

## EGT 346...348, 392, 446, 447, 646, 647: Duct temperature sensor

### How energy efficiency is improved

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

### Features

- Passive or active measuring element
- For use in pipes and vessels by means of optional thermowells (LW 7). For use in standard HVAC applications up to 160 °C and aggressive ambient conditions up to 260 °C (EGT392F102)

### Technical data

| Parameters            |   |  |
|-----------------------|---|--|
|                       | Recommended measurement current                                       | Typ. < 1 mA  |
| Time characteristic   | Time constant in moving air (3 m/s)                                   | 35 s ( $t_{63}$ )  |
|                       | Time constant in still air  | 155 s ( $t_{63}$ )   |
|                       | Time constant in still water  | 9 s ( $t_{63}$ )   |
|                       | Time constant in still water, with thermowell made of brass           | 17 s ( $t_{63}$ )  |
|                       | Time constant in still water, with thermowell made of stainless steel | 20 s ( $t_{63}$ )  |
| Ambient conditions    |   |  |
|                       | Ambient temperature   | EGT*4*: passive: -35...90 °C<br>EGT*4*: active: -35...70 °C<br>EGT392F102: -25...90 °C                   |
| Storage and transport |   |  |
|                       | Storage and transport temperature                                     | -35...70 °C  |
|                       | Humidity (non-condensing)   | 85% rh   |
| Construction          |   |  |
|                       | Housing   | EGT*4*: Black/yellow   |
|                       | Housing material  | EGT*4*: Polyamide<br>EGT392F102: Form J made of die-cast aluminium                                       |
|                       | Connection terminals  | EGT*4*: 45° screw terminals<br>0.35...1.5 mm <sup>2</sup><br>For number of poles, see connection diagram |
|                       | Cable inlet   | M16 for cable min. Ø 5 mm, max. Ø 8 mm   |
|                       | Immersion stem  | Ø 6×L (mm)<br>made of stainless steel 1.4571, up to 16 bar, see table                                    |
|                       | Active length   | 10 mm  |

| Standards and directives   |                           |  |
|----------------------------|---------------------------|--|
|                            | Type of protection        | IP65 (EN 60529)  |
| CE conformity according to | RoHS Directive 2011/65/EU | EN 50581   |
|                            | EMC Directive 2014/30/EU  | EGT34*F031: EN 60730-1 (mode of operation 1, residential premises) |

### Resistance values / characteristics

*i* The tolerance listed below applies only to the corresponding measuring element. The accuracy of the sensor depends on the cable length and the measuring element used.

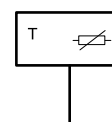
| Measuring element | Standard  | Nominal value at 0 °C | Tolerance at 0 °C |
|-------------------|-----------|-----------------------|-------------------|
| Ni1000            | DIN 43760 | 1000 Ω                | ±0.4 K            |
| Ni1000 TK5000     |           | 1000 Ω                | ±0.4 K            |
| Ni200             | DIN 43760 | 200 Ω                 | ±0.4 K            |



EGT\*4\*



EGT392F102



| Measuring element | Standard     | Nominal value at 0 °C | Tolerance at 0 °C |
|-------------------|--------------|-----------------------|-------------------|
| Pt1000            | DIN EN 60751 | 1000 Ω                | ±0.3 K            |
| Pt100             | DIN EN 60751 | 100 Ω                 | ±0.3 K            |

#### Overview of types

| Type       | Description  |
|------------|--|
| EGT346F022 | Duct temperature sensor; Ni200; -50...160 °C; L=100 mm         |
| EGT346F102 | Duct temperature sensor; Ni1000; -50...160 °C; L=100 mm        |
| EGT347F022 | Duct temperature sensor; Ni200; -50...160 °C; L=200 mm         |
| EGT347F102 | Duct temperature sensor; Ni1000; -50...160 °C; L=200 mm        |
| EGT348F102 | Duct temperature sensor; Ni1000; -50...160 °C; L=450 mm        |
| EGT392F102 | Duct temperature sensor; Ni1000; -50...260 °C; L = 100 mm      |
| EGT446F012 | Duct temperature sensor; Pt100; -50...160 °C; L=100 mm         |
| EGT446F102 | Duct temperature sensor; Pt1000; -50...160 °C; L=100 mm        |
| EGT447F012 | Duct temperature sensor; Pt100; -50...160 °C; L=200 mm         |
| EGT447F102 | Duct temperature sensor; Pt1000; -50...160 °C; L=200 mm        |
| EGT646F102 | Duct temperature sensor; Ni1000 TK5000; -35...160 °C; L=100 mm |
| EGT647F102 | Duct temperature sensor; Ni1000 TK5000; -35...160 °C; L=200 mm |
| EGT346F031 | Duct temperature transmitter; 0...10 V; L=100 mm               |
| EGT347F031 | Duct temperature transmitter; 0...10 V; L=200 mm               |
| EGT348F031 | Duct temperature transmitter; 0...10 V; L=450 mm               |

#### Passive types

| Type       | Measuring element | Immersion length L (mm) | Measuring range | Weight |
|------------|-------------------|-------------------------|-----------------|--------|
| EGT346F022 | Ni200             | 100 mm                  | -50...160 °C    | 85 g   |
| EGT346F102 | Ni1000            | 100 mm                  | -50...160 °C    | 85 g   |
| EGT347F022 | Ni200             | 200 mm                  | -50...160 °C    | 95 g   |
| EGT347F102 | Ni1000            | 200 mm                  | -50...160 °C    | 95 g   |
| EGT348F102 | Ni1000            | 450 mm                  | -50...160 °C    | 120 g  |
| EGT392F102 | Ni1000            | 100 mm                  | -50...260 °C    | 105 g  |
| EGT446F012 | Pt100             | 100 mm                  | -50...160 °C    | 85 g   |
| EGT446F102 | Pt1000            | 100 mm                  | -50...160 °C    | 85 g   |
| EGT447F012 | Pt100             | 200 mm                  | -50...160 °C    | 95 g   |
| EGT447F102 | Pt1000            | 200 mm                  | -50...160 °C    | 95 g   |
| EGT646F102 | Ni1000 TK5000     | 100 mm                  | -35...160 °C    | 85 g   |
| EGT647F102 | Ni1000 TK5000     | 200 mm                  | -35...160 °C    | 85 g   |

#### Active types

| Type       | Measuring accuracy at 21 °C <sup>1)2)</sup> | Output signal            | Power supply                      | Power consumption     | Immersion length L (mm) | Measuring range  | Weight |
|------------|---|--------------------------|-----------------------------------|-----------------------|-------------------------|--|--------|
| EGT346F031 | Typ. ±1% of measuring range                 | 0...10 V, min. load 5 kΩ | 15...24 V= (±10%) or 24 V~ (±10%) | Typ. 0.35 W / 0.82 VA | 100 mm                  | 5 temperature ranges (-50...160 °C), adjustable on device (see connection diagram) | 90 g   |
| EGT347F031 | Typ. ±1% of measuring range                 | 0...10 V, min. load 5 kΩ | 15...24 V= (±10%) or 24 V~ (±10%) | Typ. 0.35 W / 0.82 VA | 200 mm                  | 5 temperature ranges (-50...160 °C), adjustable on device (see connection diagram) | 100 g  |
| EGT348F031 | Typ. ±1% of measuring range                 | 0...10 V, min. load 5 kΩ | 15...24 V= (±10%) or 24 V~ (±10%) | Typ. 0.35 W / 0.82 VA | 450 mm                  | 5 temperature ranges (-50...160 °C), adjustable on device (see connection diagram) | 120 g  |

<sup>1)</sup> With offset adjustment ±3 K

<sup>2)</sup> The transducers must be operated at a constant operating voltage (±0.2 V). Current/voltage peaks when switching the supply voltage on/off must be avoided by the customer.

## Accessories

| Type       | Description  |
|------------|--|
| 0300360000 | Compression fitting G $\frac{1}{4}$ "; stainless steel, up to 16 bar |
| 0300360003 | Mounting flange; plastic (max. 140 °C)                               |
| 0300360004 | Heat-conducting paste incl. gun with 2 g content                     |

⚠ 039\*\*\*\*\*: Thermowells (LW 7 and LW 15) made of brass or stainless steel (see product data sheet)

## Description of operation

The resistance of the measuring element changes according to the temperature. The temperature coefficient is positive, which means the resistance increases along with the temperature. The sensors can be exchanged within the specified tolerance ranges.

### Areas of use

Duct temperature sensor for measuring the temperature of air in heating, ventilation and air conditioning systems (e.g. in supply air / return air ducts).

In combination with an immersion sleeve also suitable for measuring in liquid media (e.g. pipe systems).

Designed for connection to control and display systems.

### 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!

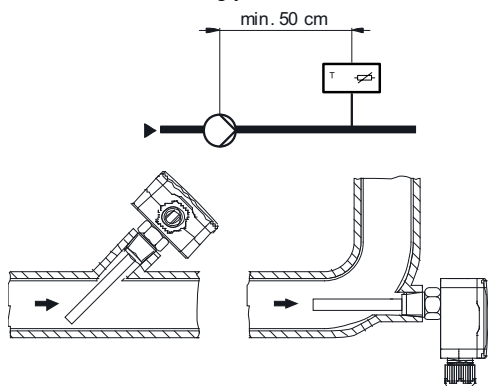
Damage to device!

► Devices with a power connection may only be connected if the power cable is disconnected from the mains.

## Fitting notes

### In the water circuit

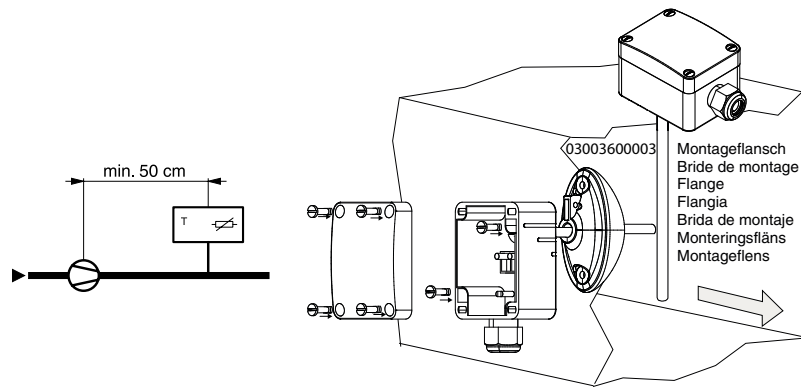
The duct temperature sensors must be installed in a thermowell (LW 7) for fitting in pipes and vessels. When they are used in pipes with lagging, the immersion length of the duct temperature sensor must be selected accordingly. The sensor must be installed facing against the direction of flow.



With compression fitting 0300360000, the duct temperature sensor can be directly screwed into pipes up to 16 bar.

### In the air duct

For installation in air ducts, the duct temperature sensor is fitted on the wall of the air duct. A variable immersion length is possible with flange 0300360003.



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

**Electric connection**

The devices are designed for operation with safety extra low voltage (SELV/PELV). The technical data for the devices applies when connecting them to the power supply.

The cable resistance of the power cable must be considered. If necessary, this must be corrected in the downstream electronic devices. Due to self-heating, the measurement current affects the accuracy of the measuring. Therefore this should not be greater than 1 mA.

Sensors with transducers should usually be operated in the middle of the measuring range, because higher deviations can occur at the end points of the measuring range. The ambient temperature of the transducer electronics should be kept constant.

When long power cables are used (depending on the cross-section used), the voltage drop on the shared GND cable (caused by the supply current and the cable resistance) can falsify the measuring result. In this case, two GND cables must be connected to the sensor, one for the supply current and one for the measurement current.

**Disposal**

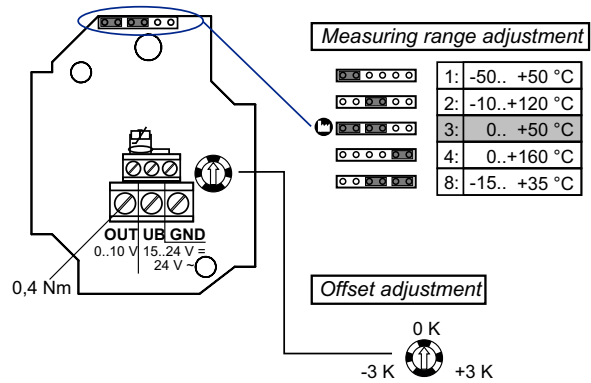
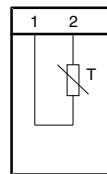
When disposing of the product, observe the currently applicable local laws.

More information on materials can be found in the Declaration on materials and the environment for this product.

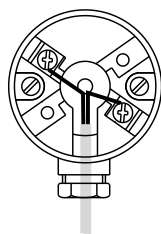
**Connection diagram**

EGT346...348, EGT 446, 447

EGT346F031, EGT347F031, EGT348F031



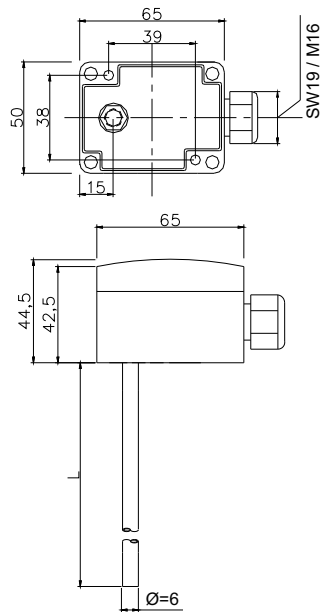
EGT392F102



**Dimension drawing**

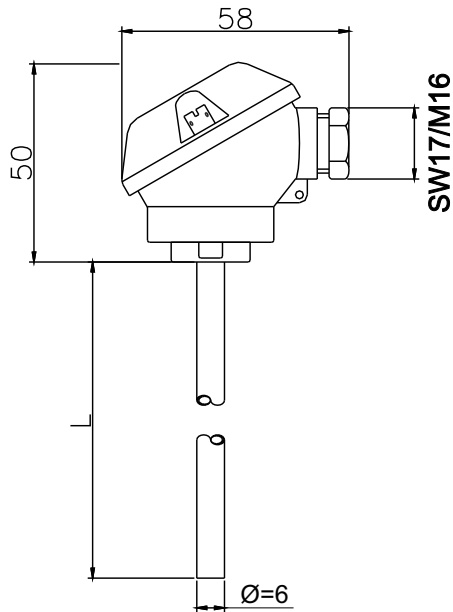
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EGT392F102

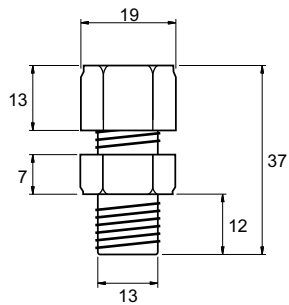
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**Accessories**

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