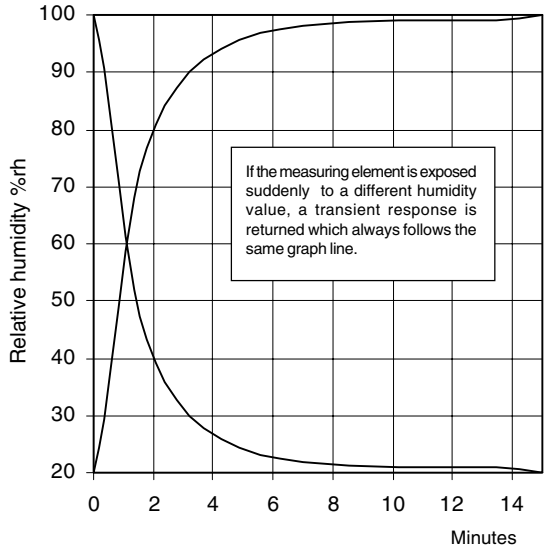
Reaction of the sensor

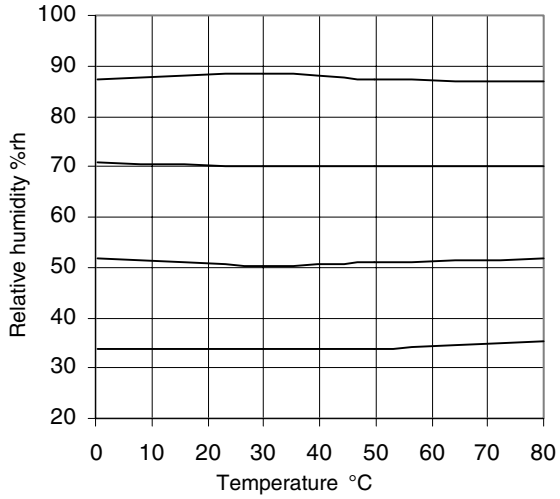
Due to the law of diffusion, there is a time delay before the fibres are saturated during water absorption. This is a decisive factor when determining the reaction time. Thus, for one individual fibre with a diameter of 3 µm, a short saturation time (several seconds) can be measured. Empirical investigations show that bundled or woven fibres, as are used here in the Galltec sensor, give rise to a longer period prior to saturation. This is because the individual fibres impede each other during water absorption and/or water loss, and the ensuing humidity does not register until later. Measurements have shown that, at a wind speed of 2m / sec. the half-life period is 1.2 mins. This represents an effective period of approx. 30 - 40 mins.

Half-life period



Transient response of the measuring element between 20 and 100%rh

Thermal behaviour



50º C is given as the maximum temperature value. Higher temperatures can only be tolerated for a short period of time. The eventual result is a change in the molecular structure which causes a constant error. The maximum temperature of 50º C only applies, however, if no harmful substances (acids, solvents etc.) are present in the medium.

The temperature coefficient as well as the self-heating may vary according to the location and the application (especially with sensors where electronic and measuring system are integrated in one housing).

Technical Data

humidity measuring range ..... 0...100%rh
measuring accuracy
... >40%rh ..... ±2.5%rh
...<40%rh ...according to tolerance diagram
working range ..... 35...100%rh
temperature measuring accuracy ..... +/-0.5°C
working range ..... -10...+60°C
measuring medium ..... air, pressureless, non-aggressive
permissible ambient temperature ..... 0...50°C
mean temperature coefficient ..... -0.1%/K at 20ºC and 50%rh
adjustment ..... at average air pressure 430m NN
permissible air speed 15m/sec
half-life period at v=2m/sec.....1.2 min
fixing ..... slots in housing base
mounting position ..... optional, preferably with ventilation slots at right angles to direction of airflow
connecting terminals ..... for conductor cross sections 0.5mm²
cable connection.....by flush device box
EMC-tested ..... to EN 50 081-2, to EN 50 081-2
housing ..... impact resistant plastic, light grey
protective system IP20
weight ..... approx. 0.2 kg

Electrical data for passive sensors

Humidity Output 1 ..... 0...100 ohms linear 2-wire
..... 0...200 ohms linear 2-wire
..... 0...1000 ohms linear 2-wire
..... 100...138.5 ohms linear 2-wire
.....5..100..5 ohms unlinear 3-wire
further resistance ranges on request
permissible load ..... 1.0 watt
max. voltage 42V
insulation resistance ..... 10 Mohms

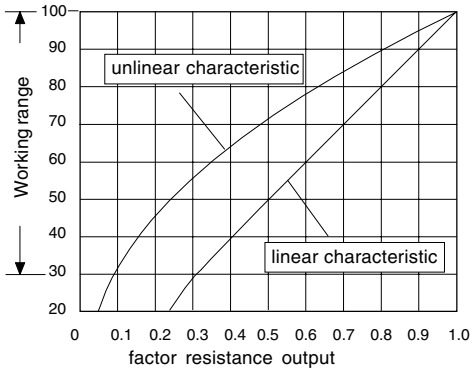
Temperature Output 2 (TFG120) ..... Pt100 ref. DIN EN 60751
permissible load for air 1m/sec and t=0.1K ..... 2 mA

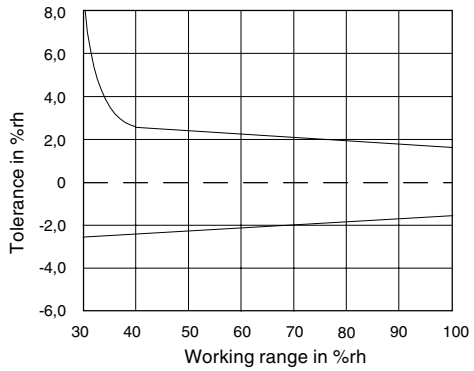
"subject to technical modifications"

Overview of passive sensors

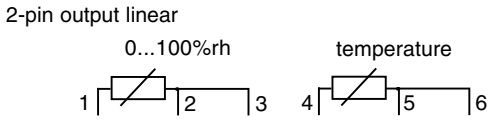
Type	Humidity		Temperature		power supply	wire-system	litem no.
	measuring range 1	output 1	measuring range 2	output 2			
FG120	0...100%rh	0...100 Ohm			max 42V	2wire	45010100
	0...100%rh	0...200 Ohm			max 42V	2wire	45010200
	0...100%rh	0...1000 Ohm			max 42V	2wire	45010300
	0...100%rh	100...138,5 Ohm			max 42V	2wire	45010400
	0...100%rh	50...30...50 Ohm			max 42V	3wire	45010500
	0...100%rh	5...100...5 Ohm			max 42V	3wire	45010600
TFG120	0...100%rh	0...100 Ohm	+5...+50°C	Pt100	max 42V	2wire	45700150
	0...100%rh	0...200 Ohm	+5...+50°C	Pt100	max 42V	2wire	45700250
	0...100%rh	0...1000 Ohm	+5...+50°C	Pt100	max 42V	2wire	45700350
	0...100%rh	100...138,5 Ohm	+5...+50°C	Pt100	max 42V	2wire	45700450
	0...100%rh	5...100...5 Ohm	+5...+50°C	Pt100	max 42V	3wire	45700650

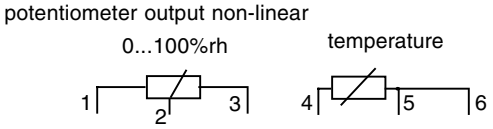
Humidity and tolerance diagram





Connection diagram for passive sensors with resistance output





Dimensions diagram