

Specifications

INPUT POWER

Voltage: 8 V_{DC} - 28 V_{DC} (loop powered)

Max Loop Resistance: $R_{max} (\Omega) = (V_{supply} - 8V) / 0.024 A$

ANALOG OUTPUT

Current: 4 - 20 mA

PROCESS PARAMETERS

Process Medium: Water, water-based fluids
(others upon request)

Pipe Materials: Metal Pipes (others upon request)

Pipe Outer Diameters:

Sanitary: 1.5", 2", 2.5", 3", 4"

Industrial: 1", 2", 2.5", 3", 4" nominal
(others upon request)

Process Temperature Range: 0 to 100°C liquid, user
scalable analog output

PERFORMANCE

Accuracy with Fluid Flowing:

Sanitary: ±0.5°C

Industrial: ±1.0°C from factory and improved
accuracy to ±0.5°C possible with
in-situation 1 or 2-point calibration

Response Time (t63): 5 seconds

Response Time (t90): 10 seconds

ENVIRONMENTAL

Ambient Operating Temperature: 0 to 40°C

(32 to 104°F)

Rating: IP65 when mated

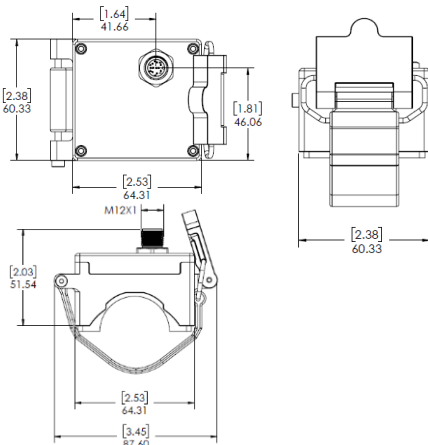
MECHANICAL

Dimensions: 60.3 W x 64.31 L x 51.54mm H
(2.38" W x 2.53" L x 2.03" H)

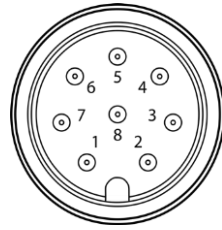
Materials: PA12, silicone rubber, nickel-plated brass,
stainless steel

GENERAL

Agency Approvals: CE



M12 8-Pin Connector Wiring Diagram



	Name	Function	Wiring
Pin 1	Loop -	4-20mA Return	4-20mA
Pin 2	INTR	Interrupt Signal	Layer N
Pin 3	SCL	I2C Clock Signal	Layer N
Pin 4	SDA	I2C Data Signal	Layer N
Pin 5	Shield	Shield Ground	Layer N
Pin 6	Loop +	4-20mA Source	4-20mA
Pin 7	GND	Power Ground	Layer N
Pin 8	3.3VDD	Power Supply	Layer N

*Pin 5 (Shield Ground) and Pin 7 (Power ground) must be isolated.

Frequently Asked Question

Q: How can a clamp-on temperature (surface) sensor have response times and accuracy similar to an immersion sensor?

A: Omega's innovative HANI™ Clamp Temperature Sensor includes multiple sensors along with a proprietary algorithm to reach response times and accuracy comparable to an immersion sensor.

Q: Will ambient temperature affect the reading of the HANI™ Clamp Temperature Sensor?

A: Ambient temperature will not affect the reading of the HANI™ Clamp Temperature Sensor. Ambient operating temperature for the sensor is 0°C to 40°C (32°F to 104°F).

Q: Is there any special preparation required to properly setup and mount the HANI™ Clamp Sensor?

A: There is no special preparation or tools required to setup and mount the sensor, however, when setting up any sensor ensure the mounting area is clean, dry, and free from any debris.

Q: How should the sensor be oriented on the pipe?

A: The sensor can be mounted on any straight pipe at least 2.5" long. It is suggested to mount the sensing surface on the bottom half of the pipe for best results.

Q: Are other pipe diameters / sizes available? Other than water-based process mediums, can other liquid viscosities be measured?

A: Yes, please contact us to discuss your specific application.

Q: How can I improve the accuracy of ±1.0°C with my industrial pipe application?

A: Industrial pipes have a wide variety of tolerances, surface finishes, and coatings which can affect the accuracy. An in situation user calibration can be done to improve the accuracy for your specific application. Use the free Omega SYNC software to do a 1 or 2-point calibration with the HANI™ Clamp Sensor and an in place immersion sensor. See the user manual for additional details.

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.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

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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 OMEGA:

1. Purchase Order number under which the product PURCHASED,
2. Model and serial number of the product under warranty, 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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FOR **NON-WARRANTY REPAIRS**, consult OMEGA for current repair charges. Have the following contacting 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 to the problems relative to the product.



HANI™ Clamp Sensor High Accuracy Non-Invasive Clamp Temperature Sensor



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For Other Locations Visit omega.com/worldwide

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.

HANI™ Clamp Temperature Sensor Setup

Setting up a HANI™ Clamp Temperature Sensor in the field is quick and easy. Follow the instructions below:

Step 1: Mount the HANI™ Clamp Temperature Sensor on the underside of the pipe.

Step 2: Insert and hook the clasp into the cam mechanism.

Step 3: Pull the cam mechanism to tighten the HANI™ Clamp Temperature Sensor securely on the pipe.

4-20 mA Output Plug and Play

The HANI™ Clamp Temperature Sensor can easily be integrated to your existing analog system in a few steps.

Step 1: Attach an 8-pin female M12 connector to your 4-20 mA analog cable (see wiring diagram - only pins 1 & 6 are needed for loop power setups), then connect to the male 8-pin M12 connector on the HANI™ Clamp Temperature Sensor.

The HANI™ Clamp Temperature Sensor will immediately begin reporting temperature readings.

Layer N Smart Interface Connection

Note: **Important:** SYNC configuration is only necessary if you will be changing the following: Pipe diameter, pipe material type, pipe conductivity, or to scale output readings.

Note: Ensure Omega's SYNC configuration software is downloaded, setup, and running before continuing. Ensure you have a Layer N Smart Interface compatible with your Smart Device.

The HANI™ Clamp Temperature Sensor can easily be configured using a Layer N Smart Interface and SYNC configuration software.

Step 1: Connect the HANI™ Clamp Temperature Sensor to your Layer N Smart Interface.

Step 2: Connect the Smart Interface to your computer running SYNC.


SYNC Auto-Detect

Once the HANI™ Clamp Temperature Sensor is connected to your computer, SYNC will automatically detect it and begin displaying temperature readings.

Note: If you have successfully connected your HANI™ Clamp Temperature Sensor to SYNC, skip ahead to section **SYNC Configuration**.

SYNC Manual Connection

If SYNC does not automatically detect your device, follow these steps:

Step 1: Click on the  icon located on the top left of the SYNC interface.

Step 2: Select End Device / Probe and click **Next**.



Step 3: Select your **Communication Interface** type from the dropdown and set your preferred Command Timeout, Device Address, and Device ID / Port.

Step 4: Click **Finish**.

SYNC Configuration

Note: **Important:** HANI Clamp Temperature Sensors come preconfigured for **STAINLESS STEEL** pipe materials with standard wall thickness. If your pipe material is something other than Stainless Steel and/or has a non-standard pipe thickness, please connect to SYNC to configure appropriately. Sanitary device pipe thickness should not need to be changed. Industrial pipe devices come preconfigured for Schedule 40 (standard) thicknesses.

To customize the pipe diameter, pipe material type, or pipe conductivity navigate to the **Inputs** tab in SYNC to adjust the settings. Below is a list of Pipe Materials that are currently supported. See the Product User's Manual for detailed instructions.

Type	Material
SS	Stainless Steel
CS	Carbon Steel (1% C)
GS	Galvanized Steel
CU	Copper
BR	Yellow Brass (70%Cu/30%Zn)
AL	Aluminum
User Specified	Custom - User Scalable Thermal Conductivity Value for Custom Pipe Type

To scale output readings or set analog output error defaults, navigate to the **Outputs** tab in SYNC to adjust the settings. See the Product User's Manual for detailed instructions.

View Readings in Layer N Cloud

To view the readings provided by your HANI™ Clamp Temperature Sensor in the Layer N Cloud, follow these instructions:

Step 1: Navigate to **cloud.omega.com** user account and log in to your account.

Step 2: Connect your Layer N Smart Interface to your Layer N Gateway (refer to your Smart Interface user documentation).

Note: Refer to your Layer N Smart Interface user documentation for instructions on how to connect to your Layer N Gateway.

Introduction

Use this Quick Start Guide to set up your HANI™ Clamp Temperature Sensor. For additional information regarding your HANI™ Clamp Temperature Sensor, refer to the User Manual available on the Omega website.

Materials

Included with your HANI™ Clamp Temperature Sensor

- HANI™ Clamp Temperature Sensor Unit
- Quick Start Guide

Additional Materials Needed

For a 4-20 mA Output Connection:

- 4-20 mA wire connection with 8-pin M12 connector *or* OMEGA M12.8-S-F-FM Field Mountable 8-pin M12 connector (Sold Separately on the OMEGA website)

For Layer N Ecosystem Connection:

Important: A Layer N Smart Interface is required to connect your HANI™ Clamp Temperature Sensor to SYNC configuration software.

- Computer/Laptop with Windows OS
- SYNC configuration software
 - Downloadable on the Omega website
- Layer N Smart M12 to USB Cable (*IF-001*)
- Layer N Gateway
- A registered user account with **cloud.omega.com**

For Ad-Hoc Temperature Measurement:

- Computer/Laptop with Windows OS
- SYNC configuration software
 - Downloadable on the Omega website
- Layer N Smart M12 to USB Cable (*IF-001*)

Optional Material:

- USB Isolator
- IF-001 M12 to USB Serial cable to change device configuration setting (*i.e. temperature range scaling, pipe material, pipe diameter, analog output error settings, etc.*)

Important: If the HANI™ Clamp Temperature Sensor is being powered with a 4-20 mA connection and will be connected to SYNC simultaneously, a USB Isolator **must** be used between the user PC and the HANI™ Clamp Temperature Sensor to avoid false readings and potential damage to the unit.