

LINEAR POSITION TECHNOLOGY

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We reserve the right to make technical alterations without prior notice.

Linear Position Technology



QR14 Miniature Series, Analog Output (U/I)



Measuring Range Specifications

Measuring span (A...B):	25 mm
Blind zone (a):	17 mm
Blind zone (b):	7.5 mm
Nominal distance:	1.5 mm

System

Resolution:	12 bit
Repeat accuracy:	≤ 0.025% of full scale
Linearity deviation:	≤ 1% of full scale
Temperature drift:	≤ ±0.01% / K
Ambient temperature:	-25 to +70 °C -40 to +70 °C (S97 version)

Electrical Data

Operating voltage:	15-30 VDC (LiU5) 8-30 VDC (LU4)
Residual ripple:	≤ 10% U _{pp}
No-load current:	≤ 50 mA
Isolation test voltage:	≤ 0.5 kV
Short-circuit protection:	yes
Wire breakage / reverse polarity protection:	yes/yes (supply voltage)
Output function:	analog output
Voltage output:	0-10 V (LiU5) 0.5-4.5 V (LU4)
Current output:	4-20 mA (LiU5)
Load resistance of voltage output:	≥ 4.7 kΩ
Load resistance of current output:	≤ 0.4 kΩ
Current consumption:	< 50 mA
Sampling rate:	700 Hz

Housing Style

Housing style:	rectangular, QR14
Dimensions:	53.5 x 49 x 14 mm
Housing material:	plastic, PBT-GF30-V0
Cable quality:	5.2 mm, LifYY, PVC (LiU5) 5.2 mm, Lif 32Y32Y, TPE (LU4)
Connection:	cable/cable with connector, M12 x 1
Vibration resistance:	55 Hz (1 mm)
Shock resistance:	30 g (11 ms)
Protection class (IEC 60529/EN 60529):	IP68/IP69K

LEDs

Power on indication:	green LED
Measuring range indication:	green/green flashing (multifunctional LEDs)

Miscellaneous

Included in delivery:	P1-Li-QR14/Q17L
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Product Features

- 12 bit resolution
- Current and voltage output in one device
- M12 Eurofast connector (4-pin)
- Cable, open end
- Extreme short blind zones
- Watertight (IP68/IP69K) fully potted polycarbonate housing

Measuring Range Indicated via LED

- **Green:** The positioning element is in the measuring range.
- **Green flashing:** The positioning element is in the measuring range with a lower signal quality (e.g., the distance between sensor and element is too large).
- **Off:** The positioning element is outside the programmed range.

We reserve the right to make technical alterations without prior notice.



QR14 Miniature Series, Analog Output (U/I)

Part Number Key: QR14 Series

A	B	C	D	E	F	G
LI	25	P1	-	QR14	-	LIU5X2

A	Type
LI	Linear Inductive

B	Measuring Span
25	25 mm

C	Positioning Element, Floating
P1	P1-Li-QR14/Q17L*

*Operates at a distance of 0-4 mm from the sensor surface

D	Housing Style
QR14	Rectangular, 53.5 x 14 mm

E	Operating Voltage and Output Type
LU4X2	8-30 VDC, 0.5-4.5 V, 2 LEDs
LIU5X2	15-30 VDC, 4-20 mA, 0-10 V, 2 LEDs

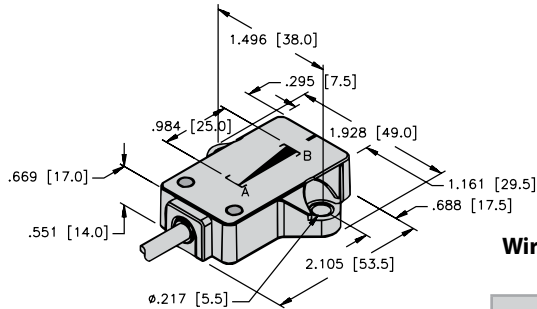
F	Type of Connection*
0.3-RS4 (Blank)	Cable (0.3 m PUR) w/ M12 Eurofast Connector Cable (2 m PUR)

*TPE cable for output type 'LU4X2'.

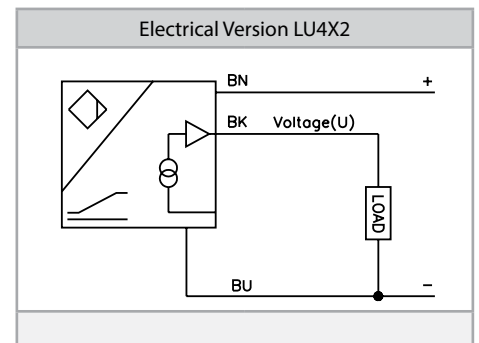
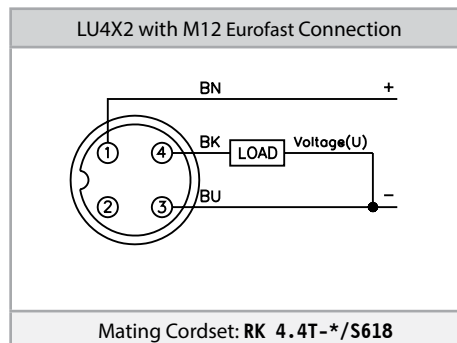
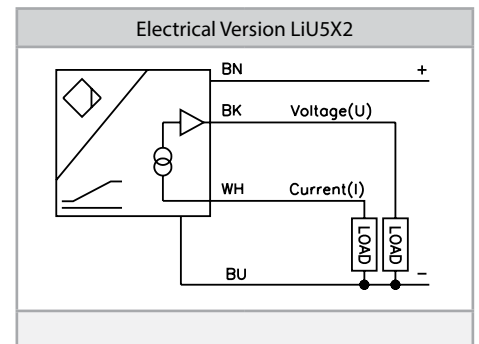
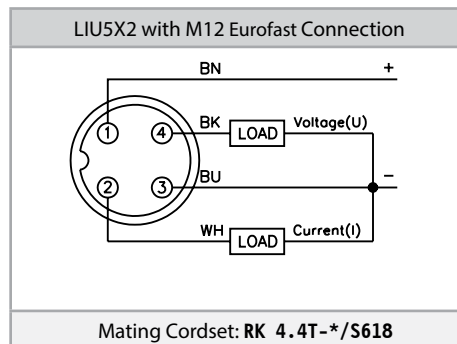
G	Specials (Optional)
S97	-40 to +70 °C Extended Temperature Range ¹⁾

¹⁾ Only available for output type 'LU4X2'.

Dimensions: QR14 Series



Wiring Diagram: QR14



See page H1, Connectivity, for cables and connectors.

We reserve the right to make technical alterations without prior notice.

Linear Position Technology

Q17L Compact Series, Analog Output (U/I)



Measuring Range Specifications

Max. measuring span:	50, 100, 150, 200, 300 mm
Blind zone (a):	22 mm
Blind zone (b):	9 mm (Li50 = 16 mm)
Nominal distance:	1.5 mm

System

Resolution:	12 bit
Repeat accuracy:	≤ 0.025% of full scale
Linearity deviation:	≤ 0.5% of full scale
Temperature drift:	≤ ±0.01 % / K
Ambient temperature:	-25 to +70 °C -40 to +70 °C (S97 version)

Electrical Data

Operating voltage:	15-30 VDC (LIU5) 8-30 VDC (LU4)
Residual ripple:	≤ 10% U _{PP}
No-load current:	≤ 50 mA
Isolation test voltage:	≤ 0.5 kV
Short-circuit protection:	yes
Wire breakage / reverse polarity protection:	yes/yes (supply voltage)
Output function:	4-wire, analog output
Voltage output:	0-10 V (LIU5) 0.5-4.5 V (LU4)
Current output:	4-20 mA (LIU5)
Load resistance of voltage output:	≥ 4.7 kΩ
Load resistance of current output:	≤ 0.4 kΩ
Current consumption:	< 50 mA
Sampling rate:	700 Hz

Housing Style

Housing style:	rectangular, Q17L
Dimensions:	20 x 16.5 mm, length L = measuring length + 32 mm, (Li50 + 38 mm)
Housing material:	plastic, PC-GF10
Cable quality:	5.2 mm, Li9YH-11YH, PUR (LIU5) 5.2 mm, Lif32Y32Y, TPE (LU4)
Connection:	cable/cable with connector, M12 x 1
Vibration resistance:	55 Hz (1 mm)
Shock resistance:	30 g (11 ms)
Protection class (IEC 60529/EN 60529):	IP67

Miscellaneous

Included in delivery:	P1-Li-QR14/Q17L (position element), M1.1-Q17L, M1.2-Q17L (mounting feet)
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Product Features

- 12 bit resolution
- Current and voltage output in one device
- M12 Eurofast connector (5-pin)
- Cable, open end
- Extreme short blind zones
- Programmable measuring range
- Watertight (IP67) fully potted polycarbonate housing

Measuring Range Indicated via LED

- **Green:** The positioning element is in the measuring range.
- **Green/flashing:** The positioning element is in the measuring range with a lower signal quality (e.g., the distance between sensor and element is too large).
- **Off:** The positioning element is outside the programmed range.

Setting the Measuring Range

The initial and final value of the measuring range is set at the push of a button, either via a teach adapter or programming line (pin 5). Furthermore, the output curve can be inverted.

- Factory setting (0 V/4 mA at the connector end): Jumper pin 5 and pin 1 for 10 sec.
- Factory setting inverted: Jumper pin 5 and pin 3 for 10 sec.
- Setting the initial value: Move positioning element to desired position and jumper pin 5 and pin 3 for 2 sec.
- Setting the final value: Move positioning element to desired position and jumper pin 5 and pin 1 for 2 sec.

We reserve the right to make technical alterations without prior notice.



Q17L Compact Series, Analog Output (U/I)

Part Number Key: Q17L Series

A	B	C	D	E	F	G	H				
LI	50	P1	-	Q17L	M1	-	LU4X2	-	0.3M-RS5	/	S97

A	Type
LI	Linear Inductive

B	Measuring Span
50	50 mm
100	100 mm
150	150 mm
200	200 mm
300	300 mm

C	Positioning Element, Floating
P1	P1-Li-QR14/Q17L*

*Operates at a distance of 0-4 mm from the sensor surface

D	Housing Style
Q17L	Rectangular, 16.5 x 20 mm

E	Mounting Bracket
M1	M1.1-Q17L and M1.2-Q17L

F	Operating Voltage and Output Type
LU4X2	8-30 VDC, 0.5-4.5 V, 2 LEDs
LIU5X2	15-30 VDC, 4-20 mA, 0-10 V, 2 LEDs

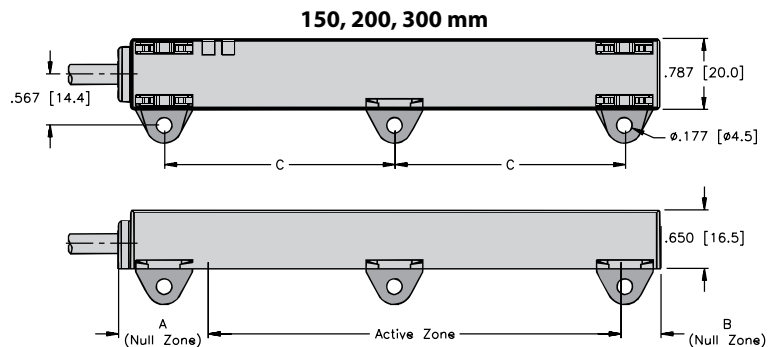
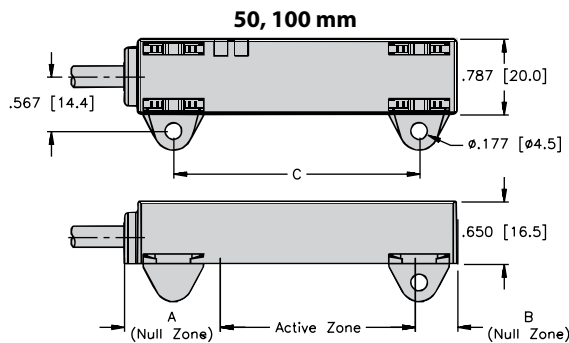
G	Type of Connection*
0.3M-RS5 (Blank)	Cable (0.3 m PUR) w/ M12 Eurofast Connector Cable (2 m PUR)

*TPE cable for output type 'LU4'.

H	Specials (Optional)
S97	-40 to +70 °C Extended Temperature Range ¹⁾

¹⁾Only available for output type 'LU4'.

Dimensions: Q17L Series



Wiring Diagram: Q17L

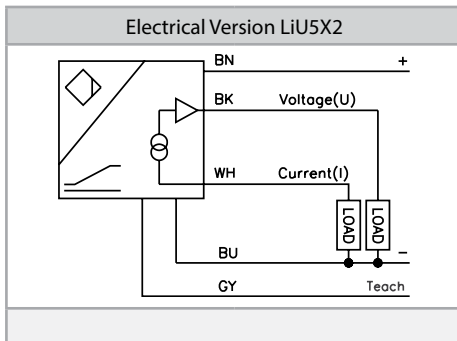
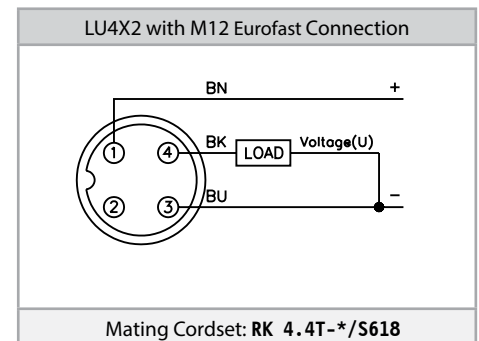
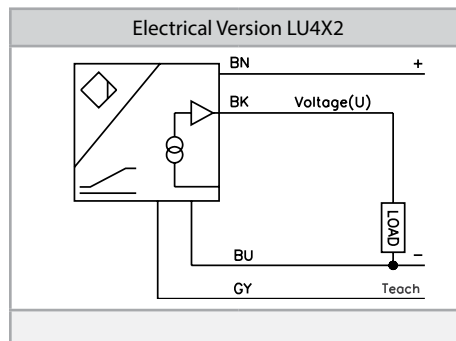
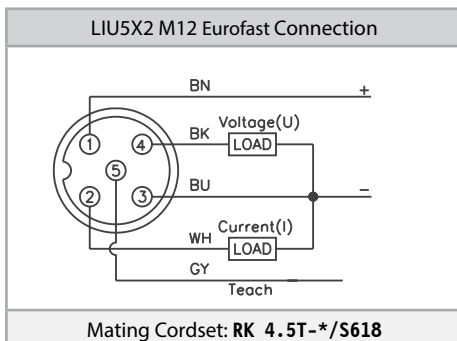


Table 1:

Measuring Range	Mounting Hole Dimensions (C)
50 mm	65 mm
100 mm	108 mm
150 mm	79 mm
200 mm	104 mm
300 mm	154 mm

See page H1, Connectivity, for cables and connectors.



* Length in meters.

We reserve the right to make technical alterations without prior notice.

Linear Position Technology



E-Series with Enhanced Resolution, Analog Output (U/I)



Assembly part number:
Li200P1-Q25LM2-ELIU5X3-H1151

Measuring Range Specifications

Measuring span (L):	100, 200, 300, 400, 500, 600, 700, 800, 900, 1,000 1250, 1500, 1750, 2000 mm
Blind zone (a):	29 mm
Blind zone (b):	29 mm
Nominal distance:	1.5 mm

System

Resolution:	16 bit (measuring range in mm/65536)
Repeatability:	≤ 0.02% of full scale
Linearity deviation:	≤ 0.1% of full scale (under the influence of shock and vibration)
Temperature drift:	≤ ±0.003 %/K
Ambient temperature:	-25 to +70 °C

Electrical Data

Operating voltage:	15-30 VDC
Residual ripple:	≤ 10% U _{pp}
No-load current:	≤ 50 mA
Isolation test voltage:	≤ 0.5 kV
Short-circuit protection:	yes
Wire breakage / reverse polarity protection:	yes/yes (supply voltage)
Output function:	5-wire, analog output
Voltage output:	0-10 V
Current output:	4-20 mA
Diagnostic:	output signal 24 mA or 11 V (positioning element not within detection range)
Load resistance of voltage output:	≥ 4.7 kΩ
Load resistance of current output:	≤ 0.4 kΩ
Current consumption:	< 100 mA
Sample rate:	5000 Hz

Housing Style

Housing style:	rectangular, Q25L
Dimensions:	profile 35 x 25 mm, L = measuring range + 58 mm
Housing material:	aluminum
Material active face:	plastic, PA6-GF30
Connection:	connector, M12 x 1
Vibration resistance (EN 60068-2-6):	20 g; 1.25 h/axis; 3 axis
Shock resistance (EN 60068-2-27):	200 g; 4 ms 1/2 sine
Protection class (IEC 60529/EN 60529):	IP67, IP66

LEDs

Power indication:	green LED
Measuring range indication:	green/yellow multifunctional LED

Product Features

- 16 bit resolution
- Current and voltage output in one device (5-wire, 15-30 VDC)
- M12 Eurofast connector (5-pin)
- 29 mm blind zones
- Programmable measuring range
- Captive and floating (0-4 mm from sensing face) position elements available
- Robust extruded aluminum housing
- Watertight (IP67) polycarbonate insert
- Multifunction LED

Measuring Range Indicated via LED

- **Green:** The positioning element is in the measuring range.
- **Yellow:** The positioning element is in the measuring range with a lower signal quality (e.g., the distance between sensor and element is too large).
- **Yellow flashing:** The positioning element is outside of the measuring range (max. range).
- **Off:** The positioning element is outside the programmed range but inside the total, non-programmed measuring length.

Setting the Measuring Range

The initial and final value of the measuring range is set at the push of a button, either via a teach adapter or programming line (pin 5). Furthermore, the output curve can be inverted.

- Factory setting (0 V/4 mA at the connector end): Jumper pin 5 and pin 1 for 10 sec.
- Factory setting inverted: Jumper pin 5 and pin 3 for 10 sec.
- Setting the initial value: Move positioning element to desired position and jumper pin 5 and pin 3 for 2 sec.
- Setting the final value: Move positioning element to desired position and jumper pin 5 and pin 1 for 2 sec.

Optional

- Teach lock/unlock: Jumper pin 5 and pin 1 for 30 sec. After 30 sec. the flashing changes to fast flashing. The teach lock is recommended in situations where it is necessary to prevent alterations of parameters.

We reserve the right to make technical alterations without prior notice.



E-Series with Enhanced Resolution, Analog Output (U/I)

Part Number Key: E-Series

A	B	C		D	E		F		G
LI	100	P0	-	Q25L	M0	-	ELIU5X3	-	H1151

A	Type
LI	Linear Inductive

D	Housing Style
Q25L	Rectangle, 25 x 35 mm

B	Measuring Span
100	100 mm
200	200 mm
300	300 mm
400	400 mm
500	500 mm
600	600 mm
700	700 mm
800	800 mm
900	900 mm
1000	1000 mm
1250	1250 mm
1500	1500 mm
1750	1750 mm
2000	2000 mm

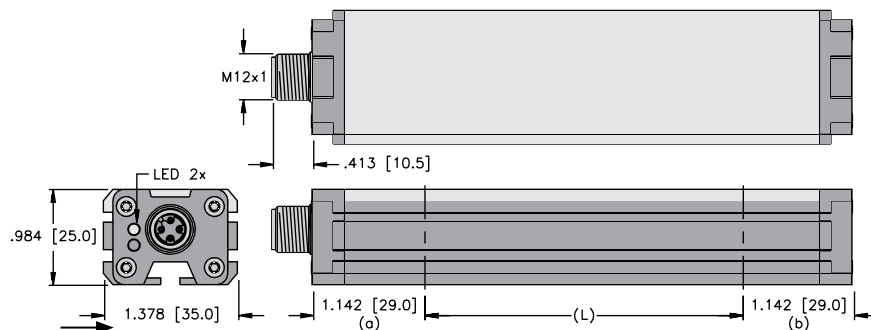
E	Mounting Bracket
M0	No Mounting Brackets
M1	M1-Q25L
M2	M2-Q25L
M3	M3-Q25L

F	Operating Voltage and Output Type
ELIU5X3	15-30 VDC, 4-20 mA, 0-10 V, 3 LEDs

C	Positioning Element
P0	No Positioning Element
P1	P1-Li-Q25L (Captive)
P2	P2-Li-Q25L (Floating)*
P3	P3-Li-Q25L (Floating, Right Angle)*

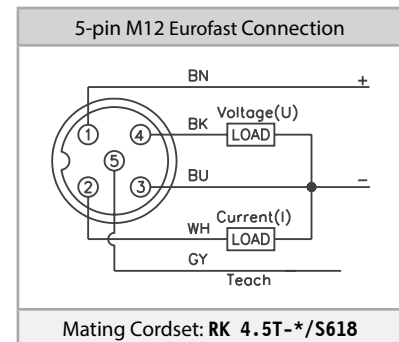
*Operates at a distance of 0-4 mm from the sensor surface

Dimensions: E-Series



Note: Right angle cable direction

Wiring Diagram: E-Series



Mating Cordset: **RK 4.5T-*/S618**

* Length in meters.

Ordering Information

The Q-track linear position sensors are available in different lengths from 100 to 2,000 mm, in increments of 100 mm. The sensors, mounting accessories, and positioning elements are available individually or as a kit.

See page H1, Connectivity, for cables and connectors.

We reserve the right to make technical alterations without prior notice.

Linear Position Technology



HE-Series with Enhanced Resolution and SSI Interface



Assembly part number:

Li100P2-Q25LM1-HESG25X3-H1181

Measuring Range Specifications

Measuring span (L):	100, 200, 300, 400, 500, 600, 700, 800, 900, 1,000 mm
Blind zone (a):	29 mm
Blind zone (b):	29 mm
Nominal distance:	1.5 mm

System

Resolution:	0.001 mm
Repeatability:	10 µm (0.01 mm)
Linearity deviation:	≤ 0.1% of full scale
Temperature drift:	≤ ±0.0001 % / K
Ambient temperature:	-25 to +70 °C

Electrical Data

Operating voltage:	15-30 VDC
Residual ripple:	≤ 10% U _{pp}
Isolation test voltage:	≤ 0.5 kV
Short-circuit protection:	yes
Wire breakage / reverse polarity protection:	yes/yes (voltage supply)
Output function:	8-wire, SSI, 25 bit gray code
Process data area:	bit 0.... bit 19
Diagnostic bits:	bit 21: Positioning element left the measuring range and is outside the detectable area bit 22: Positioning element is in the measuring range, lower signal quality (e.g., distance is too large) bit 23: Positioning element is outside the measuring range) bit 24: Synchronous operation active
Current consumption:	< 50 mA
Sample rate:	5 kHz

Housing Style

Housing style:	rectangular, Q25L
Dimensions:	profile 35 x 25 mm, L = measuring range + 58 mm
Housing material:	aluminum
Material active face:	plastic, PA6-GF30
Connection:	connector, M12 x 1
Vibration resistance:	55 Hz (1 mm)
Shock resistance:	30 g (11 ms)
Protection class (IEC 60529/EN 60529):	IP67

LEDs

Power indication:	green LED
Measuring range indication:	green/yellow multifunctional LED

Product Features

- Enhanced resolution (up to 20 bit) depending on sensor length
- Enhanced sample rate of 5 kHz
- Excellent temperature stability and linearity through direct digital signal transmission
- SSI interface
- M12 Eurofast connector (8-pin)
- 29 mm blind zones
- Robust extruded aluminum housing
- Watertight (IP67) polycarbonate insert
- Multifunction LED

Measuring Range Indicated via LED

- **Green:** The positioning element is in the measuring range.
- **Yellow:** The positioning element is in the measuring range with a lower signal quality (e.g., the distance between sensor and element is too large).
- **Yellow flashing:** The positioning element is outside of the measuring range (max. range).
- **Off:** The positioning element is outside the programmed range but inside the total, non-programmed measuring length.

High-Precision Digital SSI Output

SSI (synchronous serial interface) is a 4-wire data communication standard commonly used in industry to transmit position data digitally. The conductors in the cable are shielded twisted pairs that enhance EMI/RFI protection. In addition to the clock and data wires, it also has separate power wiring.

We reserve the right to make technical alterations without prior notice.



HE-Series with Enhanced Resolution and SSI Interface

Part Number Key: HE-Series / SSI

A	B	C		D	E		G		H
LI	100	P0	-	Q25L	M0	-	HESG25X3	-	H1181

A	Type
LI	Linear Inductive

D	Housing Style
Q25L	Rectangular, 25 x 35 mm

B	Measuring Span
100	100 mm
200	200 mm
300	300 mm
400	400 mm
500	500 mm
600	600 mm
700	700 mm
800	800 mm
900	900 mm
1000	1000 mm

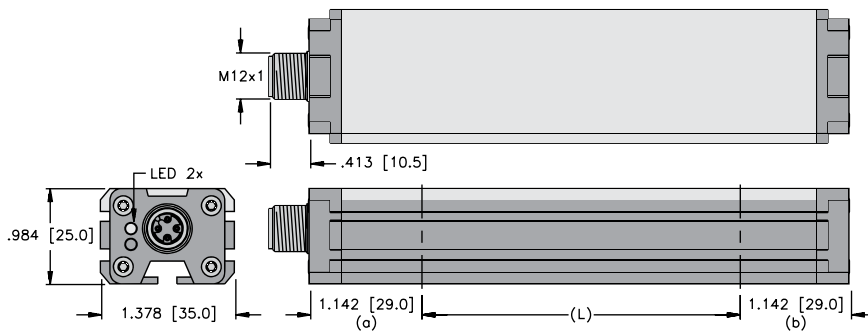
E	Mounting Bracket
M0	No Mounting Brackets
M1	M1-Q25L
M2	M2-Q25L
M3	M3-Q25L

G	Operating Voltage and Output Type
HESG25X3	15-30 VDC, SSI, Gray Code, 25 bit, 3 LEDs

C	Positioning Element
P0	No Positioning Element
P1	P1-Li-Q25L (Captive)
P2	P2-Li-Q25L (Floating)*
P3	P3-Li-Q25L (Floating, Right Angle)*

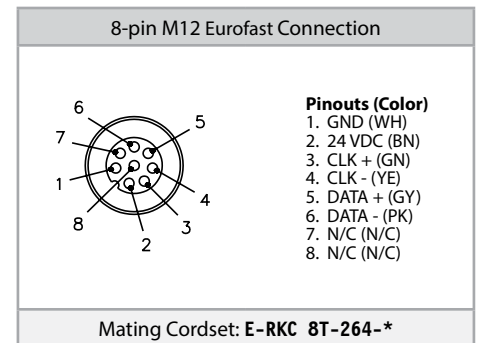
*Operates at a distance of 0-4 mm from the sensor surface

Dimensions: HE-Series / SSI



Note: Right angle cable direction

Wiring Diagram: E-Series / SSI



* Length in meters.

Ordering Information

The Q-track linear position sensors are available in different lengths from 100 to 1,000 mm, in increments of 100 mm. The sensors, mounting accessories, and positioning elements are available individually or as a kit.

See page H1, Connectivity, for cables and connectors.

We reserve the right to make technical alterations without prior notice.

Linear Position Technology

E-Series with Enhanced Resolution, IO-Link Compatible



Assembly part number:
Li300P1-Q25LM1-ELIUPN8X3-H1151

Measuring Range Specifications

Measuring span (L):	100, 200, 300, 400, 500, 600, 700, 800, 900, 1,000 mm
Blind zone (a):	29 mm
Blind zone (b):	29 mm
Nominal distance:	1.5 mm

System

Resolution:	16 bit (D/A converter and IO-Link) measuring range in mm / 65536)
Repeatability:	0.0015% (0.0015 mm per 100 mm)
Linearity deviation:	≤ 0.035% of full scale
Temperature drift:	≤ ±0.003 % / K
Ambient temperature:	-25 to +70 °C

Electrical Data

Operating voltage:	15-30 VDC
Residual ripple:	≤ 10% U _{pp}
Isolation test voltage:	≤ 0.5 kV
Short-circuit protection:	yes
Wire breakage / reverse polarity protection:	yes/yes (voltage supply)
Output function:	two programmable outputs (analog output current or voltage, switching outputs, PWM, ...) IO-Link compatible Factory setting: 0-10 V on pin 2, PNP switching output on pin 4. Changes to settings via IO-Link only.
Load resistance of voltage output:	≥ 4.7 kΩ
Load resistance of current output:	≤ 0.4 kΩ
Current consumption:	< 50 mA
Sample rate:	1000 Hz

Housing Style

Housing style:	rectangular, Q25L
Dimensions:	profile 35 x 25 mm, L = measuring range + 58 mm
Housing material:	aluminum
Material active face:	plastic, PA6-GF30
Connection:	connector, M12 x 1
Vibration resistance:	55 Hz (1 mm)
Shock resistance:	30 g (11 ms)
Protection class (IEC 60529/EN 60529):	IP67

LEDs

Power indication:	green LED
Measuring range indication:	green/yellow multifunctional LED

Product Features

- Enhanced resolution of 16 bit
- Enhanced sample rate 1 kHz
- Improved linearity
- Two programmable outputs (analog output current or voltage, switching outputs, PWM) IO-Link compatible
- M12 Eurofast connector (5-pin)
- 29 mm blind zones
- Robust extruded aluminum housing
- Watertight (IP67) polycarbonate insert
- Multifunction LED

Measuring Range Indicated via LED

- **Green:** The positioning element is in the measuring range.
- **Yellow:** The positioning element is in the measuring range with a lower signal quality (e.g., the distance between sensor and element is too large).
- **Yellow flashing:** The positioning element is outside of the measuring range (max. range).
- **Off:** The positioning element is outside the programmed range but inside the total, non-programmed measuring length.

Programming and IO-Link

Output functions, measuring ranges and alarm outputs are set via a teach adapter or programming line (pin 5). Alternatively, the sensor can also be operated in IO-Link mode. For this purpose, connect the sensor to an IO-Link compatible module. The established connection is indicated by a green flashing LED. For more information, please see the corresponding instruction manual.

We reserve the right to make technical alterations without prior notice.



E-Series with Enhanced Resolution, IO-Link Compatible

Part Number Key: E-Series / IO-Link

A	B	C		D	E		G		H
LI	100	P0	-	Q25L	M0	-	ELIUPN8X3	-	H1151

A	Type
LI	Linear Inductive

D	Housing Style
Q25L	Rectangular, 25 x 35 mm

B	Measuring Span
100	100 mm
200	200 mm
300	300 mm
400	400 mm
500	500 mm
600	600 mm
700	700 mm
800	800 mm
900	900 mm
1000	1000 mm

E	Mounting Bracket
M0	No Mounting Brackets
M1	M1-Q25L
M2	M2-Q25L
M3	M3-Q25L

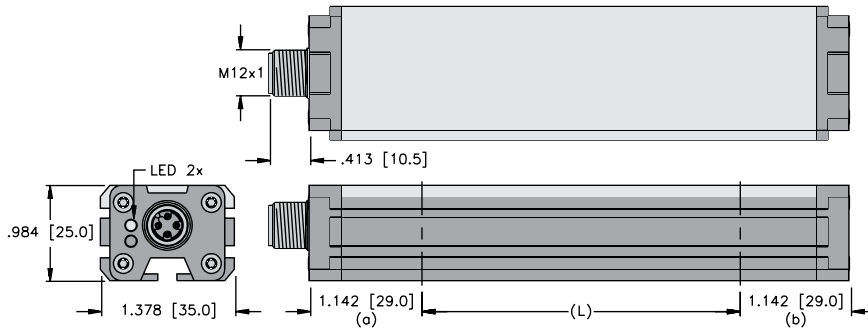
G	Operating Voltage and Output Type
ELIUPN8X3	15-30 VDC, IO-Link Configurable, 3 LEDs

H	Type of Connection
H1151	5-pin M12 Eurofast Connector

C	Positioning Element
P0	No Positioning Element
P1	P1-Li-Q25L (Captive)
P2	P2-Li-Q25L (Floating)*
P3	P3-Li-Q25L (Floating, Right Angle)*

*Operates at a distance of 0-4 mm from the sensor surface

Dimensions: E-Series / IO-Link



Note: Right angle cable direction

Ordering Information

The Q-track linear position sensors are available in different lengths from 100 to 1,000 mm, in increments of 100 mm. The sensors, mounting accessories, and positioning elements are available individually or as a kit.

Sample Networked Communication: IO-Link Master

The following components can be used to connect a linear position sensor through IO-Link to any Turck supported network protocol:

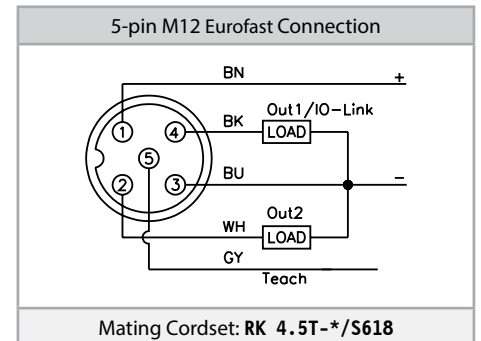
	BL20	BL67	TBEN	BLC
1 x IO-Link Master	BL20-E-4IOL	BL67-4IOL	TBEN-*.IOL	BLCEN-*.4IOL-*
1 x BL67 Base	N/A	BL67-B-4M12	N/A	N/A
1 x Connection Cable	RK 4.4T-*	RK 4.4T-*.RS 4.4T	RK 4.4T-*.RS 4.4T	RK 4.4T-*.RS 4.4T

Sample Configuration: IO-Link Master

The following components can be used for parameterization of a linear sensor through IO-Link:

1 x IO-Link Master	USB-2-IOL-0002
1 x Connection Cable	RK 4.5T-*.RS 4.5T

Wiring Diagram: E-Series / IO-Link



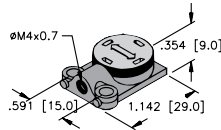
Mating Cordset: RK 4.5T-*/S618

* Length in meters.

See page H1, Connectivity, for cables and connectors.

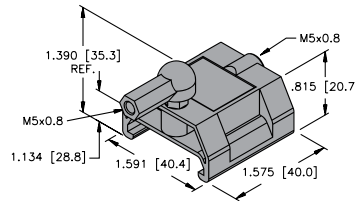


Q-track Accessories – Position Elements



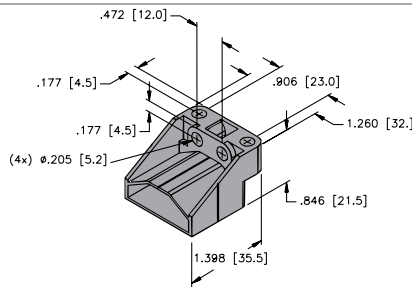
P1-Li-QR14/Q17L

Floating position element for LI-QR14 and LI-Q17L linear position sensors; transverse and longitudinal mounting possible; Nominal distance to the sensor is 1.5 mm; pairing with the linear sensor at a distance of up to 3 mm or misalignment tolerance of up to 3 mm.



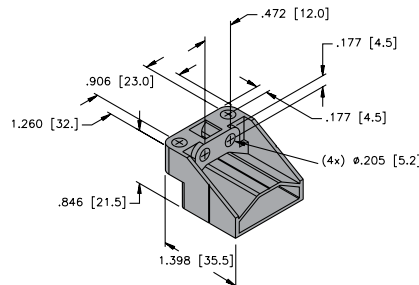
P1-Li-Q25L

Captive positioning element; laterally inserted in sensor groove; include rod-end bearing to mount M5 threaded rods.



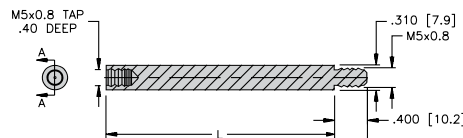
P2-Li-Q25L

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



P3-Li-Q25L

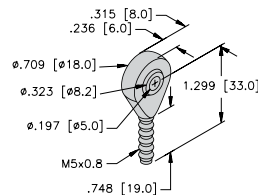
Floating position element for LI-Q25L linear position sensors; operational at an offset of 90°; Nominal distance to the sensor is 1.5 mm; pairing with the linear sensor at a distance of up to 5 mm or misalignment tolerance of up to 4 mm.



CA*E-Q21

Control arm; Can be used with **P1-Li-Q25L** and **RE-Q21** to connect the positioning element to an actuator.

* Length specified in inches.
3, 6 and 9 inches are standard lengths.
Other lengths available, consult factory for part numbers and availability.

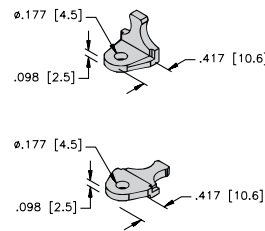


RE-Q21

Rod End; Can be used with **P1-Li-Q25L** and **CA*E-Q21** to connect the positioning element to an actuator.

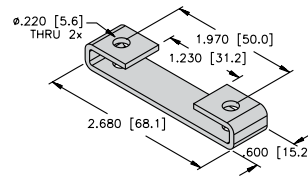


Q-track Accessories – Mounting Accessories



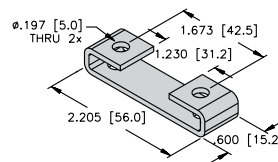
M1.1-Q17L (right angle) (3 pcs per bag)
M1.2-Q17L (straight) (3 pcs per bag)

Mounting feet for inductive linear position sensor Q17L. Each sensor is delivered with a sufficient quantity of M1.1-Q17L and M1.2-Q17L for mounting.



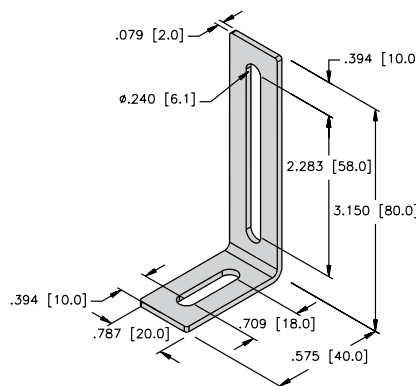
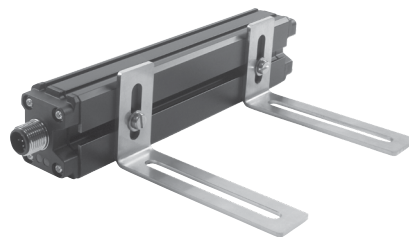
M1-Q25L

Mounting foot for LI-Q25L linear position sensors; Two mounting feet should be used for devices with a measuring range of up to 1,000 mm; Material: stainless steel; 2 pcs. per bag.



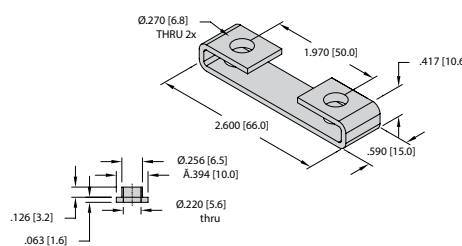
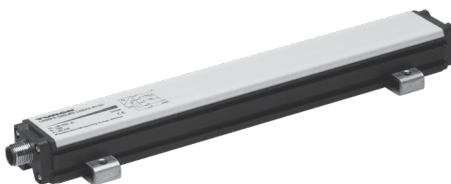
M2-Q25L

Mounting foot for LI-Q25L linear position sensors; Two mounting feet should be used for devices with a measuring range of up to 1,000 mm; Material: stainless steel; 2 pcs. per bag.



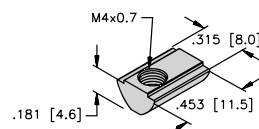
M4-Q25L

Mounting bracket for LI-Q25L linear position sensors; Two mounting feet should be used for devices with a measuring range of up to 1,000 mm; Material: stainless steel; 2 pcs. per bag.



M5-Q25L

Mounting foot for LI-Q25L linear position sensors; Two mounting feet should be used for devices with a measuring range of up to 1,000 mm; Includes isolation sleeves; Material: anodized aluminum, nylon; 2 sets per bag.



MN-M4-Q25

Sliding blocks with M4 thread for back side groove of LI-Q25L linear position sensors; Material: Brass; 10 pcs. per bag.

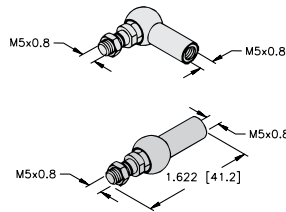
Only available separately, not as a kit with linear position sensors.

We reserve the right to make technical alterations without prior notice.

Linear Position Technology

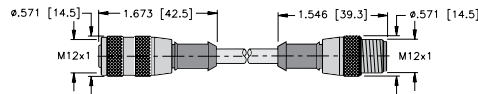


Q-track Accessories



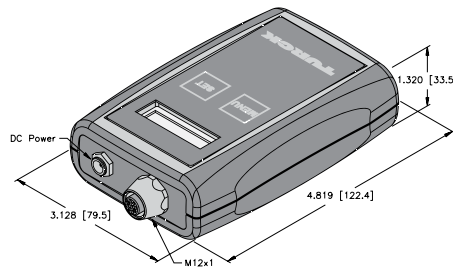
RBVA-M5
Angle joint for M5 thread, stainless steel

ABVA-M5
Axial joint for M5 thread, stainless steel

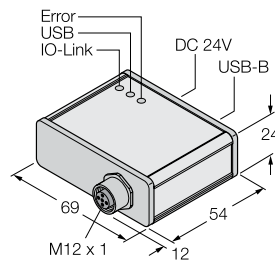
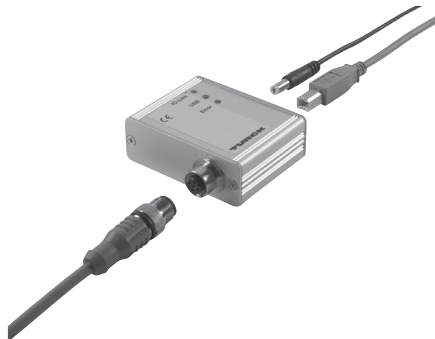


RK 4.5T-* -RS 4.4T/S3107 Cable
To convert existing wiring from EZ-track installation with current output to Q-track current output.

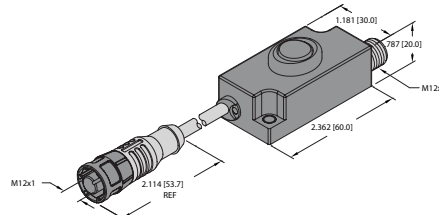
RK 4.5T-* -RS 4.4T/S3108 Cable
To convert existing wiring from EZ-track installation with voltage output to Q-track voltage output.



TB4 V.2
Analog test box for sensors with analog or switching outputs, incl. batteries.



USB-2-IOL-0002
IO-Link master with integrated USB interface for parameterization of IO-Link compliant linear position sensors via PC.



TX1-Q20L60
Teach adapter to program measuring range of inductive position sensors.

We reserve the right to make technical alterations without prior notice.



Analog Profile Series



EZ-track LDT's profile style probes use magnetostrictive technology by applying a mechanical strain pulse to a magnetostrictive waveguide that runs the length of the sensor. When the strain pulse encounters a magnetic field produced by the slide or floating magnet assembly, a current pulse is produced that is picked up by the electronic circuitry. A high

speed timer measures the time difference between the applied strain pulse and the return of the induced current pulse. This time, proportional to position is compared to the "zero" and "span" positions established during the calibration process to scale the output. Once the position has been scaled accordingly, it is converted to a signal in the form of an analog (voltage or current) output, quadrature pulse output, or digital (PWM or start/stop) outputs.

Enhanced Resolution Analog Profile Series (Q21R/Q35R) Specifications:

Output:	<u>Current:</u> 20 to 4 mA 4 to 20 mA	<u>Voltage:</u> 0 to 10 V 10 to 0 V	<u>Differential:</u> 0 to 10 V 4 to 20 mA
Load impedance:	$\leq (\text{voltage in} - 4) \div 0.02 \text{ A}$ (example: 10 VDC \leq 300 Ω)		$\geq 1000 \Omega$
Q21R span:	4 to 180 in		
Q35R span:	5 to 36 in		
Repeatability:	+/-0.006% of full span or +/-0.002 in, whichever is greater		
Resolution:	0.001 in internal (For span lengths < 65 in); 16 bit (For lengths > 65 in)		
Non-linearity:	+/-0.05% of stroke		
Operating temperature:	-4 to +158 °F (-20 to +70 °C)		
Null zone:	3.00 in		
Dead zone:	2.00 in		
Operating voltage:	13.5-30 VDC		
Current consumption:	120 mA at 15 VDC, 2.5 watts maximum		
Response time:	≤ 50 in	1 ms	
	51 to 100 in	2 ms	
	101 to 150 in	3 ms	
	151 to 180 in	4 ms	
LED:	Green = Power is applied and magnet is present in the programmed range Red = Fault, magnet is in the Null Zone, Dead Zone or lost Yellow = Magnet is out of the active programmed range, but still within the active stroke area		
Protection rating:	Electronics: IP67, IP68 optional Rod housing: IP65		
Agency approval:	CE		

Standard Resolution Analog Profile Series (Q21/Q35) Specifications:

Output:	<u>Current:</u> 20 to 4 mA 4 to 20 mA	<u>Voltage:</u> +5 to -5 V 0 to +10 V -5 to +5 V +10 to 0 V 0 to +5 V -10 to +10 V +5 to 0 V +10 to -10 V
Load impedance:	$\leq (\text{voltage in} - 4) \div 0.02 \text{ A}$ (example: 10 VDC \leq 300 Ω)	
Q21 span:	4 to 180 in	
Q35 span:	5 to 36 in	
Repeatability:	+/-0.01% of full span or +/-0.014 in, whichever is greater	
Resolution:	0.014 in for stroke lengths less than 60 in; For lengths over 60 in: 12 bits	
Non-linearity:	+/-0.05% of stroke or +/-0.028 whichever is greater	
Accuracy:	+/-0.1% of stroke or +/-0.050 whichever is greater	
Operating temperature:	-40 to +158 °F (-40 to +70 °C)	
Null zone:	3.00 in	
Dead zone:	1.50 in	
Operating voltage:	10-30 VDC	
Current consumption:	100 mA (maximum)	
Response time:	50 in or less: 1 ms updates with 5 ms settling time 50 in or greater: 2 ms updates with 4 ms settling time	
LED:	Green = power is applied and magnet is present in the programmed range Red = fault, magnet is in the null zone, dead zone or lost Yellow = magnet is out of the active programmed range, but still within the active stroke area	
Protection rating:	Electronics: IP67, IP68 optional Rod housing: IP65	
Agency approval:	CE, FM Class I, Div 2	

Low Profile Extrusion Housing:

The Q21 series is housed in low profile, environmentally sealed, anodized aluminum housings. The electronics and the sensing element are incorporated into a housing that is less than 1 inch tall without the need for a can or head on the sensor to house the electronics

Diagnostic LED:

The EZ-track Series utilizes a diagnostic LED that enables the operator to understand the state of the sensor dependent upon the position of the target magnet.

The LED flashes to indicate it is in AGC mode (Q21 and Q35 series). This feature simplifies programming and troubleshooting, effectively reducing setup and maintenance time.

Various Analog Outputs

Available Profile Style:

The Q21 and Q35 series may be ordered in a variety of outputs.

Although sensors may be ordered with any of the above outputs, the units may easily be changed in the field to reverse the analog signal. Thus, one model can be used for two applications by programming the "zero" and "span" appropriately.

Automatic Gain Control:

The Automatic Gain Control (AGC) feature allows the EZ-track to sense a magnet other than the standard slide magnet and adjust to the magnetic field strength accordingly. With the ability to sense a standard floating magnet up to 3/8 inch away, the user has greater mounting flexibility for various applications.

FM Approved Installation

(Class I, Division 2):

The EZ-track Q21 unit can be ordered for use in a Class I, Division 2 environment. The unit utilizes a Lock-Euro-G.

Analog Profile Series

Part Number Key: Analog Profile Series

A	B	C		D	E		F	G	H		I		J
LT	40	E	-	Q21	R	-	LI	0	X3	-	H1151	/	S1661

A	Type
LT	Linear Transducer

B	Measuring Span
*	Length of Measuring Span

C	Housing
E	Inches

D	Housing Height
Q21	21 mm
Q35	35 mm

E	Resolution
(Blank)	Standard Resolution
R	Enhanced Resolution

F	Output Configuration
LI	Current
LU	Voltage
LD	Differential ¹⁾

G	Output Type		
	Current	Voltage	Differential
0	4-20 mA	0 to 10 V	0 to 10 V ³⁾
1	20-4 mA	10 to 0 V	4 - 20 mA ³⁾
2		-10 to 10 V ²⁾	
3		10 to -10 V ²⁾	
4		0 to 5 V ²⁾	
5		5 to 0 V ²⁾	
6		-5 to 5 V ²⁾	
7		5 to -5 V ²⁾	

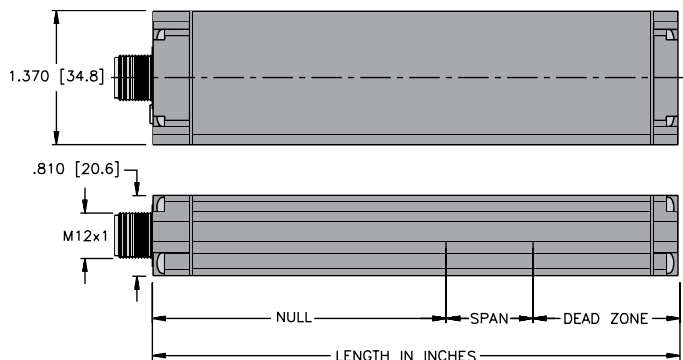
H	Number of LEDs
X3	3 Diagnostic LEDs

I	Type of Connection
H1141	4-pin M12 Eurofast Connector ²⁾
H1151	5-pin M12 Eurofast Connector ³⁾

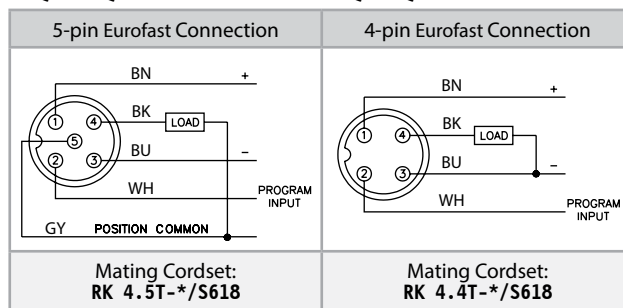
J	Specials
(Blank)	IP67
S1661	IP68

Note: In addition to the LDT, a typical system includes a magnet, mounting feet and cable (all sold separately).

Dimensions: Q21 Analog Profile Series

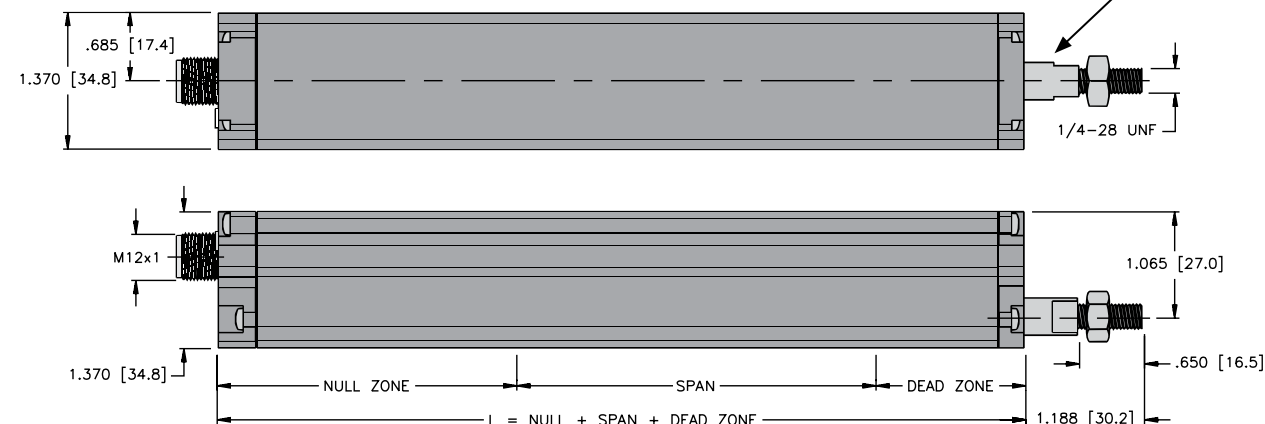


Wiring Diagrams: Q21R/Q35R



* Length in meters.

Dimensions: Q35 Analog Profile Series



Quadrature Profile Series



Direct Quadrature Output:

Directly interface to the PLC input card and reduce installation time, vendors and cost. The Q21-DQ provides A and B channel quadrature output signals that are proportional to the position of the magnet assembly along the length of the probe, and output directly from the transducer to the controller. The quadrature output makes it possible to directly interface to virtually any incremental encoder input or counter card, eliminating costly absolute encoder converters and special PLC interface modules.

An index channel (Z) is also provided and its position may be set by the user at any position along the active system. The A, B and Z channels are differential outputs: the connection for each output consists of two signal wires. These are typically described as the "+" and "-" signals. Differential signals are much less prone to interference caused by electrical noise or ground loops often found in single ended connections.

Quadrature Profile Series (Q21-DQ/Q35-DQ) Specifications:

Output:	Quadrature, A, \bar{A} , B, \bar{B} , Z, \bar{Z}	
Span:	5 to 180 in (Q35 maximum span is 36 in)	
Repeatability:	+/-0.006% of full span	
Resolution:	0.001 in internal (1000 pulses per in)	
Operating temperature:	-4 to +158 °F (-20 to +70 °C)	
Null zone:	3.00 in	
Dead zone:	2.00 in	
Operating voltage:	13.5-30 VDC	
Current consumption:	3 watts maximum (1 watt typical)	
Response time:	≤ 40 in	1 ms
	≤ 41 to 100 in	2 ms
	101 to 150 in	3 ms
	151 to 180 in	4 ms
Inputs:	Option N	NPN (used with sourcing outputs)
	Option P	PNP (used with sinking outputs)
	Option T	TTL
	Option R	5 V differential
	Option L	10 to 30 VDC, Volt = Vin-1 Volt
Output frequency:	10 kHz - 1 MHz	
Nonlinearity:	+/-0.05% of full span	
LED:	Green = Power is applied and magnet is present in the programmed range Red = Fault, magnet is in the Null Zone, Dead Zone or lost	
Protection rating:	Electronics: IP67, IP68 optional Rod housing: IP65	
Agency approval:	CE	

Incremental Output, Absolute Functionality:

The Q21-DQ allows you to use an incremental output, while taking advantage of an absolute sensing technology. The Burst Input on the transducer triggers a data transfer of all incremental position data relative to the transducer's zero position. This can be used to achieve absolute position updates when power is restored to the system or anytime an update is needed to re-zero or home the machine.

Programmable Zero Point:

The zero input allows you to set the probes reference position at any point along the active span. The probe will output an increasing or decreasing signal based on the direction the magnet is moving in relation to the established zero point. See Quadrature Part Number Key to select storage mode.

Volatile Storage:

The zero point will be kept until a new zero pulse is sent or until the probe loses power.

The zero point can be programmed an infinite number of times.

Non-Volatile Storage:

The probe will store the zero position even in the event of a power failure. The zero point can be set 100,000 times.

Transducer Inputs:

The burst and zero inputs are single ended connections: the connection for each input consists of only one wire. The Q21-DQ is available with either +24 VDC level signal or TTL level thresholds. Additionally, the 24 VDC may be specified as either sinking or sourcing relative to the probe's input.

Quadrature Output Resolution and Speed:

The internal resolution of the Q21-DQ transducer is 0.001 inches. This would be represented to the encoder input device by specifying an output resolution of 1,000 cycles per inch (CPI).

Replace Incremental Output Devices:

The Q21-DQ may be used in certain applications to replace incremental rotary and linear encoders. The quadrature output may be used in applications requiring 0.001 inch resolution and repeatability.

Velocity Feedback:

The EZ-track quadrature produces pulses that are sent to the controller in packets at a fixed frequency. The period of the pulses does not change with magnet velocity. Therefore, velocity cannot be determined from the pulse packets unless the controller can interpolate velocity from position over time. If your application requires a velocity feedback, please consider the Linear Encoder on pages B32-B37 or consult factory.

Frequency or Pulse Rate:

For a typical incremental encoder output, the resolution of the encoder and the speed of travel govern the frequency and pulse width of the output pulses. The output pulse rate from the EZ-track transducer is fixed and controlled internally. This output frequency is user specified (10 kHz to 1 MHz) so that it does not exceed the maximum input rate of the counter card. If the controller's maximum input frequency falls between two available frequencies, choose the lower frequency.

Output Drivers:

The Q21-DQ uses an OL7272 line driver and may be configured for either a TTL level output or a 10-30 VDC level output. Option R has a 5 VDC TTL level output regardless of input power. Option L has an output of 1 volt less than the probe's input voltage and should be used when driving input cards that are not TTL compatible.

Quadrature Profile Series

Part Number Key: Quadrature Profile Series

A	B	C		D		E	F	G	H	I	J		K
LT	40	E	-	Q21	-	DQ	R	A	N	N	X2	-	H11121

A	Type
LT	Linear Transducer

B	Measuring Span
*	Length of Measuring Span

C	Units of Measurement
E	Inches

D	Housing Height
Q21	21 mm
Q35	35 mm

E	Resolution
DQ	Quadrature

F	Output Configuration
L	10-30 VDC, Line Driver
R	13.5 - 30 VDC, RS422 Line Driver (TTL Compatible)

G	Quadrature Cycle Frequency		
A	10 kHz	F	150 kHz
B	25 kHz	G	250 kHz
C	50 kHz	H	500 kHz
D	75 kHz	I	1000 kHz
E	100 kHz		

H	Zero Offset Storage
N	Nonvolatile (100,000 storage cycles max)
V	Volatile

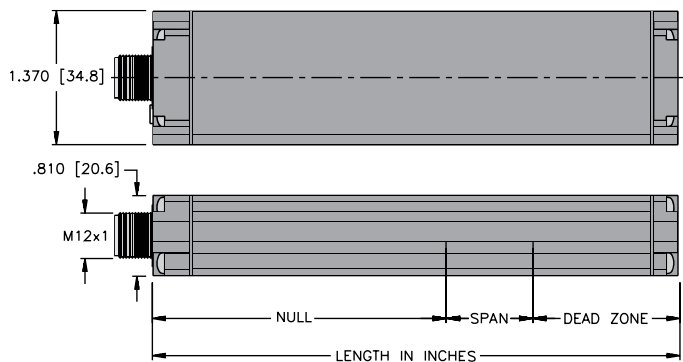
I	Input Type
N	Sinking (Typically used with Sourcing Outputs)
P	Sourcing (Typically used with Sinking Outputs)
T	TTL Level

J	Number of LED's
X2	2 Diagnostic LEDs

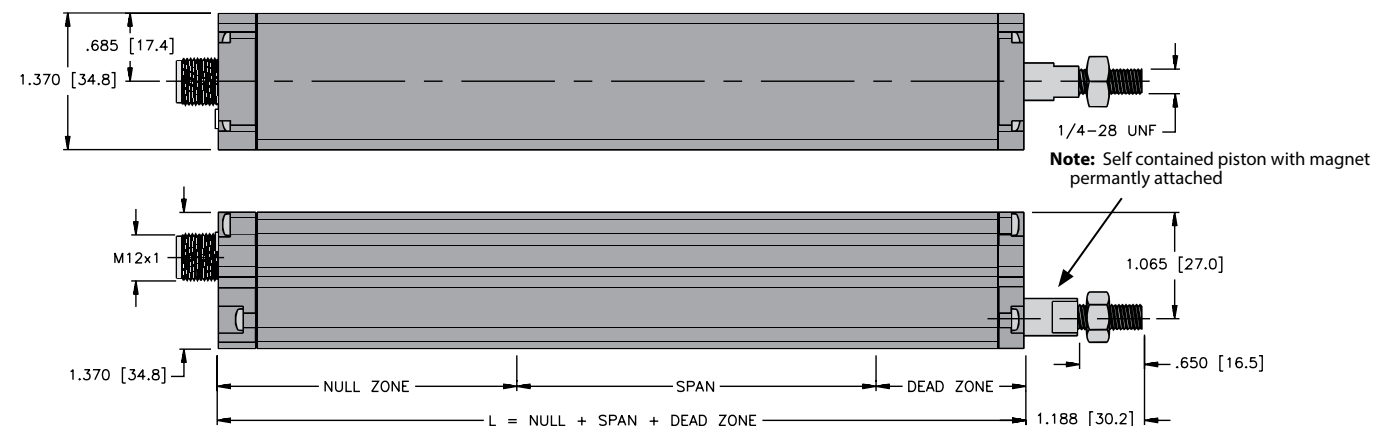
K	Type of Connection
H11121	12-pin M12 Eurofast Connector

Note: In addition to the LDT, a typical system includes a magnet, mounting feet and cable (all sold separately).

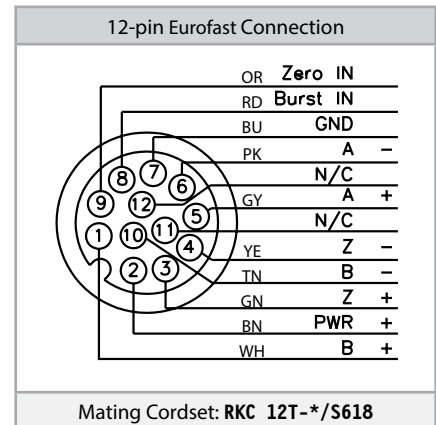
Dimensions: Q21-DQ Quadrature Profile Series



Dimensions: Q35-DQ Quadrature Profile Series



Wiring Diagram: Q21-DQ/ Q35-DQ



Mating Cordset: RKC 12T-*/S618

* Length in meters.

We reserve the right to make technical alterations without prior notice.



Digital Profile Series



The Q21D is a non-contact LDT with a digital output. This transducer utilizes magnetostrictive technology to give absolute position that is repeatable to .006% of the active sensing distance. It also has the same auto-tuning capability that the other profile series transducers offer, so that it can adjust its signal strength to various magnets.

There is a diagnostic LED that is located at the connector end of the probe and provides visual status information regarding the operation of the Q21D. The indications are specified in the table below. The Q21D digital transducer provides either a Start/Stop or a Variable Pulse signal interface that is proportional to the position of the slide magnet assembly along the length of the probe.

Digital Profile Series (Q21D/Q35D) Specifications:

Output:	Start/Stop Pulse: External interrogation; Variable Pulse: Internal or External interrogation
Number of recirculation:	Variable Pulse: 001 (standard) to 127
Span:	5 to 180 in (Q35 maximum span is 36 in)
Repeatability:	+/-0.006% of full span
Hysteresis:	+/-0.02% of full span
Operating temperature:	-4 to +158 °F (-20 to +70 °C)
Null Zone:	3.00 in
Dead Zone:	2.00 in
Operating voltage:	13.5-30 VDC
Current consumption:	120 mA at 15 VDC, 2.5 watts maximum
Shock:	Tested to 40 g
Vibration:	MIL-STD810E, 10G rms random, 20 Hz - 2 kHz
LED:	Green = power is applied and magnet is present Red = fault, magnet is in the null zone, dead zone or lost Yellow = no interrogation signal detected
Protection rating:	Electronics: IP67, IP68 optional Rod housing: IP65
Agency approval:	CE

Start/Stop (RS):

The Start/Stop signal interface of the Q21D digital output series is a differential RS-422 output. To initiate a start pulse, an external device must be used, and should be a minimum of 1 ms in duration. A stop pulse of 1 ms in duration will follow. The time delay from the leading edge of the start pulse to the leading edge of the stop pulse is proportional to the distance from the Null Zone to the Magnet.

Variable Pulse (VP):

The Variable Pulse signal interface digital output is a pulse width modulated signal (RS-422). The Q21D LDT can be ordered with either an external (VPE) or internal (VPI) interrogation.

External interrogation occurs when an external device connected to the Q21D-VPE generates a start pulse. This start pulse should be a minimum of 1 ms in duration. Within 50 nanoseconds after the leading edge of the start pulse has been received, the LDT will generate an output pulse. The duration of the output pulse is proportional to the distance from the Null Zone to the Magnet.

The Q21D-VPI generates an internal interrogation, and will continually output pulse width modulated signals. The duration of this output pulse is also proportional to the distance from the Null Zone to the Magnet.

We reserve the right to make technical alterations without prior notice.

Linear Position Technology

Digital Profile Series

Part Number Key: Digital Profile Series

A	B	C	D	E	F	G	H	I						
LT	40	E	-	Q21D	-	VPI	-	001	-	X3	-	H1161	/	S1661

A	Type
LT	Linear Transducer

B	Measuring Span
*	Length of Measuring Span

C	Units of Measurement
E	Inches

D	Housing Height
Q21D	21 mm
Q35D	35 mm

E	Output Mode
CP	RS422, Control Pulse
RS	RS422, Start/Stop Pulse
VPE	Variable Pulse External Interrogations
VPI	Variable Pulse Internal Interrogations

F	Number of Recirculations ¹⁾
*	001 (Standard) to 127

¹⁾ Only Available with Output Mode 'VPI' or 'VPE'. Otherwise (Blank)

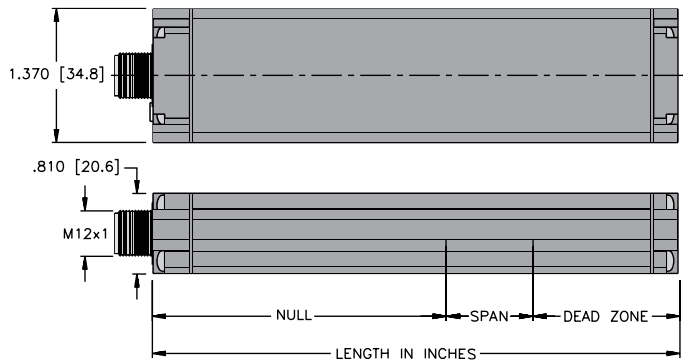
G	Number of LEDs
X3	3 Diagnostic LED's

H	Type of Connection
H1161	6-pin M12 Eurofast Connector

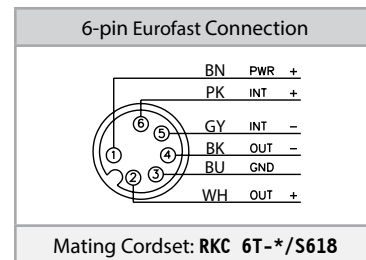
I	Specials
(Blank)	IP67
S1661	IP68

Note: In addition to the LDT, a typical system includes a magnet, mounting feet and cable (all sold separately).

Dimensions: Q21D Digital Profile Series

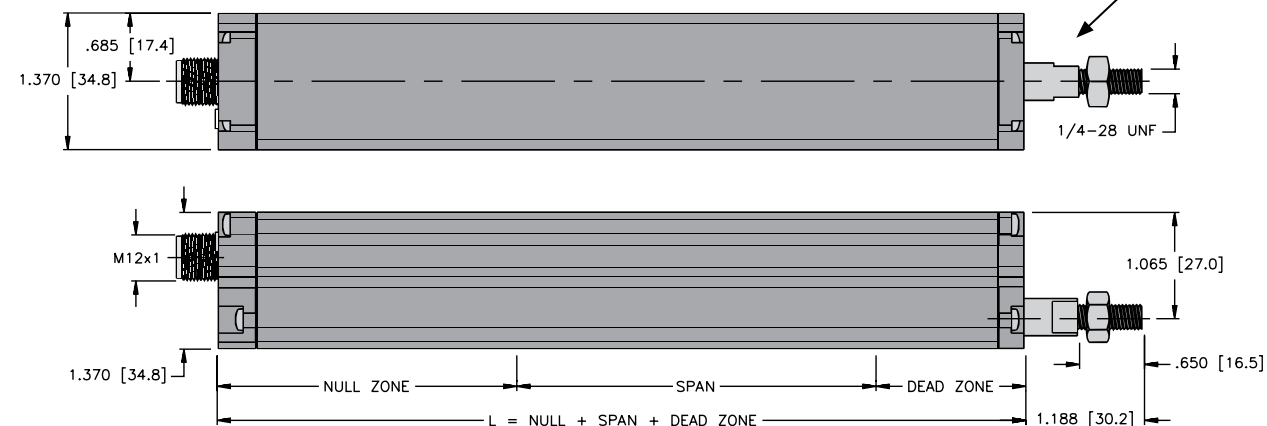


Wiring Diagram: Q21D/Q35D



* Length in meters.

Dimensions: Q35D Digital Profile Series



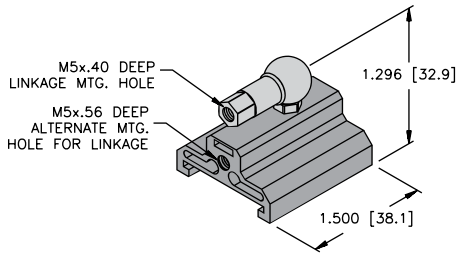
Note: Self contained piston with magnet permanently attached



Profile Series Accessories

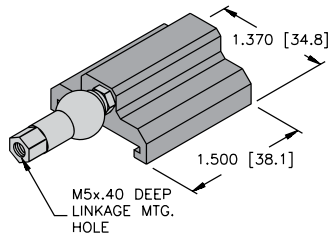
Slide Magnet

SM-Q21



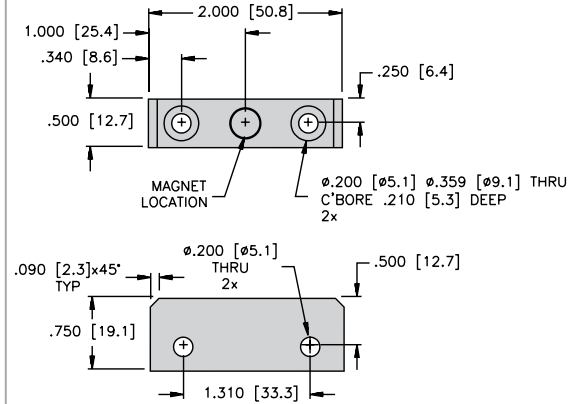
Slide Magnet with Side Adapter

SA-Q21



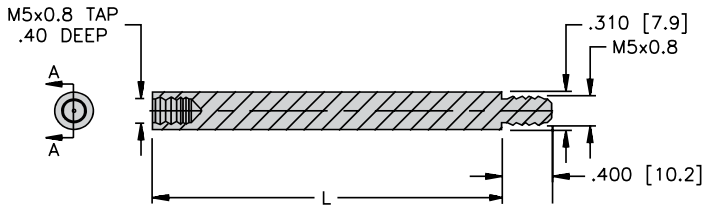
Floating Magnet

FM-Q21



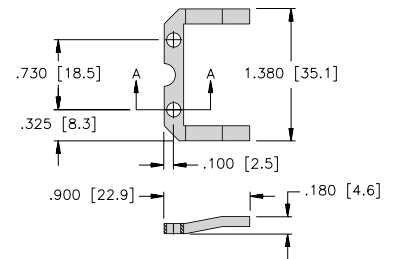
Control Arms

CA*E-Q21



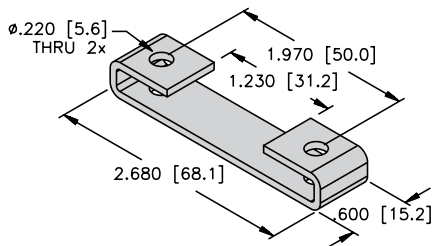
Q21 Upside Down Brackets

UB-Q21 (2/bag)



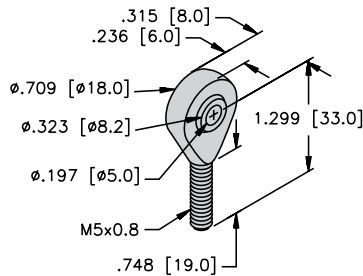
Q21 Mounting Brackets

MB-Q21



Rod Ends

RE-Q21



RBVA-M5

Angle Joint for M5 Thread, Stainless Steel



ABVA-M5

Angle Joint for M5 Thread, Stainless Steel



We reserve the right to make technical alterations without prior notice.

Linear Position Technology

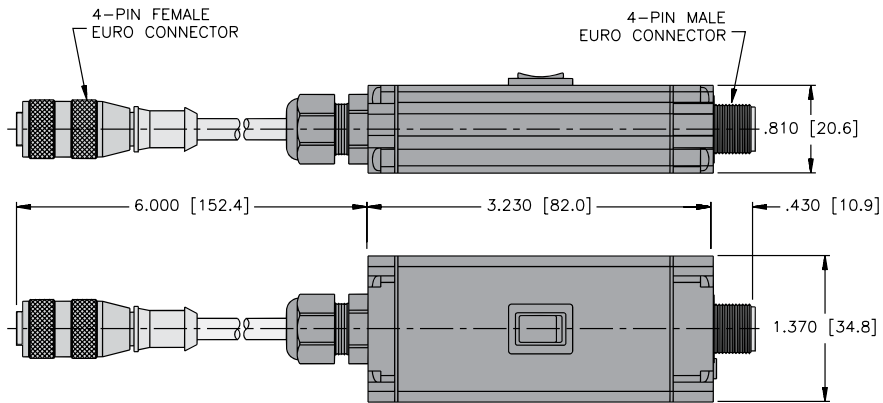
* Length in inches.



Profile Series Accessories

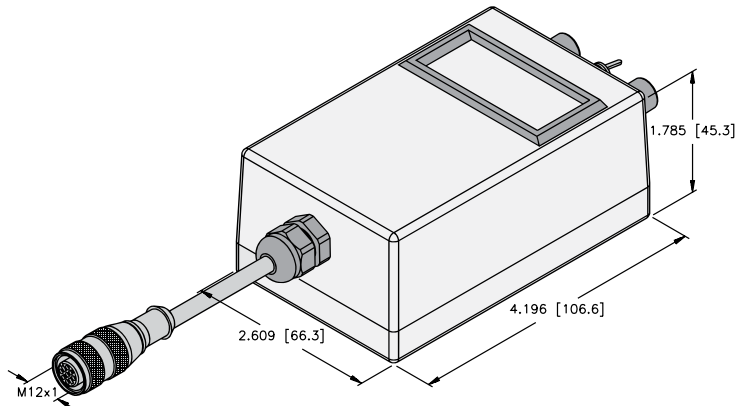
Rocker Programmer

RP-Q21



Test and Programming Device

**TB2-LDT (voltage)
TB2-LDT-LI (current)**

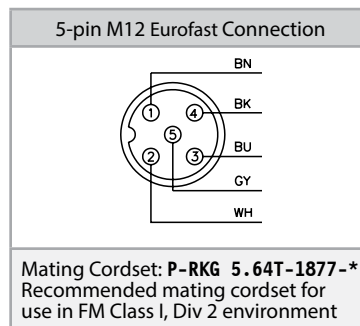


Lock-Euro-G

Required for use with a Q21 to maintain FM approval in a Class I, Div 2 environment



Wiring Diagram



We reserve the right to make technical alterations without prior notice.



Rod Style Series



Rugged Rod Style Housings:

Transducers designed to survive in harsh industrial environments to reduce downtime on the plant floor.

The R10 housing, sensing rod and components are designed and constructed to withstand heavy duty applications, such as those found in lumber mills, steel mills and stamping plants. They have been lab tested and field proven to withstand 2000 g of shock and 30 g of random vibration without false signals or mechanical damage.

In addition, the **R10's** electronics are enclosed in

an aluminum housing with O-ring seals for an IP67 environmental rating.

Although R10 sensors can be ordered with any of the outputs below, the units can easily be changed in the field to reverse the output signal. Thus, one model can be used for two applications by programming the "zero" and "span" appropriately. The differential feature allows the gap distance between two magnets to be measured. The magnets must remain within the active span at all times and cannot be any closer than 2.5 inches to each other.

Rod Style Series (R10) Specifications:

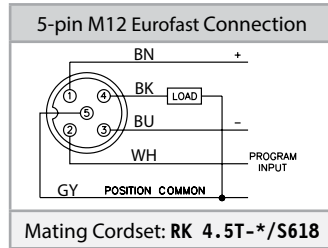
	LT Analog	LTX Analog	LTX Digital	LTX SSI
Output:	4-20 mA, 20-4 mA, 0-10 VDC, 10-0 VDC	0-10 VDC, 10-0 VDC, -10 to 10 VDC, 10 to -10 VDC, 0-5 VDC, 5-0 VDC, -5 to 5 VDC, 5 to -5 VDC, 4-20 mA, 20-4 mA	RS422 Start/Stop, Variable Pulse: Internal or External interrogation	24, 25 or 26 bit, Binary or Gray Code
Span ¹⁾ :	2-168 in	1-300 in	1-300 in	1-300 in
Repeatability:	+/-0.006% of full span or +/-0.002 in, whichever is greater	Equal to resolution	Equal to resolution of controller	Equal to output resolution
Resolution:	0.001 in / 16 bit	0.00006 in / 16 bit	Controller dependent	English: 0.00005 in, 0.0001 in, 0.0005 in, 0.001 in Metric: 1, 5, 10, 20 micron
Operating temperature:	Head (Electronics): -40 to +158 °F (-40 to +70 °C) Guide Tube: -40 to +221 °F (-40 to +105 °C)	Head (Electronics): -40 to +185 °F (-40 to +85 °C) Guide Tube: -40 to +221 °F (-40 to +105 °C)	Head (Electronics): -40 to +185 °F (-40 to +85 °C) Guide Tube: -40 to +221 °F (-40 to +105 °C)	Head (Electronics): -40 to +185 °F (-40 to +85 °C) Guide Tube: -40 to +221 °F (-40 to +105 °C)
Storage temp.	-40 to +185 °F (-40 to +85 °C)	-40 to +221 °F (-40 to +105 °C)	-40 to +221 °F (-40 to +105 °C)	-40 to +221 °F (-40 to +105 °C)
Null zone:	2.00 in	2.00 in	2.00 in	2.00 in
Dead zone:	2.50 in	2.50 in	2.50 in	2.50 in
Operating pressure:	5,000 PSI operating, 10,000 PSI spike	5,000 PSI operating, 10,000 PSI spike	5,000 PSI operating, 10,000 PSI spike	5,000 PSI operating, 10,000 PSI spike
Operating voltage:	13.5-30 VDC	7-30 VDC	7-30 VDC	7-30 VDC
Current consumption:	3 watts maximum, 200 mA at 15 VDC	1 watt at 1 ms interrogation time with no recirculations. Power consumption increases as interrogation times and recirculations increase. 40 mA at 24 VDC typical	1 watt at 1 ms interrogation time with no recirculations. Power consumption increases as interrogation times and recirculations increase. 40 mA at 24 VDC typical	1.3 watt at 1 ms interrogation time. Power consumption increases as interrogation times increase. 40 mA at 24 VDC typical
Response time:	1 ms (span length 1-50 in) 2 ms (span length 51-100 in) 3 ms (span length 101-150 in) 4 ms (span length 151-168 in)	0.5 mms (L ≤ 2") 1 ms (2" < L ≤ 12") 2 ms (12" < L ≤ 30") 3 ms (30" < L ≤ 50") 4 ms (50" < L ≤ 100") 5 ms (100" < L ≤ 150") 6 ms (150" < L ≤ 180") 7 ms (180" < L ≤ 250") 8 ms (250" < L ≤ 300")	Controller Dependent	4.0 K measurements/sec. (span length 1-12 in) 2.4 K measurements/sec. (span length 13-30 in) 2.0 K measurements/sec. (span length 31-40 in) 1.1 K measurements/sec. (span length 41-80 in) 0.5 K measurements/sec. (span length 81-197 in)
Shock:	2000 g	1000 g	1000 g	1000 g
Vibration:	30 g	30 g	30 g	30 g
Hysteresis:	+/-0.02% of full span	0.001 in	0.001 in	0.001 in
Non-linearity:	+/-0.05% of full span	< 0.01% or +/-0.005 in, whichever is greater	< 0.01% or +/-0.005 in, whichever is greater	< 0.01% or +/-0.005 in, whichever is greater
Rod end / Mounting hex:	316 stainless steel, 0.405 in (10.29 mm) outer dia.	316 stainless steel, 0.405 in (10.29 mm) outer dia.	316 stainless steel, 0.405 in (10.29 mm) outer dia.	316 stainless steel, 0.405 in (10.29 mm) outer dia.
LED:	N/A	Tri-color diagnostic	Tri-color diagnostic	Tri-color diagnostic
Protection rating:	IP67	IP68	IP68	IP68
Agency approval:	CE	CE	CE	CE

¹⁾ Span available in 0.1" increments

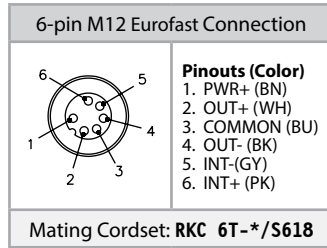
Rod Style Series

Wiring Diagrams:

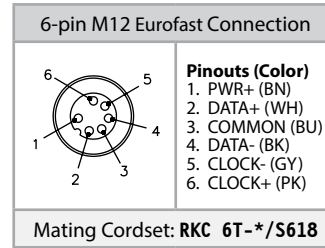
LT and LTX Analog



LTX Digital



LTX SSI



Part Number Key: Analog R10 Rod Style Series

A	B	C		D		E	F		G
LT	12	E	-	R10	-	LI	0	-	H1151

A	Type
LT	Linear Transducer

B	Measuring Span
*	Length of Measuring Span

C	Units of Measurement
E	Inches

D	Housing Size, Material
R10	10 mm Rod, Aluminum
ER10	10 mm Rod, Stainless Steel

E	Output Configuration
LI	Current
LU	Voltage
LD	Differential

F	Output Type		
	Current	Voltage	Differential
0	4-20 mA	0 to 10 V	0 to 10 V
1	20-4 mA	10 to 0 V	4-20 mA
4		0 to 5 V	
5		5 to 0 V	

G	Type of Connection
H1151	5-pin M12 Eurofast Connector

Part Number Key: LTX Analog R10 Rod Style Series

A	B	C		D		E	F	G		H
LTX	12	E	-	R10	-	LI	0	X3	-	H1151

A	Type
LTX	Linear Transducer

B	Measuring Span
*	Length of Measuring Span

C	Units of Measurement
E	Inches ¹⁾
M	Millimeters ¹⁾

¹⁾ This selection also determines thread type (see LTX drawing on page B26)

D	Housing Size, Material
R10	10 mm Rod, Aluminum
ER10	10 mm Rod, Stainless Steel

E	Output Configuration
LI	Current
LU	Voltage

F	Output Type	
	Current	Voltage
0	4-20 mA	0 to 10 V
1	20-4 mA	10 to 0 V
2		-10 to 10 V
3		10 to -10 V
4		0 to 5 V
5		5 to 0 V
6		-5 to 5 V
7		5 to -5 V

G	Number of LEDs
X3	3 Diagnostic LEDs

H	Type of Connection
H1151	5-pin M12 Eurofast Connector



Rod Style Series

Part Number Key: Digital R10 Rod Style Series

A	B	C		D		E		F		G		H
LTX	12	E	-	R10	-	VPI	-	001	-	X3	-	H1161

A	Type
LTX	Linear Transducer

B	Measuring Span
*	Length of Measuring Span

C	Units of Measurement
E	Inches ¹⁾
M	Millimeters ¹⁾

¹⁾This selection also determines thread type(see LTX drawing on page B26)

D	Housing Size, Material
R10	10 mm Rod, Aluminum
ER10	10 mm Rod, Stainless Steel

E	Output Mode
RS	RS422, Start/Stop Pulse
VPE	Variable Pulse External Interrogations
VPI	Variable Pulse Internal Interrogations

F	Number of Recirculations ²⁾
*	001 (Standard) to 225

²⁾Only Available with Output Mode 'VPI' or 'VPE'. Otherwise (Blank)

G	Number of LEDs
X3	3 Diagnostic LEDs

H	Type of Connection
H1161	6-pin M12 Eurofast Connector

Part Number Key: SSI R10 Rod Style Series

A	B	C		D		E		F		G	H	I	J		K		L		M
LTX	12	E	-	R10	-	SSI	-	1	-	B	S	F	B	-	X3	-	A	-	H1161

A	Type
LTX	Linear Transducer

B	Measuring Span
*	Length of Measuring Span

C	Units of Measurement
E	Inches ¹⁾
M	Millimeters ¹⁾

¹⁾This selection also determines thread type(see LTX drawing on page B26)

D	Housing Size, Material
R10	10 mm Rod, Aluminum
ER10	10 mm Rod, Stainless Steel

E	Data Mode
SSI	Synchronous Serial Interface

F	Data Length
1	24 bit
2	25 bit
3	26 bit

G	Data Format
B	Binary Code
G	Gray Code

H	Data Type
A	Asynchronous
S	Synchronous

I	Direction
F	Forward
R	Reverse
V	Velocity

J	Resolution
1	0.005 mm
2	0.01 mm
3	0.05 mm
4	0.1 mm
5	0.02 mm
6	0.002 mm
7	0.001 mm
8	0.00005"
9	0.0001"
A	0.0005"
B	0.001"

K	Number of LEDs
X3	3 Diagnostic LEDs

L	Option
(Blank)	None
A	Alarm

M	Type of Connection
H1161	6-pin M12 Eurofast Connector

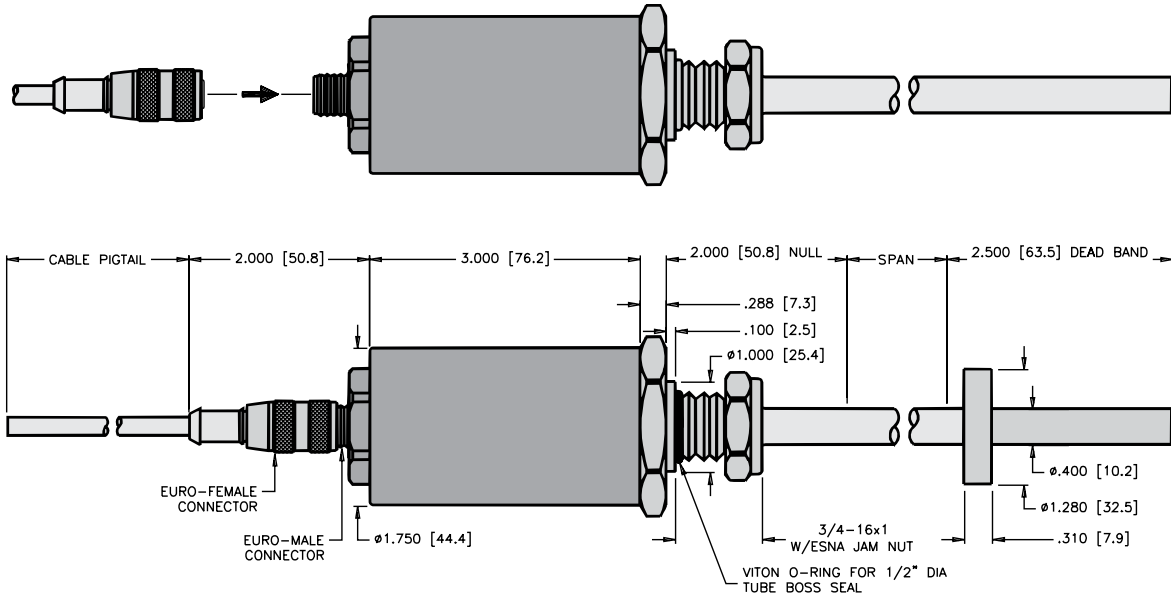
We reserve the right to make technical alterations without prior notice.

Linear Position Technology

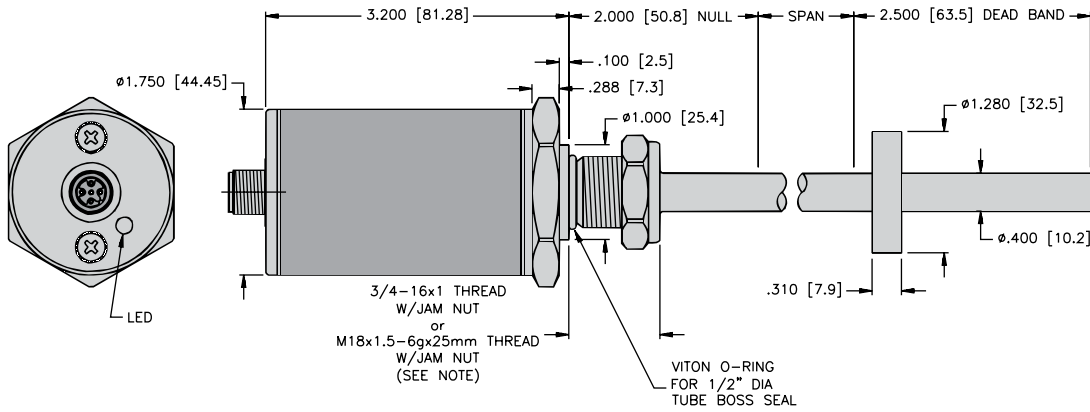


Rod Style Series

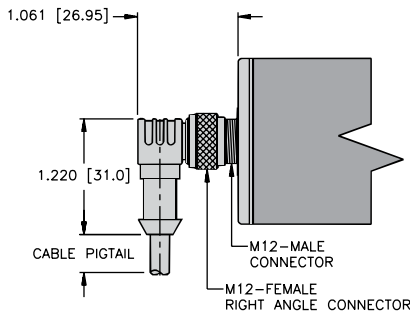
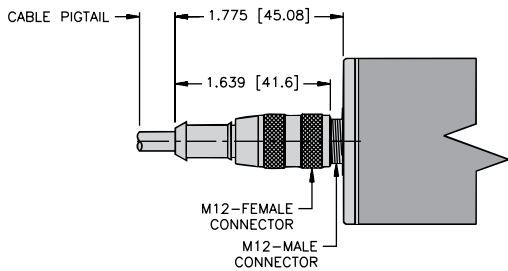
Dimensions: Rod Style Series LT



Dimensions: Rod Style Series LTX



NOTE: UNLESS OTHERWISE SPECIFIED
 FOR ENGLISH THREAD TYPE, RAISED FACE FEATURE COMPLIES WITH SAE J1926-1.



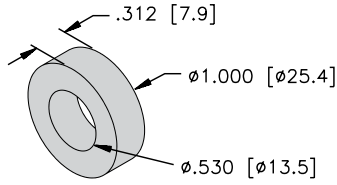
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Rod Style Series Accessories

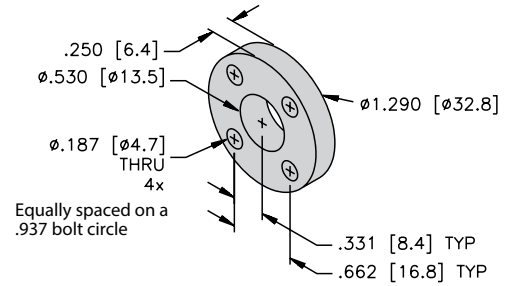
1" Diameter Cylinder Magnet

CM-R10



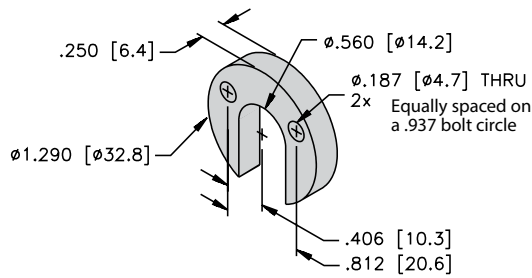
Standard Magnet Spacer

STS-R10



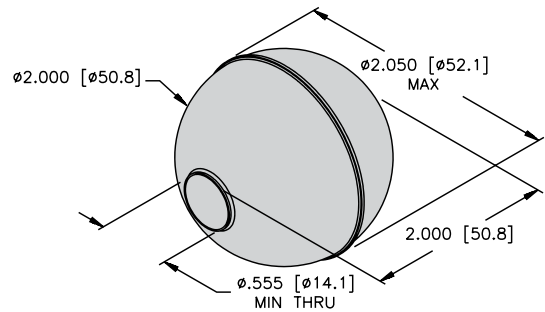
Split Magnet Spacer

SPS-R10



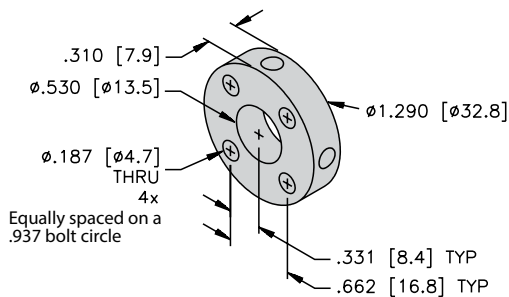
Egg Shape Float

EF-R10



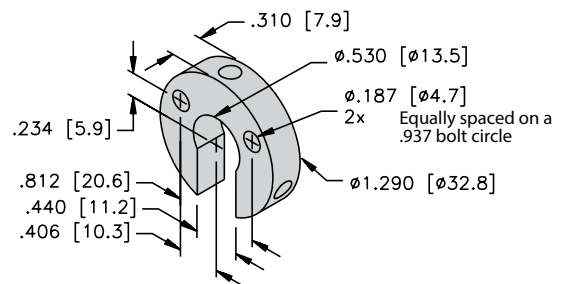
Standard 4-Hole Magnet

STM-AL-R10 (aluminum)
STM-SS-R10 (stainless steel)



Split Magnet

SPM-AL-R10



All dimensions shown as: inches [mm]

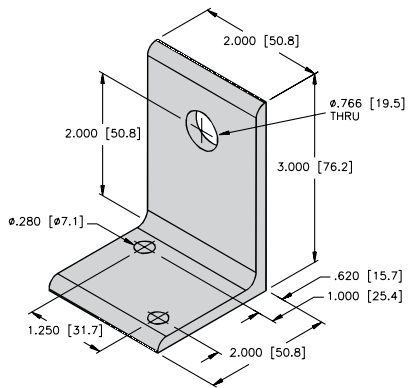
We reserve the right to make technical alterations without prior notice.

Linear Position Technology

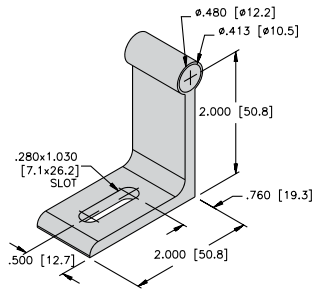


Rod Style Series Accessories

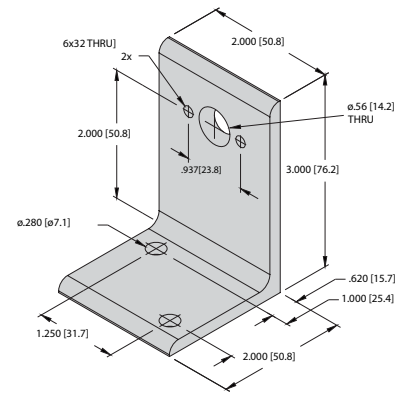
Mounting Bracket
LB-R10



Rod Support
RB-R10

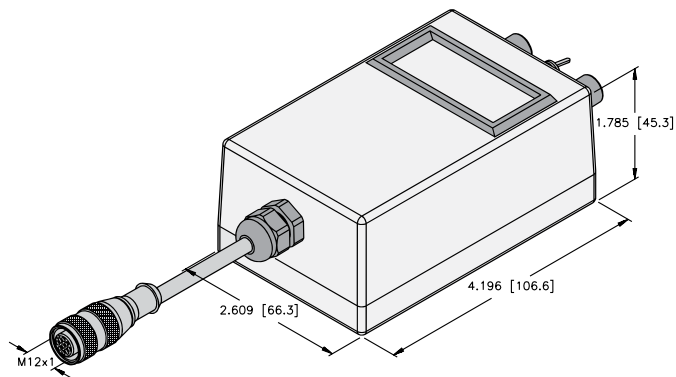


Magnet Mounting Bracket
MMB-R10

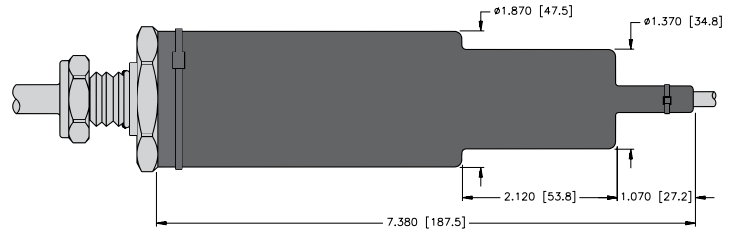


MB-R10: Part number includes mounting bracket **LB-R10** and rod support bracket **RB-R10**.

Test and Programming Device
TB2-LDT
TB2-LDT-LI



Rubber Boot
BT-R10



All dimensions shown as: inches [mm]

We reserve the right to make technical alterations without prior notice.



Glossary of Terms: Linear Position Sensors

Absolute Sensing: Position is accurately known at power ON without the need for a reference or home position.

Magnetostrictive Technology: A linear sensor technology based on a magnetic principal of operation used in all EZ-track LDTs.

Repeatability: The difference in the indicated position of a single point when that point is repeatedly approached from the same direction under the same ambient conditions.

Accuracy: The difference between the target point and the point actually indicated by the sensor with relation to a fixed reference.

Non-Linearity: The distance the indicated position of the positioning element along the span varies from the actual physical position.

Resolution: The smallest incremental change in position that can be detected and indicated as an output.

Blind Zone: Term used to describe the areas of the Q-track sensors where it no longer picks up the positioning element.

Non-Volatile: Position is held in memory and will not be lost on power down.

Span: The area of a linear sensor that reacts to the positioning element as it moves over it, producing an output signal.

Dead Zone: An area at the end of the EZ-track sensor that is opposite the connector where the magnet cannot be accurately sensed.

Null Zone: An area at the connector end of the sensor where the magnet cannot be accurately sensed.

Span Point: The end point of the analog measuring distance at which the output signal equals the greatest value of the analog scale.

Hysteresis: The difference of the measured value when approaching a defined point from opposite directions.

Quadrature Cycle Output Frequency: The fixed frequency at which the pulse rate is transmitted out of the probe.

SSI: Synchronous Serial Interface is a standard protocol for serial interface between sensors and controllers.

Incremental Sensing: A relative position feedback device whose signal is always referenced to the zero position. The sensor produces a digital square wave pulse train that is fed into an up/down counter chip or clock to derive position.

RLC: Stands for Resistance, Inductance and Capacitance. It is the principal of operation for all Turck Q-track sensors. The positioning element is a passive coil circuit that is excited by an emitter coil and the resulting inducted voltage is picked up by receiver coils.

Volatile: Position held in memory that is lost on power down.

Zero Point: The beginning point of the analog measuring distance at which the output signal equals the lowest value of the analog scale. The Zero Point is also used as the reference position for the incremental scale used in quadrature output probes.