

# Noble-Sky

## Multi-input wireless transmitter for a wide range of sensors and measurement signals

Noble-Sky is a versatile, battery-powered wireless transmitter for measuring temperature, voltage, current, and digital signals.

Noble-Sky allows multiple types of sensors and measurement signals to be connected to a single wireless transmitter. The device supports temperature sensors, voltage and current signals, and digital inputs. Supported temperature sensors include a wide range of thermocouple types and resistive temperature sensors, such as Pt100 and Pt1000. The device also features four digital inputs, one of which supports pulse counting.



Measurement data is transmitted wirelessly via the Nokeval Sky radio network. Based on LoRa modulation, the radio technology provides a transmission range of up to several kilometers under good line-of-sight conditions. Transmitted data is protected with AES-128 encryption. Noble-Sky is powered by four user-replaceable C-size alkaline batteries, with an estimated battery life of approximately three years at a 15-minute transmission interval using the Effort 3 setting.

With its IP65 enclosure and an operating temperature range of -30 to +55 °C, Noble-Sky is also suitable for demanding environments and outdoor installations. The enclosure is made of ASA plastic for UV resistance in outdoor use.

## Applications



General-purpose applications

## Product features

- Versatile measurement capabilities: 2 or 4 temperature sensor inputs, 4 voltage inputs, 2 current inputs, and 4 digital inputs
- Wide sensor support: multiple thermocouple types and resistive temperature sensors, including Pt100, Pt1000, Ni, and Cu
- Secure wireless data transmission via Nokeval Sky
- Long battery life and easy maintenance
- Suitable for outdoor installations



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## General and mechanical

|                                 |                                                                              |
|---------------------------------|------------------------------------------------------------------------------|
| <b>Storage conditions</b>       | -40 to +60 °C, relative humidity 5–95%, non-condensing                       |
| <b>Operating conditions</b>     | -30 to +55 °C, relative humidity 5–95%, non-condensing                       |
| <b>Ingress protection</b>       | IP65                                                                         |
| <b>Enclosure material</b>       | UV-resistant ASA plastic                                                     |
| <b>Dimensions</b>               | 120 mm x 160 mm x 65 mm                                                      |
| <b>Weight</b>                   | TBD                                                                          |
| <b>Mounting</b>                 | Wall mounting recommended, 6 screw holes in mounting flanges                 |
| <b>Cable glands</b>             | 3 x M12x1.5 glands                                                           |
| <b>Configuration connection</b> | Micro-USB connector on circuit board, MekuWin configuration software support |

## Power supply

|                            |                                                                                                               |
|----------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Type</b>                | 4 x LR14 (C size) 1.5 V alkaline batteries                                                                    |
| <b>Battery life</b>        | About 3 years with 15 min transmission interval with Effort 3                                                 |
| <b>Battery replacement</b> | User-replaceable; batteries can be easily replaced while the device is installed by opening the enclosure lid |

## Data transmission and security

|                                |                                                                                                          |
|--------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>Description</b>             | Nokeval Sky radio based on LoRa modulation, not LoRaWAN compatible                                       |
| <b>Frequency</b>               | 433,3–434,5 MHz                                                                                          |
| <b>Transmit power</b>          | Max. +10 dBm E.R.P.                                                                                      |
| <b>Antenna</b>                 | Internal, fixed helix antenna                                                                            |
| <b>Supported Sky receivers</b> | All Nokeval Sky radio receivers and gateway devices                                                      |
| <b>Range, line of sight</b>    | Dependent on radio parameters and environment; up to several kilometers in good line-of-sight conditions |
| <b>Data security</b>           | All data transmitted by the device is strongly encrypted (AES-128)                                       |
| <b>Firmware updates</b>        | Via connector on the circuit board                                                                       |

## Analog inputs

|                               |                                                                                                                            |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Analog inputs</b>          | 2 or 4 temperature sensor inputs, 4 voltage inputs, and 2 milliampere current inputs; all galvanically interconnected      |
| <b>Analog input types</b>     | Differential thermocouple, Resistive temperature sensor (RTD), Voltage, Current                                            |
| <b>Voltage input ranges</b>   | <b>Low range:</b> -4 to +28 V, 0.1 mV resolution<br><b>High range:</b> -18 to +126 V, 1 mV resolution (up to 60 V allowed) |
| <b>Voltage input accuracy</b> | ±5 mV at 25 °C ambient + 60 ppm/°C thermal drift                                                                           |
| <b>Current input range</b>    | 0...24 mA                                                                                                                  |
| <b>Current input accuracy</b> | ±0.008 mA at 25 °C ambient + 60 ppm/°C thermal drift                                                                       |

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## Thermocouple inputs

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Supported thermocouple types</b>         | B, C, D, E, G, J, K, L, N, R, S, T                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Thermocouple input range (linearity)</b> | <b>TcB:</b> 400...1700 °C (0.3 °C)<br><b>TcC:</b> 0...2300 °C (0.5 °C)<br><b>TcD:</b> 0...2300 °C (1 °C)<br><b>TcE:</b> -100...900 °C (0.2 °C)<br><b>TcG:</b> 1000...2300 °C (2 °C)<br><b>TcJ:</b> -160...950 °C (1 °C)<br><b>TcK:</b> -150...1370 °C (0.5 °C)<br><b>TcL:</b> -150...900 °C (0.5 °C)<br><b>TcN:</b> 0...1300 °C (0.1 °C)<br><b>TcR:</b> 0...1700 °C (0.5 °C)<br><b>TcS:</b> 0...1700 °C (0.5 °C)<br><b>TcT:</b> -200...400 °C (1 °C) |
| <b>Thermocouple input accuracy</b>          | ±1°C at 25 °C ambient over +0...+100 °C typical                                                                                                                                                                                                                                                                                                                                                                                                      |

## RTD inputs

|                                |                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------|
| <b>Supported RTD sensors</b>   | Pt100, Pt1000, Ni, Cu                                                               |
| <b>RTD input range</b>         | -200...+600 °C                                                                      |
| <b>RTD input accuracy</b>      | 0.05% of reading + 0.2 °C at 25 °C ambient + 0.01 °C/°C thermal drift               |
| <b>Analog input protection</b> | Short-term over-voltage tolerance -24V...24 V, ESD protection according to EN 61326 |

## Digital inputs

|                                 |                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------|
| <b>Digital inputs</b>           | 4 digital inputs (1 with pulse counter support); inputs are galvanically interconnected |
| <b>Digital input types</b>      | NPN, PNP configurable                                                                   |
| <b>Digital input protection</b> | Short-term over-voltage tolerance -24...24 V, ESD protection according to EN 61326      |