



Features and Benefits

- Self-detecting 0-10Vdc or 4-20mA
- (3-wire) output
- Fully configurable LCD Display
- Resistive temperature output option
- No jumpers or DIP-switches to select output type

Technical Overview

The RH-x-UN series are a single-output sensor for relative humidity measurement, with optional features such as temperature sensing, set point adjustment, momentary switch, fan speed control, and an LCD display.

Its key advantage is automatic detection of controller input, 4-20mA or 0-10Vdc, removing the need for jumpers. Just connect, and it configures itself. LED indicators show the active output type, with diagnostic patterns to quickly identify faults.

Product Codes

RH-S-UN	Space Relative Humidity Transmitter
RH-D-UN	Duct Relative Humidity Transmitter
RH-W-UN	Wall Mount Relative Humidity Transmitter
RH-O-UN	Outside Relative Humidity Transmitter

Suffixes

Direct resistive temperature output

Thermistor types:

-A (10K3A1)	-B (10K4A1)	-C (20K6A1)
-H (SAT1)	-K (STA1)	-L (TAC1)
-M (2.2K3A1)	-N (3K3A1)	-P (30K6A1)
-Q (50K6A1)	-S (SAT2)	-T (SAT3)
-W (SIE1)	-Y (STA2)	-Z (10K NTC)

Platinum types:

-D (PT100a)	-E (PT1000a)
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Nickel types:

-F (NI1000a)	-G (NI1000a/TCR (LAN1))
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-SP	Resistive set point †
-MS	Momentary switch †
-LCD	Integral LCD display

† Only available on Space Sensor types

Accessory

DPA Duct probe adjustment flange (use on **RH-D-UN** only)

Specification

Common Specification:

Outputs	0-10Vdc or 4-20mA self-detecting (not loop powered)
Power supply	24Vac/dc
Output range	0 to 100% RH
Country of origin	UK
Conformity	EMC, CE & UKCA Marked

Space Sensor type:

Ambient:	
Temperature	0 to 50°C
RH	0 to 95% RH, non-condensing
Housing:	
Material	ABS (flame retardant)
Colour	Polished white finish
Dimensions	115 x 85 x 30mm
Protection	IP30

Plant Sensor type:

Environmental:	
Housing	-30 to 60°C
	0 to 95% non-condensing
Media	-10 to 50°C
Housing:	
Material	PC (Halogen free, flame retardant & UV stabilized)
Dimensions	123 x 103 x 54mm
Probe:	
Material	Probe, PVC - End cap, Delrin
Dimensions	
RH-D-UN	205x 20mm dia.
RH-W-UN	90 x 20mm dia.
RH-O-UN	235 x 118mm dia.
Protection:	IP65
Conformity	EMC, CE & UKCA Marked

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.



Sensor Characteristics

Humidity

Measurement range	0 to 100% RH
Accuracy	±3% RH
Type	Capacitive
Long term stability	<0.5% RH p.a.
Response time ³	8 seconds (t 63%)

Optional Passive Output

Type	Resistive PTC & NTC types
Accuracy:	
Thermistor	±0.2°C 0 to 70°C
Platinum types	±0.2°C @ 25°C
Nickle types	±0.4°C @ 25°C

LCD

To show RH measured value only

Set point

Resistive 1-11kΩ ±30%

Momentary switch

VFC 24Vac/dc 50mA max.

Installation

Handling & Precautions:

- Use **antistatic precautions** – static discharge can damage the PCB.
- **Do not use** in swimming pools or spas (chemicals shorten sensor life and void warranty).
- Install **after construction/renovation** to avoid dust (warranty may be void if contaminated).

Installation Steps:

RH-S-UN

- 1) Remove tamperproof screw and front panel from the base.
- 2) Mount base (to conduit box, back box, or wall using base as template).
- 3) Feed cable through base and terminate wires (see "Electrical Connections").
- 4) Connect outputs to controller and check supply voltage before powering.
- 5) Wait 4 minutes for initial check, 30 minutes before pre-commissioning.

RH-D-UN

- 1) Fix housing to duct with screws or optional mounting flange.

RH-W-UN

- 1) Fix housing to wall with appropriate screws.

RH-O-UN

- 1) Fix radiation shield to suitable mast or wall using U-bolts supplied, when connections are made, inset probe into shield and tighten gland (see "Radiation Shield")

Common Installation Steps on Plant Types:

- 2) Open lid by pressing the tab, feed cable through gland and terminate wires (see "Electrical Connections"). Tighten gland for water-tight seal.
- 3) For outdoor use, mount with cable entry at bottom. If fed from above, add a rain loop before entry.
- 4) Connect output to controller and check supply voltage before powering.
- 5) Wait 4 minutes for initial check, 30 minutes before pre-commissioning

Calibration & Testing:

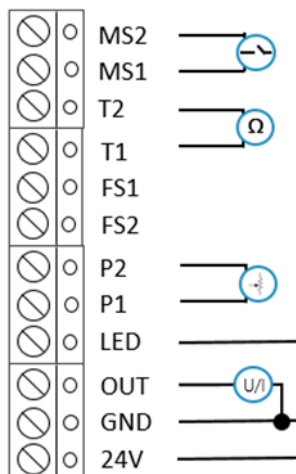
For accurate comparison with a reference, probes must be adjacent in a stable RH environment for at least 30 min. Avoid using mechanical hygrometers or "slings."

Radiation Shield

The plate profiles are shaped to allow the minimum restriction of airflow while providing the necessary shielding from solar radiation and precipitation. All sensor shields produce an error due to temperature rise during high solar radiation; the error is reduced with higher wind speeds which provide ventilation. The figures given below are based on a radiation intensity of 1000W/m²; typical errors for the specified wind speeds would be: 0.4°C @ 3 m/s, 0.65°C @ 2 m/s, 1.4°C @ 1 m/s or slower.

Electrical Connections

MS2	Momentary switch output (VFC)
MS1	Momentary switch output (VFC)
T2	Direct thermistor output (resistive)
T1	Direct thermistor output (resistive)
FS1	Not used
FS2	Not used
P2	Set point (resistive)
P1	Set point (resistive)
LED	Occupied/unoccupied text on LCD
OUT	0-10Vdc or 4-20mA (3-wire) RH output
GND	Common 0V
24V	Supply + 24Vac/dc



Options

-T (if fitted)	Direct resistive output is between terminals T1 and T2, polarity is independent. When using the resistive output for temperature, they are not compensated for internal self heating.
Set point (if fitted)	1k Ω to 11k Ω
Momentary switch (if fitted)	24Vac/dc @ 500mA max.
LCD (if fitted)	The display will show RH measurement only. It will not show the optional suffixes, temperature or set point.

Status LEDs

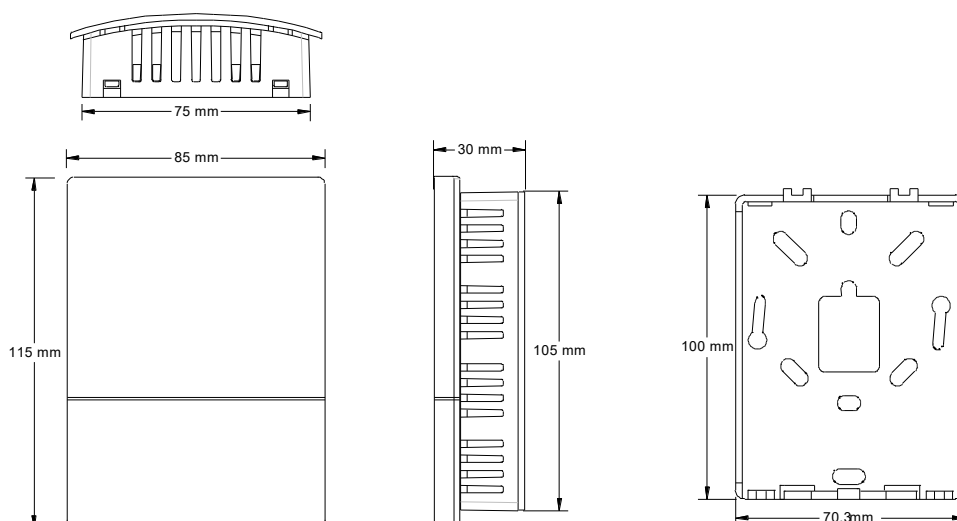
- Loads >2.2k Ω → 0-10Vdc (LED 1)
- Loads >50 & <550 Ω → 4-20mA (LED 2)
- Loads <50 Ω or >550 Ω & <2.2k Ω → LEDs flash alternately
- Fault, RH sensor missing/faulty → both LEDs on, output zero

Self-Test

Push button, hold → 50% output (may take a few seconds to settle). Display shows "50%" if fitted.

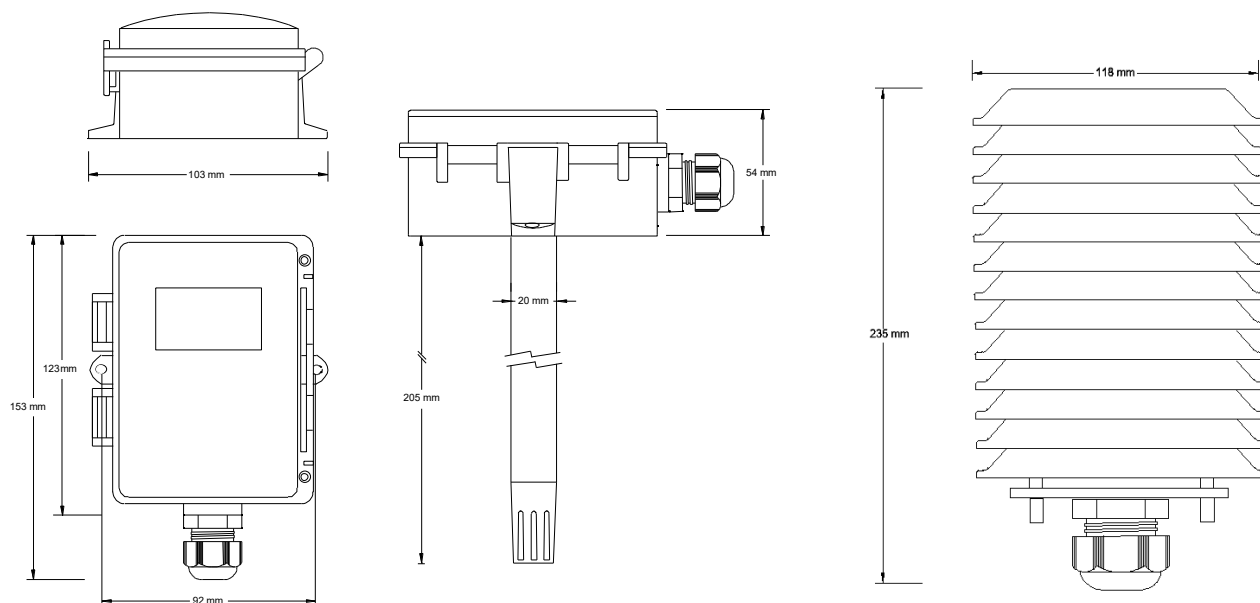
Dimensions

RH-S-UN:

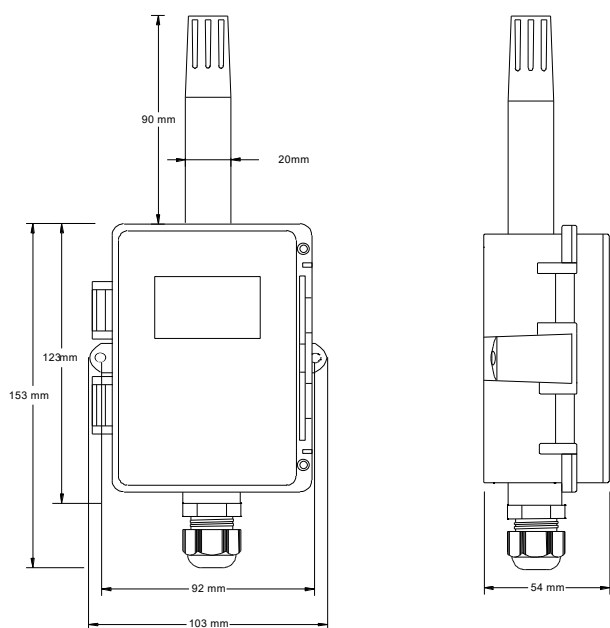


Dimensions

RH-D-UN & Shield used with RH-O-UN:



RH-O-UN:



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