Satchwell

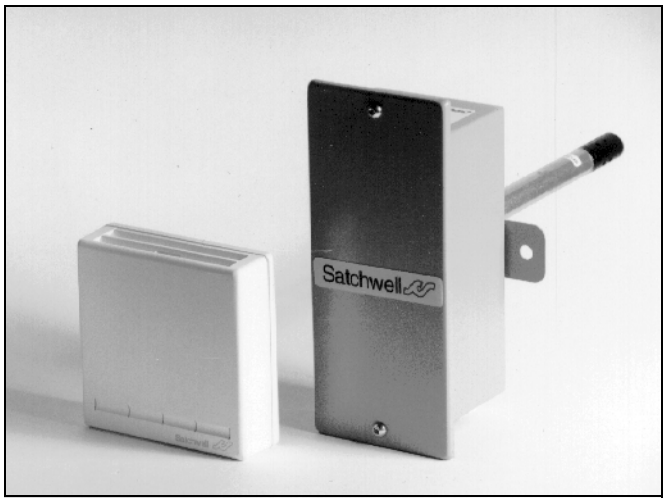
DRH 7501, DDH 7551

ROOM/DUCT HUMIDITY AND TEMPERATURE SENSOR

Specification No. DRH - 331-7-501
DDH - 331-7-551

The DDH is a duct mounted sensor for use with Satchwell controllers to provide relative humidity measurement; the DRH is a room mounting version of the same. This high accuracy unit has a factory set 0-10Vdc output and can be easily adapted in the field to provide a 0-5Vdc output if required.

The DDH and DRH also provides a standard Satchwell 'T' type resistance output for temperature sensing.



FEATURES

- **Humidity and temperature output**
- **High accuracy**
- **Fast response time**
- **Tamperproof**
- **Low voltage**
- **Long term stability**
- **Variable output signals**
- **Simple commissioning**
- **Suitable for aggressive environments**

Multi-Lingual Instructions
MLI 1.07 - Installation Instructions
MLI 1.07R - Installation Instructions

SPECIFICATION

Type	Mounting	Sensing	Control Range	Output	Power	Accuracy at +20°C†
DRH 7501	Room	Relative Humidity	0-100%RH	0 to 10Vdc	24Vac	±2%RH (30 to 80%RH) ±3%RH (0 to 30 and 80 to 100%RH)
		Temperature	0 to 55°C	see Fig.4 on page 3)		
DDH 7551	Duct	Relative Humidity	0-100%RH	0 to 10Vdc	24Vac	±2%RH (30 to 80%RH) ±3%RH (0 to 30 and 80 to 100%RH)
		Temperature	-35 to 55°C	see Fig.4 on page 3)		

†Including calibration inaccuracy, linearity, repeatability.

Consumption: 20mA

Wiring: **Humidity:** 3-wires, signal, earth and 24Vac power supply
Temperature: 2 wires, not polarised

Ambient Temperature Limits: **DRH - Operating:** 0 to +55°C
DDH - Operating: -35 to +55°C
Storage: -40 to +55°C

CONSTRUCTION

Housing: DRH - Tough fire resistant moulded case, plugs into moulded backplate UL94V-0
DDH - Enamelled steel

Protection Class: DRH - IP 20
DDH - IP 65

Element: **Humidity:** Sensitive Polymer capacitance element (DDH only - membrane filter cap)
Temperature: NTC Thermistor

Cable Entry: DRH - Via backplate for surface or conduit box mounting
DDH - ½" knock out for conduit connection or gland nut supplied

Terminals: DRH - Accept 1 x 1.5mm^2
DDH - Pluggable screw terminals for wires 0.5 to 1.5mm^2

INSTALLATION

Cautions

The element must not be touched and should be protected from dust, water spray and condensation.

Do not use a DC test meter directly on the element as this will damage it.

DUCT SENSOR TYPE: DDH HUMIDITY/TEMPERATURE SENSOR

1. Select a location for the sensor where the sensitive element is in a representative part of the air stream i.e. away from any obstructions or bends that may affect it - see Fig.6 for details. The sensor location should be relatively clean and free from damp and condensation.
2. Drill a clearance hole for the sensor stem (the stem is 13mm in diameter). Use 6mm self tapping screws to mount the sensor to the duct.
3. When wiring, allow sufficient flexible conduit/wire to enable removal of the sensor from the duct for maintenance etc.
4. Remove the cover to allow access to the terminals for wiring.
5. Wire the sensor in accordance with the appropriate scheme diagram. Fig.5 shows the basic wiring connections.
6. If a 0 to 5Vdc output is required, set the jumper to the correct position - see Fig.2 and Fig.4.
7. Replace the cover and tighten the fixing screws.

ROOM SENSOR TYPE: DRH HUMIDITY/TEMPERATURE SENSOR

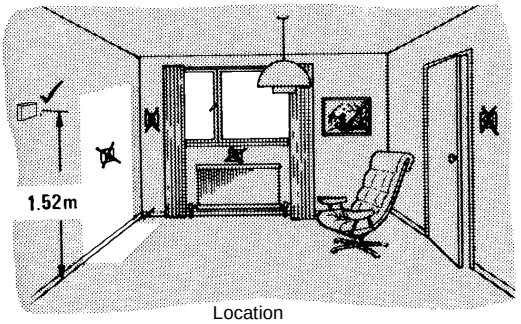
1. Select a location for the sensor which is representative of the space to be controlled and where it will be readily affected by changes in the general space humidity and temperature level. The sensor location should also be reasonably clean and free from damp and condensation - see Fig.1.
2. Remove the backplate by pushing in the fixing lugs on the top and bottom of the sensor with a small screwdriver or similar tool.
3. Thread the wires through the backplate and fix it to the wall or conduit box with the arrow pointing upwards. Ensure that there are no draughts from the cable entries to influence the sensed humidity and temperature.
4. Connect the wires to the sensor terminals on the backplate. See the data sheet for the controller the sensor is to be connected to for the terminal designations. Fig.6 shows the basic wiring connections.
5. If a 0 to 5Vdc output is required, set the jumper to the correct position - see Fig.3 and Fig.4.
6. Plug the sensor housing on to the backplate.

WIRING PRECAUTIONS

Refer to the data sheet relevant to the controller to which the sensor is to be connected. See the table on page 2. The wiring should be screened with the screen connected to the controller Earth terminal only. The maximum resistance is 15Ω per core.

MAINTENANCE

- Periodic checking at 12 monthly intervals is recommended.
- If required, wash element in industrial grade Isopropyl alcohol. Remove power from the sensor when washing the element. Take any precautions specified by the manufacturer of the Isopropyl alcohol.



Location Fig.1

CONNECTION DIAGRAMS

DDH SENSOR LAYOUT

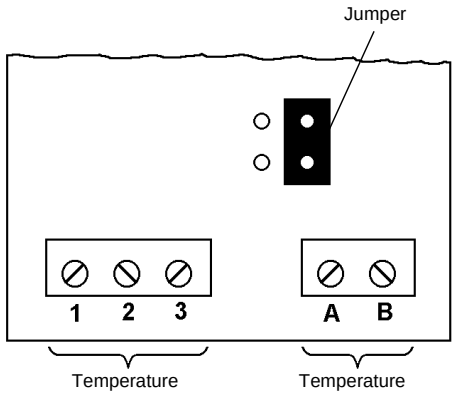


Fig.2

DRH SENSOR LAYOUT

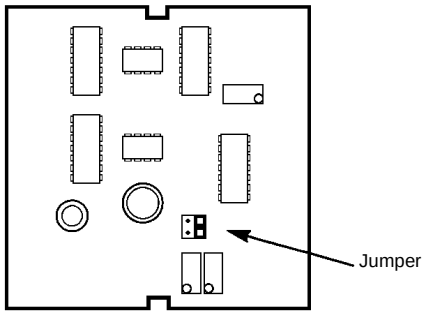
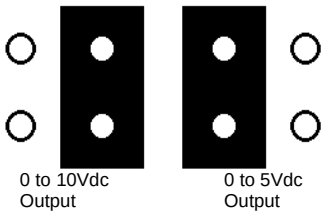


Fig.3

OUTPUT SELECTION



Factory set at 0 to 10Vdc output. Optional 0 to 5Vdc output signal defined by jumper connector position.

Fig.4

DDH BASIC WIRING DIAGRAM

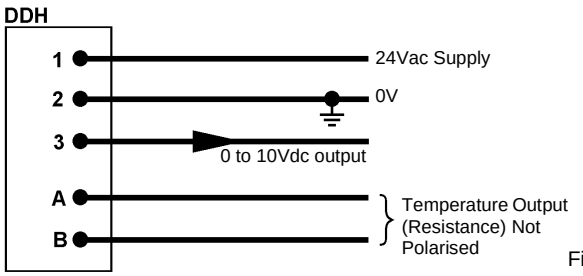


Fig.5

DDH SENSOR LOCATION

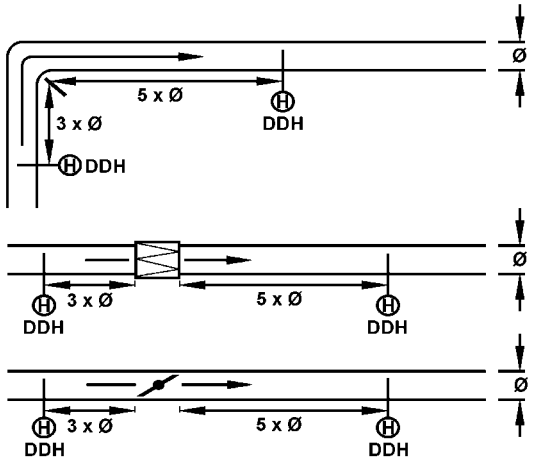


Fig.6

DRH BASIC WIRING DIAGRAM

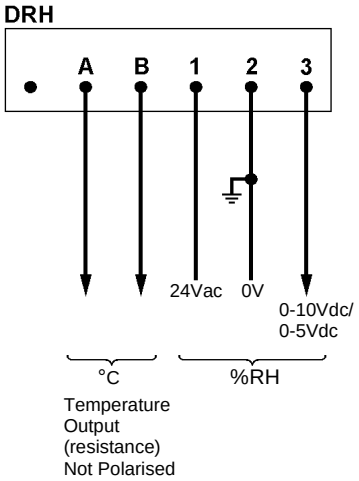
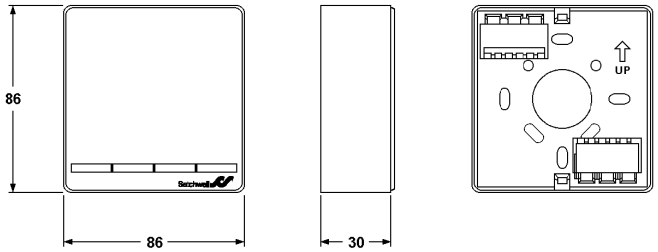


Fig.7

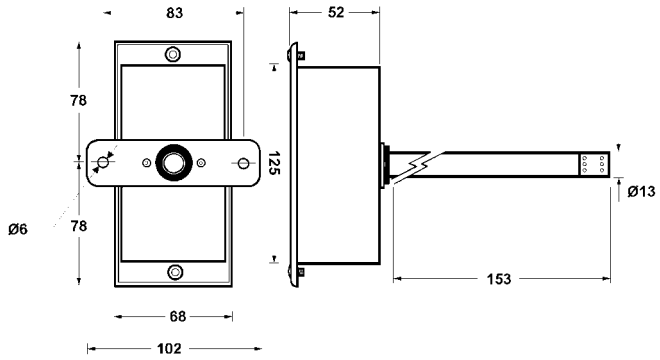
TEMPERATURE SENSOR CHARACTERISTICS	
Temperature (°C)	**Resistance (Ω)**
-35	9604
-30	9465
-25	9288
-20	9067
-15	8796
-10	8472
-5	8093
0	7661
+5	7182
10	6667
15	6126
20	5573
25	5025
30	4492
35	3987
40	3518
45	3089
50	2702
55	2358

DRH



Dimensions in mm

DDH



Weight: 0.45kg

Cautions

- **Do not apply any voltages until a qualified technician has checked the system and the commissioning procedures have been completed.**
- **This is a low voltage (24Vac) device and should only be used with the appropriate Satchwell controller. Local wiring regulations and usual safety precautions must be observed.**
- **The element must not be touched and should be protected from dust, water spray and condensation.**
- **Do not use a DC test meter directly on the element as this will damage it.**
- **Observe sensor wiring precautions on the appropriate controller data sheet.**
- **Observe maximum ambient temperature.**
- **Interference with those parts under sealed covers renders the guarantee void.**
- **Design and performance of Satchwell equipment are subject to continuous improvement and therefore liable to alteration without notice.**
- **Information is given for guidance only and Satchwell do not accept responsibility for the selection or installation of its products unless information has been given by the Company in writing relating to a specific application.**
- **A periodic system and tuning check of the control system is recommended. Please contact your Local Satchwell Service office for details.**

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An Invensys company

Printed in England. 07/00