SP-014 Series

OMEGA™

Omega Link Process Monitoring Smart Probe

- **Process Inputs: 4-20 mA, 0-1.0 V_{DC}, 0-2.0 V_{DC}**
- **Mixed mode supports Digital Input and Process Input**
- **2x Digital I/O (Input or Output)**
- **Software configurable through SYNC configuration software**
- **Modular M12 construction**
- **10,000+ Sample data/event logging**
- **Integrated alarm and control**
- **Secure authentication and password protection**

CE UK CA

SP-014: Introduction

The Omega Link SP-014 Process Monitoring Smart Probe provides an easy way to integrate process signals to your Omega Link Ecosystem. The SP-014 accepts standard process signals through its M12 5-pin connector and Omega Link Smart Interfaces through its M12 8-pin connector. The optional M12.8-T-SPLIT Sensor Splitter can be used to access the Discrete I/O pins on the M12 8-pin connector. The optional M12.5-S-M-FM and M12.8-S-M-FM mating connectors can be utilized to easily connect wire leads to the SP-014 or Sensor Splitter. Each of the 3 process inputs may be independently configured as 0-24 mA, 0-1.0 V DC, or 0-2.0 V DC inputs.

A mixed-mode configuration option allows for the measurement of one process input and one digital pulse input which supports frequency (rate), pulse width, pulse duty cycle, and pulse counting (totalizer).

Smart Core Enabled

Smart Core is integral to all Omega Link Smart Sensing Devices. In addition to allowing for modular integration to the Omega Link Ecosystem using any Omega Link Smart Interface, this powerful suite of advanced features enable plug-and-play connectivity, alarm and notifications, data logging, SYNC configuration, and storage of 10,000 data points and events.

Modularity

Customize your Omega Link Ecosystem by taking advantage of discrete I/O features accessible through the modular addition of an M12.8-T-SPLIT and M12.8-S-M-FM terminal.
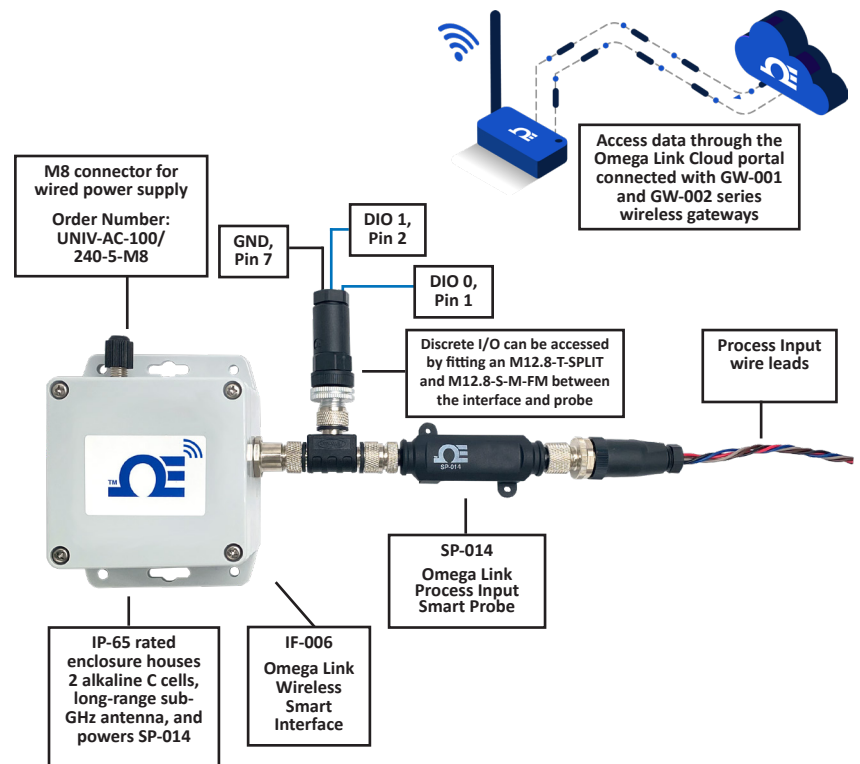
Edge Control and Built in I/O

The Omega Link SP-014 features 2 discrete 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-014 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.

Long-Range Wireless Solution*

Pairing the SP-014 with the IF-006 Series interface produces a self-contained, long-range, wireless solution. This setup can also be externally powered by adding the UNIV-AC100/240-M8 power adaptor.

Note: IF-006 must be paired with an Omega Link wireless gateway

Wireless Configuration for Smart Probe with Optional DIO

M8 connector for wired power supply
Order Number: UNIV-AC-100/240-5-M8

GND, Pin 7

DIO 1, Pin 2

DIO 0, Pin 1

Access data through the Omega Link Cloud portal connected with GW-001 and GW-002 series wireless gateways

Discrete I/O can be accessed by fitting an M12.8-T-SPLIT and M12.8-S-M-FM between the interface and probe

Process Input wire leads

SP-014 Omega Link Process Input Smart Probe

IP-65 rated enclosure houses 2 alkaline C cells, long-range sub-GHz antenna, and powers SP-014

IF-006 Omega Link Wireless Smart Interface

SP-014 Series

Specifications

Input Power
    Voltage: 2.8 V_{DC} - 3.3 V_{DC}

Digital Input Signals *(see table on next page)*
    ON: 1.0 V_{DC}
    OFF: 0.7 V_{DC}
    Internal Pull Up/Down: 1.5k to 3.0 V_{DC}
    Comparator (Pulse) Input: 100 mV, 500 mV, 1.0 V_{DC}, 2.0 V_{DC}

Type	Range	Operating Conditions	Accuracy
Frequency (Rate)	0.01 Hz to 100 Hz	$T_{PW\,MIN}$ = 200 uS	±0.5%
Frequency (Rate)	100 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
Pulse Width (T_{PW})	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 Impedance
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}	1.20 V_{DC}	±10 mV	100k ohm
Voltage	0 - 2.0 V_{DC}	±10 mV	0 V_{DC}	2.50 V_{DC}	±20 mV	100k ohm

Discrete I/O - Digital Inputs
    $V_{inHighThreshold}$ = 2.2 V_{MAX}
    $V_{inLowThreshold}$ = 0.3 V_{MIN}
    V_{inMAX} = 30 V_{DC}

Discrete I/O - Digital Outputs
    2x Open Drain 100 mA max
    V_{MAX} = 30 V_{DC}

Environmental
    Operating Temperature: -40 to 85ºC (-40 to 185ºF)
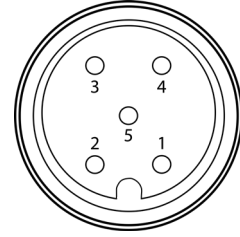   *Rating:* IP67 when mated

Mechanical
    Dimensions: 22.1 mm W x 96.7 mm L (0.87" x 3.80") not including mounting tabs
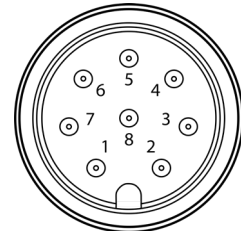
General
    Agency Approvals: CE, UKCA
    Compatibility: Compatible with OEG, SYNC configuration software, Omega Link Cloud, and Modbus Networks

M12 5-Pin Female Connector Wiring

Pin	Process	Mixed Mode
Pin 1	Excitation Power (3.3 V_{DC}, 100 mA)	Excitation Power (3.3 V_{DC}, 100 mA)
Pin 2	Process 0	DIN 0/Pulse A
Pin 3	Ground Reference	Ground Reference
Pin 4	Process 2	Process 0
Pin 5	Process 1	DIN 1/Reset

M12 8-Pin Male Connector

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

Omega Link SP-014 Ordering Guide

Model Number	Description
SP-014-1	Omega Link Process Monitoring Smart Probe with discrete I/O

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Omega Link Smart Interface

Omega Link Smart Sensing devices require an Omega Link Smart Interface to operate and connect to your Omega Link Ecosystem. There are both wired and wireless options.

Model Number	Description
IF-001	Wired USB Smart Interface
IF-002	Wired RS485/Modbus Smart Interface
IF-006-1-NA	Wireless Sub GHz Wireless Interface -915 MHz
IF-006-1-EU	Wireless Sub GHz Wireless Interface -868 MHz

Omega Link Gateways

An Omega Link Gateway is *required* to connect your Smart Probe to the Omega Link Cloud or Omega Enterprise Gateway.

Model Number	Description
GW-001-0	Wired IIoT Gateway Standard, Ethernet connectivity, Modbus RTU RS232/RS485 and Modbus TCP
GW-001-2-NA	Wireless IIoT Gateway Standard, Ethernet connectivity, connects up to 100 Omega Link Smart Sensors- 915 MHz
GW-001-2-EU	Wireless IIoT Gateway Standard, Ethernet connectivity, connects up to 100 Omega Link Smart Sensors- 868 MHz
GW-001-3-NA	Wireless IIoT Gateway Pro, Ethernet connectivity, power over Ethernet, connects up to 100 Omega Link Smart Sensors, Modbus RTU RS232/RS485 and Modbus TCP, 2x USB ports- 915 MHz
GW-001-3-EU	Wireless IIoT Gateway Pro, Ethernet connectivity, power over Ethernet, connects up to 100 Omega Link Smart Sensors, Modbus RTU RS232/RS485 and Modbus TCP, 2x USB ports- 868 MHz
GW-002-1-LTE	Wireless LTE IIoT Gateway Pro connects up to 40 Omega Link Smart Sensors, Modbus RTU RS232/RS485 and Modbus TCP, 1x RJ45 port, 1x USB port - 915 MHz

Accessories

Model Number	Description
M12.5-S-M-FM	M12 5-pin Straight Plug Field install connector with screw terminals
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

Your Data at a Glance with the Omega Link Cloud

The Omega Link 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.

omega.com