Model 1201 Smart Temperature/RH Sensor

Model 1201 smart sensors allow for the measurement of temperature and relative humidity, (RH) during an ILRT without the aid of a data acquisition system. Each compact sensor contains one temperature channel and one temperature compensated RH channel with its own CPU, memory, signal conditioning, internal calibration constants and RS-485 bus interface.

The RS-485 network allows for multiple sensors to be connected to a PC's communications port with a single 4-wire cable string. A typical ILRT may use six strings with seven or more sensors per string. Although the are physically connected in series, they are electrically connected in parallel so that the failure of any one will not affect the others.

 The advantages over a conventional system

• Elimination of the need for a scanner and data acquisition system.

• The amount of cable and the time needed to install it is greatly reduced.

• Each sensor is a complete system in itself; a single failure will not disable the entire network.

• Each sensor may be subjected to an end to end calibration in the laboratory.

• The sensor directly outputs a digital signal, cable length has no effect upon the sensor's accuracy.

• No loop calibrations or any kind of adjustments in the field are ever needed.

1201 Specifications

POWER REQUIREMENTS
Electrical Power: 15 to +25 VDC, 1.0 Watts Max.
Max current draw: 45 mA at 24V DC

TEMPERATURE SENSOR
The Model 1201's temperature sensor is designed for the measurement of temperature inside of primary reactor containment during an ILRT. These sensors utilize 10K ohm thermistors. The thermistors are glass hermetic encapsulated and subjected to 100% individual in-process screening and are suitable for long term use in severe moisture environments, unaffected by cyclic moisture conditions

Temperature Range: 32 to 160°F, (0 to 72°C)
Whole Channel Accuracy: 0.2°F, (0.111°C)
Resolution: 0.01°F, (0.005°C)
Stability: Less Than 0.09°F, (0.050°C) Drift Per 100 Months

HUMIDITY SENSOR
The 1201's humidity sensor is designed for the measurement of relative humidity, (RH) inside of primary containment during an ILRT. These RH sensors utilize CMOSens® technology in a unique capacitive sensor element which is temperature compensated using a band-gap temperature sensor. This technology guarantees excellent reliability and long term stability.

Humidity Range   : 10 to 100 %RH
Whole Channel Accuracy: 2 %RH
Resolution: 0.01 %RH

INPUT MODULE
CPU: 8 Bit Microcomputer
A-D Converter: 15 Bit, 9 Conversions per Second
Temp Stability: 50 ppm/°F (27.78 ppm/°C) Max
Max Operating Pressure: 70 psig, (4.82 bar)
Relative Humidity: 0 to 100 %RH

COMMUNICATIONS BUS
Multi-drop RS-485 Bus, With ASCII
Format Command/Response Protocol
Max Number of Sensors/Port: 124
Parity Options: None
Selectable Baud Rates: 300, 1200 or 9600
Data Bits: 8, Parity: N, Stop bits: 1
Flow Control: None

AMBIENT CONDITIONS
Max Operating Pressure: 70 psig (4.82 bar)
Relative Humidity: 10 to 100%

TYPICAL ILRT SYSTEM

MODEL 1201 SMART SENSOR