



SENSORS & CONTROLS



DEWIT INDUSTRIAL SENSORS



Index

Sensoren:

QF – Hall effect sensors	4
QL – Photocells	4
QG – Inclometers QG Acceleration sensors	5 + 6
QR – Angle sensors / Encoders	7 + 8
QX – Inductive proximity switches	9

Control technology:

Remote controls	10
Motor controls	11



Dewit Industrial Sensors BV

Introduction

For 20 years now, the DIS name has stood for high-quality sensor technology. We develop, manufacture and market sensors, control systems and customized electronics for a wide range of applications. Innovation is in our blood, know-how in our genes. The result: high-quality products and solutions that enable DIS to serve the needs of the European market. A subsidiary of the Roter Group of Companies, DIS is based in Soest, central Netherlands. The company has been ISO 9001-certified since 2003.

Product range

We offer a wide range of sensors: inductive proximity switches, photocells, humidity sensors, speed/direction and angle sensors and sensors for the measurement of inclination, acceleration and vibration.

In addition, we supply control systems for applications such as adjustable furniture (home automation), medical equipment and consumer products like caravan movers. These systems are based on standard products, but can also be supplied in fully customized versions. DIS has an outstanding reputation in the area of made-to-measure solutions and will be pleased to serve as your partner in innovation. Because we work together with a network of carefully selected suppliers, we can also offer large production runs at highly competitive prices.

This brochure is designed to provide you with an overview of our product range, but don't be limited to what you see in it. You may find what you want, but require a minor adjustment. Or a different solution altogether. Whatever the case, there's one thing you can count on: in DIS, you have found the ideal partner when it comes to high-quality sensor technology.

DIS makes sense!

What else can DIS offer?

- ISO9001, TÜV, UL and RDW certification
- An R&D department with a total of 75 years' experience
- (Pre-compliance) EMC measurements
- Production department offering the following options:
Surface mount and conventional assembly (single- and double-sided),
wave and reflow soldering, electronics potting, small to medium-sized production runs
(50 – 2,000 units/batch), batch registration
- Testing department: functional tests, temperature and RH chamber, exact sensor calibration
- Branche office in Germany and experienced distribution partners throughout Europe.

QF Hall sensors

Hall sensors have proven themselves over many years to be the most reliable technology for non-contact revolution measurement. DIS employs these components in its Quadro-Flux series. Revolutions up to 12 kHz can be measured using a range of options, with or without phase-shifted signals for direction indication.

Measuring range	0 – 12 kHz
Measuring distance	0 – 5 mm
Versions	Internal (back biased) or external magnet
Supply voltage	10 - 30 Vdc
Outputs	NPN, PNP, NO, NC
Protection class	IP67

Applications:

- Revolution measurement
- Non-contact (end) switches
- Direction detection
- Coin-counting



QL Photocells

Quadro-Lux series photocells are designed to be used in extreme conditions. The unique Quadro flat pack housing (15 mm high) makes it easy to build the transmitter/receiver combination into any machine. The system works with a separate control module and the detection range between transmitter and receiver can be set to a maximum of 30 m.

Many standard photocells perform more functions than the customer needs. DIS can develop specific photocells to order, with “barebone” designs available for OEM applications (>500 units), allowing for major savings on cost.

Measuring range	0 – 5 m, 0 – 15 m and 0 – 30 m
Supply voltage	24 Vac/dc or 115/230Vac
Output	PNP transistor or relay contact
Protection class	IP67

Applications:

- Car washes
- Forestry equipment
- Level detection
- Automatic doors
- Industrial automation
- Packaging machines



QG Inclinometers

QG series inclinometers measure angles with respect to gravity. The QG series is based on highly robust 3D-MEMS technology, which transforms capacitance levels to analogue voltage levels within a micromechanical sensor chip. The series is available in 1D or 2D versions. In addition to two types of plastic housing, the QG series is also available in an aluminium or stainless steel housing.

Measuring range 1-axis	$\pm 10^\circ$; $\pm 30^\circ$; $\pm 90^\circ$; $0 - 360^\circ$
Measuring range 2D	$\pm 10^\circ$; $\pm 30^\circ$; $\pm 90^\circ$
Supply voltage	5 Vdc or 10 – 30 Vdc
Analogue output	0.5 – 4.5V or 4 – 20 mA
Digital output	SPI; switching output; CANopen
Accuracy	Depends on model and range: max 0.1°
Protection class	IP67

Applications:

- Tip-over protection for cranes
- Elevated work platforms
- Solar panels
- Air suspension systems
- Agricultural machinery
- Shipbuilding: roll and pitch measurement

CANopen

Solar tracking systems

Large parks populated with solar cells are being built to create the power stations of the future. DIS is contributing to their development by supplying accurate 2-axis inclination sensors that transmit precise absolute angles with respect to gravity (elevation and rotation) to the control system. This enables the panels to remain positioned in the ideal position towards the sun, based on the astronomical calendar, boosting efficiency by around 25%. Key factors that lead customers to opt for DIS include the robust finish and long lifecycle.



QG Acceleration sensors

QG series accelerometers measure acceleration on 1, 2 or 3 axes. The series is based on highly robust 3D-MEMS technology, which transforms capacitance levels to analogue voltage levels within a micromechanical sensor chip. The analogue output is proportional to the acceleration or deceleration. Thanks to the modular design of the electronics and the embedded software, the sensors can be quickly adjusted. In addition to two types of plastic housing, the QG series is also available in an aluminium or stainless steel housing.

Measuring range	From ± 0.25 to ± 12 g (1 g = 9,81 m/s ²)
Frequency range	0 – 400 Hz
Supply voltage	5 Vdc or 10 – 30 Vdc
Analogue output	0.5 – 4.5V or 4 – 20 mA
Digital output	SPI; switching output; CANopen
Accuracy < 0.01%	FS
Protection class	IP67

Applications:

- Agricultural machinery
- Vibration monitoring
- Active vibration damping
- Automotive testing
- Vibration measurement
- Transport monitoring (e.g. containers)



3D acceleration sensor for sway-control systems

DIS recently developed a 3 axis acceleration sensor with control unit for a caravan anti snaking system.

With a 3 axis acceleration sensor (± 2 g), caravan movements are measured while driving. Should the acceleration exceed a determined level, the embedded software ensures that the caravan's brakes are applied appropriately.

A number of safety measures (hardware and software) have been built into the control unit to prevent undesired braking actions.



QR30 Angle sensors

The QR30 angle sensor is designed to measure non-contact rotary displacement from 0 to 360 degrees, without mechanical stop. The magnet and sensor are fitted separately from each other, the magnet being attached to the rotating axle. The distance of 3 mm between the magnet and sensor leaves sufficient space for mechanical tolerances in extreme circumstances. We supply a range of electronic output options with 10 or 12-bits resolution, to cater for a wide range of applications.



Measuring range	0 – 360° (sub-ranges possible)
Supply voltage	5 Vdc or 10 – 30 Vdc
Analogue output	0.5 – 4.5 V; 0 – 5 V or 4 – 20 mA
Digital output	A/B, PWM
Protection class	IP67
Mounting height	15 mm

Applications:

General:	<ul style="list-style-type: none">• As substitutes for potentiometers, (expensive) optical encoders and rotary switches
Industrial:	<ul style="list-style-type: none">• Agricultural machinery• Excavators• (Mobile) waste compactors• Valve timing• Robot systems• Position determination
Automotive:	<ul style="list-style-type: none">• Electronic control systems• Accelerator/brake pedal positioners• Headlight height adjustment

Angle sensor in an agricultural robot

The QR30 non-contact angle sensor has been successfully adapted for use in an automatic grazing system. This grazing system increases cows harvesting efficiency, avoids variations in milk production and milk composition and ensures labour saving.

Three QR sensors are used per robot arm at the hinge points, enabling the distance and height to the fence line to be determined, while keeping costs down. The robot can then follow a guide wire along the edge of the grazing land. The QR30 was selected for the machine on account of how easy it is to fit, its low mounting height and the fact that it allows absolute angles to be measured. The QR30 is highly suitable for outdoor applications.



QR40 Angle sensors



The QR40 angle sensor allows for absolute rotation measurement from 0 to 360 degrees, without a mechanical stop. The magnet is built into the sensor and the axle is available with a slotted or D-shaped end. For harsh applications you can choose a ball bearing instead of the standard glass filled polyamide bearing, both of which ensuring a long working life. The QR40 also has a “zero reset” input, meaning that it can be reset to zero once installed.

Measuring range	0 – 360° (sub-ranges possible)
Resolution	10 or 12 bit/F.S.
Supply voltage	5 Vdc or 10 – 30 Vdc
Analogue output	0.5 – 4.5 V; 0 – 5 V or 4 – 20 mA
Digital output	A/B, PWM, switching output
Protection class	IP67

Applications:

General:	<ul style="list-style-type: none"> • As substitutes for potentiometers, (expensive) optical encoders and rotary switches
Industrial:	<ul style="list-style-type: none"> • Agricultural machinery • Excavators • (Mobile) waste compactors • Valve timing • Robot systems • Position determination
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The QR40, perfectly cut-out for a scissor lift

A Dutch manufacturer of scissor lifts uses the QR40 for measuring the angle of the scissors, enabling the height of the lift to be determined. Factors important in the application include the high, 12-bit resolution, low mounting depth and the option to reset the sensor to zero after installation. This QR40 is equipped with ball bearings.



QX Inductive proximity switches

The special features of the QUADRO-PROX series of inductive proximity switches make them ideal for heavy duty applications, or for use where space is at a premium.

Of slimline design, they are suitable for detection distances of between 0.2 and 18 mm. The electronics are completely encapsulated, meaning they can stand up to tough operating conditions.

A range of power supply options are available (PNP, NPN, NAMUR, NO or NC). Alongside its standard products, DIS also supplies many customized inductive switches (e.g. cable type/length, connector, etc).

Measuring range	0.2 – 18 mm
Output	PNP, NPN, NAMUR, NO, NC
Supply voltage	10 – 30 Vdc
Housing	Plastic or aluminium, 10x10 to 40x40 mm
Mounting height	6 – 25 mm
Protection class	IP67

Applications:

- Limit switches and position detection
- Mechanical engineering and agricultural machinery
- Excavators and forklift trucks
- Waste compactors
- Cranes
- Pile drivers
- Internal modes of transport
- Mobility scooters



QX30 sensor for forklift trucks

A leading manufacturer of forklift trucks has been using the QX30 proximity sensor for over 15 years and couldn't be happier with it! It selected the QX30 in account of its slim, robust housing and attractive price. The QX30 used by the manufacturer is equipped with a 2-wire interface.



Remote control

DIS has developed a range of standard handsets for the (remote) control of motors, in combination with a DIS control board. Their design can vary in terms of colour, printing and buttons, to reflect the customer's identity.

- Remote control via cable, radio frequency or infrared technology
- Receiver integrated into the control card
- Rubber control buttons or film keypad
- Integrated LCD display
- Status LEDs and/or buzzer
- Programmable features
- Keypad illumination
- Integrated flashlight

DIS has worked together with specialist partners for many years in the area of product design, as well as mould designers for injection mouldings.



Operation chair

DIS has developed the electronics and embedded software for a multifunctional operation chair. The position of the backrest, seating and leg section was measured using a total of six QG30 inclination sensors.

In doing so, a conscious choice was made to do away with expensive combinations of gear racks and multi-turn potentiometers, with a view to achieving cost savings. The control card allows for a total of seven DC motors to be controlled. Five programmable, storable settings have been incorporated, meaning for example that the chair can be moved automatically to an upright position. Three control panels, one of them hand-operated, are linked with the control card via a bidirectional RS485 bus. The embedded software includes soft-start and soft-stop options, plus battery monitoring and individual motor current monitoring.



Motor controls



DIS offers a range of standard building blocks for the switching and control of motors, enabling the following features to be constructed:

- Control of 1 to 6 motors (up to 70A)
- Speed adjustment by means of PWM
- Powered via internal / external 110/230AC => 12/24DC transformer
- Battery-powered (12 or 24 Vdc)
- Parallel control of 2+ motors
- Programmable, storable positions
- Jam-protection system, limit detection
- Integrated IR / RF receiver for operation

In addition, the control board can be designed to suit the customer's needs exactly, including, if desired, it being mounted in a "designer" housing.

Available interfaces:

- CANopen
- RS232/ RS485
- TCP/IP
- RF (434 or 868 MHz)
- IR
- GPRS
- I²C
- SPI
- etc.

Caravan Mover

Caravan movers enable caravans to be manoeuvred independently of a car. DIS produces the electronics that make caravan movers work, using RF remote control (868 MHz) and a base station located in the caravan.

The base station can receive commands transmitted via the remote control. It controls two motors, each of which drives a wheel, as well as two motors to apply the drive rollers to the tyres. The maximum current per drive motor is approximately 90 A.

Using a unique synchronisation method, the base station 'learns' how to listen to just one specific remote control unit. Each remote control has its own unique code.

DIS has incorporated a range of innovations into its caravan mover: soft-start and soft-stop, the option of combining two caravan movers to enable a double-axle trailer to be manoeuvred, etc.





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