

Model DS2000-1

Single Channel OnLine Dewpoint Hygrometer
Ranges available between -110°C to +20°C (-166°F to +68°F)Td

A complete online solution for continuous measurement of moisture in process gases and compressed air, offering powerful functionality via a simple interface.

The dewTEC Model DS2000-1 from Alpha Moisture Systems is a single channel, on-line hygrometer designed to accurately display dewpoint in gases

This panel mounted dewpoint hygrometer combines advanced digital technology with the industry leading ultra high capacitance aluminium oxide sensors - the acknowledged industry benchmark for trace moisture measurement.

Easy set up - Large clear display with visible alarms -
Fast response - Stable - Reliable - Accurate.

Features
- Advanced functionality with user-friendly design
- Accuracy better than ±2°C Dewpoint
- Automatic Calibration
- RS485 serial communications
- 2 Independent, fully programmable alarm relays
- Linear retransmission signal of current or voltage
- Cable length of up to 1km to sensor
- Calibration traceable to National & International standards
- Logging software option available
- Fully compatible with SF6

The measured dewpoint is displayed by means of a large 5½ digit, seven segment LED display. The dewTEC DS2000-1 also offers two independent, fully user programmable alarm contacts and open collector outputs to provide all the versatility required for any application. The factory set, analogue, current or voltage output, that is linear with dewpoint, is available as well as RS485 serial connection with 1-99 address settings. The dewTEC DS2000-1 is a fully self-contained display system in 1/8 DIN panel mounted case providing front panel protection to IP31.

The dewTEC DS2000-1 can be supplied together with any one of a range of dedicated, ultra high capacitance, sensors incorporating automatic calibration and covering an overall range from -110°C to +20°C dewpoint. The sensor has been conditioned for long term stability so ensuring a long and trouble free service life. Additionally the high sensitivity and linear output of the sensor allows up to 1km cable length between the Sensor and the dewTEC DS2000-1 instrument. The sensor is ATEX certified for intrinsic safety and so can be used in hazardous environments with a suitable Zener barrier in the safe area. Please see page 4 diagram.
Specifications

**DISPLAY**

Type: Red/green, 7-segment, 5-digit primary display, 1-digit secondary display.

Height: 18mm (0.71 inches) primary display, 7mm (0.3 inches) secondary display.

Annunciators: Alarm 1 and Alarm 2 status.

**SENSOR (SEE ALSO SENSOR DATASHEET FOR ATEX AND CONFORMITY)**

Overall Range: From –110°C to +20°C dewpoint

Accuracy: ± 2°C over full range

Operating Temperature: –20°C to +70°C

Storage Temperature: –50°C to +70°C

Operating Humidity: 10-90% RH non-condensing

**MECHANICAL CONNECTIONS**

M14 x 1.25mm pitch

**ELECTRICAL CONNECTION**

Standard male coaxial plug to sensor with BNC coax connection to display

**INTRINSIC SAFETY CERTIFICATION STANDARDS:**

II 1G Ex ia IIC T6 Ga (Ta = -20 °C to +50 °C)

Complies to: EN 60079-0, EN 60079-11, EN 60079-26, BS EN 61326-1

**HYGROMETER INPUT**

Sampling Rate: 10Hz

Resolution: 14-bits

Sensor short circuit detection: Detected within two seconds. All alarms become active.

**TRANSISTOR OUTPUTS**

Type: NPN open collector. Output 1 tied to Alarm 1. Output 2 tied to Alarm 2.

**RELAY OUTPUT 1**

Contact Type: Single pole, double throw

Rating: 2A resistive, 120/240V, 50/60Hz

Lifetime: >500,000 operations at rated voltage/current

Isolation: Inherent

**RELAY OUTPUT 2**

Contact Type: Single pole, double throw

Rating: 2A resistive, 120/240V, 50/60Hz

Lifetime: >500,000 operations at rated voltage/current

Isolation: Inherent

**LINEAR (RE-TRANSMITTED) OUTPUT**

(VOLTAGE OR CURRENT IS A FACTORY SET OPTION)

Ranges Available: 0-5V, 1-5V, 0-10V, 2-10V, 0-20mA and 4-20mA

Accuracy: ±0.5% max of display value 12bit

Load Impedance: 500. max for mA ranges, 500Ω. min for voltage ranges.

**LOGGING SOFTWARE**

Type: See Manual 1208 for full specifications.

**SERIAL COMMUNICATIONS**

Type: Serial asynchronous, UART to UART

Data Format: Open ASCII; one start bit, even parity, seven data bits and one stop bit.

Physical Layer: RS485.

Maximum No. of zones: 99.

Baud Rate: Selectable – 1200, 2400, 4800 or 9600.

**PERFORMANCE**

Reference Conditions

Supply Voltage: 90 – 264V, 50Hz

Power Consumption: 7.5VA max

Operating Conditions

Ambient Temperature: 0°C to +55°C

Relative Humidity: 20 – 95% non-condensing

**ENVIRONMENTAL**

Approvals: CE

EMC: Certified to BS EN 61326-1

Front Panel Seal: To IP31

**PHYSICAL**

Dimensions: Height – 72mm, Width – 144mm, Depth – 119mm

without sensor connector.

Weight: 0.32 kg max.

Mounting: Panel-mount; panel clip fixing.

Panel cut out size: – 68mm x 138mm.

Terminals: Wago press fit.

The long lasting sensing element offers excellent sensitivity, repeatability and response speed - especially on dry down. Each unit is calibrated to ±2°C accuracy and is supplied with a Certificate of Calibration traceable to International Humidity Standards.

The dewTEC DS2000-1 incorporates two fully programmable alarm relays to control external devices, including process high, process low, direct acting, reverse and logical OR. The alarms can be independently set across the full operating range of the sensor with variable hysteresis for the chosen engineering unit.

The dewTEC DS2000-1 Dewpoint Hygrometer is supplied fully configured according to the customer’s specifications and ready to use, with calibration certification traceable to national and international standards, instruction manual and 2 meters of connecting cable as standard.

An optional sensor holder can be ordered with the instrument. Additional sensor cable upto 1000m can be ordered separately.

Front Panel and Dimensions

Model DS2000-1 Dewpoint Hygrometer

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Connections and Installation

Model DS2000-1 Dewpoint Hygrometer

How to Order - Step 1 of 2

Select a Range Below

<table>
<thead>
<tr>
<th>Range</th>
<th>Temperature Range (°C/°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILVER</td>
<td>-110 to -20°C (-166°F to -4°F)</td>
</tr>
<tr>
<td>PURPLE</td>
<td>-100 to 0°C (-148°F to +32°F)</td>
</tr>
<tr>
<td>RED</td>
<td>-80 to -20°C (-112°F to -4°F)</td>
</tr>
<tr>
<td>GREY</td>
<td>-80 to 0°C (-112°F to +32°F)</td>
</tr>
<tr>
<td>BLUE</td>
<td>-80 to +20°C (-112°F to +68°F)</td>
</tr>
</tbody>
</table>

Select a Display Unit

- °C Dewpoint
- °F Dewpoint
- ppm(V)
- lb/MMSCF
- g/m³

Select a Retransmission Output

- Voltage Output (Please Specify)
- Current Output (Please Specify)

Select Alarm 1 Configuration

- High Alarm, Direct action (normally de-energised relay)
- High Alarm, Reverse action (normally energised relay)
- Low Alarm, Direct action (normally de-energised relay)
- Low Alarm, Reverse action (normally energised relay)

Select Alarm 2 Configuration

- High Alarm, Direct action (normally de-energised relay)
- High Alarm, Reverse action (normally energised relay)
- Low Alarm, Direct action (normally de-energised relay)
- Low Alarm, Reverse action (normally energised relay)

Select a Sensor Holder

- None
- 1/4" Swagelok® Stainless Steel Compression Fitting
- 1/8" Swagelok® Stainless Steel Compression Fitting
- 6mm Swagelok® Stainless Steel Compression Fitting

Select Logging

- No Logging
- With Logging (SEE PAGE 4 FOR DETAILS)

Ordering Example:

To order DS2000-1 with range -80°C to -20°C dewpoint, with retransmission set to current output, both alarms to trip on rising dewpoint with normally de-energised relays and sensor holder with 1/4" Swagelok® fittings, + logging, the order would look like this:

Model DS2000-1 + [XX] + [X] + [X] + [XX] + [XX] + [X] + [X] + [X] + [X] + [X]

Select Logging

- No Logging
- With Logging (SEE PAGE 4 FOR DETAILS)
### How to Order - Step 2 of 2
**Select A Longer Cable Below**

Your DS2000-1-Sensor comes complete with 2 metres of Coax connecting cable with plug and 1 BNC as standard. 
To order a longer length in metres, add number after this part number.
Example: CAB138-10 for 10 metres
Non-Standard off the shelf cables available in 3, 4, 5, 10, 12, 15, 25m lengths. For longer lengths please call.

Coax Standard Cable 2 Meters

Part No. CAB138

### RELATED PRODUCTS

#### Basic Sample System
- Model SS-B
  - Built for multiple applications

#### Made to Order Sample Systems
- Ideal Gases
- Natural Gas
- Aggressive Gases

#### Large Range of Accessories
- High quality components that are built to last.
- See our website for more.

See our website [www.amsystems.co.uk](http://www.amsystems.co.uk) for a range of Dewpoint Sample Systems to suit Hazardous and non-hazardous applications.

### Zener Barriers for Ex Environments

A Zener Barrier (short diode safety barrier) should be used when installing the sensor in a hazardous area.

The Model AZB is a DIN rail mounting zener barrier for installation in existing bus bar systems.

The Model AZB-C includes a custom enclosure for stand alone installations.

The connection from the moisture sensor to the Zener Barrier is via low loss coaxial cable.

See diagram to the right that highlights the location of a Zener Barrier Unit or an Isolator.

### For more information on Hazardous and Zoned Area applications, please contact us.

Corrosive Gases: The Sensor should not be exposed to corrosive gases (or corrosive contaminants in the gas sample) as these can chemically attack the sensor, impairing calibration accuracy and/or damaging it beyond economic repair. Examples of such gases are mercury (Hg), ammonia (NH3), chlorine (Cl2) etc. Strong oxidising agents such as ozone (O3) should also be prevented from coming into contact with the sensor.

For more details on any of our products please visit our website [www.amsystems.co.uk](http://www.amsystems.co.uk) and [www.dew-point.com](http://www.dew-point.com)