Humidity and Temperature sensor unit for vacuum chamber application
Qty.: 1 No.

1.0 Technical specifications:

Sl. No.	Technical parameters	Specification values
1.1	Description	The Humidity and temperature sensor unit shall consist of sensor/probe with **½"** ISO/NPT end fitting, DIN rail/Rack mounted transmitter with suitable digital read out display and **10.0m length** connecting cable.
1.2	Measurement technology	Capacitive based measurement
1.3	Application	The Humidity and Temperature sensor will be used in vacuum chamber which is typically maintained at high vacuum of better than 10^{-6} mbar.
1.4	Parameters to be measured	Relative Humidity and Temperature
1.5	Sensor/Probe material	AISI Stainless steel 304/316 or better.
1.6	Sensor/Probe protection	Sensor shall be provided with suitable filter such as PPS plastic grid/sintered stainless steel/stainless steel mesh etc.
1.7	**Operating environment** Pressure Temperature	 From full vacuum (Better than 10^{-6} mbar) to 10 bar (g) -70ºC to +100ºC
1.8	**Measurement range** 1.8.1 Relative humidity 1.8.2 Temperature	 0 to 100 % ≤ -70ºC to ≥ +150ºC
1.9	**Accuracy** 1.9.1 Relative humidity 1.9.2 Temperature	 ≤ ± 1% in the range of 0 to 90% RH ≤ ± 0.5ºC
1.10	Response time for Relative Humidity	≤ 15 seconds
1.11	End fitting	The end fitting of the probe shall have an O-ring seal or any other suitable seal so as to establish the vacuum leak tightness in the order of 10^{-8} mbar-litre/sec or better at the interface of vacuum chamber.
1.12	Sensor/Probe material compatibility for high vacuum	All the materials of sensor/probe shall be suitable for use in vacuum environment and shall have low outgassing rates. Vendor to provide the information on materials used in sensor/probe and their outgassing rate data, if available.
1.13	Operating voltage	230VAC ± 10%. In case of any other voltages, suitable adaptor shall be provided.

1.14	Output parameters to be read on the display	Relative Humidity (%RH), Temperature (ºC), Absolute Humidity (g/m^3), Dew point temperature (ºC), Water concentration (ppm_v), Water mass fraction (ppm_w), Water vapor pressure(hPa), Water vapor saturation pressure(hPa) and Wet bulb temperature(ºC).
1.15	Signal Output requirements (both analog and digital)	**Analogue output:** 4-20mA **Digital output:** RS 485 or RS 232 or Ethernet with Modbus protocol
1.16	Relay output	Min. one relay output shall be provided for process related control.

2.0 General Terms and Conditions:

2.1 Technical datasheet in support of the offered specifications shall be provided along with the offer.

2.2 Offers from Original Equipment Manufacturers (OEM's) or their authorized representatives only will be considered. In case of Authorized representative, authorization letter from OEM shall be provided along with the quote.

2.3 **Product Heritage:** The quoted product shall have good heritage for using it in vacuum chambers. Purchase order references in support of the same shall be provided along with the quote.

2.4 Calibration certificate traceable to NIST for Relative Humidity and Temperature shall be provided along with the supply.

2.5 One set of operating instructions/Manual in English language shall be provided along with the supply.

2.6 The price shall be quoted on **"FOR URSC"** basis.

2.7 **Acceptance:** The item will be accepted at URSC after verification of functional and operational requirements.

2.8 **Delivery period:** 10 weeks from the date of acknowledgement of Purchase Order.

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