Model DS2000

Single Channel On-Line Dewpoint Hygrometer
-110°C to +20°C (-166°F to +68°F)

A complete on-line solution for continuous measurement of dewpoint in process gas and compressed air, offering powerful functionality via a simple interface.

The **dewTEC Model DS2000** from **Alpha Moisture Systems** is a single channel, online hygrometer designed to accurately measure dewpoint in process gases and dry compressed air.

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 in industrial process gases.

Measuring instrument conforms with BS EN 61326-1

Sensor can be installed in Hazardous areas

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

Features

- Advanced functionality with user-friendly design
- Accuracy ±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 SF_6

The combination of advanced electronics and full specification sensors makes this the unit of choice for a wide range of applications due to it's flexibility and high configurability and ease of use through its menu driven operation. The instrument can be factory configured to order and to read in °C or °F dewpoint, ppm(V), g/m≥ or lb/MMSCF.

The measured dewpoint is displayed by means of a large 5½ digit, seven segment LED display. **Model DS2000** 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** is a fully self-contained display system in 1/8 DIN panel mounted case providing front panel protection to IP66 (NEMA 4).

The **dewTEC DS2000** 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** 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.

Specifications

DISPLAY

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

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

Annunciators: Alarm 1 and Alarm 2 status.

SENSOR - (SEE 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 +50°C
Storage Temperature: –50°C to +70°C
Operating Humidity: 10-90% RH non-condensing
Mechanical Connections: M14 x 1.25mm pitch
Electrical Connection: Female BNC (Unit), coaxial plug to sensor
Approvals: CE.

INTRINSIC SAFETY CERTIFICATION STANDARDS:

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

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

LOGGING SOFTWARE

Type: See Manual 1547 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: 10 – 95% non-condensing

ENVIRONMENTAL

Approvals: CE
EMC: Certified to BS EN 61326-1
Front Panel Seal: To IP66

PHYSICAL

Dimensions: Height – 48mm, **Width** – 95mm, **Depth** – 110mm without sensor connector.
Weight: 0.21 kg max.
Mounting: Panel-mount; press-fit fixing.
Panel cut out size: – 45mm x 92mm.
Terminals: Screw type

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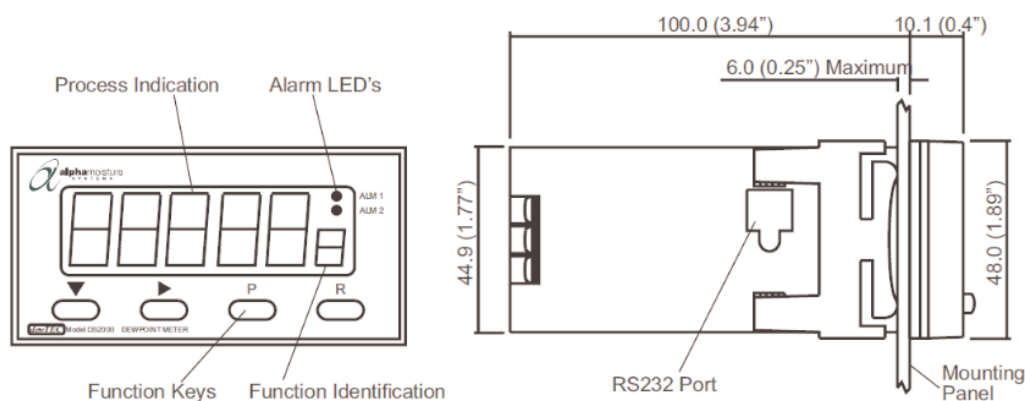
The **dewTEC Model DS2000** incorporates two fully programmable alarm relays to control external devices, including process high, process low, direct acting, reverse and logical OR. The alarms can be independently set across the full operating range of the sensor with variable hysteresis for the chosen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

The **dewTEC Model DS2000** 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.
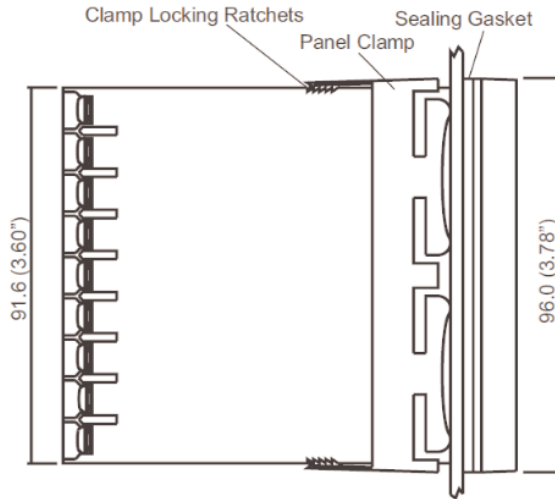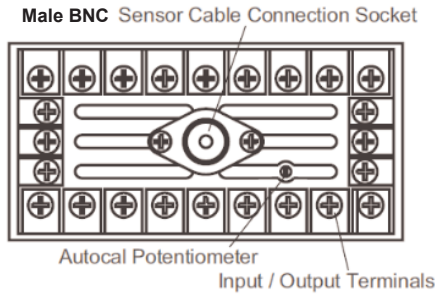
Front Panel and Dimensions

Model DS2000 Dewpoint Hygrometer

Connections and Installation

Model DS2000 Dewpoint Hygrometer

How to Order - Step 1 of 2

	Range	Units	V or A	Alarm1	Alarm2	Holder	Logging

Model DS2000 +[XX] +[X] +[X] +[XX] +[XX] +[X] +[X]

Select a Range Below

SILVER	-110 to -20°C	(-166°F to -4°F)	SR
PURPLE	-100 to 0°C	(-148°F to +32°F)	PL
RED	-80 to -20°C	(-112°F to -4°F)	RD
GREY	-80 to 0°C	(-112°F to +32°F)	GY
BLUE	-80 to +20°C	(-112°F to +68°F)	BL

Select a Display Unit

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

Select a Retransmission Output

Voltage Output	V
Current Output	A

Select Alarm 1 Configuration

High Alarm, Direct action (normally de-energised relay)	HD
High Alarm, Reverse action (normally energised relay)	HR
Low Alarm, Direct action (normally de-energised relay)	LD
Low Alarm, Reverse action (normally energised relay)	LR

Select Alarm 2 Configuration

High Alarm, Direct action (normally de-energised relay)	HD
High Alarm, Reverse action (normally energised relay)	HR
Low Alarm, Direct action (normally de-energised relay)	LD
Low Alarm, Reverse action (normally energised relay)	LR

Select a Sensor Holder

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

Select Logging

No Logging	O
With Logging (SEE PAGE 4 FOR DETAILS)	L

Ordering Example:
To order **DS2000** 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 - RD - C - A - HD - HD - 4 - L

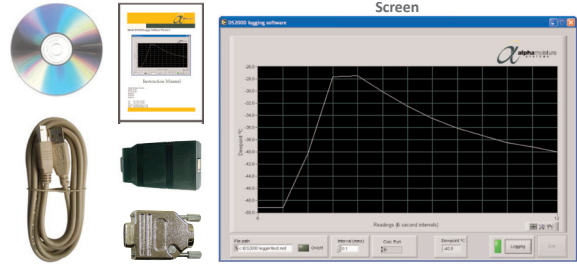## Logging Information

DS2000 Logger Software v1.
- Easy install using the Install Wizard from CD
- Multi function graph tools
- PC specification: PC should be running Windows® XP SP2 32bit>, Vista 32 bit, Windows® 7 and 10 32/64bit.
- Minimum screen resolution of 1024 x 768 pixels.
- Kit components include:-
   CD installation disk + Manual
   USB to USB cable
   Male 9 way 'D' type on USB - RS485 Converter unit.
Cable from Display Unit to RS485 connection not included.

Screen

How to Order - Step 2 of 2
Select A Longer Cable Below

CAB138 + [XX]
Length

Your DS2000-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
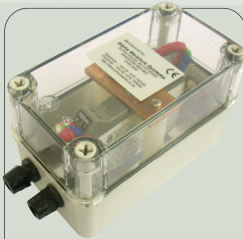Ideal Gases
Natural Gas
Aggressive Gases

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

See our website **www.amsystems.co.uk** for a range of Dewpoint Sample Systems to suit Hazardous and non-hazardous applications.
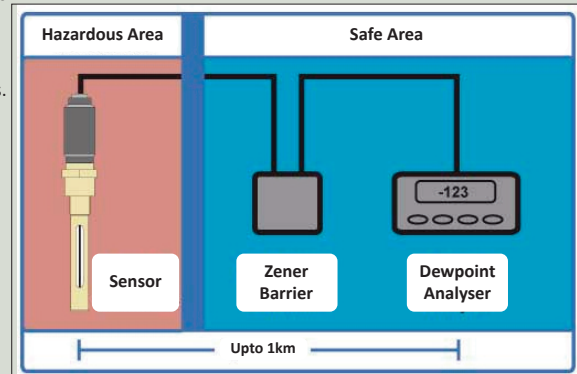
Zener Barriers for Ex Environments

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.

Model AZB-C
Shown here is used for stand alone installations.

Order Model AZB for DIN rail applications.

Hazardous Area	Safe Area
Sensor	Zener Barrier — Dewpoint Analyser -123

Upto 1km

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

Note: The Sensor is not suitable for Ammonia (**NH$_3$**), Chlorine (**CI**) - and Hydrogen Chloride (**HCI**). Sulphur Dioxide (**SO$_2$**) can be monitored if the moisture content is low, less than 100ppm(v).

For less acidic gases our **EDM** range of hygrometers may be suitable. See datasheets for more details.

For more details on any of our products please visit our websites **www.amsystems.co.uk** and **www.dew-point.com**

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