



User Manual

Dew Point Sensor - P Series

Model: DEP



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Notices

Please read this manual in full and carefully observe the notes and instructions before and during installation, operation and maintenance. 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 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 product 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

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

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

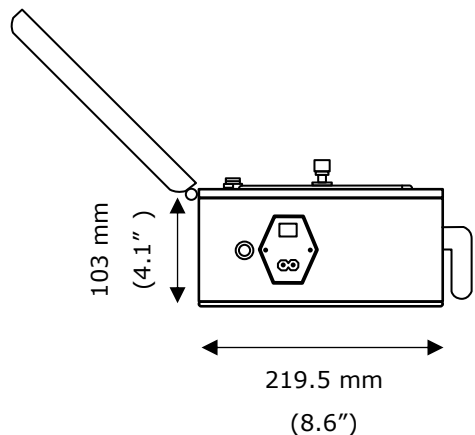
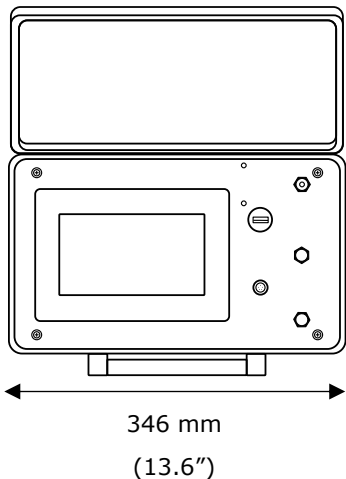
Compressed Air Alliance's dew point sensors are designed for measuring pressure dew point, gas temperature, relative humidity and pressure (optional) in manufacturing, industrial and base building environments.

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.

Dew Point Sensor Dimensions (mm)



Specifications – P Series

	DEPx1xxxx	DEPx2xxxx	DEPx3xxxx
Technology	Polymer	Aluminum-Oxide	Aluminum-Oxide
System	Compressed air and gas systems up to 4 Mpa (600psi)		
Dryer Type	Refrigerant, Drum or Membrane dryers	Refrigerant, Desiccant, Drum or Membrane dryers	Desiccant dryer
Gases	Air, Argon, Carbon Dioxide, Carbon Monoxide, Helium, Hydrogen, Nitrogen, Oxygen		
Accuracy	Dew Point +60 to -60°C: ±2°C -60 to -100°C: ±3°C Temperature: ±0.5°C Pressure: ±0.3% FS (at 23°C) Pressure changes with temperature: ±0.01 bar / °C <i>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.</i>		
Minimum gas flow	> 1 L/min		
Measurement Ranges			
Dew Point Measurement	-60°C to +60°C -76°F to 140°F	-80 to +20 °C -112 to +68°F	-100°C to +20°C -148°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	Modbus RS485		
Power			
Power Supply	Standard wall socket, 220 vAC, 10W		

	DEPx1xxxx	DEPx2xxxx	DEPx3xxxx
Electrical Connection	M12 PG Plug		
EMC	Meets IEC 61326-1		
Other Information			
Process Connection	6 mm stainless steel quick connector		
Display	17.8cm (7.0") LCD colour touch screen		
Data Logging	Yes		
Data recording	Max 16G USB Flash Disk		
Operating Temperature	0°C to +50°C +32°F to +122°F		
Gas Relative Humidity	0 to 95% RH		
Dimensions	346 mm L x 219.5 mm W X 103 mm D 13.6" L x 8.6" W x 4.1" D		
Casing	Plastic		
Installation Type	Permanent or temporary installation		
Calibration Frequency	Every 2 years <i>provided the sensor is not exposed to relative humidity above 85%</i>		

Dew Point Sensor Pack

Each dew point sensor comes with:

- ✓ Portable dew point sensor
- ✓ Power cord with USA, EURO, UK or Australia plug
- ✓ 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.



Portable dew point
sensor



6 mm PTFE tube
with nitto fitting



Power cord

Installation Overview

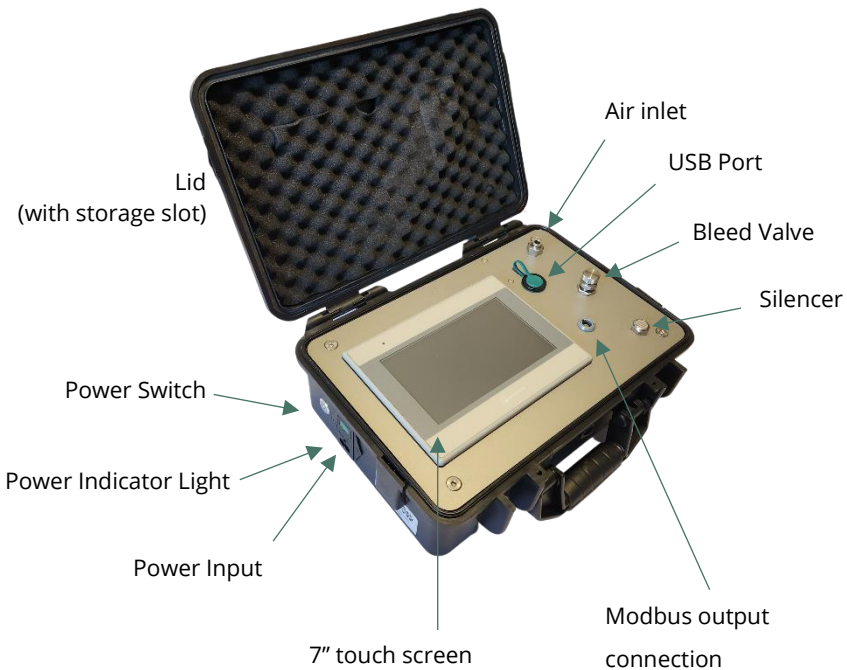
Step 1 – Connect Portable Dew Point Sensor to power and gas

- The portable dew point sensor must be connected to dry side of system (ie after a dryer or in gases with relative humidity below 80%).
- The portable dew point sensor must be placed on stable surface
- If necessary, create a connection point on the gas pipe

Step 2 – Turn on Portable Dew Point Sensor

Step 3 – Open Bleed Valve

Step 4 – Optional – insert USB to record data and / or insert Modbus connection



Installation



WARNING! Incorrect installation can damage the dew point sensor 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 portable dew point sensor must be disconnected from any power supply during installation and maintenance work.
- **Do not use this product in explosive areas.**
- Do not use this product outdoors. The portable dew point meter is only suitable for indoor applications.
- Always use the correct tools to install the product.
- Only use pressure rated materials and parts when installing and maintaining the product.
- Do not disassemble the product.
- Do not tamper with the wiring inside the dew point monitor. Modifying the wiring will void your warranty and could damage the sensor.
- 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.
- **Response times:** The dew point sensor may take up to 24 hours to stabilise. Once stabilised, response times will be a few seconds or less.

Step 1 – Connect Portable Dew Point Sensor



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

Make sure the portable dew point is secured to a stable surface.

- Insert one end of PTFE tube into Air Inlet on the Portable Dew Point Sensor
 - If the ends of the PTFE tube are damaged, cut them off. Damaged tube may allow gas to escape which can affect the sensors readings
- Insert other end of PTFE tube into the gas connection point (on the gas pipe)
 - If necessary, remove the nitto fitting from the PTFE tube
 - If the ends of the PTFE tube are damaged, cut them off. Damaged tube may allow gas to escape which can affect the sensors readings
 - If necessary, create a connection point on the pipe (eg nitto connection or 6 mm push fitting). If you are unsure on how to create a connection point, contact Compressed Air Alliance
- Insert power lead into the side of the Portable Dew Point Sensor

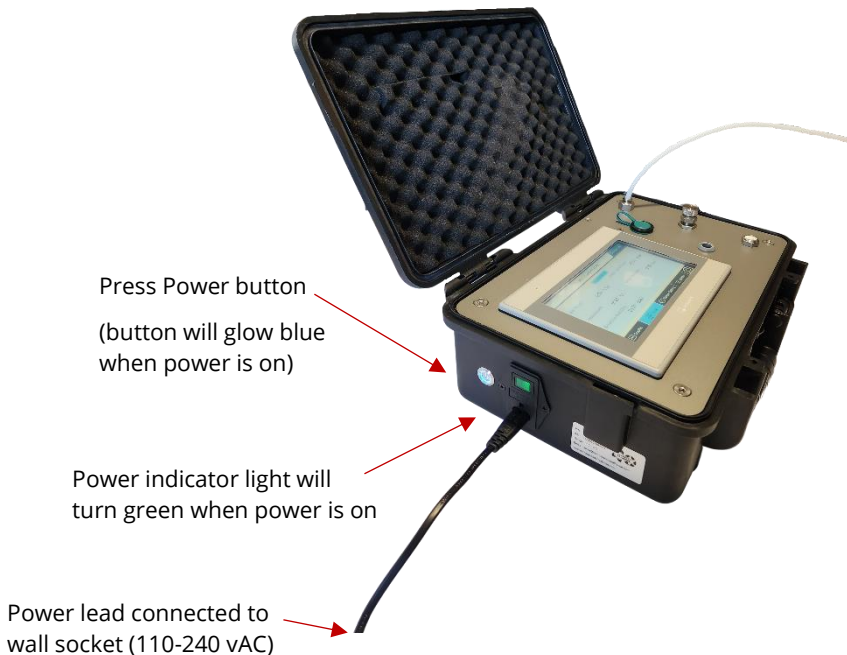


Step 2 – Power On Portable Dew Point Sensor



Consider all local and national safety requirements and regulations for electrical installations.

- Connect power lead to a standard wall socket, (**110-240vAC**) and turn on power
 - High voltages will damage the product.
- On the Portable Dew Point Sensor, press the power button. When the power is on:
 - The power button will glow blue
 - The power indicator light will turn green
 - The screen will light up



Step 3 – Open Bleed Valve

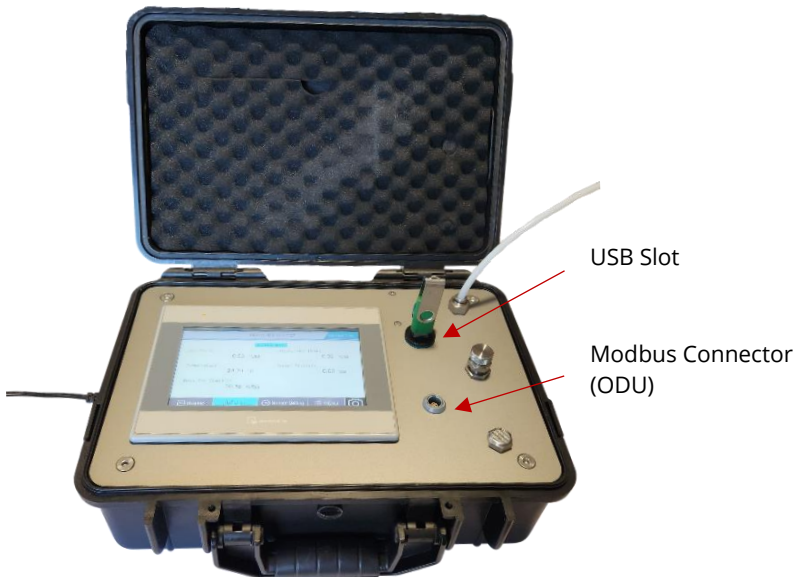
- Turn the Bleed Valve slightly to allow some gas to escape. This will ensure gas is reaching the dew point sensor
 - If Bleed valve is closed, no gas will flow past the dew point sensor which can cause incorrect readings
 - If the Bleed Valve is open too far, the pressure in the portable dew point sensor will be lower than the system pressure in the gas pipes
 - When the Bleed Valve is open, you will hear gas hissing out of the Silencer



Step 4 – Optional – USB and Modbus connection

To record data or take screen shots, you will need to insert a USB card into the Portable Dew Point Sensor.

You can also export data via the Modbus connector (ODU)



Using the Display

The touch screen display has five (5) main menus (along the bottom of the screen) – ‘Graphic’, ‘Value’, ‘Sensor Setting’, ‘Menu’ and ‘Camera’.



- **Graphic** displays a graph of the data
- **Value** (or home screen) shows you the current dew point, temperature and relative humidity readings.
 - If you have the Portable Dew Point Sensor with integrated Pressure sensor, you will also see the pressure readings.
- **Sensor Setting** allows you to view the modbus settings of the dew point sensor.
- **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.
- **Camera icon** takes a screen shot.

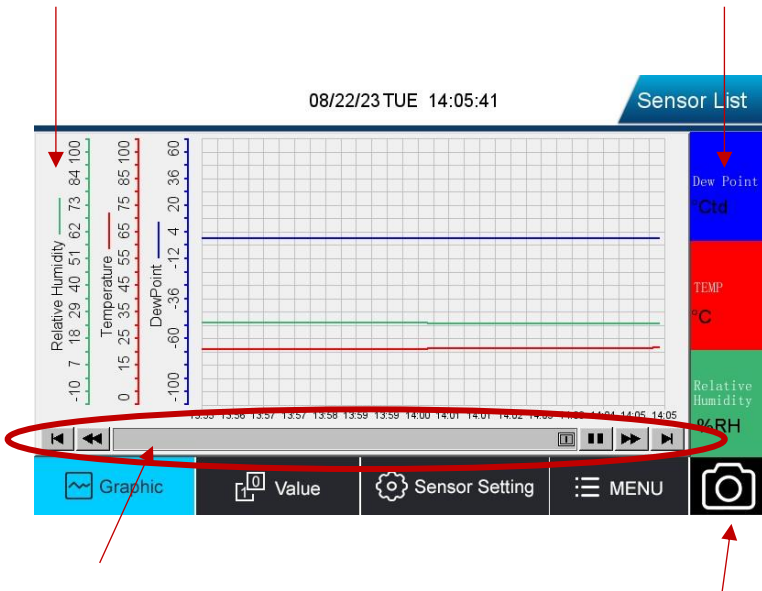
Graphic Screen

View the dew point readings on a graph.

Click on the side bar to change the range. A pop up box will appear

- Click on the "High" valve to change the upper limit
- Click on the "Low" valve to change the lower limit

Click on the side bar to turn the graph on or off



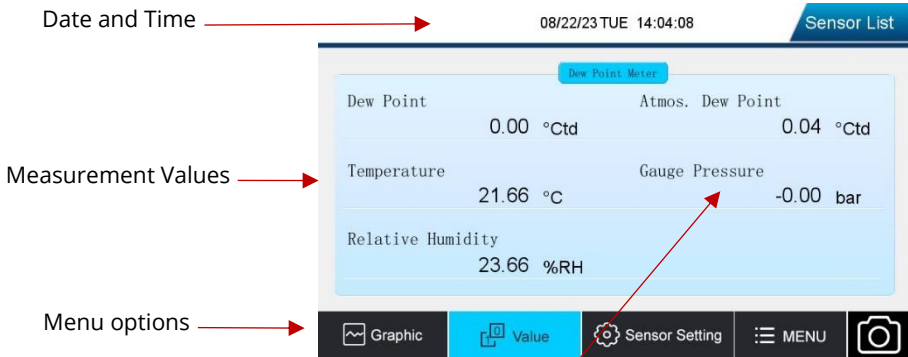
Move back or forward in time
Start or stop the graph

Press the Camera icon to take a screen shot

(Note: USB must be inserted into Portable Dew Point Sensor)

Value Screen

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

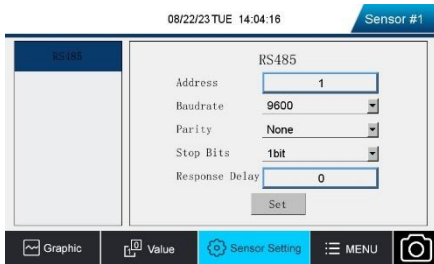


“Gauge Pressure” will only appear if you have the Portable Dew Point Sensor with Integrated Pressure Sensor

Press the Camera icon to take a screen shot

(Note: USB must be inserted into Portable Dew Point Sensor)

Sensor Setting



Edit the modbus settings for the dew point sensor.



Which Modbus screen do I use?

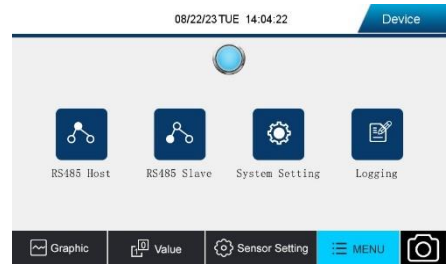
The dew point monitor has three screens with Modbus information.

Sensor Setting > RS485 =
Modbus setting of the dew point sensor

Menu > RS485 Host = Modbus setting of the touch screen display

Menu > RS485 Slave = Modbus setting of the Modbus ODU Connector

Menu Screen



The menu screen has four options:

- **RS485 Host** allows you to change Modbus settings for the touch screen display
- **RS485 Slave** allows you to change Modbus settings for the Modbus ODU connector
- **System Setting** which allows to change:
 - brightness of the screen,
 - date / time
 - view device information.
- **Logging** lets you start / stop logging
 - You will need to insert a USB into the Portable Dew Point Sensor to record data

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

Communication Settings

Default Modbus Settings

All dew point sensors use the following default Modbus settings. Settings can be changed to suit system requirements using the Service Software (contact Compressed Air Alliance for more information).

Default Modbus RTU (RS485) Settings					
Address	Baud Rate	Frame / Parity / Stop Bit	Response Time	Response Delay	Frame Spacing
1	9600	8 / N / 1	1 Sec	0 Milliseconds	7 Characters

Modbus Registers						
Holding Register	Address	Data Type	Byte Length	Description	Unit	Read / Write
1	0	FLOAT	4	Temperature	°C or °F	Read
3	2	FLOAT	4	Relative Humidity	%RH	Read
5	4	FLOAT	4	Pressure Dew Point	°Ctd or °Ftd	Read

Optional integrated pressure sensor						
21	20	FLOAT	4	Absolute Pressure	KPa, Mpa, Bar, PSI	Read
42	41	FLOAT	4	Gauge Pressure	KPa, Mpa, Bar, PSI	Read

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.

Trouble Shooting

My dew point monitor isn't reading correctly

If your sensor is not reading the correct values, follow these steps.

1. Make sure the dew point monitor is suitable for your system. Refer to the "*Specifications*" section for details.
2. Make sure the sensor is calibrated. Sensors should be calibrated every 2 years. Contact your local dealer or Compressed Air Alliance for calibration.
3. Make sure the portable dew point sensor is installed correctly. Refer to the "*Installation*" section for more information. **Typical installation errors include:**
 - ✘ Installing the dew point sensor in wet air
 - ✘ Gas is not reaching the sensor tip
 - ✘ Gas is leaking from the tube connection points
4. Make sure the portable dew point sensor is connected to power and the power is turned on.
5. Check modbus settings.
 - Does the modbus setting of the dew point sensor (under Sensor Setting > RS485) match the modbus setting of the touch screen display (under Menu > RS485 Host).
 - If you need to change the dew point settings, contact Compressed Air Alliance.
6. Check dryer is functioning correctly.
7. Check condensate drains are functioning correctly.

If you are still having problems, contact your local dealer or Compressed Air Alliance.

How do I 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.

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.

The touch screen doesn't work

If the touch screen doesn't work, try the following:

- Clean the screen.
- Use the fleshy part of your finger to touch the screen.
 - The touch screen **does not** work if you use finger nails or pens.
- Try pressing harder, or softer.

Need help?

Contact your local dealer.

Alternatively, contact Compressed Air Alliance via:

- Phone (Australia): 1300 558 526
- E-mail: sales@compressedairalliance.com
- Website: www.compressedairalliance.com

Commissioning Report

About the Portable Dew Point Sensor

Part Number (eg DEP120001)			
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 Portable Dew Point Sensor installed correctly? (refer to "Installation")					
2	Is the Dew Point Sensor 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?					



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