

EGE 112: Duct transducer, enthalpy

How energy efficiency is improved

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

Features

- Measures the enthalpy and temperature in air ducts
- Measurement by means of fast capacitive measuring element
- Active measuring element
- Unaffected by flow speeds and normal contamination
- Mounting flange supplied

Technical data

Power supply		
Power supply		15...24 V= (±10%) or 24 V~ (±10%)
Power consumption		Max. 0.4 W (24 V=) 0.8 VA (24 V~)
Outputs		
Output signal		2 x 0...10 V (min. load 10 kΩ)
Parameters		
Flow speed		Min. 3 m/s Max. 10 m/s
Time characteristic	Time constant in moving air (3 m/s)	3 minutes
Enthalpy	Measuring range	0...100 kJ/kg
	Measuring accuracy	3.5 kJ/kg (typ. at 21 °C)
Temperature	Measuring range	-20...80 °C
	Measuring accuracy	±0.5 °C (typ. at 25 °C)
Ambient conditions		
Ambient temperature		-20...70 °C
Construction		
Connection terminals		Screw terminal, max. 1.5 mm ²
Cable inlet		M20 for cable Ø min. 5.8 mm, max. 6 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 and 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

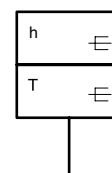
Type	Description
EGE112F031	Duct transducer, enthalpy and temperature, 2 x 0-10 V

Description of operation

Duct transducer for measuring the enthalpy in gaseous media in heating, ventilation and air conditioning systems (e.g. in supply air/return air ducts). The relative humidity is captured using a quick, capacitive measuring element. The humidity and temperature values are used to calculate the enthalpy and converted to the standard signal 0...10 V.



EGE112F031



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 higher the operating voltage, the greater the power loss. 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. The duct transducers have a variable operating voltage, but due to the way they are manufactured, only one operating voltage can be taken into account. As standard, the transducers are set to an operating voltage of 24 V=. This means that, at this voltage, the expected measurement error of the output signal is smallest. At other operating voltages, the offset error increases or diminishes due to the change in power loss of the sensor electronics. If recalibration directly on the sensor becomes necessary during later operation, this can be done using the trimmer potentiometer on the sensor circuit board.

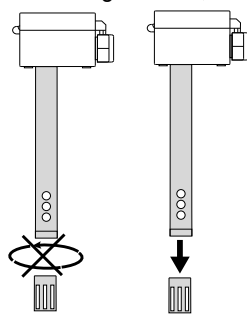
Fitting

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 element, 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.

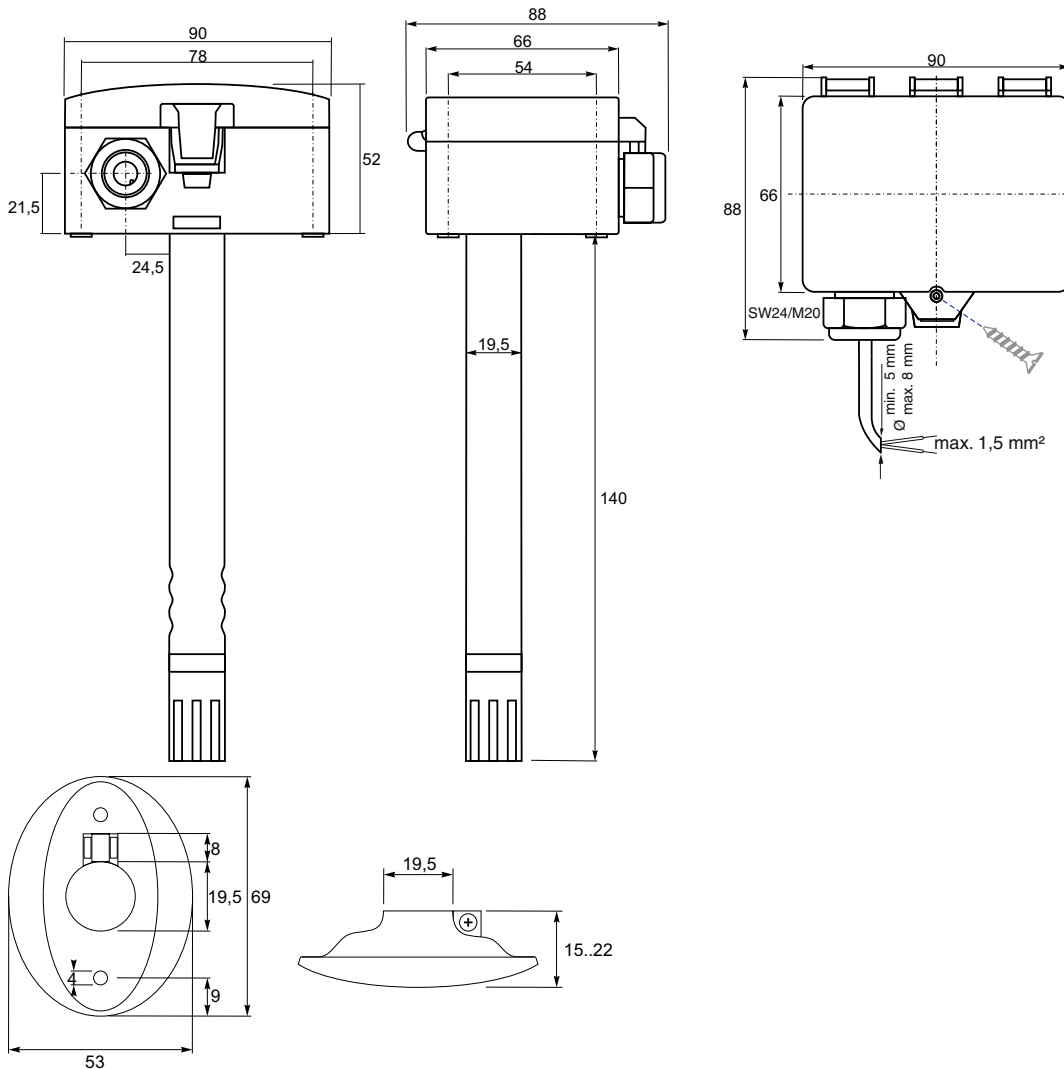
More information on materials can be found in the Declaration on materials and the environment for this product.

Connection diagram

1	2	3	4	5	6
Out Temp. 0...10V	Out H 0...10V	Uv 15-24V=24V~	GND		

Dimension drawing

[mm]



Fr. Sauter AG
 Im Surinam 55
 CH-4016 Basel
 Tel. +41 61 - 695 55 55
 www.sauter-controls.com