User Manual

Handheld Dew Point Meter - H Series

Model: DEH

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Notices and Warnings

Notices

Please **read all of this manual** before you install, operate or maintain this product. Pay attention to notes, warnings and instructions. The manufacturer cannot be held liable for any damage which occurs as a result of noncompliance with this manual.

Do not tamper with device. Should the device be tampered with in any manner other than a procedure which is described and specified in this manual, the warranty is cancelled and the manufacturer is exempt from liability.

The product is designed exclusively for the described application. Use of this product in conditions not specified in this manual or, contrary to the instructions provided by the manufacturer, is considered improper handling / use of the product and will void your warranty. The manufacturer will not be held liable for any damages resulting from improper use of the product.

This manual should be read carefully by relevant personnel and the end user. This manual should be kept with the product and be made available as needed. **Once you install or use the product, you accept that you have read, understood and complied with this manual**.

Compressed Air Alliance endeavours to make the content of this manual correct, but is not responsible for omissions or errors and the consequences caused. In case of any doubts or questions regarding this manual or the product, please contact Compressed Air Alliance.

Warnings

Ignoring the warnings can lead to serious injury and/or cause damage!

When handling, operating or carrying out maintenance on this product, personnel must employ safe working practices and observe all local health & safety requirements and regulations.

Improper operation or maintenance of this product could be dangerous and result in an accident causing damage to machinery or injury or death.

The manufacturer cannot anticipate every possible circumstance which may represent a potential hazard. The warnings in this manual cover the most common potential hazards and are therefore not all-inclusive. If the user employs an operating procedure, an item of equipment or a method of working which is not specifically recommended by the manufacturer they must ensure that the product will not be damaged or made unsafe and that there is no risk to persons or property.

NEVER CHANGE ORIGINAL COMPONENTS WITH ALTERNATIVES.

Compressed Air Safety

Any contact with quickly escaping air or bursting parts of the compressed air system can lead to serious injuries or even death.

- Do not exceed the maximum permitted pressure.
- Only use pressure rated installation materials and parts.
- Avoid getting hit by escaping air or bursting parts.
- The system must be pressure-less during maintenance work.

Electrical Safety

Any contact with energised parts of the product, may lead to an electrical shock which can lead to serious injuries or even death. The user shall take all measures necessary to protect against electrical shock.

Consider all regulations for electrical installations.

The system must be disconnected from any power supply during maintenance work.

Any electrical work on the system is only allowed by authorised qualified personal.

Storage and transportation

- Make sure that the transportation temperature of the sensor is between -10°C to 60°C (14°F to 140°F).
- Please make sure that the storage temperature of the sensor is between -10°C to 50°C (14°F to 122°F) and the humidity is <90%, no condensation. Avoid direct UV and solar radiation during storage.

Cleaning

If you need to clean the sensor it is recommended to use a clean, dry cloth. For stubborn marks, use distilled water or isopropyl alcohol only.

Please note: contamination on the sensor tip will affect calibration and accuracy of the sensor. Removal of the contamination may not fix the issue.

Disposal

Electronic devices are recyclable material and do not belong in the household waste. The product, lithium-ion battery, accessories and its packing material must be disposed according to local statutory requirements.

Lithium-Ion Battery

The hand held (portable) dew point meter contains a lithium-ion battery.

When handling and storing a lithium-ion battery product:

- store lithium-ion batteries and products in cool, dry places and out of direct sunlight
- allow the lithium-ion battery to cool after use and before recharging
- keep lithium-ion batteries separate from each other when removed from products.
- **Never** use lithium-ion batteries, products or chargers that are showing signs of failure such as:
  - denting, crushing or other damage
  - overheating
  - swelling
  - leaking or
  - venting gas.
- **Never** leave lithium-ion batteries or products in hot places such as in parked vehicles
- **Never** modify a lithium-ion battery or use it in the incorrect product
- **Never** repurpose batteries designed for use in one product to use in another.

When charging a lithium-ion battery

- Always monitor charging times of devices and disconnect products from chargers once they are fully charged. Consider setting timers as a reminder to unplug devices
- Always charge lithium-ion batteries or products on non-combustible surfaces such as concrete, ceramic, or steel.
- **Never** charge lithium-ion batteries or products on combustible materials such as sofas or carpet
- **Never** use damaged chargers or charging cables.

When disposing of a lithium-ion battery product

- Always check safe disposal options for your local area
- Never dispose of lithium-ion batteries or products in household rubbish, recycling bins or kerbside hard waste collections. This can cause fires in bins, garbage trucks and waste facilities.

Introduction

About Dew Point Sensors

Intended use

Compressed Air Alliance's dew point sensors are suitable for use in manufacturing, industrial and base building environments providing the sensor's specifications are met. This includes:

- Sensor is used in inert gases, eg air, oxygen, nitrogen, etc
- Pressure dew point is between:
  - -60°C to +60°C (-76°F to +140°F) for DEH1xxxxx
  - -110°C to +60ºC (-166°F to +140°F) for DEH2xxxxx
- Gas pressure between: 0 to 17 bar (247 psi)
- Gas temperature is between: -40°C to +100°C (-40°F to +212°F)
- The sensor is **not** used in explosive environments.

Refer to the *Specifications* section (next page) for full requirements.

Our dew point sensors measure pressure dew point, gas temperature, relative humidity and pressure.

About Dew Point Sensors

Dew point sensors are the simplest way to monitor dryer performance and detect moisture issues before they can cause a problem.

Moisture in gas systems can clog pipes, break machinery, cause contamination (eg rust, mildew, bacteria) or cause freezing.

Dew point sensors are cheap, easy to install and have low maintenance requirements.

Benefits of monitoring dew point

- Improve system reliability
- Reduce product contamination risks
- Reduce system maintenance
- Reduce operating and energy costs
- Reduce the risk of rust and corrosion build up
- Improve dryer reliability
- Improve filter life and performance
- Reduce the risk of bacteria, fungus and yeast build up
- Alerts you to changes in dryer performance before moisture appears in your plant
- Easy to install and low maintenance
- Suitable for temporary or permanent installations.

Specifications

Measurement Range			
Pressure Dew Point Range:			Sensor Technology:
Option 1:	-60°C to +60°C	-76°F to +140°F	1 polymer sensor
Option 2:	-110°C to +60ºC	-166°F to +140°F	1 polymer sensor & 1 alumina-oxide sensor
Gas Temperature Measurement Range		-40 to +100 °C	-40 to +212°F
Pressure Measurement Range		0 to 17 bar	0 to 246 psi

Accuracy	
Dew Point Accuracy	
• +20 to -60°C	±2%
• -60 to -100°C	±3%
Temperature Accuracy	
• 0 to + 50°C	±0.3°C
• -40 to 0°C and +50 to +100°C	±0.5°C
Pressure Accuracy (@23°C)	±0.3% F.S
Pressure changes with temperature	±0.01 bar / 10°C

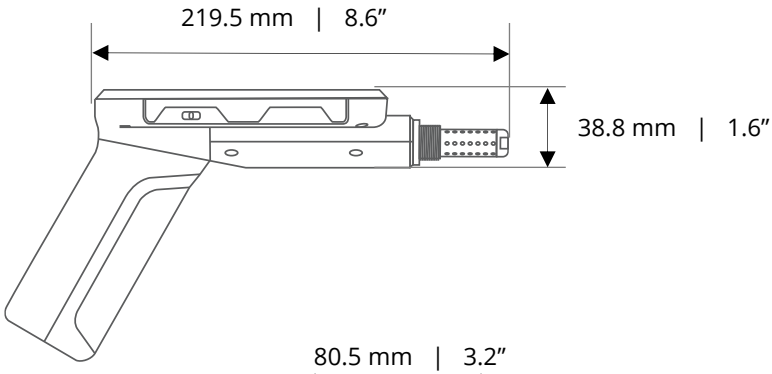
Response Time	
-50 to +20 °Ctd	20 sec [40 sec]
+20 to -50 °Ctd	1 min [3 min]
Pressure measurement	<1 sec

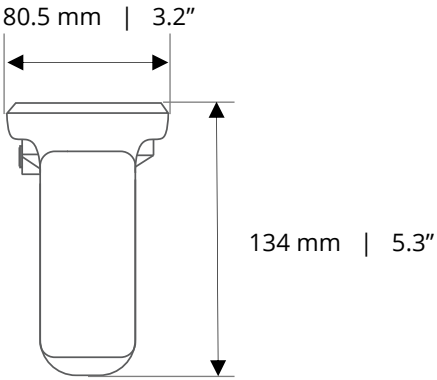
Reference Conditions: 63% [90%], 20 °C, 1bar(a), 4L/min

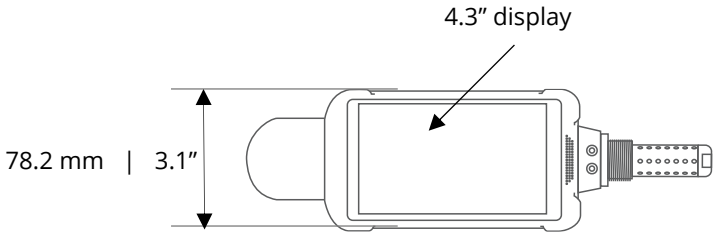
Display & Data Logger	
Display	4.3" IPS LCD capacitive touch screen
Data Logging	1.5 G storage space 200 million recording points

Data Output	Type C interface
Data Format	.csv
Power	
Battery Type	Rechargeable lithium-ion battery, 37Wh
Battery charging	PD fast charger, 15 to 20VDC, 1A, 25W
Charging interface	Type-C interface
Charging time	2.5 hours
Battery life	16 h (at 20 °C operating temperature)
Working Environment	
Ambient Temperature	-30 to +70°C | -22 to +158°F
Operating Temperature	0 to +50°C | 32 to 122 °F
Storage Temperature	-10 to +60°C | 14 to 140°F
Relative Humidity	0 to 95% RH
Minimum gas flow	> 2L /min
Pressure	0 to 17 bar
Other	
Process Connection	6 mm hose with quick connector
Weight • Handheld unit only • Carry Case and handheld unit	 0.95 kg 3.5 kg
Warranty	12 months

Dimensions







Handheld Dew Point Meter Kit

Each handheld dew point meter comes with:

- Portable Dew Point Meter (handheld unit)
- Measurement Chamber
- Charger and Charing Cable (Type C)
- Teflon tube (2m) with quick connect (∅ 6mm)
- Quick connect coupling (∅ 6mm)
- OTG Type C USB flash drive
- ABS carry case
- Calibration certificate and user manual

Installation & Maintenance

Installation

WARNING! Incorrect installation can damage the sensor or cause it to work incorrectly.

Notes

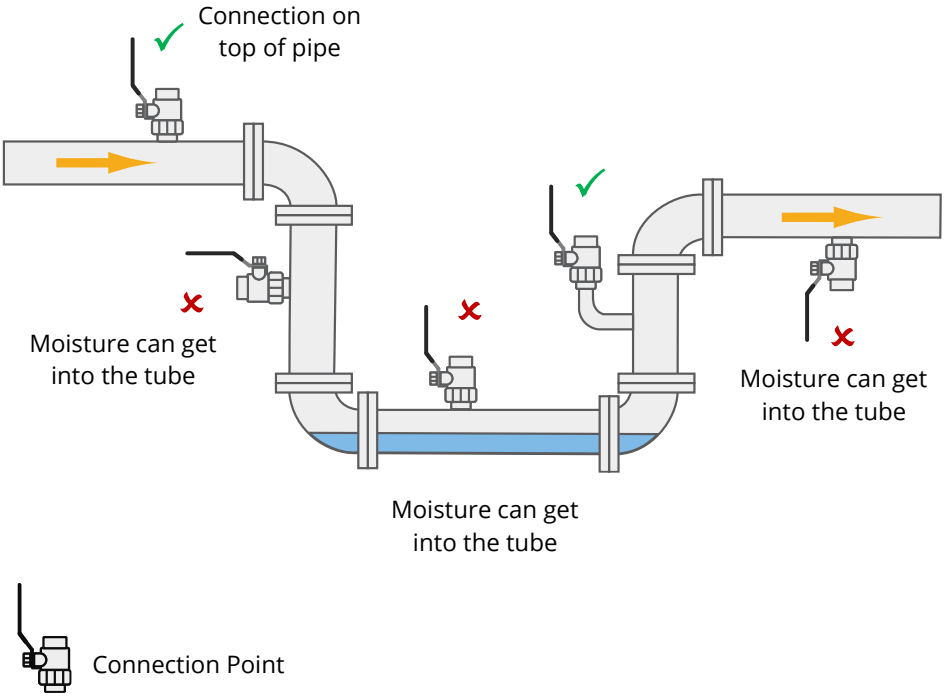
- **Before installing the sensor, make sure it is rated for your system** (refer to the “Specifications” section).
  - Use of the product outside specified ranges or operating parameters can lead to malfunctions and may damage the product or system.
- Do not use this product in explosive environments.
- Only use pressure rated materials and parts when installing and maintaining the product.
- Do not disassemble the product.
- Please observe local and national regulations before/during installation and operation.
- The product must be installed properly and calibrated regularly, otherwise it may lead to inaccurate measurement values.

Step 1 – Find a suitable connection point on the pipe

Attach the dew point meter to a connection point:

- ✓ on top of the pipe
- ✓ in dry gas (gas humidity should be less than 80% relative humidity (RH)).

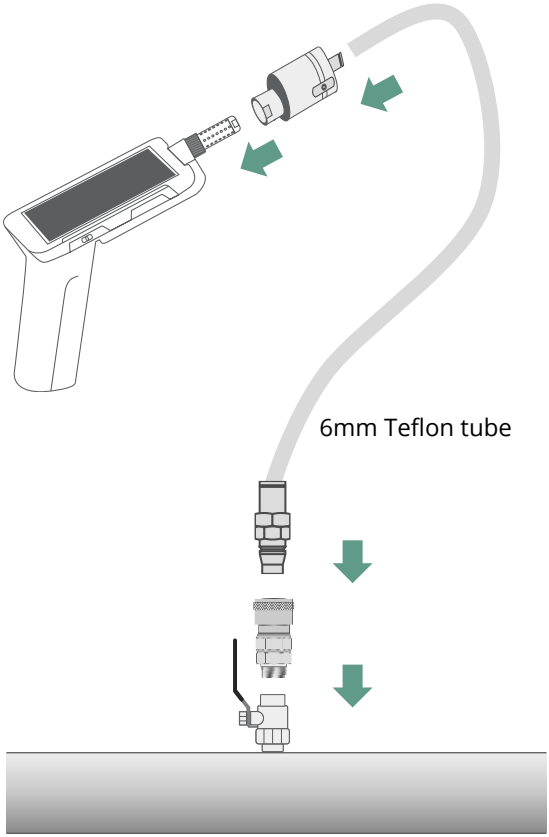
Do **not** attach the dew point meter to a connection point that will allow moisture to get into the tube as this can damage the dew point sensor. Do **not** attach the dew point meter to a connection point (i) before a dryer, (ii) in gases with a relative humidity above 80%, (iii) on the bottom of (iv) a pipe or on a pipe with liquid in it.



Step 2 – Connect Dew Point Meter to Pipe

To install the dew point meter, you need a connection point on the pipe, eg a ball valve or a nozzle or nipple. The thread must be G 1/2".

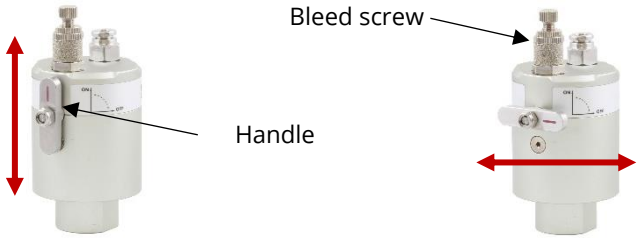
- Attach measurement chamber to the handheld unit.
- Attach the male quick connect coupling to the ball value
- Connect one end of the Teflon tube to the measurement chamber.
    - Make sure that the Teflon tube is dry and clean. A wet or contaminated tube will negatively affect the measurement and could damage the sensor.
- Connect the other end of the Teflon tube (with the quick connect) to the male quick connect coupling



Step 3 – Use Hand-held Dew Point Meter

Open the measurement chamber (turn handle to the 'On' position) and adjust the bleed screw so a small amount of gas escapes.

When you have finished using the dew point meter, close the measurement chamber (turn handle to the 'Off' position). Closing the measurement chamber prevents moisture entering the sensor. This helps decrease the response time of the sensor when a new measurement is started.

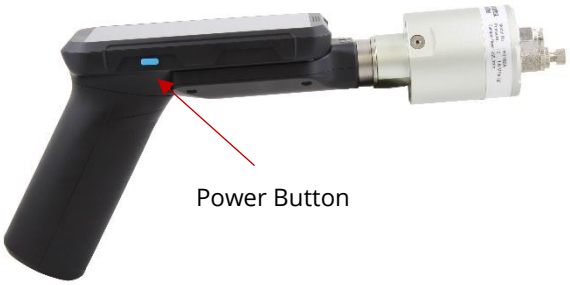


Measurement Chamber
On (open)

Measurement Chamber
Off (closed)

Press the power button to turn on the dew point meter.

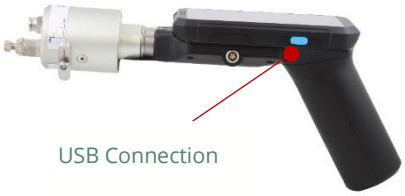
Press and hold the power button to turn off the dew point meter.



Maintenance

Charging

To charge the dew point meter, connect the charging cable to the USB connection on the handheld unit. Connect the charger to an AC power supply. Never leave the device unattended when charging.



Changing the Desiccant and Filter

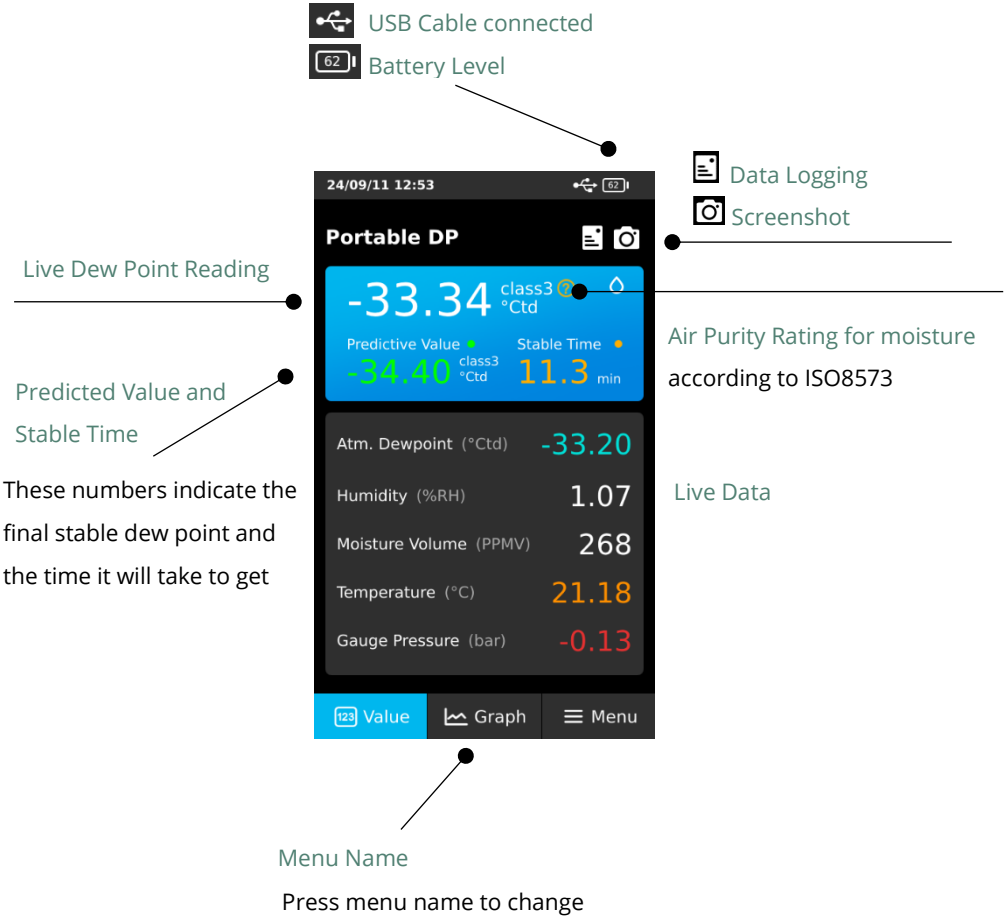
The desiccant and filters should be changed when the measurement chamber is closed (‘off’) and the dew point meter is reading greater than -10°C (14°F)

Contact your local dealer or Compressed Air Alliance for a service kit.

Using the Display

Using the Display

Value Screen

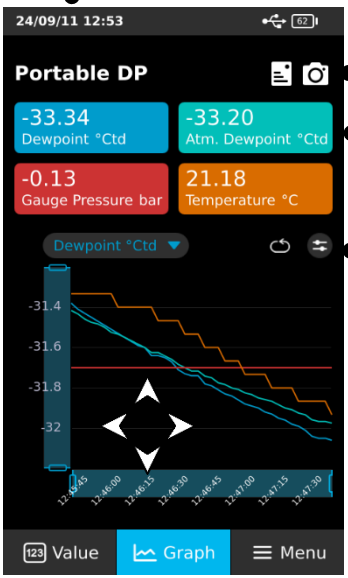


Graph Screen

Date and Time

Data Logging

Screenshot



Graph items

Click these buttons to turn their graph on / off

Y-Axis Selection

Click here to select the Y-axis parameter

X-Axis Selection

Click here to change the time period on the X-axis (from 2 min to 8 hours)

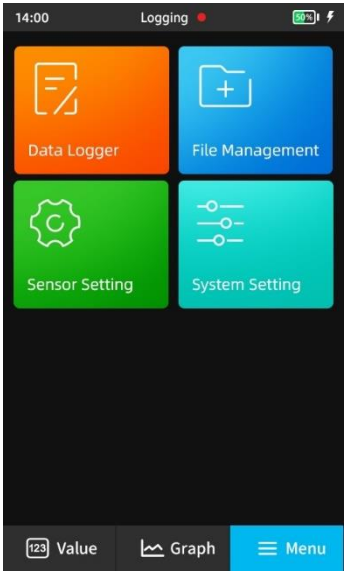
Graph Scaling

Use two fingers to scale the graph

- Move 2 fingers horizontally to adjust the x-axis
- Move 2 fingers vertically to adjust the y-axis

Reset Graph

Menu Screen



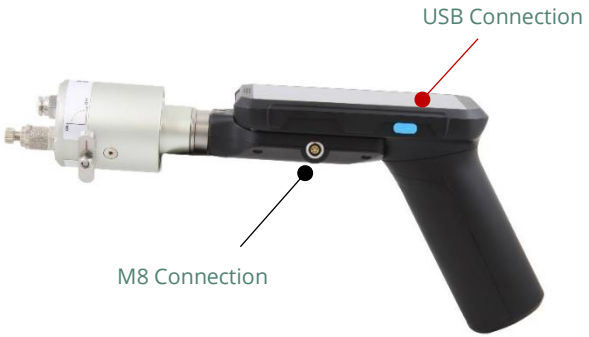
Menu	Sub Menu	Features
Data Logger		Set up logger Start / stop logger
File Management		Download log files (.csv) Download screenshots
Sensor Setting	Sensor Setting	Gas Type • Air • Oxygen • Nitrogen • Hydrogen • Carbon Monoxide • Carbon Dioxide • Sulfur Hexa (SF6) • Argon • Helium

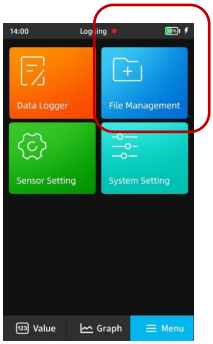
Menu	Sub Menu	Features
		Unit Settings • Temperature ○ °C or °F • Pressure ○ Pa ○ kPa ○ mbar ○ PSI ○ hPa ○ Mpa ○ bar
		Filter Grade (1 – 50)
		Dew Point Offset
		Pressure Offset
System Setting	Screen Setting	Screen Brightness Screen time-out
	Language	English Chinese
	Date and Time	Set your local date and time
	System Information	Serial numbers Hardware and software versions CPU temperature Battery temperature
	System Restart	

Exporting Data

To download data and screenshots:

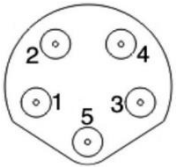
- insert the USB stick into the Handheld Unit
- Go to Menu > 'File Management' on the display and follow the prompts





You can also connect the Handheld Unit to an external device using the M8 connection.

Connector		Cable Colour
Pin 1	RS845, Data + (A / D+)	Brown
Pin 2	RS845, Data - (B / D-)	White
Pin 3	NA	Blue
Pin 4	+12-30 vDC	Black
Pin 5	0 vDC / V-	Grey



Trouble Shooting

Trouble Shooting

Problem	Possible Causes	Suggested Action
Readings are different than expected	Sensor installed incorrectly, eg upside down, in wet air	Check installation
	Gas is not reaching the sensor tip. • Measurement Chamber is closed ('Off')	Turn the handle on the Measurement Chamber to the 'On' position.
	Gas is not reaching the sensor tip. • Ball Valve is closed or • Gas system is turned off.	Open ball valve. Check gas system is turned on
	Gas is not reaching the sensor tip. • Bleed screw is closed.	Open bleed valve slightly on the measurement chamber
	Too much gas is reaching the sensor tip. • Bleed screw open too far.	Tighten bleed valve on the measurement chamber so that only a small amount of gas is escaping
	Dryers, filters, condensate drains are not working correctly	Service equipment
	Equipment failed (eg dryer failure) thus allowing too much water vapour, oil or particles to enter the system	Sensor may be damaged. Contact Compressed Air Alliance
	Sensor due for calibration	Calibrate sensor. Compressed Air Alliance can help with calibration
Readings don't change or readings stuck on a certain number	Sensor damaged	Contact Compressed Air Alliance
	Incorrect sensor for your system	Check that the sensor's specifications are suitable for your system.

Problem	Possible Causes	Suggested Action
Air is escaping from the bleed screw on the measurement chamber	-	This is normal operation.
The display is in the wrong language		• To Menu > System Setting • On the top row, select the middle option with the green globe icon • Select the language then click the back arrow to save the change

Factory Settings

The default settings / factory settings are shown below. If needed, you can change these settings using the display.

Setting	Default Value / comments	
Gas Type	Air	
Unit Setting	Temperature Units	°C
	Pressure Units	Bar
Filter Grade	3	
Dew Point Offset	Reference Dew Point	0.00°Ctd
Pressure Offset	Reference Pressure	0.00 bar

Warranty

Compressed Air Alliance provides a 12-month warranty for all sensors. The warranty covers materials and workmanship under the stated operating conditions from the date of delivery. Please report any findings immediately and within the warranty time.

If faults occur during the warranty period Compressed Air Alliance will repair or replace the defective unit, without charge for repair labour and material costs but there is a charge for other services such as labour to remove or reinstall the instrument, transport and packing. Warranty repairs do not extend the period of warranty.

The following damage is excluded from this warranty:

- Improper use and non-adherence to the user manual.
- Use of unsuitable accessories.
- External influences (e.g. damage caused by vibration, damage during transportation, excess heat or moisture).

The warranty is cancelled when one of the following situations occurs:

- The user opens the measurement instrument without a direct request written in this manual.
- Repairs or modifications are undertaken by third parties or unauthorised persons.
- The serial number has been changed, damaged or removed.

Other claims, especially damage occurring on the outside of the instrument (eg dents, marks), are not included unless responsibility is legally binding.

Calibration

The sensor is calibrated before delivery. The calibration date is printed on the certificate which is shipped with the sensor.

Dew point sensors require calibration to remain accurate. The frequency of calibration depends greatly on the level of contamination within your system.

We recommend you calibrate the sensor every 2 years (provided the sensor is not exposed to contaminates or relative humidity above 85%). Calibration is excluded from the product warranty. For more information, contact Compressed Air Alliance:

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- E-mail: sales@compressedairalliance.com

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