Interior temperature and humidity sensors, analog output 0 ÷ 10V - types RK-HTU, RK-HNU

The sensors are designed to measure relative air humidity and possibly air temperature without aggressive additives in interiors with increased aesthetic demands. They are adapted for direct mounting on an interior wall or on a standard installation box with a spacing of 60mm.

he output of relative air humidity (hereinafter referred to as RH) is a voltage signal of 0 ÷ 10V. The output of the measured temperature is a voltage signal of 0 ÷ 10V, or the device may be without the possibility of measuring temperature.

The sensor electronics with terminal blocks are located in the base part of the box and are accessible after removing the lid.

The sensors must be protected from dirt, excessive dust or direct exposure to water!

Basic technical parameters:

Supply voltage (Ucc)	15 ÷ 30 VDC [*1]
Max. consumption	10mA
Range of RH (RH = 0 ÷ 10V)	0 ÷ 100%
Accuracy - humidity	±3% (10 ÷ 90%)
Standard temperature ranges (temp. = 0 ÷ 10V)	0 ÷ 35 °C 0 ÷ 50 °C
Accuracy - temperature	±1% from range
Load impedance of voltage outputs (Rz)	> 50kΩ
Galvanic separation of outputs	no
Range of recommended working temp. [*2]	0 ÷ 50 °C / 0 ÷ 95 %RH
Range of recommended storage temp. / RH	-20 ÷ 60 °C / 0 ÷ 95 %RH
Protection type	IP30
Terminal board	CPP (max. 1 mm^2)

[*1] If 24VAC supply voltage is required, an MN24 voltage converter can be ordered for the device (for placement in the KU68 installation box).

[*2]
The sensor steadily works within the recommended measurement range that is 10 ÷ 80 % RH. The long-term exposition to the high humidity, namely >80% RH causes the gradually increasing reading deviation of RH (+3% RH after 60 hours >80% RH). After returning back to normal range the RH measurement gets slowly back to calibrated values.
Long-term exposure to extreme conditions can accelerate sensor aging.
Detailed information on conditions of long-term use of the sensor SHT31 under conditions out of the standard range, especially at the relative humidity >80% RH, are shown directly at the producer´s website at: http://www.sensirion.com

Connection plan (fig.1):
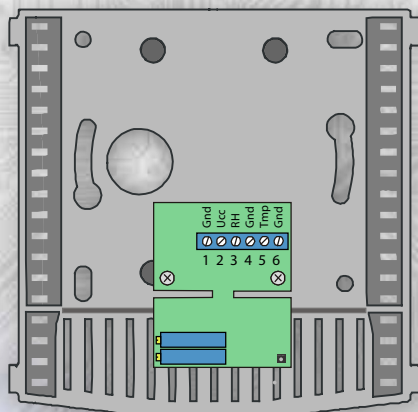
Terminal 1...... - GND, negative pole
Terminal 2.......+ Ucc, positive pole
Terminal 3...... positive pole RH   (0 ÷ 10V)
Terminal 4...... common pole RH   (GND)
Terminal 5..... positive pole temperature (0 ÷ 10V)
Terminal 6...... common pole T   (GND)
Terminals 1, 4 and 6 are galvanically connected.

List of available types:

Type of outputs	RH = 0 ÷ 10V, temperature = NO	RH = 0 ÷ 10V, Temp. 0÷35°C = 0 ÷ 10V	RH = 0 ÷ 10V, Temp. 0÷50°C = 0 ÷ 10V
Type of sensor	**HNU**	**HTU/0÷35°C**	**HTU/0÷50°C**

Connection of output signals and power supply (Fig. 2):

RK-HNU

RH

U+cc   V + −

1 2 3 4

RK-HTU

RH   T

U+cc   V   V + −

1 2 3 4 5 6
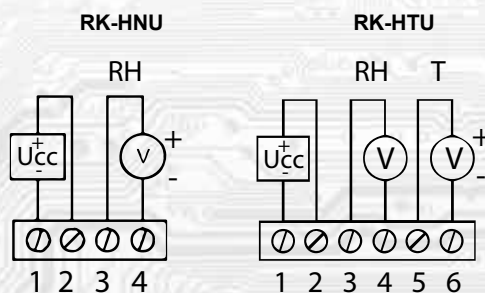
Assembly and connection:

The devices are intended for direct mounting on the wall or on the KU68 installation box. First, the lid is removed, which makes the terminal block and mounting holes accessible. The base is screwed to the interior wall or to a standard installation box with a spacing of 60mm using two screws.
The electrical connection of the lead wire of the recommended cross-section and diameter is made on the terminal block (Fig. 1 and 2).
By attaching the perforated cover, the sensor is ready for operation.
Disassembly is carried out in the reverse order.

Using the sensors in 24VAC systems

Using the MN24 converter, these devices can also be used in 24VAC measurement and control systems.
The converter can be placed in a deeper flush-mounted box, e.g. KU68.

Terminals 1, 2 :
input voltage 24VAC

-24VDC

+24VDC

1
2

21

14

100

51

Dimensions

front view

mounting holes

75 mm

103 mm

68 mm

Ø15 mm

100 mm

60 mm

Material	polyamid
Color	white
Dimensions	103 x 100 x 25 mm