Formaldehyde Monitor and Data Logger

AQM-101

$C \in$

- Large LCD Displays HCHO Level, Temperature, Relative Humidity, Calendar (Y/M/D) and Time
- Three (3) Smiley Icons Indicate Indoor Air Quality Levels at (0/0.08/0.8 ppm)
- Stable Electrochemical Sensor for HCHO Detection
- Programmable High Alarm
- Manual 0 ppm Calibration
- Audible/Visible LED Warning for High HCHO Concentration

AQM-101 shown smaller than actual size.

The AQM-101 is designed to measure HCHO concentration, air temperature and relative humidity with visible and audible alarms. This HCHO monitor is an ideal instrument for indoor air quality (IAQ) diagnosis and HVAC system performance verification.

FORMALDEHYDE (HCHO) is a gaseous component of the earth's atmosphere. The concentration of HCHO in natural ambient air is about 0.03 ppm. Formaldehyde is found in a number of products. While most of these products contain a relatively low amount of the compound, others have a fairly strong concentration of formaldehyde. This is particularly true with products used in the course of scientific research and other professions where tissue is preserved in some manner. Formaldehyde exposure can lead to side effects that range from mild to life-threatening.

Non-Enforced Reference Levels*

0.03 ppm – Background (normal) outdoor air level
0.10 ppm – Typical recommended upper limit for residences by ASHRAE, ANSI, EPA, NIOSH and STEL
0.40 ppm – Typical recommended upper limit for manufactured homes
0.50 ppm – Typical OSHA workplace limits.
0.75 ppm – Typical OSHA TWA limit
0.80 ppm – Level at which most people first detect odor
2.00 ppm – Typical OSHA STEL limit

SPECIFICATIONS

HCHO

Measurement Range: 0.00 to 5.00 ppm @25ºC (77ºF), ambient pressure

Accuracy: ±5%, + 0.03 ppm

Resolution: 0.01 ppm

Temperature

Range: 0 to 50ºC (32 to 122ºF)

Accuracy: ±0.1ºC (2ºF) [0 to 50ºC (32 to 122ºF)]

Resolution: 0.1ºC (0.1ºF)

Relative Humidity

Range: 10 to 90% RH

Accuracy: ±5% RH [at 25ºC (77ºF)

Memory Capacity: 32,000 readings

Storage Temperature: -40 to 70ºC (-40 to 158ºF)

Interface: USB

Response Time: Less than 30 seconds (T90)

Dimensions: 110 H x 108 W x 28 mm D (4.33 x 4.25 x 1.10")

Weight: 165 g (5.8 oz)

Model No.	Description
AQM-101	HCHO, RH and temperature monitor and data logger
AQM-100-PW	AC adaptor (optional)

Comes complete with 4 "AAA" batteries, USB cable, operator's manual, AC adaptor and software CD.
 * Local regulatory exposure limits will vary.

Carbon Dioxide Monitor and Data Logger

AQM-102

$C\epsilon$

- Large LCD Displays CO_2 Level, Temperature, Relative Humidity, Calendar (Y/M/D) and Time
- Six (6) Smiley Icons Indicate Indoor Air Quality Levels at (350/450/700/1000/2500/5000 ppm)
- Stable NDIR Sensor for CO_2 Detection
- Programmable High Alarm
- Manual 400 ppm Calibration
- Audible/Visible Led Warning for High CO_2 Concentration
- Heat Index/WBGT Temperature Calculation

The AQM-102 is designed to measure CO_2 concentration, air temperature and relative humidity with visible and audible alarms. This CO_2 monitor is an ideal instrument for indoor air quality (IAQ) diagnosis and HVAC system performance verification.

Carbon dioxide (CO_2) is a gaseous component of the earth's atmosphere. The concentration of CO_2 in natural ambient air is about 0.04% or 400 ppm. With each breath, humans convert oxygen (O_2) into carbon dioxide (CO_2). Although carbon dioxide is invisible and odorless, increased CO_2 levels can cause headaches, drowsiness and a loss of the ability to concentrate or worse.

AQM-102 shown smaller than actual size.

Non-Enforced Reference Levels*

250 to 350 ppm	– Background (normal) outdoor air level
350 to 1000 ppm	– Typical level in occupied spaces with good air exchange
1000 to 2000 ppm	– Level associated with complaints of drowsiness and poor air
2000 to 5000 ppm	– Levels associated with headaches, sleepiness and stagnant, stale, stuffy air; poor concentration, loss of attention, increased heart rate and slight nausea may also be present
>5000 ppm	– Exposure may lead to serious oxygen deprivation resulting in permanent brain damage, coma and even death

SPECIFICATIONS

CO₂
  Measurement Range: 0 to 9999 ppm
  Accuracy: ±30 ppm, + 3% of rdg
  Resolution: 1 ppm
Temperature
  Range: -40 to 85ºC (-40 to 185ºF)
  Accuracy: ±1.2ºC (2.2ºF)
  Resolution: 0.1ºC (0.1ºF)
Relative Humidity
  Range: 0.0 to 90% RH
  Accuracy: ±3% RH [at 25ºC (77ºF), from 10 to 90 RH], ±5% RH beyond 10%
Memory Capacity: 32,000 readings
Storage Temperature: -40 to 70ºC (-40 to 158ºF)
Interface: USB
Dimensions: 110 H x 108 W x 28 mm D (4.33 x 4.25 x 1.10")
Weight: 165 g (5.8 oz)

Model No.	Description
AQM-102	CO₂, RH and temperature monitor and data logger
AQM-100-PW	AC adaptor (optional)

Comes complete with 4 "AAA" batteries, USB cable, operator's manual, AC adaptor and software CD.
*** Local regulatory exposure limits will vary.*

Carbon Monoxide Monitor and Data Logger

AQM-103

$C \in$

AQM-103 shown
smaller than actual size.

- Large LCD Displays CO Level, Temperature,
  Date and Time
- Programmable High Alarm
- Audible/Visible LED Warning for High CO Concentration

The AQM-103 is designed to measure CO concentration and air temperature with visible and audible alarms. This CO monitor is an ideal instrument for indoor air quality (IAQ) diagnosis and HVAC system performance verification.

CO is a common byproduct of the combustion of fossil fuels. Carbon monoxide or CO is a colorless, odorless and tasteless gas. Due to this fact, it is very hard to detect the presence of CO in your environment. It is, however, imperative that the CO levels are carefully monitored. Even at relatively low levels, CO is poisonous because it rapidly accumulates in the blood thereby depleting its ability to carry oxygen. Extreme cases of CO poisoning result in death.

For healthy adults CO becomes toxic when it reaches a level higher than 30 ppm (parts per million) with continuous exposure over an eight hour period.

SPECIFICATIONS

Carbon Monoxide
  Measurement Range: 0 to 999 ppm
  Accuracy: ±5% of rdg or ±10 ppm whichever is greater
  Resolution: 1 ppm
Temperature
  Range: 0 to 50ºC (32 to 122ºF)
  Accuracy: ±0.6ºC (1.2ºF)
  Resolution: 0.1ºC (0.1ºF)
Memory Capacity: 32000 readings
Storage Temperature: -40 to 70ºC (-40 to 158ºF)
Interface: USB
Dimensions: 110 H x 108 W x 28 mm D
(4.33 x 4.25 x 1.10")
Weight: 165 g (5.8 oz)

Model No.	Description
AQM-103	CO, RH and temperature monitor and data logger
AQM-100-PW	AC adaptor (optional)

Comes complete with 4 "AAA" batteries, USB cable and operator's manual, AC adaptor and software CD.
Local regulatory exposure limits will vary.

Handheld Volatile Organic Compound (VOC) Meter

HHAQ-107

1 YEAR WARRANTY

- ✔ **Metal-Oxide Semi-Conductor Sensor within Vented Ball Housing Detects Ammonia, Toluene, Ethanol, Hydrogen Sulfide (H$_2$S) and Cigarette Smoke**
- ✔ **Make Total VOC Concentration Measurements, Ambient Temperature, Relative Humidity (RH), Dew Point and Wet Bulb Temperatures**
- ✔ **Logs Up to 32,000 Data Points**
- ✔ **Powerful Data Logging Software**
- ✔ **Adjustable High VOC Concentration Audible Alarm**
- ✔ **Min/Max Memory (for All Measured Parameters) and Data Hold**
- ✔ **Separate Automated Procedures for VOC Zero Adjustment and Background Calibration**
- ✔ **Manually Off-Settable Temperature and RH Sensor Drift**
- ✔ **Large Backlit Dual-Readout LCD**
- ✔ **Tripod Mountable**

The HHAQ-107 is ideal for making general measurements of mixed gas volatile organic compound (VOC) levels as part of an indoor air quality (IAQ) maintenance program. Much less expensive than photo-ionization meters designed to make precise measurements of VOC levels from a single gas. Small and light weight with a tripod mount fitting, the HHAQ-107 is a versatile tool for HVAC and IAQ technicians. The meters storage capacity can be entirely devoted to VOC readings or split 3 ways for VOC, ambient temperature and relative humidity. The HHAQ-107 incudes powerful data logging software for downloading readings to a PC and printing in table or graph form.

HHAQ-107, shown smaller than actual size.

SPECIFICATIONS

VOC Measurement Range/Resolution:
0 to 50/0.01 ppm

VOC Warmup Time: 10 minutes first use,
2 minutes thereafter

VOC Sensor Type/Longevity: Metal-oxide semiconductor/
5 years (typical)

Temperature Measurement Range: -10 to 50°C
(14 to 122°F)

Temperature Measurement Accuracy/Resolution:
±0.6°C (1.2°F)/0.1°

RH Measurement Range: 10 to 90% RH

RH Measurement Accuracy/Resolution: ±5% of reading at 25°C (77°F); ±7% of reading elsewhere in range/0.1% RH

Dew Point Measurement Range: -73 to 47°C
(-99.2 to 118°F)

Wet Bulb Measurement Range: -11 to 48.2°C
(12.2 to 118.8°F)

Data Logging Capacity: 32,004 points

Display Type/Size: Dual readout LCD/51 mm (2") diagonal

Auto Power-Off Trigger: 15 minutes of front-panel inactivity (can be disabled)

Operating Temperature: 0 to 50°C (32 to 122°F) at 0 to 95% RH, non-condensing

Dimensions: 210 L x 60 W x 25 mm D (8.3 x 2.4 x 1.0")

Weight: 204 g (7.2 oz), including batteries

Power Source: (6) "AAA" batteries (included) or included 110 Vac adaptor

To Order	
Model No.	**Description**
HHAQ-107	Handheld volatile organic compound (VOC) meter
MN2400	Replacement "AAA" batteries 2 per pack, 3 packs needed

Comes complete with meter, PC-compatible data logging program on mini-disc, USB cable, AC adaptor, soft pouch, (6) "AAA" batteries and operator's manual.

Handheld
Formaldehyde Meter

HHAQ-108

1 YEAR WARRANTY

✔ **Tracks, Calculates and Displays Three Cumulative Formaldehyde Gas Metrics**
✔ **One-Button Calibration to 0 ppm in Clean Air**
✔ **User-Adjustable High Alarm**
✔ **Measures Formaldehyde ppm, Relative Humidity (RH) and Temperature in °F or °C**
✔ **Manual Off-Settable for Temperature and RH Accuracy**
✔ **Min/Max Memory and Data Hold**
✔ **Large Backlit Dual-Readout LCD**
✔ **Low Battery Indication**
✔ **Tripod Mount**

The HHAQ-108 is ideal for measuring levels of gaseous formaldehyde (HCHO) as part of a workplace indoor air quality (IAQ) maintenance program, or to spot-check a residential environment.

The HHAQ-108 features an electrochemical sensor which measures real-time formaldehyde gas concentration with accuracy and resolution that meet U.S. National Institute for Occupational Safety and Health's (NIOSH's) acceptance criteria. It also tracks, calculates and displays three cumulative formaldehyde gas metrics: 8-hour TWA (time-weighted average), 1-hour average, and 15-minute STEL (short-term exposure limit). The device is also equipped with a tripod mount fitting for hands free monitoring.

HHAQ-108 shown smaller than actual size.

Specifications
Formaldehyde Range/Resolution: 0 to 5 ppm/0.01 ppm*
Formaldehyde Accuracy: ±(5% + 0.03 ppm)*
Formaldehyde Sensor Type
Warmup Time: Electrochemical/ 1 to 15 minutes
Temperature Range: 0 to 50°C (0 to 122°F)
Temperature Accuracy/Resolution: ±1°C (1.8°F)/0.1°
RH Range/Accuracy: 10 to 90% RH/ ±5% of reading, typical
Display Type/Size: Dual readout LCD/51 mm (2") diagonal
Auto Power-Off Trigger: 15 minutes of front-panel inactivity (can be disabled)
Operating Temperature: 0 to 50°C (32 to 122°F) @ 0 to 95% RH, non-condensing
Dimensions: 210 L x 60 H x 25 mm D (8.3 x 2.4 x 1.0")
Weight: 204 g (7.2 oz) (with battery)
Power Source: 4 "AAA" batteries (included) or optional 110V AC adaptor (HHB400-AC)
Meets U.S. National Institute for Occupational Safety and Health's (NIOSH's) acceptance criteria.

To Order

Model No.	Description
HHAQ-108	Handheld formadehyde detector
HHB400-AC	AC wall adaptor (optional)
MN2400	Replacement "AAA" batteries 2/pack (2-packs required)

Comes complete with soft pouch, 4 "AAA" batteries and operator's manual.

Rugged Handheld Environmental Meters

With Rubber Bumper and Cover for Field Engineering

Temperature Measurement

Dual Input Type K Thermocouple Thermometer

HHC201

✔ **0.1% Accuracy**
✔ **Fast Temperature Response**
✔ **Display T1, T2 or T1-D2 Differential**
✔ **Functions: Hold/Min/Max/Max-Min/AVG/REL**
✔ **Auto Power-Off (10 Minutes)**
✔ **Backlight with Auto-Off (15 Seconds)**

Specifications

Units: °C or °F

Range: -200 to 1372°C (-328 to 2500°F)

Resolution:
  0.1°: -100 to 1372°C (-148 to 2500°F) **1°:** -200 to -100°C (-328 to -148°F)

Accuracy: Type K thermocouple ITS-90
  ±(0.1% rdg +1°C): -60 to 1372°C (-76 to 2500°F)
  ±(0.1% rdg +2°C): -200 to -60°C (-328 to -76°F)

Operating Temperature: 0 to 50°C (32 to 122°F)

Power: 2 "AAA" batteries (included)

Battery Life: 250 hours typical with alkaline batteries

Dimensions: 24.7 x 50.9 x 132.9 mm (0.98 x 2.0 x 5.2")

Weight: 148 g (5.2 oz)

Comes complete with batteries, carrying strap, protection cap, and thermocouple.

HHC201 shown smaller than actual size.

Infrared Thermometer

HHC210

✔ **Laser Sighting**
✔ **Field of View 6:1**
✔ **Adjustable Emissivity 0.1 to 1.00**
✔ **Display IR Temperature, Ambient Temperature and IR-Ambient Differential Temperature**
✔ **Functions: Hold/Min/Max/Max-Min/AVG**
✔ **Auto Power-Off (10 Minutes)**
✔ **Backlight with Auto-Off (15 Seconds)**

HHC210 shown smaller than actual size.

Specifications

Units: °C or °F

Infrared Temperature:
  FOV: 100 mm (4") @ 600 mm (24")
  Range: -30 to 550°C (-22 to 1022°F)
  Resolution: 0.1°
  Accuracy:
    ±2°C: -30 to 100°C (-22 to 212°F)
    ±2% rdg: 101 to 550°C (214 to 1022°F)

Air Temperature:
  Range: -20 to 60°C (-4 to 140°F)

Accuracy:
  ±0.5°C: 0 to 45°C (32 to 116°F)
  ±1°C: -20 to 0°C (-4 to 32°F);
        45 to 60°C (116 to 140°F)

Operating Temperature: 0 to 50°C (32 to 122°F)

Power: 2 "AAA" batteries (included)

Battery Life: 40 hour with laser typical with alkaline batteries

Dimensions: 24.7 x 50.9 x 132.9 mm (0.98 x 2.0 x 5.2")

Weight: 148 g (5.2 oz)

Comes complete with batteries, carrying strap, and protection cap.

NEW

1 YEAR WARRANTY CE

HHC280 shown smaller than actual size.

HHC281 shown smaller than actual size.

OMEGA®
HHC280
DIFFERENTIAL MANOMETER

OMEGA®
HHC281
ABSOLUTE PRESSURE METER

Differential Manometer

HHC280
- ✔ **0 to 40 inH$_2$O/0 to 100 hPa**
- ✔ **HVAC System Troubleshooting**
- ✔ **Gas Pressure Measurements**
- ✔ **Compliant for Pitot Tubes for Measuring Air Velocity**
- ✔ **Dual Inputs P1 and P2**
- ✔ **Functions: Hold/Min/Max/Max-Min/AVG**
- ✔ **Auto Power-Off (10 Minutes)**
- ✔ **Backlight with Auto-Off (15 Seconds)**

Specifications
Eight Selectable Units: mmH$_2$O, mmHg, psi, inH$_2$O, inHg, hPa, mbar, Pa, plus m/s and fmp (for air velocity)

Range: 0 to 100 hPa/0 to 1019.7 mmH$_2$O

Resolution: 0.1 hPa/0.1 mmH$_2$O

Accuracy: ±0.03 hPa (0 to 0.30 hPa)
±0.05 hPa (0.31 to 1.00 hPa)
±0.1 hPa + 1.5% or rdg (rest of range)
±0.3 mmH$_2$O (0 to 3.0 mmH$_2$O)
±0.5 mmH$_2$O (3.1 to 10.2 mmH$_2$O)
±1.02 mmH$_2$O + 1.5% of rdg (rest of range)

Operating Temperature: 0 to 50°C (32 to 122°F)

Power: 2 "AAA" batteries (included)

Battery Life: 85 hours typical with alkaline batteries

Dimensions: 24.7 x 50.9 x 132.9 mm (0.98 x 2.0 x 5.2")

Weight: 113 g (4.0 oz)

Comes complete with batteries, carrying strap, and protection cap.

Absolute Pressure Meter

HHC281
- ✔ **High Accuracy Absolute Pressure Measurement**
- ✔ **Barometric and Altitude Measurement**
- ✔ **Calculation of Barometric Pressure**
- ✔ **Functions: Hold/Min/Max/Max-Min/AVG**
- ✔ **Auto Power-Off (10 Minutes)**
- ✔ **Backlight with Auto-Off (15 Seconds)**

Specifications
Eight Selectable Units: hPa, mbar, Pa, mmH$_2$O, mmHg, inH$_2$O, inHg, psi, plus m and ft (for altitude)

Range: 300 to 1200 hPa

Resolution: 0.1 hPa

Accuracy: ±3 hPa

Operating Temperature: 0 to 50°C (32 to 122°F)

Power: 2 "AAA" batteries (included)

Battery Life: 600 hours typical with alkaline batteries

Dimensions: 24.7 x 50.9 x 132.9 mm (0.98 x 2.0 x 5.2")

Weight: 120 g (4.2 oz)

Comes complete with batteries, carrying strap, and protection cap.

Unit	Range	Resolution
mmH$_2$O	0 to 1019.7	0.1
mmHg	0 to 75.00	0.01
psi	0 to 1.450	0.001
inH$_2$O	0 to 40.14	0.01
inHg	0 to 2953	0.001
hPa	0 to 100.00	0.01
mbar	0 to 100.00	0.01
Pa	0 to 10000	1
FPM	*	1
m/s	*	0.1

RPM/Light Measurement

Light Meter

HHC230

✔ **Measures Light Intensity**
✔ **Wide Measuring Range 0 to 200,000 lux**
✔ **Spectral Response ƒ<8%**
✔ **Based on CIE Standard Illuminant A (2856K)**
✔ **Functions: Hold/Min/Max/Max-Min/AVG**
✔ **Auto Power Off (10 Minutes)**
✔ **Backlight with Auto-Off (15 Seconds)**

Specifications

Range: 0 to 200,000 lux; 0 to 18,580 fc
Accuracy: ±3% rdg + 10 digits (based on a light source 2856K)
Resolution: 1 lux (0 to 19999), 10 lux (20,000 to 200,000), 1 fc (0 to 18,580)
Units: lux/fc
Operating Temperature: 0 to 50°C (32 to 122°F)
Typical Light Intensity Ranges (lux):
  Design/General Office: 1500 to 2000
  Meeting Room: 300 to 750
  Precision Assembly: 1500 to 3000
  R&D Department: 750 to 1500
  Packing/Measurement/Hallway: 300 to 750
Power: 2 "AAA" batteries (included)
Battery Life: 180 hours typical with alkaline batteries
Dimensions: 24.7 x 50.9 x 132.9 mm (0.98 x 2.0 x 5.2")
Weight: 116 g (4.0 oz)
Comes complete with batteries, carrying strap, and protection cap.

HHC230 shown smaller than actual size.

RPM Meter

HHC250

✔ **Non-Contact Optical RPM Measurement**
✔ **Wide Measuring Range up to 99999 rpm with LED Spot Marking and Reflective Tape on Object**
✔ **Measuring Range Up to 40 cm (15.7") (Depending on Ambient Light)**
✔ **Functions: Hold/Min/Max/Max-Min/AVG**
✔ **Auto Power-Off (10 Minutes)**
✔ **Backlight with Auto-Off (15 Seconds)**

Specifications

Range: 100.0 to 99999
Accuracy: ±0.02% of rdg + 1 digit
Resolution:
  0.1 rpm: 100.1 to 19999.9 rpm
  0.1 rps: 1.7 to 333.3 rps
  1 rpm: 20,000 to 99,999
  1 rps: 334 to 1666 rps
Units: rpm/rps
Operating Temperature: 0 to 50°C (32 to 122°F)
Power: 2 "AAA" batteries (included)
Battery Life: 30 hours typical with alkaline batteries
Dimensions: 24.7 x 50.9 x 132.9 mm (0.98 x 2.0 x 5.2")
Weight: 110 g (3.9 oz)
Comes complete with batteries, carrying strap, protection cap, and reflective tape (5 each).

HHC250 shown smaller than actual size.

Air Flow/Humidity/Dew Point/Wet Bulb

Hygro-Anemometer

HHC261

- ✔ **0.4 to 20 m/s (80 to 4000 ft/min)**
- ✔ **High Accuracy Air Flow Measurement**
- ✔ **Built-In Ambient Temperature Measurement**
- ✔ **Wind Chill Temperature (WCT) Indicator**
- ✔ **Integrated Flow Vane**
- ✔ **Humidity with Dew Point and Wet Bulb**
- ✔ **Functions: Hold/Min/Max/Max-Min/AVG**
- ✔ **Auto Power-Off (10 Minutes)**
- ✔ **Backlight with Auto-Off (15 Seconds)**

Specifications

Air Velocity:
   Range: 0.4 to 20 m/s (80 to 4000 ft/min)
   Accuracy: ±0.2 m/s + 2% of rdg; ±0.40 ft/min + 2% of rdg
   Resolution: 0.1 m/s, 1 ft/min
   Units: beau, m/s, ft/m, mph, km/h, WCT, kts

Air Temperature:
   Range: -20 to 60°C (-4 to 140°F)
   Accuracy:
     ±0.5°C: 0 to 45°C (32 to 113°F)
     ±1°C: -20 to 0°C and 45 to 60°C
     (-4 to 32°F) and (113 to 140°F)
   Resolution: 0.1°C/°F

Humidity:
   Range: 0 to 100% RH
   Accuracy:
     ±2.5%: 10 to 90% RH
     ±5%: 0 to 10% RH and 90 to 100% RH
Operating Temperature: 0 to 50°C (32 to 122°F)

HHC261 shown smaller than actual size.

Power: 2 "AAA" batteries (included)
Battery Life: 50 hours typical with alkaline batteries
Dimensions: 24.7 x 50.9 x 132.9 mm (0.98 x 2.0 x 5.2")
Weight: 119 g (4.2 oz)
Comes complete with batteries, carrying strap, and protection cap.

All Models Include Slip-Off Hard Cover Shell

HHC201 shown closed with included cover.

HHC201 shown with included cover.

Digital Sound Level Data Logger

HHSL-101

1 YEAR WARRANTY

✔ **Simple One Button Operation Starts/ Stops Data Logging without a PC**
✔ **Plug-and-Play USB 2.0 Interface— No Need for Cables, Cradles or Docks**
✔ **Large Storage Capacity—Track, Store and Download 32,000 Data Points into Excel-Format**
✔ **LCD Displays Real Time Sound Level**
✔ **A/C Frequency Weighting**
✔ **FAST/SLOW Time Weighting**
✔ **MAX/MIN/AVG Displays**
✔ **High and Low Alarm Limit**
✔ **Selectable Sampling Time**
✔ **Ability to Analyze Data in Graph View Using Free Software, Plus Print or Save the Results**

HHSL-101 shown smaller than actual size.

The HHSL-101 is a low-cost, compact, battery-powered sound level meter capable of unattended logging (recording) of the decibel level of an environment for days, weeks or months. Data logging can be started or stopped by pushing a button on the unit, eliminating the need to bring a laptop to the job site.

The HHSL-101 is ideal for monitoring environmental and industrial noise as well as for measuring decibel levels during acoustical design and sound system setups.

After a data log has been captured and stored, it can be uploaded as a .txt file to any PC running Windows® XP, Windows® 7 or Windows® 8 operating system after plugging the HHSL-101 into one of the computer's USB ports. The HHSL-101's internal flash memory is large enough to store up to 32,000 data points. Software is included with the product—which is slightly larger than a thumb drive—that can display a data log file as a table or graph and/or export it to Microsoft Excel®. Exporting to Excel is recommended for sophisticated trending and analysis of sound level data and easy detection of unexpected excursions.

Specifications
Range: 30 to 130 dB
Resolution: 0.1 dB
Accuracy: ±1.5 dB
Memory: 32,000 data points
Communications: USB 1.0/2.0
Software: Windows XP/7/8
Sampling Rate: 125 ms, 500 ms, 1 sec, 2 sec, 5 sec, 10 sec, 60 sec (user-selectable)
Power: ½ "AA" 3.6V 1200 mAh lithium battery (included); user-replaceable
Working Current: <1 mA
Operating Temperature: 0 to 50°C (32 to 122°F)
Operating Humidity: 10 to 90% RH non-condensing
Storage Temperature (Without Battery): -10 to 50°C (14 to 122°F), 5 to 95% RH
Dimensions: 180 L x 28 H x 27 mm D (7.09 x 1.10 x 1.06")
Weight (without battery): 57 g (2.0 oz)

To Order	
Model No.	**Description**
HHSL-101	Digital sound level data logger
OM-EL-BATT	Replacement 3.6V lithium battery

Comes complete with Windows software on CD, protective cap, mounting stand, USB extension cable, 3.6V lithium battery and user's manual.

Ordering Example: HHSL-101, *sound level data logger with LCD display.*

Sound Meter

with Data Logging SD Card

HHSL402SD

1 YEAR WARRANTY

- ✔ **Measures 30 to 130dB**
- ✔ **2 GB SD Card Included**
- ✔ **Automatic Range Selections**
- ✔ **Real Time Data Logger**
- ✔ **Large Backlit LCD**
- ✔ **MAX/MIN Function**
- ✔ **Auto Power-Off**
- ✔ **RS232 Interface (Optional Cable)**
- ✔ **Data Logging Software (Optional)**
- ✔ **Hard Carrying Case Included**

HHSL402SD

The HHSL402SD is a general-purpose handheld instrument that measures the noise level of an environment or the sound level produced by a piece of machinery. Using an integrated 13 mm (0.5") condenser microphone, the meter can measure sound levels from 30 to 130 dB with a resolution of 0.1 dB and show the results on a front-panel liquid-crystal display. Several features and capabilities enhance the meter's versatility. Among them are autoranging, the ability to hold readings and display maximum and minimum readings, and user-settable measurement parameters such

as frequency weighting (using the "A" and "C" standards) and time weighting (fast or slow). Because it is microprocessor-based, the HHSL402SD can make full use of the portability, reliability and large storage capacities that SD memory cards offer.

Measurements can be made automatically at any sampling rate between one second and one hour. After timestamping and storing the measurements on an SD card plugged into the instrument, the user can remove the card and

plug it into to a laptop or desktop computer either directly or via a USB card reader. The data points are stored on the card as files with the .xls extension, which can be opened by Microsoft's Excel application. The HHSL402SD has a backlit 64 mm (2.5") diagonal display and is powered by six "AA" alkaline batteries or an optional 9V AC/DC adaptor.

Q

Sound wind shield ball.

HHSL402SD

**All items included
and shown smaller
than actual size.**

Hard carrying case.

2 GB SD card with case.

Specifications

Display Type: LCD with green backlight
Display Size: 52 x 38 mm (2.05 x 1.5")
Parameter Measured: dB
Frequency Range: 31.5 Hz to 8 kHz
Measurement Range:
- 30 to 130 dB in autoranging mode
- User can also select fixed range of 30 to 80 dB, 50 to 100 dB, or 80 to 130 dB

Measurement Weighting:
- **By Frequency:** Frequency weighing uses "A" or "C" standard
- **By Time:** Time weighting is fast or slow (200 or 500 ms response time)

Measurement Accuracy:
- With "A" frequency weighting: ± 3.5 dB @ 31.5 Hz, 2.5 dB @ 63 Hz, 2 dB @ 125 Hz, 1.9 dB @ 250 Hz, 1.9 dB @ 500 Hz, 1.4 dB @ 1 kHz, 2.6 dB @ 2 kHz, 3.6 dB @ 4 kHz, 5.6 dB @ 8 kHz

Measurement Resolution: 0.1 dB
Data Logging Sampling Time: 1 second to 1 hour
Settable Parameters: Date, time, auto power off, beep sound, sampling time, decimal point or comma decimal division, "A" or "C" frequency weighting, fast or slow time weighting
Storable/Recallable Readings: Maximum, minimum
SD Card Capacity: 1 to 16 GB
Operating Temperature: 0 to 50°C (32 to 122°F)
Operating Relative Humidity: 0 to 85%

Power Supply: Six alkaline "AA" batteries or optional 9 Vdc AC adaptor
Power Consumption:
- 8 mADC (normal operation, with backlight off and SD card not saving data)
- 30 mADC with backlight on and card saving data
- 44 mADC with backlight on and card saving data

Dimensions of Meter: 245 x 68 x 45 mm (9.65 x 2.68 x 1.77")
Weight of Meter: 489 g (1.08 lbs)

OMEGA CARE℠ Extended Warranty Program

OMEGACARE℠ extended warranty program is available for models shown on this page. Ask your sales respresentative for full details when placing an order. OMEGACARE℠ covers parts, labor and equivalent loaners.

To Order *Visit omega.com/hhsl402sd for Pricing and Details*

Model No.	Description
HHSL402SD	Sound meter with data logging SD card

Accessories (Field Installable)

Model No.	Description
2GB-SD	Spare 2 GB SD card
ADAPTER-SD	AC power adaptor
SW-U101-WIN	Software for data logging with RS232 cable
RS232-SD	Optional RS232 interface cable

Comes complete with sound wind shield ball, 6 "AA" batteries, hard carrying case, 2 GB SD memory card, and operator's manual.
***Ordering Example: HHSL402SD,** sound meter with data logging SD card.*
***OCW-3.** OMEGACARE℠ extends standard 1-year warranty to a total of 4 years.*

UVA, UVC Light Meter with
Data Logging SD Card

NEW

HHUV254SD

1 YEAR WARRANTY

Measures Light Intensity
Two Automatic
Range Selections
J/K Thermocouple Input
2 GB SD Card Included
UVA and UVC
Probes Included
Real Time Data Logger
Large Backlit LCD Display
MAX/MIN Function
Auto Power-Off
Hard Carrying Case
Included

Many industrial and commercial applications require or can benefit from measurement of the intensity of UVA and/or UVC light. Among them are welding (to minimize exposure to "blue light" radiation), UV sterilization of food, photochemical matching, erasure of electrically programmable read-only memory (EEPROM) chips, production of graphic arts products, exposure of photoresists, and curing of inks, adhesives and coatings.
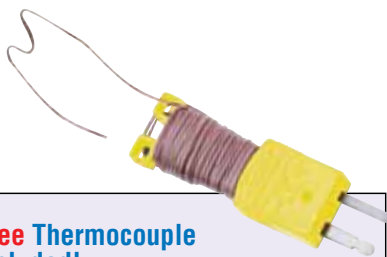
Type K thermocouple (included).

UVA light meter (included).

HHUV254SD.

2 GB SD card (included).

Free Thermocouple Included!
This model includes a free 1 m (40") Type K insulated beaded wire thermocouple with subminiature connector and wire spool caddy. Order a Spare! Model No. SC-GG-K-30-36

OMEGA's HHUV254SD has the performance and features needed to satisfy the most demanding aspects of these applications. For example, it combines the capabilities of UVA (black light in the long-wave 365 nm band) and UVC (short waves in the 254 nm band) measurement in one instrument. The meter also can measure temperature with a Type K or J thermocouple. A UVA probe and a UVC probe are supplied with the instrument. Because it is microprocessor-based, the HHUV254SD data logger can make full use of the portability, reliability

and large storage capacities that SD memory cards offer. Measurements of light intensity or temperature can be made automatically at any of 11 sampling rates between one second and one hour. After time-stamping and storing the measurements on an SD card plugged into the instrument, the user can remove the card and transfer the measurements to a laptop or desktop computer either directly or via a USB card reader.

The HHUV254SD has a backlit 2½" diagonal display and is powered by 6 "AA" alkaline batteries or an optional 9 Vdc AC adaptor.

Q

Hard carrying case.

Type K thermocouple.

2 GB SD card.

Probe cover.

UVA probe.

UVC probe.

HHUV254SD comes complete with all items listed here.

All models shown smaller than actual size.

Specifications

Display Type: LCD with green backlight

Display Size: 52 x 38 mm (2.05 x 1.5")

UV Light Types Measured: UVA, UVC

Measurement Range: 240 to 390 nm

Measurement Accuracy: ±4% of full scale reading + 2 digits

Full-Scale Autoranges: 2 mW/cm^2 and 20 mW/cm^2

Storable/Recallable Readings: Max, min

Data Logging Sampling Time: 1 sec to 1 hr

SD Card Capacity: 1 to 16 GB

Settable Parameters: Date, time, auto power off, beep sound, temperature unit (°C or °F), sampling time, thermocouple Type (K or J), decimal point or comma

Operating Temperature: 0 to 50°C (32 to 122°F)

Operating Relative Humidity: 0 to 85%

Thermocouple Input Ranges and Accuracy:

Type K:
-50 to 1300°C (±0.2% + 0.5°C)
-50.1 to -100°C (±0.2% + 1°C)
-58 to 2372°F (±0.2% + 1°F)
-58.1 to -148°F (±0.2% + 1.8°F)

Type J:
-50 to 1200°C (±0.2% + 0.5°C)
-50.1 to -100°C (±0.2% + 1°C)
-58 to 2192°F (±0.2% + 1°F)
-58.1 to -148°F (±0.2% + 1.8°F)

Power Supply: 6 Alkaline "AA" batteries or optional 9 Vdc AC adaptor

Power Consumption:

• 6.5 mADC (normal operation, with backlight off and SD card not saving data)

• 30 mADC with backlight on

Dimensions:
Meter: 177 H x 68 W x 45 mm D (6.97 x 2.68 x 1.77")
UVA Probe Head: 45 (diagonal) x 32 mm L (1.77 x 1.26")
UVA Probe Handle: 24 (diagonal) x 125 mm L (0.94 x 4.92")
UVC Probe: 38 (diagonal) x 25 mm L (1.50 x 0.98")

Weight:
Meter: 351 g (12.38 oz)
UVA Probe: 100 g (3.53 oz)
UVC Probe: 103 g (3.63 oz)

OMEGACARE℠ extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE℠ covers parts, labor and equivalent loaners.

To Order

Model No	Description
HHUV254SD	UVA, UVC light meter with data logging SD card

Accessories (Field Installable)

Model No	Description
2GB-SD	Spare 2 GB SD card
ADAPTER-SD	AC power adaptor
SW-U101-WIN	Data acquisition software with RS232 cable
RS232-SD	Spare RS232 interface cable

Comes complete with UVA probe, UVC probe, probe cover, 6 "AA" batteries, hard carrying case, 2 GB SD memory card, Type K thermocouple and operator's manual.

Ordering Example: HHUV254SD, UVA, UVC light meter with data logging SD card.

OCW-3, OMEGACARE extends standard 1-year warranty to a total of 4 years.

TIPPING BUCKET RAIN GAUGES
AND ELECTRIC RAIN/SNOW GAUGES

RG-2500 Series

1 YEAR WARRANTY **RoHS**

✔ **Choose from 20 and 30 cm (8 and 12") Orifice**
✔ **Heated Models Available for Snowfall Collection**

The RG-2500 tipping bucket rain gauge is a dependable instrument used for measuring precipitation. Rainfall that enters the 20 or 30 cm (8 or 12") funnel collector is directed to the tipping bucket assembly. When an incremental amount of precipitation has been collected (e.g. 0.01" or 1mm) the bucket assembly tips and activates a magnetic reed switch. The sample is discharged through the base of the gauge. A momentary electrical contact is provided for each increment of rainfall. The contact closure is used to operate a data acquisition system.

RG-2500E gauges are is used where 115 Vac is available and precipitation is often in the form of snow. A 400 Watt heating kit is added to the basic RG-2500 rain gauge to provide capability for measuring snowfall.

SPECIFICATIONS
Capacity: Unlimited
Orifice Size:
   RG-2500, RG-2500E: 20 cm (8")
   RG-2500-12, RG-2500E-12: 30 cm (12")
Accuracy:
RG-2500: ±1% at 5.1"/hr
RG-2500-12: ±1% at 2.3"/hr
Switch: 3 W, 24 Vdc, 0.25 A maximum
Sensitivity: 0.01" or 1 mm per tip
Dimensions:
   RG-2500, RG-200E: 203.2 Dia. x 431.8 H mm (8 x 17")
   RG-2500-12, RG-2500E-12: 508 H x 304.8 mm Dia. (20 x 12")
Weight:
   RG-2500: 3.2 kg (7 lb)
   RG-2500E: 5.4 kg (12 lb)

RG-2500-12

Each model is supplied with 7.6 m (25') signal cable, heated units also include 7.6 m (25') power cable, mounting feet and operator's manual.

RG-2500

Both models shown smaller than actual size.

C

To Order

Model No.	Description
RG-2500	Rain gauge 20 cm (8") orifice, tips at 0.01"
RG-2500-12	Rain gauge 30 cm (12") orifice, tips at 0.01"
RG-2500E	Heated rain gauge 20 cm (8") orifice, tips at 0.01"
RG-2500E-12	Heated rain gauge 30 cm (12") orifice, tips at 0.01"
RG-2500M	Rain gauge 20 cm (8") orifice, tips at 1 mm
RG-2500M-12	Rain gauge 30 cm (12") orifice, tips at 0.25 mm
RG-2500ME	Heated rain gauge 20 cm (8") orifice, tips at 1 mm
RG-2500ME-12	Heated rain gauge 30 cm (12") orifice, tips at 0.25 mm

ACCESSORIES

Model No.	Description
RG-2595	Rain gauge calibrator
RG-952	Rain gauge wind screen with 24" legs
RG-2500-MP	8" rain gauge mounting plate
RG-2500-MP-12	12" rain gauge mounting plate
OM-CP-EVENT101 A	Event data logger

Comes complete with 7.6 m (25') signal cable, mounting feet, and operator's manual. Heated units also include 7.6 m (25') power cable.

***Ordering Examples: RG-2500E,** heated rain gauge with 20 cm (8") orifice.*
***RG-2500M-12,** rain gauge, 30 cm (12") with **RG-2595,** rain gauge calibrator.*
***RG-2500,** 20 cm (8") orifice rain gauge with **OM-CP-EVENT101A,** event data logger.*

Omega Link Environmental Monitoring Smart Probe

CE UK CA

- **Measured Temperature Range from:**
  -40 to 85ºC (-40 to 185ºF)
- **Humidity: 0 to 100% RH**
- **Barometric Pressure: 10 to 1200 mbar**
- **Dewpoint, Humidex, & Heat Index readings**
- **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**

5" Tube Housing

3"Tube Housing

3" Bulkhead Housing

SP-003/SP-004: Introduction

The Omega Link SP-003/SP-004 Environmental Monitoring Smart Probe provides temperature, relative humidity and barometric pressure readings. The SP-003-2 and SP-004-2 models additionally provide real-time Dewpoint, Humidex, and Heat Index readings. The SP-003/SP-004 accepts Omega Link Smart Interfaces through its M12 8-pin connector.

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.

Intuitive Configuration

Configure your Omega Link Smart Probe using our free SYNC configuration software. Configurable features include selective data extraction, measurement and device traceability, local alarms, and adaptive transmission rates.

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.

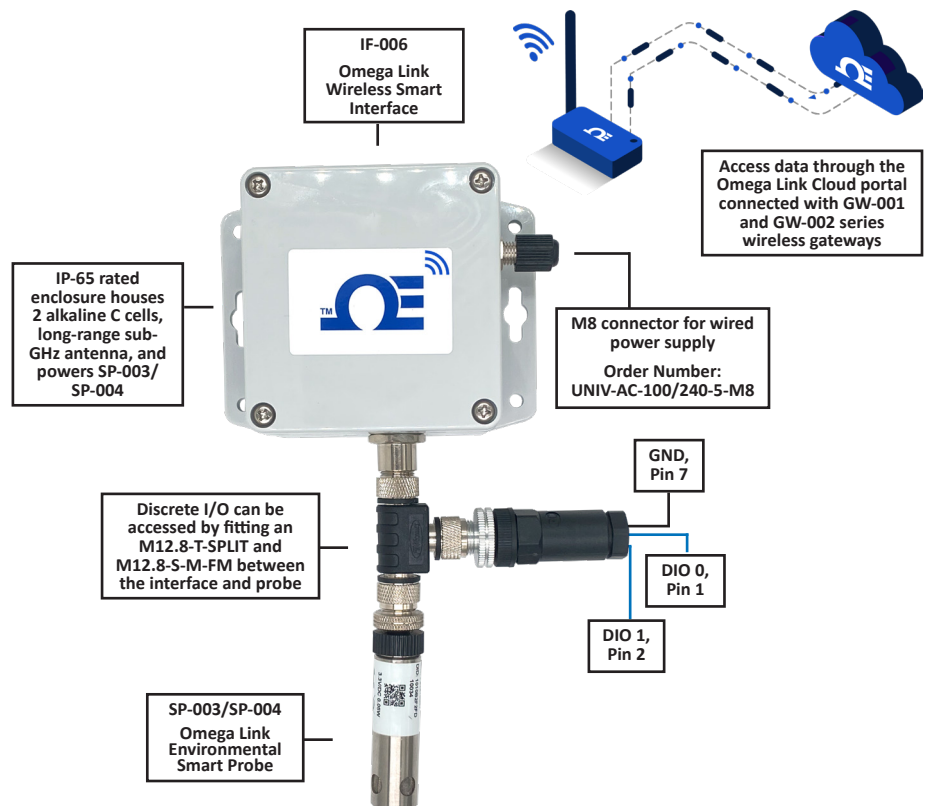## Edge Control and Built in I/O

The Omega Link SP-003/SP-004 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-003/SP-004 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-003/SP-004 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

IF-006
Omega Link Wireless Smart Interface

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

IP-65 rated enclosure houses 2 alkaline C cells, long-range sub-GHz antenna, and powers SP-003/SP-004

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

GND, Pin 7

DIO 0, Pin 1

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

DIO 1, Pin 2

SP-003/SP-004 Omega Link Environmental Smart Probe

Specifications

TEMPERATURE
Range: -40 to 85ºC (-40 to 185ºF)
Accuracy at 25ºC: ±0.3ºC (±0.6ºF)
Response Time: Less than 1 second
Temperature Coefficient: less than 0.01 C/C
Repeatability: ±0.15ºC

RELATIVE HUMIDITY
Accuracy at 25ºC: ±2.5% (0 to 80%) non-condensing, ±3.5% (80 to 100%) non-condensing
Hysteresis: ±0.8%
Response Time: 8 seconds
Repeatability: ±0.21% RH

BAROMETRIC PRESSURE
Accuracy Over Full Range: ±6 mbar from 300 to 1100 mbar
Accuracy @ 25ºC: ±4 mbar from 700 to 1100 mbar

DEWPOINT (Calculated)
Accuracy: ±2ºC

HEAT INDEX (Calculated)
Accuracy: ±2ºC

HUMIDEX (Calculated)
Accuracy: ±2ºC

INPUT POWER
Voltage: 2.8 V_{DC} - 3.3 V_{DC}

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 85ºC (-40 to 185ºF)
Rating: IP67 when mated

MECHANICAL
Tube Housing
Construction: Stainless Steel
Dimensions: 72 mm L x 15.9 mm OD (2.83" x 0.62") (5" model available)
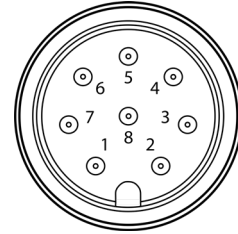**Bulkhead Housing**
Construction: Aluminium
Dimensions: 73 mm L x 15.9 mm OD x 18.5 mm Panel Opening (2.83" x 0.62" x 0.72")

GENERAL
Agency Approvals: CE, UKCA

Compatibility: Compatible with OEG, SYNC configuration software, Omega Link Cloud, and Modbus Networks
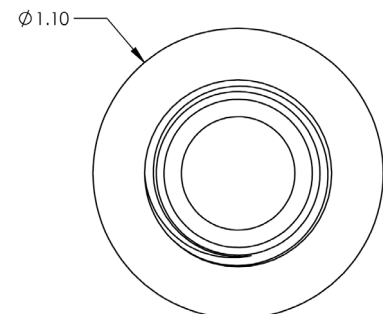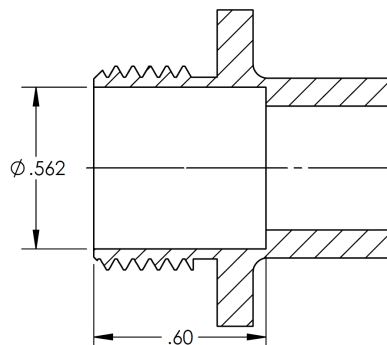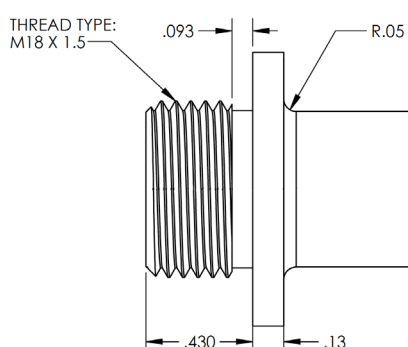
M12 8-Pin Male Connector

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-003 / SP-004 Ordering Guide

Model Number	Mechanical Housing	Description
SP-003-1	3" Tube	Temperature, Humidity, Barometric Pressure Smart Probe with discrete I/O
SP-003-2	3" Tube	Temperature, Humidity, Barometric Pressure, Dewpoint, Humidex, and Heat Index Smart Probe with discrete I/O
SP-004-1	3" Tube	Temperature and Humidity Smart Probe with discrete I/O
SP-004-2	5" Tube	Temperature, Humidity, Dewpoint, Humidex, and Heat Index with discrete I/O
SP-004-4	3" Bulkhead	Temperature and Humidity Smart Probe with discrete I/O

Bulkead Dimensions in Inches

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
M12.8-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.