



SPACE T SENSOR

TYPE BARCSTLCDSP



Application

The BARC-S-T-LCD-SP uses a high accuracy thermistor element, standard equipped which set point and LCD display.

Options such as momentary switch and fan speed selection are available together with a 0-5Vdc override status input is also available as option, allowing occupancy indication on the display.

A valuable feature of this sensor is, when in 3-wire mode, it automatically detects the controller input type, 4-20mA or 0-5Vdc. This removes the requirement for output jumpers. 2-wire loop powered is selectable via a DIP switch. It also provides on-board LED indication for power up status and set output mode. The terminal blocks are pluggable and allow tool free installation (ferrules required).

Features

- Slim design for room applications
- Easy installation with LED indication, test button and auto-output mode detection (3-wire)
- 2-wire loop powering selectable via DIP switch
- Pluggable terminal blocks and tool free installation
- Optional set point wheel, fan speed slider, momentary button and LCD available

Product Codes

BARCSTLCDSP	Space T Sensor 0-5V with LCD and SP
BARCSTCO2LCDSP	Standard CO ₂ + Space T Sensor 0-5V with LCD and SP

Other options are available on request



WEEE Directive:



At the end of the products useful life please dispose as per the local regulations.
Do not dispose of with normal household waste.
Do not burn.



Technical Specifications

Outputs	0-5Vdc or 4-20mA, 3-wire self detecting 4-20mA 2-wire, loop powering via DIP switch
Output range	0 to 40°C
Temperature accuracies	±0.3°C
Power Supply	24Vac/dc ±10% (3-wire) 24Vdc ±10% (2-wire)
Supply current	max. 30mA (3-wire)
Electrical connections	Pluggable spring loaded terminal block, min. 0.2mm ² , max. 1.5mm ²
Enviromental / Storage	-25 to 60°C
Working ambient conditions	
Temperature	-10 to +60°C
Humidity	0 to 95% RH, non-condensing
Housing	
Material	ABS (flame retardant)
Colour	RAL 9003 polished white finish
Dimensions	115 x 85 x 30mm
Environmental	
Temperature	0 to 50°C
Humidity	0 to 95% RH non-condensing
Protection	IP30
Country of origin	UK

* If using the -LCD option, when in loop powered mode the back light will not be lit.
The transmitter will require a 0V connection for the back light to work (3-wire).

Installation instructions



Antistatic precautions must be observed when handling these sensors. The PCB contains circuitry that can be damaged by static discharge.

Note: Barcol-Air range of sensors are not suitable for use in swimming pool & spa applications. Sensors used in these types of applications are not covered under Barcol-Air warranty terms. Chemicals used in swimming pool & spas can contaminate the electrochromic components, which results in a reduced service life.

1. Select a location on a wall of the controlled space which will give a representative sample of the prevailing room condition. Avoid sitting the sensor in direct sunlight, on an outside wall or near heat sources. An idea mounting height is 1.5m from the floor.
2. Undo the tamperproof screw at the bottom of the housing and remove the front panel from the base.
3. Using the base as a template mark the hole centres and fix to the wall with suitable screws. Alternatively the base plate can be mounted on to a conduit box or standard recessed back box. The base plate is suitable for EU & North America fixings.
4. Feed cable through the hole in the base plate of the housing and terminate the cores at the terminal block as required. Leaving some slack inside the unit.
5. Set the switch on the PCB either to the 3-wire or 2-wire position.

IMPORTANT! Do not alter the switch position while sensor is powered up. Do not select 2-wire if a 0v connection (3-wire) is made. Permanent damage to the sensor or BMS controller may result.

6. Plug the terminal block on the pins header on the PCB. Check polarity and orientation. Replace the housing to the base plate and tighten the tamperproof screw (if required) through the lug at the bottom of the base plate.

IMPORTANT! Make sure the Terminal Block is fitted the correct position and direction. The cable entry faces the centre of the sensor.

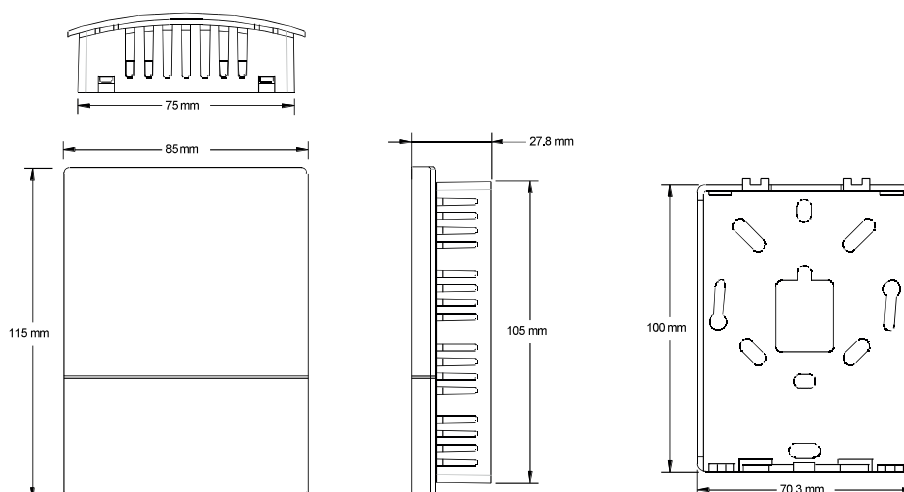
7. Connect all sensor outputs to the controller inputs or to the device, the sensor output(s) are connected to.
8. Before powering the sensor, ensure that the supply voltage is within the specified tolerances.

IMPORTANT! It is important to make all electrical output connections before applying the supply voltage. If the sensor is not connected in this sequence, damage may be caused to the input circuitry of the controller or device the sensor output(s) are connected to.

9. Allow 3 minutes before checking functionality, and at least 30 minutes before carrying out pre-commissioning checks. This will allow the electronics time to stabilise.

Active temperature transmitters are sensitive electronic devices and care should be taken at all times to ensure that they are not exposed to extreme ambient conditions or incorrect electrical connection. Transmitters should not be exposed to direct moisture contact (e.g. rain) and very high humidity should be avoided wherever possible.

Dimensions



Wiring details

24V	Supply 24Vac/dc	FS1	Not used (if fitted)
0V	Supply 0V (Common 0V)	FS2	Not used (if fitted)
OP1	Temperature output	P5	Set point
OP2	Not used (if fitted)	P6	Set point, wiper
OP3	Not used (if fitted)	P7	Set point
0V	Not used (if fitted)	MS1	Not used (if fitted)
TH1	Not used (if fitted)	MS2	Not used (if fitted)
TH2	Not used (if fitted)	OVR	Not used (if fitted)

Terminal Block

For easier installation, the terminal block can be detached from the PCB. When used with ferrules it doesn't require any tools to release the spring loaded terminal block. When used with stranded cable, push in the orange latch to compress the spring load. Feed in the wire and release the spring to secure the wire connection.

IMPORTANT! Make sure the Terminal Block is fitted the correct position and direction. The cable entry faces the centre of the sensor.



Settings

Selecting output mode and LED indication:

IMPORTANT! Do not alter the switch position while sensor is powered up. Do not select 2-wire if a 0v connection (3-wire) is made. Permanent damage to the sensor or BMS controller may result.

3-wire connection:

Ensure there is no power to the sensor before changing the switch. Set the switch in the left hand position. The sensor automatically sets the outputs to 0-10V or 4-20mA based on the resistive load on the outputs.

All outputs MUST be connected to the same type of load:

- If ALL the loads are $>2k\Omega$, all the outputs will be set to 0-5Vdc and the green 0-10V LED will light.
- If ALL the loads are $>50\Omega$ and $<550\Omega$, all the outputs will be set to 4-20mA and the orange 4-20mA LED will light.
- If ANY of the loads are $<50\Omega$ or >550 and $<2k\Omega$, all the outputs will be switched off and the red ERROR LED will light.

Output 1 is checked first, and if it has determined what this output is set to it will assume that all other enabled outputs are connected to similar loads. The LEDs will switch off after 15 minutes.

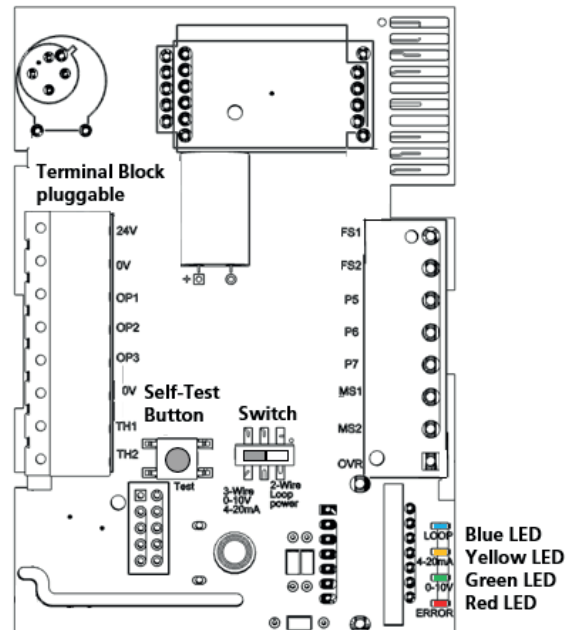
2-wire connection:

Ensure there is no power to the sensor before changing the switch and do not connect 0V. Set the switch in the right hand position. All outputs MUST be connected. The blue LOOP LED will light.

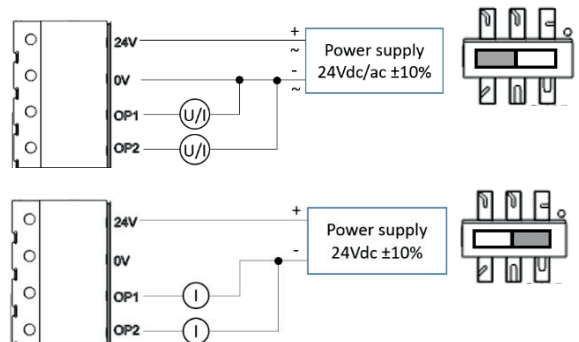
Self-Test Button

The self-test button helps the installer to validate the wiring for each output and helps to commission the system. When the self-test button is pushed it cycles all outputs as follows: 0%, 50%, 100%, normal operation. After 30 seconds in any mode the system resets to normal operation. When the self-test button is held for more than 3 seconds, it sets all outputs to 50%, when released the outputs return to normal operation.

PCB Layout



Connection



Set point (-SP):

For 1-11k Ω use the 0-10 Ω and add an inline 1k Ω resistor on the controller input side.

	-	+
P5/P6	0k Ω	10k Ω
P7/P6	11k Ω	1k Ω



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