

NS11 Infrared Sensor



Operator's Manual



Content

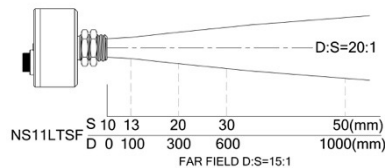
	Page
1. Description	2
1.1 Basics of Infrared thermometry	2
1.2 Scope of Delivery	2
1.3 Maintenance	2
1.4 Electrical Interference	2
2. Technical Data	3
2.1 Measurement Specifications	3
2.2 Electrical Specifications	3
2.3 General Specification	3
3. Optical Chart	4
4. Dimensions	4
5. Accessories	4
6. Installation	5
6.1 Mechanical Installation	5
6.2 Wiring	5
7. Operation	6
8. Warranty	7

*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.

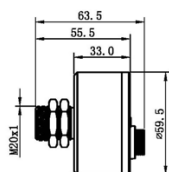
-1-

3. Optical Chart

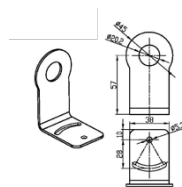
The optical diagrams indicate the target spot diameter at any given distance between the target object and the sensing head. The spot size will change in longer distance corresponding to the following drawing. In order to prevent measuring errors the object must be as least as big as the spot size.



4. Dimensions



5. Accessories



Fixed Mounting Bracket

-4-

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 (-)
yellow----- RS485 A, optional
grey----- RS485 B, optional
bare----- Shield Ground

(4 ~ 20mA, 2-wire)

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

-5-

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

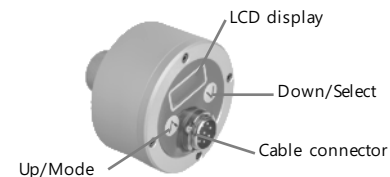
Keep the lens clean at all times. Any foreign matter on the lens would affect measurement accuracy. Blow off loose particles using clean compressed air. The lens surface can be cleaned with a soft, humid tissue moistened with water or a water based glass cleaner. Never use cleaning compounds which contain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

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
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)	0 ~ 500°C
Unit C	Temperature unit	°C / °F

-6-

2. Technical Data

2.1 Measurement Specifications

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

2.2 Electrical Specifications

Power Supply	24VDC ±20%, < 100mA
Analog Output	0 ~ 5V or 4~20mA
Digital Output	TTL or RS485
Minimum Impedance Load	10 KΩ (V)
Maximum Loop Resistance	500 Ω (I)

2.3 General Specification

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

*1 At 23°C ± 5°C emissivity = 0.95

-3-

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



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

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NS11-E202603A

-7-

NS11 紅外線測溫器

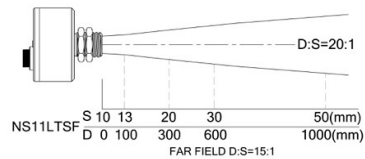


使用說明

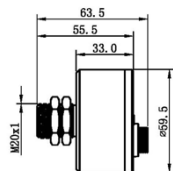
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3 光學路徑

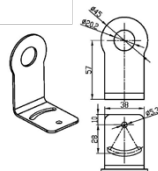
光學路徑圖可顯示被測物體大小與測量距離之間的關係 $D:S = 20:1$ 。指出探頭與目標的距離 (D) 所能測量到目標物 (S) 的大小。為了避免發生溫度測量的誤差，被測物體面積一定不能小於光學路徑圖所要求的光點直徑 (S)。



4 外型尺寸



5 配件



L 型固定架

目錄

	頁碼
1 產品介紹	2
1.1 原理簡介	2
1.2 包裝內容	2
1.3 保養須知	2
1.4 注意事項	2
2 產品規格	3
2.1 技術規格	3
2.2 電氣特性	3
2.3 機械參數	3
3 光學路徑	4
4 外型尺寸	4
5 配件	5
6 安裝	5
6.1 固定方式	5
6.2 連接線標示	5
7 功能操作	6
8 售後服務	7

注意：使用儀器前請詳細閱讀本手冊，製造商保留因產品技術升級更改本說明書權利。

-1-

6 安裝

6.1 固定方式

NS11 外殼材質為鋁合金A6061，附有兩個固定螺帽 (M20 x 1)，可直接安裝探頭於現場，也可選購 L 型固定架進行安裝。安裝探頭時，須確認鏡頭的光學路徑不可被任何物體所遮擋，以避免影響到 NS11 測量溫度的準確度。

6.2 連接線標示

V/A4 (0~5V 或 4~20mA 輸出)

紅-----24VDC 電源 (+)
黑-----24VDC 電源 (-)
白-----0~5V/4~20mA 信號輸出 (+)
綠-----0~5V/4~20mA 信號輸出 (-)
黃-----RS485 A (選購)
灰-----RS485 B (選購)
裸線-----遮蔽線 (Gnd)

A2 (兩線式 4~20mA 輸出)

紅-----Loop (+)
黑-----Loop (-)
黃-----TX 數位信號 (選購)
灰-----RX 數位信號 (選購)
藍-----GND 數位信號 (選購)
裸線-----遮蔽線 (Gnd)

-5-

1 產品介紹

1.1 原理簡介

NS11 系列紅外線測溫器為單體式結構組成，包含光學鏡頭、溫度感應器、電子線路及 LCD 顯示幕共同組裝在一個鋁合金 (A6061) 金屬管裏，表面經硬化處理，耐磨和不易刮傷。探頭符合環境保護 IP65 / NEMA-4 等級，可滿足安裝在各種場合的使用要求。

1.2 包裝內容

- NS11 測溫探頭
- 固定螺帽 x 2
- 3m 快速連接線 (A2-兩芯、V/A4-四芯)
- 操作手冊

1.3 保養須知

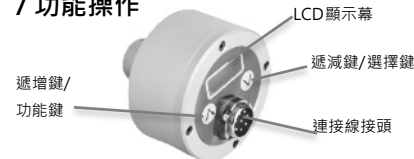
NS11 的光學鏡頭必須保持清潔，避免因粘有灰塵、油煙等汙染物，而導致溫度測量誤差甚至損壞鏡頭，清潔鏡頭可用相機的擦鏡紙蘸清水擦拭。

1.4 注意事項

為避免高頻干擾，安裝探頭時避免接近變頻器、電焊和高週波加熱等會產生高頻率的電氣裝置，遠離 EMF (電磁場)，例如：電動機、變頻器、馬達、大功率電纜等。避免環境溫度急遽的變化，溫度探頭的遮蔽線必須良好接地。

-2-

7 功能操作



1. 在測溫狀態時，請先按 (A) 不鬆手，再按 (V) 進入設定模式。
2. 按 (A) 來選擇所欲修改的項目。
3. 選定所欲修改的項目後，再按 (V) 鍵，讓該項目的右方出現 (-) 符號，顯示已進入設定模式。
4. 可按 (A) 增加或 (V) 減少，改變其設定值。
5. 確認該項目設定好後，等 7 秒後按鍵沒有動作，測溫器會自動儲存設定的參數值，並回到測溫狀態。

*恢復原廠設置：在測溫狀態下，按遮減鍵 (V) 不鬆手，再按遮增鍵 (A)，當 LCD 螢幕顯示 (INIT) 時，則確認已恢復為原廠設置狀態。

顯示	說明 (舉例)	設定內容
E 0.950	放射率	0.100 ~ 1.000 (可調)
A 0.2	信號輸出平均時間	(0.0 ~ 6000.0 s)
P 0.0	信號輸出最高值保持 (未啟動)	(0.0 ~ 6000.0 s)
V 0.0	信號輸出最低值保持 (未啟動)	(0.0 ~ 6000.0 s)
AP OFF	蜂鳴保持 啟動(ON) / 關閉(OFF)	按 (V) 或 (A) 鍵切換
AP 0	蜂鳴保持預設值	可依需求設定
註：P (最高)、V (最低) 和 AP (蜂鳴) 此三種信號輸出保持，只能選擇一。		
L 0	下限溫度 → 0V/4mA 對應的輸出信號	
H 500	上限溫度 → 5V/20mA 對應的輸出信號	0°C ~ 500°C
Unit C	溫度單位	°C / °F

-6-

2 產品規格

2.1 技術規格

溫度範圍	0°C ~ 500°C (LT)
光學解析	D:S = 20:1 (90% 能量)
頻譜反應	8 ~ 14 μm
反應時間	150ms (95%)
精確度*1	±1% 讀值或 ±1.5°C，取大值
重複性*1	±0.5% 讀值或 ±1°C，取大值
放射率	0.100~1.000 (可調)

2.2 電氣特性

工作電源	24 VDC ±20%，< 50 mA
信號輸出	0~5 V 或 4~20mA
數位通訊	TTL 或 RS485
最小負載	10 KΩ (電壓輸出)
最大負載	500 Ω (電流輸出)

2.3 機械參數

防護等級	IP 65 (NEMA-4)
環境溫度	0°C ~ 70°C
儲存溫度	-20°C ~ 80°C
相對濕度	10%~95% (不結露)
連接線耐溫	-20°C ~ 80°C
連接線長度	3m (標準)，5m 或 10m
重量	200g

*1 環境溫度=23°C ±5°C，發射率=0.95

-3-

8 售後服務

每具紅外線測溫器都經過了嚴格品質管控的流程，如果產品出現故障請立即和客服部門聯絡，產品保固期限為自出廠之日起 12 個月。

保固期間不適用由於因人為操作使用不當造成的損壞，製造商不對衍生性原因造成的損壞負責。保固期內產品出現故障，製造商有權更換零件，製造商只提供更換、校正和維修服務，運輸費由寄件人承擔。

如因使用不當造成的損壞，由用戶承擔維修費用，用戶可以事先與客服部門聯絡，詢問預估的維修費用。

Test Standards:

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



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-4-

-7-