



TURCK
works

Industrial
Automation

**SOLUTIONS
FOR MOBILE
EQUIPMENT**



.....Sense It!.....Connect It!.....Bus It!.....Solve It!

www.turck.us

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com

TURCK

YOUR **AUTOMATION SOLUTIONS** PROVIDER



DETECTION SENSORS



CORDSETS



I/O STATIONS



INSTRUMENTATION



RFID



INTERFACE MODULES



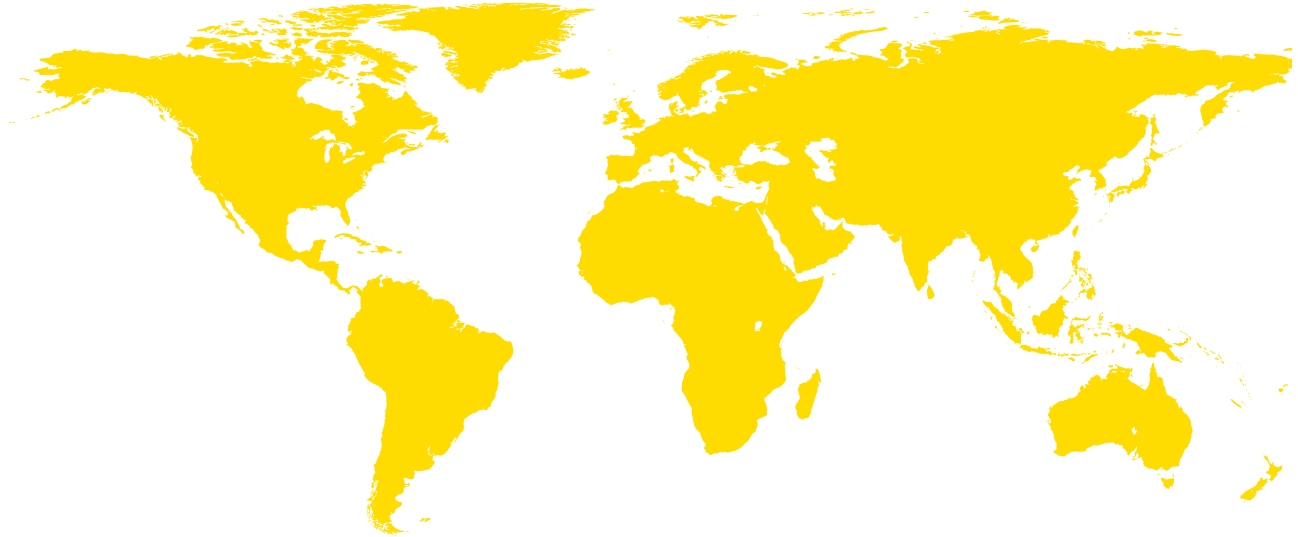
CUSTOM CONNECTIVITY



MEASUREMENT



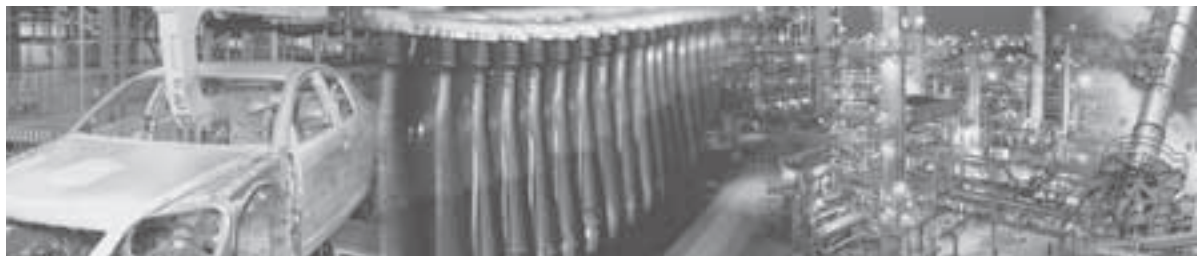
NETWORK MEDIA



TURCK's global support network consists of over 2,700 employees in 25 countries and 60 exclusive agencies worldwide that strive to meet customer expectations. Our sales, support and manufacturing facilities are strategically located across the world allowing us to respond to local market conditions and deliver customer specific solutions on a timely basis.

We are a world leader in **automation technology** with a diverse and broad product portfolio that provides customer specific applications with high performance, reliable and cost effective solutions. The synergy in our product portfolio and customization flexibility are key components of our value proposition.

Our expertise spans across two major industry categories: **Industrial Automation** and **Process Automation**. Each weighs in with its own unique requirements and methods of conducting business. This market centric approach ensures that we develop application specific solutions across a variety of vertical market segments.



SOLUTIONS FOR MOBILE EQUIPMENT



Kriss Szkurlatowski

TURCK's broad line of solutions specially designed for industrial vehicle and mobile equipment manufacturers has led to product innovations and ease of operations for customers worldwide. We strive to provide products of exceptional quality that may be used in harsh applications – and we are able to customize our solutions based on your specifications.

Our extensive line of solutions includes advanced sensors and encoders for position detection of booms, outriggers, seats, doors and gates. Level indication may be determined with TURCK's line of inclinometers, and our cordsets and junction boxes help you streamline wiring and connect your components with ease.

Sensing Solutions

- Inductive Position Sensors
- Pressure Monitoring Sensors
- Angular Position Sensors
- Rotary Position Sensors

Features:

- Non-contact technology provides longer service life
- Able to withstand heavy shock and vibration
- Extended temperature ranges
- Ease of installation
- Superior noise immunity
- Low operating voltage
- Exceptional sealing

Connectivity Solutions

- Cordsets
- Junction Boxes

Features:

- Rugged junction box housing
- Quick disconnect connectors
- Vibration immune connectors
- IEC IP 67 and NEMA 6P protection
- Excellent abrasion and cut-through resistant PUR jacketed cordsets

TURCK Solutions For Mobile Equipment

Fire Truck

Ladder Position

- Sensors

Door Position

- Inductive Sensors

Ladder Extension

- Sensors
- Draw Wire Encoders

Platform Rotation

- Sensors
- Encoders

Hydraulic System Monitoring

- Pressure Transducers

Outriggers

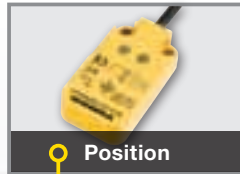
- Inductive Sensors
- Draw Wire Encoders

Actuators

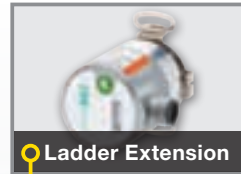
- Junction Boxes
- Cordsets



Actuators



Position



Ladder Extension



Platform Rotation



Hydraulic System Monitoring



Outriggers

Fork Truck

Steering Position

- Sensors

Seat Position

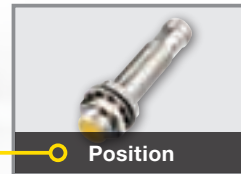
- Sensors

Mast Height

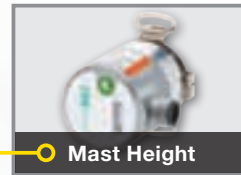
- Sensors
- Draw Wire Encoders

Fork Tilt

- Inclinometers
- Sensors



Position



Mast Height



Fork Tilt

Agricultural

Shaft Rotation

- Sensors

Head Position

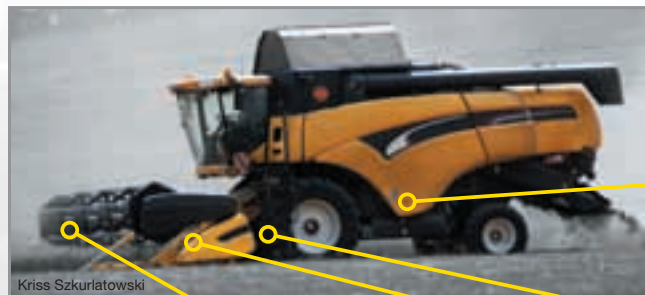
- Sensors

Extension

- Encoders

Actuators

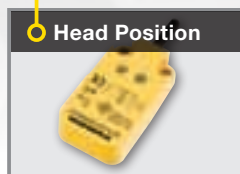
- Cordsets



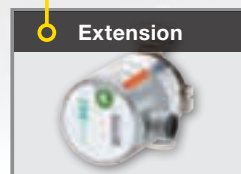
Kriss Szkurlatowski



Shaft Rotation



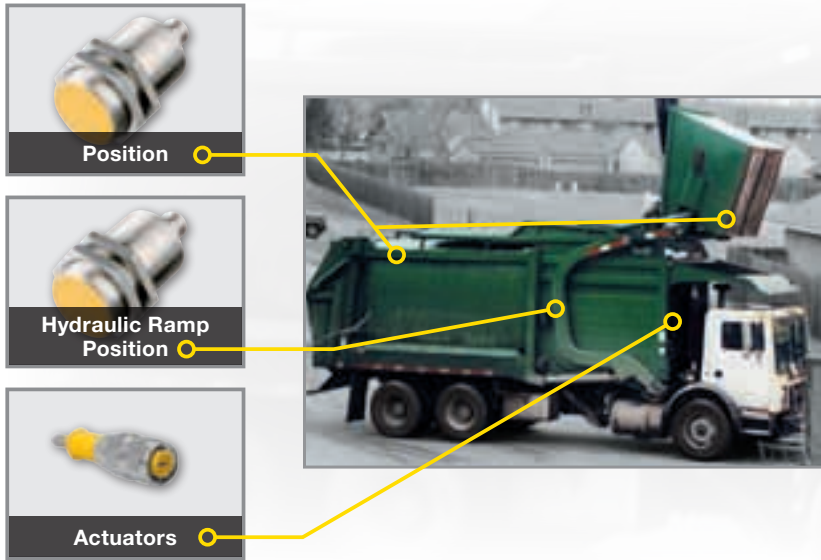
Head Position



Extension



Actuators



Garbage Truck

Door & Gate Position

- Sensors

Fork Position

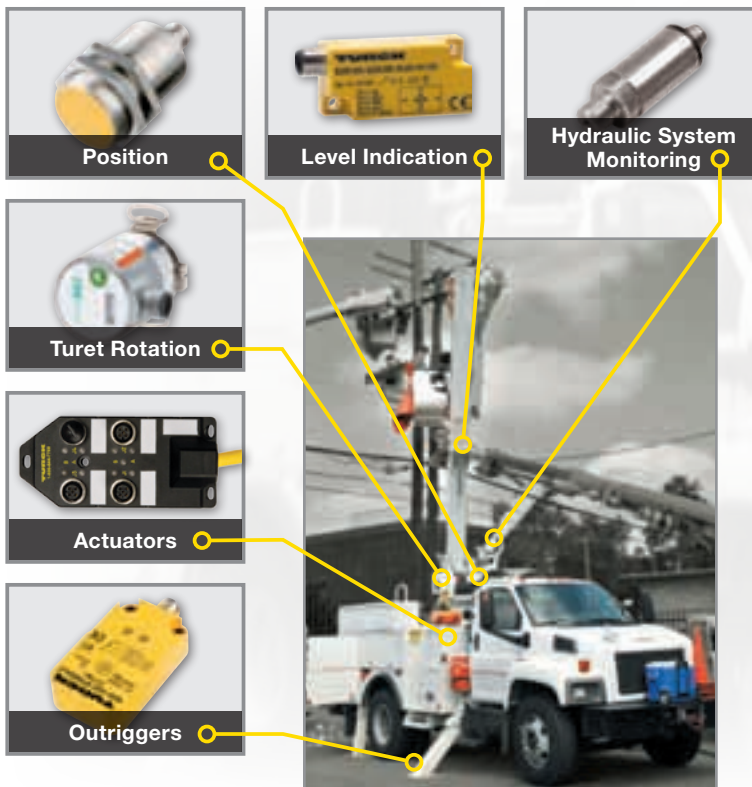
- Inclinometers

Hydraulic Ramp Position

- Sensors

Actuators

- Junction Boxes
- Cordsets



Bucket Truck

Level Indication

- Inclinometers

Hydraulic System Monitoring

- Pressure Transducers

Boom Position

- Sensors

Turret Rotation

- Sensors
- Encoders

Actuators

- Junction Boxes
- Cordsets

Outriggers

- Inductive Sensors

TURCK

Solutions For Mobile Equipment

Inductive Position Sensors Page 8

High degree of protection

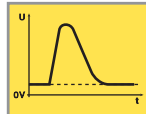
IP 67 plus IP 68 and IP 69k:

- 24 hrs. continuous storage at 70°C
- 24 hrs. continuous storage at -25°C
- 7 days submersion, depth 1 m, 10 temperature changes from 70°C to -25°C, each temperature for 1 hour
- IP 69k, suitable for high pressure steam-jet cleaning to DIN 40050-9, following EN 60529



Load dump protection

Test pulse 5 to DIN ISO 7637-2 / SAE J 1113-11 emulates the disconnection pulse of the battery charging current. This pulse



occurs if a battery is disconnected while the generator is supplying charging current. This may occur if a battery is disconnected while the motor is running due to corrosion, a poor connection or intentionally. In addition, the mobile equipment sensors passed test pulses 1-4 per DIN ISO 7637-2 with 12 V and 24 V systems.

Resistance to vibration and mechanical shock

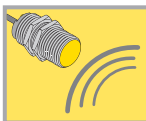
TURCK mobile equipment sensor series is ideally equipped to withstand continuous vibrations and shocks. The sensors are vibration proof up to 3000 Hz, 20 g, and can withstand continuous shocks of 100 g in 3 axes.



- EN 60068-2-6 (vibration resistance): 20 g; 10-3000 Hz; 50 cycles; 3 axes
- EN 60068-2-27 (shock resistance): 40 g; 6 ms; 4000 x each; 3 axes
- EN 60068-2-30 (continuous shock resistance) 100 g; 11 ms, 1/2 sinusoidal; 3 x each; 3 axes

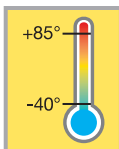
Excellent EMC immunity

The mobile equipment sensor series for utility vehicles meets more requirements than stipulated by DIN ISO 7637-2 (conducted and emitted electrical interference - Part 2: Vehicles with 12 V or 24 V systems) and DIN EN ISO 14982 for the severe radiated and line-conducted interference usually present in vehicles.



Extended temperature range

From -40°C to 85°C or from the polar region to the Sahara: The extended temperature range of the sensors allows worldwide use. Even the radiant heat up to 85°C emitted from motors, gears or exhaust systems cannot damage these sensors. Extreme temperature changes as defined by DIN 60068-2-14 (temperature change, -40°C to 85°C; 20 cycles) are not a problem.



Plug & play with standard automotive connectors

On request, TURCK can also supply the sensors with short cables and connectors, as commonly used with standard makes in the automotive sector: Deutsch, Packard and Molex are just some examples. This makes connection on the prefabricated cable harness a simple plug & play operation with a proven connection technology.



Pressure Monitoring Sensors Page 14

The TURCK pressure transmitters (PTs) are designed to meet the rugged demands of the hydraulic systems in mobile applications.

Pressure transmitters have the following features making them ideal for mobile equipment applications:

- Fixed range to 8700 psi.
- No calibration needed
- 4-20 mA and 0-10 DC outputs
- Stainless housing
- Robust ceramic element
- M12 connection
- IP 67

Angular Position Sensors Page 12

TURCK inclinometer products utilize cutting edge technology to provide level feedback in a compact, yet rugged package. Engineered using MEMS (micro-electromechanical system) technology, these dual axis sensors are designed to help keep your equipment within their safe operating limits in the most challenging, rugged environments.

- Inclinometers offer 2-axis control from a single IP 67 housing
- Temperature ranges from -40°C to 85°C
- Robust, fast, stable and precise
- Input voltages from 10 VDC to 30 VDC
- Analog outputs in Logic Control compatible 0.1 – 4.9 VDC and 4-20 mA versions
- Factory level setpoints are easily teachable to local terrains and equipment setups
- Standard available measuring ranges are +/- 10°, +/- 45°, +/- 60°, +/- 85°
- Custom ranges are available up to +/- 85°

Cordset Solutions Page 18

TURCK's standard connectivity products can be tailored specific to your needs. TURCK's experienced engineers work to provide you with an application specific solution that allows you to consolidate all types and styles of automation connectors.

Examples include:

- Sizes from the sub-miniature M5 to the 35 Amp M40 power connector
- 2 through 28-pin connectors, IP 67 protection
- Custom harness and cable assemblies
- Private wrap labeling
- Color coded wires
- Custom printed snap-in labels



Rugged, Sealed Junction Boxes Page 20

Consolidate wiring in any application or environment. TURCK offers a wide array of junction box styles to suit your application.

- 4, 6 or 8 ports, with or without LEDs for NPN or PNP sensors
- Integral cable or quick disconnect versions
- M5, M8, M12, 1/2" and 7/8" connector types
- Cast aluminum or plastic fully-encapsulated, IP 67 and NEMA 6P protection



Rotary Position Sensors Page 22

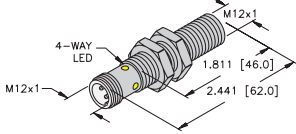
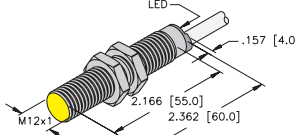
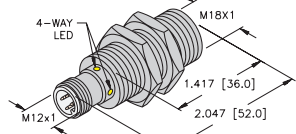
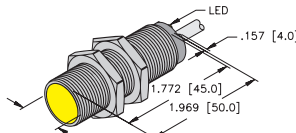
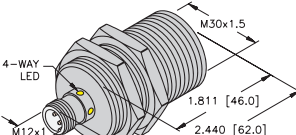
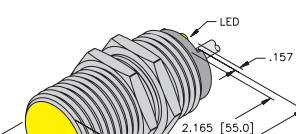
TURCK encoder products offer flexible solutions providing you with the tools to solve even the most demanding positioning applications. Regardless of your environment, our engineers are ready to help you choose the right solutions for your specific requirements.

- Encoders available from -40°C to 90°C and IP 69K
- Heaviest standard bearings in the industry
- Rugged, die cast aluminum and optional stainless steel housings
- Popular fieldbus networks including SSI/BiSS, CANopen, and J1939
- Speeds up to 12,000 RPM, standard
- Draw wire lengths up to 40 meters
- M12, M23, MS 6, MS7, and MS10 standard connector types
- Input voltages from 5 VDC to 30 VDC



TURCK Inductive Position Sensors for Mobile Equipment



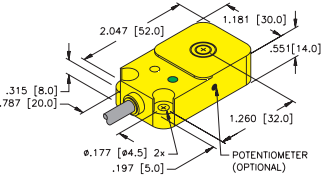
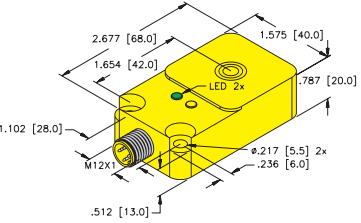
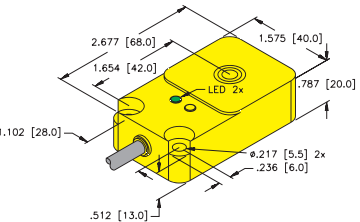
Housing	Part Number	ID Number	Features	Sensing Range (mm)	Output
12 mm Embeddable, M12 <i>euromast</i> ® Connection 	Bi 4-EM12E-AP45XLD-H1141	T1585000	<ul style="list-style-type: none"> • Load Dump Protection • Shock Resistant • EMC Immunity • Extended Temperature Range • Broader Operating Voltage • Improved Sealing and Environmental Protection • Longer Sensing Range 	4	DC 3-Wire PNP
	Bi 4-EM12E-AN45XLD-H1141	T1584003		4	DC 3-Wire NPN
12 mm Embeddable, Potted-in Cable 	Bi 4-EM12E-AP45XLD	T1584001		4	DC 3-Wire PNP
	Bi 4-EM12E-AN45XLD	T1584004		4	DC 3-Wire NPN
18 mm Embeddable, M12 <i>euromast</i> Connection 	Bi 8-EM18-AP45XLD-H1141	T1584010		8	DC 3-Wire PNP
	Bi 8-EM18-AN45XLD-H1141	T1584017		8	DC 3-Wire NPN
18 mm Embeddable, Potted-in Cable 	Bi 8-EM18-AP45XLD	T1584011		8	DC 3-Wire PNP
	Bi 8-EM18-AN45XLD	T1584014		8	DC 3-Wire NPN
30 mm Embeddable, M12 <i>euromast</i> Connection 	Bi15-EM30-AP45XLD-H1141	T1584020		15	DC 3-Wire PNP
	Bi15-EM30-AN45XLD-H1141	T1584024		15	DC 3-Wire NPN
30 mm Embeddable, Potted-in Cable 	Bi15-EM30-AP45XLD	T1584021		15	DC 3-Wire PNP
	Bi15-EM30-AN45XLD	T1584022		15	DC 3-Wire NPN

Voltage	Switching Freq. (kHz)	Operating Current (mA)	Operating Temp. (°C)	Protection	Housing	Face	Power LED	Output LED	Mating Cord, Cable Length/ Material	Wiring Diagram #	Wiring Diagrams
8.4-64 VDC	≤2.0	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	RK 4T-*/S90	2	Diagram 1
8.4-64 VDC	≤2.0	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	RK 4T-*/S90	1	
8.4-64 VDC	≤2.0	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	2M/TPE	3	Diagram 2
8.4-64 VDC	≤2.0	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	2M/TPE	4	
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	RK 4T-*/S90	2	Diagram 3
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	RK 4T-*/S90	1	
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	2M/TPE	3	Diagram 4
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	2M/TPE	4	
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	RK 4T-*/S90	2	
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	RK 4T-*/S90	1	
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	2M/TPE	3	
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	SS	PA12	N/A	YE	2M/TPE	4	

* Length in meters.

TURCK Inductive Position Sensors for Mobile Equipment



Housing	Part Number	ID Number	Features	Sensing Range (mm)	Output
Q14 Embeddable, Potted-in Cable 	Bi10-Q14-AP45X2LD	M1584031	<ul style="list-style-type: none"> • Load Dump Protection • Shock Resistant • EMC Immunity • Extended Temperature Range • Broader Operating Voltage • Improved Sealing and Environmental Protection • Longer Sensing Range 	10	DC 3-Wire PNP
	Bi10-Q14-AN45X2LD	M1584032		10	DC 3-Wire NPN
Q20 Embeddable, M12 <i>euromast</i> ® Connection 	Bi20-Q20-AP45X2LD-H1141	M1584040		20	DC 3-Wire PNP
	Bi20-Q20-AN45X2LD-H1141	M1584042		20	DC 3-Wire NPN
Q20 Embeddable, Potted-in Cable 	Bi20-Q20-AP45X2LD	M1584041		20	DC 3-Wire PNP
	Bi20-Q20-AN45X2LD	M1584043		20	DC 3-Wire NPN

Voltage	Switching Freq. (kHz)	Operating Current (mA)	Operating Temp. (°C)	Protection	Housing/Face	Power LED	Output LED	Mating Cord, Cable Length/ Material	Wiring Diagram #	Wiring Diagrams
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	PBT	GN	YE	2M/TPE	2	<p>Diagram 1</p>
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	PBT	GN	YE	2M/TPE	1	<p>Diagram 2</p>
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	PBT	GN	YE	RK 4T-*/S90	3	<p>Diagram 3</p>
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	PBT	GN	YE	RK 4T-*/S90	4	<p>Diagram 4</p>
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	PBT	GN	YE	2M/TPE	2	
8.4-64 VDC	≤0.5	≤200	-40 to +85	IP 68, IP 69K	PBT	GN	YE	2M/TPE	1	

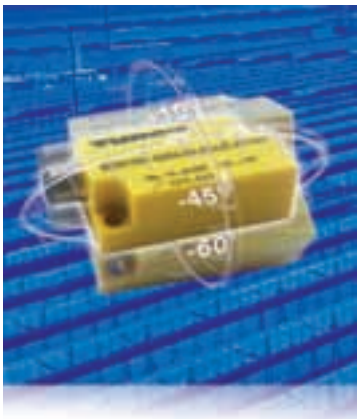
* Length in meters.

TURCK Angular Position Sensors for Mobile Equipment



Housing	Part Number	ID Number	Features	Measuring Range (Angular °)	Output
20 mm – Embeddable, M12 euromast ® Connection 	B2N 10H-Q20L60-2LU3-H1151	M1534006	<ul style="list-style-type: none"> • Shock Resistant • EMC Immunity • Extended Temperature Range • Broad Operating Voltage • Robust Sealing and Environmental Protection • Logic Level Outputs 	-10° to +10°	4-Wire DC Analog Voltage
	B2N 45H-Q20L60-2LU3-H1151	M1534007		-45° to +45°	4-Wire DC Analog Voltage
	B2N 60H-Q20L60-2LU3-H1151	M1534008		-60° to +60°	4-Wire DC Analog Voltage
	B2N 85H-Q20L60-2LU3-H1151	M1534027		-85° to +85°	4-Wire DC Analog Voltage
20 mm – Embeddable, M12 euromast ® Connection 	B2N 10H-Q20L60-2LI2-H1151	M1534012		-10° to +10°	4-Wire DC Analog Current
	B2N 45H-Q20L60-2LI2-H1151	M1534013		-45° to +45°	4-Wire DC Analog Current
	B2N 60H-Q20L60-2LI2-H1151	M1534014		-60° to +60°	4-Wire DC Analog Current
	B2N 85H-Q20L60-2LI2-H1151	M1534032		-85° to +85°	4-Wire DC Analog Current

Dual Axis Inclinometer Sensor



The TURCK inclinometer is a dual axis sensor for angular tilt detection. These sensors feature compact rectangular housings, and may be mounted up to a maximum of +/- 85 degree angles. Inclinometer sensors may be used in a wide variety of applications to solve unique feedback requirements where the customer needs to level platforms, control tilt angle or control a dancer.

The new TURCK inclinometer measures angular tilt in reference to gravity. At the heart of the TURCK inclinometer is a MEMS (micro-electro-mechanical system) device that incorporates a micro-electromechanical capacitive element into the sensor that utilizes two parallel plate electrodes, one stationary and one attached to a spring-mass system. Movement causes acceleration that produces deflection in the non-stationary electrode. This results in a measurable change in the capacitance between the two plates that is proportional to the angle of deflection. These signals are conditioned to provide two analog outputs (0.1-4.9 VDC) or two current outputs (4-20 mA). The micro board design in the MEMS technology allows for a compact, precise inclinometer in a very robust, industrialized package. The inclinometer is IP 67 rated, with a temperature range of -30°C to 70°C. The sensor is also available in the optional -40°C /S97 option.

Voltage	Output Recovery Time (ms)	Output Voltage/Current	Operating Temp. (°C)*	Protection	Housing	Shock Resistance	Zero Point Calibration	Teach Pendant	Mating Cordset	Wiring Diagram #	Wiring Diagrams
10-30 VDC	≤12	0.1-4.9 V	-30 to +70	IP 67	PBT	30 g (11 ms)	+/- 5°	VB2-SP4	RKS 4.5T/S618	1	<p>Diagram 1</p> <p>Diagram 2</p>
10-30 VDC	≤12	0.1-4.9 V	-30 to +70	IP 67	PBT	30 g (11 ms)	+/- 15°	VB2-SP4	RKS 4.5T/S618	1	
10-30 VDC	≤12	0.1-4.9 V	-30 to +70	IP 67	PBT	30 g (11 ms)	+/- 15°	VB2-SP4	RKS 4.5T/S618	1	
10-30 VDC	≤12	0.1-4.9 V	-30 to +70	IP 67	PBT	30 g (11 ms)	+/- 15°	VB2-SP4	RKS 4.5T/S618	1	
10-30 VDC	≤12	4-20 mA	-30 to +70	IP 67	PBT	30 g (11 ms)	+/- 5°	VB2-SP4	RKS 4.5T/S618	2	
10-30 VDC	≤12	4-20 mA	-30 to +70	IP 67	PBT	30 g (11 ms)	+/- 15°	VB2-SP4	RKS 4.5T/S618	2	
10-30 VDC	≤12	4-20 mA	-30 to +70	IP 67	PBT	30 g (11 ms)	+/- 15°	VB2-SP4	RKS 4.5T/S618	2	
10-30 VDC	≤12	4-20 mA	-30 to +70	IP 67	PBT	30 g (11 ms)	+/- 15°	VB2-SP4	RKS 4.5T/S618	2	

Note: Operating temperature of -40°C available with /S97 option.

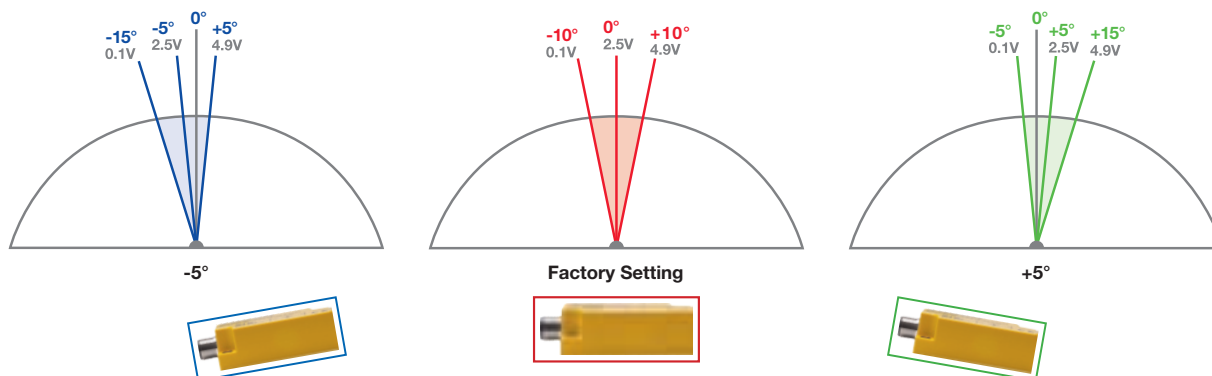
Zero Setpoint Teach Function

The zero point, or level reference, of the inclinometer may be reset to the unique grade of your application. Depending on the model, it is adjustable up to +/- 15 degrees from the factory setting of absolute horizon level. This allows you to effectively shift the sensing window to accommodate slightly non-level rest positions of your equipment, such as the difference between an empty and a loaded dump truck. We offer a teaching pendant to make this a simple, single push-button task.

Optional Teaching Pendant: VB2-SP4



Inclinometer Teach Range Example : B2N 10H-Q20L60-2LU3-H1151



TURCK Pressure Monitoring Sensors for Mobile Equipment



Pressure Transmitter Technical Information

Specifications:

Ambient Temperature -40°C to +85°C (-40°F to +185°F)
Medium Temperature -40°C to +150°C (-40°F to +302°F)
Current Consumption ≤20 mA
Dynamic Response <2 ms
Short-Circuit Protection . . Yes
Reverse Polarity Protection Yes
Enclosure Rating IP 67
Housing Material Stainless Steel 1.430 (AISI 303) / PBT
Shock Resistance 75 G, 11 ms per IEC 68-2-27
Vibration Resistance 20 G, 15 mm per IEC 68-2-6
Zero Shift <±0.015% of measuring range / °C
Span Shift <±0.015% of measuring range / °C
Voltage Output >10 k Ω / <100 nF

$$\text{Current Output} \dots \leq \frac{\text{supply voltage}}{0.02 \text{ A}} = \text{Ohm}$$

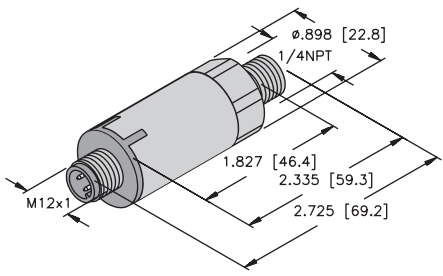
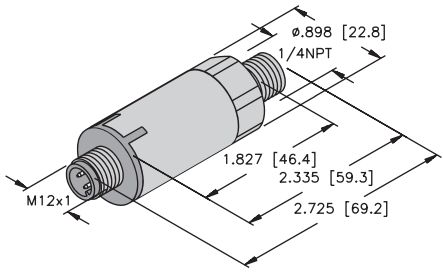
Material:

Housing 303 Stainless Steel/PBT
Sensing Element AL₂O₃ Ceramic
Media Stop PPS
Cable Connector 303 Stainless Steel / PBT
Pressure Connection 303 Stainless Steel
O-ring Seal Viton

	PT...LI3 (scaled in bar)	PT...LI3 (scaled in psi)	PT...LU2 (scaled in bar)	PT...LU2 (scaled in psi)
Output	4-20 mA Loop Powered	4-20 mA Loop Powered	0-10 V	0-10 V
Voltage	8-33 VDC	8-33 VDC	11.4-33 VDC	11.4-33 VDC
Accuracy** (Full Scale)	≤0.3%	≤0.5%	≤0.3%	≤0.5%
Mating Cordset	RK 4T-*/S618	RK 4T-*/S618	RK 4T-*/S618	RK 4T-*/S618
Wiring Diagrams				

* Length in meters.

** Total of linearity, hystereiss and repeatability.

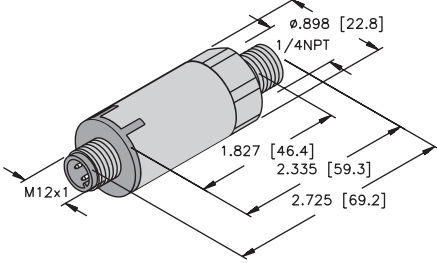
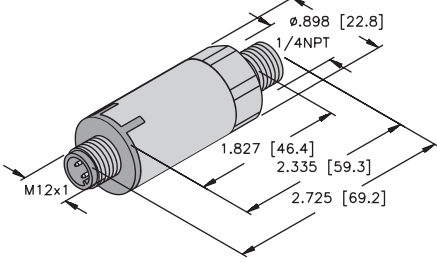
Description	Part Number	ID Number	Scaled Pressure Range	Allowable Over Pressure (bar)
Gauge Pressure Transmitter, 1/4 Male NPT Connection, Scaled in PSI, 4-20 mA Output 	PT-30HG-13-LI3-H1131	H6831455	0 to -30 inHg	60 inHg
	PT15psig-13-LI3-H1131	H6831456	0 to 15 psi	45 psi
	PT30psig-13-LI3-H1131	H6831457	0 to 30 psi	90 psi
	PT60psig-13-LI3-H1131	H6831458	0 to 60 psi	150 psi
	PT100psig-13-LI3-H1131	H6831459	0 to 100 psi	250 psi
	PT200psig-13-LI3-H1131	H6831460	0 to 200 psi	500 psi
	PT300psig-13-LI3-H1131	H6831461	0 to 300 psi	750 psi
	PT500psig-13-LI3-H1131	H6831462	0 to 500 psi	1250 psi
	PT750psig-13-LI3-H1131	H6831463	0 to 750 psi	1875 psi
	PT1000psig-13-LI3-H1131	H6831464	0 to 1000 psi	2500 psi
	PT2000psig-13-LI3-H1131	H6831465	0 to 2000 psi	5000 psi
	PT3000psig-13-LI3-H1131	H6831466	0 to 3000 psi	7500 psi
	PT5000psig-13-LI3-H1131	H6831467	0 to 5000 psi	12,500 psi
	PT7500psig-13-LI3-H1131	H6831468	0 to 7500 psi	13,050 psi
Gauge Pressure Transmitter, 1/4 Male NPT Connection, Scaled in PSI, 0-10 V Output 	PT-30HG-13-LU2-H1131	H6831469	0 to 30 inHg	60 inHg
	PT15psig-13-LU2-H1131	H6831470	0 to 15 psi	45 psi
	PT30psig-13-LU2-H1131	H6831471	0 to 30 psi	90 psi
	PT60psig-13-LU2-H1131	H6831472	0 to 60 psi	150 psi
	PT100psig-13-LU2-H1131	H6831473	0 to 100 psi	250 psi
	PT200psig-13-LU2-H1131	H6831474	0 to 200 psi	500 psi
	PT300psig-13-LU2-H1131	H6831475	0 to 300 psi	750 psi
	PT500psig-13-LU2-H1131	H6831476	0 to 500 psi	1250 psi
	PT750psig-13-LU2-H1131	H6831477	0 to 750 psi	1875 psi
	PT1000psig-13-LU2-H1131	H6831478	0 to 1000 psi	2500 psi
	PT2000psig-13-LU2-H1131	H6831479	0 to 2000 psi	5000 psi
	PT3000psig-13-LU2-H1131	H6831480	0 to 3000 psi	7500 psi
	PT5000psig-13-LU2-H1131	H6831481	0 to 5000 psi	12,500 psi
	PT7500psig-13-LU2-H1131	H6831482	0 to 7500 psi	13,050 psi

See page 14 for technical information.
Conversion: 1 bar = 14.5038 psi

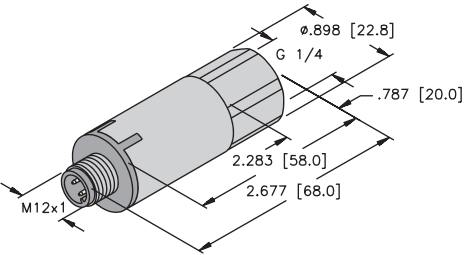
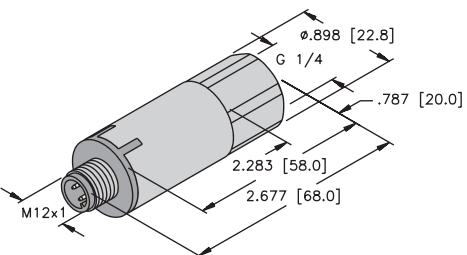
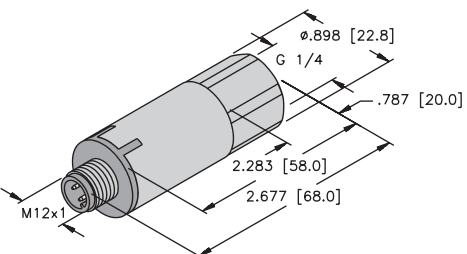
TURCK

Pressure Monitoring Sensors for Mobile Equipment



Description	Part Number	ID Number	Scaled Pressure Range (bar)	Allowable Over Pressure (bar)
Gauge Pressure Transmitter, 4-20 mA Output, 1/4 Male NPT Connection, Scaled in bar 	PT01VR-13-LI3-H1131	H6831496	-1 to 0	3
	PT001R-13-LI3-H1131	H6831497	0 to 1	3
	PT002R-13-LI3-H1131	H6831498	0 to 1.6	4.8
	PT003R-13-LI3-H1131	H6831499	0 to 2.5	7.5
	PT004R-13-LI3-H1131	H6831500	0 to 4	12
	PT006R-13-LI3-H1131	H6831501	0 to 6	15
	PT010R-13-LI3-H1131	H6831502	0 to 10	25
	PT016R-13-LI3-H1131	H6831503	0 to 16	40
	PT025R-13-LI3-H1131	H6831504	0 to 25	62.5
	PT040R-13-LI3-H1131	H6831505	0 to 40	100
	PT060R-13-LI3-H1131	H6831506	0 to 60	150
	PT100R-13-LI3-H1131	H6831507	0 to 100	250
	PT160R-13-LI3-H1131	H6831508	0 to 160	400
	PT250R-13-LI3-H1131	H6831509	0 to 250	625
	PT400R-13-LI3-H1131	H6831510	0 to 400	900
PT600R-13-LI3-H1131	H6831511	0 to 600	900	
Gauge Pressure Transmitter, 0-10 V Output, 1/4 Male NPT Connection, Scaled in bar 	PT01VR-13-LU2-H1131	H6831512	-1 to 0	3
	PT001R-13-LU2-H1131	H6831513	0 to 1	3
	PT002R-13-LU2-H1131	H6831514	0 to 1.6	4.8
	PT003R-13-LU2-H1131	H6831515	0 to 2.5	7.5
	PT004R-13-LU2-H1131	H6831516	0 to 4	12
	PT006R-13-LU2-H1131	H6831517	0 to 6	15
	PT010R-13-LU2-H1131	H6831518	0 to 10	25
	PT016R-13-LU2-H1131	H6831519	0 to 16	40
	PT025R-13-LU2-H1131	H6831520	0 to 25	62.5
	PT040R-13-LU2-H1131	H6831521	0 to 40	100
	PT060R-13-LU2-H1131	H6831522	0 to 60	150
	PT100R-13-LU2-H1131	H6831523	0 to 100	250
	PT160R-13-LU2-H1131	H6831524	0 to 160	400
	PT250R-13-LU2-H1131	H6831525	0 to 250	625
	PT400R-13-LU2-H1131	H6831526	0 to 400	900
PT600R-13-LU2-H1131	H6831527	0 to 600	900	

See page 14 for technical information.
 Conversion: 1 bar = 14.5038 psi

Description	Part Number	ID Number	Scaled Pressure Range (bar)	Allowable Over Pressure (bar)
Gauge Pressure Transmitter, G 1/4 Female Connection, 4-20 mA Output, Scaled in bar 	PT01VR-11-LI3-H1131	H6831433	-1 to 0	3
	PT0.5R-11-LI3-H1131	H6831495	0 to 0.5	1.5
	PT001R-11-LI3-H1131	H6831434	0 to 1	3
	PT002R-11-LI3-H1131	H6831435	0 to 1.6	4.8
	PT003R-11-LI3-H1131	H6831436	0 to 2.5	7.5
	PT004R-11-LI3-H1131	H6831437	0 to 4	12
	PT006R-11-LI3-H1131	H6831438	0 to 6	15
	PT010R-11-LI3-H1131	H6831432	0 to 10	25
	PT016R-11-LI3-H1131	H6831439	0 to 16	40
	PT025R-11-LI3-H1131	H6831440	0 to 25	62.5
	PT040R-11-LI3-H1131	H6831441	0 to 40	100
	PT060R-11-LI3-H1131	H6831442	0 to 60	150
	PT100R-11-LI3-H1131	H6831443	0 to 100	250
	PT160R-11-LI3-H1131	H6831444	0 to 160	400
	PT250R-11-LI3-H1131	H6831445	0 to 250	625
	PT400R-11-LI3-H1131	H6831446	0 to 400	900
	PT600R-11-LI3-H1131	H6831447	0 to 600	900
Gauge Pressure Transmitter, G 1/4 Female Connection, 0-10 V Output, Scaled in bar 	PT01VR-11-LU2-H1131	H6831454	-1 to 0	3
	PT001R-11-LU2-H1131	H6831483	0 to 1	3
	PT002R-11-LU2-H1131	H6831484	0 to 1.6	4.8
	PT003R-11-LU2-H1131	H6831485	0 to 2.5	7.5
	PT004R-11-LU2-H1131	H6831486	0 to 4	12
	PT006R-11-LU2-H1131	H6831452	0 to 6	15
	PT010R-11-LU2-H1131	H6831487	0 to 10	25
	PT016R-11-LU2-H1131	H6831488	0 to 16	40
	PT025R-11-LU2-H1131	H6831489	0 to 25	62.5
	PT040R-11-LU2-H1131	H6831490	0 to 40	100
	PT060R-11-LU2-H1131	H6831491	0 to 60	150
	PT100R-11-LU2-H1131	H6831492	0 to 100	250
	PT160R-11-LU2-H1131	H6831453	0 to 160	400
	PT250R-11-LU2-H1131	H6831451	0 to 250	625
PT400R-11-LU2-H1131	H6831493	0 to 400	900	
PT600R-11-LU2-H1131	H6831494	0 to 600	900	
Absolute Pressure Transmitter, G 1/4 Female Connection, 4-20 mA Output, Scaled in bar 	PT001A-11-LI3-H1131	H6831449	0 to 1	3
	PT002A-11-LI3-H1131	H6831450	0 to 1.6	4.8
	PT003A-11-LI3-H1131	H6831448	0 to 2.5	7.5

See page 14 for technical information.
Conversion: 1 bar = 14.5038 psi

TURCK Cordsets for Mobile Equipment



Housing Style	Part Number	Cable	Features	Pinout								
<p>4 and 5-Wire M12 eurofast® Cordsets, Standard Plug Body</p> <p>RK..</p> <p>WK..</p> <p>RS..</p> <p>WS..</p>	RK 4T-*/S90	AWM PUR Grey 3x20 AWG 105°Ct 250 VAC/300 VDC, 4 A 5.2 mm OD Cable #RF50518-*M*	<ul style="list-style-type: none"> • NEMA 1, 3, 4, 6P and IEC IP 68 Protection • Cut/Abrasion Immune • Anti-vibration coupling nut 									
	WK 4T-*/S90			AWM PUR Grey 3x20 AWG 105°Ct 250 VAC/300 VDC, 4 A 5.2 mm OD Cable #RF50518-*M*	<ul style="list-style-type: none"> • NEMA 1, 3, 4, 6P and IEC IP 68 Protection • Cut/Abrasion Immune • Anti-vibration coupling nut 							
	RS 4T-*/S90					AWM PUR Grey 3x20 AWG 105°Ct 250 VAC/300 VDC, 4 A 5.2 mm OD Cable #RF50518-*M*	<ul style="list-style-type: none"> • NEMA 1, 3, 4, 6P and IEC IP 68 Protection • Cut/Abrasion Immune • Anti-vibration coupling nut 					
	WS 4T-*/S90							AWM PUR Grey 3x20 AWG 105°Ct 250 VAC/300 VDC, 4 A 5.2 mm OD Cable #RF50518-*M*	<ul style="list-style-type: none"> • NEMA 1, 3, 4, 6P and IEC IP 68 Protection • Cut/Abrasion Immune • Anti-vibration coupling nut 			
	RK 4.5T-*/S90									AWM PUR Grey 5x22 AWG 105°C 250 V, 4 A 5.7 mm OD Cable #RF50649-*M*	<ul style="list-style-type: none"> • NEMA 1, 3, 4, 6P and IEC IP 68 Protection • Cut/Abrasion Immune • Anti-vibration coupling nut 	
	WK 4.5T-*/S90											AWM PUR Grey 5x22 AWG 105°C 250 V, 4 A 5.7 mm OD Cable #RF50649-*M*
	RS 4.5T-*/S90	AWM PUR Grey 5x22 AWG 105°C 250 V, 4 A 5.7 mm OD Cable #RF50649-*M*	<ul style="list-style-type: none"> • NEMA 1, 3, 4, 6P and IEC IP 68 Protection • Cut/Abrasion Immune • Anti-vibration coupling nut 									
	WS 4.5T-*/S90			AWM PUR Grey 5x22 AWG 105°C 250 V, 4 A 5.7 mm OD Cable #RF50649-*M*	<ul style="list-style-type: none"> • NEMA 1, 3, 4, 6P and IEC IP 68 Protection • Cut/Abrasion Immune • Anti-vibration coupling nut 							

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.

Standard coupling nut material is nickel plated brass.

* See section N of Connectivity catalog for **reelfast**® cable information.



Housing Style	Part Number	Cable	Features	Pinout		
<p>19-Pin M23 <i>multifast</i>® Cordsets</p> <p>CKM..</p> <p>CKWM..</p> <p>CSM..</p> <p>CSWM..</p>	CKM 19-11-*/S90	<p>AWM PUR Yellow 3x18, 8x22 AWG 105°C 150 V, 9 A (18 AWG) 2 A (22 AWG) 8.4 mm OD Cable #RF50718- *M*</p>	<p>• IEC IP 67 Protection • Cut/Abrasion Immune • Anti-vibration coupling nut</p>			
	CKWM 19-11-*/S90			<p>AWM PUR Yellow 3x18, 16x22 AWG 105°C 150 V, 9 A (18 AWG) 2 A (22 AWG) 10.4 mm OD Cable #RF50682- *M*</p>	<p>3. GY 4. RD/BU 5. GN 6. BU 7. GY/PK 8. WH/GN 12. GN/YE 14. BN/GN 15. WH 16. YE 19. BN</p>	
	CSM 19-11-*/S90					
	CSWM 19-11-*/S90					
	CKM 19-19-*/S90				<p>AWM PUR Yellow 3x18, 16x22 AWG 105°C 150 V, 9 A (18 AWG) 2 A (22 AWG) 10.4 mm OD Cable #RF50682- *M*</p>	<p>1. VT 2. RD 3. GY 4. RD/BU 5. GN 6. BU 7. GY/PK 8. WH/GN 9. WH/YE 10. WH/GY 11. BK 12. GN/YE 13. YE/BN 14. BN/GN 15. WH 16. YE 17. PK 18. GY/BN 19. BN</p>
	CKWM 19-19-*/S90					
	CSM 19-19-*/S90					
	CSWM 19-19-*/S90					

* Length in meters. Standard cable lengths are 5 and 10 meters. Consult factory for other lengths.
Standard coupling nut material is nickel plated brass.

* See section N of Connectivity catalog for *reelfast*® cable information.

TURCK Junction Boxes for Mobile Equipment



Low Profile Junction Boxes with M12 *euromast*® Connections, 4-Port and 8-Port

4-Port, 2 Signals Per Port, 10-48 VDC

Application	Specifications	Pinout				No LEDs	PNP LED	NPN LED
4-port J-box 2 signals per port M23 <i>multifast</i> connector	2 A/port, 10 A total 19-pin M23 <i>multifast</i> connector 11 conductors Mates with CKM 19-11-*	Function + V - V Ground Port 1, Sig 1 Port 1, Sig 2	Pin / Color 19 / BN 6 / BU 12 / GN / YE 15 / WH 7 / GY / PK	Function Port 2, Sig 1 Port 2, Sig 2 Port 3, Sig 1 Port 3, Sig 2 Port 4, Sig 1 Port 4, Sig 2	Pin / Color 5 / GN 4 / RD / BU 16 / YE 8 / WH / GN 3 / GY 14 / BN / GN	4MB12Z-5-CS19	4MB12Z-5P3-CS19	4MB12Z-5N3-CS19

8-Port, 2 Signals Per Port, 10-48 VDC

Application	Specifications	Pinout				No LEDs	PNP LED	NPN LED
8-port J-box 2 signals per port M23 <i>multifast</i> connector	2 A/port, 10 A total 19-pin M23 <i>multifast</i> connector 19 conductors Mates with CKM 19-19-*	Function + V - V Ground Port 1, Sig 1 Port 1, Sig 2 Port 2, Sig 1 Port 2, Sig 2 Port 3, Sig 1 Port 3, Sig 2	Pin / Color 19 / BN 6 / BU 12 / GN / YE 15 / WH 7 / GY / PK 5 / GN 4 / RD / BU 16 / YE 8 / WH / GN	Function Port 4, Sig 1 Port 4, Sig 2 Port 5, Sig 1 Port 5, Sig 2 Port 6, Sig 1 Port 6, Sig 2 Port 7, Sig 1 Port 7, Sig 2 Port 8, Sig 1 Port 8, Sig 2	Pin / Color 3 / GY 14 / BN / GN 17 / PK 9 / WH / YE 2 / RD 13 / YE / BN 11 / BK 10 / WH / GY 1 / VT 18 / GY / BN	8MB12Z-5-CS19	8MB12Z-5P3-CS19	8MB12Z-5N3-CS19

Note: Integral cable and side exit connector home run options available

Features:

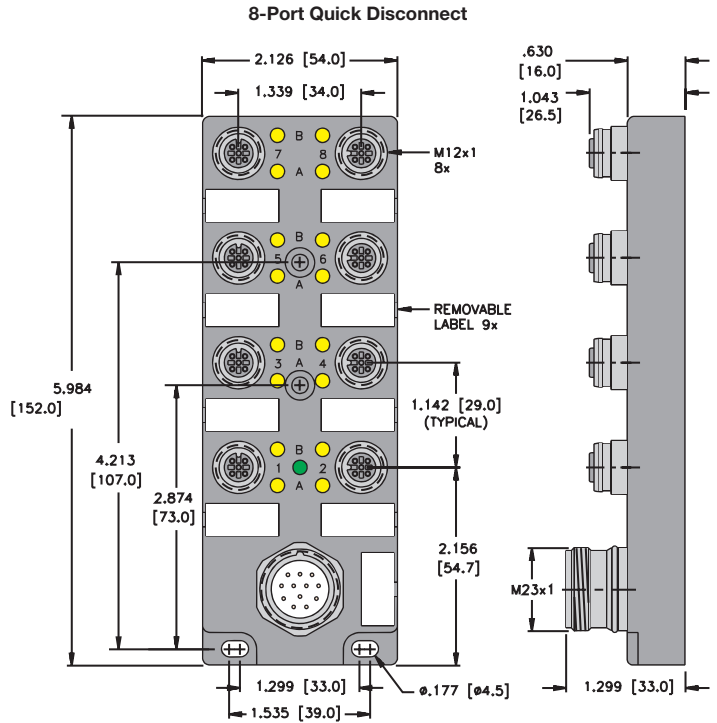
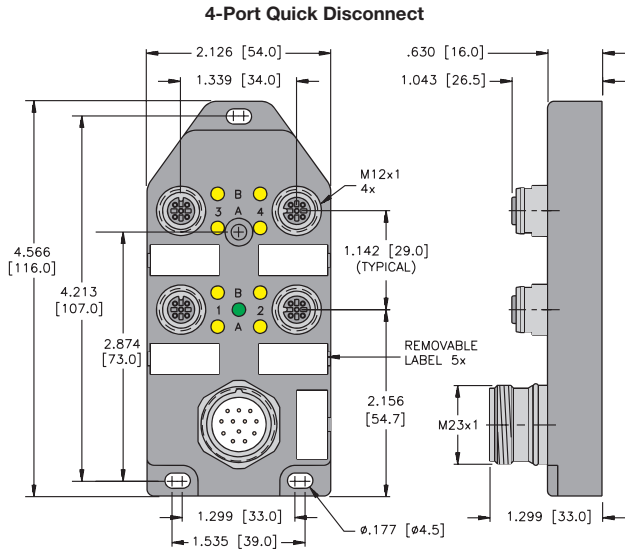
- Dual Output per port
- Rugged Plastic Housing
- Available with or without LEDs
- M23 Quick Disconnect Homerun Cable
- Threaded M12 Connections
- Corrosive Resistant
- NEMA 1, 3, 4, 6P and IEC IP 67

Specifications:

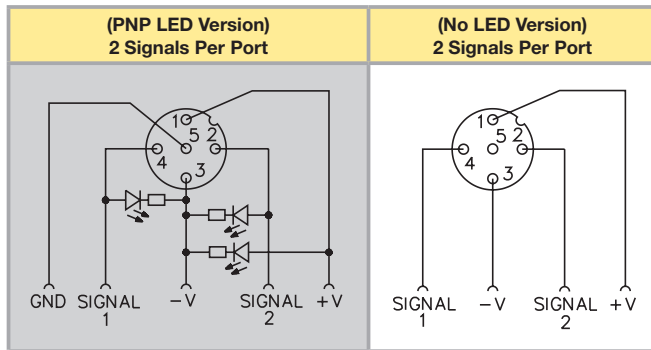
- Housing:** Nylon
- Connectors:** M12 *euromast*®: Nylon or PUR, spacings to VDE 0110 Group C
- Contacts:** Gold plated brass
- Thread Inserts:** Nickel plated brass
- LED Current:** 10 mA maximum at 48 VDC supply voltage (per LED)
- Temperature:** -30°C to +80°C (-22°F to +176°F)
- Accessories:** VZ 3 closure caps and a VZ 12 label kit included
- Recommended Splitter:** YB2-FSM 4.5-2FKM 4.5

Low Profile Junction Boxes with M12 eurofast® Connections, 4-Port and 8-Port

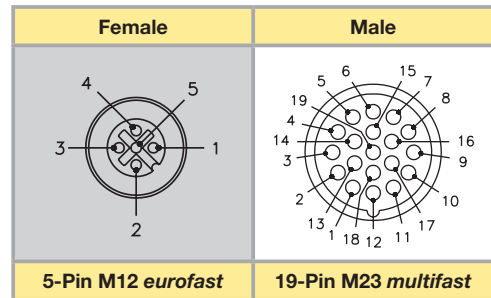
Dimensions



Functional Wiring Diagrams



Pinout

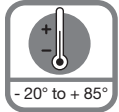




Absolute Singleturn Encoder Type T8.2450/T8.2470



locked bearing



- 20° to + 85°

temperature



Non-contact measuring system with long service life, high reliability, high resolution, 12 Bit (4096 various positions at 360°)

Absolute Singleturn, SSI, shaft T8.2450
Absolute Singleturn, SSI, hollow shaft T8.2470

- Output SSI (12 Bit)
- Rugged cable outlet, high strain relief thanks to multiple clamping
- Wide range of power supply
- 5 VDC or 8-30 VDC



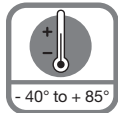
For complete specifications please visit www.turck.com/SSI

Sendix Absolute, Singleturn Encoder Type T8.3651/T8.3671 and T8.3658/T8.3678

Sendix®



Safety-Lockplus™



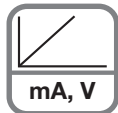
- 40° to + 85°

temperature



IP 69k

high IP value



mA, V

output



shock resistant
vibration resistant

CANopen

New magnetic singleturn encoder that provides all-round protection thanks to **Safety-Lockplus™** and **Sensor-Protect™** technology.

- Output: 4-20 mA, 0-10 V, or CANopen
- Wide range of temperature -40° to 85°C
- Resolution 12 Bit (4-20 mA, 0-10 V)
- Resolution 14 Bit (CANopen)

Sensor-Protect™

Fully encapsulated electronics;
separate mechanical bearing assembly

Safety-Lockplus™

IP 69k protection on the flange side;
robust bearing assemblies with
interlocking bearings; mechanically
protected shaft seal



For complete specifications please visit www.turck.com/Magnetic

Draw Wire Encoders A50, B80, C120, D135



wide temperature range



shock resistant
vibration resistant



high IP value

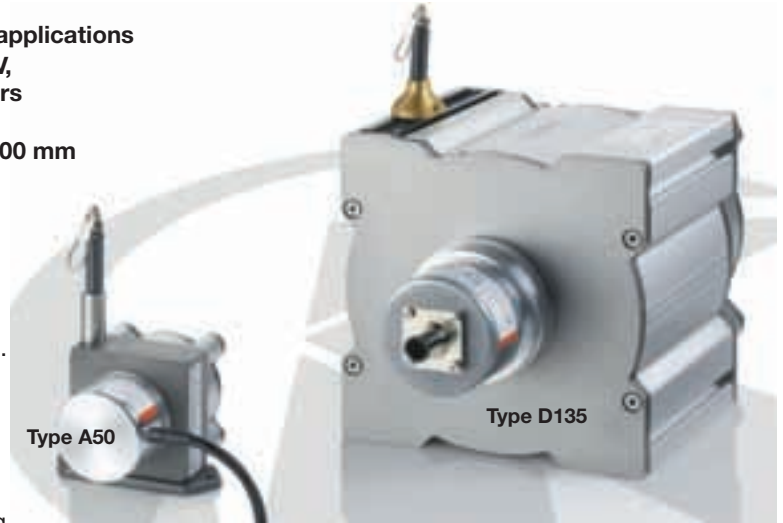


reverse polarity protection

- Specially designed for demanding applications
- For use with analog sensors (0-10 V, 4-20 mA, potentiometer) or encoders (Incremental, Absolute, Fieldbus)
- Measurement length from 250-40,000 mm
- High speed
- High acceleration

Dynamic spring traction by means of a constant force spring, long service life, approximately 2 million complete cycles.

- Simple wire fixing using clip
- Quick mounting
- Diamond-polished ceramic guide
- Titanium anodised aluminium housing



For complete specifications please visit www.turck.com/DrawWire

Slip Rings

In general, slip rings are used to transmit power, signal or data from a stationary to a rotating platform.

Advantages and benefits:

- Rugged design for industrial use
- Modular system construction, load and signal channels can be combined selectively
- Long service life and long maintenance cycles
- Separate signal channels
- Fieldbus signals such as PROFIBUS®, CANopen, etc. (up to 12 MB)



Application areas for Slip Rings:

- Packaging machines
- Textile machines
- Robots and handling equipment
- Cranes
- Pipeline inspection systems
- Video surveillance (CCTV) equipment
- Amusement park rides
- Bottling plants
- Rotary tables

For complete specifications please visit www.turck.com/SlipRings



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