Column 5 (Circuit Diagrams)

Relay or Switch

3.3V

P.1 — Pull Up

Debounce Capacitor Suggested

P. 2/5

P. 3

For Active High Select Normally Closed
For Active Low Select Normally Open

Pulse / TTL Input

3.3V

P.1

Do not Exceed 3.3V at Input Pin

P. 2/5 — Pull Down

P. 3

For Active High Select Normally Open
For Active Low Select Normally Closed

NPN or N-MOS Transistor Input

3.3V

P.1 — Pull Up

P. 2/5

P. 3

For Active High Select Normally Closed
For Active Low Select Normally Open

PNP or P-MOS Transistor Input

Optional External Power — Vext

3.3V

Do not Exceed 3.3V at Input Pin

P.1

P. 2/5 — Pull Down

P. 3

For Active High Select Normally Open
For Active Low Select Normally Closed

Active High/Active Low Circuit Examples

Pairing a Sensing Device

Refer to either the Wireless Pairing or Wired Pairing instructions as applicable:

Wireless Pairing

Pairing your wireless Smart Interface (IF-006) and attached Smart Probe is made easy with a one-button pairing system between the IF-006 and the Omega Link Gateway.

Step 1: Push the pairing button once on your IF-006. The LED Status Indicator will blink green indicating it is in Pairing Mode.

Step 2: Quickly push the pairing button on the Omega Link Gateway. The LED on the Gateway will blink green indicating the Gateway is in Pairing Mode.

When the IF-006 has been successfully paired to the Omega Link Gateway, the LEDs will stop blinking on both devices.

Wired Pairing

Wired Smart Probes connected directly to an Omega Link Gateway with an IF-001 cable or IF-002 will need to be added to the Gateway Internal User Interface.

The Connected Devices tab is the default page set once you are signed into the internal gateway UI. From here, you can add devices to your gateway to have them appear in your Omega Link Cloud account.

CONNECTED DEVICES   SETTINGS ▾

[Add] [Search ...]
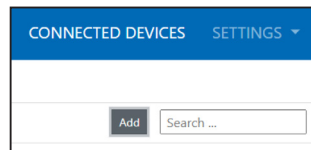
To add a device to the gateway from the internal gateway web UI, begin by clicking the **Add** button at the top right of the web page and fill out the **Add Device** menu according to the device specifications.

For more information regarding wired or wireless pairing, refer to the Omega Link Gateway User's Manual available on the Omega website.

Once the SP-014 has been successfully paired to an Omega Link Gateway the device may be placed in its final sensing location. Readings will transmit to the Omega Link Cloud or OEG according to the rate set in the Omega Link Cloud or OEG settings and subscription tier.

CE UKCA

SP-014
Omega Link Process Monitoring Smart Probe

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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

Introduction

Use this Quick Start Guide to set up your Omega Link SP-014 Process Monitoring Smart Probe. For additional information regarding your SP-014, refer to the User Manual available on the Omega website.

Materials

Included with your SP-014
• SP-014 Unit
• Quick Start Guide

Additional Materials Needed
• An M12.5-S-M-FM screw terminal accessory
• An Omega Link Smart Interface
• A Windows 7,8, 9, 10, or 11 OS PC or laptop with Omega's free SYNC configuration software
• A compatible Omega Link Gateway
• An Omega Link Cloud account or a qualifying Omega Enterprise Gateway license tier (Pro, Business, or Business Pro)

Optional Materials
• M12.8-T-SPLIT Sensor Splitter (For DIO access)
• M12.8.S-M-FM Screw Terminal Accessory (For DIO access)

⚠️ **Important:** An Omega Link Smart Interface is required to connect your SP-014 to SYNC configuration software. For a list of available Smart Interfaces, visit the Omega website.

Before you Begin

Users must have a registered Omega Link Cloud account or a qualifying Omega Enterprise Gateway (OEG) license to complete the setup process and view sensor data.

For Omega Link Cloud setups, the user will need to first register an Omega Link Gateway to the account before the Smart Probe and Smart Interface can be paired.

If the Omega Link Smart Probe will be paired wirelessly with an IF-006, the Omega Link Gateway firmware must be updated. Omega Link Gateways update automatically upon first-time setup. For instructions on how to manually update Omega Link Gateway firmware, refer to the Omega Link Gateway User's Manual.

⚠️ **Important:** If the user intends on pairing the Smart Probe using an Omega Link IF-006 to an existing Omega Link Gateway, it is required to update the Gateway firmware to version 1.0.9 or higher to ensure the Gateway and IF-006 communicate and operate correctly.

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Connecting Wire Leads to the SP-014

Wire leads providing process inputs can be connected to an M12.5-S-M-FM screw terminal accessory that can then be attached to the 5-pin connector of the SP-014.
Step 1: Use the pin layout diagram below to connect the wire leads to the M12.5-S-M-FM accessory.

⚠️ **Note:** An M12.5-S-M-FM connector can be used to connect wire leads to your SP-014.
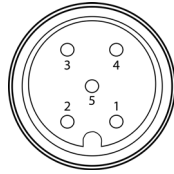
Smart Probe M12 5-pin female connector front view

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

For 4-20 mA devices, use the wiring diagram below to connect your device. Refer to the User's Manual for additional information.
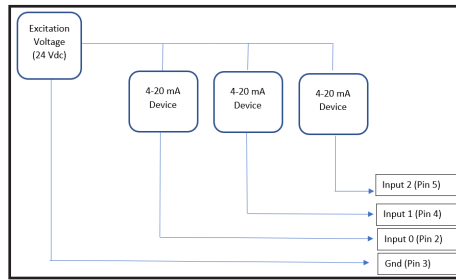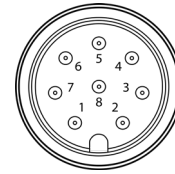
4-20 mA device connection diagram

Connecting your Smart Probe & Interface

Step 1: Connect the SP-014 to your Omega Link Smart Interface.

Note: Locate the position of the keyway as a guide on the SP-014 prior to making the connection.

**Step 2:** Connect the Smart Interface with Smart Probe attached to a computer running SYNC configuration software.

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Smart Probe M12 8-pin male connector front view

	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

Discrete I/O
If the smart probe discrete I/O will be utilized, an **M12.8-T-SPLIT** and an **M12.8-S-M-FM** will need to be connected between the Smart Interface and Smart Probe. Refer to the previous pin diagram and the diagram below to connect the accessories:
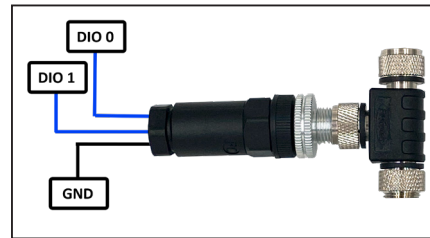
*M12.8-T-SPLIT and M12.8-S-M-FM for DIO access*

Smart Probe SYNC Configuration

The Smart Probe can be configured using Omega's free SYNC configuration software. Once the SP-014 is connected to the computer, SYNC will automatically detect it and begin displaying readings.

Configuring Process Inputs

The SP-014 can accept up to three 0-24 mA, 0-1.0 V_{DC}, 0-2.0 V_{DC} process inputs. To customize your process inputs, follow these steps:

**Caution:** All three inputs share the same ground connection.

4
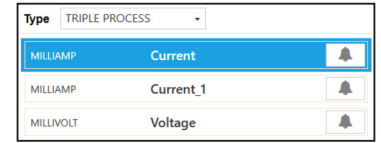
SYNC interface triple process configuration

Step 1: Click the **Inputs Configuration Tab** on SYNC and choose an input type that lists **Process** from the **Type** drop down.

Choose between **mA** and **mV** from the **Device Range/Type** drop down.

Configuring Digital Input (Mixed Mode)

The SP-014 can accept one digital pulse input and one process input when set to the mixed (DIGITAL, PROCESS or DIGITAL, PROCESS, DIO) input mode is selected. To use these features, follow these steps:
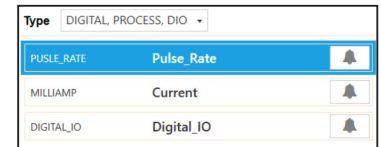
SYNC interface mixed mode configuration

Step 1: Click the **Inputs Configuration Tab** on SYNC and choose the **Digital** input type from the **Type** drop down.

Step 2: Click the Digital or Process input that you will configure.

Step 3: Configure your device inputs to your preferred settings.

Select the type of digital input in the **Device Range/Type** drop down in SYNC. The following types are available:

Selection	Measurement	Description
DIN	Digital Input	2-bit Binary Digital Input
RATE	Frequency	Measure the Frequency of Rising Edges
WIDTH	Pulse Width	Measure the active time of a signal
DUTY	Duty Cycle	Measure the % of active time of a signal
COUNT	Up Counter/ Totalizer	Pulse counter with Reset

Each of the two input pins can be independently set to either have an internal 1.5k **Pull Up (PU)** or **Pull Down (PD)** and can be set to be either Active High or Active Low by selecting **Normally Open (NO)** or **Normally Closed (NC)**. Some typical circuits are shown below: