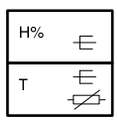
EGH 681: SAUTER viaSens681 humidity and temperature sensor



How energy efficiency is improved

Precise measuring of relative humidity and temperature for energy-efficient room climate control

Features

- Sensor for measuring the relative humidity and the temperature in rooms
- Sensor for controlling the room climate in combination with room automation systems
- Measurement of the room temperature and the relative humidity
- Fast response time and high precision
- Calculation of indirect variables such as absolute humidity, enthalpy, dew point
- Quick, easy overview of the room climate through a multi-coloured LED
- Wide-ranging parameterisation with the CASE Sensors software
- The power supply and the analogue outputs are electrically isolated
- Room sensor in a wide range of designs and colours
- Device insert fits into frame with 55 x 55 mm aperture

Technical data

Power supply		
	Power supply (SELV)[1]	24 V~, ± 20%, 24 V=, +20%/-15%
	Power consumption	0.3 W
Output signal[2]		
	Analogue outputs	2 × 0...10 V
	Relative humidity	0...100% rh
	Temperature	0...50 °C
	Load current	0...2 mA (per output)
Parameters		
Relative humidity	Measuring range	10...95% rh
	Accuracy (at 23 °C)	± 2.0% rh (40...60% rh) ± 3.5% rh (<40% rh/ >60% rh)
	Reproducibility	± 1% rh
	Resolution	0.2% rh
	Time constant	< 15 s (in air 0.1 m/s, t_{63})
	Warming-up time[3]	30 min.
Temperature	Measuring range	0-50 °C
	Accuracy (at 23 °C)	± 0.4 °C
	Reproducibility	± 0.15 °C
	Resolution	0.05 °C
	Time constant	< 10 min. (in air 0.1 m/s, t_{63})
Calculated variables[4]		
Absolute humidity (water vapour content)	Range	0...50 g/kg
	Accuracy (at 23 °C, 55 %rh)	< 1 g/kg
Enthalpy	Range	0...100 kJ/kg
	Accuracy (at 23 °C, 55 %rh)	< 3 kJ/kg
Dew point	Range	-5...30 °C
	Accuracy (at 23 °C, 55 %rh)	< 1.5 °C

1) *SELV: Safety extra low voltage*

2) *The two analogue outputs can each be assigned a measured or calculated value with CASE sensors. The factory setting is “relative humidity” and “temperature”.*

3) *The precision of the sensor is guaranteed after a warm-up period of approx. 30 minutes. During this period, the LED flashes green.*

4) *The calculated variables are dependent on the temperature and the humidity (see also the diagrams in the “Calculated variables” section). The results are calculated based on a standard air pressure of 1013 mbar. The device is not pressure-compensated.*

Ambient conditions		
Operation	Humidity (non-condensing)	10...95% rh
	Temperature	0...50 °C
Storage and transport	Humidity (non-condensing)	10...95% rh
	Temperature	-20-70 °C
LED indicator		
	LED indicator	Three colours – green, yellow, red
	LED function	Display of relative humidity or temperature or a combination of both
	Factory setting	Combination of relative humidity and temperature (according to EN 15251)
Construction		
	Dimensions W x H x D	59.7 × 59.7 × 53 mm (with terminal)
	Housing	Pure white (RAL 9010)
	Plastic insert	Silver (similar to Pantone 877 C)
	Connection terminals	Pluggable screw terminal for conductor cross-section of max. 1.5 mm^2
	Fitting	Recessed Surface-mounted (with accessories)
	Cable inlet	From behind
	Weight	58 g
Standards and directives		
	Type of protection[5)]	IP30 (EN 60730-1)
	Protection class	III (EN 60730-1)
	Environment class	3K3 (IEC 60721)
CE conformity as per	EMC directive 2004/108/EC	EN 60730-1 (for residential premises)

Overview of types

Type	Description
EGH681SF233	viaSens 681, humidity/temperature room sensor 24V; 0...10V

Accessories

Type	Description
0940240***	For frames, mounting plates and adaptors for third-party frames and surface mounting: see product data sheet PDS 94.055
P100011363	SAUTER film without pictogram for the variable – colour: silver (similar to Pantone 877 C)
0300360001	USB connection set

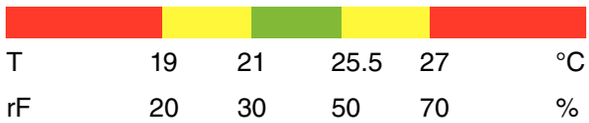
Additional information

Fitting instructions	P100011918
Declaration on materials and the environment	D100171376
Manual for CASE Sensors	7010081001

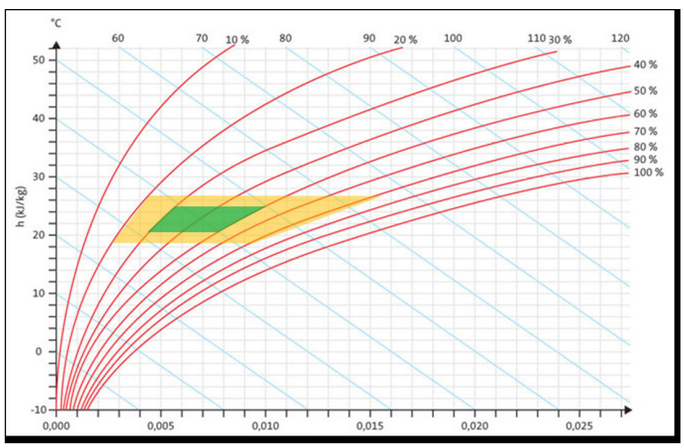
Description of operation

The sensor allows the exact measurement of relative humidity and temperature in the room for the energy-efficient monitoring and controlling of the room climate. In addition the sensor can calculate absolute humidity, enthalpy and the dew point. The modern design combines high measuring reliability and elegance. Frames and adaptors are available as accessories for multiple fitting options and provide an optimal solution for every application. Every sensor in the family of products can be identified easily by the pictogram on the front of the device. The pictogram provides the user with intuitive information about the measured variable.

5) *when installed*



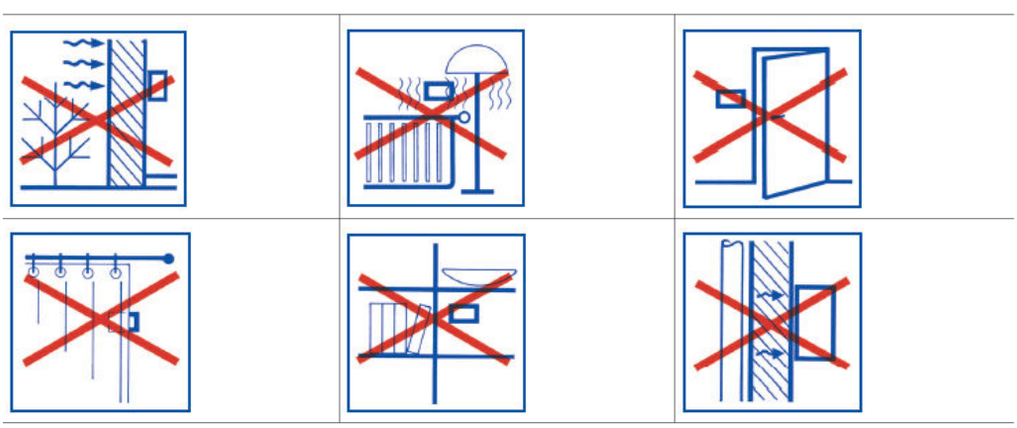
The three-coloured LED indicator enables the user to visualise the temperature and humidity at a glance at any time. The parameters of the LED indicator are set according to EN15251 ex works. CASE Sensors can be used to parameterise these settings as well as a large variety of functionalities specific to the customer.



Comfort zone (green area)

Fitting

The viaSens is suitable for various fitting methods. Product data sheet PDS 94.055 shows the fitting options and the accessory material required. For surface mounting, boxes with a minimum depth of 35 mm must be used (for example, the LS990 series from JUNG). For further information, see the fitting instructions. Incorrect fitting can result in incorrect measuring results. Therefore, always observe the mounting instructions. The place of installation must also be chosen carefully to ensure the reliable measurement of the room temperature and the room humidity. Cold outer walls and fitting above heat sources (radiators, for example) and right next to doors with draughts must be avoided, as well as direct sunlight. Furnishings, such as curtains, cabinets or shelves, can hinder the flow of room air to the sensor and thereby cause discrepancies in the measurements. Heating pipes inside the walls can also affect the temperature measurement. With recessed mounting, the installation pipes must be sealed: otherwise incorrect air circulation can cause errors in the measurement. The highest degree of measuring accuracy is attained when mounted in an individual frame.



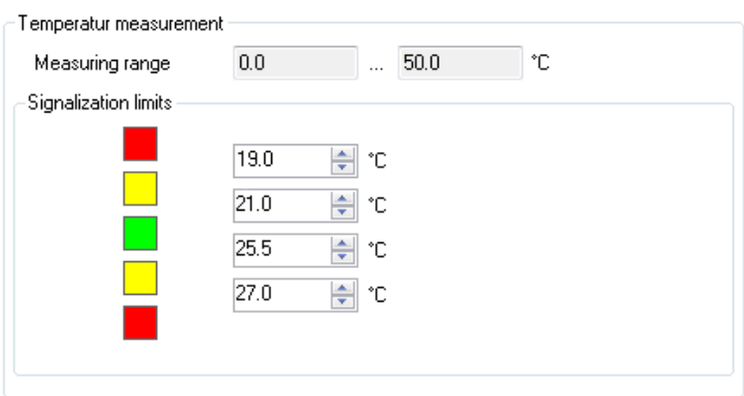
Electrical connection

The viaSens is connected to the electricity supply by means of a pluggable screw terminal. This is suitable for conductor cross-sections (braided or solid) up to 1.5 mm^2. We recommend using a conductor cross-section up to 0.75 mm^2. When you are laying the cables, note that electrical interference can affect the measurements. These effects increase the longer the cable is and the smaller the conductor cross-section. In high-interference environments, we recommend using shielded cables.

CASE Sensors – a powerful software tool for configuring the sensor

The sensor can be used immediately after it is delivered. The customer can use CASE Sensors to parameterise the sensor, providing real added value.
CASE Sensors enables the user to work with all the intelligent options of the sensor.
The software allows the following specific parameters to be set:

- Description of the measuring point
- Function of the LED indicator:
  - Monitoring indicator for relative humidity
  - Monitoring indicator for temperature
  - Monitoring indicator for relative humidity and temperature
  - Inactive
- Setting the limit values for the LED indicator (see example)
- Scaling the output signal:
  - Limiting the measuring range
  - Limiting the output signal
- Switching off the analogue outputs
- Activating calculated variables



Example: Setting the temperature limit values of the LED indicator

To use the sensor functions, you require the SAUTER CASE Sensors software and a USB connection set (see accessories).
The current version of the software can be downloaded from the website www.sauter-controls.com.
After parameterising the sensor, the communications interface must be disconnected at the sensor. Continuous operation with the interface is not permitted.

Notes for users

Under normal operating conditions, the devices are subject to an extremely slow rate of deterioration. Humidity sensors are subject to increased deterioration if they are used in very contaminated air or aggressive gases. The factors affecting the device depend on the concentration of the aggressive media and can increase the drift of the sensor. If the sensor is used in very contaminated air, the warranty does not cover the premature replacement of the complete sensor.

Manufacturer test certificates and maintenance

The test certificates enable the measuring accuracy of every sensor to be quantified. The test certificate is valid for the entire device. The user can enter the corresponding measuring results of the sensor as offset values in a higher-level control device (e.g. SAUTER EY-AS 525 automation station).
We recommend the following calibration intervals:

- Under normal conditions, every 2 years.
- In contaminated air (for example, with cleaning or disinfecting agents), every year.

SAUTER provides manufacturer test certificates according to DIN 55350-18 (EN 10204) under the following test conditions:

- Relative humidity (at 23 °C): 30% rh, 55% rh, 70% rh
- Temperature: 4 °C, 20 °C, 36 °C

The sensors can be delivered ex works with the corresponding manufacturer test certificates. For more information, please contact your personal SAUTER representative.

Calculated variables

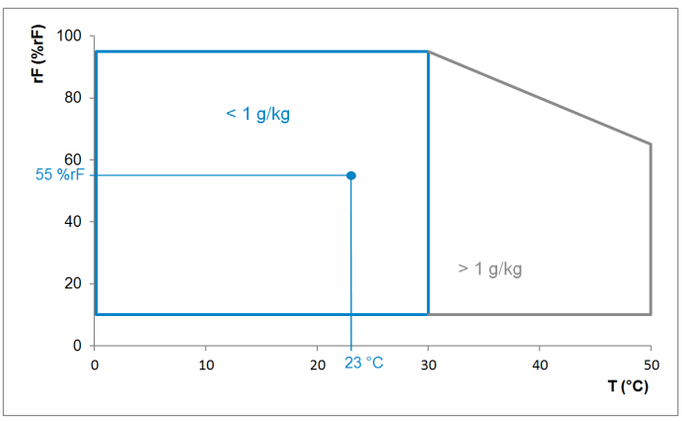
The measurement of the relative humidity and the temperature allows a range of variables to be calculated. The calculated variables can be activated using CASE Sensors and assigned to an output signal. The operation of the LED indicator cannot be assigned to the calculated variables. The LED indicator is reserved for the temperature and/or the relative humidity.

Absolute humidity (water vapour content)

The absolute humidity is the water vapour contained in a kilogram of air (g/kg).

Range: 0…50 g/kg

Accuracy: < 1 g/kg (at 23 °C and 55% rh)



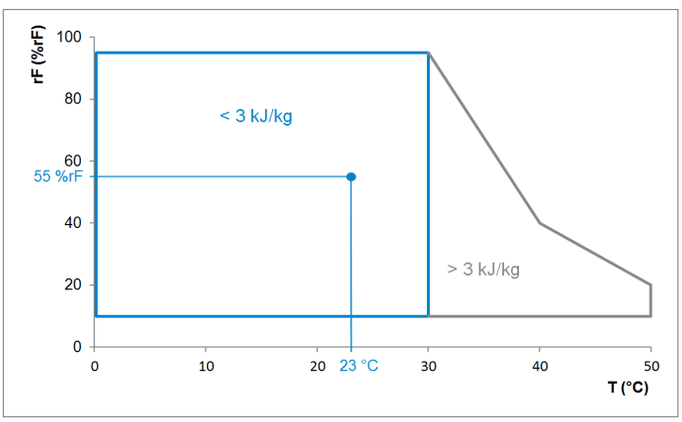
Absolute humidity accuracy range

Enthalpy

The enthalpy (or heat content) is the energy (quantity of heat) contained in the air. It is expressed as kJ/kg. A temperature of 0 °C is used as the reference variable.

Range: 0-100 kJ/kg

Accuracy: < 3 kJ/kg (at 23 °C, 55% rh)



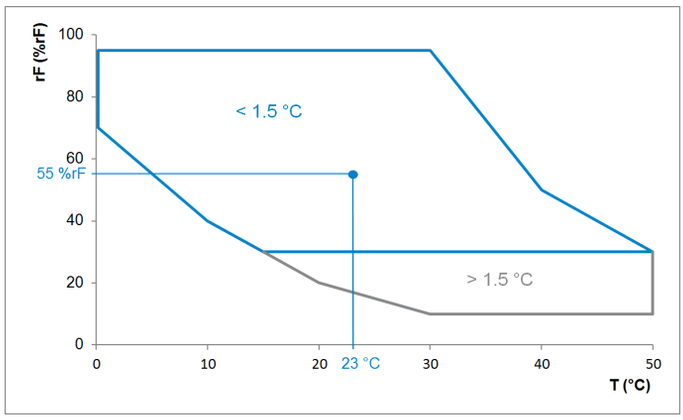
Enthalpy accuracy range

Dew point

The dew point or the dew point temperature is the temperature at which the water vapour contained in the air reaches saturation point, condenses and changes to the liquid state.

Range: -5-30 °C

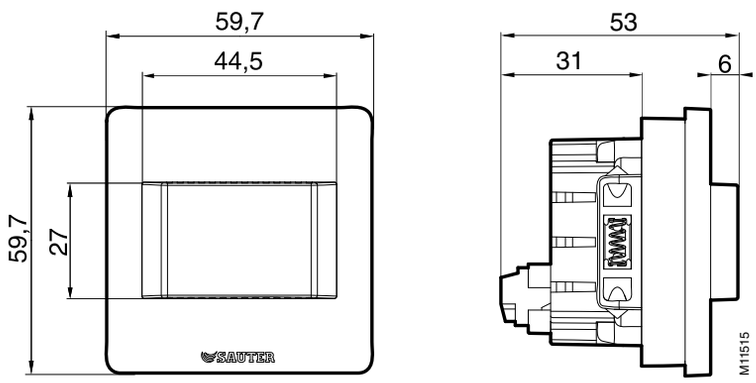
Accuracy: < 1.5°C (at 23 °C, 55% rh)



Dew point temperature accuracy range

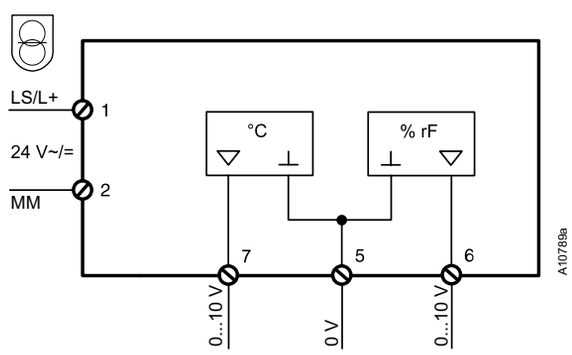
The viaSens681 cannot be used as a dew-point monitor. A condensation protection application is implemented with a separate clamp-on sensor, e.g. SAUTER EGH 102.

Dimension drawing



Connection diagram

EN 61558-2-6



The power supply (pins 1 and 2) and the analogue outputs (pins 5 and 7) are electrically isolated from each other.

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