User Manual

Dew Point Sensor - W Series

Model: DEW

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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, accessories and its packing material must be disposed according to local statutory requirements.

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, carbon dioxide
- Depending on which model you purchased, the pressure dew point is between:
  - -60°C to +60°C (-76°F to 140°F)
  - -80°C to +20°C (-112°F to +68°F)
  - -110°C to +20°C (-166°F to +68°F)
- Gas pressure between 0 to 17 bar (247 psi)
- Gas temperature is between: -40°C to +100°C (-40°F to +212°F)
- Power supply is between: 110-240vAC
- The dew point 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 (optional).

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

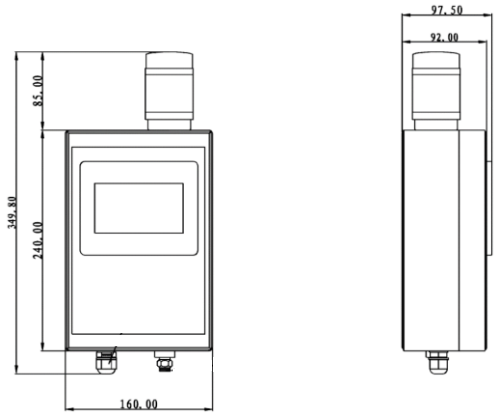
- Improve system reliability
- Reduce product contamination risks
- Reduce system maintenance
- Reduce operating and energy costs
- Reduce the risk of rust and corrosion build up
- Improve dryer reliability
- Improve filter life and performance
- Reduce the risk of bacteria, fungus and yeast build up
- 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 – W Series

	DEWx1xxxx	DEWx2xxxx	DEWx3xxxx
Technology	Polymer	Alumina-Oxide	Quartz
System	Compressed air and gas systems up to 4 Mpa (600psi)		
Dryer Type	Refrigerant, Desiccant, Drum or Membrane dryers		
Gases	Air, Argon, Carbon Dioxide, Carbon Monoxide, Helium, Hydrogen, Nitrogen, Oxygen		
Accuracy	Dew Point +60 to -80°C: ±2°C -80 to -110°C: ±3°C Temperature: ±0.5°C Pressure: ±0.3% FS (at 23°C) Pressure changes with temperature: ±0.01 bar / °C *The accuracy of the sensor is affected by on-site conditions. Contaminants such as oil, high humidity or other impurities can affect the calibration and accuracy of the sensor.*		
Minimum gas flow	> 1 L/min		
	Measurement Ranges		
Dew Point Measurement	-60°C to +60°C -76°F to 140°F	-80°C to +20°C -112°F to +68°F	-110°C to +20°C -166°F to +68°F
Pressure Measurement	0 to 17 bar (247 psi)		
Gas Temperature	-40°C to +100°C | -40°F to +212°F		
	Outputs		
Output	Optional 4-20mA output Speak to Compressed Air Alliance when ordering the dew point monitor		
	Power		
Power Supply	Standard wall socket, 110-240vAC, 10W		
Electrical Connection	M12 PG Plug		

	DEWx1xxxx	DEWx2xxxx	DEWx3xxxx
EMC	Meets IEC 61326-1		
	Other Information		
Process Connection	6 mm stainless steel quick connector and 6 mm PTFE tube with nitto fitting. Tube length: 1.5 meters (5 foot) long		
Display	11cm (4.3”) LCD colour touch screen		
Alarm	Red/green light, buzzer		
Operating Temperature	-30°C to +70°C | -22°F to +158°F		
Gas Relative Humidity	0 to 95% RH		
Dimensions	350 mm L x 160 mm W X 98 mm D 13.8” L x 6.3” W x 3.9” D		
Casing	Plastic		
Installation Type	Permanent or temporary installation		
Calibration Frequency	Every 2 years *provided the sensor is not exposed to relative humidity above 85%*		

Dew Point Sensor Dimensions (mm)



Dew Point Sensor Pack

Each dew point sensor comes with:

- ✓ Wall mount dew point sensor
- ✓ 6 mm PTFE tube with nitto fitting. Tube length: 1.5 meters (5 foot) long
  - A longer tube can be provided upon request, but it will slow the sensor's response time.

Installation

Installation Overview

Step 1 – Attach dew point monitor to a suitable location.

- The dew point monitor must be installed on a solid, vertical surface (eg a wall or post), near a power supply.

Step 2 – Create a connection point on the pipe, eg a ball valve, nozzle or nipple.

- The dew point monitor must be connected to the dry side of the system (ie after a dryer or in gases with relative humidity below 80%).
- Do **NOT** create a connection point on the bottom of a pipe or in a location that allows moisture to gather in the dew point monitor.

Step 3 – Connect dew point monitor to the pipe.

Step 4 – Connect power to the dew point monitor and turn on power.

Step 5 – Set alarm.

Step 6 – Fill out the Commissioning Report (last page of this manual)

Tools and Equipment needed for installation

(not included with Dew Point Sensor Pack)

Drill

Screws

Screw Driver

Thread Tape / Sealant

Ball Valve (optional)

Nitto coupling (optional)

Hot Tap Kit (optional)

Installation

WARNING! Incorrect installation can damage the dew point monitor or cause it to work incorrectly.

Notes

- **Before installing the product, 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.
- **The dew point monitor must be disconnected from any power supply during installation and maintenance work.**
- The dew point monitor must be installed on a solid, vertical surface (eg a wall or post).
- Do not use this product in explosive areas.
- Do not use this product outdoors. The dew point monitor is only suitable for indoor applications.
- Always use the correct tools (eg screw driver, spanner / wrench) to install the product.
- Only use pressure rated materials and parts when installing and maintaining the product.
- Do not disassemble the product.
- Please follow 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.
- **Response times**: The dew point sensor may take up to 24 hours to stablise. Once stablised, response times will be a few seconds or less.

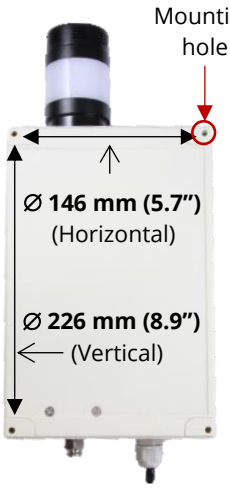
Step 1 – Attach dew point monitor to suitable location

The dew point monitor must be installed on a solid, vertical surface (eg a wall or post). Make sure the dew point monitor is installed near a power point.

The dew point monitor must be connected to dry gas (gas humidity should be less than 80% relative humidity (RH)).

There are 4 mounting holes on the back of the dew point monitor. You access these inside the cabinet.

- Drill 4 holes to match dimensions shown below.
    - Horizontal spacing: ∅ 146 mm (5.7")
    - Vertical spacing: ∅ 226 mm (8.9")
- Remove caps from each corner of the front panel.
- Unscrew front panel and open.
- Attach dew point monitor to a solid, vertical surface using screws (not supplied).
    - Fix firmly to prevent loosening or shaking
- Close and secure / screw front panel. Insert caps in each corner.

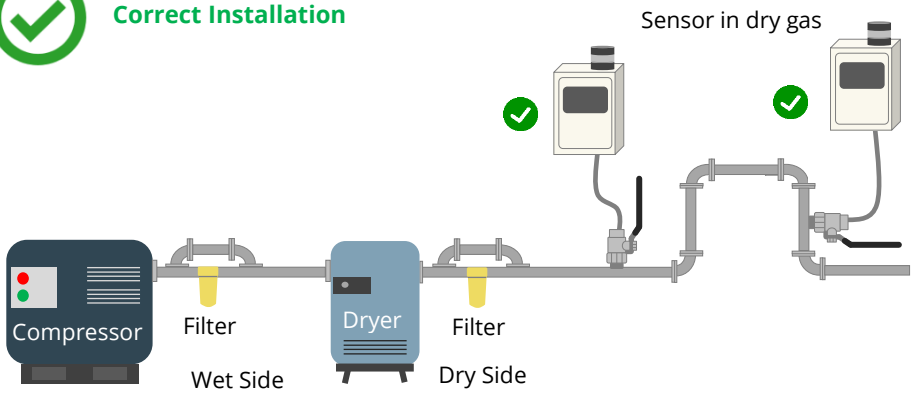


Back of Dew Point Monitor

Remove caps and unscrew front panel

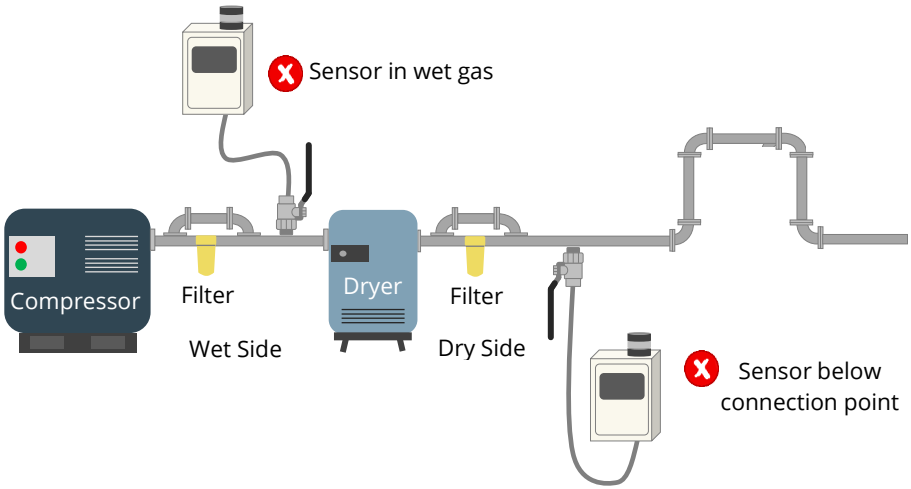
Mounting holes

Correct Installation



Incorrect Installation

Do **NOT** install the dew point monitor before a dryer or in gases with a relative humidity above 80%.
Do **NOT** install the dew point monitor below the connection point, as shown below.
Do **NOT** let condensate reach the tip of the sensor.

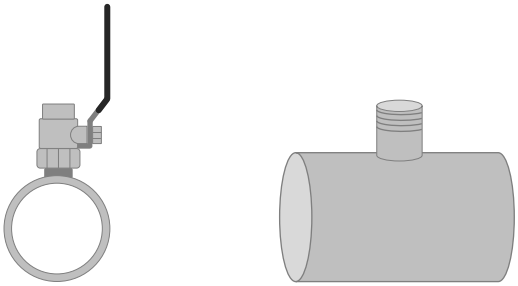


Step 2 – Create a connection point on the pipe

You need a connection point on the pipe, eg a ball valve or a nozzle or nipple.

The dew point monitor must be connected to dry side of system (after a dryer or in gases with relative humidity below 80%).

Do **NOT** create a connection point on the bottom of a pipe or in a location that allows moisture to gather in the dew point monitor.



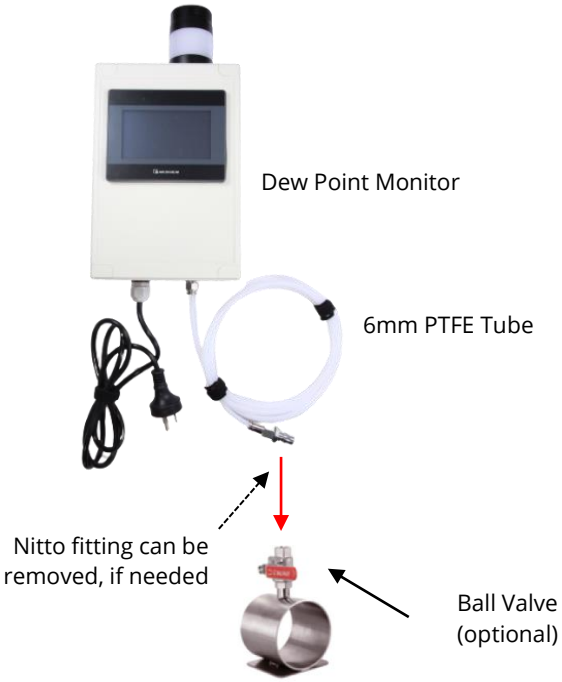
Ball Valve **OR** Welded nipple on pipe

Use of a ball valve is optional - You do not need to use a valve to install the sensor. However, using a valve will make removing the sensor easier (eg when you need to remove the sensor for calibration).

If installing a ball valve, you can use a hot tap drill and clamp to create a connection point on pressurized or unpressurized pipes. See the Compressed Air Alliance website for information on hot tap drills and clamps.

Step 3 – Connect dew point monitor to pipe

- Inset the PTFE tube into the 6 mm push fitting on the dew point monitor.
- Insert the other end of the PTFE tube (with the nitto fitting) into the connection point (eg valve, nipple or nozzle).
    - The nitto fitting can be removed and the tube connected to a nipple using a push fitting or other connector, if required.
    - Use thread tap or sealant, where required.
- Open the valve.
- Check for leaks at the PTFE tube connection points.



Step 4 – Connect dew point monitor to power and turn on

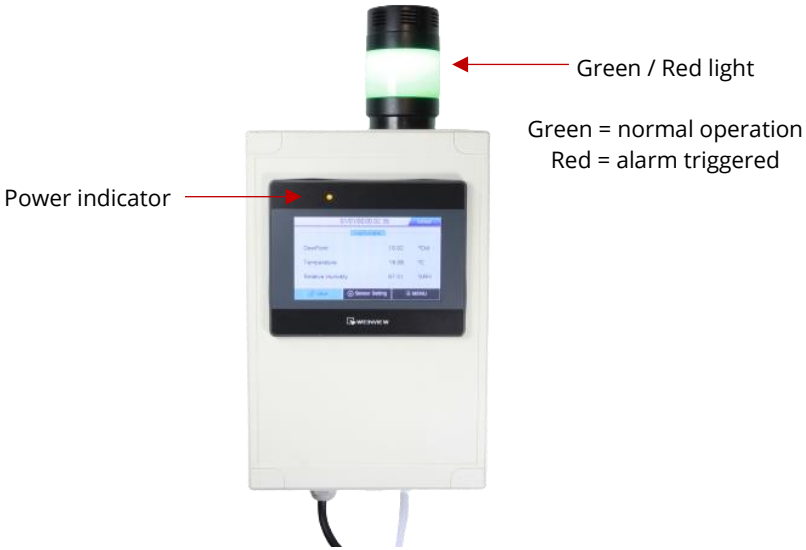
WARNING! Incorrect wiring can damage the sensor or cause it to work incorrectly.

Notes:

- Only connect the dew point monitor to a **standard wall socket, 110-240vAC**. High voltages will damage the product.
- Consider all local and national safety requirements and regulations for electrical installations.
- Any electrical work on the system is only allowed by authorised and qualified personal.
- Do not tamper with the wiring inside the dew point monitor. Modifying the wiring will void your warranty and could damage the sensor.

Plug in the Dew Point Monitor and turn the power point on.

- There is no on/off switch on the dew point monitor.



Step 5 – Set alarm

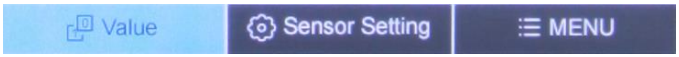
You can set the alarm via the touch screen display. Only one (1) alarm can be set. When the alarm triggers, the light will go red and a sound will be heard.

- Press "**Sensor Setting**" on the menu at the bottom of the screen.
- Press "**Alarm**" on the menu on the left hand side of the screen.
- Adjust alarm settings.
    - Channel – Select which measurement channel (dew point, temperature or relative humidity) you want to set the alarm.
    - Type (Upper / Lower) – Select if the alarm to trigger when it goes above the threshold value (Upper) or below the threshold value (Lower).
    - Hystersis - Set the Hystersis value.
        - For example, if you set the alarm to trigger when it reaches an upper value of 25 and the Hystersis is 1, the alarm will automatically turn off when the reading drops to 24.
    - Threshold - Enter the alarm set point (ie the point you want the alarm to trigger).

Using the Display

Using the Display

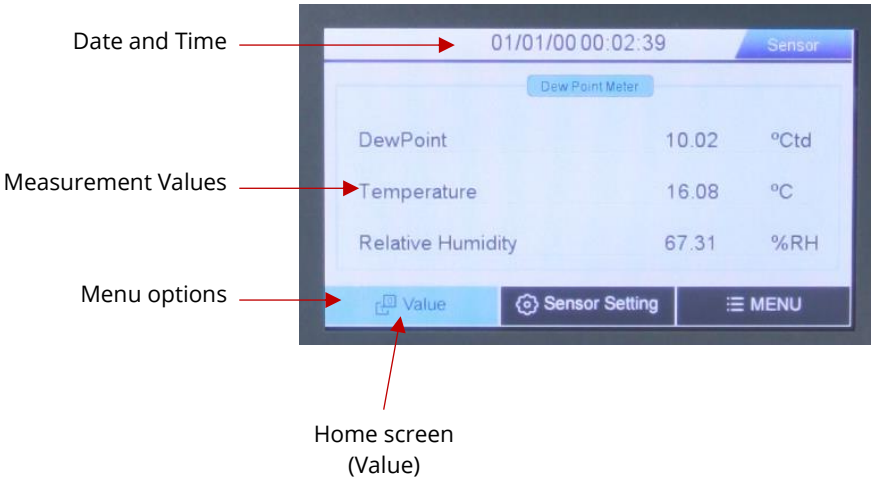
The touch screen display has three (3) main menus (along the bottom of the screen) – 'Value', 'Sensor Setting' and 'Menu'.



- **Value** (or home screen) shows you the current dew point, temperature and relative humidity values.
- **Sensor Setting** allows you to set the alarm and view the modbus settings of the dew point sesnor.
- **Menu** allows you to change the brightness of the screen, set the date and time, view the device information (serial number, hardware version and software version) and update the modbus settings of the display to match the modbus settings of the dew point sensor.

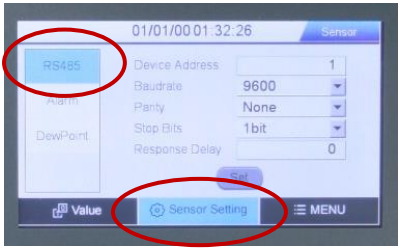
Value Screen

The Value screen (or home screen) shows you the current dew point, temperature and relative humidity values.



Sensor Setting

RS485



View the modbus settings for the dew point sensor. You can not edit this screen.

Notes:

- You can **not** change the dew point sensor's modbus settings using the display.
- If you need to change the modbus settings of the dew point sensor, you must use the CAA Service Software. Contact Compressed Air Alliance for more information.
- If you change the modbus settings of the dew point sensor, you will need to update the modbus settings of the display (go to 'Menu > Communication' to change the modbus settings of the display).

Which Modbus screen do I use?

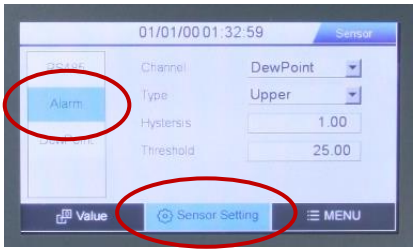
The dew point monitor has two screens with Modbus information.

Sensor Setting > RS485 (this page) = Modbus setting of the dew point sensor.

Menu > Communication = Modbus setting of the touch screen display

In order for the touch screen display to work, the modbus settings of the display (Menu > Communication) must match the modbus settings of the sensor (Sensor Setting > RS485)

Alarm



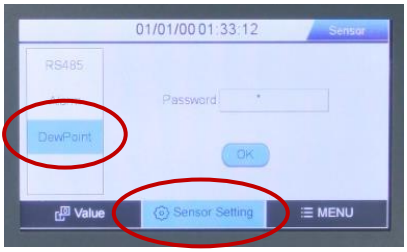
Set the alarm. You can only set one (1) alarm.

If you don't want to use the alarm, set the threshold to well outside your dew point range.

Set the alarm:

- Select which channel you want to set the alarm for - dew point, temperature or relative humidity.
- Set the alarm to trigger when it reaches an upper or lower limit.
- Set the Hystersis value.
    - For example, if you set the alarm to trigger when it reaches an upper value of 25 and the Hystersis is 1, the alarm will automatically turn off when the reading drops to 24.
- Set the alarm value / threshold.

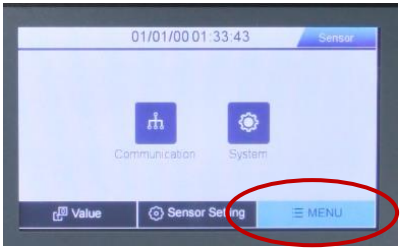
Dew Point



Compressed Air Alliance does not recommend you change the dew point settings.

This screen is password protected.

Menu Screen



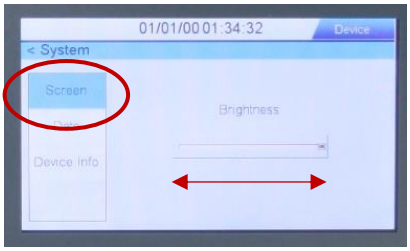
The menu screen has two options:

- **Communication** settings for the touch screen display
- **System** which allows to change the brightness of the screen, change the date / time and view the device information.

To return to the previous screen, click on the back arrow (**<**) on the top left of the screen.

Click the back arrow (**<**) to return to the previous screen

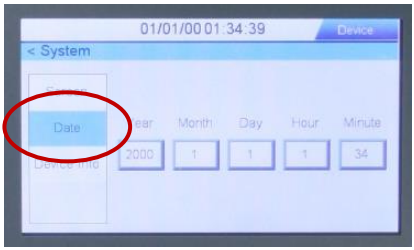
System > Screen



Change the screen brightness by sliding the bar.

Click on the back arrow (**<**) at the top left of screen to return to the previous page.

System > Date



Change the date and time of the dew point monitor.

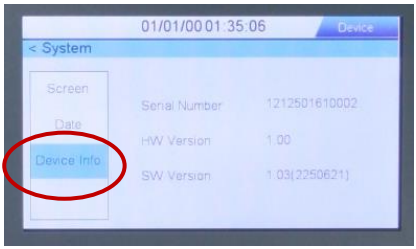
- Click on the field to update
- Enter new value
- Click “Enter”

Click on the back arrow (**<**) at the top left of screen to return to the previous page.

Note:

- If you lose power to the dew point monitor or you turn the power off, the date / time will reset to midnight on 1 January 2000.

System > Device Info



View the:

- Product’s serial number
- Hardware version
- Software version.

Click on the back arrow (**<**) at the top left of screen to return to the previous page.

Communication

The Communication screen allows you to view and change the Modbus settings of the touch screen display.

To change the Modbus settings of the display:

- Click on the relevant modbus setting
- Update the setting(s)
- Click **Set** when done
- Click on the back arrow (**<**) at the top left of screen to return to the previous page.

Notes:

- The Modbus settings of the touch screen display must match the modbus settings of the dew point sensor (under "Sensor Setting" > "RS485").
- If you change the sensor's modbus information you must update the modbus settings of the touch screen display using this menu ("Menu" > "Communication").
- If the touch screen display has different modbus settings to the dew point sensor, the dew point, temperature and relative humidity values on the home screen will stop working.

Which Modbus screen do I use?

The dew point monitor has two screens with Modbus information.

- **Sensor Setting > RS485** = Modbus setting of the dew point sensor.
- **Menu > Communication** (this screen) = Modbus setting of the touch screen display

In order for the touch screen display to work, the modbus settings of the display (Menu > Communication) must match the modbus settings of the sensor (Sensor Setting > RS485). If the modbus settings are different, the screen won't work or it will display the wrong information.

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.	• Check gas system is turned on Open ball valve (if installed) • Check that the PTFE tube is inserted correctly • Check for leaks or kinks in the PTFE tube
	Modbus address of the display is different to the Modbus address of the sensor	1. Check the modbus settings of the dew point sensor (go to Sensor Setting > RS485). Write these settings down as you will need them for step 3. 2. Go to the modbus settings of the display (Menu > Communication) 3. Check if the two modbus settings are the same. If not, update the screen settings (Menu > Communication) to match the sensor settings (see step 1)
	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

Problem	Possible Causes	Suggested Action
Readings don't change or readings stuck on a certain number	Sensor damaged	Contact Compressed Air Alliance
	Incorrect sensor for you compressed air system	Check that the sensor's specifications are suitable for your system.
I can't output data to my SCADA / energy management system	-	The dew point monitor is a stand-alone unit. It does not have a modbus or 4-20mA output.
The touch screen doesn't work	Dirty screen, using a hard object to touch the screen, pressing too hard, etc	• Clean the screen. • Use the fleshy part of your finger to touch the screen. ○ The touch screen does not work if you use a pen or finger nails. • Try pressing harder, or softer.

FAQ

How do I change the Units of Measure?

You need to use the CAA Service Software to change the Units of measure. Please contact Compressed Air Alliance for more information.

How can I connect the Dew Point Monitor to my SCADA / energy management system?

The dew point monitor has no data output. It is a stand-alone monitor.

If you need to connect a dew point sensor to your SCADA etc, we suggest using one of our other dew point sensors. Refer to our website for more information: www.compressedairalliance.com/products

How do I change the Modbus Settings of the Dew Point Sensor?

To change the modbus settings of the dew point sensor, you need to use the CAA Service Software to change the Modbus settings of the dew sensor. Please contact Compressed Air Alliance for more information.

What's the difference between the two modbus screens?

Sensor Setting > RS485 = Modbus setting of the dew point sensor. You can not change these settings via the touch screen display.

Menu > Communication = Modbus setting of the touch screen display

The Modbus settings of the dew point sensor (under "Sensor Setting" > "RS485") must match the modbus settings of the touch screen display (under "Menu" > "Communication").

If these settings are different, the display won't be connected to the dew point sensor.

Modbus settings for the touch screen display are under:
Menu > Communication

Modbus settings for the Dew Point Sensor are shown under:
Sensor Setting > RS485

Need help?

Contact your local dealer.

Alternatively, contact Compressed Air Alliance via:

- Phone:
  - Australia: 1300 558 526
  - International: +61 494095632
- What'sApp: +61 494095632
- E-mail: sales@compressedairalliance.com
- Website: www.compressedairalliance.com

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 relative humidity above 85%). Calibration is excluded from the product warranty. For more information, contact Compressed Air Alliance:

- Phone:
  - Australia: 1300 558 526
  - International: +61 494095632
- What'sApp: +61 494095632
- E-mail: sales@compressedairalliance.com

Commissioning Report

About the Dew Point Monitor

Part Number (eg DEW120001)			
Serial Number			
Installed by		**Installed Date**	

About the Compressed Air System

Dryer Type (select one)	Refrigerant	Desiccant	Membrane	Other
Dew Point Sensor Reading				

Installation

Step	Task	Yes	NA	No	Comments	Sign
1	Is the Dew Point Monitor installed correctly? (refer to "*Installation*")					
2	Is the Dew Point Monitor plugged in and turned on?					
3	Are there air leaks at the PTFE tube connection points?					
4	Do the modbus settings the of sensor & display match?					
5	Are the dryer and condensate drains working correctly?					

Compressed Air Alliance Pty Ltd

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