



FK120J for humidity  
TFK120J for humidity and temperature

**Humidity Sensor type FK120J** (capacitive)

with current or voltage output, to determine air humidity in room conditions.

**Humidity-temperature Sensor type TFK120J**

with current or voltage output, to determine air humidity and temperature in room conditions.

**Description of the sensors**

The FK120J (humidity only) / TFK120J (humidity and temperature) sensor measures the air humidity by means of a humidity-dependant condenser. The capacitive humidity measuring element, produced using thin-film technology, consists of a base plate, on which the electrodes are housed, and a hygroscopic polymer layer above it. The hygroscopic polymer layer absorbs water molecules from the medium to be measured (air) or releases them, thereby altering the capacity of the condenser. In a tandem-arranged electroic device, the change in capacity is processed via integrated signal preprocessing into standardised signals 0...20mA/0...10VDC or 4...20mA.

The measuring element is protected in the housing. The sensors are designed for pressureless systems - the measuring medium is non-corrosive air.

The TFK120J sensors also contain a semi-conductor temperature sensor for simultaneous temperature measurement. Its measured values are likewise converted into standardised signals 0...20mA / 0...10VDC or 4...20mA.

**Mounting instructions**

The room sensor should be mounted on a vertical wall about 1.5m above the floor.

Do not fit above radiators, near windows or doors, on areas exposed to intense vibration or direct sunlight, exterior walls or chimneys. Under no circumstances must the sensors be mounted into a wall or niche. The sensors should be protected from dripping water or splashes. Ensure that no air can flow into the interior of the housing via the concealed cable lead. Do not use a silicon sealing compound to seal the cable lead. The sensors should be mounted such that air in the room can flow upwards unimpeded through the ventilation slots in the housing cover.

**Maintenance**

The measuring element is maintenance free when the surrounding air is clean. Agents that are corrosive and contain solvents, depending upon the type and concentration of the agent, can result in faulty measurements and cause the measuring element to break down. Substances deposited on the sensor are damaging as they form a water-repellent film. Such substances are resin aerosols, lacquer aerosols, smoke deposits etc. Contaminated protective guards should be changed.

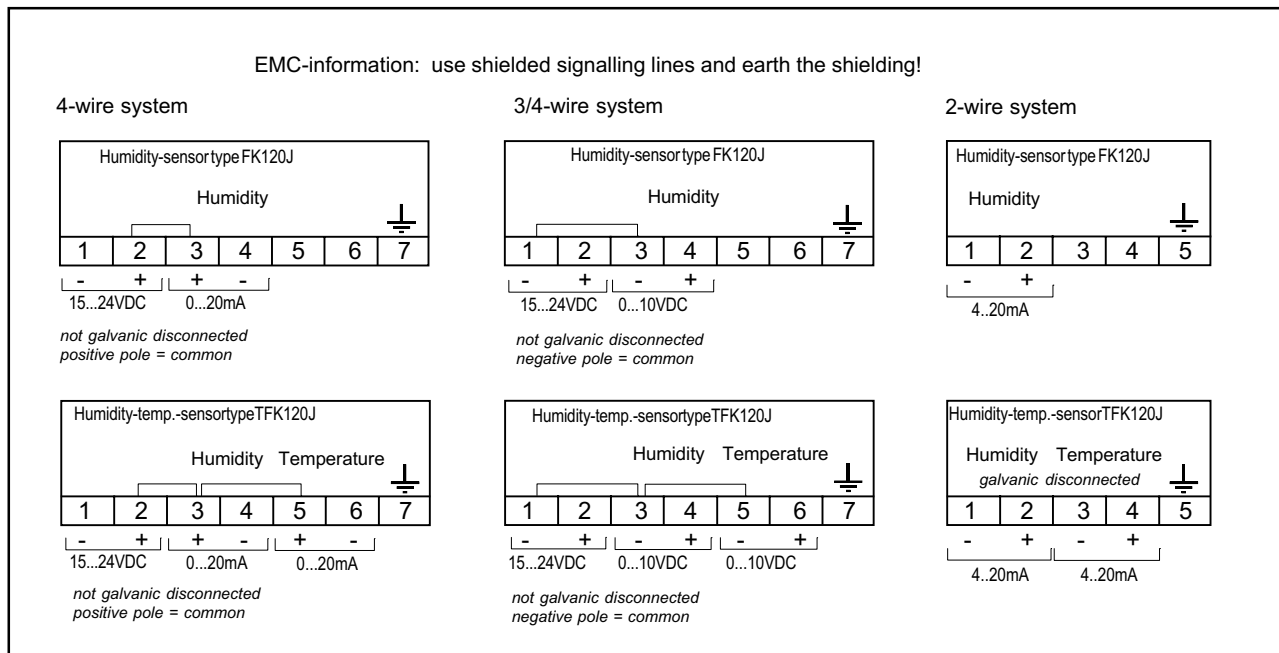
**ATTENTION:** The guarantee is no longer valid of the interior of the measuring element has been accessed.

**Technical Data**

measuring range <b>humidity</b> .....	0..100%rh
working range .....	10...95%rh
measuring medium ..air, pressureless, non-corrosive, non-condensing	
measuring accuracy .....	±3.5 %rh
temperature coefficient .....	0.05%/K ref. to 20°C and 50%rh
half-life period (v=2m/sec) .....	circa 10 sec
output <b>humidity</b> .....	0...20mA or 0... 10V 4-wire system
.....	or 4...20mA 2- wire system
measuring range <b>temperature</b> 0...+50,30..+60,10..+90,0..100°C	
working range .....	-10...+60°C
measuring accuracy .....	±0.8K
linearity tolerance .....	<0.5%
output <b>temperature</b> .....	0...20mA or 0...10V 4 wire-system
.....	or 4...20mA 2 wire-system
operating voltage.....	15..24V DC /24V AC
max. load for current output .....	500 ohms
min. ballast resistance for voltage-output .....	10 k ohms
internal consumption per measuring range (4-wire).....	5 mA
permissible ambient temperature .....	-10...60°C
permissible air speed .....	15 m/sec.
fixing .....	slots in housing base for wall mounting
mounting position.....	preferably ventilation slots at righ-angles to wind direction
contact.....	connecting terminals in the housing
connecting terminals.....	for conductor cross-sections 1.5mm <sup>2</sup>
cable connection.....	simple shielding
EMC tested.....	ref. EN 50 081-2, EN 50 082-2
housing.....	impact resistant plastic, light grey
dimensions .....	115x70x42mm
protective system .....	IP20
weight .....	ca 0.2 kg
"technical modification rights reserved"	

This information is based on current knowledge and is intended to provide details of our products and their possible applications. It does not, therefore, act as a guarantee of specific properties of the products described or of their suitability for a particular application. It is our experience that the equipment may be used across a broad spectrum of applications under the most varied conditions and loads. We cannot appraise every individual case. Purchasers and/or users are responsible for checking the equipment for suitability for any particular application. Any existing industrial rights of protection must be observed. The perfect quality of our products is guaranteed under our General Conditions of Sale.  
Issue : March 1996 FK120\_E. This issue supersedes all previous technical leaflets.

**Connection diagram**



**Overview of capacitive sensors  $U_B = 15...30V DC$**

FK120J	0...100%rh	0...20mA			15...24VDC	3/4wire	59013000
	0...100%rh	0...10V			15...24VDC	3/4wire	59014600
	0...100%rh	4...20mA			15...24VDC	2 wire	59014800
TFK120J	0...100%rh	0...20mA	0...+50°C	0...20mA	15...24VDC	3/4wire	59523030
	0...100%rh	0...20mA	-30...+60°C	0...20mA	15...24VDC	3/4wire	59573030
	0...100%rh	0...20mA	-10...+90°C*	0...20mA	15...24VDC	3/4wire	59623030
	0...100%rh	0...20mA	0...100°C*	0...20mA	15...24VDC	3/4wire	59543030
	0...100%rh	0...10VDC	0...+50°C	0...10VDC	15...24VDC	3/4wire	59524646
	0...100%rh	0...10VDC	-30...+60°C	0...10VDC	15...24VDC	3/4wire	59574646
	0...100%rh	0...10VDC	-10...+90°C*	0...10VDC	15...24VDC	3/4wire	59624646
	0...100%rh	0...10VDC	0...100°C*	0...10VDC	15...24VDC	3/4wire	59544646
	0...100%rh	4...20mA	0...+50°C	4...20mA	15...24VDC	2 wire	59524848
	0...100%rh	4...20mA	-30...+60°C	4...20mA	15...24VDC	2 wire	59574848
	0...100%rh	4...20mA	-10...+90°C*	4...20mA	15...24VDC	2 wire	59624848
	0...100%rh	4...20mA	0...100°C*	4...20mA	15...24VDC	2 wire	59544848

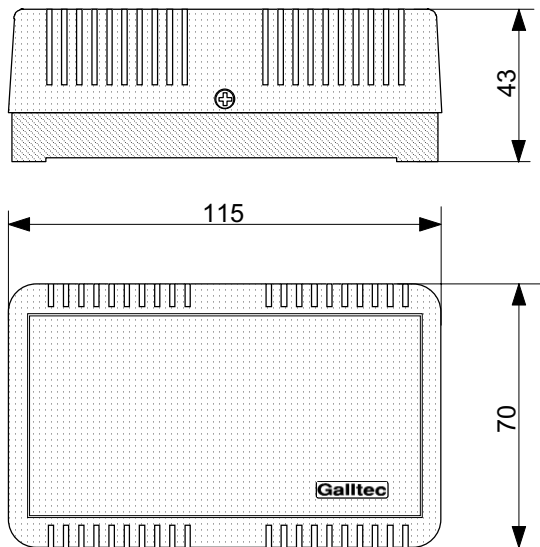
\* heed max. temperature range

**Overview of capacitive sensors  $U_B = 24V AC (20...28VAC)$**

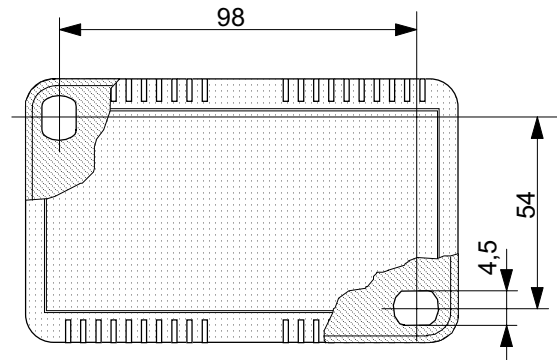
FK120J	0...100%rh	0...20mA			24VAC	3/4wire	59014200
	0...100%rh	0...10VDC			24VAC	3/4wire	59014700
TFK120J	0...100%rh	0...20mA	0...+50°C	0...20mA	24VAC	3/4wire	59524242
	0...100%rh	0...20mA	-30...+60°C	0...20mA	24VAC	3/4wire	59574242
	0...100%rh	0...20mA	-10...+90°C*	0...20mA	24VAC	3/4wire	59624242
	0...100%rh	0...20mA	0...100°C*	0...20mA	24VAC	3/4wire	59544242
	0...100%rh	0...10VDC	0...+50°C	0...10VDC	24VAC	3/4wire	59524747
	0...100%rh	0...10VDC	-30...+60°C	0...10VDC	24VAC	3/4wire	59574747
	0...100%rh	0...10VDC	-10...+90°C*	0...10VDC	24VAC	3/4wire	59624747
	0...100%rh	0...10VDC	0...100°C*	0...10VDC	24VAC	3/4wire	59544747

\* heed max. temperature range

### Dimensions diagram



### Mounting drawing



### Guide to installation

Interference is often to be encountered during installation. The correct installation procedure can prevent interference to a very large extent. However, some ground rules should be observed.

To avoid interference, suppression should be carried out in accordance with VDE 0875 and VDE 0874

(VDE - this is assumed to be the *Vorschriftenwerk Deutscher Elektrotechniker* - regulations governing German electrical engineers).

Fundamentally, interference must be removed at its source, where suppressor material is most effective. Interference can, however, also result from electromagnetic fields via signalling lines. The EMV law determines the corresponding protective measures. All Galltec equipment is designed in accordance with European standards EN 50081-2 and EN 50082-2 (for industrial locations). In addition, further protective measures must be observed.

Unavoidable sources of interference should be kept at a good distance from the control systems.

Data and signalling lines should not be used in parallel with control, networking and power lines.

For data and signalling lines, shielded cable should be used, and the shielding must be applied to the earth terminal. Ensure that earth circuits and fault currents do not arise as a result of a second earth connection.

For equipment with a network connection, it is recommended that a separate network circuit be used.

During the switch process, electrical power consumers such as switch contactors, magnetic valves etc. produce induction voltages that can cause interference. In the trade there is an abundance of protective and suppressor component parts that are most effective when applied directly to the source of the trouble. A suitable suppressor has the added advantage that components such as relays, microswitches etc. have a longer service life.

Further difficulties during installation can arise if signalling lines are joined together with common lines. It is essential to check whether this is permissible. Interference is particularly likely when installing using equipment of different makes. Here, too, the trade offers isolating amplifiers that overcome the problem.