

# Model 6020 Dewpoint Hygrometer

## Single Channel Advanced On-Line Dewpoint Hygrometer

Model 6020 is a single channel, panel mounted, online hygrometer designed to accurately measure trace moisture in process gases utilising a range of dedicated, ultra high capacitance, field mountable sensors.

The system incorporates an automatic calibration (AutoCal) facility and encompasses measurement needs from  $-110^{\circ}\text{C}$  to  $+20^{\circ}\text{C}$  dewpoint.

The sensor has been designed and conditioned for long term stability, and together with its high sensitivity, allows use of up to 1km cable length between sensor and instrument.

Additionally, the sensor is ATEX certified for intrinsic safety so can be used in hazardous environments with a suitable Zener barrier in the safe area.

Offering full field interchangeability, each Model 6020 unit is factory calibrated with sensor to better than  $\pm 2^{\circ}\text{C}$  accuracy and is supplied with a certificate of calibration traceable to International Humidity Standards.

There are three Hot Key front panel key functions to gain rapid access to set alarms trip points and choice of displayed engineering units. These functions can be locked to prevent unauthorised tampering.

Users may choose to view the trace moisture levels in  $^{\circ}\text{C}$  dewpoint,  $^{\circ}\text{F}$  dewpoint, ppm(v), ppm(w),  $\text{g}/\text{m}^3$  or lb/MMSCF on the 5 digit, seven segment LED display.

The factory calibrated, but fully configurable, analogue current output is automatically linearly correlated with all the selected engineering units.

Model 6020 contains two independent, fully user programmable alarm contacts to provide all the versatility required for any application. A digital communication channel is provided via a RS485 serial connection for remote interrogation of measured values and status of alarms and instrument.

Should the need arise to set up the instrument differently to the factory provided configuration then a highly flexible, user configurable setup menu is built in. The features within the setup menus are protected by user configurable passwords to limit access and protect against unauthorised changes.



### Features

- Works with a range of sensors covering an overall range from  $-110^{\circ}\text{C}$  to  $+20^{\circ}\text{C}$  dewpoint ( $-166^{\circ}\text{F}$  to  $+68^{\circ}\text{F}$ )
- Units selectable for  $^{\circ}\text{C}$  and  $^{\circ}\text{F}$   $T_d$ , ppm(v), ppm(w),  $\text{g}/\text{m}^3$  or lb/MMSCF
- System accuracy better than  $\pm 2^{\circ}\text{C}$  dewpoint equivalent
- Calibrations traceable to International Humidity Standards
- AutoCal calibration adjustment to maintain accuracy between laboratory calibrations
- On board pressure dewpoint calculator, including data for Natural Gas
- Molecular mass pre-loaded for ppm(w) in common gases, other gases can be entered
- Two fully programmable alarms with 10A relay contacts and status LEDs
- An analogue current output linear and range configurable for selected units
- RS485 port for digital output of measured value
- Large, easy to read, 5-digit LED display
- Hot Key functions for rapid access to set alarms and units, can be locked to prevent tamper
- Ex certified sensors for Hazardous Area use (via Zener barrier in Safe Area) 
- Sensor cable length can be up to 1 km

## Specifications Model 6020

### DISPLAY

**Type:** Red 7-segment 5-digit primary display, and secondary display.  
**Height:** 14mm (0.71inches) primary display, 7mm (0.3 inches) secondary display.  
**Annunciators:** Alarm 1 and Alarm 2 status LEDs.

### SENSOR

**INTRINSIC SAFETY CERTIFICATION:**  
 Sira 02ATEX2130X. IECEx BAS 16.0082X. CSAE 21UKEX3447X.

### ATEX, UKCA and IECEx Markings



II 1G, Ex ia IIC T6 Ga ( $T_a = -20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ )



Ex. ia IIC T6 Ga ( $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$ )

### Standard Dewpoint Ranges

**Available:** Various between  $-110^{\circ}\text{C}$  to  $+20^{\circ}\text{C}$  (1.6ppb(v) to 23,000ppm(v))  
**Accuracy:** Better than  $\pm 2^{\circ}\text{C}$  over full range  
**Operating Temperature:**  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$   
**Storage Temperature:**  $-50^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$   
**Operating Humidity:** 0-90% RH non-condensing  
**Mechanical Connections:** M14 x 1.25mm pitch  
**Electrical Connection:** Standard male coaxial plug to sensor with BNC coax connection to display.  
**Approvals:** CE and UKCA Compliant.

### RELAY OUTPUT 1 AND 2

**Contact Type:** Single pole, changeover (SPCO)  
**Rating:** 10A resistive, 120/240V, 50/60Hz  
**Lifetime:** >100,000 operations at rated voltage/current  
**Isolation:** 1000 Vrms

### LINEAR (RE-TRANSMITTED) OUTPUT

**Ranges Available:** 0-20mA and 4-20mA  
**Accuracy:**  $\pm 0.5\%$  max of display value  
**Load Impedance:** 500 $\Omega$  max

### LOGGING SOFTWARE

**Type:** See Manual 2062 for full specifications.

### SERIAL COMMUNICATIONS

**Type:** Serial asynchronous, UART  
**Data Format:** Open; one start bit, even parity, seven data bits and one stop bit. RS485.  
**Physical Layer:** RS485.

**Maximum No. of addresses:** 99.

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

### ENVIRONMENTAL

**Approvals:** CE  
**EMC:** Certified to BS EN61326-1  
**Safety:** Complies with BS EN 61010-1  
**Front Panel Seal:** To IP54

### PHYSICAL (CONTROL UNIT)

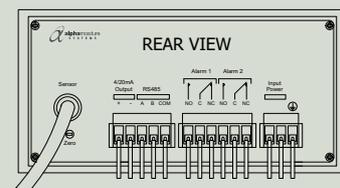
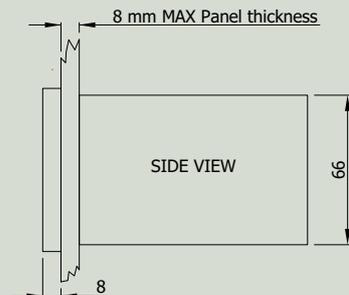
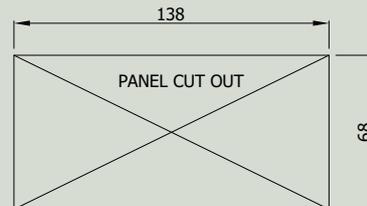
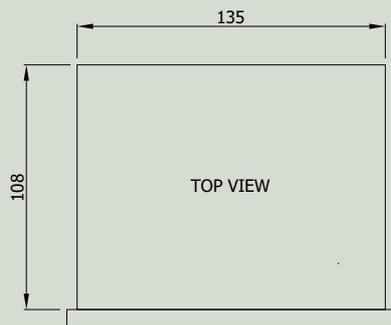
#### Reference Conditions

**Supply Voltage:** Factory Set Options  
**AC:** 90 – 250VAC, 50/60Hz  
**DC:** 18-28VDC  
**Power Consumption:** AC=10VA/DC=4VA max

#### Operating Conditions

**Temperature:**  $-20^{\circ}\text{C}$  to  $60^{\circ}\text{C}$   
**Relative Humidity:** 0-95% non-condensing  
**Dimensions:** **Height** – 66mm, **Width** – 135mm, **Depth** – 108mm without sensor connector. See below drawing.

**Weight:** 0.47 kg max.  
**Mounting:** Panel-mount; press-fit fixing.  
**Panel cut out size:** 68mm x 138mm.  
**Terminals:** Screw type



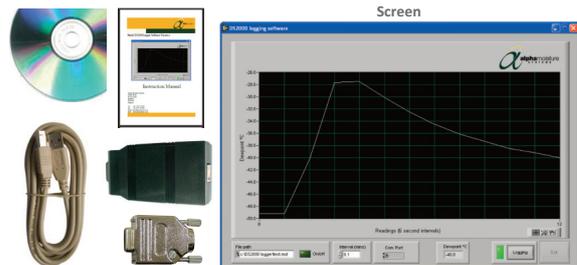
## Logging Information

### Model 6020 External Logger Software

- Easy install using Install Wizard from CD
- Multi function graph tools
- PC specification: PC should be running minimum WindowsXP®, Windows Vista®, Windows 7®, Windows® 10 & 11, 32 & 64 bit compatible.
- 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 is not included\*

\* When placing order indicate length of cable, example: 3 meters.



**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 (NH<sub>3</sub>), chlorine (Cl<sub>2</sub>) etc. Strong oxidising agents such as ozone (O<sub>3</sub>) should also be prevented from coming into contact with the sensor.

## How to Order

### Select a Standard Range Below

<b>SILVER</b>	-110 to -20°C	(-166°F to -4°F)	<b>SR</b>
<b>PURPLE</b>	-100 to +0°C	(-148°F to +32°F)	<b>PL</b>
<b>RED</b>	-80 to -20°C	(-112°F to -4°F)	<b>RD</b>
<b>GREY</b>	-80 to 0°C	(-112°F to +32°F)	<b>GY</b>
<b>YELLOW</b>	-60 to 0°C	(-76°F to +32°F)	<b>YE</b>
<b>BLUE</b>	-80 to +20°C	(-112°F to +68°F)	<b>BL</b>

### Select Power Type

<b>AC</b>
<b>DC</b>

### Select a Longer Cable (optional)



Note: Model 6020 is supplied with 2 metres of Coaxial Sensor connecting cable with BNC connection to display as standard. For longer cables specify here. Other lengths are available - please specify.

-
3
4
5
10
12
15
25

Model 6020 + [XX] + [XX] + [X]m + [X/X] + [X]

### Select a Sensor Holder (optional)

No Sensor Holder needed	-	Yes
Sensor Holder No Fittings needed (Note: Ports are 1/8" NPT)	0/0	No
With 1/4" Swagelok® Stainless Steel Compression Fittings	4/4	
With 1/8" Swagelok® Stainless Steel Compression Fittings	8/8	
With 6mm Swagelok® Stainless Steel Compression Fittings	6/6	



Ordering Example: To order Model 6020 with a range of -80°C to 0°C dewpoint, with AC power and 5 metres connecting cable and sensor holder with 1/4" Swagelok® fittings, the order would look like this: **Model 6020 - GY - AC - 5m - 4/4**

## RELATED PRODUCTS

### Basic Sample Systems



Model SS-B Built for multiple applications

### Made to Order Sample Systems



Sample Systems for Ideal Gases, Natural Gas and Aggressive Gases

### Large Range of Accessories



High quality components that are built to last. See our website for more.

Go to our websites [www.amsystems.co.uk](http://www.amsystems.co.uk) or [www.dew-point.com](http://www.dew-point.com) for a range of Dewpoint Sample Systems to suit hazardous and non-hazardous applications.

## Zener Barriers for Ex Environments



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

The Zener Barrier Unit comes in a custom enclosure. A Zener Barrier (shunt 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 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. The Zener Barrier can also be supplied without the enclosure for direct installation into an existing bus bar system.

To the right is a simple drawing highlighting the location of a Zener Barrier Unit or an Isolator.

