TEMPERATURE AND HUMIDITY SENSOR PROBE

This module integrates a PT100 RTD and SHT45 sensor, managed by the nRF52833 IC. It measures –40 °C to +100 °C temperature and 0 to 100% RH humidity, converts digital outputs to analog signals, and supports MODBUS communication for reliable use in industrial and automation systems.

FEATURES

- High precision temperature and humidity sensing probe
- Compact low power design, suitable for IoT and embedded applications
- Robust RS485/MODBUS RTU communications for industrial use
- CRC validations provide reliable and error free data transfer
- Output provides both analog and digital value

SPECIFICATIONS

Temperature Range	–40 °C to +100 °C
Humidity Range	0 to 100% RH
Temperature Sensor	PT100 RTD (via MAX31865, SPI)
Humidity Sensor	SHT45 (I²C)
Controller IC	nRF52833, ARM Cortex-M4
DAC Outputs	2 × MCP4725, 12-bit, I²C
Analog Output Range	0 – 1 V (linear mapping)
Digital Output	UART / RS485 (Modbus RTU)
Communication Protocol	Modbus RTU (CRC16)
Temperature Accuracy	±0.1°C
Humidity Accuracy	±1.0% RH
Supply Voltage	5 -12 V (DC external)

*Note: The existing probe having the temperature range of –40 °C to +100 °C, but it can be adjusted as per the requirements.

APPLICATIONS

- IOT and agriculture irrigation system.
- Healthcare & Medical Facilities
- Agriculture & Farming
- Cold Storage and Warehouse.
- Food & Beverage Industry
- Transportation & Logistics

ENCLOSURE SPECIFICATIONS

TEMPERATURE AND HUMIDITY SENSOR PROBE

Material	Acrylonitrile Butadiene Styrene (suitable for outdoor use
Dimensions	Length 155mm, Diameter 18.90mm
Weight	70g
Color	Glossy White (for minimal solar heating)
Cable Entry	Weather-sealed PG7 / PG9 glands for sensor & power cables
UV Resistance	Rated for > 5 years outdoor exposure