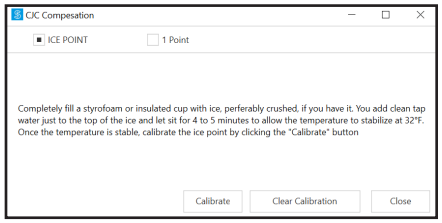
Step 2: Insert probe into 0ºC reference and allow it to stabilize. Once the Thermocouple is stable in a 0ºC (32ºF) environment, click **Calibrate**.

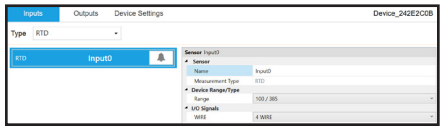


For thermocouples that do not read to 0ºC, One-Point calibration can be used instead of Ice-Point Calibration.

RTD Configuration

The SP-005 supports 100, 500, and 1000 ohm Platinum RTD sensors in 2, 3, and 4 wire configurations. To use these features, follow these steps:

Note: A single RTD connection is supported.



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

Step 2: Click the input you wish to configure and select your RTD type from the **Device Range/Type** drop down.

Step 3: Click the **Wire** drop down and choose your wiring configuration.

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.

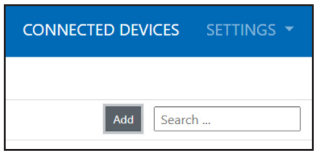
Step 2: Quickly push the pairing button on the Omega Link Gateway. The LED on the Gateway will blink green indicating the Gateway is in Pairing Mode.

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.



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-005 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.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair or calibration,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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MQS5817/0223

SP-005

Omega Link Temperature and RTD Smart Probe

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START HERE

Introduction

Use this Quick Start Guide to set up your Omega Link SP-005 Temperature Monitoring and Control Smart Probe. For additional information regarding your SP-005, refer to the User Manual available on the Omega website.

Materials

Included with your SP-005

- SP-005 Unit
- Quick Start Guide

Additional Materials Needed

- 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-005 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.

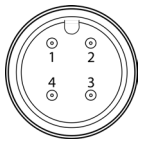
Thermocouple Connection and Wiring

Most M12 4-pin thermocouple probes can be connected directly to the SP-005.

2

Step 1: Assemble your SP-005 by connecting an M12 4-pin thermocouple to the M12 4-Pin connector of your SP-005.

Important: If you are connecting wires directly to the SP-005, view the wiring diagrams provided in the sections titled **Thermocouple Interface and Wiring** or **RTD Interface and Wiring** to correctly wire your device.



Smart Probe M12 4-pin female connector front view

Pins	Thermocouple
Pin 1	TC 2 Negative
Pin 2	TC 1 Positive
Pin 3	TC 1 Negative
Pin 4	TC 2 Positive

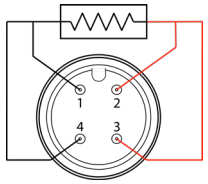
Type	Range	Accuracy
J	-210ºC to 1200ºC	0.4ºC
K	160ºC to 1372ºC	0.4ºC
T	190ºC to 400ºC	0.4ºC
E	-220ºC to 1000ºC	0.4ºC
N	-100ºC to 1300ºC	0.4ºC
R	40ºC to 1768ºC	0.5ºC
S	100ºC to 1768ºC	0.5ºC
B	640ºC to 1820ºC	0.5ºC
C	0ºC to 2320ºC	0.4ºC

RTD Connection and Wiring

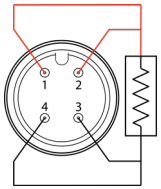
Most M12 4-pin RTD probes can be connected directly to the SP-005.

Step 1: Assemble your SP-005 by connecting an M12 4-pin RTD probe to the M12 4-Pin connector of your SP-005.

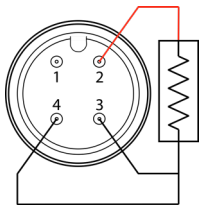
RTD 4 Wire Option 1



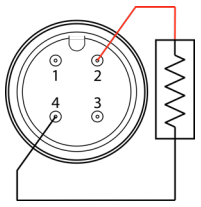
RTD 4 Wire Option 2



RTD 3 Wire



RTD 2 Wire



3

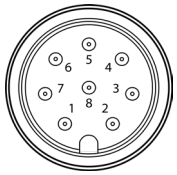
Type	Range	Accuracy
385, 4 Wire	-200ºC to 850ºC	0.3ºC
385, 3 Wire	-200ºC to 850ºC	0.3ºC
385, 2 Wire	-200ºC to 850ºC	0.6ºC
392, 4 Wire	-200ºC to 660ºC	0.3ºC
392, 3 Wire	-200ºC to 660ºC	0.3ºC
392, 2 Wire	-200ºC to 660ºC	0.6ºC
3916, 4 Wire	-200ºC to 660ºC	0.3ºC
3916, 3 Wire	-200ºC to 660ºC	0.3ºC
3916, 2 Wire	-200ºC to 660ºC	0.6ºC

Connecting your Smart Probe & Interface

Step 1: Connect the SP-0005 with thermocouple or RTD attached to your Omega Link Smart Interface.

Note: Locate the position of the keyway as a guide on the SP-005 prior to making the connection.

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

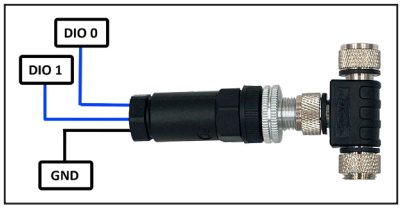


Smart Probe M12 8-pin male connector front view

	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

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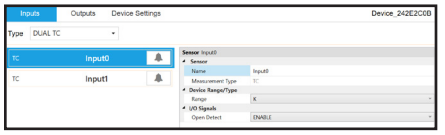
Smart Probe SYNC Configuration

The Smart Probe can be configured using Omega's free SYNC configuration software. Once the SP-005 is connected to the computer, SYNC will automatically detect it and begin displaying readings.

Thermocouple Configuration

The SP-005 provides interfaces to type J, K, T, E, N, R, S, B, and C thermocouples with the capability of enabling or disabling the open detect feature. To use these features, follow these steps:



Step 1: Click the **Inputs** configuration tab on SYNC and choose your input type from the **Type** drop down.

Step 2: Click the input you wish to configure and select your thermocouple type from the **Device Range/ Type** drop down.

Step 3: Click the **Open Detect** drop down and choose to enable or disable it.

Cold Junction Calibration

The SP-005 has automatic Cold Junction Compensation and is factory calibrated so that in most cases it needs no adjustment. However, for increased accuracy, Cold Junction Calibration can be performed as described below.

Note: The default thermocouple type is K-type. When using a different TC type, ice-point calibration must be completed to ensure accurate readings.

Step 1: Ensure your thermocouple has been configured in the previous section and click **Calibration** beneath the input interface.