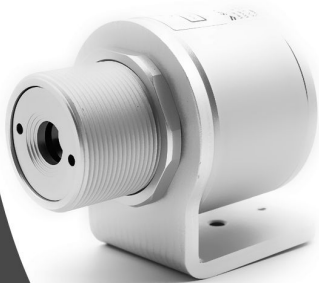


NS11P Infrared Sensor



Operator's Manual



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*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.

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1. Description

1.1 Basics of Infrared thermometry
The NS11P is a non-contact infrared temperature sensor with an integrated double laser sighting. The electronics are protected by a rugged IP64 aluminium alloy(A6061) 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**
- NS11P
 - Mounting nut x 1
 - Fixed mounting bracket x 1
 - 3m connection cable (standard) (2-cores, A2 / 4-cores, A4 & V)
 - 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. Never use cleaning compounds which contain solvents for the lens.

1.4 Electrical Interference
Keep away from strong EMF. 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.

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2. Technical Data

2.1 Measurement Specifications

Temperature Range	0°C ~ 500°C (LT)
Optics Resolution	D:S = 33:1(SF), 13:1 (CF), (90% energy)
Response Time	150ms (95%)
Spectral response	8 ~ 14 µm
Accuracy*1	±1% of reading or ±1.5°C, which is greater
Repeatability*1	±0.5% of reading or ±1°C, which is greater
Emissivity	0.100~1.000

*1 At 23°C ± 5°C, emissivity = 0.95

2.2 Electrical Specifications

Power Supply	24 VDC ±20%, < 100 mA
Analog Output	0 ~ 5 V or 4 ~ 20mA
Digital Output	TTL / USB (optional)
Minimum Impedance Load	10 KΩ (V)
Maximum Loop Resistance	500 Ω (I)

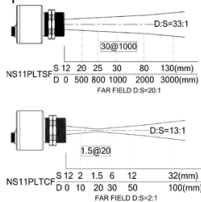
2.3 General Specification

Environmental Rating	IP 64
Ambient Temperature	0°C ~ 70°C
Storage Temperature	-20°C ~ 85°C
Relative Humidity	10% ~ 95%, non-condensing
Cable Temperature	-20°C ~ 80°C
Cable Length	3 m (standard), 5m or 10m
Weight	330g

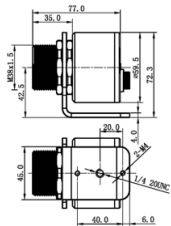
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3. Optical Charts

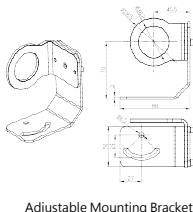
The optical diagrams indicate the target spot diameter at any given distance between the target object and the sensing head. The spot size will change in longer distance corresponding to the following drawing. In order to prevent measuring errors the object must be as least as big as the spot size.



4. Dimensions



5. Accessories



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6. Installation

6.1 Mechanical Installation

The NS11 comes with a standard 3 m cable, one mounting nut and fixed mounting bracket. You can mount the sensor in brackets or cutouts of your own design.

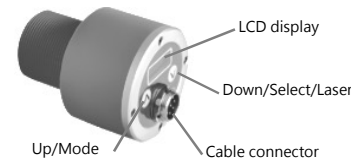
6.2 Wiring

- V/A4 (0 ~ 5V or 4 ~ 20mA output)
- red----- 24VDC power (+)
 - black----- 24VDC power (-)
 - white----- 0 ~ 5V/4 ~ 20mA signal (+)
 - green----- 0 ~ 5V/4 ~ 20mA signal (-)
 - orange----- TX (TTL), optional
 - grey----- RX (TTL), optional
 - blue----- GND (TTL), optional
 - bare----- Shield Ground
- A2 (4 ~ 20mA, 2-wire)
- red----- 4~20mA, Loop (+)
 - black----- 4~20mA, Loop (-)
 - white----- Laser, power supply 24VDC (+)
 - green----- Laser, power supply 24VDC (-)
 - orange----- TX (TTL), optional
 - grey----- RX (TTL), optional
 - blue----- GND (TTL), optional
 - bare----- Shield Ground

Laser Sighting of NS11P-A2:
The laser sighting of NS11P-A2 is powered by an external 24VDC. It can be activated via a switcher by connecting the white/Laser power supply (+) and green/Laser power supply (-) to a 24VDC power supply. The laser will not be switched off automatically. The user needs to disconnect the 24VDC (+) to turn off the laser sighting when not using. Continuing turn on the laser, will affect the life of laser module.

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7. Operation



Sensor Setup :

1. Pressing the up (Λ) key and down (V) keys simultaneously to enter setup function.
2. Press the up (Λ) key to select the functional parameter.
3. Press the down (V) key, when a (-) symbol appears at the right side of the selected function confirming into Setting Mode.
4. Press the down (V) or up (Λ) key to setup the functional parameter.
5. No action for 7s forces the unit to leave the Setting Mode and save the parameter.

Display	Mode	Adjustment Range
S ON	Laser Sighting (NO) / (OFF) (*NS11P-V/A4)	Press the Down (V) or Up (Λ) key
E 0.950	Emissivity	0.100 ~ 1.000
A 0.2	Signal output Average	0.0 ~ 600.0s
P 0.0	Signal output Peak hold (inactive)	0.0 ~ 600.0s
V 0.0	Signal output Valley hold (inactive)	0.0 ~ 600.0s
AP OFF	Advanced Peak hold (inactive)	ON / OFF
AP 0	Trigger Value for AP	depending on user
The signal processing features (Peak, Valley and AP hold) cannot be used concurrently.		
L 0	Lower Limit signal output [0V / 4mA]	0 ~ 500°C
H 500	Upper Limit signal output [5V / 20mA]	
Unit C	Temperature unit	°C / °F

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8. 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.



LASER LIGHT
DO NOT STARE INTO BEAM
CLASS 2 LASER
<1mW / 650 nm
IEC 825 (1994)

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!

Test Standards:

- EN 61010-1:2010

- EN 61326-1:2013

Complies with the following relevant provisions:

-EC Low Voltage Directive (2014/35/EU)

-EC Electromagnetic Compatibility Directive (2014/30/EU)



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NS11P-E202009A

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