

NS10P Infrared Sensor



Operator's Manual

Content	Page
1. Description-----	2
1.1 Introduction-----	2
1.2 Scope of Delivery-----	2
1.3 Maintenance-----	2
1.4 Electrical Interference-----	2
2. Basics of Infrared thermometry-----	3
3. Factory Defaults-----	3
4. Technical Data-----	4
4.1 Measurement Specifications-----	4
4.2 Electrical Specifications-----	4
4.3 General Specification-----	5
5. Optical Charts-----	6
6. Dimensions-----	8
7. Installation-----	8
7.1 Mechanical Installation-----	8
7.2 Wiring-----	9
8. Laser Sighting-----	9
9. Aiming and Focusing-----	10
10. Accessories-----	10
10.1 Fixed Mounting Bracket-----	10
10.2 Adjustable Mounting Bracket-----	11
10.3 Air Purge Collar-----	11
11. Software-----	12
12. Warranty-----	15

*Note: Read the manual carefully before the initial start-up. The producer reserves the right to change the herein described specifications in case of technical advance of the product.

- 1 -

4. Technical Data

4.1 Measurement Specifications

Model	Temperature Range	Spectral Response	D:S (90%)
H1	600°C ~ 1600°C	1.0 μm	150:1
H2	300°C ~ 1300°C	1.6 μm	150:1
H3	100°C ~ 600°C	2.3 μm	60:1
H3L	60°C ~ 400°C	2.3 μm	40:1
Response Time	5ms (95%)		
Accuracy*1	±(0.5% of reading+2°C)		
Repeatability*1	±(0.3% of reading+1°C)		
Emissivity	0.100 ~ 1.000		

*1 At 23±5°C, emissivity H1/H2/H3=1.00

4.2 Electrical Specifications

Power Supply	24 VDC ±20%, < 100 mA
Signal Output	4 ~ 20mA
Digital Communication	RS485 (2-wire)
Max. loop resistance	500Ω

- 4 -

4.3 General Specification

Environmental Rating	IP 65 (NEMA-4)
Ambient Temperature	0°C~70°C
Storage Temperature	-20°C ~ 85°C
Relative Humidity	10% ~ 95%
Cable Temperature	-20°C~ 80°C

- 5 -

1. Description

1.1 Introduction

The NS10P is a non-contact infrared temperature sensor. The electronics are protected by a rugged IP65/NEMA 4 stainless steel (SS304) housing. They calculate the surface temperature based on the emitted infrared energy of objects and convert the energy into temperature signal.

1.2 Scope of Delivery

- NS10P
- Mounting nut x 2
- 2m connection cable (standard)
- User manual

1.3 Maintenance

Keep the lens clean at all times. Any foreign matter on the lens would affect measurement accuracy. Blow off loose particles using clean compressed air. The lens surface can be cleaned with a soft, humid tissue moistened with water or a water based glass cleaner. Never use cleaning compounds which contain solvents for the lens.

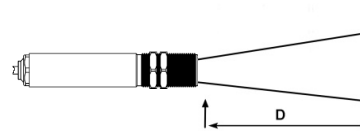
1.4 Electrical Interference

Keep away from strong EMF (electromagnetic fields). Avoid static electricity, arc welders, and induction heaters. Avoid abrupt changes of the ambient temperature. To avoid ground loops, make sure that only one point is earth grounded.

- 2 -

5. Optical Charts

The optical diagrams indicate the target spot diameter at any given distance between the target object and the sensing head. The spot size will change in longer distance corresponding to the following drawing. In order to prevent measuring errors the object must be as least as big as the spot size. And make sure to keep the optical path clear of any obstacles.



- 6 -

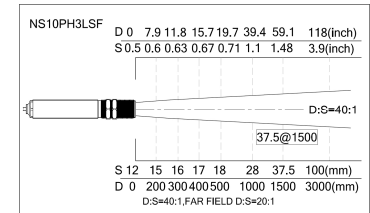
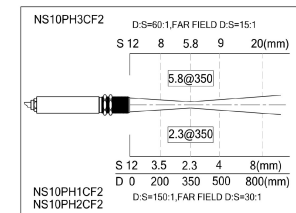
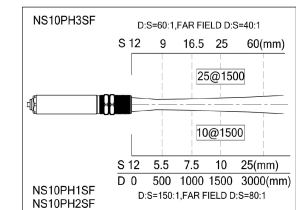
2. Basics of Infrared thermometry

Infrared thermometer is an optoelectronic sensor. Any object of a temperature above absolute zero (-273 °C) emits electromagnetic radiation. Infrared thermometer calculates the surface temperature on the basis of the emitted infrared radiation from the object. By determining its radiation intensity the temperature of an object can thereby be determined in a non-contact way.

3. Factory Defaults

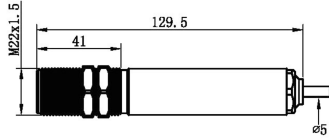
Emissivity	1.000
Average	0s
Peak Hold	inactive
Valley Hold	inactive
Advance Peak Hold	inactive
Unit	°C

- 3 -



- 7 -

6. Dimensions



- 8 -

7. Installation

7.1 Mechanical Installation

The NS10P has rugged stainless steel 304 housing, comes with a standard 2 m cable and 2 mounting nuts. You can mount the sensor in brackets or cutouts of your own design. For easy mounting and aligning the sensor to the measured object, a fixed or adjustable mounting bracket is available. For exact measurement of the object temperature the sensor must be aligned correctly onto the object. Mount the sensor so the measured spot is the same or smaller than the target.

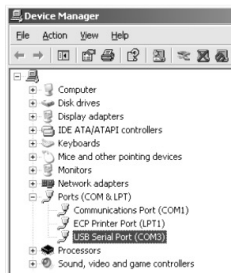
11. Software

11.1 Install driver for USB/RS485 Converter :

Please install the driver for USB to RS485 converter first. Windows will randomly assign an unused COM port number to the adapter..

To find out which COM-Port number your computer set, open the device manager (Start – Settings – Control Panel – System – Hardware – Device Manager).

In the category "Ports (COM & LPT)" you can find the "USB Serial Port" (only if your converter is plugged in). In parenthesis the COM Port number is shown.



- 12 -

7.2 Wiring

red----- 24VDC power (+)
 black----- 24VDC power (-)
 white---- 4~20mA signal (+)
 green---- 4~20mA signal (-)
 yellow--- RS485 (T+/A)
 grey----- RS485 (T-/B)
 blue -----Laser Trigger
 bare----- -Shield Ground

8. Laser Sighting

When connected to the power supply, the laser sighting will turn on for two minutes then shut down automatically. To restart the laser, the user needs to turn 24VDC power off and then turn on the power again, or the laser can be activated via a trigger. By shorting the Laser Trigger (blue) and power ground - (black). That can be done with a switch or push button which the user installed on site. At ambient temperature > 50°C, the laser will be switched off automatically.

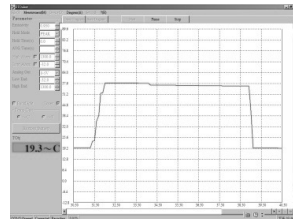
- 9 -

11.2 STonline Software

1) Please connect the sensor to your PC and start STonline software, and open at first [Menu: Setup(S)\Interface Settings], to choose the correct COM port and set the Baud Rate to 9600.

After the unit connected to your personal computer, and the STonline software is started successfully, the communication has been established. The status line will be displayed in the left bottom: active COM port and successfully communication with the connected sensor. And the target temperature will show on the left in digital form.

You can set the sensor; download the logger data and recording temperature curve through the software.



- 13 -

9. Aiming and Focusing

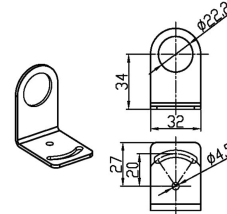
Position the sensor so the laser beam hits in the center of the target and gently move it around until the temperature signal reads the highest. Hold the sensor in place and secure the mounting base. Focusing is complete.



WARNING: Do not point the laser directly at the eyes of persons or animals! Do not stare into the laser beam. Avoid indirect exposure via reflective surfaces!

10. Accessories

10.1 Fixed Mounting Bracket

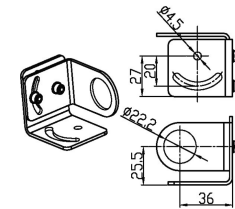


- 10 -

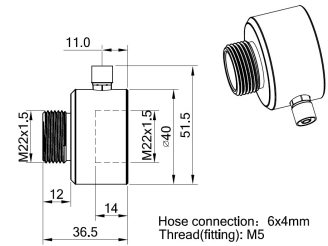
- 2) Starting the measurement
Please press the measuring key: [Menu:Measurement(M)\Start]
- 3) Scaling of the temperature axis
In the menu item settings [Diagram(A)]
Global Auto Scaling: the temperature range of the diagram is automatically adapted to the respective peak values.
Local Auto Scaling: the temperature range of the diagram will be dynamically adapted to the respective peak values.
Manual scaling: It can be done at any time using the control elements of the temperature axis.
- 4) Stop the measurement
To stop the current measurement, please press the stop key [Menu:Measurement(M)\Stop].
The save key [Menu: File(F)\Save Diagram] opens an explorer window to select destination and file name.
- 5) Diagram setting
The menu item settings [Menu: Diagram(A)\Settings] enable the settings for data diagram.
Color: temperature graph and digital display.
Initial Time Interval(S): time frame on x-axis at the beginning of measurement.

- 14 -

10.2 Adjustable Mounting Bracket



10.3 Air Purge Collar



- 11 -

12. Warranty

Each product passes through a quality process. Nevertheless, if a failure occurs please contact the customer service at once. The period of warranty starts from the date of delivery of the product to the customer and shall cover a period of 12 months. This warranty shall not apply to fuses, batteries, or any product that has been subject to misuse, neglect, accident, or abnormal conditions of operation.

The manufacturer shall not be liable for any special, incidental or consequential damages, whether in contract, tort, or otherwise. If a failure occurs during the warranty period, the product will be replaced, calibrated or repaired without further charges. The freight costs will be paid by the sender. The manufacturer reserves the right to exchange components of the product instead of repairing it.

If the failure results from misuse, neglect, accident, or abnormal conditions of operation or storage, the user has to pay for the repair. In that case you may ask for a cost estimate beforehand.

Test Standards:
 - EN 61010-1:2010
 Complies with the following relevant provisions:
 -EC Low Voltage Directive (2014/35/EU)

SENTEST Instruments Corporation Ltd.
 Tel : +886-2-2579-5079
 Fax : +886-2-2579-5297
 www.sentest.com



NS10P-E202005A

- 15 -