



Product overview

The AX-RHT-SM is a range of Room Relative Humidity & Temperature transmitters with Modbus RTU output. An integrated LCD display is available as an option. Wiring is simplified with connections all made on the back-plate, and a plug-in electronics housing. Communication parameters can be configured locally using dipswitches or over the network.

Options for this range of sensors include the addition of various passive temperature sensors for most BMS systems.

Products Features

- 2.5% Accuracy standard
- Optional 2-Line LCD display
- Isolated RS-485 output
- Optional thermistor output for temperature

Product Specifications

| | |
|--------------------------------|--|
| Power Supply : | 24Vac \pm 10% or 24Vdc \pm 10% |
| Sensor Type / Protection : | RH: Capacitive , Temperature: Band gap / PTFE filter |
| Output : | RS485 Modbus RTU *See ' <i>NETWORK COMMUNICATION DETAILS</i> ' for more information |
| Output Range - RH : | 0 to 100% RH |
| Output Range - Temperature : | -10°C to +40°C |
| RH Accuracy : | \pm 2.5% typical (20 to 80% RH at 25°C), \pm 2.0% option |
| Temperature Accuracy : | \pm 0.3°C typical |
| Long Term Stability : | \pm 1% RH at 50% RH in 5 years |
| Repeatability / Hysteresis : | \pm 0.5% RH / \pm 1% of span max |
| Response Time : | 15 seconds @ 25°C, but dependant on airflow |
| Display option : | 3 digit, 2 line, 6mm character height LCD display of RH and Temperature |
| Terminals : | Rising clamp 0.5-1.5mm ² cable |
| Ambient Temperature Range : | -10°C to 50°C, 0-95% RH |
| Dimensions, Weight & Ingress : | 87 x 82 x 27mm, 75g, IP20 |
| Country of origin : | United Kingdom |

Product Order codes

| Order Code | Description |
|-------------|---|
| AX-RHT-SM | RH & T Transmitter over RS485 Modbus ,2.5% accuracy |
| AX-RHT-SMD | RH & T Transmitter over RS485 Modbus ,2.5% accuracy ,with LCD |
| AX-RHT-SM2 | RH & T Transmitter over RS485 Modbus ,2% accuracy |
| AX-RHT-SM2D | RH & T Transmitter over RS485 Modbus ,2% accuracy ,with LCD |

Add suffix (-x) for Additional passive thermistor output. Choose one of the below thermistor types. Eg -T for Trend.

| | | | | | |
|----|----------------------|-----|-----------------|------|---------------|
| T | 10K3A1 Trend | D | 30K3A1 Drayton | 1K | PT1000a Cylon |
| 3K | 3K3A1 Alerton | 50K | 50K6 Priva | 2.2K | 2.2K Johnsons |
| A | 10K4A1 York, Andover | N1K | Ni1000a Siemens | SAT | Satchwell |
| H | 10K6A1 Honeywell | 100 | PT100a Serek | TAC | 1K87A1 TAC |

Installation

The AX-RHT-SM range of sensors should be installed by suitably qualified technician in conjunction with any guidelines for the equipment it is to be connected to and any local regulations. Field wiring should be installed to satisfy the requirements set out by the manufacturer of the equipment that the sensor is being connected to. Anti-static precautions must be observed when handling these transmitters. The PCB contains circuitry that can be damaged by static discharge.

The unit should not be mounted where temperatures will exceed the ambient temperature range specified.

Allow 3 minutes after applying power before checking functionality, and allow a further 30 minutes before carrying out pre-commissioning checks.

Chemical vapours at high concentration in combination with long exposure times will offset the sensor reading. This includes transportation before installation

Display

During start up , LCD display will show the network parameters briefly.

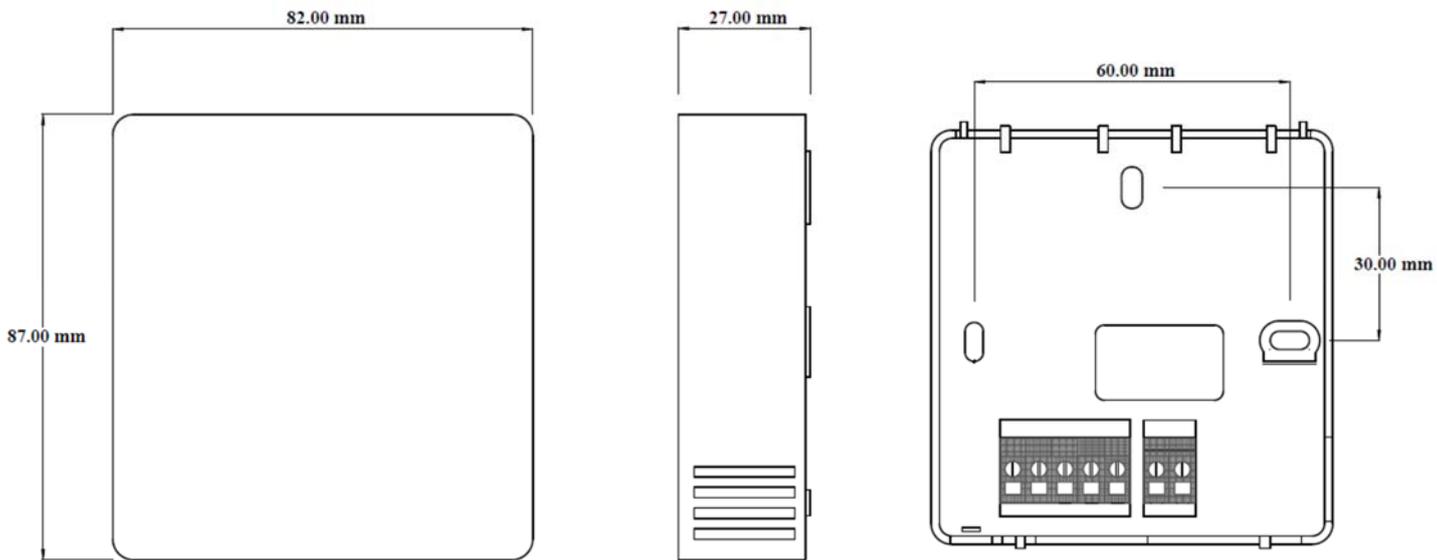
In normal operation the top line of the display will show the relative humidity level as a percentage. The bottom line will show the temperature in °C.

If the display show 'Err' then the sensor is faulty .

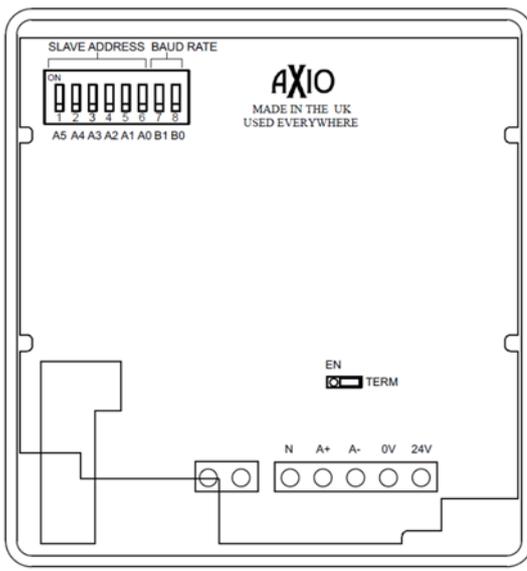
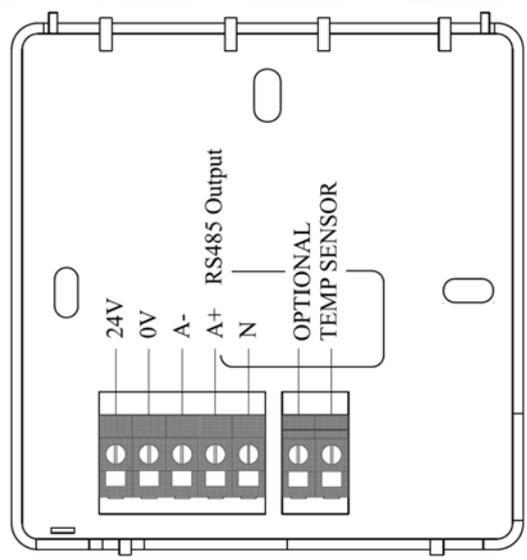
Termination Impedance

If the slave device is at the end of the network, enable 120Ohms termination resistor by placing TERM in ENABLE Position. This ensures the proper termination of signals travelling in both directions on the bus. Do NOT use more than two termination impedances in a network.

Dimensions



Connections



Network Communication Details

The communication parameters can be set using the Dipswitches or can be programmed over the network.

When dipswitches are used, the device address is set using switches A5 to A0 and the baud rate is selected by B1 and B0. The Parity will be None and the Number of Stop bits will be 1 in this mode. The new values will not be updated until either the unit is re-powered or a software reset executed.

When the dipswitches A5 to A0 are set to OFF, the communication parameters will be loaded from the configuration registers 40050 to 40053. When these registers are modified, the updated values will not be stored until a Non Volatile Memory Update command has been executed and will not be used until either a Force Reset command or a re-power of the unit.

Dipswitch configuration

| A5 | A4 | A3 | A2 | A1 | A0 | |
|-----|-----|-----|-----|-----|-----|----------------------------------|
| OFF | OFF | OFF | OFF | OFF | OFF | Comms. set by registers 40050:53 |
| | | | | | | Address |
| OFF | OFF | OFF | OFF | OFF | ON | 1 |
| OFF | OFF | OFF | OFF | ON | OFF | 2 |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| ON | ON | ON | ON | ON | ON | 63 |

| B1 | B0 | Baud Rate | Parity | No of Stop Bits |
|-----|-----|-----------|--------|-----------------|
| OFF | OFF | 9600 | None | One |
| OFF | ON | 19200 | | |
| ON | OFF | 38400 | | |
| ON | ON | 57600 | | |

Modbus Register Details

| Address | Supported function codes | Description | Data type | Data |
|-------------------------|---|----------------------------|-----------|---|
| Data registers | | | | |
| 30001 | 04(Read Input Registers) | Relative Humidity in % | int16 | 0-10000 (00.00-100.00) |
| 30002 | | Temperature in Deg C | int16 | -1000 - 4000 (-10.00 - 40.00) |
| 30003 | | Sensor Fault | uint16 | 0: No Fault 1: Fault |
| Configuration registers | | | | |
| 40050 | 03(Read Holding Registers) 06(Preset Single Register) 16(Preset Multiple Registers) | Modbus Address (Network) | uint16 | 1-247(Default:1) |
| 40051 | | Baud rate (Network) | uint16 | 0: 9600(Default) 1:19200 2:38400 3:57600 |
| 40052 | | Parity | uint16 | 0:None(Default) 1:Odd 2:Even |
| 40053 | | No of Stop bits | uint16 | 0:1 Stop bit (Default) 1:2 Stop bits |
| Control registers | | | | |
| 40100 | 06(Preset Single Register) | Force reset | uint16 | 0:Normal 1:Reset |
| 40101 | | Non volatile memory update | uint16 | 0:Normal 1:Update |
| 40102 | | Force factory defaults | uint16 | 0:Normal 1:force Defaults |

Datasheet Contents

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