WISE AIR 4.0
MEASURE TO MANAGE

USER MANUAL · 2026 EDITION

WADS-201

Dew Point Sensor

Models covered: WADS-201, WADS-202, WADS-203, WADS-204 (all variants)



−110...+60 °C	±2 °C td	0–40 bar	RS485/4–20mA
Dew point range (series)	Dew point accuracy	Operating pressure	Modbus RTU + analogue

INSTALLATION · OPERATION · CONFIGURATION · MAINTENANCE

WISEAIR TECHNOLOGIES INDIA LLP

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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

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01 Safety and general information

Read this manual completely before you install, operate or service the WADS-201 to WADS-204 dew point sensors. 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

- Transport temperature: −10 to +60 °C.
- Storage temperature: −10 to +50 °C, humidity below 90 % RH, 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-201 to WADS-204 series are compact in-line dew point sensors for continuous monitoring of the pressure dew point (PDP) in compressed air systems after refrigerant, desiccant and membrane dryers.

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

Fast response
Polymer capacitive (WADS-201 to 203) or quartz (WADS-204) sensing element with drift compensation for temperature, contamination and ageing.

Two outputs as standard
RS485 Modbus RTU (digital) and 4–20 mA (analogue) on one 5-pin connector.

Up to four values
Over Modbus: pressure dew point, temperature, relative humidity and – with the optional pressure sensor (WADS-202/203/204) – line pressure.

Contamination resistant
Stainless-steel sinter filter protects the sensor element.

Measurement chamber included
Quick-release coupler for fast fitting and removal; permanent or temporary installation.

IP65
Rated IP65 for industrial environments.

Benefits

- Improves system and dryer reliability
- Reduces product contamination risk
- Reduces maintenance and energy costs
- Reduces rust, corrosion and the growth of bacteria, fungus and yeast
- Improves filter life and performance
- Warns you of dryer problems before moisture reaches the plant

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. User manual
2. Dew point sensor (WADS-201, 202, 203 or 204, as ordered)
3. Calibration certificate
4. Connection cable with M8 (WADS-201) or M12 (WADS-202/203/204) connector, 2 m
5. Measurement chamber
6. Quick-release coupler (QRC)

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 Choosing the right model

WADS-201 – compact

Aluminium housing, M8 connector. For refrigerant, desiccant and membrane dryers. Proven polymer-film sensor with strong contamination resistance. No pressure-sensor option.

WADS-202 – precision

Stainless-steel housing, M12 connector. For refrigerant, desiccant and membrane dryers with PDP down to −50 °C td. Optional integrated pressure sensor.

WADS-203 – desiccant dryers

New-generation polymer sensor with auto drift correction (ADC). For desiccant and membrane dryers. Not suitable for refrigerant dryers. Optional integrated pressure sensor.

WADS-204 – ultra-low dew point

Quartz sensing technology for dew points down to −110 °C td. For desiccant and membrane dryers with PDP below −20 °C td. Not suitable for refrigerant dryers. Optional integrated pressure sensor.

Dryer suitability (up to 40 bar)

Dryer type	WADS-201	WADS-202	WADS-203	WADS-204
Refrigerant dryer	✓	✓	×	×
Desiccant dryer	PDP above −40 °C td	PDP above −50 °C td	PDP above −60 °C td	PDP below −20 °C td
Membrane dryer	✓	✓	✓	✓

Ordering codes

Ordering code	Measuring range	Description
WADS-201-A	−60 … +20 °C td	Compact sensor, aluminium housing, M8
WADS-201-B	−60 … +60 °C td	Compact sensor, aluminium housing, M8
WADS-202-A	−60 … +20 °C td	Precision sensor, stainless steel, M12
WADS-202-B	−60 … +60 °C td	Precision sensor, stainless steel, M12
WADS-203-A	−60 … +20 °C td	Polymer sensor with ADC, stainless steel, M12
WADS-203-B	−60 … +60 °C td	Polymer sensor with ADC, stainless steel, M12
WADS-203-C	−80 … +20 °C td	Polymer sensor with ADC, stainless steel, M12
WADS-204-A	−110 … 0 °C td	Quartz sensor, stainless steel, M12

The optional integrated pressure sensor (WADS-202/203/204) must be specified when ordering.

05 Technical specifications

Parameter	WADS-201	WADS-202	WADS-203	WADS-204
Sensor				
Technology	Polymer capacitive	Polymer capacitive	Polymer capacitive (ADC)	Quartz
Housing	Aluminium	Stainless steel	Stainless steel	Stainless steel
Measurement				
Dew point range	A: −60 … +20 °C td B: −60 … +60 °C td	A: −60 … +20 °C td B: −60 … +60 °C td	A: −60 … +20 °C td B: −60 … +60 °C td C: −80 … +20 °C td	A: −110 … 0 °C td
Dew point accuracy	±2 °C td	±2 °C td	±2 °C td	±2 °C td
Temperature accuracy	±0.5 °C	±0.5 °C	±0.5 °C	±0.5 °C
Pressure sensor	Not available	Optional	Optional	Optional
Pressure accuracy (optional sensor)	–	±0.3 % FS at 23 °C; ±0.01 bar / 10 °C	±0.3 % FS at 23 °C; ±0.01 bar / 10 °C	±0.3 % FS at 23 °C; ±0.01 bar / 10 °C
Process				
Operating pressure	0 … 40 bar	0 … 40 bar; 0 … 16 bar with pressure sensor	0 … 40 bar; 0 … 16 bar with pressure sensor	0 … 40 bar; 0 … 16 bar with pressure sensor
Gas temperature	−40 … +100 °C	−40 … +100 °C	−40 … +100 °C	−40 … +100 °C
Minimum gas flow (pilot flow)	> 1 L/min	> 1 L/min	> 1 L/min	> 1 L/min
Process connection	G 1/4" via measurement chamber and QRC	G 1/4" via measurement chamber and QRC	G 1/4" via measurement chamber and QRC	G 1/4" via measurement chamber and QRC
Outputs				
Analogue 4–20 mA	PDP	PDP	PDP	PDP
Digital RS485 Modbus RTU	PDP, T, RH	PDP, T, RH (+ pressure*)	PDP, T, RH (+ pressure*)	PDP, T, RH (+ pressure*)
General				
Supply voltage	12 … 30 VDC	12 … 30 VDC	12 … 30 VDC	12 … 30 VDC
Electrical connection	5-pin M8	5-pin M12	5-pin M12	5-pin M12
Ingress protection	IP65	IP65	IP65	IP65
Storage temperature	−10 … +50 °C, < 90 % RH	−10 … +50 °C, < 90 % RH	−10 … +50 °C, < 90 % RH	−10 … +50 °C, < 90 % RH

PDP = pressure dew point; T = gas temperature; RH = relative humidity; FS = full scale; °C td = dew point temperature in °C. * Only with the optional integrated pressure sensor.

06 Mechanical installation

These instructions apply to all WADS-201, WADS-202, WADS-203 and WADS-204 sensors. Before you start, check that the sensor is rated for your system (see *Technical specifications*).

WARNING

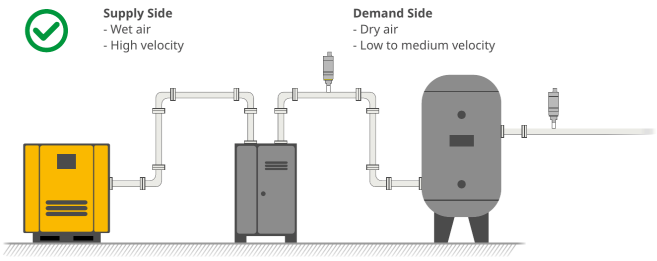
Incorrect installation can damage the sensor or give wrong readings. Depressurise the pipe before you install or remove the sensor.

Step 1 – Choose the location

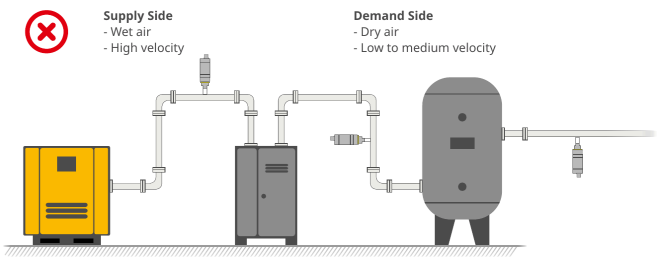
- Install the sensor **downstream of the dryer**, in dry air (relative humidity below 80 %).
- Use a horizontal section of pipe and mount the sensor **vertically on top of the pipe** (at 90° to the pipe, connector pointing upwards).
- Leave enough room above the pipe to fit and remove the sensor.
- Outdoors,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

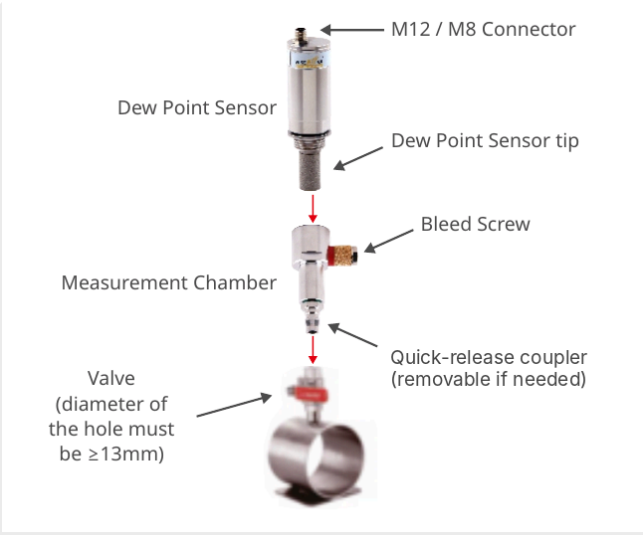
You need a connection point on the pipe – a ball valve, weld nipple or socket – with a **G 1/4" female thread**. The bore into the pipe must be **at least 13 mm** in diameter.

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

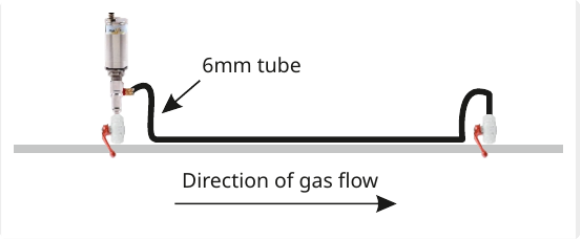
1. Close the bleed screw on the measurement chamber completely.
2. Open it slightly until a very small flow of gas escapes to atmosphere.



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.

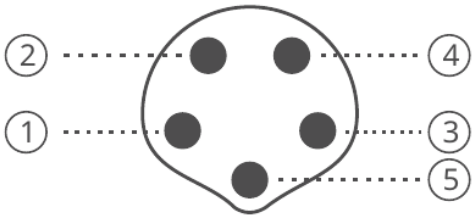
07 Electrical connection

WADS-201 has a 5-pin **M8** connector. WADS-202, WADS-203 and WADS-204 have a 5-pin **M12** connector. The pin assignment is the same for both connector types.

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

Pin assignment

Pin	Function
1	RS485 Data + (A)
2	RS485 Data – (B)
3	4–20 mA output (PDP)
4	Supply + 12 ... 30 VDC
5	Supply 0 V (GND)



Pin layout of the sensor connector.



1_ M8 or M12 Connector Plug
2_ Sensor Tip

- Use a shielded cable for RS485 and keep it away from power cables and frequency inverters.
- The 4–20 mA output carries the pressure dew point only. Its scaling corresponds to the measuring range shown on the sensor label and calibration certificate.
- To read temperature, relative humidity or pressure, use the RS485 Modbus output.
- To connect several sensors to one RS485 bus, use the Y-type M12 splitter.

08 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
21	20	Float	4	Line pressure*	kPa / MPa / bar / psi	Read

Each 32-bit float occupies two consecutive 16-bit registers – read 2 registers per value. * Line pressure is available only on WADS-202/203/204 with the optional integrated pressure sensor.

09 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.

10 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).

11 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.

12 Commissioning report

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

SENSOR	
Model (WADS-201 / 202 / 203 / 204)	
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	Electrical wiring 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 _____

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Need help with your WADS-201?

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

CALL

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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.