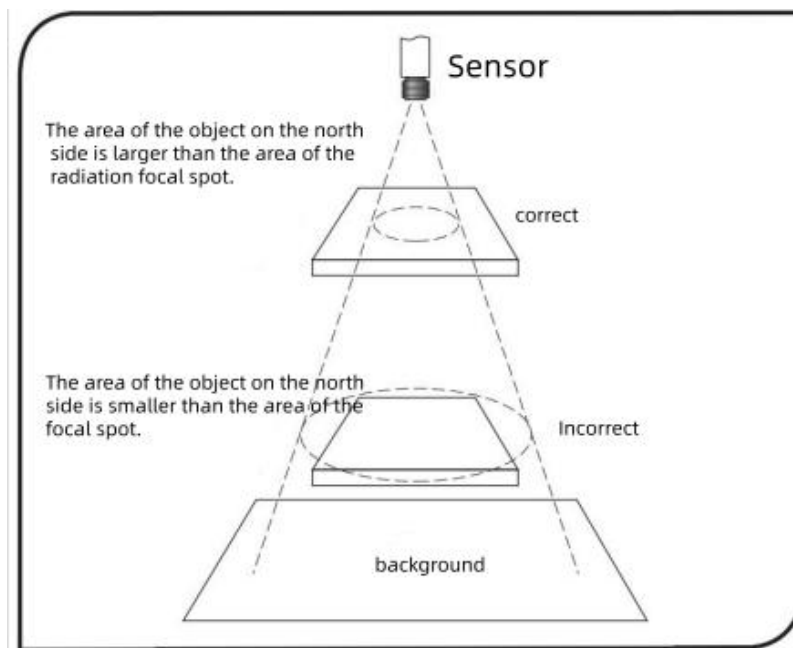
➤ Electromagnetic interference

To prevent electromagnetic interference, please ensure the following: During installation, keep the infrared temperature sensor as far away as possible from electromagnetic sources (such as electric motors, high-power cables, etc.). If necessary, add a metal sleeve.

Install

➤ Preparation

Ensure that the surface area of the object being measured is larger than the focal spot area of the sensor.



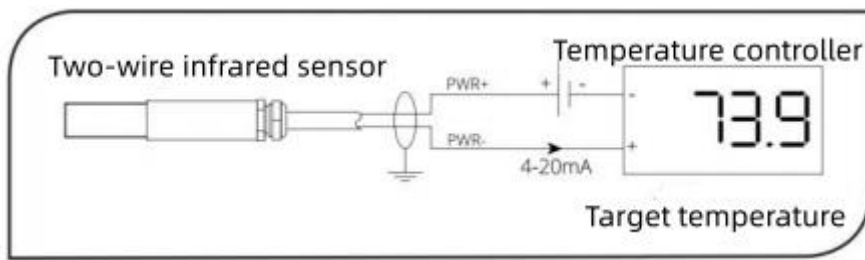
➤ Mechanical installation

The ST03 metal housing features an M18×1 thread, allowing for direct mounting or installation using a mounting bracket. The adjustable bracket facilitates easier adjustment of the measuring head. When adjusting the target and the measuring head, ensure the optical path is unobstructed.

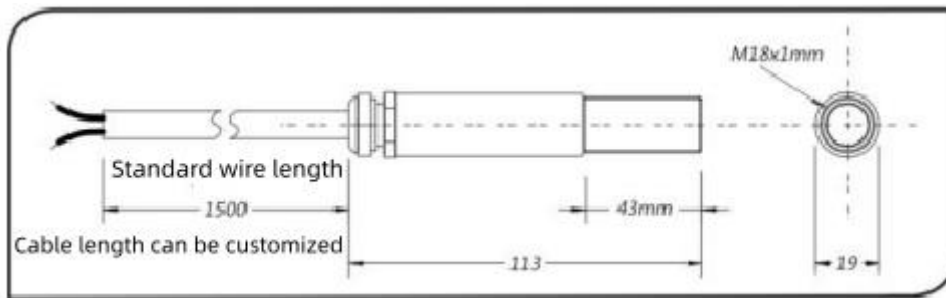
➤ Electrical installation/wiring

Type	Wire color	Function
Output	red	+6~30V DC
	blue	Signal output 4~20mA
	transparent	Shielded wire

For 4~20mA analog signal output (the upgraded version can be connected without polarity, the polarity can be interchanged, and red/blue can be reversed), it is a two-wire loop current output method. Its connection to the display or controller has the following two typical applications (with polarity connection):



Outline Dimension (unit: mm)



Contact

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