

Model DS2000-Exd

Flame Proof Single Channel Dew Point Hygrometer for Ex Hazardous Areas

The **Model DS2000-Exd** is designed to take dewpoint readings in Ex Hazardous areas Zones 1, 21, 2 and 22.

The **Model DS2000-Exd** incorporates the Control Display Unit, Zener Barrier and all Connection Points.

It is Flameproof to ATEX and IECEx Certification for intended use in potentially explosive atmospheres.

Easily Installed - Fast Response - Stable - Reliable - Accurate.

The **DS2000-Exd** from Alpha Moisture Systems is a single channel continuous online hygrometer designed to measure dewpoint in dry process gases within the range between -110°C to $+20^{\circ}\text{C}$ (-166°F to $+68^{\circ}\text{F}$) dewpoint. The **Model DS2000-Exd** range of ultra high capacitance sensors for accurate trace moisture measurement.

A combination of advanced digital technologies in the display electronics and the transmitter, makes this the system of choice for a wide range of Ex applications where precise indication, control and monitoring is critical.

The **Model DS2000-Exd** system can be factory configured to read in $^{\circ}\text{C}$ dewpoint, $^{\circ}\text{F}$ dewpoint, ppm(v), ppb(v), g/m^3 or lbs/MMSCF. The measured value is displayed on a large 4 digit, 13.8mm high, fourteen segment LED display. **Model DS2000-Exd Dewpoint Hygrometer** is fully configured to the customer's specifications.

The instrument offers two fully programmable alarm relays, which can be independently set across the full operating range. An optically isolated analogue signal, linear with the measured unit is also available (to interface with any external device).

The long lasting sensing element offers excellent sensitivity, repeatability and response speed - especially on dry down. Integrated electronics in each transmitter allow calibration data to be stored within its memory, making sensors completely field interchangeable.

Each Sensor is calibrated to provide overall system accuracy of better than $\pm 2^{\circ}\text{C}$ dewpoint and supplied with a certificate of calibration traceable to international humidity standards.

Model DS2000-Exd also incorporates the invaluable "AUTOCAL" feature for easy field verification of the system response, without recourse to any additional equipment. Accidental or unauthorised operation is prevented by a simple initiation routine.

The system allows the display unit to be sited in excess of 1000m from the sensor, connected by a simple twisted pair cable.



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

Overall Range: From -110°C to $+20^{\circ}\text{C}$ dewpoint

Accuracy: $\pm 2^{\circ}\text{C}$ over full range

Operating Temperature: -10°C to $+50^{\circ}\text{C}$

Storage Temperature: -50°C to $+70^{\circ}\text{C}$

Operating Humidity: 10-90% RH non-condensing

Mechanical Connections: M14 x 1.25mm pitch

Electrical Connection: Male coaxial plug

Approvals: CE, ATEX Certified

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: $\pm 0.5\%$ max of display value

Load Impedance: 500. max for mA ranges, 500 Ω . 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 $+55^{\circ}\text{C}$

Relative Humidity: 10 – 95% non-condensing

ENVIRONMENTAL

Approvals: CE

EMC: Certified to EN61326

Safety: Complies with EN61010-1

PHYSICAL (EXD ENCLOSURE)

Dimensions: H - 353mm, W - 310mm, D - 270mm

Weight: ?? kg max.

Protection: To IP66 when fitted with nitrile gasket.

Mounting Holes: 14mm.

ENCLOSURE MATERIALS AND FINISH

GUBH Flameproof (type "d") Ex II 2 G D

Body and Cover:

Copper free aluminium alloy LM25. (EN AC-42000), (BS EN 1706:1998) with less than 0.2% copper content.

Mounting plate:

Mild steel zinc plated (Passivated).

Window:

Heat resistant toughened glass.

Finish:

Natural. (Corrosion resistant finish also available as chromate primed and polyester powder coated).

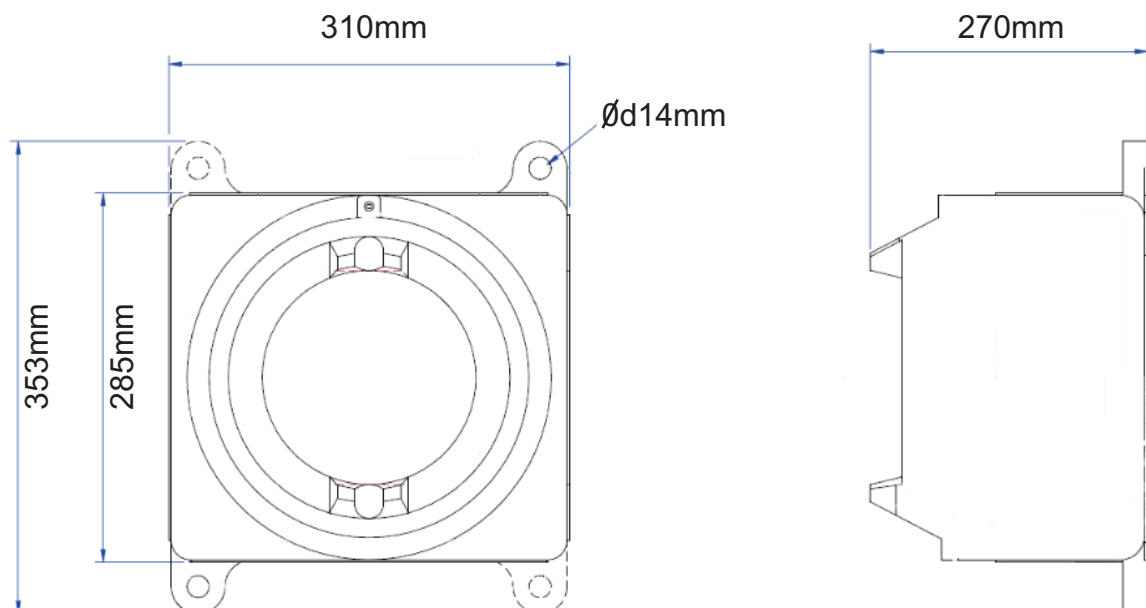
Earthing:

Enclosure is supplied with a 6mm stainless steel (18/8) internal and external earth stud as standard.

Cable Entries ports and Thread Sizes:

Available ISO metric M20-M90 1/2" - 3" NPT.

Dimensions



How to Order

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

Range Units V or A Alarm1 Alarm2 Holder Logging

Select a Range Below

SILVER	-110 to -20°C	(-166°F to -4°F)	SR
PURPLE	-110 to +20°C	(-166°F to +68°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/m ³	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

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

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Product specification may be subject to change.