NS11
Infrared Sensor

Operator's Manual

SENTEST Instruments

Content

*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. Description

1.1 Basics of Infrared thermometry

The NS11 is a non-contact infrared temperature sensor. The electronics are protected by a rugged IP65/NEMA 4 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

- NS11
- Mounting nut x 2
- 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. 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. Avoid static electricity, arc welders, and induction heaters. Avoid abrupt changes of the ambient temperature. To avoid ground loops, make sure

2. Technical Data

2.1 Measurement Specifications

Temperature Range	0ºC ~ 500ºC (LT)
Optics Resolution	D:S = 20:1 (90% energy)
Response Time	150ms (95%)
Spectral response	8 ~ 14 µm
Accuracy*1	±1% of reading or ±1.5ºC, which is greater
Repeatability*1	±0.5% of reading or ±1ºC, which is greater
Emissivity	0.100~1.000

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)

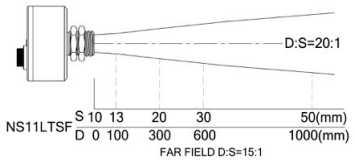
2.3 General Specification

Environmental Rating	IP 65 (NEMA-4)
Ambient Temperature	0ºC ~ 70ºC
Storage Temperature	-20ºC ~ 85ºC
Relative Humidity	10% ~ 95%, non-condensing
Cable Temperature	-20ºC ~ 80ºC
Cable Length	3 m (standard), 5m or 10m
Weight	200g

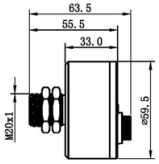
*1 At 23ºC ± 5ºC emissivity = 0.95

3. Optical Chart

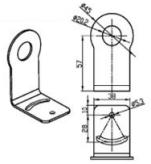
The optical diagrams indicate the target spot diameter at any given distance between the target object and the sensing head. The spot size will change in longer distance corresponding to the following drawing. In order to prevent measuring errors the object must be as least as big as the spot size.



4. Dimensions



5. Accessories



Fixed Mounting Bracket

6. Installation

6.1 Mechanical Installation

The NS11 comes with a standard 3 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.

6.2 Wiring

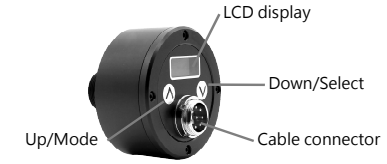
(0 ~ 5V or 4 ~ 20mA output)

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

(4 ~ 20mA, 2-wire)

red--------- Loop (+)
black------- Loop (-)
orange------ TX (TTL), optional
grey-------- RX (TTL), optional
blue-------- GND (TTL), optional
bare--------Shield Ground

7. Operation



Sensor Setup :

1. Pressing the up (∧) key and down (∨) keys simultaneously to enter setup function.
2. Press the up (∧) key to select the functional parameter.
3. Press the down (∨) key, when a (-) symbol appears at the right side of the selected function confirming into Setting Mode.
4. Press the down (∨) or up (∧) 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
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

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.

Test Standards:
- EN 61010-1:2010
- EN 61326-1:2013

CE RoHS compliant

Complies with the following relevant provisions:
-EC Low Voltage Directive (2014/35/EU)
-EC Electromagnetic Compatibility Directive (2014/30/EU)

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