TP542 | Relative humidity sensor 0 – 10VDC

Room sensor TP542 is used to monitor the air quality inside buildings and effectively control ventilation (HVAC) systems according to current levels of air pollution. The sensor measures the relative humidity (RH) in air. It is suitable for living rooms, bathrooms, warehouses, ateliers etc.

- measures relative humidity in air
- LED indication with automatic turn off according to ambient light (at night)
- analog voltage output 0-10V
- output relay NO/C
- maintenance or calibration not required during operation
- long life and stability

Description

Measurement of the relative humidity is based on the principle of capacitive polymer sensor.

The sensor has one analog output for the actual concentration of RH.
Ventilation, air conditioning and heat recovery units can be directly controlled based on the output signal of the sensor in very efficient way.

The trigger level of RH output relay can be set by a rotary element.
Current air quality can be easily checked by three LED indicators. When ambient light is dimmed, the indicators turn off automatically to not disturb you when falling asleep.

Technical data

Parameter	Value	Unit
Supply voltage range	12 – 35 12 – 24	V DC V AC
Power consumption	max 1,5	W
RH measuring range	0 – 100 %	RH
RH accuracy 20 – 80 %	± 3 %	RH
RH accuracy 0 – 100 %	± 6 %	RH
RH switching hysteresis	5 %	RH
Voltage output	0 – 10	V DC
Max. switching voltage	250/30	V AC / V DC
Max. switching current	5/5	A AC / A DC
Working humidity non condensing	0 – 90 %	RH
Working temperature	0 to +50	°C
Storage temperature	-20 to +60	°C
Expected lifetime	min. 10	years
Ingress protection	IP20	
Dimensions	90x80x31	mm

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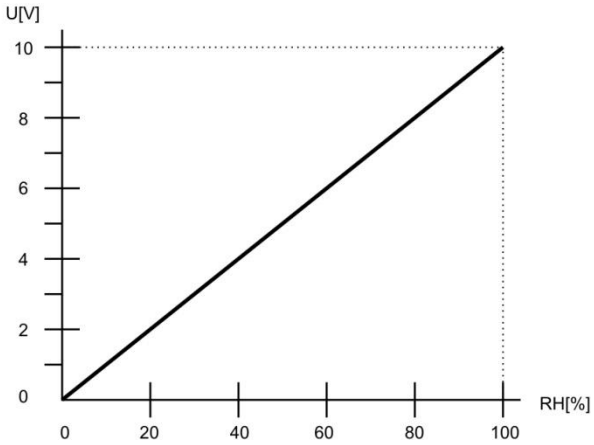
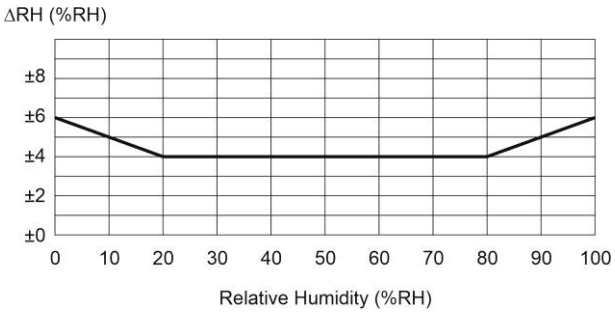
Voltage output versus RH concentration



Typical RH measurement accuracy at 25 °C



LED indication description

White LED lights:

Less than 40% RH.

– low concentrations of RH. too dry air feels cooler person perceives as compared to the same hot air with high relative humidity, dryness of mucous membranes - respiratory problems

Green LED lights:

More than or equal to 40% RH and less than or equal to 60% RH.

– optimal relative humidity to human stay

Yellow LED lights:

More than 60% RH.

– too high humidity, the risk of mold growth and associated health complications

Sensor start after power on

All three LEDs are shining simultaneously in the meantime, pending the availability of the first measured value. But no longer than 10 seconds.

Sensor failure indication

All three LED´s lights up at the same time permanently.

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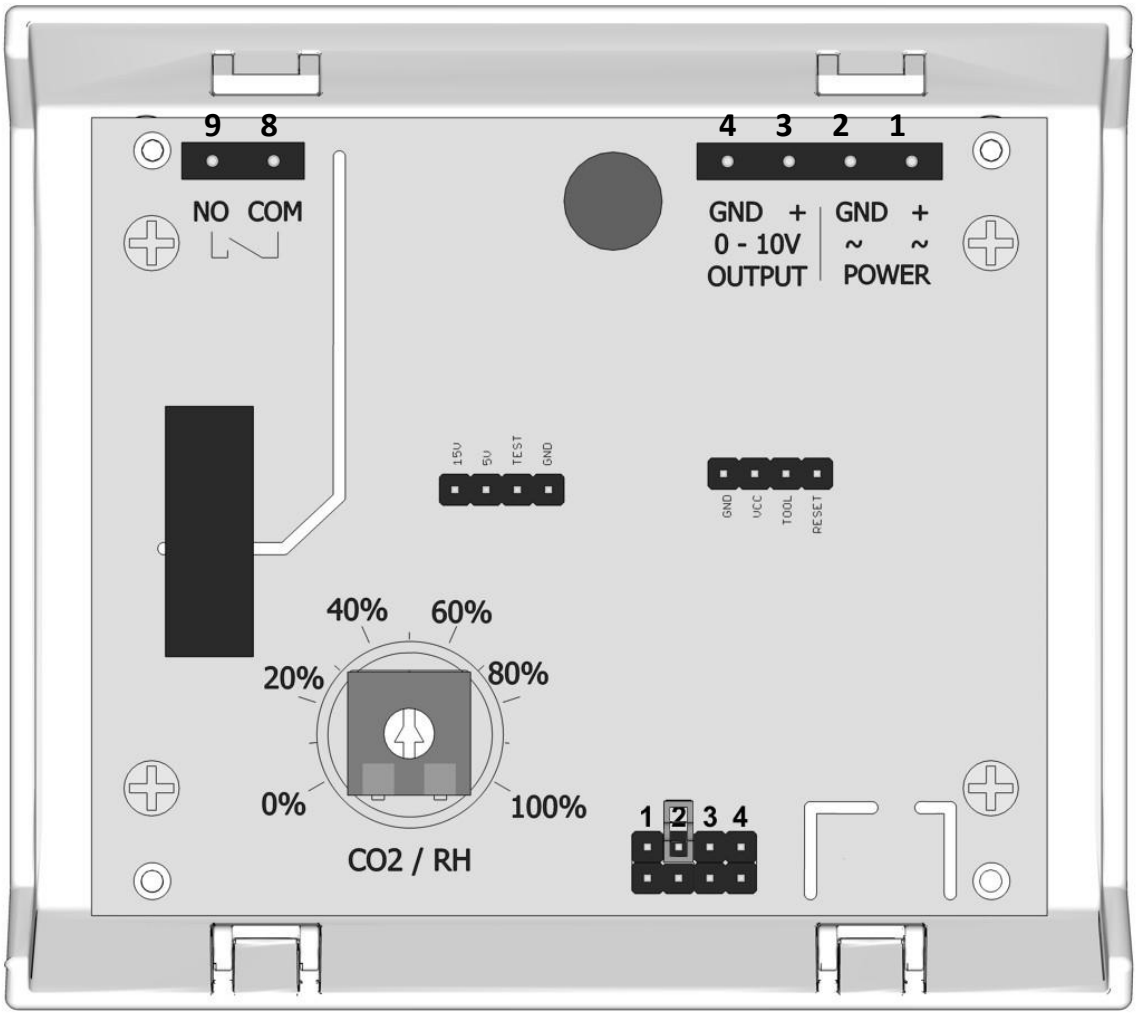
Electronic board controls and terminals



Terminals

POWER

1. ~ +	supply AC or DC (+) plus pole
2. ~ GND	supply AC or DC (-) minus pole, GND

OUTPUT

3. +	analog output 0-10 V
4. GND	output – minus pole

8. COM	output relay, common contact
9. NO	output relay, normally open contact

Jumpers

jumper	meaning	fitted	not fitted
2	LED indication	always	automatic
3	this position is not for user setting		
4			
1			

Factory setting

LED indication	automatic
Switching level	50%

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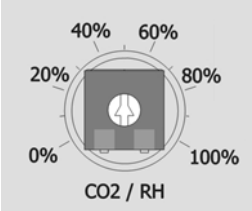
Setting the relay switching level using rotary selector

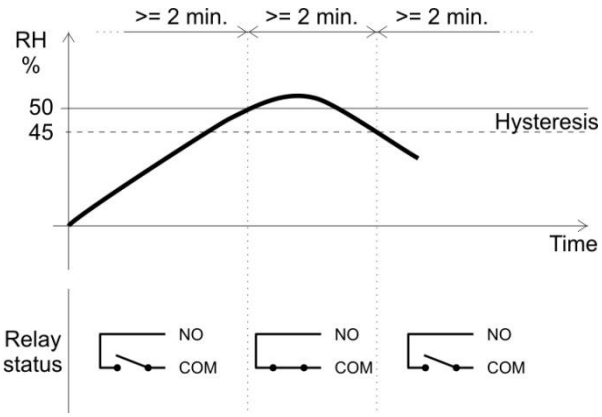
The 0 - 100% selector setting corresponds to the value of RH measuring range – see example below.



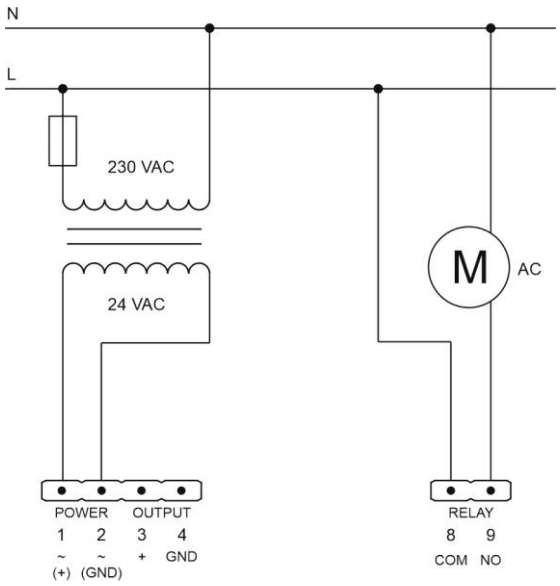
The relay switches on when the level measured value rises above the level of the rotary selector.
The relay switches off when the level measured value falls below the level of the rotary selector minus hysteresis value of 5% from measuring range.
Minimal lag between changes in state relays are 2 minutes.

Selector value	RH
0%	0%
10 %	10 %
20 %	20 %
30 %	30 %
40 %	40 %
50 %	50 %
60 %	60 %
70 %	70 %
80 %	80 %
90 %	90 %
100 %	100 %

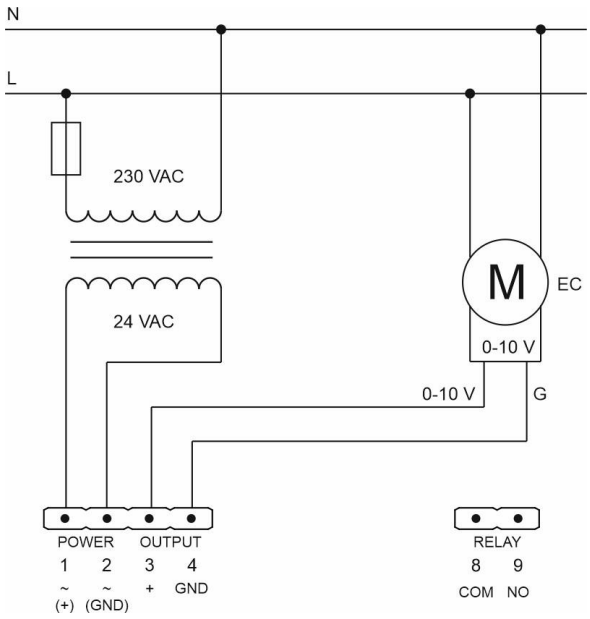
Relay switching example - selected switching level value 50% (correspond to 50% RH), hysteresis 5%



Sensor connection using the output relay



Sensor connection - direct EC motor control using signal 0-10 V



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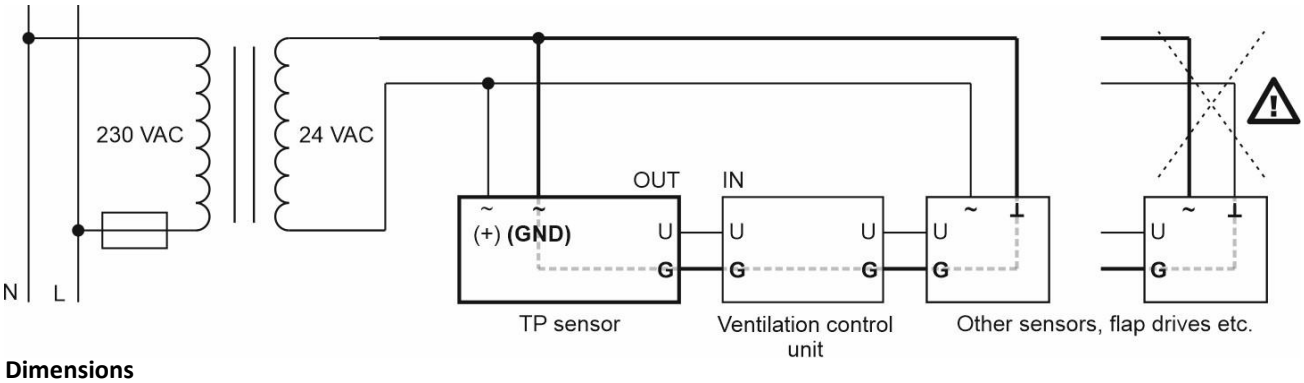
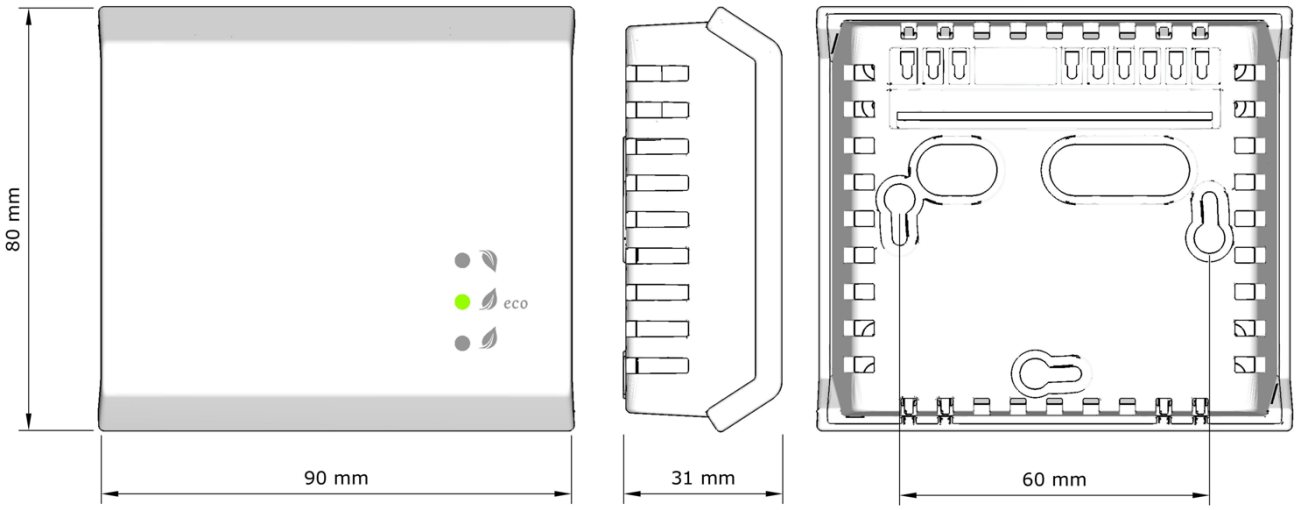
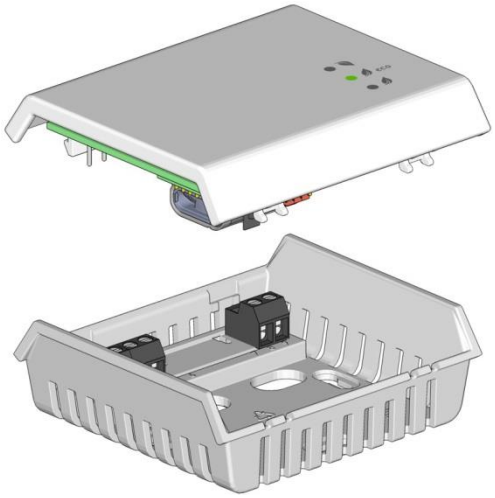
If you connect other devices or more sensors to the same AC power source as the TP sensor, it is necessary to meet GND wiring of all analog inputs and outputs, as well as power wires.



Dimensions



Sensor assembly



Box color

Front: White - RAL9016. Base: gray - RAL7035.

Way to use

The product is intended for indoor use only. It is necessary to avoid severe mechanical shock of the sensor.

End of product life

Discard the product in according to the electronic waste law and the EU directives.

The producer reserves the right of technical changes in order to product improvements its properties and functions without previous notice.