SEM164 HUMIDITY & TEMPERATURE TRANSMITTERS

Supplied by :

STATUS INSTRUMENTS

Green Lane Business Park
Tewkesbury
Glos, GL20 8DE, UK
Telephone : 01684 296818
Fax : 01684 293746
E-mail : support@status.co.uk

Stock code : 52-214-2074-01 Issue:01

1.0 INTRODUCTION

The SEM164 range of temperature and humidity transmitters includes types for both wall and duct mounting as follows :

SEM164 W / 3 / HP	(Wall mount 3%)
SEM164 W / 2 / HP	(Wall mount 2%)
SEM164 D / 3 / HP	(Duct mount 3%)
SEM164 D / 2 / HP	(Duct mount 2%)

Two wire loop powered operation provides good noise immunity and economic site wiring. Connection of the site wiring to the transmitter is via screw terminals which are removable from the PCB for ease of wiring.

The sensor is fitted with a PTFE membrane filter around the sensor guard body, to filter harmful dust and other airborne pollutants whilst allowing the moisture vapours to enter the sensing area of the probe. The probe **MUST NOT** be operated without this filter in place.

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL THIS TRANSMITTER.

2.0 HANDLING

Handle the probe with care during installation, the sensing element used to measure the humidity is of glass construction. Although mechanically robust when permanently fixed into position, it may be damaged if the probe is dropped or shocked in any way.

Sensor probes should not be mounted in positions in which they will be exposed to direct moisture contact e.g. rain. Units being mounted outdoors should be fitted into suitable protective enclosures. Sensors should not be exposed to humidity and temperature levels outside their specified operating ranges.

2.1 INSTALLATION

(DUCT MOUNT VERSIONS) Cut a 27mm hole in the chosen position of the duct wall to allow the probe to enter the duct. Make sure the probe does not foul the opposite wall of the duct. Position the probe shaft through the 27mm aperture to it's full extent and with the cable gland of the electronics housing in the vertical downwards position, note and mark the two fixing slots at the side of this housing. The fixing slots are moulded at an angle to facilitate easier screwdriver access.

(WALL MOUNT VERSIONS) Position the transmitter at the desired location with the sensor stem either horizontal or pointing downwards mid way between floor and ceiling. Avoid the following locations :-

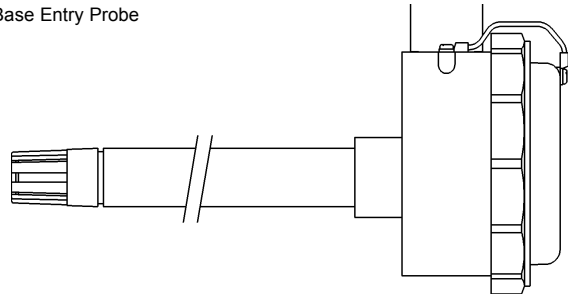
Near to entrances, exits or windows
In direct sunlight or near room heating devices
In direct line of air conditioning vents

Remove the probe and drill the two marked positions to receive No.6 x 19.1mm self-tapping screws. As a guide, in soft materials ie. aluminium, plastics, wood etc. a 2.5mm drill is recommended. In harder and/or thicker materials use a 3mm drill.

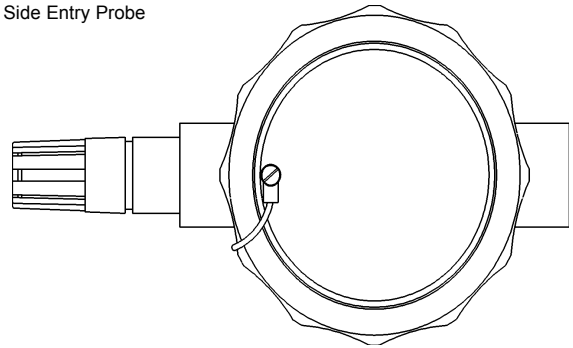
Unscrew the cover of the electronic housing and remove the plastic bag containing the two self-tapping screws, replace cover. Now fix the probe permanently into position. On duct mount devices, the neoprene compression ring, between the housing and the duct, will give a good degree of sealing when the probe is fixed as recommended.

2.2 MECHANICAL

Base Entry Probe



Side Entry Probe



3.0 WIRING

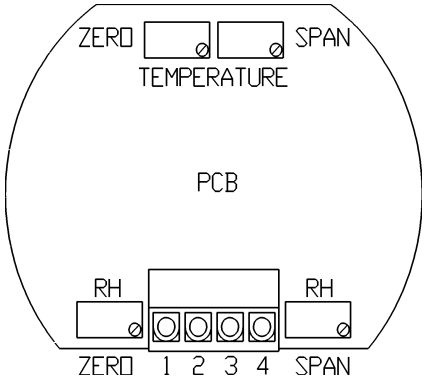
The electronic housing contains the wiring terminals which are screw type clamps. A maximum core size of 2.5mm² can be accepted, with an overall cable diameter of between 4 and 8mm. Pass the cable through the cable gland of the probe and connect to the relevant terminals using small loops for each core to reduce strain on the PCB mountings. The connecting terminals are removable from the PCB for ease of wiring (see diagram in section 3.1).

It is recommended that transmitters are fitted into an installation after the air distribution system has been running for an initial period of at least several hours. This will permit the system to clear itself of contaminants and reduce the possibility of sensor saturation.

3.1 ELECTRICAL

Connections are made to the four way terminal on the transmitter PCB, as shown in diagram below :

Both relative humidity and temperature channels require DC supplies in the range of 12 to 32 volts (nominal 24 volts).



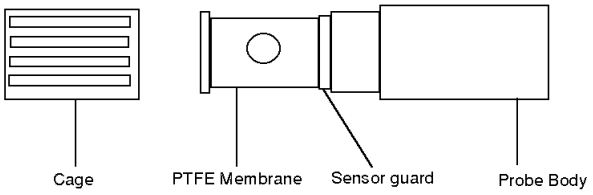
Electrical Connections :

1 Humidity -	2 Humidity +
3 Temperature -	4 Temperature +

4.0 CHANGING THE FILTER

Remove protection cage from the probe stem (as shown below), by applying steady upward pressure to the sensor cage.

Use a high grade 12mm wide PTFE tape, lay onto a piece of paper to reduce the static effect, cut off a 50mm length. The PTFE tape is now fitted to the PTFE membrane to cover the sensor guard holes. Apply light pressure, to rub the tape in the direction of the tape end joint will effect the bonding. Refit the sensor cage after the operation.



5.0 CALIBRATION CHECK FOR HUMIDITY (%RH)

The probe may be checked for correct operations if the need arises, calibration capsules are required. Either check capsules or NAMAS certified capsules for more precise calibration are available. With power applied to the probe affix the lowest value of capsule over the sensor cage, leave for 30 minutes then check the %RH 4-20mA output using an Ammeter. Adjust humidity ZERO pot if required.

Note: The reading should be Capsule Value (%RH) x 16mA + 4mA Replace low value capsule for a high value capsule, leave for 30 minutes and check the %RH output signal. Adjust the humidity SPAN pot if required, repeat process until unit is within specification. Remove power from the probe, disconnect Ammeter, refit the probe into position.

5.1 CALIBRATION CHECK FOR TEMPERATURE °C

To check the calibration of the temperature, the probe should be compared with a reference probe within a stable environment. Slight inaccuracies can be corrected by adjusting the temperature zero pot. If greater inaccuracies have occurred the unit should be sent back for re-calibration.

6.0 SPECIFICATION

Humidity

Output signal:	4-20mA linear
Sensor type: capacitive -	wettable
Measuring range:	0-100%RH
Probe tip working temperature:	-25°C to +80°C
Electronics working temperature:	-25°C to +55°C

	Grade 3	Grade 2
Accuracy:	±3%RH	±2%RH
Hysteresis:	<3%RH	±1%RH
Response time:	0-95%RH (90% of change): <15s	
Linearity 5-95%RH:	<2%RH	
Loop power supply:	24V DC nom	

Maximum loop load: $R_{load(max)} = \frac{(V_{loop} - 12V)}{20mA}$

eg. Vloop 24V DC - Rload(max) = 600 Ohms

Temperature

Output signal:	4-20mA
Range:	0-50°C
Sensor:	Mo1000 thin film
Class:	'B' equivalent to IEC 751 (DIN 43760)
Accuracy:	0 °C = ±0.3°C 50°C = ±0.55°C
Calibration accuracy:	= ±0.1%
Loop power supply:	24V DC nominal
Maximum loop load:	$R_{load(max)} = \frac{(V_{loop} - 12V)}{20mA}$

Mechanical Details

Materials of construction:	ABS for main body Polypropylene for sensor mounting
Sensor filter material:	PTFE Sub-micronic
Filter type:	Field replaceable
Protection:	IP65 enclosure
Connections:	Removable screw terminals
Maximum core size:	2.5mm²
Recommended cable diameter:	4-8mm
Cable entry:	Compression type cable gland - to IP65

ORDER CODE