

# SP-013

## Digital Interface Smart Probe



- Pulse Rate, Pulse Width, Pulse Duty Cycle, and Pulse Delay monitoring
- Up/Down Counter
- 2x Digital I/O
- Software configurable through SYNC configuration software
- Modular M12 construction
- OMEGA Smart Core enabled
  - Data Logging
  - Integrated Alarm and Control
  - Plug and Play Device Detection
  - Sensor health monitoring



The Layer N SP-013 Digital Interface Smart Probe provides an easy way to integrate digital pulse inputs to your Layer N Ecosystem. The SP-013 accepts digital pulse inputs through its M12 5-pin connector and Layer N Smart Interfaces through its M12 8-pin connector. The optional M12.5-S-M-FM connector can be utilized to easily connect wire leads to your SP-013.

The SP-013 may be configured to monitor the on/off state of the input signals, the pulse rate/ 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.

### Intuitive Configuration

Configure your Layer N Smart Probe using SYNC's intuitive configuration interface.

### Edge Control and Built in I/O

The Layer N SP-013 features 2 configurable digital I/O pins. These can be used for a myriad of applications including driving relays, physical alarms, or sensing dry contacts like door switches. The SP-013 can also be utilized as an edge controller, with autonomous independent decision-making capabilities to generate local alarms or provide control outputs based on sensor inputs.

### Smart Core Enabled

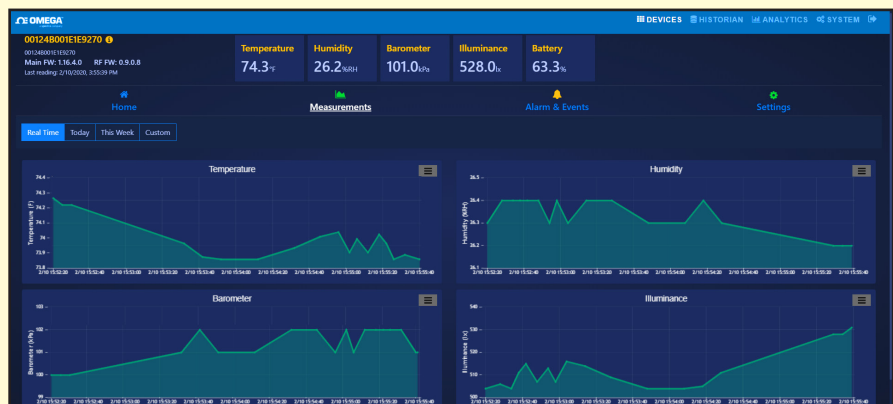
Smart core is integral to all Layer N Smart Probes. This powerful suite of advanced features enable plug and play connectivity, alarms and notifications, data assurance, data logging, and storage.

### Smart Interface Modularity

Customize your Layer N Ecosystem with modular Smart Interfaces that connect and transmit data from your Smart Probe to the Layer N Cloud.

### 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. Visit the OMEGA website for more details.



## Specifications

### INPUT POWER

**Voltage:**  $2.8 V_{DC} - 3.3 V_{DC}$

### DIO DIGITAL INPUTS

$V_{inHighThreshold} = 2.2 V_{MAX}$

$V_{inLowThreshold} = 0.3 V_{MIN}$

$V_{inMAX} = 30 V_{DC}$

### DIO DIGITAL OUTPUTS

2x Open Drain 100 mA max

$V_{MAX} = 30 V_{DC}$

### ENVIRONMENTAL

**Operating Temperature:** -40 to 85°C (-40 to 185°F)

**Rating:** IP67 when mated

### MECHANICAL

**Dimensions:** 22.1 mm W x 96.7 mm L (0.87" x 3.80") not including mounting tabs

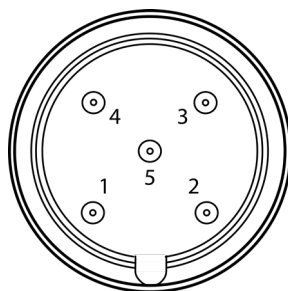
### GENERAL

**Agency Approvals:** CE, EMC

2014/30/EU, LVD 2014/35/EU

**Compatibility:** Compatible with OEG, SYNC configuration software, Layer N Cloud, and Modbus Networks

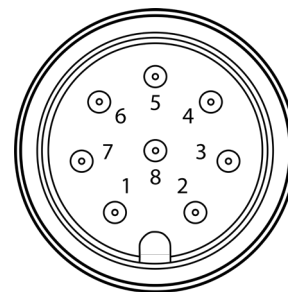
## M12 5-Pin Wiring



Pin	Frequency, Width, Duty Cycle	Delay	Up/Down Counter	Digital Input
Pin 1		3.3V Power		
Pin 2	Pulse	Pulse A	Pulse	Input 1
Pin 3		GND		
Pin 4	Enable	Pulse B	Direction	Input 3
Pin 5		Reset		Input 2



## M12 8-Pin Wiring



Pin	Name	Function
Pin 1	DIO 0	Discrete I/O Signal 0
Pin 2	INTR	Interrupt Signal
Pin 3	SCL	I2C Clock Signal
Pin 4	SDA	I2C Data Signal
Pin 5	Shield	Shield Ground
Pin 6	DIO 1	Discrete I/O Signal 1
Pin 7	GND	Power Ground
Pin 8	3.3VDD	Power Supply

## Layer N SP-013

Model Number	Description
SP-013-1	Digital Interface Smart Probe with discrete I/O

## Layer N Smart Interface

Layer N Smart Probes require a Layer N Smart Interface to operate and connect to your Layer N Ecosystem.

Model Number	Description
IF-001	USB Smart Interface
IF-002	RS485/Modbus Smart Interface

## Accessories

An optional M12 5-pin screw terminal adapter is available for users who wish to connect wire leads directly to the SP-013.

Model Number	Description
M12.5-S-M-FM	M12 5-pin screw terminal adapter
M12.8-T-SPLIT	Smart Probe M12-8 pin shielded T-Splitter - enables access to I/O pins
M12.8-S-M-FM	M12-8 pin Straight Plug Field install connector with screw terminals
DM12CAB-8-1-RA	1m (3.3') cable dual M12-8 connector, right angle terminator
DM12CAB-8-3-RA	3m (9.8') cable dual M12-8 connector, right angle terminator
DM12CAB-8-5-RA	5m (16.4') cable dual M12-8 connector, right angle terminator
DM12CAB-8-1	1m (3.3') cable dual M12-8 straight connector
DM12CAB-8-3	3m (9.8') cable dual M12-8 straight connector
DM12CAB-8-5	5m (16.4') cable dual M12-8 straight connector