

CAPACITIVE SENSORS



Sense it! Connect it! Bus it! Solve it!

Overview – housings, functions, materials

Cylindrical housings

Threaded barrel	Housing	Max. switching distance		Connection	Electrical version
		flush	non-flush		
• Brass, chrome-plated	M 12 x 1	3 mm	–	Connector/ cable	2-wire AC 3/4-wire DC
	M 18 x 1	5 mm	–		
	M 30 x 1.5	10 mm	–		
• Plastic	M 12 x 1	3 mm	4.5 mm	Connector/ cable/ terminal chamber	2-wire AC 3-Draht DC NAMUR
	M 18 x 1	5 mm	7.5 mm		
	M 30 x 1.5	10 mm	15 mm		
• Dyflor/PTFE	M 18 x 1	5 mm	7.5 mm	Cable	3/4-wire DC NAMUR
	M 30 x 1.5	10 mm	15 mm		

Smooth barrel	Housing	Max. switching distance		Connection	Electrical version
		flush	non-flush		
• Plastic	Ø 34 mm	15 mm	22.5 mm	Connector/ cable/ terminal chamber	2-wire AC 3/4-wire DC
	Ø 40 mm	20 mm	30 mm		

Rectangular – compact

Rectangular – compact	Housing	Max. switching distance		Connection	Electrical version
		flush	non-flush		
• Die-cast zinc	Q08	5 mm	–	Connector/ cable	3/4-wire DC
	Q10	8 mm	–		
• Plastic	Q14	10 mm	–	Connector/ cable	3/4-wire DC 2-wire AC
	Q20	20 mm	–		
	Q20	20 mm	–		

Rectangular – flat

Rectangular – flat	Housing	Max. switching distance	Connection	Electrical version
• Plastic	QF 5,5	10 mm (flush)	Cable	3-wire DC NAMUR
	Q20L60	10 mm (flush)	Connector/ cable	3-wire DC

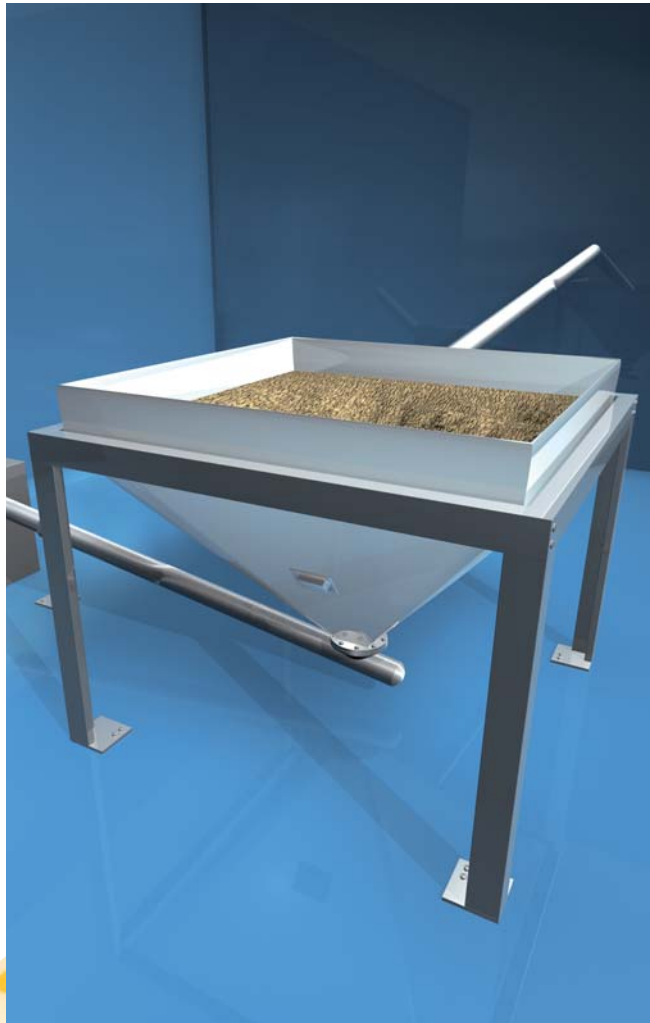
Rectangular – variable

Rectangular – variable	Housing	Max. switching distance		Connection	Electrical version
		flush	non-flush		
• Plastic	CP 40	20 mm	30 mm	Connector/ terminal chamber	3/4-wire DC
	CP 80	–	50 mm		

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CAPACITIVE SENSORS - APPLICATION SAFETY FROM THE OUTSET



Capacitive sensors operate on a non-invasive, isolated and non-contact basis. Both electrically conductive and non-conductive materials are reliably detected. Capacitive sensors are thus ideally suited for application areas in which the inductive principle is not applicable.

Typical application examples for capacitive sensors are distance and position measurement, including the measurement of deflection, thickness, fill level, eccentricity, concentricity, deformation, wear and oscillation.

Features

- Non-contact detection of metals and non-metals
- Large switching distances (adjustable)
- Innovative close range suppression
- Short-circuit and reverse polarity protection
- All connection possibilities: Connectors, cable connection and terminal chambers
- Housings made of plastic, metal and Dyflor
- Immune to electromagnetic interference (EMC) and electrostatic discharge (ESD)
- Switch state display via LED
- Degree of protection up to IP67

A broad range of applications

Counting, verification and fill level control

Whether it is flat against a pipe, adjacent to a tube or through a plastic or glass wall – the medium is always safely detected.

If mounting within a container or tank is unavoidable, special tank adapters made of mechanically and chemically resistant polypropylene are used, or special sensor housing designs with a ring seal and PVDF housing are employed.

Whether they are metallic or non-metallic – capacitive TURCK sensors can reliably detect a wide range of different objects through non-metals. It is possible for example, to differentiate between full and empty packages in the course of final inspections.

Even small metal parts can be detected at high switching distances, and this without the necessity for exact positioning. Capacitive sensors are the ideal solution for the detection of wire breaks e.g.

Environments with high EMC interference levels

The potentiometer which is used to adjust the switching distance is located on conventional capacitive sensors in the sensitive generator area. The disadvantage of this configuration is that the sensor is very sensitive to HF decoupling and other sources of interference. For this reason the potentiometer on the capacitive sensors from TURCK is located in a less sensitive area of the circuit.

Additional protective measures are usually required for environments in which extreme interference occurs. The BCF series offers the ideal solution: All sensors of this series are immune to radiated and conducted sources of HF interference and burst interference as well as static discharges (ESD).

Where others are “blind”

Enhanced application reliability through innovative close range suppression

Capacitive sensors react to all materials with a permittivity ϵ_r of greater than 1. In order to avoid that dirt deposits and moisture are detected on the active face of the sensor, a so-called compensation probe has been integrated.

With the assistance of the electrode, a signal is generated in the close proximity of the sensor face which counteracts the main signal. In the vicinity of the electrode, a 'blind zone' is thus created where targets are not detected by the sensor (including dirt and moisture). Thanks to innovative circuit technology this close range suppression also functions with conductive films.



Extended temperature range (-25 °C ... +100 °C)

TURCK has developed a special range of sensors to meet the increasing requirement for sensors with an increased temperature range.



Technology in small spaces

A whole range of unforeseen installation and detection possibilities become possible through the use of high quality components in a compact, stable housing.



Automatic wetting compensation

Malfunctions caused by wetting or condensation are automatically eliminated.