

UN-1000

Space Mounted Single Output Universal Sensors



Features:

- Self-detecting 0-10Vdc or 4-20mA (3-wire) output
- Fully configurable LCD Display
- Resistive temperature output option

Benefits:

- No jumpers or DIP-switches to select output type
- Low cost

Technical Overview

The UN-1000 range offers a cost-effective single output based on the sensing element required. This can be either IAQ, CO₂, RH & temperature but can also include a combination of familiar passive options such as setpoint adjustment, momentary switch and fan speed, plus an LCD display.

A unique feature of the sensor is its ability to automatically detect what sort of controller input it is connected to, 4-20mA or 0-10Vdc, removing the requirement for output jumpers which can be inadvertently set incorrectly. Just connect it to the controller input and it does the rest. PCB LED indication of which output type is in operation is provided, with diagnostic LED patterns for determining faults.

Specification:

Outputs	0-10Vdc or 4-20mA self-detecting (not loop powered)
Power supply	24Vac/dc
Output ranges:	
IAQ	0 to 10 indicates AQ value (0 = good, 10 = poor)
CO ₂	0-2000ppm or 0 to 5000ppm
RH	0 to 100%
Optional passive outputs:	
-T	Resistive, PTC & NTC types
-SP	1-11K Ω linear $\pm$ 30%
-MS	VFC 24Vac/dc 50mA max.
-FS	Resistive (see page 4 for values)
Measurement accuracies:	
CO ₂	$\pm$ 70ppm
RH	$\pm$ 3% RH
Other optional outputs (<i>available on request</i>)	
Temp	-20 to +50°C
Dewpoint	-10 to +50°C
Absolute humidity	-5 to 75g/m ³
Enthalpy	-20 to 250kJ/kg
Accuracy	
Temperature	$\pm$ 0.4°C
Dew point	1.2°C typical (4°C max)
Enthalpy	1.8kJ/kg typical (27kJ/kg max)
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 28mm
Protection	IP30
Country of origin	UK

Part Codes:

GS-AQ1000-UN

Space air quality transmitter

GS-CO2-1000-UN

Space CO₂ transmitter

RH-1000-UN

Space RH transmitter

Suffixes (add to part code)

-T 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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Interface Options (add to part code)**

-SP	Resistive set point 0-10k Ω or 11-1k Ω
-FS3	Resistive 3-speed fan switch
-FS4	Resistive 4-speed fan switch
-FS5	Resistive 5-speed fan switch
-HR	0-5000ppm CO ₂ range (GS-CO2 only)
-MS	Momentary switch
-LCD	Integral LCD display
-LED	3-colour LED CO ₂ indication (GS-CO2 only)

Accessories

DECOR Decorators trim plate

GASKET Insulating gasket (pack of 10)

** Interface Restrictions

- SP only
- MS only
- SP-MS only
- SP-FS only

Note*:

When using the **-T** option, they are not compensated for internal heating.



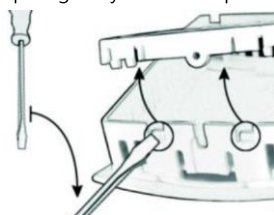
The products referred to in this data sheet meet the requirements of EU Directive 2004/108/EC

Installation:



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

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, to remove the front panel from the base, twist a screwdriver as below and pull gently the front panel from the base.

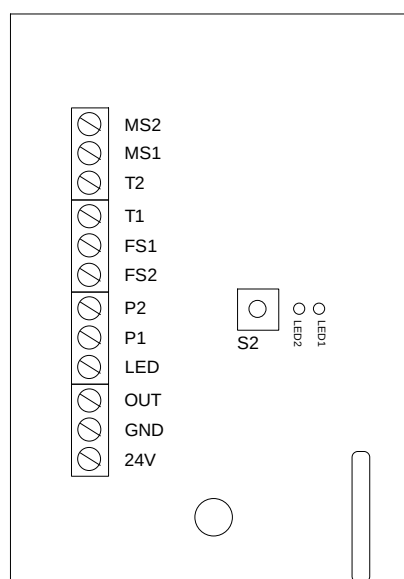


3. Using the base as a template mark the hole centres and fix to the wall with suitable screws. Alternatively the base plate can be mounted on to a conduit box or standard recessed back box. The base plate is suitable for EU & North America fixings.
4. Feed cable through the hole in the base plate of the housing and terminate the cores at the terminal block as required. Leaving some slack inside the unit.
5. Replace the housing to the base plate and tighten the tamperproof screw (if required) through the lug at the bottom of the base plate.
6. 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.

To perform an accurate comparison between a transmitter output and any portable reference, it is essential that the two sensors are held adjacent for a minimum of 30 minutes in a stable environment. Only in this way can speed of response and temperature factors be eliminated.

Connections:

MS2	Momentary switch output (VFC)
MS1	Momentary switch output (VFC)
T2	Direct thermistor output (resistive)
T1	Direct thermistor output (resistive)
FS1	Fan speed switch output (resistive)
FS2	Fan speed switch output (resistive)
P2	Set point (resistive)
P1	Set point (resistive)
LED	0-10Vdc input for "traffic light" led or Occupied/unoccupied test on LCD
OUT	Auto-selecting 0-10Vdc or 4-20mA (3-wire) output
GND	Common 0V
24V	Supply + 24Vac or Vdc



Options:

-T (if fitted)

Direct resistive output is between terminals T1 and T2, polarity is independent. When using the **-T** option, they are **not** compensated for internal heating.

Fan Speed (if fitted)

The position of the selector switch will cause the resistance between the terminals to alter as shown below.

Switch position	Output
0	Open circuit
1	22.7k Ω
2	26k Ω
3	29.3k Ω
Auto	32.6k Ω

Set point (if fitted)

This is available in two standard values:

-	+
1k Ω	11k Ω

Momentary switch (if fitted)

Rated at 24Vac/dc @ 500mA max.

LED's, Self Test and CO₂ LED(optional):

The LEDs are labelled LED1 and LED2. On power up or when the load resistance is in the "forbidden zone" (550R to 3K) the LEDs will flash alternately. Once the system has established which mode to operate in, the appropriate led will be on and not flashing.

- LED1 Current output
- LED2 Voltage output

Currently an 'Error Halt' will occur if:-

1. Temperature, RH, Dewpoint, Absolute Humidity or Enthalpy is selected and the appropriate sensor not fitted.
2. In CO₂ mode a CO₂ sensor element is not fitted or is faulty.
3. In IAQ mode a sensor is not fitted.

In all 3 cases above, both LEDs are on and the output is set to zero.

PCB Self Test:

Push button is for 50% output. Press and hold, the output in voltage mode it may take several seconds to settle. The screen displays 50% message when active (if display is fitted).

0-10Vdc input:

- In traffic light mode: Zero to 2.5V = Green 3.5V to 6V = Amber and 8.5V to 10V = Red.
- In override mode: 0-4.9V Override Off, 5-10V Override On