WISE AIR 4.0®
MEASURE TO MANAGE

USER MANUAL · 2026 EDITION

WADS-207

Dew Point Sensor with Display

Models covered: WADS-207-A/-B, WADS-208-A/-B



−80...+60 °C td	±2 °C td	1.5" touch	RS485/4–20mA
Range (207 / 208)	Dew point accuracy	Colour display	Modbus RTU + analogue

INSTALLATION · OPERATION · CONFIGURATION · MAINTENANCE

WISEAIR TECHNOLOGIES INDIA LLP

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CONTENTS

Inside this manual

01	Safety and general information	03
02	Product overview	04
03	What's in the box	05
04	Technical specifications	06
05	Mechanical installation	07
06	Electrical connection	09
07	Communication (RS485 Modbus RTU)	09
08	Maintenance and calibration	10
09	Troubleshooting	11
10	Warranty and service	12
11	Commissioning report	13

ABOUT WISEAIR

WiseAir Technologies India LLP designs and supplies smart measurement instruments for compressed air and industrial gases — flow, dew point, pressure and power sensors, data loggers, smart drains and leak detection tools. Every WiseAir product is built to make compressed-air energy use **visible, measurable and manageable**.

WiseAir sensors work on their own or as part of the **WiseAir WASM-604 Smart Monitoring platform**, which collects data over Modbus / 4–20 mA, analyses it and reports energy, demand and leakage in real time.

DOCUMENT

Document	WA-UM-WADS207-26
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01 Safety and general information

Read this manual completely before you install, operate or service the WADS-207 / WADS-208 dew point sensor. Keep it with the instrument and make it available to everyone who works with it.

Only trained, qualified personnel may install, commission and maintain the instrument. WiseAir Technologies is not liable for damage caused by failure to follow this manual. Opening or modifying the instrument in any way not described here cancels the warranty.

Intended use

The instrument measures the dew point (moisture content) of compressed air and of the technical gases listed under *Product overview*. Use it only within the operating limits given in *Technical specifications*. Any other use is not intended.

Symbols used in this manual

Symbol	Meaning
Danger	Hazard that can cause death or serious injury.
Warning	Hazard that can cause injury or serious damage to equipment.
Caution	Situation that can damage the instrument or give wrong readings.
Note / Tip	Useful information for correct installation and use.

! **COMPRESSED AIR**

- Escaping air or bursting parts can cause serious injury or death.
- Never exceed the maximum permitted pressure of the instrument.
- Use only pressure-tight installation material.
- Depressurise the pipe or sampling line before any installation or maintenance work.
- Keep your face and body away from escaping air.

! **ELECTRICAL SAFETY**

- Contact with live parts can cause electric shock.
- Follow all national regulations for electrical installations.
- Disconnect the power supply before any maintenance work.
- Only authorised, qualified personnel may carry out electrical work.

INSTALLATION AND OPERATION

- Do not use the instrument in explosive (hazardous) areas.
- Do not exceed the permitted gas temperature, pressure or ambient limits.
- Avoid condensation or liquid water on the sensor element – it seriously affects accuracy and can damage the sensor.
- Do not dismantle the instrument.
- Tighten threaded parts with a spanner on the spanner flats only; never turn the housing.

STORAGE AND TRANSPORT

- Storage temperature: −40 to +80 °C, non-condensing.
- Keep away from direct sunlight and UV radiation.
- Store and transport in the original packaging with the protective cap fitted.

02 Product overview

The WiseAir WADS-207 and WADS-208 are in-line dew point sensors with a built-in 1.5" capacitive touch display. They measure the pressure dew point of compressed air after the dryer and send the values over RS485 Modbus RTU and an isolated 4–20 mA output.

Why monitor pressure dew point?

Moisture in compressed air causes corrosion in pipes, shortens the life of pneumatic components, makes actuators fail and can contaminate products. Once water has entered the network, it takes a long time to dry out again.

The indicator on a refrigerant dryer shows only the refrigerant temperature – it does not measure the dew point of the air entering your plant. Faults before or after the dryer (for example a blocked condensate drain) are not shown on the dryer display. A dew point sensor measures the actual moisture in the air and warns you before water reaches the plant.

PRESSURE DEW POINT VS ATMOSPHERIC DEW POINT

Dew point depends on pressure. When air is compressed, the partial pressure of water vapour rises and the dew point rises with it. Example: air at 1013 mbar with a dew point of −10 °C td has a water-vapour partial pressure of about 2.8 mbar. Compressed to 2026 mbar (absolute), the partial pressure doubles to about 5.6 mbar and the dew point rises to about −1 °C td. Always state whether a value is a **pressure dew point (PDP)** or an **atmospheric dew point**.

Key features

Polymer film sensor
Precision design compensates for drift caused by temperature, contamination and ageing.

Accurate to ±2 °C td
Up to 9-point dew point calibration and multi-point temperature compensation.

Integrated pressure sensor
MEMS pressure sensor (variant -B) shows pressure dew point and atmospheric dew point (up to 15 bar).

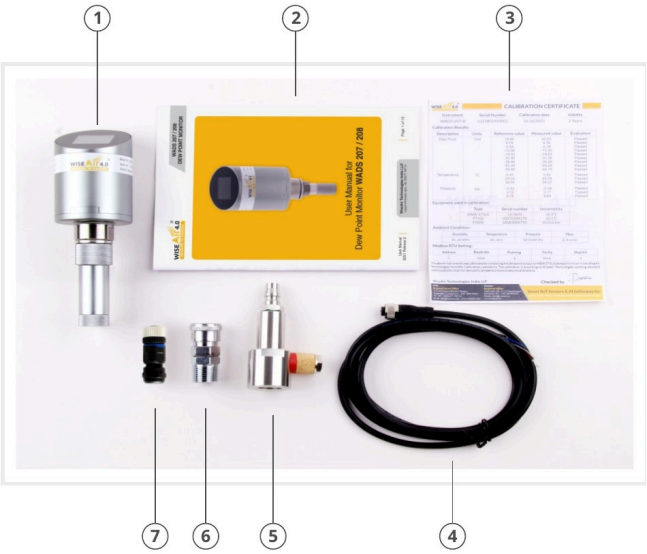
Local display
1.5" capacitive touch display on the sensor.

Two connectors
Connector A: power and RS485 Modbus RTU. Connector B: isolated 4–20 mA and pulse output.

Robust
Resistant to condensation, particles, oil and most chemicals; high immunity to electrical interference.

Measured media: compressed air and the following gases: nitrogen (N_2), oxygen (O_2), hydrogen (H_2), carbon monoxide (CO), carbon dioxide (CO_2), argon (Ar) and helium (He). The instrument is not approved for hazardous areas – contact WiseAir support before using it with flammable gases such as hydrogen or carbon monoxide.

03 What's in the box



1. Dew point sensor (WADS-207 or WADS-208, as ordered)
2. User manual
3. Calibration certificate
4. Connection cable with M12 connector, 2 m
5. Measurement chamber
6. Quick-release coupler (QRC)
7. M12 field-wireable connector

Optional accessories

Accessory	Use
Y-type M12 splitter	Connects several sensors to one RS485 bus
WiseAir WADL-301 data logger	Records sensor values and sends them to WASM-604
WASM-604 Smart Monitoring	Online data acquisition, dashboards and alarms (smartmonitoring.wiseair.asia)
Analogue display unit	Panel display for the 4–20 mA signal

Ask your WiseAir dealer for prices and other accessories.

04 Technical specifications

MEASURING RANGE	
Dew point – WADS-207	−60 … +60 °C td
Dew point – WADS-208	−80 … +20 °C td
Temperature	−40 … +100 °C
Pressure (variant -B)	0 … 15 bar

DEW POINT ACCURACY (AIR AND NITROGEN)	
+20 … −60 °C td	±2 °C td
−60 … −80 °C td (WADS-208)	±3 °C td

TEMPERATURE ACCURACY (STANDARD; HIGHER ACCURACY ON REQUEST)	
0 … +50 °C	±3 °C
−40 … 0 °C and +50 … +100 °C	±5 °C

PRESSURE ACCURACY (VARIANT -B)	
At 23 °C	±3 % FS
Temperature dependence	±0.01 bar / 10 °C

RESPONSE TIME (63 % / 90 %; 20 °C, 1 BAR(G), 4 L/MIN)	
−50 → +20 °C td (dry to wet)	20 … 40 s
+20 → −50 °C td (wet to dry)	1 … 3 min
Pressure sensor	< 1 s

OUTPUTS	
Analogue	4–20 mA (4-wire, isolated); pulse output
Digital	RS485 Modbus RTU
Measured values	Pressure dew point, atmospheric dew point, relative humidity, temperature, pressure (-B)

DISPLAY	
Type	1.5" capacitive touch panel

POWER	
Supply	24 VDC nominal (18 … 30 VDC)
Power supply rating	1 A

OPERATING CONDITIONS	
Ambient temperature	−30 … +70 °C
Storage temperature	−40 … +80 °C
Ambient humidity	0 … 95 % RH
Pilot gas flow	> 1 L/min
Pressure rating	0 … 15 bar

OTHER	
Electrical connection	2 × M12, 5-pin (A: power + RS485; B: analogue + pulse)
Process connection	G 1/4" via measurement chamber and QRC
Sensor protection	Stainless-steel sinter filter, 30 … 45 µm
EMC	IEC 61326-1

Ordering codes

Ordering code	Range	Description
WADS-207-A	−60 … +60 °C td	Dew point sensor with 1.5" touch display
WADS-207-B	−60 … +60 °C td	As -A, with integrated pressure sensor; displays pressure dew point and atmospheric dew point
WADS-208-A	−80 … +20 °C td	Dew point sensor with 1.5" touch display
WADS-208-B	−80 … +20 °C td	As -A, with integrated pressure sensor; displays pressure dew point and atmospheric dew point

05 Mechanical installation

These instructions apply to all WADS-207 and WADS-208 sensors. Before you start, check that the sensor is rated for your system (see *Technical specifications*).

WARNING

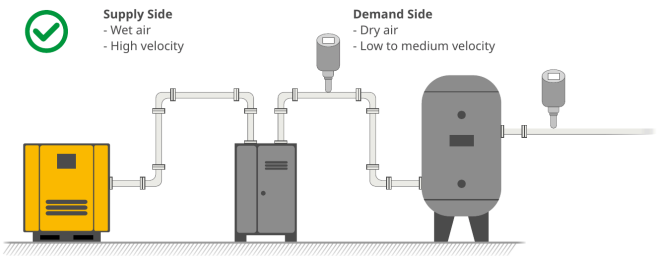
Incorrect installation can damage the sensor or give wrong readings. Depressurise the pipe before you install or remove the sensor.

Step 1 – Choose the location

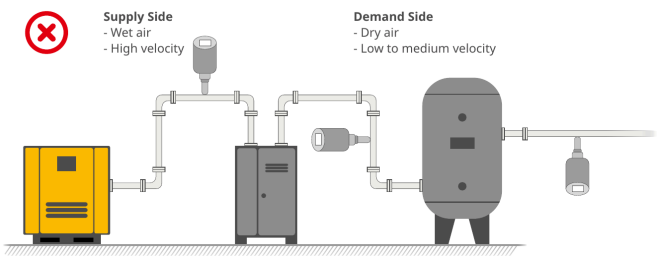
- Install the sensor **downstream of the dryer**, in dry air (relative humidity below 80 %).
- Use a horizontal section of pipe and mount the sensor **vertically on top of the pipe** (at 90° to the pipe, connector pointing upwards).
- Leave enough room above the pipe to fit and remove the sensor.
- Outdoors, protect the sensor from sun and rain.

DO NOT

- install the sensor upstream of a dryer or in gas with relative humidity above 80 %;
- install the sensor upside down, horizontally or at an angle;
- let liquid water reach the sensor tip.



Correct: vertical, on top of the pipe, downstream of the dryer (dry air).



Incorrect: upstream of the dryer (wet air), horizontal or upside down.

Step 2 – Prepare the connection point

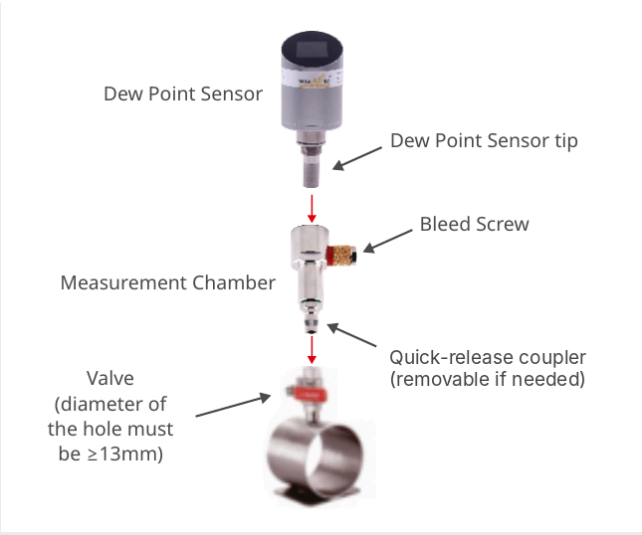
You need a connection point on the pipe – a ball valve, weld nipple or socket – with a **G 1/4" female thread**. The bore into the pipe must be **at least 13 mm** in diameter.

TIP

A ball valve is optional, but it lets you remove the sensor (for example for calibration) without depressurising the pipe.

Step 3 – Fit the sensor

1. Screw the sensor into the measurement chamber. Tighten with a spanner on the spanner flats.
2. Connect the measurement chamber to the connection point with the quick-release coupler (QRC).
3. If you prefer a fixed connection, remove the QRC and screw the chamber's 1/4" BSP male thread directly into the valve.
4. Open the valve slowly and check all joints for leaks.



Sensor, measurement chamber, quick-release coupler and valve.

Step 4 – Set the pilot flow

The sensor needs a small, continuous flow of gas past the sensor tip (minimum **1 L/min**) to measure correctly. Choose one of two options:

Option 1 – Bleed to atmosphere

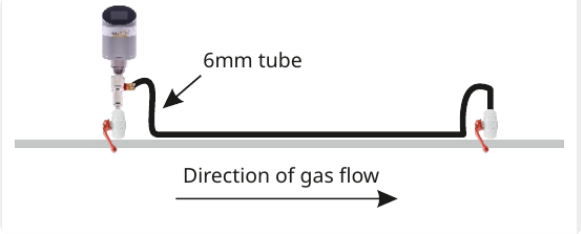
1. Close the bleed screw on the measurement chamber completely.
2. Open it slightly until a very small flow of gas escapes to atmosphere.



Bleed screw on the measurement chamber.

Option 2 – Zero-loss loop

1. Remove the bleed screw and its fitting from the measurement chamber.
2. Fit a 1/4" × 6 mm push-in fitting.
3. Connect a 6 mm tube from the chamber to a second valve further downstream. The pressure drop along the pipe drives the pilot flow, so no air is lost.



Zero-loss loop with 6 mm tube.

Step 5 – Allow the reading to stabilise

After installation the sensor must dry down to the process dew point. Drying to low dew points takes longer than responding to wetter air – allow the reading to settle before you record it in the commissioning report.

06 Electrical connection

The sensor has two 5-pin M12 connectors. **Connector A** carries the power supply and RS485 Modbus. **Connector B** carries the isolated 4–20 mA output and the pulse output.

> **!** **CAUTION**
> Switch off the power supply before you connect or disconnect a cable. Screw the connectors on by hand only – using force can damage the pins.

Pin	Connector A (power + Modbus)	Connector B (analogue)
1	RS485 Data + (A)	4–20 mA +
2	RS485 Data – (B)	4–20 mA –
3	Not used	Pulse
4	Supply + 18 ... 30 VDC	Pulse
5	Supply 0 V (GND)	Not used



Pin layout – connector A (left) and connector B (right).



1_ Connector A
2_ Connector B

- The 4–20 mA output is a 4-wire, isolated output. Connect it to a passive (non-powered) analogue input.
- Use a shielded cable for RS485 and keep it away from power cables and frequency inverters.
- The analogue output scaling corresponds to the measuring range shown on the sensor label and calibration certificate.
- For pulse-output configuration, contact WiseAir support.

07 Communication (RS485 Modbus RTU)

The sensor communicates as a Modbus RTU slave over RS485. Connect it to the **WiseAir WADL-301 data logger**, to the **WASM-604 Smart Monitoring** platform (smartmonitoring.wiseair.asia) or to any Modbus RTU master (PLC, SCADA, BMS).

Default RS485 / Modbus RTU settings

Parameter	Default
Slave address	Factory-set – confirm with WiseAir support before commissioning
Baud rate	9600
Data bits / parity / stop bits	8 / None / 1 (8N1)
Response time-out	1 s
Response delay	0 ms
Frame spacing	7 characters

Settings can be changed on request to suit your system.

Modbus register map (function code 03, read holding registers)

Register (1-based)	Address (0-based)	Data type	Bytes	Value	Unit	Access
1	0	Float	4	Temperature	°C / °F	Read
3	2	Float	4	Relative humidity	% RH	Read
5	4	Float	4	Pressure dew point	°C td / °F td	Read

Each 32-bit float occupies two consecutive 16-bit registers. Read 2 registers per value.

08 Maintenance and calibration

Every sensor is calibrated before delivery. The calibration date is printed on the calibration certificate supplied with the sensor.

Recommended calibration interval	Every **2 years**
Earlier check needed	If the sensor has been exposed to relative humidity above 85 %, to liquid water or to oil
Calibration service	Return the sensor to WiseAir or your local dealer. Calibration is not covered by the warranty.

Cleaning and care

- Clean the housing with a soft, dry or slightly damp cloth. Do not use solvents.
- Do not touch the sensor element or the sinter filter with your fingers or tools.
- If the sinter filter is contaminated with oil or dirt, contact WiseAir support; do not try to clean the sensor element yourself.
- Check the condition of seals, the sampling line and the pilot flow at every service visit.

09 Troubleshooting

Symptom	Possible cause	Action
No reading / instrument dead	No power; wrong wiring; damaged connector	Check the supply voltage and wiring against the pin-out. Check the connector for bent pins.
No Modbus communication	Wrong address, baud rate or frame setting; Data+ / Data– swapped; missing bus termination	Check the settings in *Communication*. Swap the Data+ and Data– wires as a test. Check the RS485 network termination.
Dew point too high (wet)	Dryer fault; blocked condensate drains; sensor installed upstream of the dryer	Check the dryer and the condensate drains. Check that the sensor is installed downstream of the dryer, in dry air.
Dew point too high after installation	Sensor not yet dried down; leak in the sampling line letting in ambient air	Allow time to stabilise (dry-down to low dew points can take several minutes or longer). Check all fittings for leaks.
Slow or no response to changes	No pilot flow through the measurement chamber; bleed screw closed	Set the pilot flow as described in *Mechanical installation*, step 4 (minimum 1 L/min).
Water or oil on the sensor tip	Sensor installed upside down, at an angle or in wet air	Depressurise, remove and dry the sensor. Re-install vertically on top of the pipe. Contact WiseAir support if readings remain wrong.
Reading drifts over time	Calibration overdue; contaminated sensor	Check the calibration date. Send the sensor for calibration.
Reading not plausible for the dryer type	Wrong sensor model for the application	Check the dryer suitability table in *Technical specifications*.

If the problem remains, contact your local dealer or WiseAir support (details on the back cover).

10 Warranty and service

WiseAir Technologies provides a **12-month warranty** on the dew point sensor from the date of delivery. The warranty covers defects in material and workmanship when the instrument is used under the stated operating conditions. Report any defect immediately and within the warranty period.

During the warranty period WiseAir Technologies will repair or replace a defective unit free of charge for parts and repair labour. Other services – such as removal and re-installation, travel and transport – are charged. A warranty repair does not extend the warranty period.

Not covered by the warranty

- Improper use or failure to follow this manual.
- Use of unsuitable accessories.
- External influences, e.g. vibration, transport damage, excess heat, moisture or liquid water on the sensor.
- Cosmetic damage to the outside of the instrument (dents, marks).
- Calibration (calibration is a service and is charged separately).

The warranty is cancelled if

- the instrument has been opened, except where this manual tells you to;
- repairs or modifications have been made by third parties or unauthorised persons;
- the serial number has been changed, damaged or removed.

NEED HELP?

Contact your local WiseAir dealer or WiseAir support (details on the back cover). Have the model, serial number and calibration date ready.

11 Commissioning report

Complete this report at commissioning and keep a copy with the instrument.

SENSOR	
Model (WADS-207 / 208, variant)	
Part number / ordering code	
Serial number	
Calibration valid until	
Installed by / date	
COMPRESSED AIR SYSTEM	
Customer / site / location	
Dryer type (refrigerant / desiccant / membrane / other)	
Line pressure (bar)	
Dew point reading at commissioning (°C td)	

Installation checks

#	Check	Yes	N/A	No	Comments
1	Sensor installed downstream of the dryer, vertical, on top of the pipe	☐	☐	☐	
2	Isolation valve installed (if used)	☐	☐	☐	
3	Sensor and measurement chamber fitted; no leaks	☐	☐	☐	
4	Pilot flow set (bleed screw or zero-loss loop)	☐	☐	☐	
5	Connectors A and B wired and checked against the pin-out	☐	☐	☐	
6	Modbus settings checked / 4–20 mA signal checked	☐	☐	☐	
7	Dryer and condensate drains working correctly	☐	☐	☐	
8	Reading stable and plausible for the dryer type	☐	☐	☐	

WiseAir representative (name and signature)	Customer representative (name and signature)	Date

WISE AIR 4.0®
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Need help with your WADS-207?

Our product specialists support installation, commissioning, configuration and calibration — remotely or on site.

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> When you contact support, please keep the sensor serial number, firmware version and a photo of the installation ready.

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Specifications are subject to change without notice.