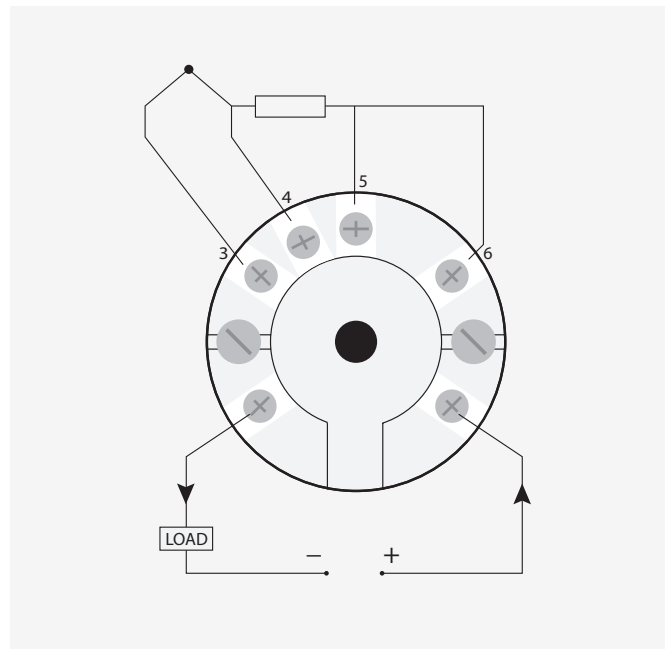


# HBS4500

## Temperature Transmitter

Temperature Transmitters



The HBS4500 is a HART® 7 enabled high accuracy head-mounted programmable transmitter suitable for RTD Pt100 or Thermocouple Inputs. The temperature transmitter is loop powered and the HART® communications protocol enables online digital communication concurrent with a 4 to 20mA analogue signal.

The RTD and Thermocouple input types and ranges including upscale or downscale error detection can be programmed with a HART® hand held communicator, PC & HART® modem or by using the configuration kit HB\*\*\*.

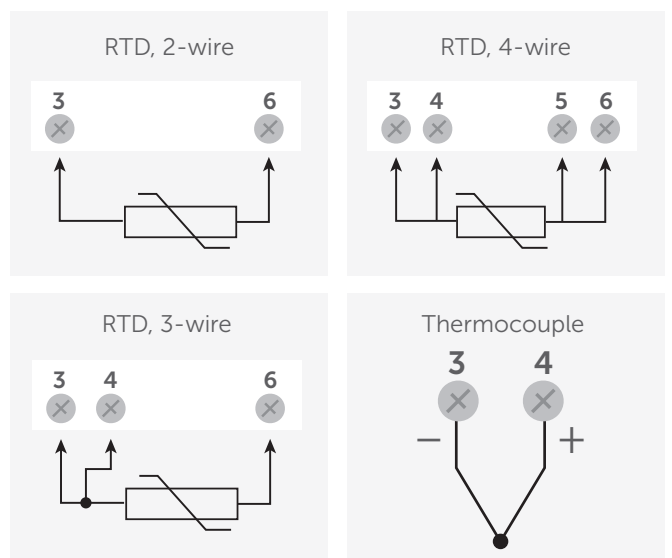
### Linear Resistance Input:

Type	Min. Value	Max. Value	Min. Span
Pt100	-200°C	+850°C	25°C

### Thermocouple Input:

Sensor Type	Range (°C) Min temp - Max Temp	Minimum Span
K	-200 - +1370	50
J	-100 - +1200	50
E	-200 - +1000	50
N	-180 - +1300	50
T	-200 - +400	25
R	-10 - +1760	100
S	-10 - +1760	100
L	-100 - +600	50

### Connections:



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### Environmental Conditions

<b>Specifications range</b>	-40°C to +85°C
<b>Calibration temperature</b>	+20°C
<b>Ambient Storage Temperature</b>	(0 to 95) °C
<b>Ambient Humidity Range</b>	(10 to 100) % RH noncondensing

### Mechanical Specifications

<b>Dimensions</b>	Ø43.0 mm x 24 mm
<b>Weight approx</b>	40 g

### Common Specifications

<b>Input/Output Breakdown Isolation</b>	500V AC rms
<b>Response Time (filter off)</b>	0.5s (to 90% of final value)
<b>Filter Factor</b>	Programmable: Off, selective between 1s and 32s or adaptive
<b>Warm-up time</b>	120s to full accuracy
<b>Power Supply</b>	(10 to 40) Volts dc
<b>Stability</b>	0.1% of full range Input or 0.1 °C / year

### Enhanced Features

#### SENSOR REFERENCING

The HBS4500 sensor referencing via the HBS\*\*\* Config software allows for close matching to a known reference sensor eliminating possible sensor errors.

#### USER CALIBRATION

In addition to sensor referencing, user offset and current output trimming is possible via the HART® commands.

#### CUSTOM LINEARISATION

The custom linearization facility allows the HBS4500 to be programmed with a custom linearisation to suit non standard sensors or sensors with unusual or unique characteristics.

#### SENSOR BURN OUT DETECTION

If any sensor wire is broken or becomes disconnected the HBS4500 output will automatically go to its user defined level (upscale or downscale). This happens irrespectively of which wire is broken.

#### OUTPUT CURRENT PRESET

For ease of system calibration and commissioning the output can be set to a pre-defined level anywhere within the 4 to 20 mA range.

### Input Specifications - RTD (PT100)

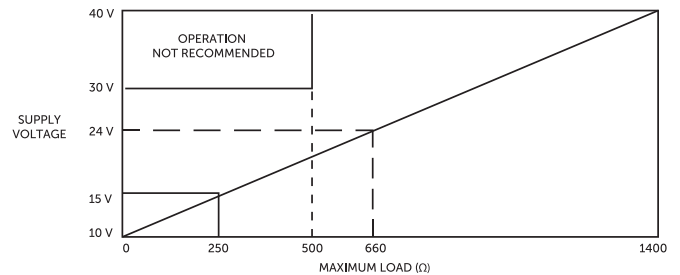
<b>Sensor Type</b>	PT100 100 Ohms @ 0°C 2,3 or 4 Wire
<b>Sensor Range</b>	-200 to +850 °C

<b>Sensor Connection</b>	Screw terminal
<b>Minimum span</b>	25 °C
<b>Linearisation</b>	BS-EN60751 BS1904 DIN 43760 JISC 1604
<b>Measurement Accuracy</b>	0.01% of full range input ± 0.07% of Reading
<b>Thermal Drift</b>	Zero 0.008 °C / °C Span 0.01% / °C
<b>Excitation current</b>	300 to 500 uA
<b>Maximum lead Resistance</b>	50 Ohms per leg

### Input Specifications – Thermocouple

<b>Measurement Accuracy</b>	± 0.04% of full range input ± 0.04% of reading or 0.5 °C (whichever is greater)
<b>Linearisation</b>	BS EN60584-01, BS4937, IEC584-1
<b>Cold Junction Error</b>	±0.5 °C
<b>Cold Junction Tracking</b>	0.05 °C / °C
<b>Cold Junction Range</b>	-40 to +85 °C
<b>Thermal Drift</b>	Zero 0.1 uV / °C Span 0.01% / °C

### Output Specifications



<b>Output Type</b>	2 wire (4 to 20) mA current loop
<b>Output range</b>	Min 3.75 mA, Max 21.5mA
<b>Output Connection</b>	Screw Terminal
<b>Maximum output</b>	21.5mA
<b>Accuracy</b>	±5 uA
<b>Loop Voltage effect</b>	0.2 uA / V
<b>Thermal drift</b>	1 uA / °C
<b>Maximum output load</b>	[(Vsupply-10)/21.5]K Ohms, 250 Ohms minimum loop load

Supply voltages over 30V a minimum loop load of 500 ohms in necessary

### Approvals

<b>EMC</b>	BS EN 61326
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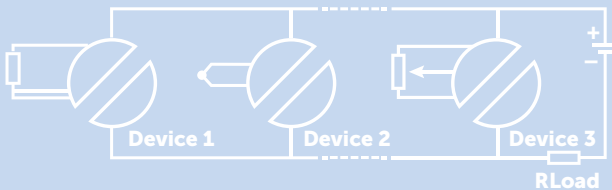
### Communications with a PC

Communication with a PC is easily accomplished by using the HART® modem supplied with the communications kit, HBS\*\*\* the menu-driven software product from H&B sensors enables the following functions to be quickly and easily performed:

- Change sensor type, range, select burnout direction, filter(damping), factor.
- Set tag numbers, assembly numbers, calibration details, messages
- Print or save to file all relevant documentary information.
- Read next calibration date.
- Perform basic calibration (TrimDac, user offset).
- Monitor sensor status and read transmitter diagnostics.
- Real-time reading of process variable.
- Supports up to 15 devices in multi-drop mode.

### Multidrop HART®

As well as operating in standard mode the HBS4500 supports HART® Multidrop mode whereby up to 15 devices can be connected to the same pair of wires enabling full digital functionality with each device.



\*in multi-drop mode the current output is set at 4 ma

### Communicating with the HBS4500 HART® Transmitters

The HBS4500 can communicate digitally, concurrent with the analogue 4 to 20 mA output signal. This can be achieved in a number of ways:

- Proprietary hand held communicator.
- PLC's, DCS's with HART interface.
- PC Computers HBS\*\*\* available download from [www.hbsensors.com](http://www.hbsensors.com) and a HART modem.

### Communicating with a Hand Held Communicator

The HBS4500 will communicate with any proprietary HART communicator and access to all universal commands is available from the communicator. In order to access all the parameters available, the communicator must have the correct HART Device Description (DD) installed.

### Communicating with PLC's or DCS's

Any system that supports HART field devices using such software packages as AMS-Plant Web™ or Cornerstone™ will communicate with the HBS4500 enabling access to advanced system features such as self documentation and diagnostics. The correct DD must be installed for full access to all parameters.