RHT-RM

Relative Humidity and Temperature Transmitter

Operation Manual

INTRODUCTION

The Relative Humidity and Temperature Transmitters RHT-RM convert these two physical units into two isolated, highly stable and interference free 4 to 20 miliamp signals.

Power is provided in a two-wire configuration where the same pair of wires that bring energy to the circuit carry the signal to the measuring device.

CHARACTERISTICS

Relative Humidity Circuit

- Output: 4 to 20mA for 0 to 100% relative humidity;
- Power supply: 12 to 30 Vdc;
- Exatidão: ±2,8%RH de 0 a 100%RH a 25°C
- Repetitivity: ±0,5%RH
- Linearity error: ±0,5%RH
- Hysteresis erro: ±1,2%RH
- Stability: ±1%RH típico a 50%RH em 5 anos.
- Humidity measurement temperature drift:

RH (compensated) = RH (measured) / (1,0546 - 0,00216 * T)
RH in %; T in °C

- Time Constant: 15 seconds in still air;
- Operating Temperature: -20°C to 80°C;

The built-in humidity sensor may be damaged or loose calibration if exposed to chemically active environments such as: Ammonia hydroxide, Acetone, Ethanol, Methanol, Formaldehyde, Benzene, Toluene e Xylene.

Temperature Section

- Output: 4 to 20mA for the temperature indicated on the side label;
- Power supply: 12 to 30 Vdc;
- Sensor: Pt100;
- Total acuracy: ±0.25°C;

The inner side of the cover contains a label with all relevant information as power supply voltage, output type, working range, etc.

CONNECTIONS

Notice that each independent transmitters (RH and Temp.) need only a two-wire connection to a power source (12Vdc to 30Vdc). The 4 to 20mA measuring signal flows through the same two wires taking the signal to the measuring device.

The power cable passes through the cable gland and is attached to the screw connector according to the instructions on the inner side of the box cover.

The figure below shows a typical electrical diagram of two measuring circuits connected to one RH and Temp transmitter.

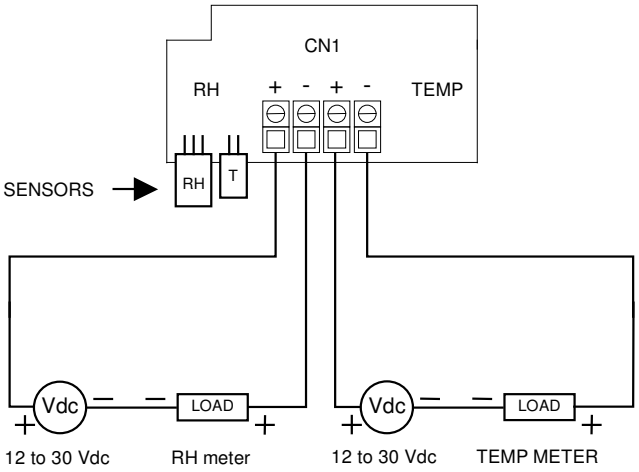

Figure 4 – Connections diagram.

The maximum LOAD resitance plus the wires resistance can be calculate as follows:

$$LOAD = \frac{Vdc - 12}{0.02}\Omega$$

Where **Vdc** is the voltage of the power supply.

The transmitter is mounted onto a wall by means of two fixing points of the base as shown in figure 2:

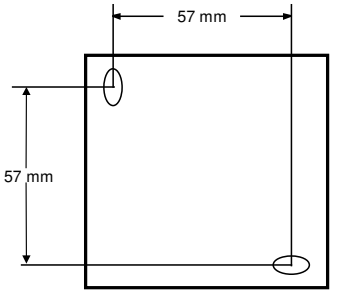

Figure 2 – Two fixing points on model RM.

MAINTENANCE

The transmitters require low maintenance. If dust in excess is deposited on the sensor, a moderated air blow can be used to clean it. The dust can cause measurements errors and delay in the response time.

If the transmitter shows for long periods a relative humidity of 100% when the ambient is known to have a lower value, then water may have been condensed on the sensor. If this is the case, blow the sensor with dry air to eliminate the condensed water.

CALIBRATION

The transmitter is factory calibrated and field calibration is seldom necessary. Should it be required, the calibration should only be done by experienced personnel.

The normally only required calibration is in the offset (ZERO) value of either the Temperature or Relative Humidity outputs, so as to match a known reference.

1) Define the input to calibrate
2) Connect a milliamp meter to the 4-20mA output to measure the transmitter output signal.
3) Adjust the ZERO RH or ZERO T trimpots to bring the output value to the correct value (see Figure 5).

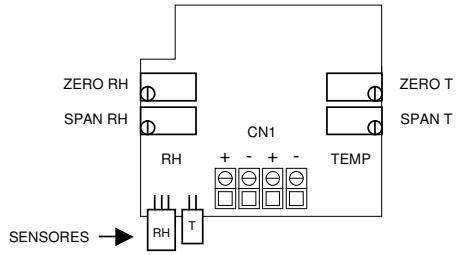

Figure 5 – Calibration trimpots inside the instrument.