

User Manual

Dew Point Sensor



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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 or improper use of the product. Improper handling 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.**

CAA Sensors 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 CAA Sensors.



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 Gas Safety

Any contact with quickly escaping gas or bursting parts of the compressed gas 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 gas 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.

Introduction



About Dew Point Sensors

Intended use

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

- The sensor is used in inert gases, eg air, oxygen, nitrogen, carbon dioxide
- Pressure dew point is within the range specified on the sensor label
- Gas pressure between:
 - 0 to 50 bar (725 psi) if the sensor doesn't have integrated pressure
 - 0 to 17 bar (247 psi) if the sensor does have integrated pressure
- Gas temperature is between: -40°C to +100°C (-40°F to +212°F)
- Power supply is between: 10 to 30 vDC
- The dew point sensor is **not** used in explosive areas.

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

Dew point sensors are easy to install and have low maintenance requirements. The sensors can be used for permanent or temporary monitoring.

Specifications

Sensor Types

Standard Dew Point Sensor

No Display or Alarm Relay

Integrated pressure sensor is optional



Sensor with Display

With Display & Alarm Relay

Integrated pressure sensor is optional

Specifications

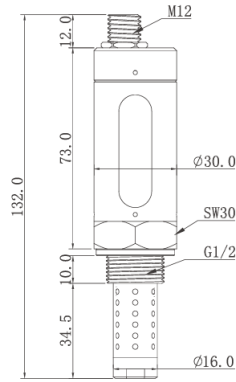
Technology	DEK Series: Polymer
	DEA Series: Alumina-Oxide
System	Compressed air and gas systems up to 4 Mpa (600psi)
Dryer Type	Refrigerant, Desiccant, Drum or Membrane dryers
Gases	Air, Argon, Carbon Dioxide, Carbon Monoxide, Helium, Hydrogen, Nitrogen, Oxygen
Accuracy	Dew Point (+20 to -80°C): ±2°C Dew Point (-80 to -110°C): ±3° Temperature: ±0.5°C Pressure: ±0.3% FS (at 23°C)
	<i>The accuracy of the sensor is affected by on-site conditions.</i>
Minimum gas flow	> 1 L/min
Measurement Ranges	
Dew Point Measurement	DEK Series: -60°C to +60°C -76°F to 140°F

Pressure Measurement	DEA Series: -80°C to +20°C -112°F to 68°F OR DEA Series: -110°C to +20°C -166°F to +68°F
	0 to 50 bar (725 psi) or 0 to 17 bar (247 psi) if using the integrated pressure sensor
Gas Temperature	-40 to +100 °C -40 to +212°F
Output	Outputs
	Analogue: 4 to 20mA (3 wire) Digital: RS485 Modbus / RTU
Modbus Output Signals	Pressure Dew Point (PDP), Relative Humidity (RH), Temperature (°C or °F) Optional integrated pressure transducer
Relay output	Standard Dew Point Sensor: NA
	Sensor with Display: Normally open, 32vDC / 500 mA
Power Supply	Power
	Standard Dew Point Sensor: 10 to 30 VDC Max 50 mA @ 24 V + 4-20mA Current output
	Sensor with Display: 16 to 30 VDC Max 150 mA @ 24 V + 4-20mA Current output
4-20 mA Current Output	<ul style="list-style-type: none">ResolutionTemperature DriftLoad <ul style="list-style-type: none">0.002 mA0.01% of span/°CMax 500 ohm
Electrical Connection	Standard Dew Point Sensor: 1 x 5 pin M12, female
	Sensor with Display: 2 x 5 pin M12, female
EMC	According to IEC 61326-1

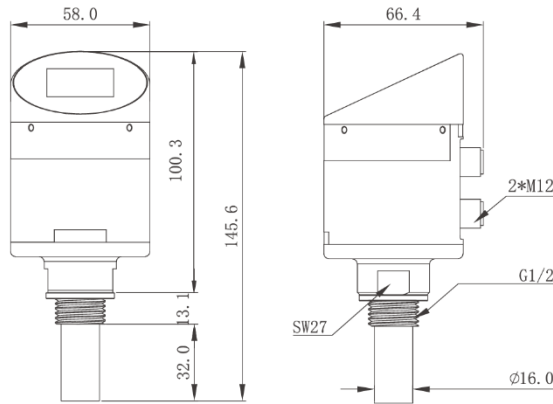
Other Information	
Inbuilt Display	Standard Dew Point Sensor: NA
	Sensor with Display: 1.5" LCD Touch screen
Process Connection	G1/2" thread (Contact us for UNF process connection)
Measurement Chamber	1/2" Quick coupling (Nitto type) with Adjustable Bleed Screw <i>Other options available on request</i>
Ambient Temperature	-30°C to +70°C -22°F to +158°F
Gas Relative Humidity	0 to 95% RH
Dimensions	Standard Dew Point Sensor: 135 mm L x 35 mm W 5.3" L x 1.4" W
	Sensor with Display: 148 mm L x 67 mm W 5.8" L x 2.6" W
Casing	Standard Dew Point Sensor: Stainless Steel
	Sensor with Display: Anodised Aluminium
IP Rating	IP65
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)

Standard Dew Point Sensor



Dew Point Sensor with Display



Protective Cap / Transport Cap

The dew point sensor comes with a protective cap / transport cap. This cap is designed to protect the sensor during transport and storage. Please remove this cap before installing the sensor.



Protective cap still on sensor



Protective cap removed



Protective cap still on sensor



Protective cap removed

Pressure Dew Point or Atmospheric Dew Point

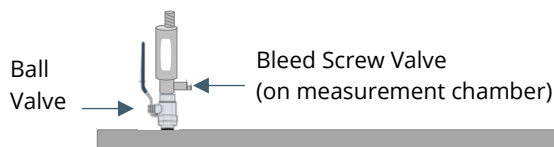
It is important to know if you are measuring Pressure Dew Point (PDP) or Atmospheric Dew Point as they will give different results. This is because dew point is affected by pressure. For a given relative humidity, the higher the gas pressure, the higher the dew point due to the increased volume ratio of gas to moisture. Decreasing gas pressure increases the gas volume thereby reducing the dew point.

Pressure Dew Point (PDP) is the dew point inside the pipe where the gas is under pressure (ie the pressure is higher than atmospheric pressure).

Atmospheric Dew Point is the dew point in non-pressured gases, ie the dew point of ambient conditions.

Pressure Dew Point

Sensor is measuring dew point inside the pipe



Atmospheric Dew Point

Sensor is measuring dew point in ambient conditions, ie the sensor is outside the pipe



If the dew point sensor is installed in the pipe and you want to measure:

- Pressure Dew Point – open the ball valve and open the bleed screw slightly. This will draw gas up to the sensor tip whilst maintaining the pipe pressure.
- Atmospheric Dew Point – Install a flow control valve on the inlet side of the chamber and open slightly. Open the bleed screw fully. This will bring the pressure in the measurement chamber to atmospheric pressure.

Dew Point Sensor Pack

Each dew point sensor comes with:

- ✓ Dew Point sensor – either standard K Series sensor **or** K Series with Display
- ✓ Measurement Chamber with mounting bracket
 - Standard option = 1/2" Quick coupling (Nitto type) with Adjustable Silencer
 - Talk to you local distributor about other options
- ✓ Connector – either 5 meter cable with connector **or** connector only (no cable).
- ✓ Calibration Certificate

Dew Point Sensor



Standard Dew Point Sensor

OR



Dew Point Sensor with Display

Measurement Chamber and Mounting Bracket



Measurement Chamber

AND



Mounting bracket

Connector



M12 connector only
(no cable)

OR



5 meter cable with M12 connector

Installation



Installation Overview

CAA Sensors recommends that our dew point sensors are installed via a measurement chamber.

Step 1 – Find a suitable section of pipe

- The sensor must be installed vertically, on dry side of system
- Do **NOT** install the sensor before a dryer or in gases with a relative humidity above 80%
- Do **NOT** install the sensor upside down, horizontally, at an angle or in wet gas

Step 2 – Install connection point in pipe, eg a ball valve, nozzle or nipple

Step 3 – Remove protective cap from sensor

Step 4 – Attach Dew Point Sensor to connection point

Step 5 – Set the gas bleed

Step 6 – Wire the sensor (see '*Installation – Electrical*')

Step 7 – Check the sensor settings

Step 8 (optional) – Connect the sensor to your SCADA or energy management system

Step 9 – Fill out the Commissioning Report (last page of this manual)

Tools and Equipment needed for installation (not included with Dew Point Sensor Pack)



Wrench /
Spanner



Thread Tape /
Sealant



Ball Valve
(optional)



Hot Tap Kit
(optional)

Installation – Mechanical

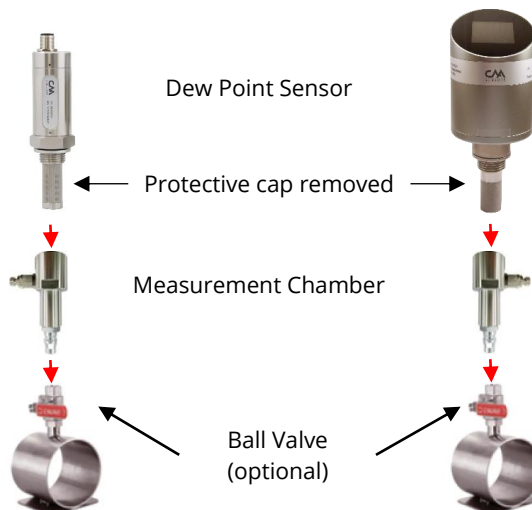


WARNING! Incorrect installation can damage the sensor or cause it to work incorrectly.



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 areas.
- Always use a 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.



Step 1 – Find a suitable section of pipe

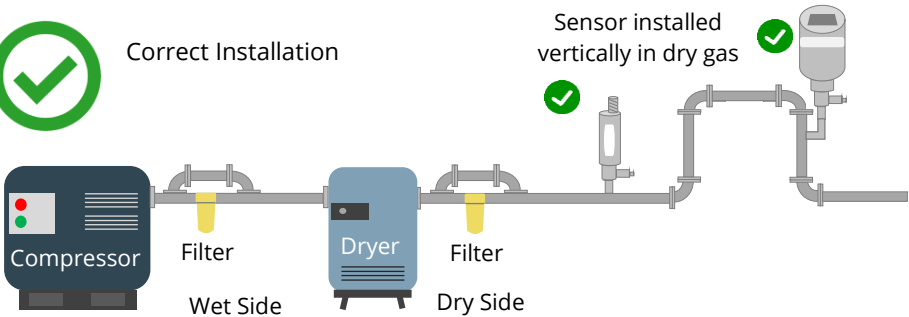
The sensor **must be installed vertically in dry gas** (gas humidity should be less than 80% relative humidity (RH)).

Make sure the sensor location has enough room above the pipe to install the sensor.

If installing the sensor outdoor, protection from sun and rain is necessary.



Correct Installation

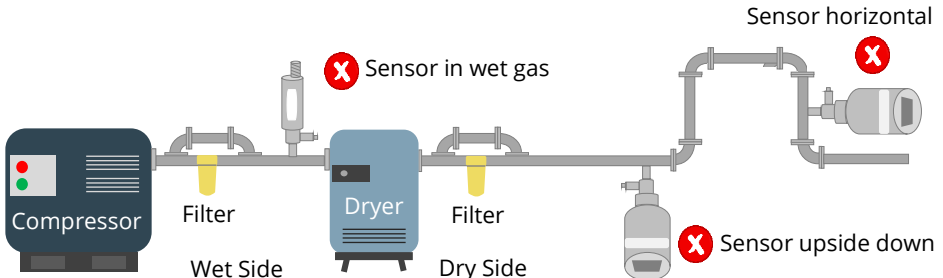


Incorrect Installation

Do **NOT** install the sensor before a dryer or in gases with a relative humidity above 80%.

Do **NOT** install the sensor upside down, horizontally or at an angle, as shown below.

Do **NOT** let condensate reach the tip of the sensor



Step 2 – Install connection point in pipe

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

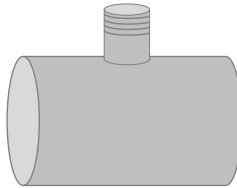
Use of a ball valve is optional - You do not need to use a valve to install the sensor. However, using a valve will make removing the sensor easier (eg when you need to remove the sensor for calibration).

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 CAA Sensors website for information on hot tap drills and clamps.



Ball Valve

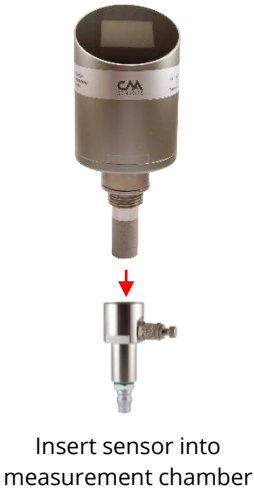
OR



Welded nipple on pipe

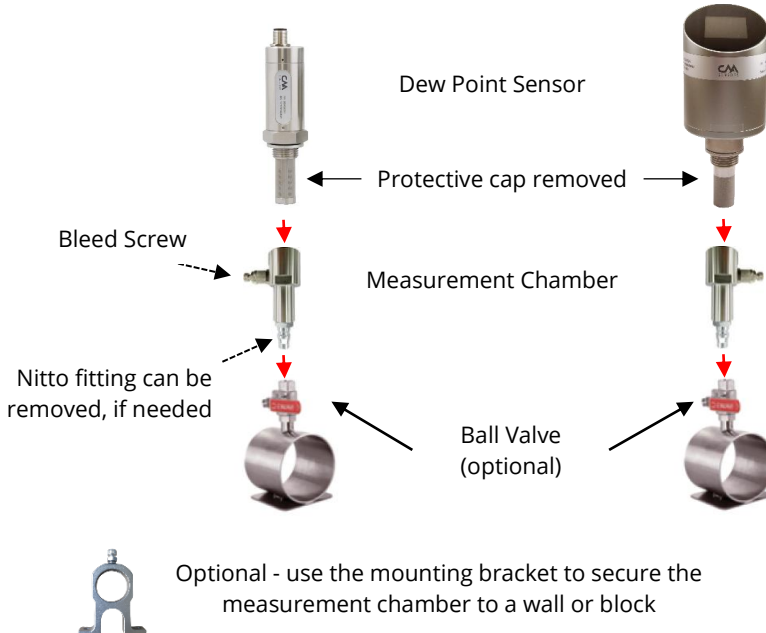
Step 3 – Remove Protective Cap

Remove (unscrew) the protective cap from the dew point sensor.



Step 4 – Attach dew point sensor to connection point

- Screw the measurement chamber into the connection point (eg valve, nipple or nozzle) and tighten with a spanner
 - You can remove the nitto fitting from the measurement chamber and replace with a 1/4" male BSP fitting, if required
 - CAA Sensors recommends that our dew point sensors are installed via a measurement chamber
 - A reducing bush may be needed if connecting the measurement chamber to a large ball valve or nipple
 - Fix measurement chamber firmly to prevent loosening or shaking
 - Use thread tap or sealant to prevent gas escaping
 - If needed, you can use the mounting bracket to secure the measurement change to a wall or block
- Screw the sensor into the measurement chamber
 - Make sure the protective cap is removed from the dew point sensor
- Open ball valve



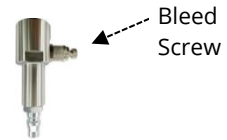
Step 5 – Set the Gas Bleed

To ensure a flow of gas past the sensor tip, either allow a small amount of gas to escape to atmosphere (option 1 below) or connect a zero loss chamber (option 2 below).

Option 1 – Bleed gas to air

On the measurement chamber:

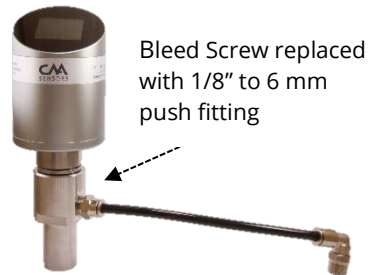
- Close the bleed screw completely.
- Then slowly open the bleed screw to allow a small flow of gas to escape to the atmosphere.



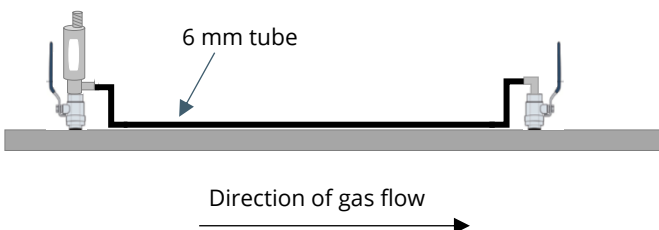
Option 2 – Zero Loss Chamber

The zero loss chamber will prevent gas escaping to atmosphere and can improve system efficiency.

- Remove the bleed screw and fitting from measurement chamber
- Install a 1/8" to 6mm push fit into measurement chamber
- Connect a 6 mm tube between the measurement chamber and a second connection point downstream of the sensor.
- Tip - use cable ties to secure the 6 mm tube to the pipe.



Zero Loss Chamber set up



Installation – Electrical



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

Notes:

- Do **not** screw the M12 connector using force, otherwise it may damage the connection pins.
- Always check the M12 connectors to make sure they are wired correctly.
- Consider all local and national safety requirements and regulations for electrical installations.
- The system must be disconnected from any power supply during installation and maintenance work.
- Only authorised and qualified personnel can conduct electrical work.

4-20mA Scaling

The sensor has an analog output range of 4 to 20 mA, which is a **3-wire active** analog output. The analog output scaling is shown in the table below.

4-20mA Scaling	
Please check your dew point sensor label to see which dew point range it has.	
DEK Series (-60°C to +60°C, -76°F to 140°F)	4 mA = -60 20 mA = +60
DEA Series – Option 1 (-80 to +20°C, -112°F to 68°F)	4 mA = -80 20 mA = +20
DEA Series - Option 2 (-110°C to +20°C, -166°F to +68°F)	4 mA = -110 20 mA = +20

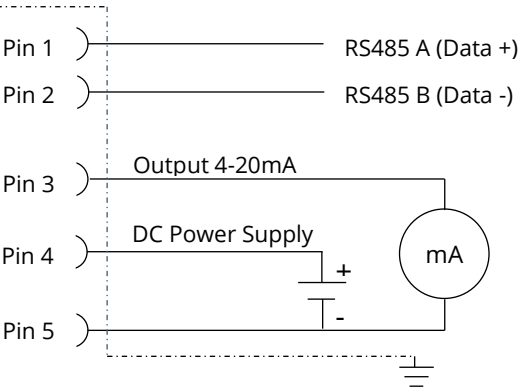
Wiring - Standard Dew Point Sensor

The standard Dew Point Sensor has one 5 pin, M12 connector on top of the sensor.

If you ordered a cable with the sensor, the cables will be coloured coded as shown in the table below. Its good practice to check the cable colours and make sure they match the chart below.



Connector		Cable Colour
Pin 1	RS845, Data + (A)	Brown
Pin 2	RS845, Data - (B)	White
Pin 3	4-20mA Output	Blue
Pin 4	+12-30 vDC	Black
Pin 5	0 vDC (Ground for Modbus)	Grey

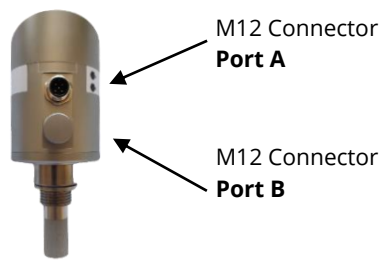


Wiring - Dew Point Sensor with Display

The Dew Point Sensor with Display has two 5 pin, M12 connectors on the back of the sensor.

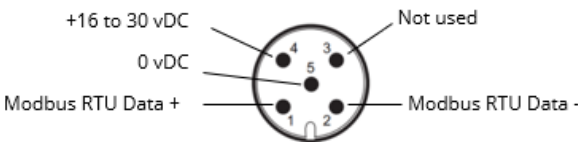
- **Port A** is used for Modbus and Power
- **Port B** is used for 4-20mA and Alarm Relay

If you ordered a cable with the sensor, the cables will be coloured coded as shown in the table below. Its good practice to check the cable colours and make sure they match the chart below.

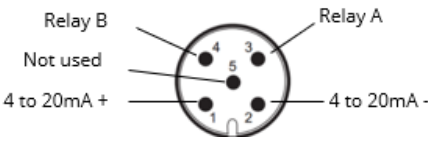


	Port A (Modbus & Power)	Cable Colour	Port B (4-20mA & Alarm Relay)
Pin 1	RS845, Data + (A)	Brown	4-20mA+
Pin 2	RS845, Data - (B)	White	4-20mA-
Pin 3	NA	Blue	Relay A
Pin 4	+16 to 30 vDC	Black	Relay B
Pin 5	0 vDC (Ground for Modbus)	Grey	NA

Port A (Modbus & Power)



Port B (4-20 mA & Relay)



Alarm Relay Output for Dew Point Sensor with Display

The Dew Point Sensor with Display has a relay output which can monitor dew point. For example, when the dew point reaches a set value, the sensor will issue an alarm.

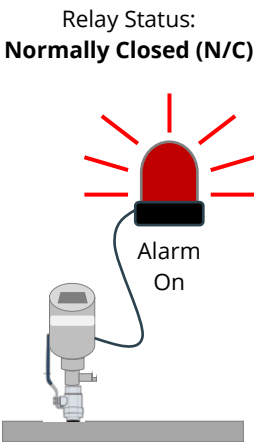
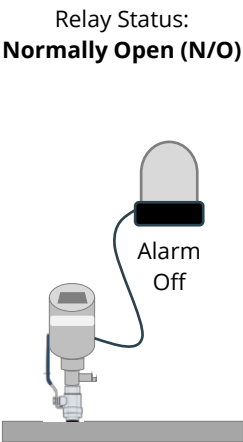
Alarm relay specifications:

- Maximum: 32 VDC / 500 mA
- Power switch status: Normally open (N/O)



Relay States

	Relay Status	Alarm Status
Dew Point Sensor powered off	Normally open (N/O)	Alarm Off
Dew Point Sensor powered on and the alarm valve is not reached.	Normally open (N/O)	Alarm Off
Dew Point Sensor powered on and the alarm valve is reached.	Normally closed (N/C)	Alarm Activated



Commuication Settings

Default Modbus Settings

All dew point sensors use the following default Modbus settings. Settings can be changed to suit system requirements using our Service Software (contact CAA Sensors for more information) or the display (if fitted).

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

Holding Register Definition

Logical channels, data and related holding registers

- Modbus read command: 0x03
- Modbus write command: 0x06 for single register, 0x10 for multiple register
- Coil registers write command: 0x05

Process Data Format: supports two data types: IEEE 754 float data and unsigned int data.

Byte Order = Little Endian Byte Swap.

- 32bit: CD AB
- 64 Bit: GH EF CD AB

Modbus Registers



Note: Writing to single point calibrations (registers 0, 4, 20, 32, 34 and 36) is not recommended as this can affect the sensors readings.

Holding Register	Data Type	Byte Length	Description	Comments	Read / Write
Process Data					
0	FLOAT_L	4	Temperature	°C or °F	Read / Write
2	FLOAT_L	4	Relative Humidity	%RH	Read
4	FLOAT_L	4	Pressure Dew Point	°Ctd or °Ftd	Read / Write
6	FLOAT_L	4	Atm. Dewpoint	°Ctd or °Ftd	Read
8	FLOAT_L	4	Mixing Ratio	g/kg	Read
10	FLOAT_L	4	Absolute Humidity	mg/m ³	Read
12	FLOAT_L	4	Absolute Humidity	g/m ³	Read
14	FLOAT_L	4	Moisture (Weight)	PPMw	Read
15	FLOAT_L	4	Moisture (Volume)	PPMv	Read
18	FLOAT_L	4	Enthalpy	kJ/kg	Read
20	FLOAT_L	4	Line Pressure (abs)	Pa, hPa, kPa, MPa, mbar, bar, PSI	Read / Write
22	FLOAT_L	4	Water Activity (aw)		Read
24	FLOAT_L	4	Gas Density	kg/m ³	Read
26	FLOAT_L	4	Pressure (Normalize to 20 C)	Pa, hPa, kPa, MPa, mbar, bar, PSI	Read
28	FLOAT_L	4	Moisture (Volume) (Normalize to 20 C)	PPMw	Read
30	FLOAT_L	4	Gas Density (Normalize to 20 C)	kg/m ³	Read
32	FLOAT_L	4	Dewpoint single point calibration	°Ctd or °Ftd	Read / Write
34	FLOAT_L	4	Temperature single point calibration	° C or °F	Read / Write

Holding Register	Data Type	Byte Length	Description	Comments	Read / Write
36	FLOAT_L	4	Pressure single point calibration	Pa, hPa, kPa, MPa, mbar, bar, PSI	Read / Write
38	FLOAT_L	4	Moisture (Volume) (Normalize to Atm.)	PPMv	Read
40	FLOAT_L	4	Atm. Pressure	Pa, hPa, kPa, MPa, mbar, bar, PSI Default: 1.01325 bar or 1013.25 hPa	Read / Write
42	FLOAT_L	4	Gauge Pressure	Pa, hPa, kPa, MPa, mbar, bar, PSI	Read
46	UNSIGNED INT	2	Gas Type	0: Air (default) 1: Oxygen (O2) 2: Nitrogen (N2) 3: Hydrogen (H2) 4: Carbon monoxide (CO) 5: Carbon dioxide (CO2) 6: Sulfur hexafluoride (SF6) 7: Argon (Ar) 8: Helium (He) 9: Nitrous oxide (N2O) 10: Methane (CH4) 11: Ethane (C2H6) 12: Propane (C3H8) 13: Butane (C4H10)	Read / Write

Holding Register	Data Type	Byte Length	Description	Comments	Read / Write
Modbus Communication					
Note: The Modbus Communication settings will take effect after writing a “1” to the holding register address 50. Then the Modbus master must change communication settings accordingly in order to communicate with the slave.					
50	UNSIGNED INT	2	Restart device Write “1” to restart device		Write
51	UNSIGNED INT	2	Device address	1-247 Default = 1	Read / Write
52	UNSIGNED INT	2	Baud Rate (bps)	12 = 1200 bps 24 = 2400 bps 48 = 4800 bps 96 = 9600 bps (default) 144 = 14400 bps 192 = 19200 bps 384 = 38400 bps 560 = 56000 bps 576 = 57600 bps 1152 = 115200	Read / Write
53	UNSIGNED INT	2	Parity	0 = None (Default) 1 = Odd 2 = Even	Read / Write
54	UNSIGNED INT	2	Stop Bit	1 bit (default) 2 bit	Read / Write
55	UNSIGNED INT	2	Response Time Out	0 ... 255 ms Default = 1 ms/step	Read / Write
Coil Register					
0	UNSIGNED INT	2	Restart Modbus Communication	Read: Always 0 Write: 0x0000 = Do Nothing 0xff00 = Restart	Read / Write

Using the Display

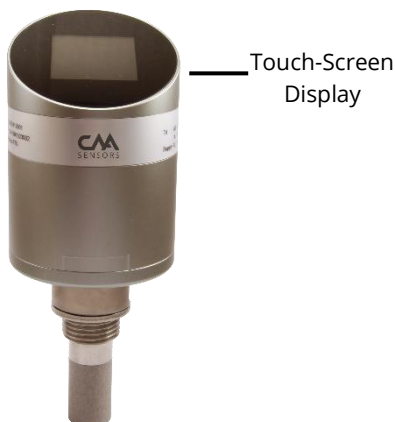


Using the Display

Dew Point Sensor with Display

If you purchased the Dew Point Sensor with Display, you can view or edit the following dew point settings:

- ✓ Gas type
- ✓ Units of measurement
- ✓ Modbus / RS485 settings
- ✓ Analog / 4-20mA settings
- ✓ Alarm (Relay) settings
- ✓ Which measurements are displayed on the touch-screen
- ✓ Language
- ✓ Screen Timeout
- ✓ Screen Brightness



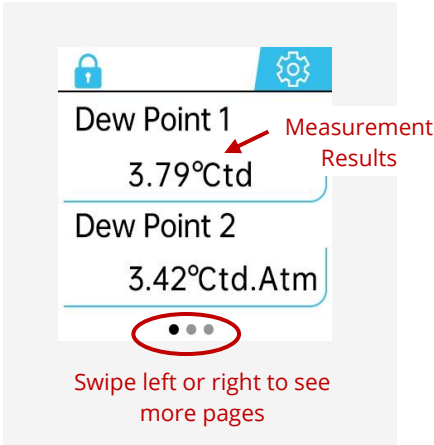
Standard Dew Point Sensor



The standard dew point sensor does **not** come with an in-built display.

If you need to change dew point settings, you will need to use our Service Software. Contact CAA Sensors for more information.

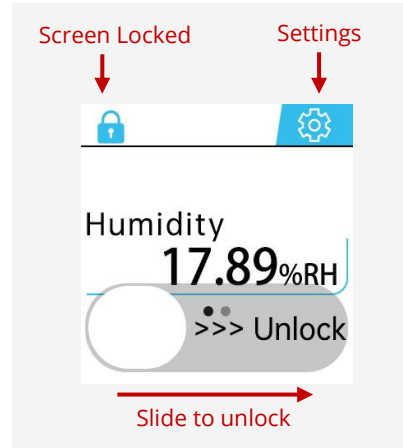
Home Screen



Measurement results are shown in the middle of the screen.

The **dots at the bottom of the screen** (• • •) show you how many pages there are. Swipe left or right to see more results.

Unlocking the Screen

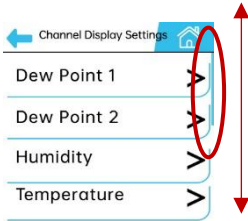


The screen automatically locks when not in use. The **lock** (🔒) at the top left of the screen means the screen is locked.

You can unlock the screen by sliding the dot to the right.

Navigation

For screens with **lists**, you may need to scroll up or down to see the full list of options (see picture below).



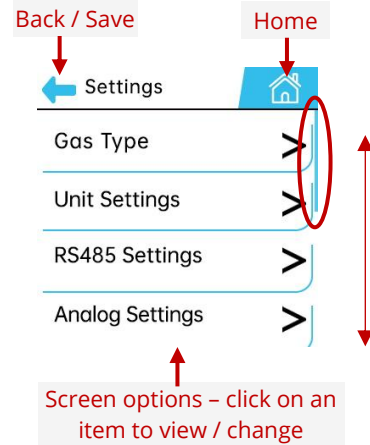
Slide up or down to see more options

For screens with **dials**, you may need to scroll left and right to full range of options (see picture below).





Slide left and right to see more options

Settings



Screen options – click on an item to view / change

Your dew point sensor will come pre-configured. If you want to view or change the settings:

- Unlock the screen
- click on the Settings Menu icon () on the home page.
- Scroll through the list to find the setting you want to view / edit
- Click on the setting, make the relevant changes then click the back arrow () to save your changes and return to the previous screen.

Note: Changes will be saved as soon as you press the back arrow.

Note: Advanced settings are password protected. If you need to access advanced setting, contact CAA Sensors.

Menu Options

Menu	Sub Menus	Comments
Gas Type	-	Select gas type: Air

Menu	Sub Menus	Comments		
	Parity	Odd Even None	None	
	Stop Bits	1 Or 2	1	
	Response Delay	0 – 255 ms	0	
Analogue / 4-20mA Settings	4-20mA Channel 4-20mA Scaling High 4-20mA Scaling Low	Dew Point (default) Relative Humidity Temperature Pressure Abs. Humidity (g/m³) Abs. Humidity (mg/m³) Mixing Ratio (k/kg) Moisture weight (ppmw) Moisture volume (ppmv) Enthalpy (kJ/kg) Atmos. Dew Point Differential ppm Note: Only one measurement can be transmitted via the analog setting		
	4-20mA Scaling Low	DEK -60	DEA (option 1) -80	DEA (option 2) -110
	4-20mA Scaling High	+60	+20	+20
System Settings	Brightness	View / change screen rotation, screen brightness, timing for screen lock		
	Screen Timeout	Change the Screen timeout from 15 seconds to 10 minutes		
	Language Setting	Change language – English or Chinese		
	System information	View hardware / software information		
Addition Settings for Dew Point Sensors with a Display				
Relay Setting	Relay Channel Relay Type Relay Threshold Relay Hystersis	Set the Alarm Relay for one of the measurements.		


Menu	Sub Menus	Comments
Channel Display Settings	Dew Point 1 Dew Point 2 Humidity Temperature Pressure	Select which channels / measurements you want displayed on the home pages of the Dew Point monitor.

Trouble Shooting

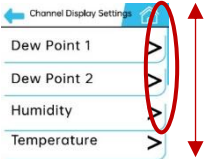


Trouble Shooting

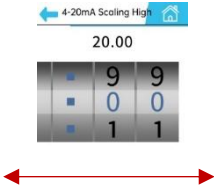
Problem	Possible Causes	Suggested Action
All Dew Point Sensors		
Readings are different than expected	Only the bottom part of the protective cap has been removed	Remove (unscrew) the whole protective cap from the dew point sensor
	Sensor installed incorrectly, eg upside down, in wet air	Check installation
	Gas is not reaching the sensor tip. <ul style="list-style-type: none"> Measurement Chamber not used. 	Install measurement chamber and open bleed valve slightly. This will ensure that gas reaches the sensor tip
	Gas is not reaching the sensor tip. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> Bleed screw is closed. 	Open bleed valve slightly on the measurement chamber
	Too much gas is reaching the sensor tip. <ul style="list-style-type: none"> Bleed screw open too far. 	Tighten bleed valve on the measurement chamber so that only a small amount of gas is escaping
	Sensor is wired incorrectly	Check Wiring <ul style="list-style-type: none"> 4-20mA wiring uses 3-wires or 4 wires (depending on the sensor) Modbus uses 4 wires
	Sensor communication set up incorrectly	Check 4-20mA settings and/or Modbus settings
	Dryers, filters, condensate drains are not working correctly	Service equipment

Problem	Possible Causes	Suggested Action
	Equipment failed (eg dryer failure) thus allowing too much water vapour, oil or particles to enter the system	Sensor may be damaged. Contact CAA Sensors
	Sensor due for calibration	Calibrate sensor. CAA Sensors can help with calibration
Readings don't change or readings stuck on a certain number	Sensor damaged	Contact CAA Sensors
	Incorrect sensor for your system	Check that the sensor's specifications are suitable for your system.
Air is escaping - from the bleed screw on the measurement chamber		This is normal operation. If you don't want gas to escape from the bleed screw, use a 'Zero Loss Chamber'
Dew Point Sensor with Display		
	Dirty screen	Clean the screen
	You are using hard objects to operate the display, eg fingernails, pens	Use the fleshy part of your finger to touch the screen. The touch screen does not work if you use fingernails or pens.
The touch screen doesn't work	Screen is locked	The screen automatically locks when not in use. The lock symbol (🔒) at the top left of the screen means the screen is locked.
	 <p>Slide to unlock</p>	
Alarm Relay not working	Sensor is wired incorrectly	Check Wiring
	Alarm settings are wrong	Check alarm settings

Problem	Possible Causes	Suggested Action
I can't see all menu items	On some menus, you will need to scroll up and down (or left and right) to see all items.	



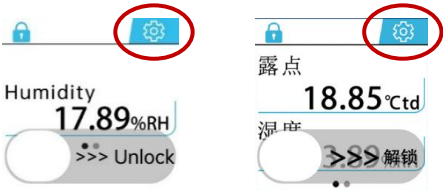
Slide **up** or **down** to see more options



Slide **left** and **right** to see more options

The screen is in the wrong language

- Step 1 – Unlock Screen and go to Settings
- If the lock screen symbol (🔒) is present, you will need to unlock the screen first.
- Click on the Settings icon (⚙️) on the top right of the home page.



- Step 2 – Go to System Settings
- Scroll to the bottom of the settings screen.
- Press the “System Setting” option – **2nd option from bottom**

Problem	Possible Causes	Suggested Action
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2nd menu option from **bottom** of page
You may need to scroll down to find this setting

Step 3 – Go to Language Settings

Press “Language” menu option – **2nd menu from bottom**



2nd menu option from **bottom** of page

Step 4 – Select desired language

Select the desired language.

Press the arrow button (←) to save your selection and return to the previous screen



Factory Settings

The default settings / factory settings are shown below. If you need to change these settings and you have a:

- Standard Dew Point Sensor – contact CAA Sensors or your local Distributor.
- Dew Point Sensor with Display - you can change these settings using the display.

Setting	Default Value / comments		
All Dew Point Sensors			
Gas Type	Air		
Unit Setting		USA	Rest of World
	Dew Point Units	°F	°C
	Temperature Units	°F	°C
	Pressure Units	psi	Bar
RS485 (Modbus) Settings	Baud Rate	9600	
	Parity	None	
	Stop Bits	1	
	Response Delay	0	
	Device Address	1	
Analog Settings	4-20mA Channel	Pressure Dew Point (PDP)	
	4-20mA Scaling	Refer to dew point sensor label	
Additional Settings for Dew Point Sensor with Display			
(Alarm) Relay Settings	Relay Channel		
	Relay Type		
	Relay Threshold		
	Relay Hystersis		
Screen Timeout	10 seconds		

Warranty

CAA Sensors 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 CAA Sensors 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 contaminants or relative humidity above 85%). Calibration is excluded from the product warranty. For more information, contact CAA Sensors:

- Phone: +61 494095632
- WhatsApp: +61 494095632
- E-mail: sales@caasensors.com

Commissioning Report

About the Sensor

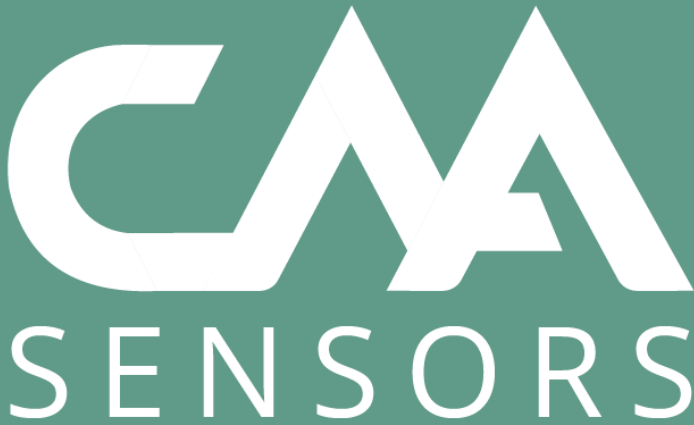
Part Number (eg DEK122001)			
Serial Number			
Installed by		Installed Date	

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 Sensor installed correctly? (refer to "Installation - Mechanical")					
2	Is the Dew Point Sensor wired correctly? (refer to "Installation - Electrical")					
3	Modbus and 4-20mA settings checked?					
4	Are the dryer and condensate drains working correctly?					



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