

OFT-420 Sensor

Measuring transducers for industrial use

relative humidity and temperature – outputs 4...20 mA



The OFT-420 measuring transducer measures relative humidity and temperature of room air. This transducer has two analogue outputs with 4...20mA. The integrated 32-bit processor and a sophisticated software allow precision at the highest operational level. Due to its modular architecture the sensors are suitable especially for industrial areas.

FEATURES

- output signals for rel. humidity/temperature
- robust stainless steel housing
- exchangeable sensor
- high precision with high speed
- power output humidity (4 ... 20 mA)
- power output temperature (4 ... 20 mA)
- modular-built sensor, interchangeable
- options (abs. humidity/melting point)

TYPICAL FIELDS OF APPLICATION



on request: available with DAKS - certification

ACCORDANCE TO THE FOLLOWING RULES AND NORMS

Emitted interference:

test regulations: *product norm* EN 55022:1998+A1:2000+A2:2003
electrical interference field strength

fault-free operation:

test regulations: *product norm* EN55024:1998+A1:2001
discharging of static electricity of EM fields
after EN 61000-4-2
EN 61000-4-3

OFT- 420 Sensor

Measuring transducers for industrial use

relative humidity and temperature – outputs 4...20 mA

COMPONENTS FOR OFT-420



OFT-420 can be purchased at www.omni-sensors.de.
The complete sensor according to image (without connector cable)

order reference:
OFT-420



electrical part of OFT-420



PVC - cable 2m long from electronics to sensor.
Intermateable to any lenght.

order reference:
OFTSens/2



exchangeable sensor measuring head

order reference:
OFT-EA2



PVC connecting cable for OFT-420,
optional in 2m or 5m available.

order reference:
OFTKab5-A (5m cable lenght)
OFTKab2-A (2m cable lenght)



top hat rail adapter deliverable optionally.

Well integratable in areas of facilities.

The sensor can be easily exchanged without alteration of wiring.

order reference:
OFT-Adapter



By sequencing the top hat rail adapters several sensors can be connected. This is applicable to all sensors of the OFT series.

attention: pictures may vary.

OFT- 420 Sensor

Measuring transducers for industrial use

relative humidity and temperature – outputs 4...20 mA

TECHNICAL DATA



HUMIDITY: (all technical descriptions are general statements)

| | |
|-------------------------------------|--|
| measuring area | 0 ... 100% RH (max. 100 °C) |
| precision (typical) | ± 2.0% RH at 25°C, 0 ... 100% RH |
| resolution | 0.03% RH |
| non-linearity | < 1% RH typical (10 ... 90%), max. 3% |
| hysteresis | ± 1% entire measuring range |
| precision of replication | ± 0.1% RH |
| RH reaction time, 1/e (63%) | approx. 4 seconds in slowly moving air |
| long-term stability (drift) | typical <1.5% RH per year* |
| max. temperature for humidity | -20 ... +100°C (max.) |

*If the sensor is exposed to extreme conditions for a long time, this can accelerate aging. The durability is strongly dependent on the environmental conditions. Damaged or aged sensor heads can be replaced if necessary!



TEMPERATURE: (all technical descriptions are general statements)

| | |
|--------------------------------|-----------------|
| measuring area | -40 ... +120°C |
| scaling | -50 ... +150°C |
| resolution | 0.01°C |
| precision (typical) | ± 0.3°C at 25°C |
| precision of replication | ± 0.1°C |
| reaction time | < 5 seconds |



VOLTAGE FEED: (all technical descriptions are general statements)

| | |
|----------------------------------|-------------------------|
| supply voltage | 24V ± 10% DC controlled |
| current consumption | < 50 mA |
| reverse voltage protection | yes |



PRESSURE AREA: (all technical descriptions are general statements)

| | |
|---------------------------------|-----------|
| admissible gauge pressure | min 8 bar |
|---------------------------------|-----------|

OFT- 420 Sensor

Measuring transducers for industrial use

relative humidity and temperature – outputs 4...20 mA

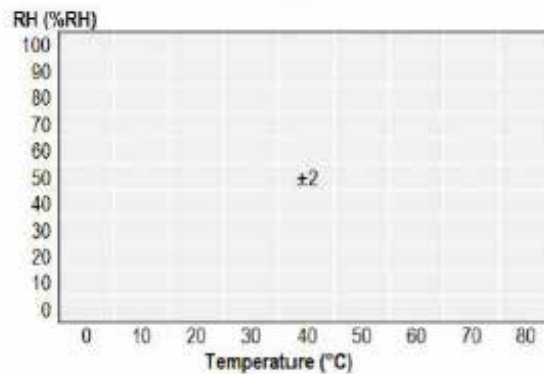
OUTPUTS: (all technical descriptions are general statements)

| | |
|---|--|
| supply voltage | 24V \pm 10% DC controlled |
| current consumption | Ca. 10 mA (without analog outputs) |
| current output (rel. humidity) | 4 ... 20mA (liability approx. 500 ohm) |
| current output (rel. temperature) | 4 ... 20mA (liability approx. 500 ohm) |

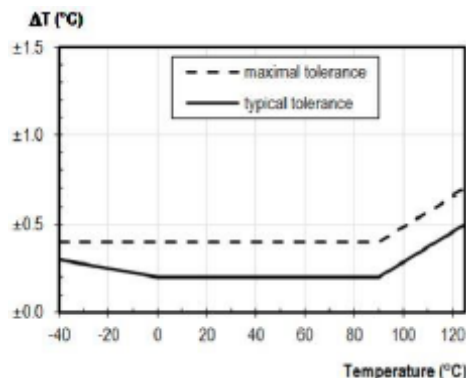
CABLE CONNECTION

| | |
|---------------------------|----------------------------|
| cable type | PVC (black) |
| safety class | IP40 |
| area of temperature | -25°C to +70°C |
| length | standard 2m (customizable) |

PRECISION RELATIVE HUMIDITY (typical)



PRECISION TEMPERATURE (typical)



OFT- 420 Sensor

Measuring transducers for industrial use

relative humidity and temperature – outputs 4...20 mA

STORAGE AND MOUNTING OF SENSOR (OFT-EA2):

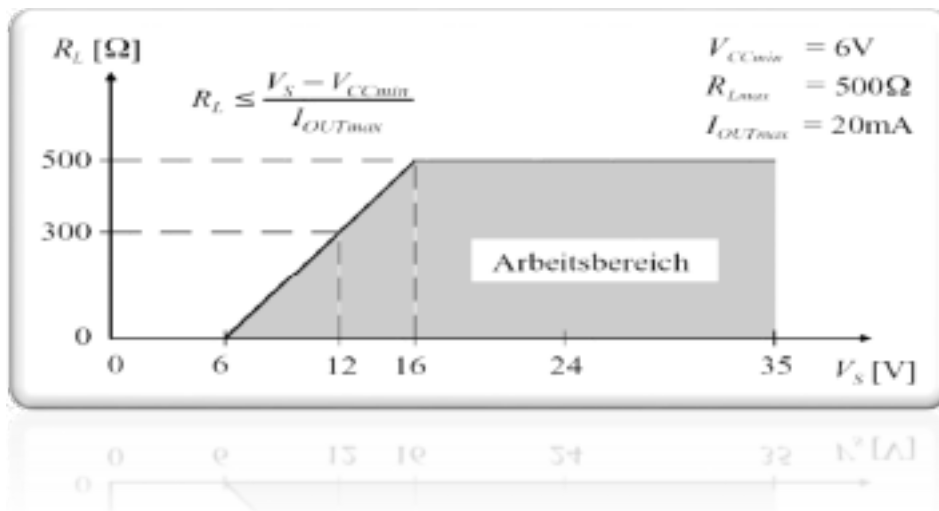
Storage and operation of the OFT-EA2 humidity-detector can be done under the same circumstances.

If the sensor was used or stored in a hot or dry area or with aggressive substances an accelerated aging or damage of the sensor element is possible. The measuring result can be influenced by this fact.

A damaged sensor can possibly be re-activated by being stored at a temperature between 20 and 30 degrees celsius for at least 24 hours with a humidity of over 74%.

Mounting should be done in slowly floating air. Since relative air humidity always refers to the temperature in the air the sensor should be installed at a place which is representative for the referred temperature. Hot places, eg near machines, can influence the measuring result strongly.

R-LOAD LIABILITY:



TERMINAL PIN ASSIGNMENT:

| colour | colour | signal at SUB - D | alternate signal |
|---------|----------|---|------------------|
| ● brown | ● brown | Pin 4 - VCC 24 V ±10% | |
| ● blue | ○ white | Pin 5 - GND | |
| ○ white | ● green | Pin 6 - current output- humidity output | |
| ● black | ● yellow | Pin 7 - current output- temperature output | |

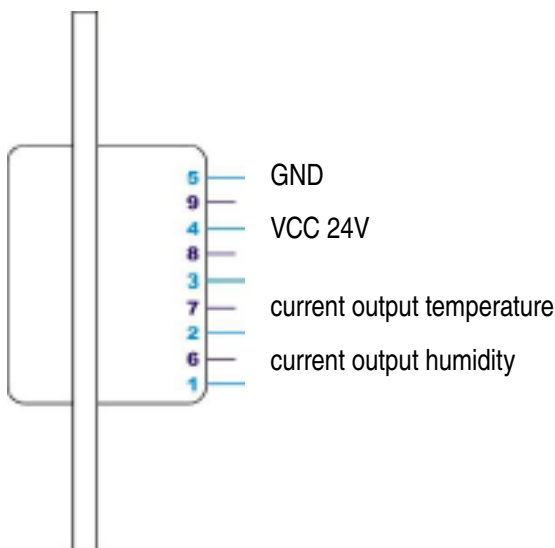
Attention! Pins can be occupied with different colours.

OFT- 420 Sensor

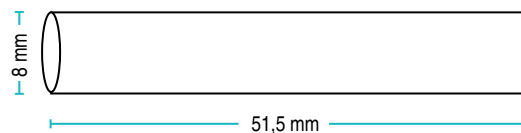
Measuring transducers for industrial use

relative humidity and temperature – outputs 4...20 mA

TERMINAL PIN ASSIGNMENT:



DIMENSIONS SENSOR ELEMENT: OFT-EA2



length: 51,5 mm
diameter: 8,0 mm
weight: ca. 10 g
housing: stainless steel, sintered metall
connector: plug, 4 pin



SAFETY INSTRUCTIONS

Sensors of the OFT series mustn't be used in processes where people are at risk or hurt. The sensors mustn't be used as emergency stop buttons at machines or facilities or in safety-relevant areas.

The cable connections to the sensor mustn't exceed neither -25 degrees Celsius nor +70 degrees Celsius - otherwise they can be damaged.

If the sensor head is used under extreme circumstances or with aggressive chemicals the function can be negatively affected or the sensor head will be damaged permanently.

Process of aging of the humidity sensor will be accelerated with temperatures over 100 degrees Celsius. The humidity sensor will be damaged with temperatures over 120 degrees Celsius.

DECLARATION OF CONFORMITY:

supplier's declaration to ROHS-rules and regulations 2011/65/EU

We hereby confirm not to exceed the amount of restricted compounds of the delivered assembly the maximum concentration values according to RoHS- rules and regulations 2011/65/EU of the European Parliament and the Council of 08 June 2011. Hence our delivered assembly is conform to EU RoHS.