SS-015 (-NA) Series

OE OMEGA™

Long Range Wireless Process and Digital Pulse Input Smart Sensor

- **3 configurable Process/Digital Pulse Inputs**
- **Process Inputs: 4-20 mA, 0-1.0 V_{DC}, 0-2.0 V_{DC}**
- **Digital Pulse Inputs: Rate, Pulse Width, Pulse Delay, Duty Cycle, Counter**
- **Wireless communication up to 3.2 km[1]**
- **IP65 Environmental Rating**
- **Easy setup with one-button pairing**
- **AES-256 encrypted wireless link keeps your data secure**
- **Local data logging up to 10,649 data points[2]**

M12.5-S-M-FM screw terminal adapter sold separately

Introduction: SS-015

The Layer N SS-015 Smart Sensor provides an easy way to integrate process and digital pulse inputs to your Layer N Ecosystem. SS-015 Smart Sensors provide a long-range wireless sub GHz interface for devices that produce both process and digital signals and transmits them to the Layer N Cloud or OEG. External process and digital signal devices connect to the SS-015 through an M12 5-pin connector (M12.5-S-M-FM screw terminal accessory sold separately) and easily pair to a Layer N Gateway through a one-button pairing system. The device can be powered by internal batteries, USB power, or an optional external power source (sold separately).

The SS-015 may be configured to monitor up to 3 industry standard process signals including 4-20 mA, 0-1.0 V_{DC}, and 0-2.0 V_{DC}.

The SS-015 may also be configured to monitor the on/off state of the input signals, the pulse rate/width and duty cycle of the primary input, or the pulse delay between the two signals. The pulse totalizing function supports both standard counting and up/down counting.

Each of the 3 inputs can be individually configured to allow mixed configurations to monitor both Process and Pulse Signals simultaneously. Additionally, a low power sensor signal excitation power output is available.

Security and Access Control

Layer N wireless products are designed with state of the art security features to protect your data with robust AES-256 encryption and advanced PKA-EC521bit (NIST) elliptic-curve cryptography to protect your data. Password protection ensures that access to device data is restricted and only accessible by authorized users. Device Authentication ensures that Layer N Smart probes connect to validated Omega devices.

Intuitive Configuration

Configure your Layer N Smart Sensor using our free SYNC configuration software. Configurable features include selective data extraction, measurement and device traceability, local alarms, and adaptive transmission rates to reduce data congestion and extend battery life.

One-Button Pairing

The SS-015 is 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 100 Smart Sensors[4] 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.

How Do Layer N Smart Sensors Work?
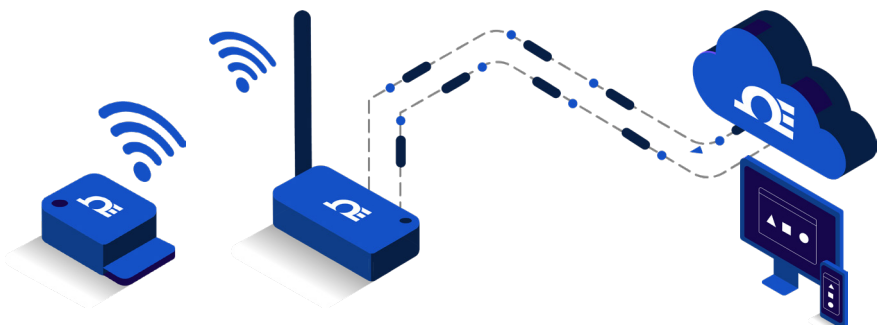
Smart Sensor
Sense, store, and process real-time data with superior wireless connectivity to the Gateway.

Gateway
Collect and securely transport data from the sensor layer to the Cloud.

Cloud & Mobile Access
Continuously collects and processes sensor data providing real-time reporting and analytics anytime, anywhere with an Internet Connection.

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OMEGA™

Specifications

Wireless Communication

Frequency: 915 MHz

Range*: Up to 1.2 km in low power mode
Up to 3.2 km in high power mode

*Clear line of sight. Actual range may vary depending on environment.

Power

Alkaline Battery: 2x C-Cell batteries (included)

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

External Power: 5 V_{DC} @ 1.75 W

*External power adapter optional. External power specification based on Omega specific power adaptor.

Environmental

Operating Conditions for Base Unit: -20ºC to 70ºC (-4ºF to 158ºF), 90% RH non-condensing

Rating: IP65

Signal Excitation Power: Nominal 3.3 V_{DC} @ 100 mA

Low Power Sensor Signal Excitation Power: Nominal 3.3 V_{DC}, current limited to 30 mA

Digital Inputs

ON: 1.0 V_{DC}

OFF: 0.7 V_{DC}

Internal Pull Up/Down: 1.5k to 3.0 V_{DC}

Comparator (Clock) Input: 100 mV, 500 mV, 1.0 V_{DC}, 2.0 V_{DC}

General

Software: Compatible with SYNC configuration software and Layer N Cloud

Certification

Contains FCC ID: WR3-MOD16370915

Contains IC ID: 8205A-MOD16370915

Digital Inputs

ON: 1.0 V_{DC}

OFF: 0.7 V_{DC}

Internal Pull Up/Down: 1.5k to 3.0 V_{DC}

Comparator (Clock) Input: 100 mV, 500 mV, 1.0 V_{DC}, 2.0 V_{DC}

Type	Range	Operating Conditions	Accuracy
Frequency (f)	0.01 Hz to 100 Hz	$T_{PW\ MIN}$ = 200 uS	±0.5%
Frequency (f)	100 Hz to 1000 Hz	$T_{PW\ MIN}$ = 200 uS	±1 Hz averaged over 1 sec.
Counter	0 to +8388608	1 kHz Max Rate	±1 count max
Up/Down Counter	-8388608 to +8388608	1 kHz Max Rate	±1 count max
Pulse Width (TPW)	200 uS min		± 50 uS ±1%
Pulse Delay (TPP)	200 uS min		±50 uS ±1%
Duty Cycle	1% to 99%	0.01 Hz to 1000 Hz, $T_{PW\ MIN}$ = 200 uS	±1.5% Max

Analog Inputs

Type	Range	Resolution	Min	Max	Accuracy	Input Independence
Current Loop	0-24 mA	±0.1 mA	0 mA	24 mA	±0.2 mA	50 ohm
Voltage	0-1.0 V_{DC}	±10 mV	0 V_{DC}	1.2 V_{DC}	±10 mV	100k ohm
Voltage	0-2.0 V_{DC}	±10 mV	0 V_{DC}	2.5 V_{DC}	±20 mV	100k ohm

M12 5-Pin Female Connector
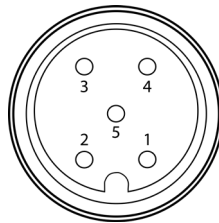
Pin	Process/ Analog	Digital	Mixed Mode
Pin 1	Excitation Power (3.3 V_{DC}, 100 mA)	Excitation Power (3.3 V_{DC}, 100 mA)	Excitation Power (3.3 V_{DC}, 100 mA)
Pin 2	Process 0	DIN 0/Pulse A	DIN 0/Pulse A
Pin 3	Ground Reference	Ground Reference	Ground Reference
Pin 4	Process 2	DIN 2/Enable/ Direction/ Pulse B	Process 0
Pin 5	Process 1	DIN 1/Reset	DIN 1/Reset

1. Actual range may vary depending on environment.

2. The number of data points available are on a per sensor basis. Local Data can be downloaded using downloadable SYNC configuration software.

3. 100 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.

Wireless Sub GHz Smart Interface

Model Number	Description
SS-015-NA	Wireless Sub-GHz Process and Digital Pulse Smart Sensor

Accessories

An optional M12 5-pin screw terminal adapter is recommended for users who will connect wire leads directly to the SS-015.

Model Number	Description
M12.5-S-M-FM	M12 5-pin screw terminal adapter
UNIV-AC-100/240-5-M8	Universal AC adapter with M8 connector

Layer N Wireless Gateways

A Layer N Wireless Gateway is *required* to connect your Smart Sensor to the Layer N Cloud.

Model Number	Description
GW-001-2-NA	Wireless IIoT Gateway Standard, Ethernet connectivity, connects up to 100 Layer N Smart Sensors- 915 MHz
GW-001-3-NA	Wireless IIoT Gateway Pro, Ethernet connectivity, power over Ethernet, connects up to 100 Layer N Smart Sensors, Modbus RTU RS232/RS485 and Modbus TCP, 2x USB ports- 915 MHz
GW-002-1-LTE	Wireless LTE IIoT Gateway Pro connects up to 40 Layer N Smart Sensors, Modbus RTU RS232/RS485 and Modbus TCP, 1x RJ45 port, 1x USB port - 915 MHz

Your Data at a Glance with the Layer N Cloud

The 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. Visit the OMEGA website for more details.

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