

EGH 110...112: Duct transducer, relative humidity and temperature

How energy efficiency is improved

Precise measuring of humidity for energy-efficient control of HVAC installations and monitoring energy consumption

Features

- Measures the relative humidity and temperature in air ducts
- Measurement by means of fast capacitive measuring element
- Active and passive measuring element
- Immersion depth 140 mm
- Mounting flange supplied

Technical data

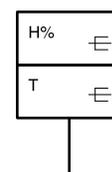
Power supply		
Power supply		15...24 V= ($\pm 10\%$) or 24 V~ ($\pm 10\%$)
Peak inrush current		1.5 A, 4 ms
Parameters		
Humidity	Measuring range, humidity	0...100% rh, no condensation
	Measuring accuracy, humidity	Typ. $\pm 2\%$ (10...90% rh)
	Repeat accuracy	Typ. $\pm 0.1\%$ rh
	Gradual drift	Typ. $< 0.5\%$ rh/year
Temperature	Measuring range, temperature	-20...80 °C
	Measuring accuracy, temperature	± 0.5 °C (typ. at 25 °C)
	Repeat accuracy	Typ. ± 0.1 °C
	Gradual drift	Typ. < 0.04 °C/year
Time characteristic	In moving air (3 m/s)	2 minutes (t63)
	Readiness for operation	10 seconds (operational), 5 minutes (max. precision)
	Flow speed	Min: 0 m/s Max: 10 m/s
	Hysteresis	$\pm 1\%$
Ambient conditions		
Ambient temperature		-20...70 C
Construction		
Connection terminals		Screw terminals, max. 1.5 mm ²
Cable inlet		M20 for cable with min. \varnothing 5 mm, max. \varnothing 8 mm
Housing		Yellow/black
Housing material		PA6
Filter unit material		Stainless steel, wire mesh
Sensor tube diameter		19.5 mm
Sensor tube length		140 mm
Weight		120 g
Standards, directives		
Type of protection		Instrument head: IP65 (EN 60529)
CE conformity according to	EMC Directive 2014/30/EU	EN 60730-1 (mode of operation 1, residential premises)
	RoHS Directive 2011/65/EU	EN 50581

Overview of types

Type	Power consumption	Output signal
EGH110F041	Max. 1 W (24 V=)	2 × 4...20 mA (max. load 500 Ω)
EGH111F031	Max. 0.4 W (24 V=) 0.8 VA (24 V~)	2 × 0...10 V (min. load 10 k Ω) + Ni1000
EGH112F031	Max. 0.4 W (24 V=) 0.8 VA (24 V~)	2 × 0...10 V (min. load 10 k Ω)



EGH11*F0*1



Description of operation

Duct transducer for measuring relative humidity and the temperature in ventilation ducts.

Humidity measurement:

A fast capacitive measuring element measures the relative humidity and a measuring amplifier converts it to a 0...10 V standard signal.

Temperature measurement:

EGH 110: The temperature of -20...80 °C is converted to a 4...20 mA standard signal.

EGH 111: With Ni1000 temperature sensor. Characteristic as per DIN 43760.

EGH 112: The temperature of -20...80 °C is converted to a 0...10 V standard signal.

Intended use

This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.

All related product regulations must also be adhered to. Changing or converting the product is not admissible.

Engineering and fitting notes



CAUTION!

Damage to device!

► Electrical devices may only be installed and fitted by a qualified electrician!

Electrical connection

When you are running the cables, note that electrical interference can affect the measurements.

These effects increase the longer the cable and the smaller the conductor cross-section. In high-interference environments, we recommend using shielded cables.

On devices with controlling units (signal generators, transmitters etc.), it must be ensured that the device receiving the signal (actuator or other equipment) does not enter a damaged or dangerous state as a result of faulty signals during assembly and configuration of the control unit. Completely disconnect the signal receiver from the power supply if necessary.

Heat caused by dissipated electric power

Temperature sensors with electronic components are always subject to a certain amount of power loss, which affects the temperature measurement of the ambient air. In active temperature sensors, the power loss depends on the respective operating voltage. This dissipated power must be taken into account in the temperature measurement. At a fixed operating voltage (± 0.2 V), this is normally done by adding or subtracting a constant offset value.

If a recalibration is required, on sensors with transducers it is performed using the trimmer potentiometer on the circuit board. The transducers can be operated with variable operating voltages. As standard, the transducers are set to an operating voltage of 24 V=. At this voltage, the expected measurement error of the output signal is smallest. Other operating voltages cause a larger offset error due to change in the power loss of the sensor electronics.

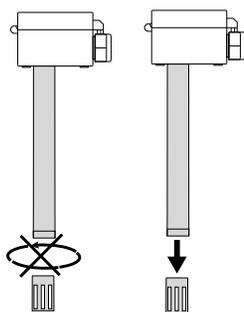
Fitting

The sensor can be fastened using the mounting flange (recommended) or directly on the ventilation duct.

If there is a possibility of condensation in the sensor tube or the immersion sleeve, make sure you install the sleeve so that any condensation can run off.

Notes for users

Air circulation may lead to particles of dirt and dust settling on the sintered filter that protects the measuring elements, which in turn may prevent the sensor from functioning properly.



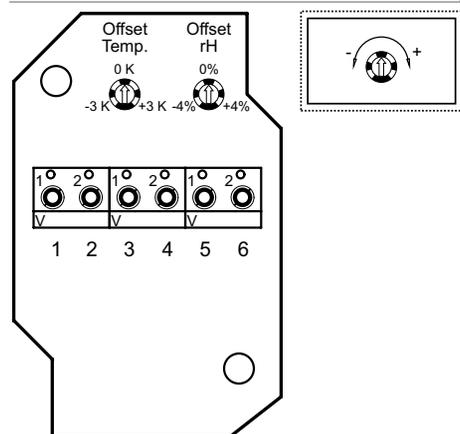
After the filter has been dismantled, it can be cleaned by blowing it out using oil-free, filtered compressed air, ultra-pure air, nitrogen or by rinsing it with purified water. Very heavily soiled filters should be replaced. In normal ambient conditions, we recommend a maintenance interval of 1 year in order to keep the specified level of precision. It may be necessary to recalibrate or replace the humidity sensor at an earlier date if it is used in an area with a high ambient temperature and high levels of humidity as well as in corrosive gases such as chlorine, ozone or ammonia. In these cases, recalibration or a possible sensor replacement are not subject to the general guarantee.

Disposal

When disposing of the product, observe the currently applicable local laws. More information on materials can be found in the Declaration on materials and the environment for this product.

Connection diagram

EGH 110						EGH 111						EGH 112					
⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
rH +24 V =	OUT rH 4..20 mA	Temp. +24 V =	OUT Temp. 4..20 mA	-	-	OUT temp. 0..10 V	OUT rH 0..10 V	Uv 24 V ~ 24 V =	GND	Sensor A-	Sensor B+	OUT temp. 0..10 V	OUT rH 0..10 V	Uv 24 V ~ 24 V =	GND	-	-



Note for EGH 110:

If only the active temperature output is being used, it is necessary to connect the humidity output to ground/GND. (24 V= from the temperature output and 24 V= from the relative humidity output can be connected)

Dimension drawing

[mm]

