

SS-002 Series

Wireless TC and RTD Smart Sensors with Cloud Connectivity



- **SS-002: Configurable sensor mix of Temperature, Humidity, Barometric Pressure, Light sensor, Thermocouple, RTD, or Contact Closure**
- **Free Layer N Standard Cloud service accessible from any connected device¹**
- **Easy setup with one-button pairing**
- **Transmits up to 1.2 km with standard AA batteries²**
- **Transmits up to 3.2 km when powered with USB²**
- **AES-256 Encrypted wireless link keeps your data secure**
- **Local data logging up to 10,649 data points³**



Layer N SS-002 Smart Sensors provide an external 3-wire RTD, thermocouple, or contact closure solution in addition to the built in suite of precision internal sensing elements that come standard with the SS-001 to accurately measure environmental conditions for a wide range of applications.

The SS-002-0 offers a configurable choice of an external thermocouple, RTD, or DIN (contact closure).

The SS-002-1 offers a configurable mix of any three of the four internal sensors: Temperature, Humidity, Barometric Pressure, Ambient Light, **AND** one external sensor option: Thermocouple, RTD, or DIN (contact closure).

Plug and Play

Layer N Smart Sensors are easily paired to the Layer N Gateway with the press of a button, and will automatically show up on your Layer N Cloud Account. The Layer N Gateway can connect up to 256 Smart Sensors⁴ per unit. Local data logging keeps your data secure in the event of a power or network outage. Reports, History, and E-mail alerts from the Layer N Cloud keep you informed on the status of all your vital processes.

Advanced Features

Advanced Omega Level N features may be configured through SYNC software and include selective data extraction, measurement and device traceability, local alarms and adaptive transmission rates to reduce data congestion and extend battery life.

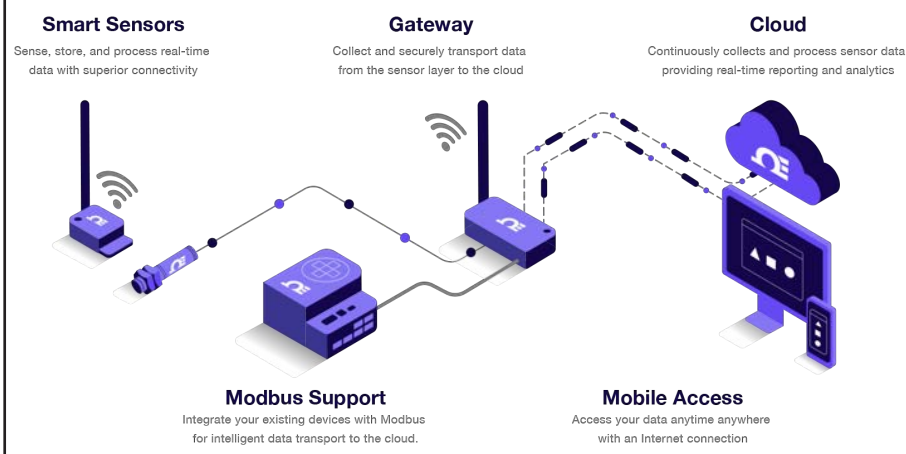
Secure

Layer N wireless products are designed with state of the art security features to protect your data with robust AES256 encryption and advanced PKA-EC521bit (NIST) elliptic-curve cryptography to protect your data.

Long Range

The SS-002 utilizes Sub GHz Frequency Hopping Spread Spectrum (FHSS) technology to ensure robust, long range communications. Transmission ranges of up to 1.2 km can be achieved with the standard AA batteries and transmission ranges of up to 3.2 km can be achieved when powered by a standard 5V micro USB cable².

How Do Layer N Products Work?



Specifications

Wireless Communication

Frequency: 868 MHz

Range: Up to 3.2 km*

*When powered by USB, without obstruction

Power

Alkaline Battery: 2x AA batteries (included)

Lifetime: Up to 1.5 years with frequency of 1 reading per hour

USB Power*: 500mA @ 5V

*Micro USB cable not included

Environmental

Operating Conditions for Base Unit

Battery Powered: -15°C to 55°C, non-condensing

USB Power: -20°C to 65°C, non-condensing

Rating: IP40

General

Software: Compatible with SYNC configuration software and Layer N Cloud

Thermocouple Types

Type	Range	Accuracy
J	-210°C to 1200°C	±1.0°C
K	-160°C to 1372°C	±2.0°C
T	-190°C to 400°C	±1.5°C
E	-200°C to 1000°C	±1.0°C
N	-100°C to 1300°C	±2.0°C
R	140°C to 1788°C	±5.0°C
S	200°C to 1768°C	±5.0°C
B	640°C to 1820°C	±5.0°C
C	0°C to 2000°C	±5.0°C
Cold Junction Calibration		±0.5°C

RTD Types

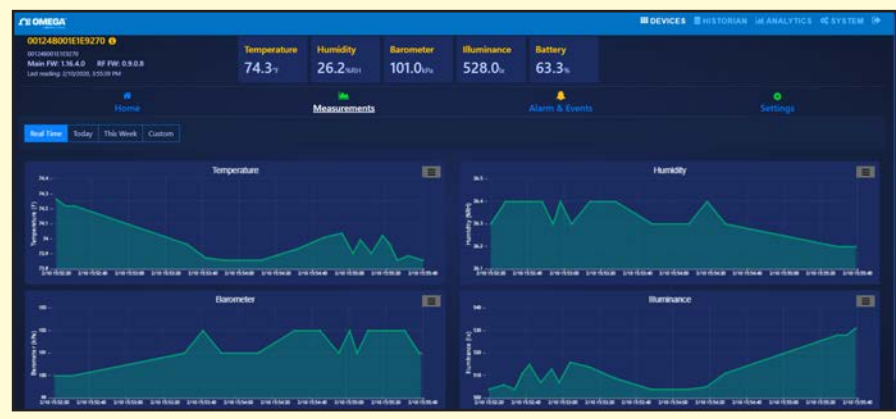
Type	Ohm	Range	Accuracy
385, 3 Wire	100, 500, 1000	-200°C to 850°C	1.5°C
392, 3 Wire	100	-200°C to 660°C	1.5°C
3916, 3 Wire	100	-200°C to 660°C	1.5°C

Smart Sensor Device

Measurement	Range	Accuracy
Temperature	-20°C to 70°C	±0.3°C
Humidity @ 25°C	0% to 80%	±2.5%
	80% to 100%	±3.5%
Barometric Pressure @ 25°C	700mbar to 1100mbar	±4mbar
Barometric Pressure @ Full Range	300mbar to 1100mbar	±6mbar
Light	0-43691 illuminance	Relative level only

Your Data at a Glance with Layer N Cloud

Layer N Cloud consolidates and brings your data to you when you need it, wherever you are. The intuitive cloud interface allows you to monitor and store your data, set alarms and alerts, and provides insights on device activity.



1. Visit <https://omega.com/en-us/cloud> for subscription options. Total number of sensors that can connect to Layer N Cloud varies with subscription tier.
2. Actual range may vary depending on environment.
3. The number of data points available are on a per sensor basis. Local Data can be downloaded using downloadable SYNC configuration software.
4. 256 sensors are supported at typical update intervals, on the order of 60 minutes, higher data rates or adverse environmental conditions may diminish the number of sensors supported.

Variants

The SS-002 is available in two variants of measurement suites: Both operate on a frequency of 868 MHz.

Model Number	Description
SS-002-0-EU	External Thermocouple, RTD, or DIN (Contact Closure) Smart Sensor - 868MHz
SS-002-1-EU	Configurable mix of 3 of the 4 internal sensors: Temperature, Humidity, Barometric Pressure, Ambient Light AND one external sensor: Thermocouple, RTD, or DIN (Contact Closure) Smart Sensor - 868MHz

Gateway

A Wireless Gateway is **required** to connect the SS-002 to the Layer N Cloud. We currently offer the following options.

Model Number	Description
GW-001-2-EU	Wireless IIoT Gateway Standard
GW-001-3-EU	Wireless IIoT Gateway Pro

Thermocouple and RTD Probes

Omega recommends using the following supported thermocouple and RTD probes. Supported probes are not limited to those in this list.

Thermocouple Immersion Probes	Description
TJ36 Series	Heavy Duty Transition Joint Thermocouple Probes, J/K/E/T/N Type, 1/16" to 1/4" lengths, 304/310/316/321 SS or Inconel sheath, multi-diameter
Thermocouple Surface Sensors	
5TC Series	Insulated Thermocouples, J/K/T/E Type, multi-length, 20/24/30/36/40 AWG Wires, PFA or Glass Braid insulation
SA1 Series	Fiberglass-Insulated Self-Adhesive Thermocouple Wire Leads, J/K/T/E Type, 40"/80"/120" length
SA2 Series	Self-Adhesive Molded Silicon Thermocouple, J/K/T/E Type, 40"/80"/120" length
RTD Probes	
PR-10 Series	General Purpose RTD, -200 to 600°C temperature range, 2/3/4 Wire configuration
PR-11 Series	General Purpose RTD with Metal Strain Relief, -200 to 600°C temperature range, 1/4", 3/16", 1/8" diameters, 6"/9"/12"/18"/24" length, provided with a minimum of 36" of 3 conductor, #26 AWG stranded, Nickel Plated Copper, PFA insulated and jacketed cable
PR-20 Series	Short RTD Probe, 2" Length, PFA: -50 to 260°C (-58 to 500°F) Fiberglass: -50 to 450°C (-58 to 842°F) Depending on Cable Selection 2/3/4-Wire available
PRTF-10 Series	General Purpose RTD with PFA Insulated and Jacketed Cables, Temperature Range: -50 to 260°C, multi-diameter, multi-length, 2/3/4-Wire
PRTF-11 Series	RTD Probes with Transition Fittings, Strain Relief Springs and PFA Insulated and Jacketed Cables, -50 to 260°C temperature range, multi-length, multi-diameter, 2/3/4-Wire
RTD Surface Sensors	
RTD-830 Series	Surface Mount RTD, Aluminum Housing, -60 to 230°C temperature range, 3-wire
RTD-800-B Series	Industrial Grade RTD Sensors, 6 Styles: Air, Surface, NPT threaded, Tab Mount, Screw On, or Flange Mount Probe
SA1-RTD Series	SA1-RTD Surface-Mount RTD, Self-Adhesive or Cement On, -73 to 260°C temperature range, 40"/80"/120" length, 3 or 4-Wire