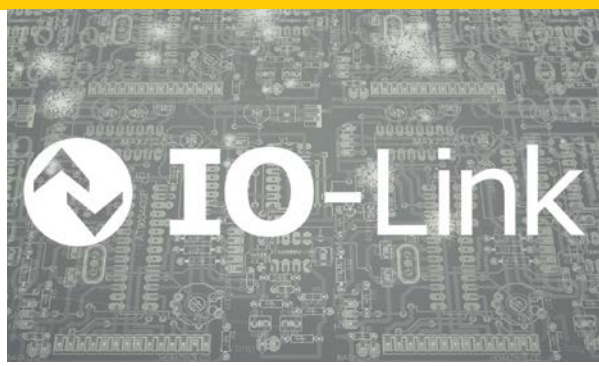
Your Global Automation Partner

TURCK

IO-Link All-in-One Solutions
Enabler for Industry 4.0



IO-Link – Enabler for Cost-efficient Digitization

The planning and building of machines is usually a costly matter. Standardized interfaces and products help customers to save costs in terms of storage of different devices or the commissioning of all machines. IO-Link is the innovative standard applied on the lowest field level to relieve electrical planning, maintenance and purchasing in the daily process.
On the way to the digital factory, the user benefits from more efficient production processes in smallest quantities, but also quality assurance and sustainable availability of the entire system.

Consistent IO-Link Portfolio

A major prerequisite for this is the availability of all relevant data at any time in any required place. Turck provides powerful solutions that capture, prepare and transmit relevant production data and support the key technologies such as RFID, Ethernet, OPC-UA and IO-Link.
The necessary software components for integrating IO-Link devices are a part of the broad portfolio of course.

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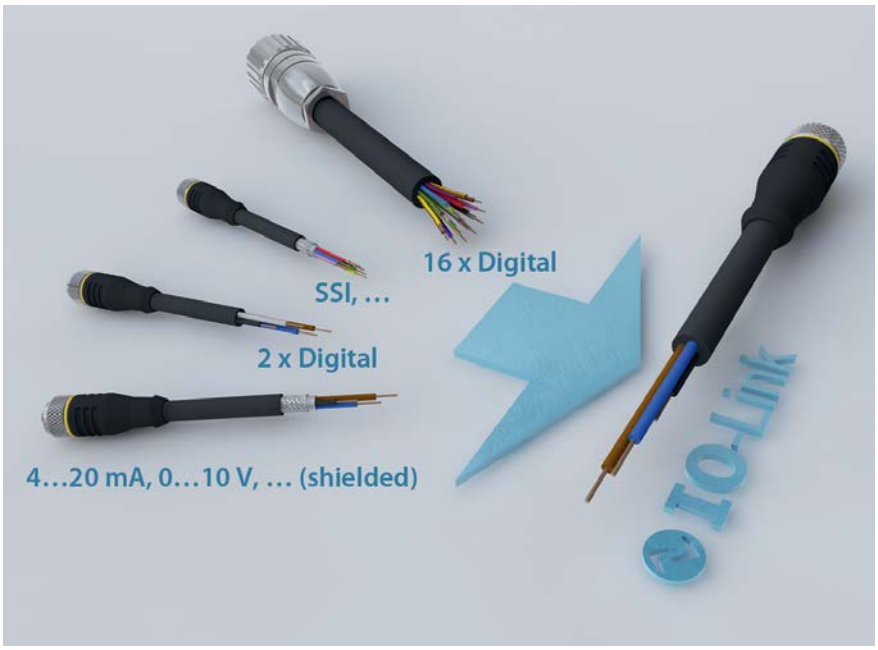
IO-Link - Simple, Consistent, Efficient

What is IO-Link?

IO-Link builds on a point to point connection between a sensor/actuator and an interface module. Up to now, the binary connection was only designed to transmit pure switching information, but IO-Link typically enables two bytes to be transmitted via a combined switching state and data channel at intervals of 2 ms. In addition to these process values, other information such as parameters or diagnostic messages can be exchanged. This way, the entire process down to the sensors is covered to enable integrated communication.



Standard cabling

IO-Link requires no special cabling. The well-established, reasonably priced and unshielded three-wire industrial cables can still be used to connect sensors and actuators. It is possible to choose between the standard switching and communication operating modes.

Your benefits

As an IO-Link user, you benefit from a multitude of advantages, in particular reduced machine costs, more efficient production processes and the improved availability of your machines and plants.

IO-Link system expertise

Turck not only offers you one of the most extensive portfolios of IO-Link solutions – from a multitude of sensors to cables and I/O hubs right up to programmable fieldbus and Ethernet solutions – but also outstanding system expertise. Take advantage of the many years of experience that Turck has in this technology, the resulting product portfolio and user-friendly software support.

Plug & Play device integration

The setting options of all our in-house IO-Link devices are integrated in the station GSDML files of the IO-Link master of the TBEN family. This greatly simplifies the configuration. When reading the GSDML file into a project planning software, such as TIA Portal or others, all Turck devices can be selected as a specific port configuation. Additional parametrization or programming is no longer required.

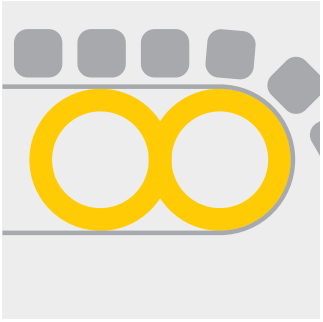
Customer Benefits

Reduced machine costs

- Reduced stockpiling due to parametrizable multi-function devices
- Only one I/O module and cost-efficient standard cable
- Low number of I/Os possible
- Devices with display and buttons no longer required
- Reduced engineering and installation costs and automatic documentation of device parameters during engineering work

More efficient production processes

- Simple parameter changes when replacing devices
- Quicker changes to parameter sets for switching thresholds, amplification, sensitivity, etc. for different production conditions
- Quicker and more reliable tool changes



Increased availability of machines and plants

- Extensive status information and diagnostic options in the plant lead to drastically reduced machine downtimes
- Expanded information enables cost-cutting measures such as predictive maintenance and asset management
- Automatic acceptance of parametrization enables devices to be replaced with fewer qualified personnel

IO-Link Overview

Engineering tool integration

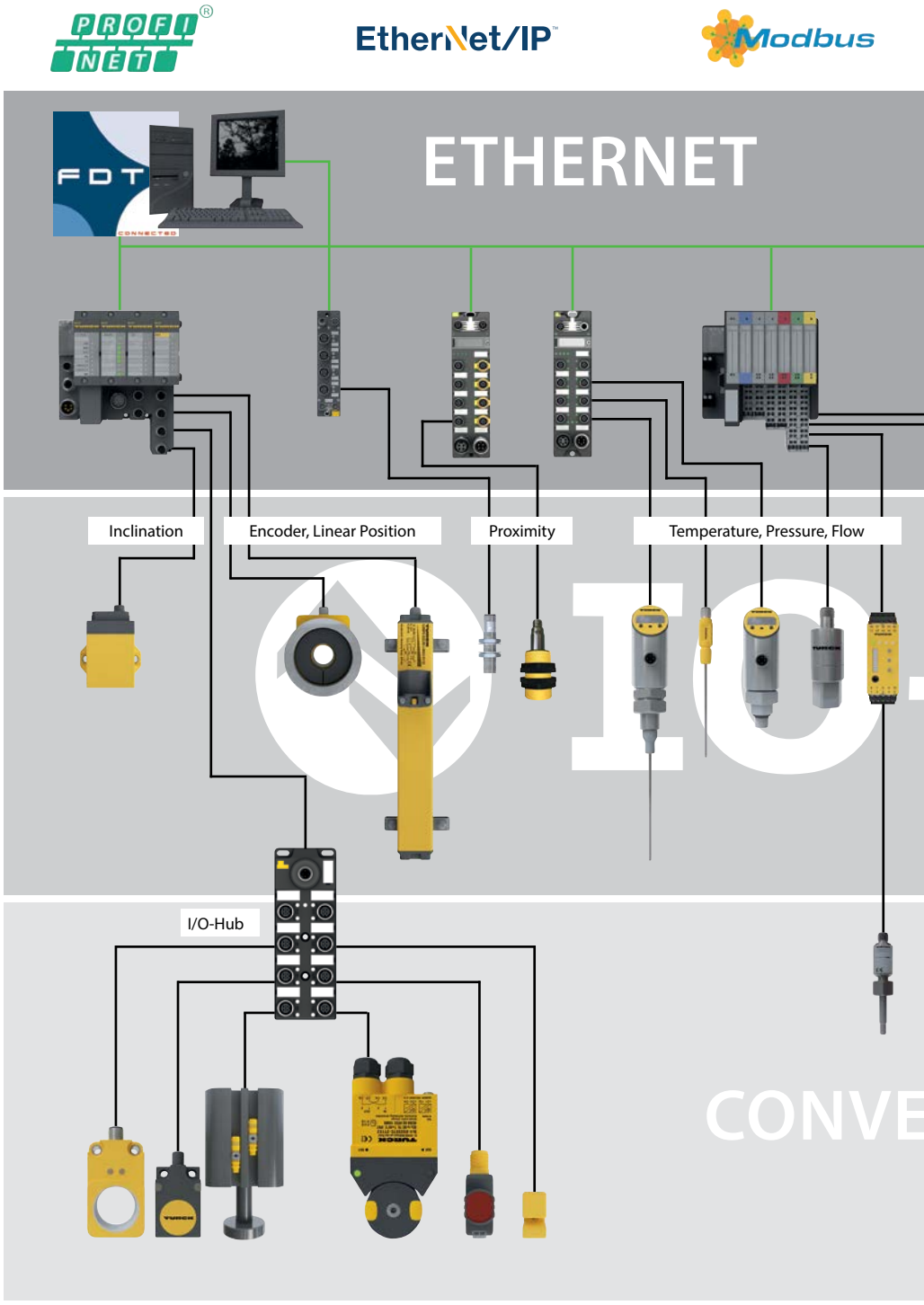
Standardized interfaces such as DTM and IODD enable complete, seamless integration in engineering tools, as well as in stand-alone tools such as asset management or configuration tools. Software solutions can also be incorporated at the company level via standard Ethernet.

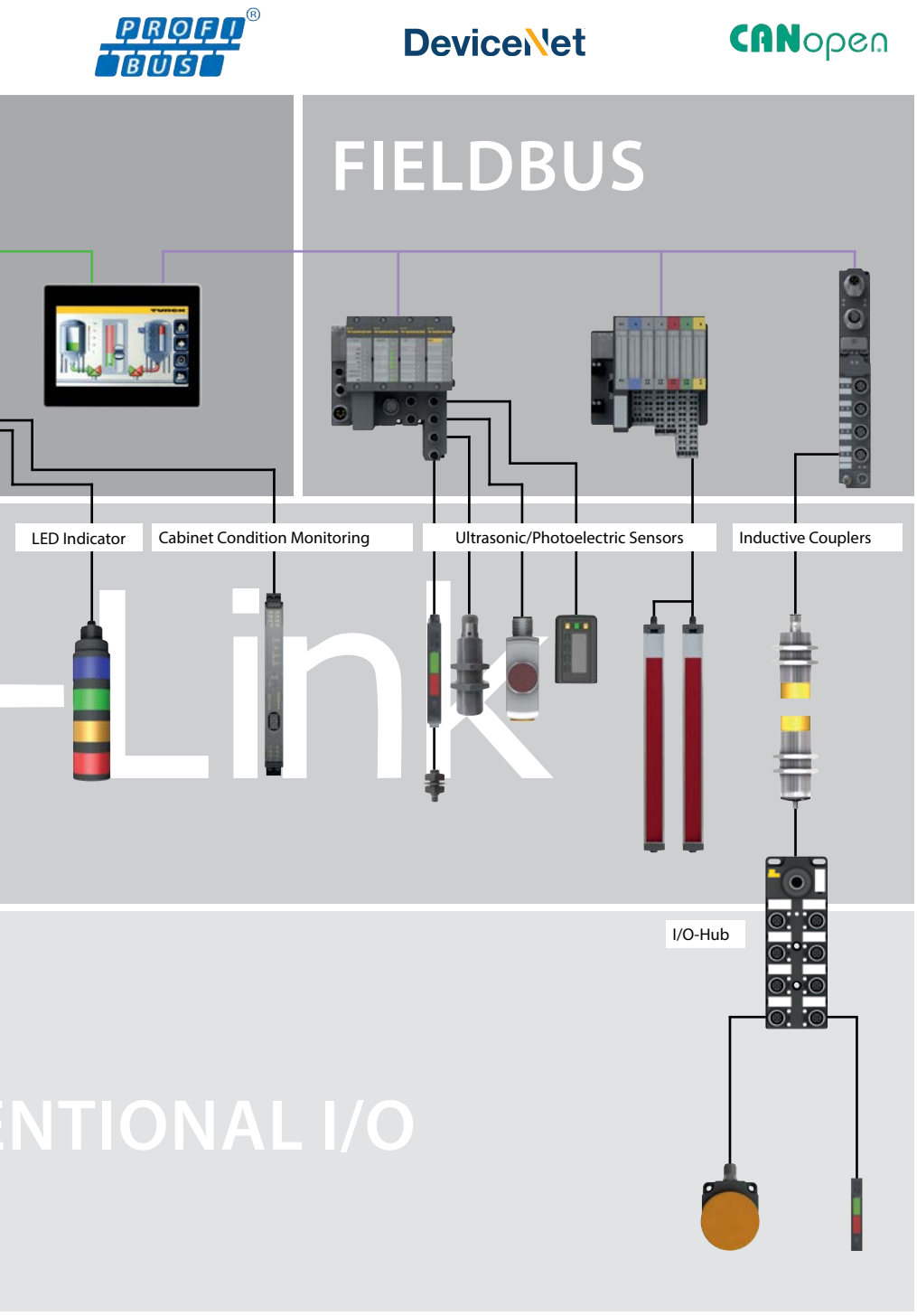
Device identification

The integrated device identification ensures that the right device is installed if a component is replaced. Because each device contains detailed information about the manufacturer, type, etc., IO-Link enables a quick replacement with a high level of reliability.

Cabling

With IO-Link, the same unshielded, three-wire standard cable with an identical pin assignment can be used as with conventional I/Os. This eliminates problems with complex devices that do not have pin assignment standards and often have multi-pole connectors.





Ethernet/Fieldbus connection

IO-Link enables a connection to all major fieldbus types as well as Ethernet. Turck offers solutions for the entire spectrum, from master modules for its modular I/O systems BL20 and BL67 to multiprotocol Ethernet gateways that can be used in PROFINET, EtherNet/IP and Modbus TCP networks thanks to their automatic protocol detection.

Sensor mounting

All IO-Link devices enable parameter changes and diagnostics via engineering systems or separate tools. Because the user does not need to access the display or switches, the devices can be installed in the machine in the exact location that makes sense for the application.

I/O hubs

All standard 24-VDC devices can be incorporated into automation systems via IO-Link using the I/O hubs from Turck. The hubs are available with inputs and outputs as well as combined variants with universal digital I/Os.

IO-Link Applications

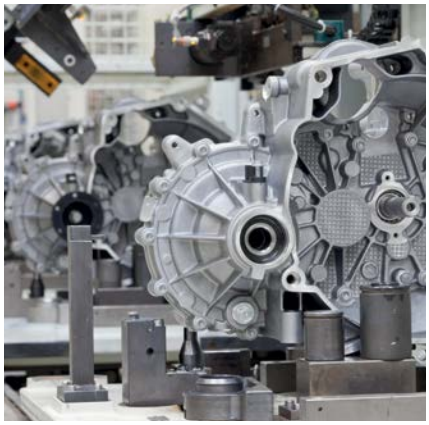
Turck has already implemented IO-Link solutions in numerous applications for its customers in a wide range of industries. We will give you a few case studies here.

Signal transmission in gearbox production

On the production line for differential gears of an automotive supplier, numerous magnetic field sensors detect the positions of pneumatic cylinders and grippers, while proximity switches detect components of the differentials themselves. In addition, there are also a large number of actuators such as pressure relief valves, solenoid valves and other devices that carry out the commands delivered by the controller.

The original plan to connect the numerous signals with passive junction boxes and multi-core cables to fieldbus gateways in the control cabinet was quickly discarded. The costs of cables and the wiring effort were too high.

With its IO-Link-capable I/O hubs, Turck was able to offer a space-saving solution that considerable simplified the wiring and was still cost-efficient. Furthermore, the system enables a diagnosis down to the sensor level. A PROFIBUS BL20 gateway with IO-Link master modules ensures a connection to the controller. TBIL junction boxes from Turck are ideal for connecting the sensors and actuators in the field. These I/O hubs use IO-Link to send up to 16 binary signals to the IO-Link-Master via a standard sensor cable. In this case, the 16-bit process signal of the IO-Link protocol is therefore not used for an analog process value, rather for the transmission of 16 individual switching signals – whether digital input or output signals. Because the I/O hubs fulfill the requirements of protection class IP67, they can be mounted directly in the field.



Position detection in fairground rides

In the past, to determine the horizontal position of the arms of a fairground ride, the manufacturer has installed five sensors on each hydraulic lifting cylinder. Although this ensured safe operation, a great deal of effort was required to install and configure the sensors and it was not possible to detect the exact position of the car at all times.

Now, Turck Li-linear position sensors detect the lift of hydraulic cylinder over its entire length of 1,000 millimeters. Even during rapid rides and with the centrifugal forces that occur, the sensor delivers the exact position of the positioning element by means of the analog 4 to 20 mA signal. On the control side, the exact position of the arm can thus be determined easily at all times.

For safety reasons, a possible failure of the positioning element must be reliably detected and reported to the controller. The Li sensor is also ideal for this due to the fact that it can be parametrized using IO-Link. Via the IO-Link interface, the user can also define measuring ranges, invert the output signal or have special signals emitted, such as the failure signal, from the controller. The controller recognizes this special case and shuts down the system by means of a defined safety routine.

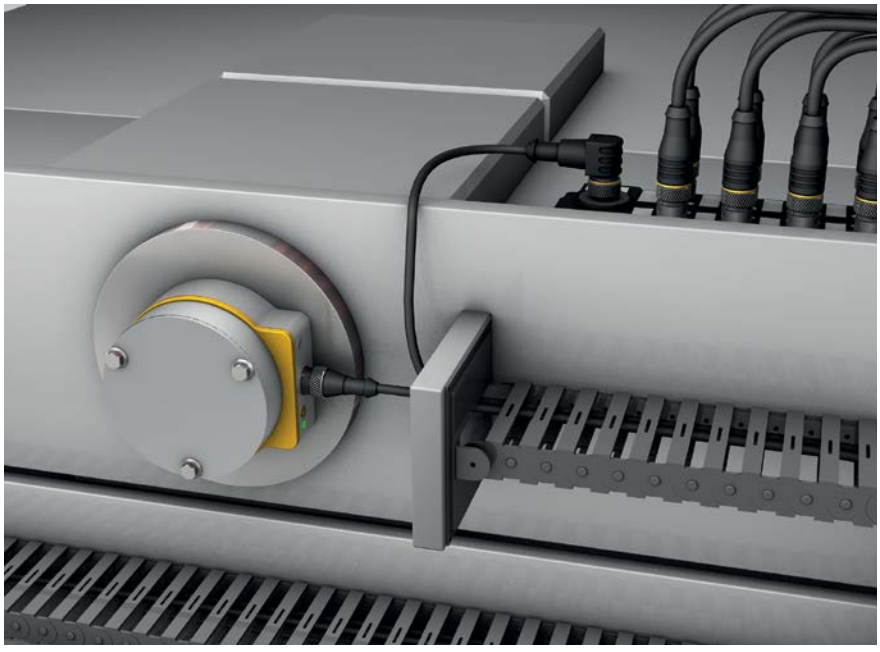
IO-Link Applications

Recording the swing movement of a core shooter

Core shooters produce sand cores for metal casting. In the process, a key objective of the manufacturer is to achieve short cycle times. With his new generation of machines, the manufacturer consistently automates using IO-Link. This offers many advantages: The manufacturer not only saves money but also time during the configuration, wiring and electrical planning, and customers benefit from a more dynamic machine. Errors occur less frequently and can be diagnosed more easily. The swing movement of the core carrier, which is recorded by the contactless IO-Link encoder QR24-IOL from Turck, is a major influence on the clock rate of the machine.

The numerous intelligent components that had previously been used usually had one bus connection. Consequently, the operating voltage and two bus cables had to be connected separately. All three cables were laid on drag chains and, consequently, were highly stressed. To detect faults such as a cable break, the technicians had to use complex diagnostic systems or search for a very long time.

IO-Link eliminates many of these disadvantages: The two bus cables and the voltage supply have been replaced with a standard three-wire cable, which is guided in the drag chains. All intelligent, analog sensors and devices now have an IO-Link interface and are connected to the controller via IO-Link masters, simple proximity switches and digital actuators via IO-Link-capable junction boxes. In this way, 16 switching signals can be connected via a standard three-wire cable, which significantly reduces the wiring effort.

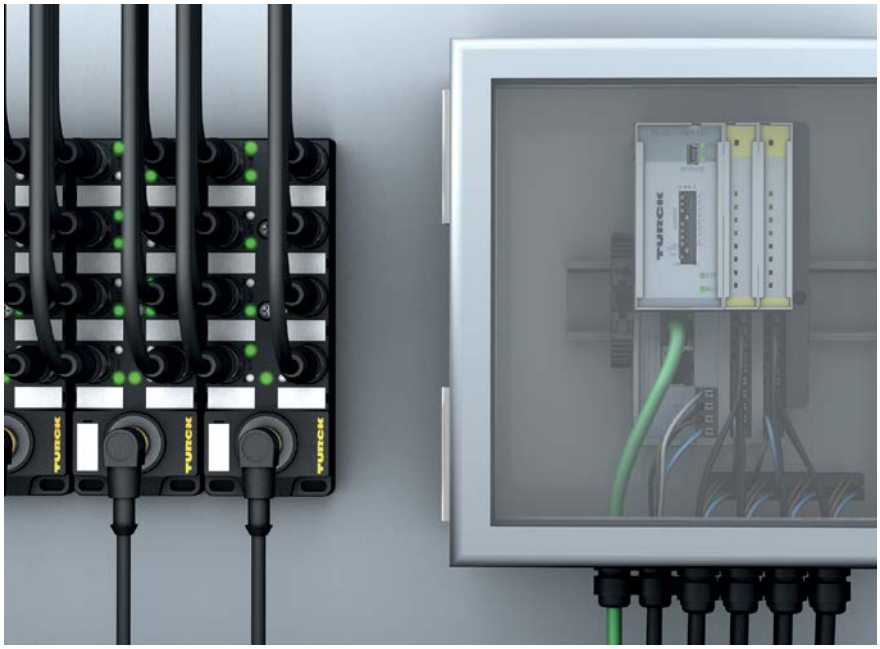


Data communication in silencer production

In a new silencer production line, a manufacturer of exhaust systems relies on the Turck fieldbus system BL20 and the IO-Link-capable TBIL passive junction box. A unique feature of the new production line is that fieldbus systems must communicate with various controllers – an ideal field of application for the modular IP20 I/O system BL20. The multiprotocol gateways, which support PROFINET, EtherNet/IP and Modbus TCP, send the various signals to the controller and also connect various valve clusters of the production line.

BL20-4IOL gateways with IO-Link master modules and the IO-Link capable IP67 I/O hubs TBIL send up to 16 switching signals from the field to the control cabinet via a simple 4-wire cable. In addition to the input signals, the actuator signals are transmitted to the valve clusters so that a single interface can take over all data communication on site.

In light of the fact that errors in the connection technology can most effectively be avoided by reducing the number of connection cables, a smart IO-Link solution, such as in this example, is not only significantly simpler, quicker and more economical to implement that multipole cable-systems, they also contribute a great deal towards quality assurance. Furthermore, digital IO-Link signal transmission is insensitive to electro-magnetic interference such as in production line for MIG welding (metal inert gas welding). In this way, the user saves on expensive shielded cables and other EMC protective measures.



IO-Link Applications

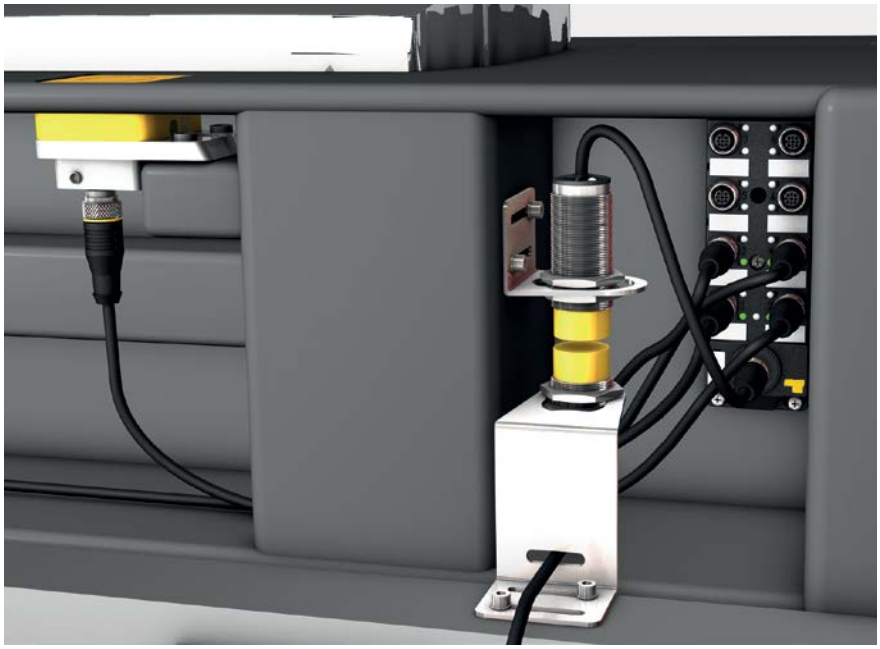
Contactless data and energy transmission

In numerous applications, such as tool changes by robots, on workpiece carriers or in the identification of press tools, the fixed machine part and the tool previously had to be both mechanically and electrically connected for the transmission of energy and I/O data.

For this reason, the electrical connections require multi-pin connectors and multi-wire cables. Due to the frequent plug cycles, these connections are highly stressed and must ensure a high level of contact reliability. This results in high investment costs and more frequent production downtime due to wear and tear.

Turck contactless inductive NIC couples represent an alternative solution for the contactless transmission of data and energy. The couplers transfer a power of up to 12 Watts and can be operated with an IO-Link device. This can either be an IO-Link sensor or a Turck I/O hub, via which up to 16 switching signals can be transmitted using IO-Link.

The I/O hub also enables tools or workpiece carriers to be identified by means of the application-specific tag of the IO-Link protocol.



Preventive maintenance on conveyor belts

There are various options for detecting the presence of objects on conveyor systems. Besides sensor systems, ultrasound reflection measurements offer an error-free and efficient alternative.

The RU ultrasonic sensor series from Turck detects objects with high precision. These sensors can be used as reflective barriers, among other things.

The RU sensors have switching and analog outputs as well as an IO-Link interface. Using IO-Link or teach buttons, the user can choose between the diffuse or retroreflective modes and the NC or NO switching output. The flexibly adjustable operating modes and the short blind zones with large detection ranges effectively reduce the range of variations that are stockpiled.

Because, in addition to the wanted signal, the sensors also detect the signal quality, they are ideal for preventive maintenance. Using the signal quality, the user can determine whether an acute fault has occurred, such as a reflector being torn off, or if the system can be repaired during scheduled downtime.

Because the devices can also display and compensate the internal temperature and external temperature fluctuations, they are always ready to use, irrespective of the ambient conditions.

Inductive Sensors

With uprox®3 IO-Link Turck offers the factor 1 sensors now also with IO-Link interface. The flexibility thus obtained makes the uprox®3 IO-Link sensor the "Swiss army knife" of factor 1 sensors. The range of functions include adjustable switching outputs, different output functions (PNP/NPN, NO/NC), various speed monitoring functions and advanced sensor data such as the internal sensor temperature or sensor ID data.

Features

- Safe investment through IO-Link 1.1
- Improved availability through diagnostics
- Highest switching distances and factor 1
- Increased flexibility in the application

Type Code

B i 10 U – M18 – IOL 6 X2 – H1 1 4 1

B i 10 U Functional Principle – **M18** Design – **IOL 6 X2** Electrical Version –

Special Functions
U uprox® or uprox®+ or uprox®3 Faktor 1 sensors

[mm]
… Switching distance

Functional principle
i Inductive

Installation
B Flush
N Non-flush

Housing
M Threaded barrel, brass, Ø in [mm]
MT Threaded barrel, brass, PTFE coated, Ø in [mm]
CK40 Rectangular, variable orientation of active face in 5 directions
QV40 Rectangular, variable orientation of active face in 5 directions

Indication
X2 Multicolor LED

Voltage Range
6 10…30 VDC

Technology
IOL IO-Link

H1 1 4 1 Electrical Connection: Connector

Assignment
1 Standard assignment

Number of Contacts
4 Number of contacts

Connector Type
1 Straight

Connector Type
H1 M12 × 1 connector

General data			
Communication Mode	COM 2 (38.4 kBaud)	**IO-Link Specification**	V 1.1
IO-Link port type	Class A		

Types and Data – Selection table

Type	ID number	Switching distance [mm]	Mounting conditions	Designation	Dimensions [mm]	Housing material
BI6U-M12-IOL6X2-H1141	1644873	6		M12 × 1	12 x 52	Metal
BI6U-MT12-IOL6X2-H1141	1644874	6		M12 × 1	12 x 52	Metal
BI10U-M18-IOL6X2-H1141	1644875	10		M18 × 1	18 x 52	Metal
BI10U-MT18-IOL6X2-H1141	1644876	10		M18 × 1	18 x 52	Metal
BI20U-M30-IOL6X2-H1141	1644882	20		M30 × 1.5	30 x 62	Metal
BI20U-MT30-IOL6X2-H1141	1644883	20		M30 × 1.5	30 x 62	Metal
NI50U-CK40-IOL6X2-H1141	1625871	50	,	CK40	65 x 40 x 40	Plastic
NI50U-QV40-IOL6X2-H1141	1625872	50	,	QV40	65 x 40 x 40	Plastic

Capacitive Sensors BCT

The capacitive sensors of the new BCT series with IO-Link reduce the effort for adjusting switch point and extend the usefulness of the measuring signals through a digitized 12-bit process value. Thanks to the optimized compensation of wetting on the sensor surface, deposits can be faded out and a drift of the switchpoint prevented.

Features

- More efficient commissioning through IO-Link
- Increased system availability with internal temperature monitoring
- Reliable measurement results through optimal wetting compensation

Type Code

BCT10 – S30 – UP6X2 – H1151

BCT10 Functional Principle – **S30** Design – **UP6X2T** Electrical Version –

Rated Switching Distance
… Switching distance Sn in [mm]

Special Functions
T Teachable

Functional Principle
C Capacitive

Installation
B Flush

Housing
S18 Plastic tube, continuous thread, Ø 18 mm
S30 Plastic tube, continuous thread, Ø 30 mm

Teach Button
T Teach button

Indication
X LED
2 Number of LEDs

Voltage Range
6 10…30 VDC

Output Mode
N NPN output
P PNP output

Output Function
U Adjustable NO/NC

H1151 Electrical Connection: Connector

Assignment
1 Standard assignment or customized

Number of Contacts
··· Number of contacts

Connector Type
1 Straight
3 Straight, with adapter

Connector Type
H1 M12 × 1 connector

Capacitive Sensors BCT

General data			
Mounting conditions	Flush	**Operating current**	200 DC
Electrical connection	Connector, M12 × 1	**Housing material**	PA
Operating voltage	10…30 VDC	**Ambient temperature**	-25…+70 °C
Quality active face	PA		

Types and Data – Selection table

Type	ID number	Switching distance [mm]	Housing designation	Output function	Protection class	Output function	Dimensions [mm]
BCT5-S18-UN6X2-H1151	2101400	7.5	M18 × 1	NPN	IP67/IP69K	NO/NC programmable, NPN	18 x 87.3
BCT5-S18-UP6X2-H1151	2101300	7.5	M18 × 1	PNP	IP67/IP69K	NO/NC programmable, PNP	18 x 87.3
BCT10-S30-UN6X2T-H1151	2101600	15	M30 × 1.5	NPN	IP67	NO/NC programmable, NPN	30 x 87.3
BCT10-S30-UP6X2T-H1151	2101500	15	M30 × 1.5	PNP	IP67	NO/NC programmable, PNP	30 x 87.3
BCT10-S30-UN6X2-H1151	2101800	15	M30 × 1.5	NPN	IP67/IP69K	NO/NC programmable, NPN	30 x 87.3
BCT5-S18-UN6X2T-H1151	2101200	7.5	M18 × 1	NPN	IP67	NO/NC programmable, NPN	18 x 87.3
BCT10-S30-UP6X2-H1151	2101700	15	M30 × 1.5	PNP	IP67/IP69K	NO/NC programmable, PNP	30 x 87.3
BCT5-S18-UP6X2T-H1151	2101100	7.5	M18 × 1	PNP	IP67	NO/NC programmable, PNP	18 x 87.3

Ultrasonic Sensors

The ultrasonic sensors of the RU series offer universal possibilities to adjust and adapt to the toughest application conditions. It is possible to operate them in diffuse, retroreflective or opposed mode, as well as synchronize several sensors to prevent mutual interference. Via IO-Link, process values can be transmitted directly or settings changed on demand during operation. The presence of the objects is typically signaled via the switching output and the distance via the analog output. Highest accuracies are possible through a customizable temperature compensation. Variants for operation in hazardous areas are also available.

Features

- Application-specific adaptation through temperature compensation
- Preventive maintenance through internal temperature measurement
- Optimization of applications by displaying the signal quality

Type Code

RU 600 U – M30 E – LIU2 PN 8 X2 T – H1 1 5 1

RU 600 U Series

Series
U Universal

Range
… [cm]

Functional principle
RU Ultrasonic sensor

M30 E Design

Housing length
E Long
M Compact
S Sonic converter, angled

Housing
M… Threaded barrel, metal, Ø in [mm]

LIU2 PN 8 X2 T Electrical Version

T With teach button
blank Without teach button

Indication
X2 2 × LED/ 2-color LED

Voltage range
8 15…30 VDC

Output mode
PN Bipolar

Output function
2 Number outputs, if >1
LIU Analog output, current and voltage

H1 1 5 1 Electrical Connection: Connector

Assignment
1 Standard assignment

Number of contacts
5 Number of contacts

Connector type
1 Straight

Connector type
H1 M12 × 1 connector

High-End

General data			
Communication Mode	COM 2 (38.4 kBaud)	**IO-Link Specification**	V 1.1
IO-Link port type	Class A	**Operating mode**	Ultrasonic diffuse mode sensor

Types and Data – Selection table

Type	ID number	Dimensions [mm]	Range [cm]
RU40U-M18E-LIU2PN8X2T-H1151	1610024	18 x 90	2.5…40
RU40U-M18ES-LIU2PN8X2T-H1151	1610025	18 x 107	2.5…40
RU130U-M18E-LIU2PN8X2T-H1151	1610026	18 x 90	15…130
RU130U-M18ES-LIU2PN8X2T-H1151	1610027	18 x 107	15…130
RU130U-M30E-LIU2PN8X2T-H1151	1610046	30 x 89	15…130
RU300U-M30E-LIU2PN8X2T-H1151	1610048	30 x 89	30…300
RU600U-M30E-LIU2PN8X2T-H1151	1610049	44.7 x 104.3	60…600

Compact

General data			
Communication Mode	COM 2 (38.4 kBaud)	**IO-Link Specification**	V 1.1
IO-Link port type	Class A	**Operating mode**	Ultrasonic diffuse mode sensor

Types and Data – Selection table

Type	ID number	Dimensions [mm]	Range [cm]
RU40U-M18M-AP8X2-H1151	1610094	18 x 63	2.5…40
RU40U-M18MS-AP8X2-H1151	1610105	18 x 80	2.5…40
RU100U-M18M-AP8X2-H1151	1610095	18 x 63	15…100
RU100U-M18MS-AP8X2-H1151	1610106	18 x 80	15…100

Measuring Light Screens

The measuring light screen EZ-Array offers customized solutions for applications such as the size and profile measurement of products during operation, but also for edge and center guidance, sag control, hole detection and parts counting. The two-piece transmitter-receiver construction facilitates commissioning. The evaluation electronics is integrated in the receiver housing. With the included T-splitter, transmitter and receiver are synchronized and the whole system is connected to the IO-Link master.

Features

- Robust aluminum housing
- Protection class IP65
- Operating temperature -40 °C…+70 °C
- Resolution 5 mm
- Range max. 4 m
- Scan field 150…2400 mm

Type Code

EA5 | R | 1500 | P | I | XMOD | Q

EA5 Series

Series

EA5	Measuring light screen, width: 36 mm, depth: 45.2 mm height depending on the type

R Operating Mode

Operating Mode

R	Receiver
E	Emitter

1500 Field Range

Field Range

150	150 mm
300	300 mm
450	450 mm
600	600 mm
750	750 mm
900	900 mm
1050	1050 mm
1200	1200 mm
1500	1500 mm
1800	1800 mm
2100	2100 mm
2400	2400 mm

P Switching Output (2 ×)

Switching Output

Blank	PNP (1 ×)
P	PNP (2 ×)
N	NPN (2 ×)

I Analog Output

Analog Output

Blank	No analog output
I	4…20 mA (2 ×)
U	0…10 VDC (2 ×)

XMOD

XMOD	RS485 serial interface (Modbus RTU) via M12 × 1, 5-pin connector (receiver only)
XK	PNP switching output or IO-Link
Blank	No output function

Q Electrical Connection

Electrical Connection

Q	M12 × 1 connector 8-pin

Light Screen EZ-Array – Emitter

General data			
Communication Mode	COM 2 (38.4 kBaud)	**IO-Link Specification**	V 1.0
IO-Link port type	Class A	**Operating mode**	Light screen

Types and Data – Selection table

Type	ID number	Dimensions [mm]	Scan field [mm]
EA5R150XKQ	3015151	45.2 x 36 x 227	150
EA5R300XKQ	3015152	45.2 x 36 x 379	300
EA5R450XKQ	3015155	45.2 x 36 x 529	450
EA5R600XKQ	3015156	45.2 x 36 x 678	600
EA5R750XKQ	3015157	45.2 x 36 x 828	750
EA5R900XKQ	3015158	45.2 x 36 x 978	900
EA5R1050XKQ	3015171	45.2 x 36 x 1128	1050
EA5R1200XKQ	3015172	45.2 x 36 x 1278	1200

Light Screen EZ-Array – Receiver

General data			
Light type	IR	**Operating mode**	Light screen

Types and Data – Selection table

Type	ID number	Dimensions [mm]	Scan field [mm]
EA5E150Q	3075423	45.2 x 36 x 227	150
EA5E300Q	3075424	45.2 x 36 x 379	300
EA5E450Q	3075425	45.2 x 36 x 529	450
EA5E600Q	3075426	45.2 x 36 x 678	600
EA5E750Q	3075427	45.2 x 36 x 828	750
EA5E900Q	3075428	45.2 x 36 x 978	900
EA5E1050Q	3075429	45.2 x 36 x 1128	1050
EA5E1200Q	3075430	45.2 x 36 x 1278	1200

Inductive Linear Position Sensors

The inductive linear position sensors operate without contact and wear-free thanks to a revolutionary measuring principle. The position is not detected via a positioning magnet but via an oscillating RLC circuit. IO-Link is used, in addition to the digital transmission of process data, also for application-specific adaptation, for example by setting the measuring range.

Features

- Wear-free signal detection
- Reduced failure rate through inductive technology
- High signal accuracy with IO-Link
- High insensitivity to magnetic fields

Type Code

Li	100	P1	–	Q25L	M1	–	E	LiUPN8	X3	–	H1	1	5	1

Li	100	P1	Functional Principle	–	Q25L	M1	Design	–	E	LiUPN8	X3	Electrical Version	–

Positioning Element
P0 Without positioning element*

Measuring Range [mm] 100
From 100 mm to 1000 mm, adjustable in steps of 100 mm

Functional principle
Li Linear inductive

Mounting Aid
M0 Without mounting aid

Design
Q25L Rectangular, profile 25 × 35 mm

*See accessories for positioning element and mounting hardware

Number of LEDs
X3 3 x LED

Output Function
LiUPN8 IO-Link capable, analog output, switching output

Resolution
E Enhanced resolution

H1	1	5	1	Electrical Connection: Connector (Q25L)	–

Assignment
1 Standard assignment

Number of Contacts
5 Number of contacts

Connector Type
1 Straight

Connector Type
H1 M12 × 1 connector

Inductive Linear Position Sensors LI

General data	
IO-Link Specification	IO-Link specified acc. to version 1.0

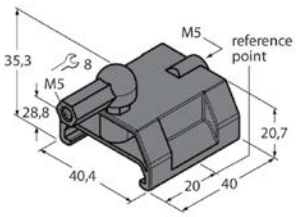
Types and Data – Selection table

Type	ID number	Measuring range	Resolution	Dimensions [mm]
LI100P0-Q25LM0-ELIUPN8X3-H1151	1590017	100	0.002 mm/16 bit	158 x 35 x 25
LI200P0-Q25LM0-ELIUPN8X3-H1151	1590604	200	0.003 mm/16 bit	258 x 35 x 25
LI300P0-Q25LM0-ELIUPN8X3-H1151	1590018	300	0.005 mm/16 bit	358 x 35 x 25
LI400P0-Q25LM0-ELIUPN8X3-H1151	1590605	400	0.006 mm/16 bit	458 x 35 x 25
LI500P0-Q25LM0-ELIUPN8X3-H1151	1590606	500	0.008 mm/16 bit	558 x 35 x 25
LI600P0-Q25LM0-ELIUPN8X3-H1151	1590607	600	0.009 mm/16 bit	658 x 35 x 25
LI700P0-Q25LM0-ELIUPN8X3-H1151	1590608	700	0.011 mm/16 bit	758 x 35 x 25
LI800P0-Q25LM0-ELIUPN8X3-H1151	1590609	800	0.012 mm/16 bit	858 x 35 x 25
LI900P0-Q25LM0-ELIUPN8X3-H1151	1590610	900	0.014 mm/16 bit	958 x 35 x 25
LI1000P0-Q25LM0-ELIUPN8X3-H1151	1590611	1000	0.015 mm/16 bit	1058 x 35 x 25

For more details on mounting aids and positioning elements see chapter "Accessories"

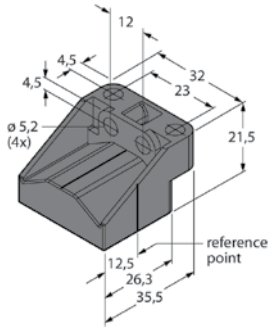
Inductive Linear Position Sensors – Accessories

P1-LI-Q25L



Guided positioning element for Li-Q25L, inserted in the sensor guide.

P2-LI-Q25L



Floating positioning element for Li-Q25L; the nominal distance to the sensor is 1.5 mm; pairing with the linear position sensor at a distance of up to 5 mm or misalignment tolerance of up to 4 mm.

Encoders and Inclinometers

The contactless operating encoder Ri-QR24 makes no compromise in terms of robustness and tightness. A mechanical coupling between the sensor and the machine shaft is – in contrast to conventional rotary encoders – no longer required. With IO-Link the measuring signal can be inexpensively and effectively evaluated and also the zero point of a measurement set.

The inclinometer B2N360-Q42 delivers angle information for two axes via 2 × 16 bits in the IO-Link telegram. With low-pass filters, which are available via IO-Link, the sensor can be exactly adapted to the application.

Features

- Wear-free rotation monitoring through inexpensive encoder with additional functions
- 360-degree inclination and acceleration measurement with precise application setting and high resolution measuring signal
- Flexible adjustment with IO-Link

Type Code

Ri 360 P0 – QR24 M0 – IOL X2 – H1141

Ri 360 P0 Functional Principle – **QR24 M0** Housing Style – **IOL X2** Electrical Version –

Positioning Element/For Shaft diameter*
P0 Without positioning element

Measuring Range
360 360°

Functional Principle
Ri Rotary inductive

Mounting Aid
M0 Without protection unit

Housing Style
QR24 Aluminium housing
EQR24 Stainless steel housing

Number of LEDs
X2 2 x LED

Output Function
IOL IO-Link capable

*See accessories for positioning element and mounting hardware

H1141 Electrical Connection

Electrical Connection
H1141 M12 × 1, straight, 4-pin

B2N 360 – Q42 – E2LIUPN8 X2 – H1181 / S97

B2N 360 Functional Principle – **Q42** Housing Style – **E2LIUPN8 X2** Output Function –

Measuring Range
360 360°

Functional Principle
B2N Inclinometer, biaxial

Housing Style
Q42

Number of LEDs
X2 2 x LED

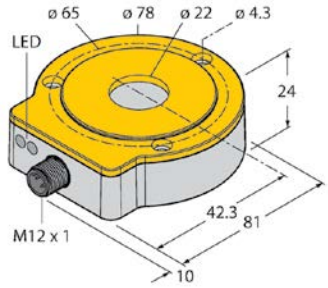
Output Function
E2LI-UPN8 IO-Link capable, 2 x analog output, 2 x switching output

H1181 Electrical Connection / **S97** Special Version

Electrical Connection
H1181 M12 x 1, straight, 8-pin

Special Version
S97 up to -40 °C

Encoder QR24



General data			
Electrical connection	Connector, M12, 4-pin	**Output function**	IO-Link
Operating voltage	15…30 VDC	**Ambient temperature**	-25…+85 °C
Protection class	IP68/IP69K	**Dimensions [mm]**	81 x 78 x 24
Housing material	ZnAlCu1/PBT-GF30-V0		

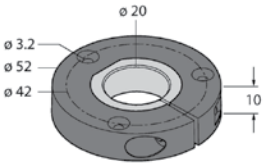
Types and Data – Selection table

Type	ID number
RI360P0-QR24M0-IOLX2 -H1141	1590975
RI360P0-EQR24M0- IOLX2-H1141	1590978

Encoders – Accessories

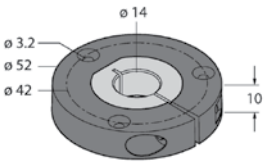
P1-RI-QR24

Positioning element, for Ø 20 mm shafts



P2-RI-QR24

Positioning element, for Ø 14 mm shafts



Inclinometer B2N-Q42

General data			
Electrical connection	Connector, M12 × 1	**Operating current**	150 DC
Description	Rectangular, plastic	**Housing material**	PA12-GF30
Housing designation	Q42	**Output function**	NO/NC, PNP/NPN, analog output, IO-Link
Protection class	IP68/IP69K	**Dimensions [mm]**	67.5 x 42.5 x 42.5

Types and Data – Selection table

Type	ID number	Operating voltage [VDC]	Ambient temperature [°C]
B2N360-Q42-E2LIUPN8X2-H1181	1534116	15…30	-25…+85
B2N360-Q42-E2LIUPN8X2-H1181/S97	1534117	7…30	-40…+85

Pressure Sensors

The pressure sensors of the PS and PC series impress with their variety of process connections and excellent robustness. Thanks to rotatable sensor bodies and a selection of different pressure ranges the sensors can be used flexibly. Via IO-Link, the pressure ranges and other parameters can be set both during commissioning as well as during operation. The comprehensive diagnostic functions of the devices provide many preventive maintenance relevant information on the application.

Features

- PS series: pressure sensor with display
- PC series: compact pressure transmitter without display
- Robust housings for harsh environments
- Simplified commissioning through IO-Link

Type Code

PC 250R – 2 01 – 2UPN 8 X – H1 1 4 1

PC 250R Functional Principle – **2 01** Mechanical Version – **2UPN 8 X** Electrical Version –

Measuring Range

01VR	-1…0 bar g
001R	0…1 bar g
001V	-1…1 bar g
003V	-1…2.5 bar g
010V	-1…10 bar g
016V	-1…16 bar g
025V	-1…25 bar g
040V	-1…40 bar g
100R	1…100 bar g
250R	1…250 bar g
400R	1…400 bar g
600R	1…600 bar g

Functional Principle

PC	Pressure switch

Pressure Connection

01	G¼" female thread
02	¼" 18 NPT female thread
03	¼" 18 NPT male thread
04	G¼" male thread
10	R¼" male thread
11	R¼" male thread

Design

2	Cylinder, without display

Electrical Version

X…	LED display

Operating Voltage

8	15…30 VDC

Output Function

2UPN	2 switching outputs/IO-Link

H1 1 4 1 Electrical Connection

Assignment

1	Standard assignment

Number of Contacts

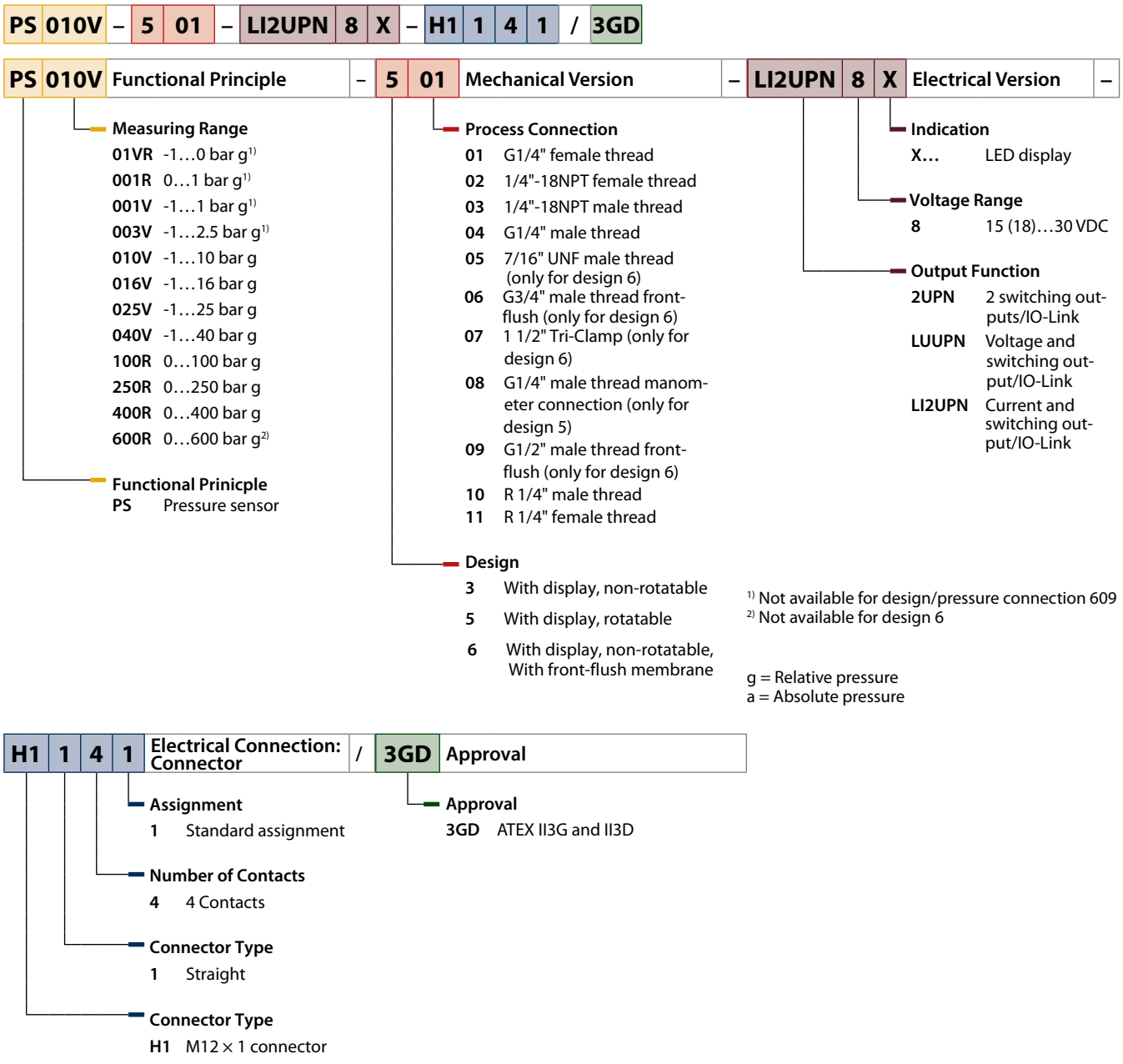
4	4 contacts, M12 × 1

Connector Type

1	Straight

Connector Type

H1	M12 × 1 connector


PS 010V – 5 01 – LI2UPN 8 X – H1 1 4 1 / 3GD
PS 010V Functional Principle
– 5 01 Mechanical Version
– LI2UPN 8 X Electrical Version –
Measuring Range
01VR -1…0 bar g1)
001R 0…1 bar g1)
001V -1…1 bar g1)
003V -1…2.5 bar g1)
010V -1…10 bar g
016V -1…16 bar g
025V -1…25 bar g
040V -1…40 bar g
100R 0…100 bar g
250R 0…250 bar g
400R 0…400 bar g
600R 0…600 bar g2)
Functional Prinicple
PS Pressure sensor
Process Connection
01 G1/4" female thread
02 1/4"-18NPT female thread
03 1/4"-18NPT male thread
04 G1/4" male thread
05 7/16" UNF male thread (only for design 6)
06 G3/4" male thread front-flush (only for design 6)
07 1 1/2" Tri-Clamp (only for design 6)
08 G1/4" male thread manometer connection (only for design 5)
09 G1/2" male thread front-flush (only for design 6)
10 R 1/4" male thread
11 R 1/4" female thread
Design
3 With display, non-rotatable
5 With display, rotatable
6 With display, non-rotatable, With front-flush membrane
Indication
X… LED display
Voltage Range
8 15 (18)…30 VDC
Output Function
2UPN 2 switching outputs/IO-Link
LUUPN Voltage and switching output/IO-Link
LI2UPN Current and switching output/IO-Link
1) Not available for design/pressure connection 609
2) Not available for design 6
g = Relative pressure
a = Absolute pressure
H1 1 4 1 Electrical Connection: Connector
/ 3GD Approval
Assignment
1 Standard assignment
Number of Contacts
4 4 Contacts
Connector Type
1 Straight
Connector Type
H1 M12 × 1 connector
Approval
3GD ATEX II3G and II3D

Pressure Sensor PC Series without Display

General data			
Electrical connection	Connector, M12 × 1	**Housing material**	1.4305 (AISI 303)/ PBT-GF15
Operating voltage	15…30 VDC	**Output function**	NO/NC, PNP/NPN
Protection class	IP69K		

Types and Data – Selection table

Type	ID number	Operating range (min.)	Operating range (max.)	Process connection
PC01VR-201-2UPN8X-H1141	6833713	-1 bar rel.	0 bar rel.	G¼" female thread
PC001V-201-2UPN8X-H1141	6833714	-1 bar rel.	1 bar rel.	G¼" female thread
PC010V-201-2UPN8X-H1141	6833717	-1 bar rel.	10 bar rel.	G¼" female thread
PC025V-201-2UPN8X-H1141	6833719	-1 bar rel.	25 bar rel.	G¼" female thread
PC001R-201-2UPN8X-H1141	6833715	0 bar rel.	1 bar rel.	G¼" female thread
PC016V-201-2UPN8X-H1141	6833718	-1 bar rel.	16 bar rel.	G¼" female thread
PC003V-201-2UPN8X-H1141	6833716	-1 bar rel.	2.5 bar rel.	G¼" female thread
PC400R-201-2UPN8X-H1141	6833723	0 bar rel.	400 bar rel.	G¼" female thread
PC600R-201-2UPN8X-H1141	6833724	0 bar rel.	600 bar rel.	G¼" female thread
PC040V-201-2UPN8X-H1141	6833720	-1 bar rel.	40 bar rel.	G¼" female thread
PC100R-201-2UPN8X-H1141	6833721	0 bar rel.	100 bar rel.	G¼" female thread
PC250R-201-2UPN8X-H1141	6833722	0 bar rel.	250 bar rel.	G¼" female thread
PC01VR-202-2UPN8X-H1141	6833725	-1 bar rel.	0 bar rel.	NPT ¼"-18 female thread
PC001V-202-2UPN8X-H1141	6833726	-1 bar rel.	1 bar rel.	NPT ¼"-18 female thread
PC001R-202-2UPN8X-H1141	6833727	0 bar rel.	1 bar rel.	NPT ¼"-18 female thread
PC003V-202-2UPN8X-H1141	6833728	-1 bar rel.	2.5 bar rel.	NPT ¼"-18 female thread
PC010V-202-2UPN8X-H1141	6833729	-1 bar rel.	10 bar rel.	NPT ¼"-18 female thread
PC016V-202-2UPN8X-H1141	6833730	-1 bar rel.	16 bar rel.	NPT ¼"-18 female thread
PC025V-202-2UPN8X-H1141	6833731	-1 bar rel.	25 bar rel.	NPT ¼"-18 female thread
PC040V-202-2UPN8X-H1141	6833732	-1 bar rel.	40 bar rel.	NPT ¼"-18 female thread
PC100R-202-2UPN8X-H1141	6833733	0 bar rel.	100 bar rel.	NPT ¼"-18 female thread
PC250R-202-2UPN8X-H1141	6833734	0 bar rel.	250 bar rel.	NPT ¼"-18 female thread
PC400R-202-2UPN8X-H1141	6833735	0 bar rel.	400 bar rel.	NPT ¼"-18 female thread
PC600R-202-2UPN8X-H1141	6833736	0 bar rel.	600 bar rel.	NPT ¼"-18 female thread
PC01VR-204-2UPN8X-H1141	6833749	-1 bar rel.	0 bar rel.	G¼" male thread
PC001V-204-2UPN8X-H1141	6833750	-1 bar rel.	1 bar rel.	G¼" male thread
PC001R-204-2UPN8X-H1141	6833751	0 bar rel.	1 bar rel.	G¼" male thread
PC003V-204-2UPN8X-H1141	6833752	-1 bar rel.	2.5 bar rel.	G¼" male thread
PC010V-204-2UPN8X-H1141	6833753	-1 bar rel.	10 bar rel.	G¼" male thread
PC016V-204-2UPN8X-H1141	6833754	-1 bar rel.	16 bar rel.	G¼" male thread
PC025V-204-2UPN8X-H1141	6833755	-1 bar rel.	25 bar rel.	G¼" male thread
PC040V-204-2UPN8X-H1141	6833756	-1 bar rel.	40 bar rel.	G¼" male thread
PC100R-204-2UPN8X-H1141	6833757	0 bar rel.	100 bar rel.	G¼" male thread
PC250R-204-2UPN8X-H1141	6833758	0 bar rel.	250 bar rel.	G¼" male thread
PC400R-204-2UPN8X-H1141	6833759	0 bar rel.	400 bar rel.	G¼" male thread

Pressure Sensor PS Series with Display

General data			
Electrical connection	Connector, M12 × 1	**Housing material**	V2A (1.4305)
Operating voltage	18…30 VDC	**Output function**	NO/NC, PNP/NPN
Protection class	IP67/IP69K		

Types and Data – Selection table

Type	ID number	Operating range (min.)	Operating range (max.)	Process connection
PS01VR-501-2UPN8X- H1141	6832624	-1 bar rel.	0 bar rel.	G¼" female thread
PS001R-501-2UPN8X- H1141	6832625	0 bar rel.	1 bar rel.	G¼" female thread
PS016V-501-2UPN8X- H1141	6832629	-1 bar rel.	16 bar rel.	G¼" female thread
PS010V-501-2UPN8X- H1141	6832628	-1 bar rel.	10 bar rel.	G¼" female thread
PS003V-501-2UPN8X- H1141	6832627	-1 bar rel.	2.5 bar rel.	G¼" female thread
PS001V-501-2UPN8X- H1141	6832626	-1 bar rel.	1 bar rel.	G¼" female thread
PS001A-501-2UPN8X- H1141	6832636	0 bar rel.	1 bar rel.	G¼" female thread
PS400R-501-2UPN8X- H1141	6832634	0 bar rel.	400 bar rel.	G¼" female thread
PS003A-501-2UPN8X- H1141	6832637	0 bar rel.	3 bar rel.	G¼" female thread
PS010A-501-2UPN8X- H1141	6832638	0 bar rel.	10 bar rel.	G¼" female thread
PS025V-501-2UPN8X- H1141	6832630	-1 bar rel.	25 bar rel.	G¼" female thread
PS100R-501-2UPN8X- H1141	6832632	0 bar rel.	100 bar rel.	G¼" female thread
PS250R-501-2UPN8X- H1141	6832633	0 bar rel.	250 bar rel.	G¼" female thread
PS040V-501-2UPN8X- H1141	6832631	-1 bar rel.	40 bar rel.	G¼" female thread
PS016A-501-2UPN8X- H1141	6832639	0 bar rel.	16 bar rel.	G¼" female thread
PS600R-501-2UPN8X- H1141	6832635	0 bar rel.	600 bar rel.	G¼" female thread
PS016V-606-2UPN8X- H1141	6833059	-1 bar rel.	16 bar rel.	G ¾" front-flush
PS010V-606-2UPN8X- H1141	6833058	-1 bar rel.	10 bar rel.	G ¾" front-flush
PS003V-606-2UPN8X- H1141	6833057	-1 bar rel.	2.5 bar rel.	G ¾" front-flush
PS01VR-606-2UPN8X- H1141	6833054	-1 bar rel.	0 bar rel.	G ¾" front-flush
PS001V-606-2UPN8X- H1141	6833056	-1 bar rel.	1 bar rel.	G ¾" front-flush
PS001R-606-2UPN8X- H1141	6833055	0 bar rel.	1 bar rel.	G ¾" front-flush
PS100R-606-2UPN8X- H1141	6833062	0 bar rel.	100 bar rel.	G ¾" front-flush
PS250R-606-2UPN8X- H1141	6833063	0 bar rel.	250 bar rel.	G ¾" front-flush
PS400R-606-2UPN8X- H1141	6833064	0 bar rel.	400 bar rel.	G ¾" front-flush
PS040V-606-2UPN8X- H1141	6833061	-1 bar rel.	40 bar rel.	G ¾" front-flush
PS025V-606-2UPN8X- H1141	6833060	-1 bar rel.	25 bar rel.	G ¾" front-flush

Temperature Sensors

Temperature sensors of the TS series are robustly designed in stainless steel and have a rotatable display. For temperature measurement TP thermocouples are connected via a standard M12 connector. The TTM temperature transmitters are devices without display that can be installed in any position in the system. Via IO-Link measured values can be transmitted as well as identification data; thus also the location can be determined. In addition, IO-Link offers advanced options for configuration and diagnostics.

Features

- Easy handling
- Peak memory for better maintenance
- IO-Link for commissioning and process-dependent settings

Type Code

TS – 5 00 – LI2UPN 8 X – H1 1 4 1

TS Functional Principle – **5 00** Mechanical Version – **LI2UPN 8 X** Electrical Version –

Functional Principle
TS Temperature sensor

H1 1 4 1 Electrical Connection: Connector

Assignment
1 Standard assignment

Number of Contacts
4 4 contacts

Connector Type
1 Straight

Connector Type
H1 M12 × 1 connector

Process Connection
00 Without process connection temperature probe via M12 × 1
16 G½" with integrated probe[1)]
30 G½" with integrated probe[1)]

Design
4 Adjustable, with display, non-rotatable
5 Adjustable, with display, rotatable

[1)] Available only on design type 5

Indication
X… LED display

Voltage Range
8 15(18)…30 VDC

Output Function
2UPN 2 switching outputs/IO-Link
LUUPN Switching and voltage output/IO-Link
LI2UPN Current and switching output/IO-Link

TTM – 100C – 203A – CF – LIUPN – H1 1 4 0 – L100

TTM Functional Principle – **100C** Measuring Range – **203A** Design –

Type

TTM	Temperature transmitter, miniature
TTMS	Temperature transmitter, miniature, stainless steel

Measuring range

…	
Blank	Freely adjustable via IO-Link

Design

100	Processor unit without probe
103A	Processor unit with probe Ø 3 mm, process connection via standard thread, accuracy class A
203A	For assembly with compression fitting/thermowell, probe Ø 3 mm, accuracy class A
206A	For assembly with compression fitting/thermowell, probe Ø 6

CF Process Connection – **LIUPN** Electrical Output –

Process Connection

G1/8	G**1/8**" male thread (only 103A)
CF	Compression fitting (only 203A and 206A)
Blank	Probe via M12 connector

Electrical output

LIUPN	4…20 mA, 2-wire, switching output/IO-Link

H1 1 4 0 Electrical Connection: Connector – **L100** Insertion Depth

Assignment

0	Special assignment: Pin 1: +, Pin 2: -

Number of Contacts

4	4 contacts

Connector Type

1	Straight

Connector Type

H1	M12 × 1 connector

Probe Length in mm

L013	13 mm (only 103A)
L024	24 mm (only 103A)
L100	100 mm
L150	150 mm

Special lengths on request!

Temperature Sensor TS Series with Display

General data			
Electrical connection	Connector, M12 × 1	**Housing material**	V2A (1.4305)
Operating voltage	18…30 VDC		

Types and Data – Selection table

Type	ID number	Protection class	Output function	Rod length [mm]	Measuring element	Process connection
TS-516-LI2UPN8X-H1141-L050	6840028	IP67/IP69K	NO/NC programmable, 4-wire	50	Pt-100 probe, DIN EN 60751, class A	G ½" male thread
TS-516-LI2UPN8X-H1141-L016	6840026	IP67/IP69K	NO/NC programmable, 4-wire	16	Pt-100 probe, DIN EN 60751, class A	G ½" male thread
TS-500-LI2UPN8X-H1141	6840015	IP67	NO/NC programmable, PNP/NPN		For connection to probes of the TP series	Cylindrical, Ø 18 mm
TS-400-LI2UPN8X-H1141	6840007	IP67	NO/NC programmable, PNP/NPN		For connection to probes of the TP series	Cylindrical, Ø 18 mm

Temperature Sensor TTM Series without Display

General data			
Mounting conditions	Immersion sensor	**Protection class**	IP67
Electrical connection	Connector, M12 × 1	**Housing material**	V4A (1.4404)
Operating voltage	15…30 VDC		

Types and Data – Selection table

Type	ID number	Output function	Rod length [mm]	Measuring element	Process connection
TTM-103A-G1/8-LIUPN-H1140-L013	9910628	NO/NC programmable, PNP/NPN	13	Pt-100 probe, DIN EN 60751, class A	G1/8" male thread
TTM-206A-CF-LIUPN-H1140-L150	9910626	NO/NC programmable, PNP/NPN	150	Pt-100 probe, DIN EN 60751, class A	For compression fittings, thermowell or direct mounting
TTM-203A-CF-LIUPN-H1140-L100	9910620	NO/NC programmable, PNP/NPN	100	Pt-100 probe, DIN EN 60751, class A	For compression fittings, thermowell or direct mounting
TTM-206A-CF-LIUPN-H1140-L100	9910624	NO/NC programmable, PNP/NPN	100	Pt-100 probe, DIN EN 60751, class A	For compression fittings, thermowell or direct mounting
TTM-203A-CF-LIUPN-H1140-L150	9910622	NO/NC programmable, PNP/NPN	150	Pt-100 probe, DIN EN 60751, class A	For compression fittings, thermowell or direct mounting
TTM-103A-G1/8-LIUPN-H1140-L024	9910630	NO/NC programmable, PNP/NPN	24	Pt-100 probe, DIN EN 60751, class A	G1/8" male thread

Type	ID number	Output function	Rod length [mm]	Measuring element	Process connection
TTMS-203A-CF-LIUPN-H1140-L150	9910658	NO/NC programmable, 4-wire	150	Pt-100 probe, DIN EN 60751, class A	For compression fittings, thermowell or direct mounting
TTMS-203A-CF-LIUPN-H1140-L100	9910656	NO/NC programmable, 4-wire	100	Pt-100 probe, DIN EN 60751, class A	For compression fittings, thermowell or direct mounting
TTMS-103A-G1/8-LIUPN-H1140-L024	9910652	NO/NC programmable, 4-wire	24	Pt-100 probe, DIN EN 60751, class A	G1/8" male thread
TTMS-100-LIUPN-H1140	9910654	NO/NC programmable, PNP/NPN		For connection to probes of the TP series	M12 × 1
TTMS-103A-G1/8-LIUPN-H1140-L013	9910650	NO/NC programmable, 4-wire	13	Pt-100 probe, DIN EN 60751, class A	G1/8" male thread
TTMS-206A-CF-LIUPN-H1140-L100	9910660	NO/NC programmable, 4-wire	100	Pt-100 probe, DIN EN 60751, class A	For compression fittings, thermowell or direct mounting
TTMS-206A-CF-LIUPN-H1140-L150	9910662	NO/NC programmable, 4-wire	150	Pt-100 probe, DIN EN 60751, class A	For compression fittings, thermowell or direct mounting

Flow Sensors

The flow modules of the FM series combine ease of operation and high functionality with a variety of connections and thus cover all the requirements of efficient flow monitoring. The large number of usable probes enables continuous flow monitoring for a precise fine tuning of the processes. Thanks to IO-Link, the user saves more analog interfaces in the cabinet and has the possibility to adapt the module to its application.

Features

- Communication-capable cabinet module
- Undisturbed transmission of measured values via IO-Link
- Versatile sensor elements

Type Code

FM X – IM – 3UP 63 X

FM X Series/Functions – **IM** Design – **3UP 63 X** Electrical Version

Functions

Blank Connection of non-Ex sensors of the type FCS-/FCI-…-NA, FM series is IO-Link capable

X Connection of Ex sensors of the type FCS-/FCI-…-NAEX(0), FMX series is IO-Link capable

Series

FM Flow module, processing unit for the connection of Turck flow sensors

Design

IM Interface module (modular housing)

LED Display

X 4 status LEDs, LED band

Voltage Range

38 20…125 VDC/ 20…250 VAC

63 20…30 VDC

Output Function

3UP One PNP output (20…30 VDC) each for flow, temperature and error monitoring

3UR One relay output (< 250 VAC/60 VDC) each for flow, temperature and error monitoring

2UPLi One PNP output (20…30 VDC) each for temperature and error monitoring and one analog output (4…20 mA) for flow monitoring

Signal Processors

General data			
Electrical connection	Terminal block	**Dimensions**	110 x 27 x 89 mm

Types and Data – Selection table

Type	ID number	Operating voltage [VDC]	Output function	Application area
FM-IM-3UR38X	7525102	20…125	NO/NC programmable, Relay output	Standard
FMX-IM-3UR38X	7525103	20…125	NO/NC programmable, Relay output	Explosion hazard (associated equipment)
FM-IM-2UPLI63X	7525104	20…30	4…20 mA, Analog output current	Standard
FM-IM-3UP63X	7525100	20…30	NO/NC programmable, PNP	Standard
FMX-IM-3UP63X	7525101	20…30	NO/NC programmable, PNP	Explosion hazard (associated equipment)
FM-IM-3UP63FX	100000818	20…30	NO/NC programmable, PNP	Standard
FM-IM-2UPLI63FX	100000819	20…30	4…20 mA, Analog output current	Standard
FM-IM-3UR38FX	100000820	20…125	NO/NC programmable, Relay output	Standard
FMX-IM-3UR38FX	100000821	20…125	NO/NC programmable, Relay output	
FMX-IM-3UP63FX	100000822	20…30	NO/NC programmable, PNP	

Immersion Probes – Standard

General data			
Mounting conditions	Immersion sensor	**Application area**	Standard
Description	Flow sensor for liquid media		

Types and Data – Selection table

Type	ID number	Electrical connection	Protection class	Housing material
FCS-G1/4A4-NA-H1141	6870304	Connector, M12 × 1	IP67	V4A (1.4571)
FCS-G1/2A2-NA	6870309	2 m	IP68	V2A (1.4305)
FCS-G1/2A4-NA	6870338	2 m	IP68	V4A (1.4571)
FCS-N1/2A4-NA-H1141	6871303	Connector, M12 × 1	IP67	V4A (1.4571)
FCS-N3/4A4-NA-H1141	6871304	Connector, M12 × 1	IP67	V4A (1.4571)
FCS-N1/2A4-NA	6871309	2 m, FEP cable	IP68	V4A (1.4571)
FCS-G1/2DY-NA	6870510	2 m, FEP cable	IP68	PVDF

Immersion Probes – Ex

General data			
Mounting conditions	Immersion sensor	**Housing material**	V4A (1.4571)
Description	Sensor according to category II 2 G for liquid media	**Application area**	Explosion hazard (zone 1)
Protection class	IP67		

Types and Data – Selection table

Type	ID number	Electrical connection
FCS-G1/2A4-NAEX-H1141	6870322	Connector, M12 × 1
FCS-G1/2A4-NAEX	6870320	2 m, PUR cable
FCS-G1/4A4-NAEX-H1141	6870341	Connector, M12 × 1
FCS-N1/2A4-NAEX-H1141	6871322	Connector, M12 × 1

Inline Probes – Standard

General data			
Mounting conditions	Inline sensor	**Protection class**	IP67
Electrical connection	Connector, M12 × 1	**Housing material**	V4A (1.4571)
Description	Flow sensor for liquid media	**Application area**	Standard

Types and Data – Selection table

Type	ID number	Mechanical connection
FCI-D03A4-NA-H1141/M16	6870633	M16 × 1.5
FCI-D03A4-NA-H1141/M12	6870635	M12 × 1.5
FCI-D09A4-NA-H1141/M16	6870631	M16 × 1.5

Inline Probes – Ex

General data			
Mounting conditions	Inline sensor	**Protection class**	IP67
Electrical connection	Connector, M12 × 1	**Housing material**	V4A (1.4571)
Description	Sensor according to category II 2 G for liquid media	**Application area**	Explosion hazard (zone 1)

Types and Data – Selection table

Type	ID number	Mechanical connection
FCI-D03A4-NAEX-H1141/M12	6870632	M12 × 1.5
FCI-D09A4-NAEX-H1141/M16	6870634	M16 × 1.5

Laser Sensors

The Q4X sensor with a reach of up to 100 or 300 mm not only measures distances, but also the light intensity. This opens up a wide range of applications for the sensor. The laser sensors of the LE series also use the laser triangulation principle and achieve ranges of up to 1 m at a resolution of up to 0.02 mm. The laser sensors of the LTF12 and LTF24 series work according to the pulse transit time method and achieve long ranges up to 12 or 24 m at a resolution of 0.3 mm. All laser sensors are set via pushbutton on the housing. The integrated display facilitates adjustment and displays the measured distance.

Features

- Laser class1 and 2 sensors
- Parameter setting via pushbutton
- Robust housings for harsh environments
- Q4X Series: dual-mode, change of distance and light intensity, ECOLAB certified
- LE series: optical resolution < 0.5 mm, two-line LCD display
- LTF12 Series: Pulse transit time method, large measuring range 0.05…12 m or 0.05…24 m

Type Code

Q4XT | B | LAF | 300 | Q8

Q4XT Series

Series

Q4XT 18 mm front thread

B Output

Output

B PNP/NPN switching output
I PNP/NPN switching output 4…20 mA current output
U PNP/NPN switching output 0…10 V voltage output
K PNP/NPN switching output IO-Link communication

LAF Operating Mode

Operating mode

LAF Laser sensor, diffuse mode, with adjustable background suppression
COD Clear object detection

300 Range

Range

100 25…100 mm
300 25…300 mm

Q8 Electrical Connection

Electrical connection

Q8 M12 connector, 5-pin

LTF | 12 | I | C2 | LD | Q

LTF Series

Series

LE
LTF

12 Range

Range

12 0.05…12 m
24 0.005…24 m
250 100…400 mm
550 100…1000 mm

I Output

Output

I PNP/NPN switching output 4…20 mA current output
U PNP/NPN switching output 0…10 V voltage output
K PNP/NPN switching output IO-Link communication
D 2 × PNP/NPN switching output

C2 Laser class

Laser class

C1 Laser class 1
C2/Blank Laser class 2

LD Operating mode

Diffuse mode laser

Blank Triangulation (only LE)
LD Laser time-of-flight (only LTF)

Q Electrical connection

Electrical connection

Bank Cable, PVC, 2 m, 5-pin
Q Connector, M12 × 1, 5-pin
QP Cable, PVC, 150 mm with connector, M12 ×1, 5-pin

Laser Sensor Q4X Series

General data			
Communication Mode	COM 2 (38.4 kBaud)	**Dimensions**	43.5 x 18 x 57.5 mm
IO-Link port type	Class A	**Light type**	Red
IO-Link Specification	V 1.1		

Types and Data – Selection table

Type	ID number
Q4XTKLAF100-Q8	3097071
Q4XTKLAF300-Q8	3095301

Laser Sensor LE Series

General data			
Communication Mode	COM 2 (38.4 kBaud)	**Dimensions**	56 x 26 x 77 mm
IO-Link port type	Class A	**Light type**	Red
IO-Link Specification	V 1.1		

Types and Data – Selection table

Type	ID number
LE250KQ	3097763
LE550KQ	3097761

Laser Sensor LTF Series

General data			
Communication Mode	COM 2 (38.4 kBaud)	**Dimensions**	77 x 26 x 56 mm
IO-Link port type	Class A	**Light type**	Red
IO-Link Specification	V 1.1		

Types and Data – Selection table

Type	ID number
LTF12KC2LDQ	3801130
LTF24KC2LDQ	3803280

Clear Object Sensors

Retroreflective sensors incorporate emitter and receiver in the same housing. The light beam of the emitter is aimed at a reflector, which reflects the beam back to the receiver. An object is detected if it interrupts the light beam.

The clear object sensors are sensitive enough to detect transparent film, glass bottles and other transparent objects. The coaxial optical design considerably reduces the blind zone of the devices. Even highly reflective objects are reliably detected thanks to the integrated pole filters. The device enables three different limit values to be monitored. This makes it possible to distinguish objects with varying transparency. The devices can readjust themselves in order to reduce impairment through dirt and dust.

Features

- Compact design
- Coaxial optical design
- Setting via potentiometers
- Transmission of process values and parameterization via IO-Link

Type Code

QS18E | E | K | 6 | XLPC | Q8

QS18E Series

Series
QS18E Design

E Output Function

Output Function
E Teach-In/N.O.

K Output

Output
K IO-Link
P PNP
N NPN

6 Operating Voltage

Operating Voltage
6 10…30 VDC

XLPC Operating Mode

Operating Mode
XLPC Retroreflective with polarizing filters and coaxial optics

Q8 Electrical Connection

Electrical Connection
Blank Cable, PVC, 2 m, 4-pin
Q Cable, PVC, 150 mm with connector, M8 × 1, 4-pin
Q5 Cable, PVC, 150 mm with connector, M12 × 1, 4-pin
Q7 Connector, M8 × 1, 4-pin
Q8 Connector, M12 × 1, 4-pin

QS18 Clear Object Sensors

General data			
Communication Mode	COM 2 (38.4 kBaud)	**Dimensions**	31 x 15 x 35 mm
IO-Link port type	Class A	**Light type**	Red polarized
IO-Link Specification	V 1.1		

Types and Data – Selection table

Type	ID number
QS18EK6XLPCQ8	3801273
QS18EK6XLPCQ5	3801743

Fiber Optic Sensors

Plastic fibers are the optimum choice for high-temperature applications and limited spaces. Optical fibers transfer the light from the sensor to a remote object. Single optical fibers are suited for opposed sensing mode, while bifurcated optical fibers are best suited for diffuse sensing mode. The sensors are set via a pushbutton on the housing. The integrated display facilitates adjustment and displays the selected signal strength.

Features

- Compact design
- 8-digit 7-segment display
- Setting via pushbutton
- Fast response time
- Transmission of process values and parameterization via IO-Link

Type Code

DF-G1 KS 2M

DF-G1	**Series**	**KS**	**Output/Function**	**2M**	**Electrical Version**

Series

DF-G1	Base unit for plastic fibers
DF-G2	Mounting on DIN rail
DF-G3	Dimensions: 10 × 33 × 72 mm

Output/Function

KS/KD	Dual switching output or I/O-Link and switching output

Electrical Connection

2M	Connection cable, 2 m
Q5	Pigtail: Cable with connector, M12 × 1
Q7	Connector, Ø 8 mm

Fiber Optic Sensors DF-G

General data			
Communication Mode	COM 2 (38.4 kBaud)	**Dimensions**	79.3 x 10 x 33 mm
IO-Link port type	Class A	**Light type**	Red
IO-Link Specification	V 1.1		

Types and Data – Selection table

Type	ID number
DF-G1-KS-Q7	3025793
DF-G1-KS-Q5	3019524
DF-G1-KS-2M	3025791
DF-G2-KD-Q7	3097703
DF-G2-KD-Q5	3097702
DF-G2-KD-2M	3097700
DF-G3-KD-Q7	3097711
DF-G3-KD-Q5	3097710
DF-G3-KD-2M	3097708

LED Signal and Indicator Lights

The TL50 LED tower lights indicate statuses clearly visible and permit a clear operator guidance within the entire plant. Each tower light is configured from different colored LED elements with or without a beeper and is installed ready for operation in a few handling steps. The LED elements and their flashing frequency, as well as the beeper can be individually controlled via IO-Link.

The K50L2 LED indicators offer all-round visibility thanks to their RGB LEDs with high luminance and true colors. Over a million different colors as well as flash frequencies or color changes can be set via IO-Link.

Features

- Individual color combinations
- Colors: Green, Red, Yellow, Blue, White
- Different beepers: continuous, pulse or staccato sound
- High luminance and true colors
- All-round visibility

Type Code

TL50 | GYR | A | K | Q

TL50 Series

Series

TL50	Standard

GYR Color

Color

G	Green
Y	Yellow
R	Red
B	Blue
W	White

A Acoustic Alarm

Acoustic Alarm

–	Not available (IP67)
A	Beeper (IP50)
AOSI	Omnidirectional beeper, continuous tone with adjustable intensity (IP67)
AOS3I	Omnidirectional beeper, pulsed tone with adjustable intensity (IP67)
AOS4I	Omnidirectional beeper, staccato tone with adjustable intensity (IP67)

K Operating Mode

Operating Mode

K	IO-Link

Q Connection

Connection

Q	Integrated M12 connector

K50L2 | RGB | K | ALS | Q

K50L2 Series

Series

K50L2	Multifunction display (2nd Generation) cylinder, plastic: Ø 50 mm, thread: Ø 30 mm

RGB Color

LED Colors

B	Blue
G	Green
Y	Yellow
R	Red
X	No other function
2	3 colors/7 functions

Audible Signals

Blank	Without audible signals
A	With audible signals

K Input

Input

P	PNP
N	NPN

ALS Audible Signals

Audible Signals

Blank	Without audible signals
A1	Beeper with continuous tone (IP50)
AL1	Beeper with loud continuous tone (IP50)
ALS	Beeper with loud continuous tone (IP67)

Q Electrical Connection

Electrical Connection

Q	M12 × 1 connector
QP	Pigtail: integrated cable 150 mm, with M12 × 1 connector

TL50 Tower Light with and without Beeper

General data			
Communication Mode	COM 2 (38.4 kBaud)	**IO-Link Specification**	V 1.1

Types and Data – Selection table

Type	ID number	Dimensions [mm]	Light type
TL50GYRKQ	3801283	50 x 142.6	Green, Yellow, Red
TL50BGYRKQ	3801284	50 x 183.3	Blue, Green, Yellow, Red
TL50WBGYRKQ	3801285	50 x 224	White, Blue, Green, Yellow, Red
TL50GYRAKQ	3801290	50 x 173.4	Green, Yellow, Red
TL50BGYRAKQ	3801291	50 x 214.1	Blue, Green, Yellow, Red
TL50WBGYRAKQ	3801292	50 x 254.8	White, Blue, Green, Yellow, Red

K50L2 Indicator with RGB LEDs

General data			
Communication Mode	COM 2 (38.4 kBaud)	**Light type**	RGB
IO-Link Specification	V 1.1		

Types and Data – Selection table

Type	ID number	Dimensions [mm]
K50L2RGBKQ	3802158	50 x 37.3
K50L2RGBKQP	3802159	50 x 37.3
K50L2RGBKA1Q	3802160	50 x 56.8
K50L2RGBKALSQ	3802164	50 x 61.8

Cabinet Guards

The IM12-CCM cabinet guard increases the availability and safety of machines and plants efficiently and inexpensively. The device uses sensors to continuously monitor temperature, humidity and the correct closure of the front door. Any limit value violations are indicated via a switch contact. IO-Link provides users with a detailed view inside the control cabinet. Application-specific configurations, actual measured values as well as historical data over a period of up to 2 years can be read from the device and used, for example, for trend evaluations.

Features

- Application-specific configuration
- Data logger for trend detection
- Access to all measured values

Type Code

IM X D 12 – CCM – 01 – 1S – 1I – H / 24 VDC CC

IM X D Design – **12 Housing Width** – **CCM Device Functions** –

Special Functions
- **D** Display
- **K** Compact design

Application Area
- **X** Ex area
- **Blank** Non-Ex area

Design
- **IM** Interface module

Housing Width
- **12** 12 mm
- **18** 18 mm
- **27** 27 mm

Device Functions
- **CCM** Cabinet guard

01 Version – **1S Input Function** – **1I Output Function** –

Version
- **01** External and internal sensors, humidity, temperature, infrared, reed contact, infrared 12C
- **02** Only internal sensors, humidity, temperature, infrared, infrared 12C
- **03** CAN-bus, external and internal sensors, humidity, temperature, infrared, reed contact, infrared 12C
- **04** Ex-version with pulse output as quasi analog output, external and internal sensors, humidity, temperature, infrared, reed contact, infrared 12C

Input Function
- **1 S** Switch
- **2 NAM** Namur
- **3 F** Frequency
- **4 I** Current
- **5 U** Voltage
- **6 TC** Thermocouple
- **7 RTD** Temperature-dependent resistor
- **8 POT** Potentiometer
- **9 R** Resistor
- **10 MTIS** Humidity
- **11** Temperature
- **12** Infrared
- **13** Switch

Output Function
- **1 I** Current
- **2 U** Voltage
- **3 T** Potential-free transistor
- **4 PNP** Transistor, PNP
- **5 NPN** Transistor, NPN
- **MT** MOSFET
- **R** Relay
- **RTD** Resistor
- **NAM** NAMUR
- **F** Frequency
- **PP** Push-Pull (level)

H Special Functions / **24 VDC Power Supply** **CC Electrical Connection**

Special Functions
- **H** HART®
- **C** Computer parameterizable
- **PR** Power Bridge
- **S** Fault alarm output
- **P** Pulse
- **0** No
- **IOL** IO-Link

Power Supply
- **24 VDC** 10…30 VDC
- **24 VUC** 10…30 VUC
- **L** Loop-powered
- **W1** 20 … 250 VAC
  20…125 VDC
- **W2** 20 … 250 VAC
  20…250 VDC

Electrical Connection
- **CC** Cage clamp terminals
- **Blank** Screw terminals

Cabinet Guards

General data			
Protection class	IP20	**Ambient temperature**	-25…+70 °C

Types and Data – Selection table

Type	ID number	Electrical connection	Description	Dimensions [mm]
IM12-CCM03-MTIS-3T-IOLC-PR/24V	7570102	Removable screw clamp terminals, 2-pin	Cabinet guard; Non-Ex type; IO-Link interface for parameter setting; removable screw terminals; Power Bridge	120 x 12.5 x 117
IM12-CCM03-MTIS-3T-IOLC-PR/24V/CC	7570103	Removable cage clamp terminals, 2-pin	Cabinet guard; Non-Ex type; IO-Link interface for parameter setting; removable cage clamp terminals; Power Bridge	120 x 12.5 x 128
IM12-CCM03-MTIS-3T-IOLC/24V	7570100	Removable screw clamp terminals, 2-pin	Cabinet guard; Non-Ex type; IO-Link interface for parameter setting; removable screw terminals	120 x 12.5 x 117
IM12-CCM03-MTIS-3T-IOLC/24V/CC	7570101	Removable cage clamp terminals, 2-pin	Cabinet guard; Non-Ex type; IO-Link interface for parameter setting; removable cage clamp terminals	120 x 12.5 x 128

I/O Hubs

For an intelligent signal distribution of digital I/Os, Turck's I/O hubs can be a cost-effective and low maintenance solution. The devices reduce the wiring effort considerably and offer outstanding performance with the known functions of a conventional passive distributor. Moreover, the hubs provide additional functions that can prepare the device ideally for applications. These include an application-specific marker and adjustable inputs and outputs.

Features

- Reduced installation work
- Inexpensive replacement of passive junctions
- Intelligent signal integration of simple sensors and actuators

Type Code

TB IL – M1 – 16 DXP

TB IL Bus System/Interface – **M1** Design/Connection – **16 DXP** Signal Type

Bus System/Interface
IL IO-Link interface

Product Series
TB Compact block I/O module

Design/Connection
S2 Short version, 4 x M12 I/O
L1 Long version, 8 x M12 I/O
M1 Medium-long version, 8 x M12 I/O

Signal Type
DIP Digital inputs, 2 signals per port
DOP Digital outputs, 1 signal per port
DXP Universal digital I/Os

Number of Channels
8 8 channels
16 16 channels

	General data			
	IO-Link Specification	Specified acc. to version 1.1	**Dimensions**	150 x 54 x 27.4 mm

Types and Data – Selection table

Type	ID number
TBIL-M1-16DIP	6814100
TBIL-M1-8DOP	6814101
TBIL-M1-16DXP	6814102

NIC Coupler System

The inductive couplers of the NIC series are designed for contactless bidirectional transmission of power and data. The coupler sets consist of two components, the primary part NICP on the control side and the secondary part NICS at the sensor/actuator side. The primary part supplies the secondary part with power via the air interface. In return the secondary part provides data to the connected sensors and actuators. The full IO-Link support makes the NIC system particularly flexible. The solution is therefore suited on the one hand for the bidirectional data transmission from and to the IO-Link devices, but also for the transmission of 8 PNP signals via a 12-wire cable, which is handled internally via IO-Link.

Features

- Contactless transmission of up to 8 PNP switching signals and up to 500 mA currents with 12 watts of power
- Transmission distance (air interface) to 7 mm at full power
- Full IO-Link support

Type Code

NIC P – M30 – IOL 2P8X H1141

NIC Functional Principle | **P** Component | **–** | **M30** Design | **–**

Functional Principle
NIC Non-flush inductive coupler

Component
P Primary side (Emitter)
S Secondary side (Reciever)

Design
M30 M30 × 1.5 threaded barrel

IOL Technology | **2 P 8 X** Electrical Version | **–** | **H1141** Electrical Connection

Technology
IOL IO-Link

Indication
X LED

Voltage Range
8 24 VDC, short-circuit proof

Output Mode
P PNP

Number of Channels
2 2 channels
8 8 channels

Electrical Connection
H1141 Integrated connector, M12 × 1, 4-pin
0.3-RKC4.4T Pigtail: 0.3 m cable with female connector, M12 × 1, 4-pin
0.3-RSC12T Pigtail: 0.3 m cable with male connector, M12 × 1, 12-pin

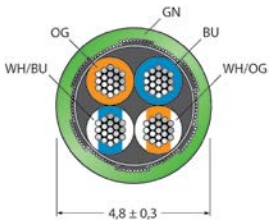
Inductive Couplers

General data			
Mounting conditions	Non-flush	**Housing designation**	M30 × 1.5
Description	Cylindrical, threaded barrel, 30 mm, chrome-plated brass	**Protection class**	IP67 IP68
Operating voltage	24 VDC	**Housing material**	CuZn
Quality active face	PA	**Ambient temperature**	-20…+55 °C

Types and Data – Selection table

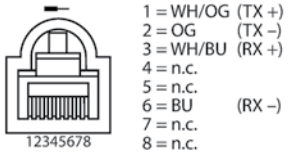
Type	ID number	Electrical connection	Operating current	Output function	Dimensions [mm]
NICP-M30-IOL2P8X-H1141	4300101	Connector, M12 × 1	750 DC	PNP & IO-Link	30 x 77.1
NICP-M30-8P8-0.3-RSC12T	4300201	0.3 m, Cable with male connector, M12 × 1	750 DC	PNP	30 x 80.4
NICS-M30-IOL2P8-0.3-RKC4.4T	4300301	0.3 m, Cable with female connector, M12 × 1	500 DC	PNP & IO-Link	30 x 80.4

PUR Cable – Green, Type 4414



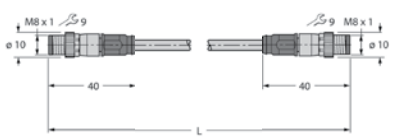
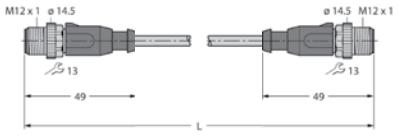
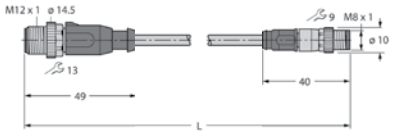
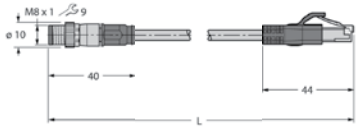
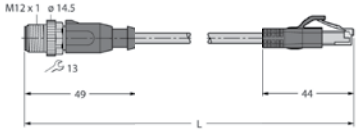
- 4-pin, 4 × 24 AWG, CAT 5E
- Qualified for drag chain use and flame-retardant
- Resistant to UV radiation and oils
- Free from halogen, silicone, PVC and LABS
- cULus approved

Female connector

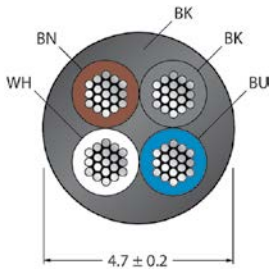


Male connector

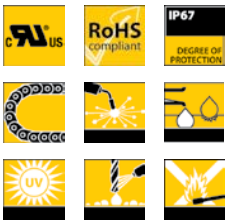
Connector	
Protection class	IP67 (A + B side screwed together)
Mechanical lifespan	> 100 Mating cycles
Pollution degree	3/2
Cable	
Core insulation	PP (WHOG, WHBU, BU, OG)
Shielding	Aluminum foil, tinned copper wire
Electrical properties at +20 °C	
Current	3 A
Test voltage	700 V
Nom. impedance	100 (1MHZ)
Nom. capacitance	51 pF/m
Mechanical and chemical properties	
Bending cycles	> 5 mil.
Bending radius (stationary laying)	> 15 x Ø

	Number of pins	Cable length [m]	Rated voltage [V]	ID number	Type
					
	4	1	30	6932993	PSGS4M-PSGS4M-4414-1M
	4	2	30	6932994	PSGS4M-PSGS4M-4414-2M
	4	5	30	6932996	PSGS4M-PSGS4M-4414-5M
	4	10	30	6932999	PSGS4M-PSGS4M-4414-10M
	4	15	30	6933000	PSGS4M-PSGS4M-4414-15M
	4	1	48	6441404	RSSD-RSSD-4414-1M
	4	2	48	6441405	RSSD-RSSD-4414-2M
	4	5	48	6441406	RSSD-RSSD-4414-5M
	4	10	48	6441408	RSSD-RSSD-4414-10M
	4	15	48	6441409	RSSD-RSSD-4414-15M
	4	1	30	6933772	RSSD-PSGS4M-4414-1M
	4	2	30	6933008	RSSD-PSGS4M-4414-2M
	4	5	30	6933009	RSSD-PSGS4M-4414-5M
	4	10	30	6933010	RSSD-PSGS4M-4414-10M
	4	15	30	6935277	RSSD-PSGS4M-4414-15M
	4	1	48	6933004	PSGS4M-RJ45S-4414-1M
	4	2	48	6933005	PSGS4M-RJ45S-4414-2M
	4	5	48	6933768	PSGS4M-RJ45S-4414-5M
	4	10	48	6934252	PSGS4M-RJ45S-4414-10M
	4	15	48	6933308	PSGS4M-RJ45S-4414-15M
	4	1	48	6441412	RSSD-RJ45S-4414-1M
	4	2	48	6441413	RSSD-RJ45S-4414-2M
	4	5	48	6935267	RSSD-RJ45S-4414-5M
	4	10	48	6441415	RSSD-RJ45S-4414-10M
	4	15	48	6441416	RSSD-RJ45S-4414-15M

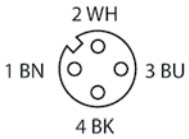
PUR Cable – black



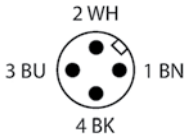
- PUR sheath (type…TXL)
- Qualified for drag chain use
- Resistant to welding sparks
- Resistant to chemicals, UV radiation and oils
- Flame-retardant
- No halogen, silicone, PVC or paint-wetting substances (LABS)
- cULus approval
- RoHS-compliant
- Other cable lengths and colors on request



Female connector



Male connector



Connector	
Protection class	IP67 (A + B side screwed together)
Mechanical lifespan	> 100 Mating cycles
Pollution degree	3
Cable	
Core insulation	PP (BN, WH, BU, BK)
Electrical properties at +20 °C	
Current	4 A
Rated voltage	250 V
Insulation resistance	> 30.5 MΩ/km
Test voltage	2000 V
Forward resistance	max. 57 Ω/km
Mechanical and chemical properties	
Bending cycles	> 5 mil.
Bending radius (stationary laying)	> 5 x Ø
Bending radius (flexible use)	> 10 x Ø
Admissible acceleration	max. 5 m/s^2
Admissible travel path, horizontal	5 m (at 5 m/s^2)
Admissible travel path, vertical	2 m (at 5 m/s^2)
Admissible traversing speed	3.3 m/s
Torsional stress	± 180 °/m

Number of pins	Cable length [m]	Rated voltage [V]	ID number	Type
4	0.3	250	6625605	RKC4.4T-0.3-RSC4.4T/TXL
4	0.6	250	6625606	RKC4.4T-0.6-RSC4.4T/TXL
4	1	250	6625607	RKC4.4T-1-RSC4.4T/TXL
4	2	250	6625608	RKC4.4T-2-RSC4.4T/TXL
4	5	250	6625731	RKC4.4T-5-RSC4.4T/TXL
4	0.3	250	6625637	WKC4.4T-0.3-RSC4.4T/TXL
4	0.6	250	6625638	WKC4.4T-0.6-RSC4.4T/TXL
4	1	250	6625639	WKC4.4T-1-RSC4.4T/TXL
4	2	250	6625640	WKC4.4T-2-RSC4.4T/TXL
4	5	250	6626878	WKC4.4T-5-RSC4.4T/TXL
4	0.3	250	6625621	RKC4.4T-0.3-WSC4.4T/TXL
4	0.6	250	6625622	RKC4.4T-0.6-WSC4.4T/TXL
4	1	250	6625623	RKC4.4T-1-WSC4.4T/TXL
4	2	250	6625624	RKC4.4T-2-WSC4.4T/TXL
4	5	250	6626682	RKC4.4T-5-WSC4.4T/TXL
4	0.3	250	6625653	WKC4.4T-0.3-WSC4.4T/TXL
4	0.6	250	6625654	WKC4.4T-0.6-WSC4.4T/TXL
4	1	250	6625655	WKC4.4T-1-WSC4.4T/TXL
4	2	250	6625656	WKC4.4T-2-WSC4.4T/TXL
4	5	250	6626684	WKC4.4T-5-WSC4.4T/TXL

IO-Link Master

Turck IO-Link masters are available in both modular and compact block I/O design. With IO-Link 1.1 they cover all required modes of communication This allows the user to easily integrate the wide range of Turck IO-Link devices in various fieldbus systems. Thanks to the multiprotocol Ethernet technology, the masters ensure efficient operation, also in new installations controlled by an Ethernet-enabled PLC system. With the IP20 and IP67 variants, solutions for use in control cabinets as well as for direct installation in the field are provided.

Features

- Application-optimized I/O systems in IP20 and IP67
- Space-saving block I/Os with multiple configuration options
- Future-proof module through IO-Link 1.1

Type Code

TB EN – S2 – 4IOL

TB EN Bus System	–	S2 Design/Connection	–	4IOL Signal Type

Bus System

EN	Ethernet multiprotocol
PN	Profisafe
IP	Ethernet/IP™CIP-Safety

Product Series

TB	Compact block I/O module

Design/Connection

S2	Small – I/O connection: 4 x M12 female connector; Power: M8 male/female connector, 4-pin
L1	Large – I/O connection: 8 x M12 female connector; Power: 7/8"male/female,5-pin
L4	Large – I/O connection: 8 x M12 female connector; Power: 7/8"male/female,4-pin
L5	Large – I/O connection: 8 x M12 female connector; Power: 7/8"male/female,5-pin

Signal Type

4IOL	4 IO-Link master ports
8IOL	8 IO-Link master ports
FDIO1	Safety I/O Set1 2 digital SIL3 inputs FDI 2 digital SIL3 channels as FDI or FDO (PP, PM)

BL20 – E – 4IOL

BL20 Product Series	–	E Design	–	4IOL Signal Type

Product Series

BL20	Modular I/O system in IP20

Design

E	ECO design

Signal Type

2IOL	2 IO-Link master ports
4IOL	4 IO-Link master ports

BL67 – 4IOL

BL67 Product Series	–	4IOL Signal Type

Product Series

BL67	Modular I/O system in IP67

Signal Type

4IOL	4 IO-Link master ports

Block I/O Module

General data			
IO-Link specification	Version 1.1		

Types and Data – Selection table

Type	ID number	IO-Link port type	Number of channels	Dimensions [mm]
TBEN-L4-8IOL	6814082	Class A and Class B	8	230.4 x 60.4 x 39
TBEN-L5-8IOL	6814017	Class A and Class B	8	230.4 x 60.4 x 39
TBPN-L1-FDIO1-2IOL	6814053	Class A and Class B	2	230.4 x 60.4 x 39
TBEN-S2-4IOL	6814024	Class A	4	144 x 32 x 32
TBIP-L5-FDIO1-2IOL	6814056	Class A and Class B	2	230.4 x 60.4 x 39

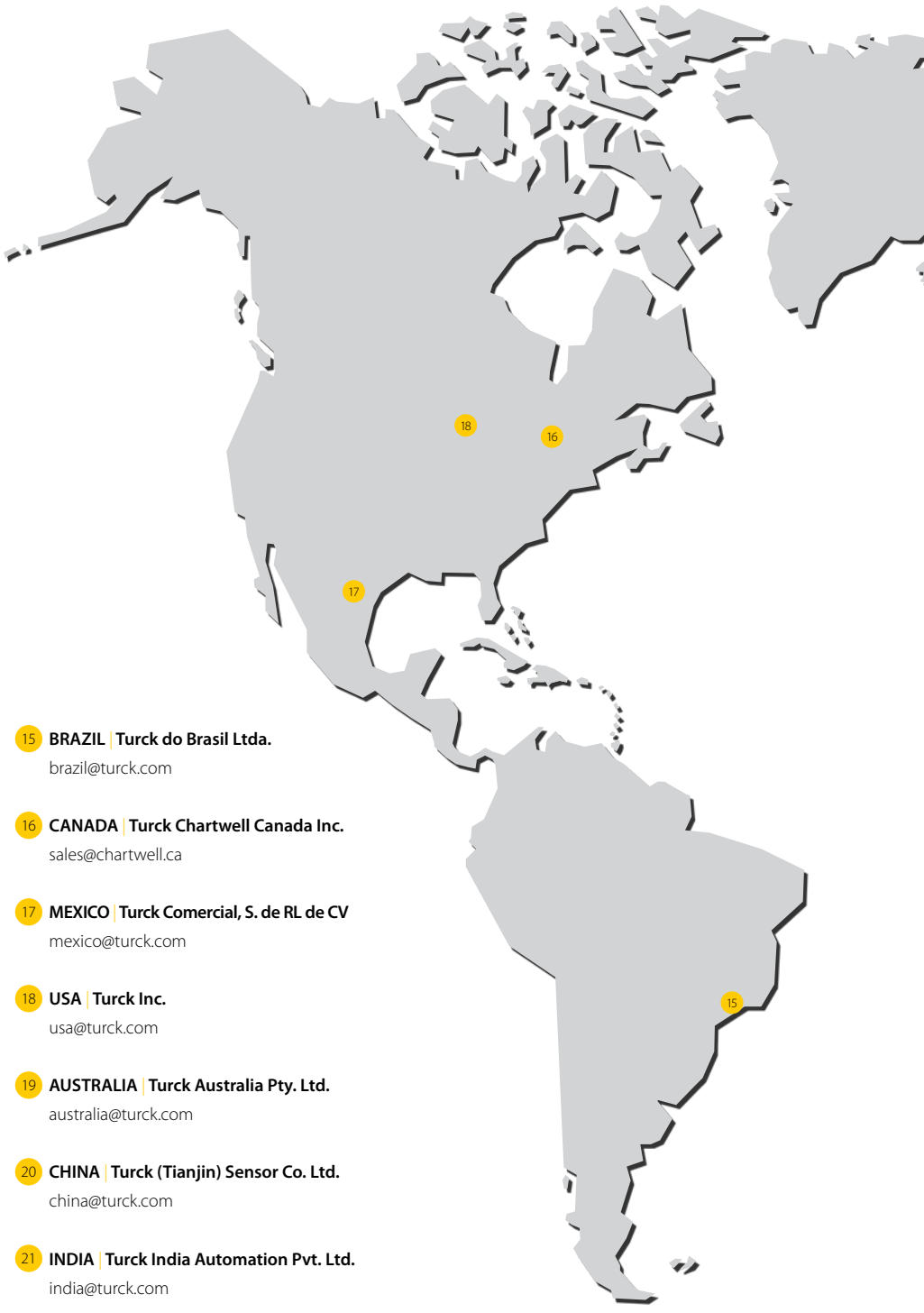
Modular System

General data			
IO-Link port type	Class A	**Number of channels**	4
IO-Link specification	version 1.1		

Types and Data – Selection table

Type	ID number	Dimensions [mm]
BL67-4IOL	6827386	91 x 32 x 59
BL20-E-4IOL	6827385	128.6 x 12.6 x 74.6

Turck Worldwide



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