

431401 – 431408 (plastic housing)

431411 – 431418 (aluminium housing)



Application

for electrical transmission of relative humidity of air and air temperature, with a capacitive sensor for measurement of relative humidity and a platinum resistor PT 100 for measurement of air temperature. The outgoing analogue signal can be used for meteorological purposes or as input signal for control and regulation applications.

Construction and mode of operation

with a capacitive sensor and a PT 100 with electronic signal conditioning the actual humidity of air and air temperature will be transformed into a proportional standardised electrical output. The water resistant housing of the sensor will protect the electronic against the influence of the weather. The sensing element protection against dust is achieved by using the mesh filter. Please note that oily vapours should be avoided as the oil may condense and form an insulating layer which degrades the sensor's performance. Combustion gases cannot be measured for similar reasons. Condensation at the sensor element will not result in damaging the sensor but until the sensor is total dry false measurements occur. The serie 43140x has a plastic housing, serie 43141x – aluminium.

Technical Data:

measuring range	: -30 ... 70°C, 0 ... 100 %
accuracy temperature	
431401/11/03/13	: ± (0.10 K + 0.0017 x t), t = temperature °C (direct PT100 output)
other sensors	: ± 0.3 K (-30...70 °C)
accuracy humidity	: ± 2 % r.h. (25°C, 5 ... 95 %)
temperature error	
humidity	: RH = indicated humidity / (1.0546 - 0.00216 * T) with T = temperature in °C
settling time	: approx. 5min
electronic output:	
431401, 431411	: 1 x 0 ... 1 V, load resistance > 10 kOhm, PT100
431402, 431412	: 2 x 0 ... 1 V, load resistance > 10 kOhm
431403, 431413	: 1 x 0 ... 10 V, load resistance > 10 kOhm, PT100
431404, 431414	: 2 x 0 ... 10 V, load resistance > 10 kOhm
431406, 431416	: 2 x 4 ... 20 mA, load resistance < 500 Ohm
431408, 431418	: 2 x 0 ... 20 mA, load resistance < 500 Ohm
operating voltage	
431400/01/11/02/12	: 8 ... 28 V DC
431403/13/04/14	: 10,5 ... 28 V DC
431406/16/08/18	: 13 ... 28 V DC
operating current	
431401/11/03/13	: typ. 12 mA, max 20 mA
431402/12/04/14	: typ. 15 mA, max. 20 mA
431406/16/08/18	: typ. 60-80 mA, max.200 mA
mounting	: clamping diameter 6,0 mm, : on vertical walls of plastic housing two mounting holes diameter 4 mm. : on vertical walls of aluminium housing – special holder (order separately).
operating temperature	: -40 ... 80 °C
protecting	: IP 55 for plastic housing, IP54 for sensing element : IP 65 for aluminium housing, IP54 for sensing element
cable	
431401/11/03/13	: LiYCY 8 x 0.2 mm ²
other sensors	: LiYCY 6 x 0.2 mm ²
Dimension	
Plastic housing	
43140x	: 115x60x40mm, sensing element holder: 148 mm x Ø12,0 mm
aluminium housing	
43141x	: 114x60x35mm, sensing element holder: 148 mm x Ø12,0 mm
weight	: approx. 300g

Installation & Maintenance

It is recommended to mount the sensing element of the T/H sensor inside of radiation shield 439101 (natural ventilation), 439102 (ventilation with use of the 12VDC-cooler) or other compatible, protected from direct sunlight as well as the precipitation. Whenever possible, sensors should be installed at a height of 7 ft. (2 meters) or greater over earth or sod enough far away from any concrete or other hard-surfaced area and not closer to any other object than four times the height of the object above the instrument shelter or remote sensors. Avoid roof installations if possible. If it is necessary to roof-mount shelters and sensors, they should not be closer than 30 ft. (9 meters) to any large, vertical reflecting surface (walls, etc.), exhaust fans, or cooling towers. Electronic remote sensors when roof-mounted should be at least 9 ft. (3 meters) or greater above the roof surface. To minimize radiation effects from the roof, they can also be mounted on a horizontal boom so that they will extend from the side of the building roof or tower assembly. Because of the interchangeability and the ease with which the elements can be replaced, it is recommended that the element be examined every two to three years to maintain accuracy. We can examine it in our labor in accordance to DIN EN 10204.



Example: radiation shield 439102 and T/H-sensor 431400

Connection Cart

The indicated colours refer only to factory-installed attached cables.

431401, 431411, 431403, 431413:

Position	Colour	Connection
1	violet	PT 100 (1)
2	blue	PT 100 (1)
3	red	PT 100 (2)
4	black	PT 100 (2)
5	white	supply +
6	brown	supply ground
7	yellow	output humidity
8	green	output ground

431402, 431412, 431404, 431414, 431416, 431418

Position	Colour	Connection
1	white	supply +
2	brown	supply ground
3	red	output temperature
4	black	output ground
5	yellow	output humidity
6	green	output ground

431406, 431408

Position	Colour	Connection
1	brown	supply ground
2	white	supply +
3	black	output ground
4	red	output temperature
5	green	output ground
6	yellow	output humidity

The Fischer company reserves the right to make changes/improvements to their products and to their specifications at any time without prior notice to anyone.



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