

HBS4600

User Manual

HBS4600

User Manual



User instruction for HBS4600 electrical apparatus for use in explosion-hazardous area. Important read and understand this document before any installation.

ATEX Instructions

For safe installation of the HBS4600 in hazardous areas the following instructions must be observed. The transmitter must be installed by competent personnel, who are familiar with national and international laws, directives and standards that apply to their region. For installation in European Economic Area (EEA) member countries users must follow requirements for electrical equipment for use in potentially explosive atmospheres, e.g. EN60079-14 & EN60079-17. This instruction sheet describes installation, which conforms with BSEN60079-14 & BSEN60079-17. Important - Particular attention must be paid to the section titled "Special conditions for safe use", failure to comply to this requirement will result in an unsafe system.




The HBS4600 has been issued with a EU-type examination certificate, confirming compliance with European ATEX directive 2014/34/EU and UK Legislation SI 2016 No. 1107 for the following specification :-

Product Information

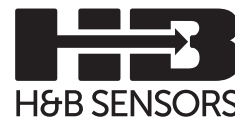
The following Information is printed on the product label

Manufacturer H&B Sensors Ltd
 Type Number HBS4600
 Certificate Ref EMT 17ATEX0036X
 CML 21UKEX2551X

Zones





Area Classification		Zone Criteria for Application Atmosphere
Gases	Dusts	
Zone 0	Zone 20	 Present continuously or for long periods (> 1000 hrs per annum)
Zone 1	Zone 21	 Likely to occur in normal operation occasionally (> 10 to < 1000 hrs per annum)
Zone 2	Zone 22	 Unlikely to occur in normal operation (< 10 hrs per annum)

Classification



HBS4600
 Type: Pt100 Range: 0-100°C
 www.hbsensors.com

Ex ia IIC T4 Ga
 Ex ia IIIC T135°C Da
 IECEx EMT 17.0013X
 EMT 17ATEX0036X - CML 21UKEX2551X
 Serial #: 123456 - 0001 Tamb = -40 °C to +85 °C

 II 1 GD
  
 0518 2813

Working Parameters

	Terminals
	+ / -
Ui =	30 V
Ii =	100mA
Pi =	750 mW
Ci =	0
Li =	0
Uo =	-
Io =	-
Po =	-

Additional Information

EMC BSEN 61326-1
 (Sensor wires Maximum length 3Metres to comply.)

Enclosure Colour Red

Every effort has been taken to ensure the accuracy of this document, however we do not accept responsibility for damage, injury, loss or expense resulting from errors and omissions, and we reserve the right of amendment without notice.

HBS4600

User Manual



User instruction for HBS4600 electrical apparatus for use in explosion-hazardous area. Important read and understand this document before any installation.

Special conditions for safe use

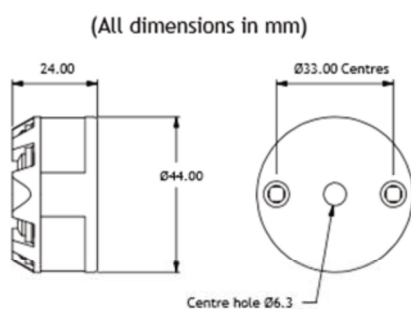
- For gas applications, the HBS4600 temperature transmitters must be mounted in an ATEX/UKEX/IECEx approved enclosure rated for IP54 and located in an area where the enclosure will not be subject to impact or friction
 - For dust applications, the HBS4600 temperature transmitters must be mounted in a suitably ATEX/UKEX or IECEx certified enclosure appropriate for the zone of end use.
- The equipment shall only be configured by means of the USB connection outside the hazardous area, however it can be configured by HART in hazardous area via HART communication.
- If the equipment is mounted in an enclosure with separate IS circuits, appropriate segregation shall be provided in accordance with IEC 60079-11 Clause 6.2.1.
- Only suitable for connection to Thermocouple(s), RTD temperature sensor(s) or slide wire resistance devices or a simple apparatus. They shall conform to the requirements for simple apparatus as defined in IEC 60079-11 clause 5.7 and shall meet the dielectric withstanding requirements of IEC 60079-11 clause 6.3.13. The insulation must be capable of withstanding an r.m.s a.c. test voltage of $2U + 1000V$, with a minimum of 1500V r.m.s., where U is the sum of the voltages of the intrinsically safe and the non intrinsically safe circuit.
- The ambient temperature range of the enclosure will limit the permitted ambient range of the overall equipment. Refer to enclosure certification.

Maintenance

The appropriate regulations concerning maintenance, repair and testing must be observed. In particular, all parts on which explosion protection depends must be checked during maintenance. The transmitter must never be USB configured in the hazardous area, the device must be removed and taken to a non hazardous area for configuration.

The enclosure used to house the HBS4600 must be cleaned regularly to prevent build up of excessive dust layers.

The HBS4600 apparatus contains no user serviceable adjustable, replaceable parts. No attempt should be made to repair a HBS4600 device, all units must be returned to the manufacturer for repair or replacement. Attempted service or replacement of parts may invalidate the explosive protection features of the HBS4600.



Mechanical Detail

The HBS4600 is mounted using two holes, on standard 33 mm fixing centres and will fit a DIN standard termination head. The HBS4600 must be installed with adequate protection from moisture and corrosive atmospheres. Refer to "special conditions for safe use" section of this user guide for information on enclosure IP rating.

Care must be taken to ensure the HBS4600 is located to ensure the ambient temperature does not exceed the specified operating temperature as specified in the "TEMPERATURE CLASS" table.

A 6.3 mm hole is provided in the centre of the transmitter for sensor wires. The sensor wires may also be fed on the outside of the transmitter.

HBS4600

User Manual

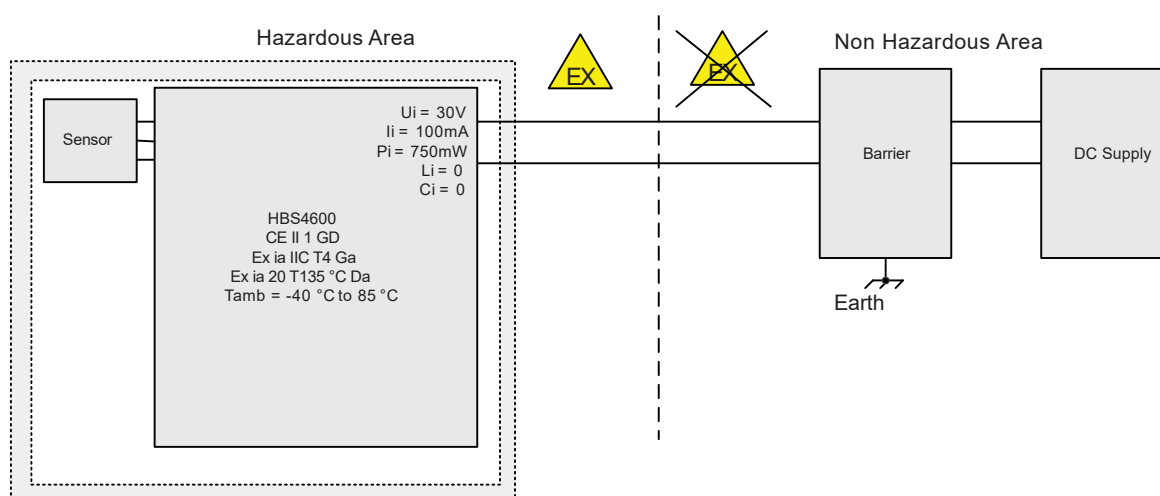


User instruction for HBS4600 electrical apparatus for use in explosion-hazardous area. Important read and understand this document before any installation.

Electrical Detail



REFER TO CONDITIONS FOR SAFE USE



Sensor wires must be isolated from earth breakdown voltage 500 V dc



REFER TO CONDITIONS FOR SAFE USE

Installation

For HBS4600 specification please refer to product data sheet. Installation is normally performed in the following order. If the HBS4600 has been purchased as part of a probe assembly ,steps (1 to 3) will have been completed. The user may wish to reconfigure the transmitter range, in this instance the HBS4600 range can be changed on a completed probe assembly by following step 1.

1. Configuration
2. Mount Transmitter into head
3. Wire Sensor
4. Install Assembly
5. Wire (4 to 20) mA Loop

1. Configuration



USBconfiguration
– Only to be performed in the safe area

Visit www.hbsensors.com download latest version of USBSpeedLink



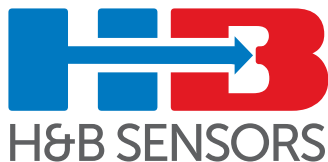
Once software is installed remove protection cover from device port , plug in configurator plugs in to device ports and connect PC to configurator using USB cable.



In USBSpeedLink software, select Model type from “Field Product – In Head TX” menu.

For further information on configuration please open the help menu on the product configuration screen.

On completion of configuration remove USB cable and replace protective cover over socket.



HBS4600

User Manual



User instruction for HBS4600 electrical apparatus for use in explosion-hazardous area. Important read and understand this document before any installation.

The main configuration is performed using the USB interface. The following parameters may be configured using the powerful USBspeed link software tool, which also provides operator diagnostics.

The following functions apply :-

Sensor

Sensortype	mV, Dual mV, ohms, slide wire, thermocouple, dual thermocouple, RTD, dual RTD (2 wire).
Sensorwire	(ohms and rtd ranges only) 2, 3, or 4 wire.
Thermocouple type	Download from USBspeedlink expanding library, common type K, J, T, E, R, S, N, B, U, G, C, D. Thermocouple CJ Fixed or Auto.
RTD type	Download from USBspeedlink expanding library, common type PT100, PT1000, PT500, Ni, CU, KTY series.
Sensor(s) Fail	Value on sensor A, (sensor B) fail.
Sensor Pre-set	Override sensor signal with pre-set value, primary function diagnostics.

Process

Scaling	Scalesensor signal to PV, options - Off, Two point scaling or (4 to 22) step profile.
Units	Set PV units

mA Output

Damping	Profile out damping (0 to 32) seconds.
Range	Range (PV units) For (4 to 20) mA output.
Fix Loop Current	Fix loop current to pre-set value (Note resets on power up). Primary use Diagnostics.
Set Max mA	Set the maximum output current (20 to 23) mA.
Set min mA	Set minimum output current (3.5 to 4.0) mA.
Trim	Read set and reset (4 and 20) mA trim values.

Diagnostics

Power ups	Number of power ups from manufacture.
Min Max PV	Minimum and maximum process variable value during operation with reset.
Operating times	From manufacture and calibration. Calibration time is resettable.
Calibration	Store Date, operator and certificate number.
Save Data	Save transducer data to text file.

Diagnostics Log

Type	150 point non volatile Process Variable log, with power off indication and sensor fail (not time stamped).
Rates	User set log periods seconds 5, 15, 30 minutes 1, 2, 5, 10, 20, 30, or 60.
Backup	Save log to PC in CSV style format (using semi colon delimiter) for easy export to text editor or spreadsheet.

Process Data

Data	Live data for sensor (TV), pre-scaling, post scaling (PV), Untrimmed mA output, Actual mA output, % output signal and device ambient temperature (SV) (cold junction).
Diagnostics	Sensor wire error detect (not supported in mV mode), Loop power detect.

HBS4600

User Manual



User instruction for HBS4600 electrical apparatus for use in explosion-hazardous area. Important read and understand this document before any installation.

1. Configuration continued

HBS4600 only A HART® interface provides the user with the following functions:

Universal command

All universal commands are supported.

Common practice commands:

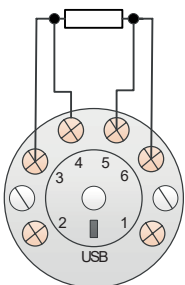
- 34 Write Damping Value
- 35 Write Range Values
- 40 Enter/Exit Fixed Current Mode
- 41 Perform Device Self-Test
- 44 Set (Trim) PV Zero
- 45 Trim DAC Zero
- 46 Trim DAC Gain
- 49 Write PV transducer number
- 59 Write Number of Response Preambles

2. Mount Transmitter into Head

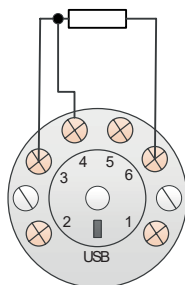
The HBS4600 is mounted using two holes, on standard 33 mm fixing centres and will fit a DIN standard termination head. The HBS4600 must be installed with adequate protection from moisture and corrosive atmospheres. Refer to "special conditions for safe use" section of this user guide for information on enclosure IP rating. A centre hole is provided in the HBS4600 case, this allows for sensor wire to enter wiring section through the HBS4600 body. Observe the "special conditions for safe use" instruction.

3. Sensor Connection

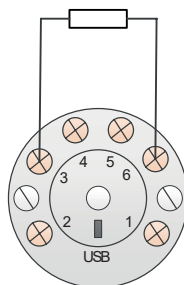
4 Wire Resistance (RTD)



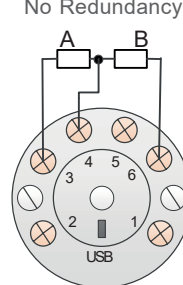
3 Wire Resistance (RTD)



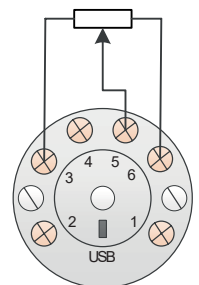
2 Wire Resistance (RTD)



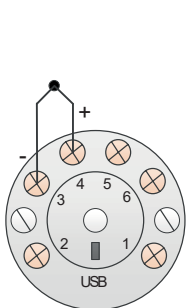
Dual RTD (2 wire)
No Redundancy



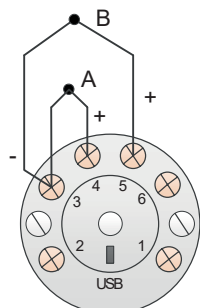
Slide Wire



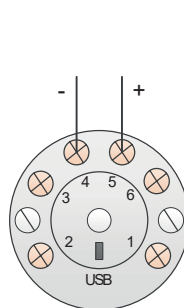
Thermocouple



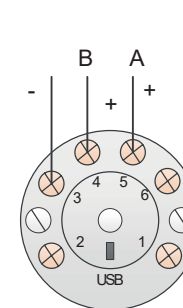
Dual Thermocouple



mV



Dual mV



HBS4600

User Manual



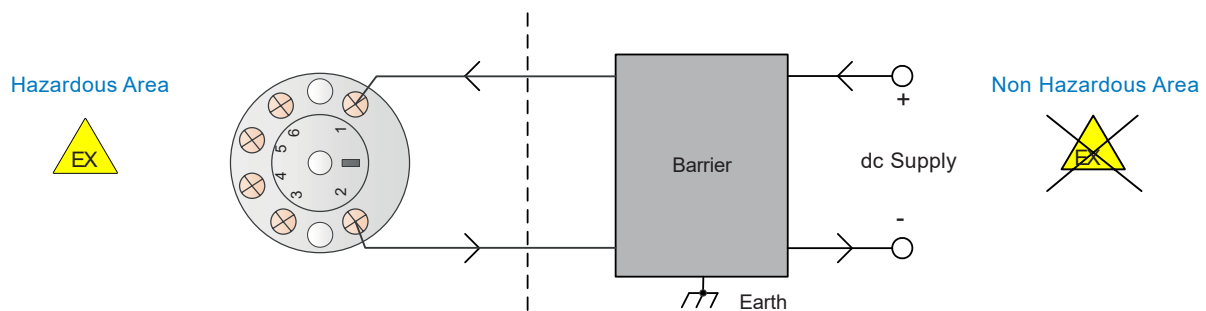
User instruction for HBS4600 electrical apparatus for use in explosion-hazardous area. Important read and understand this document before any installation.

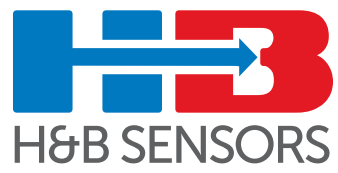
4. Install assembly

Care must be taken to ensure the HBS4600 is located to ensure the ambient temperature does not exceed the specified operating temperature as specified in the "TEMPERATURECLASS" table.

5. Wire (4 to 20) mA Loop

Ensure all other aspects of the installation comply with the requirements of this document, paying particular attention to the loop barrier. The (4 to 20) mA loop is connected as follows:-





H&B Sensors Ltd | Odyssey House | Durban Road | Bognor Regis | West Sussex | PO22 9RH | United Kingdom

Tel: +44(0)1243 866866 | Email: info@hbsensors.com | www.hbsensors.com