

## Model SADPmini-Ex

Intrinsically Safe Hand-Held Automatic Dewpoint Hygrometer  
Ranges available between  $-110^{\circ}\text{C}$  to  $+20^{\circ}\text{C}$  ( $-166^{\circ}\text{F}$  to  $+68^{\circ}\text{F}$ ) dewpoint

The **Model SADPmini-Ex** Automatic Dewpoint Hygrometer is a popular global choice for measuring the Dewpoint (moisture content) in gases and dry compressed air and is perfect for mobile analysis in Hazardous Areas.

**Ultra Compact - Ultra Portable - Ultra Functional -  
Easy to Use - The Popular Global Choice.**



Measuring instrument  
conforms with  
BS EN 61326-1

Desiccant Dry Down Technology

### Features

- Certified Intrinsically Safe for use in explosive atmospheres:
  -  Ex ia IIC T4 Ga ( $T_a = -20^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$ )
  -  Ex ia IIC T3 Ga ( $T_a = -20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ )
- Automatic Calibration (AutoCal)
- Various ranges available from  $-110^{\circ}\text{C}$  to  $+20^{\circ}\text{C}$  dewpoint
- Rechargeable battery - Over 80 hours of continuous operation on full charge
- User selectable units -  $^{\circ}\text{C}$ ,  $^{\circ}\text{F}$ , ppm, ppm(w), ppb, g/m<sup>3</sup>, lbs/MMSCF
- "Desiccant Dry Down Assembly" for quick measurements
- RS485 serial communication and 4-20mA analogue output
- Real time graphic logging to PC (Safe area only)
- Advanced DATA logging & PC download
- Pressure correction computation
- True hand held Portable Device – weighing less than 1.2 kgs
- Robust ergonomically designed custom housing
- Fully self-contained and user friendly
- Capture and display of up to 16000 data points, with 20 user-definable TAG refs
- Non Ex also available - ask for SADPmini

### Applications

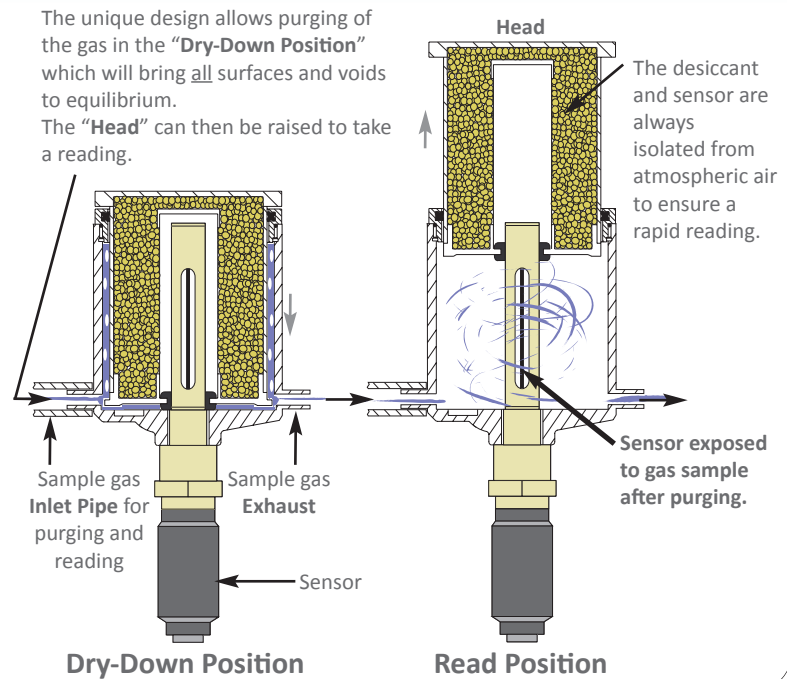
- Natural gas production
- Petro chemical production
- Power stations
- Industrial process gases
- Explosive gases
- Gas cylinder testing
- Laboratory and research

## Desiccant Dry Down Technology

### The Desiccant Head Assembly

Keeping the sensor dry between tests ensures that the SADPmini-Ex is always ready to carry out rapid spot checks. The unique design of the Desiccant Head achieves this by surrounding the sensor with desiccant before the head is raised for sampling.

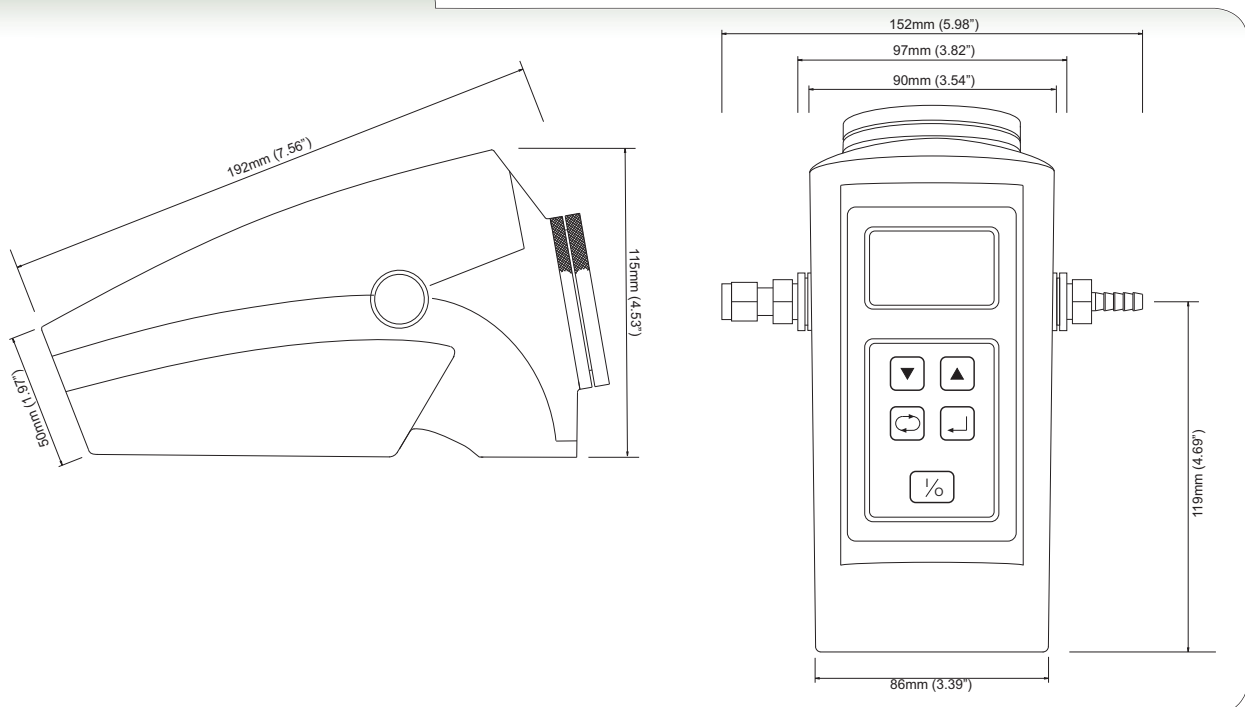
At no time is the sensor allowed to come into contact with ambient air. The chamber is also designed so that the void space and chamber wall surfaces are purged with sample gas, before exposure of the sensor, so giving faster, more accurate and reliable results.



The SADPmini-Ex has been specifically designed to be Intrinsicly Safe in hazardous environments and because of this it can be used in a wide range of applications including natural gas production, petrochemical production and explosive gases.

This robust, ergonomically designed housing incorporates the moisture sensor, signal conditioning circuitry, memory management, 128 x 64 dot graphics display, 5 key membrane keyboard plus on-board rechargeable lithium-ion battery. This self contained digital unit is user friendly and eliminates the problems experienced by operators and technicians with the bulky size, weight and even analogue readouts associated with the previous generation of traditional dewpoint meters.

## Dimensions



## Specifications

### TYPE B

**SENSING ELEMENT:** Ultra High-Capacitance Aluminium Oxide Type

**RANGE IN DEW POINT:**

<b>SR:</b>	-110°C to -20°C	(-166°F to -4°F)	dewpoint
<b>PL:</b>	-100°C to 0°C	(-148°F to +32°F)	dewpoint
<b>RD:</b>	-80°C to -20°C	(-112°F to -4°F)	dewpoint
<b>GY:</b>	-80°C to 0°C	(-112°F to +32°F)	dewpoint
<b>BL:</b>	-80°C to +20°C	(-112°F to +68°F)	dewpoint

**DISPLAY UNITS:**

°C - Degrees Centigrade dew / frost Point  
 °F - Degrees Fahrenheit dew / frost Point  
 ppm(v) - Parts per million (volume)  
 ppb(v) - Parts per billion (volume)  
 ppm(w) - Parts per million (weight)  
 g/m<sup>3</sup> - Grams per cubic metre  
 lbs/MMSCF - Pounds per million standard cubic feet

**DISPLAY:** Blue on Green, 128 x 64 pixel, Graphical LCD with LED backlight.

**SENSOR CALIBRATION ACCURACY:** Better than ±2°C dewpoint. Each unit supplied with a Certificate of Calibration, traceable to National & International Standards - National Physical Laboratory (UK) / NIST (USA).

**AUTOMATIC CALIBRATION:** Electronic "Span Check". Performed by user following simple menu driven instructions. Can be password protected to avoid unauthorised tamper.

**REPEATABILITY:** Better than ±0.2°C dew point

**POWER SUPPLY:** Rechargeable Li-Ion Battery. Battery charger included.

**BATTERY LIFE:** In excess of 80 hours of continuous use on full charge at 20°C/68°F.

**TIME TO FULL CHARGE:** 14 hours

**KEYBOARD:** 5 Membrane covered, metallic dome tactile keys.

**PRESSURE CORRECTION:** Integral calculator to display pressure dew points. Gauge pressure can be entered in kPa, kg/cm<sup>2</sup>, bar or psi.

**TEMPERATURE COEFFICIENT:** Temperature compensated for operating range.

**GAS SAMPLE CONNECTIONS:** Ports accept Swagelok® VCO type coupling (9/16" x 18 UNF). Supplied with either 6mm or 1/4" Swagelok® SS compression fitting on one side. The other side is fitted with a stainless steel push-on, "fir tree" type, hose connector

for 6mm ID tube. Each unit is supplied with a 2m length of 6mm ID PTFE tube.

**ELECTRICAL CONNECTIONS:** 9 Pin "D" type for 4-20mA analogue output, RS485 Serial Communications and PC interface. Separate socket for battery charger.

**OPERATING TEMPERATURE:** -20°C to +50°C

**STORAGE TEMPERATURE & HUMIDITY:** -40°C to +80°C / 95% RH Non-condensing

**OPERATING PRESSURE:** Atmospheric pressure, maximum 30kPag ( 0.3barg / 4 psig).

**OPERATING HUMIDITY (External):** 95% RH Non-condensing

**TYPICAL RESPONSE TIMES:**

Wet to Dry: -10°C to -60°C - less than 120 seconds  
 Dry to Wet: -110°C to -20°C - less than 20 seconds

**SAMPLE FLOW RATE:** Flow independent, but ideally 2 to 5 litres per minute. Max: 10 litres/min.

**REPLACEMENT DESICCANT:** Field Interchangeable.

**SENSOR LIFE:** Between 5 & 10 years - depending on application.

**REPLACEMENT SENSOR:** Field Interchangeable.

**ELECTROMAGNETIC COMPATIBILITY (EMC):** Product complies with the objectives and requirements of EMC Directive 2014/30/EU & BS EN 61326-1. See also EC Declaration of Conformity Certificate.

**SECURITY:** Multi level password protection.

**WARM UP TIME:** 10 seconds

**WEATHERPROOF CLASSIFICATION:** IP54 / NEMA12

**WARRANTY:** 2 years for faulty workmanship and defective parts.

**WEIGHT:** 1.2kgs (2.65lbs)

**DIMENSIONS:** 192 x 97 x 115 mms (7.5 x 3.8 x 4.5 inches)

**MATERIALS OF CONSTRUCTION:** Sensor in metal housing. Outer case custom manufactured in, stainless steel impregnated, high impact Polybutylene Terephthalate (PBT).

**ACCESSORIES INCLUDED:** Anti-static carrying case for use in hazardous areas. 2m PTFE Sampling pipe, Universal Battery Charger, User Manual.

### TYPE F OPTION

**As TYPE B ABOVE plus following additional specifications & features:**

**ANALOGUE OUTPUT:** Externally powered 4-20mA loop. Linear output with unit selected. Span easily configured by user. ▲

Max. load = 50 x (V<sub>EXT</sub> - 0.6) - 105

V<sub>EXT</sub> = Supply voltage.

(Eg. For 24V supply, Max. load = 1065Ω)

**ACCESSORIES INCLUDED:** 4-20mA connector for analogue output.

### TYPE L OPTION

**As TYPE B ABOVE plus following additional specifications and features:**

**DATA LOGGING:** 16,000 samples. Date and time stamped data, stored in chosen units of measurement for download to PC.

**DATA LOCATION:** 20 separate locations (Tags) can be entered (alpha-numerical) by user for data collection at pre-programmed locations.

**SAMPLING RATES:** User selectable (in intervals of 6 seconds) from once every 6 seconds to once a day.

**DATA DISPLAY:** Numerical and Graphical display of data on SADPmini-Ex screen.

**REAL TIME RECORDING:** Device can be programmed to monitor, record and graphically present data in real time directly to PC. ▲

**SERIAL COMMUNICATIONS:** RS485, baud rate 9600 - half duplex.

**ANALOGUE OUTPUT:** Externally powered 4-20mA loop. Linear output with unit selected. Span easily configured by user. ▲

Max. load = 50 x (V<sub>EXT</sub> - 0.6) - 105

V<sub>EXT</sub> = Supply voltage.

(Eg. For 24V supply, Max. load = 1065Ω)

**ACCESSORIES INCLUDED:** 4-20mA / RS485 Connector for analogue output and serial communications. Serial or USB (Isolated / self powered) interface, with cables, for "Real Time Logging" and data download to PC. Software supplied on CD.

**SYSTEM REQUIREMENT:** Windows® XP or later for Serial USB connection to PC.

### Hazardous Area (Ex) Carrying Case

SADPmini-Ex comes with a hard wearing, padded nylon anti-static carrying case, custom manufactured with carry handle, belt loop and adjustable shoulder strap designed for use in hazardous areas.

## How to Order

Model SADP<sub>mini-Ex</sub> - [XX] - [X] - [X] - [XX] - [X]

## RANGE IN DEW POINT = XX:

SR: -110°C to -20°C (-166°F to -4°F) dewpoint  
 PL: -100°C to 0°C (-148°F to +32°F) dewpoint  
 RD: -80°C to -20°C (-112°F to -4°F) dewpoint  
 GY: -80°C to 0°C (-112°F to +32°F) dewpoint  
 BL: -80°C to +20°C (-112°F to +68°F) dewpoint

## TYPE = X (see specifications)

B: Standard  
 F: With 4-20mA Analogue Output  
 L: With logging, RS485 Comms. and 4-20mA Output

## SAMPLE CONNECTION = X

4: 0.25" (1/4") - Swagelok® SS Compression Type  
 6: 6 mm - Swagelok® SS Compression Type  
 8: 0.125" (1/8") - Swagelok® SS Compression Type

## EXAMPLE:

To order device with range -80°C to 0°C dewpoint, with logging capabilities, 6mm pipe connection, for use in UK and to be used with a USB type PC port, order as:

**Model SADP<sub>mini-Ex</sub> - GY-L-6-UK-U**

## PC CONNECTION = X

U: USB (Windows®XP or later)  
 (Choose only for Type L.  
 Leave blank for Type B or Type F)

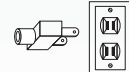
MAINS PLUG TYPE-  
For Battery Charger = XX

UK: Standard UK, 3 Square pin  
 US: 2 Vertical Flat Blade  
 EU: 2 Round Pins  
 AU: 2 Oblique Flat Blades with Ground  
 (see diagrams below)

## UK Type



## US Type



## EU Type



## Australian Type



SADP<sub>mini-Ex</sub> comes with an Anti-Static Carrying Case for Hazardous areas as standard.

## Note: Gases to Avoid

The moisture sensors are suitable for many different industrial and research applications. Most gases can be checked for their moisture content with no need for the calibration to be altered when changing between different gases, as the sensor operates only with reference to the water vapour content. There are, however, some gases that must be avoided, as they are not compatible with the material of construction of the sensor. Ammonia (NH<sub>3</sub>), Ozone(O<sub>3</sub>) and Chlorine (Cl) must be avoided at all times, even in small quantities. Hydrogen Chloride (HCl) also attacks the sensors very quickly. Some, less aggressive, acidic gases, such as Sulphur Dioxide (SO<sub>2</sub>), can be monitored, as long as the moisture content is low, generally less than 100ppm(v). If in doubt, please ask your supplier. Sulphur Hexafluoride (SF<sub>6</sub>) has no effect on the sensor.

## Distributor Information

1681 SADPmini-Ex pd210416-Issue 5



CERTIFICATE No. FM35600  
 BS EN ISO 9001:2008



**Institute of Measurement and Control**  
 Companion Company

Alpha Moisture Systems Limited. Registered Office: Alpha House, 96 City Road, Bradford, BD8 8ES

Registered in England and Wales No. 3902302 - VAT Registration No. GB 607 2075 63 - WEEE Producer Registration No. WEEE/EA0067TX

© Alpha Moisture Systems Ltd.

Tel +44 (0) 1274 733100

Fax +44 (0) 1274 733200

Email [info@amsystems.co.uk](mailto:info@amsystems.co.uk)

Website [www.amsystems.co.uk](http://www.amsystems.co.uk)