

Sensors and Connectors for Precision Farming

Sensors

Figure	Type Code	Description
	RI360P1-QR20-LU4X2-0.15-DT04-3P	Contactless encoder for different measuring ranges with Deutsch-DT, AMP-Superseal or M12 connector or connection cable
	B2N85H-Q20L60-2LU3-H1151	Two-axis inclinometer MEMS-based, filtering and damping characteristics can be adapted to the application equipment, devices with analog output, CANopen and IO-Link
	BCF10-S30-VP4X	Capacitive sensor with wetting compensation that suppresses the influence of buildup, increased safety
	TM186EQ8 (transmitter) and TM18AP6RQ8 (receiver)	Opposed mode sensor in a compact metal housing, simple installation without a deflecting mirror, reliable operation due to high performance reserve and special wavelength
	QT50ULBQ6-CRFV	Ultrasonic sensor with PTFE front surface, measuring range adjustable with teach button or teach line

Connector

Figure	Type Code	Description
	Splitter DT04-6P-A-5723-0.35-2DT06-6S-A-0.1/0.15 End cable DT06-6SA-A-DT04-6P-A-5723-0.35	Splitter for CAN valves, can be added as often as required, the last valve is connected with a terminal line with terminating resistor.

Precision Farming

What is this?

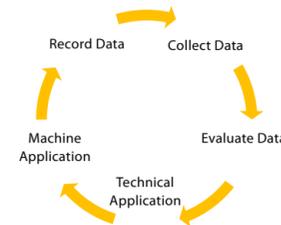
- An arable farming concept for the locally differentiated and purposeful cultivation of agricultural land. This takes into account differences in soil and yield within a field.
- Dividing a field into small units with the aim of collecting agricultural data and drawing up a tailored management plan for these units.
- Enabling machines to meet the requirements of precision farming

What are the benefits?

- Economic benefits for the farmer
- Higher productivity and maximized yield
- Significant reduction of water, fertilizer, pesticide etc.
- Positive environmental aspects of soil and groundwater due to fewer inputs
- Water savings
- Cornerstones of sustainable agriculture

What are the requirements for the automation technology?

- Highly sensitive and precise sensors
- Change from switch to continuous and accurate position detection
- High-speed networks



Ideal for mobile machinery

Miniature encoder Ri360-QR20

The Ri360-QR20 encoder series with IP68/IP69K protection exceeds the e1/E1 requirements and is built in a compact 71 × 64 × 20 mm housing. Like the "big brother" QR24, it is based on the contactless resonator measuring principle. The highlight here is: The housing fully encloses the positioning element and covers it completely to the outside. The encoder offers a very high EMC immunity and is protected against conducted interference, the so-called load dump. Salt spray mist or rapid temperature changes can affect the unit just as little as diesel, kerosene or vibrations. The Ri360-QR20 achieves a resolution of around 0.09° on the output side.

Your benefits

- No maintenance necessary
- No protective or auxiliary constructions required
- Easy diagnostics
- High mounting flexibility



Deutsch and Superseal connectivity

The Deutsch and Superseal connectors convince with their pre-assembled and overmolded cables. Thanks to their IP67/IP69K protection, they meet high requirements for tightness and mechanical resistance and implement the individual wiring concepts in a fail-safe manner. Cable jacket, grip body and overmolding are made entirely from durable Thermoplastic Polyurethane (TPU). They withstand temperatures from -40...+85 °C. With the variety of possible number of poles, optionally even with LED and protective circuitry, they cover a multitude of application possibilities. Special versions, e. g. for controlling valves in a field sprayer, are also available.

Your benefits

- Highly fail-safe
- Flexible thanks to a wide variety of types
- External thread for protective hose mounting



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Solutions for Precision Farming



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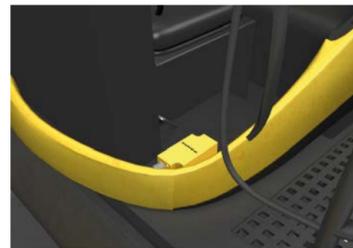


Harvester Applications



Reliable level detection grain tanks

- The BCF10-S30-VP4X capacitive proximity switch reliably detects the level in the grain tank
- The sensor is optimized for reliable detection of different grain sizes
- It is insensitive to buildup on the sensor wall



Exact detection of vehicle inclination

- The two-axis inclinometer B2N85H-Q20L60 ensures reliable levelling of the threshing unit
- Interference due to vehicle vibrations can be eliminated by an individual setup
- Especially vibration and EMC-resistant

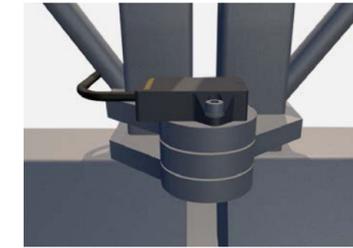


Material flow monitoring in the harvester

- The compact and robust opposed mode sensor TM18 reliably detects the grain volume in the grain lift
- The angled design allows easy installation without the use of deflecting mirrors or mounting aids
- High EMC and temperature resistance guarantee fail-safe material monitoring



Field Sprayer Applications



Contactless angle detection

- The contactless encoder RI360P1-QR20 reliably measures the angles between the different segments of the sprayer boom
- Thanks to the magnetic-free inductive operating mode, the encoder is particularly resistant to moisture and axial shocks
- The encoder can also be mounted inside the metal housing of the steering axle



Detection of the ground clearance

- The particularly robust ultrasonic sensor T30UX-ICQ8-CRFV ensures the optimum distance between the sprayer boom and the soil
- The PTFE transducer resists the chemicals used in the spraying process
- The measuring range can be easily set via teach button or teach line



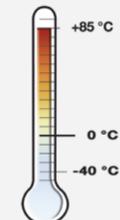
Distribution cable for CAN valves

- The fully encapsulated CAN distribution cables with Deutsch connectors allow a reliable connection of the spray valves to the control system
- The pre-assembled cables for every application are installed very quickly
- The high protection class IP67/69K and the chemical resistance guarantee long lifetimes



Resistant to cleaning

Turck sensors are very well suited for deployment in mobile equipment due to the use of resistant materials such as stainless steel and high-quality plastics as well as the potting of electronics. Their high protection class and chemical resistance allow them to withstand cleaning processes without any problems.



Wide temperature range

The extended temperature range of the sensors from -40...+85 °C enables worldwide use in outdoor applications - from polar regions to the Sahara. Even radiant heat up to +85 °C can't harm these sensors. Also extreme temperature changes according to DIN 60068-2-14 are no problem.



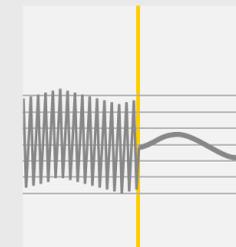
Vibration and shock resistance

Vibration and shock resistance are key criteria for increased reliability of agricultural machinery. The robust construction and the complete potting allow a vibration resistance of partly 3000 Hz at 20 g as well as a continuous shock resistance of 100 g in two axes.



Excellent EMC immunity

Even under the most difficult EMC conditions, Turck's sensors are fail-safe: In some cases, the devices exceed the requirements of DIN ISO 7637-2 and DIN EN ISO 14982 for hard-radiated and conducted interference, as is usually the case in motor vehicles.



Individual filter settings

With individual filter settings for suppressing interfering vibrations, the inclinometers can be perfectly adapted to the demanding operating conditions in agricultural machinery. The user can carry out the specific filter setting himself or purchase preset devices.



Customized connectors

2-port junction systems for connecting several CAN valves can be adapted to the dimensions of series machines according to customer specifications. This reduces assembly time and increases availability. The overmolding reliably ensures the high protection class IP69K.