

TURCK
works

Industrial
Automation

Compact Industrial Encoders

Kübler
by **TURCK**



- Industry standard
2 inch diameter
- Robust bearing design
- M12 *eurofast*® connector
- Quick delivery
- High performance

www.turck.com



Machine builders are increasingly being pressed to find encoders that will allow machines to work harder, last longer, require less maintenance and take up less space. Achieving these results requires an encoder that can handle the rigors of a factory automation environment without sacrificing output.

Rotary encoders have long been used for applications needing tight control, like material handling and conveying systems, but many encoders have not been designed to meet today's demanding automated environments.

Kübler by TURCK 2 inch encoders use a revolutionary design that provides one of the highest speed ratings and frequency responses in the industry.

Kübler by TURCK 2 inch encoders feature:

- Corrosion resistant die cast aluminum housing
- M12 **euromast**® connection standard
- Broad input voltage range of 5-30 VDC
- Extended temperature range (-40°C to 85°C)
- UL listing and CE approval
- High shock rating (250 G's)
- Quick delivery



Kübler by TURCK 2 inch encoders

- Last longer
- Meet the needs of today's demanding industrial applications
- Ship when you need them

The Kübler by TURCK 2 Inch Encoder Sets a New Standard for Compact Incremental Encoders.



Kübler by TURCK 2 inch encoders use a captive bearing design that encloses the bearings and the encoder disk without requiring a bulky package. This means that:

- The encoder disk is heavily protected from axial load and shock
- The chance of lost counts is reduced
- Encoder life is greatly extended

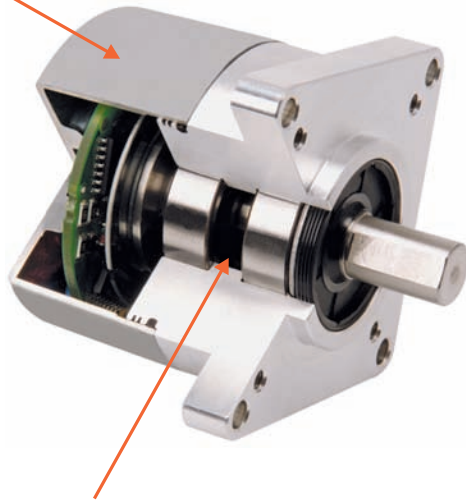
Why **TURCK** is a better choice...

- Higher Speed - **TURCK** 2 inch encoders are rated for a peak speed of 12,000 RPM.
- Long Life - The captive bearing design protects the disk from both shock and loading common to industrial applications.
- High Resolution - **Kübler by TURCK** 2 inch encoders are available in resolutions up to 3600 pulses per revolution, providing much tighter control.
- Our primary shaft seal is a high-quality, environmentally-rugged Butyl rubber lip seal, with a secondary bearing seal behind it. Our 2 inch encoder provides IP 67 protection, whereas others may not offer a protection rating at all.
- **TURCK** offers a corrosion-resistant die cast housing as standard on all 2 inch encoders.

Incremental Encoders Designed to Last In Demanding Applications

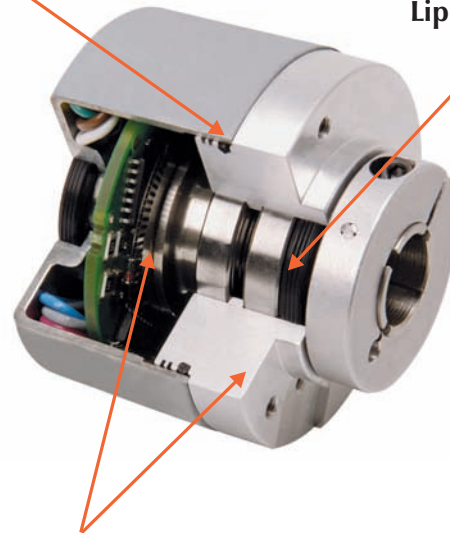
Kübler by TURCK 2 inch encoders feature an innovative design that locks the preloaded bearing set within the encoder flange, instead of gluing the bearings in place like most encoder manufacturers. Our superior design provides the following benefits: high tolerance to excessive axial force and shock from mishandling, wide operating temperature (-40°C to 85°C) and speed capabilities of 12,000 RPM. To be sure your encoder provides years of service, premium materials are used in the encoder's construction, such as Butyl rubber lip seals and o-rings, robust stainless steel hub and disk tables, and a corrosion resistant cover.

Die Cast Housing



Dual Preloaded Bearings Locked in Place by Fixed Shoulder

O-Ring



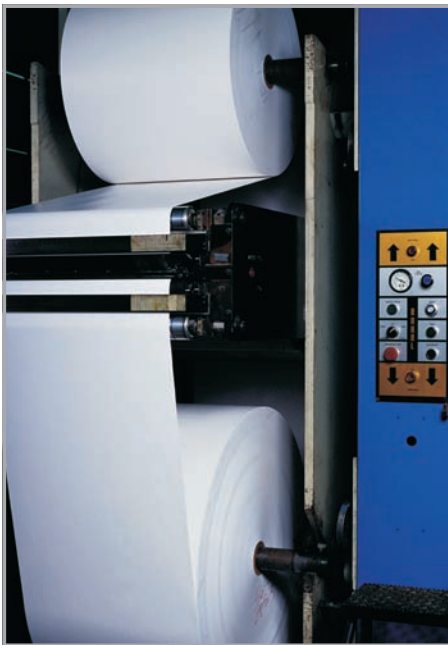
Butyl Rubber Lip Seal

Stainless Steel Hub and Disk Tables



Quick, Simple and Cost Effective Connectivity

The **E-WKC 8T-PX3-930-*** cordset has three LEDs housed in a translucent molded connector for indication of channels A, B and Z. Green LEDs indicate channels A and B, while amber is used for the index Z channel. LEDs can also be used during machine setup for home position indication or to provide operational status of the encoder output channels. This cordset is manufactured with an extremely rugged PVC *flexlife*® cable that is designed to withstand over 2 million flex cycles.



Flexible and Comprehensive Mounting Brackets

Kübler by TURCK offers a variety of flex brackets to fit every application requirement.





2" (T8.5000) Incremental Shaft Encoder Part Number Key

T8.	5000.	X X X X.	XXXX	PXX	X	X	XXXX
Flange - 2"						Optional Cable Length (Meters)	
1 = Servo flange w/shaft seal						0050 = 5 Meters	
2 = Servo flange						Special Connector Wiring Formats	
3 = Square flange w/shaft seal						See page 9	
4 = Square flange						Capacitor	
Flange - 2.5"						0 = Standard	
C = Square flange w/shaft seal						A = No bypass capacitor (vector motor)	
D = Square flange						Special Output Signal Formats	
E = Servo flange w/shaft seal						Consult factory	
F = Servo flange						Pulse Rate	
Shaft Options for 2" Flange (for use w/Flange 1, 2, 3, 4 only)						See below	
1 = Ø6 mm x 10 mm		4 = Ø3/8" x 5/8"				Connection Type	
2 = Ø1/4" x 5/8"		5 = Ø12 mm x 20 mm				1 = Axial cable (1 meter)	
3 = Ø10 mm x 20 mm		6 = Ø8 mm x 15 mm				2 = Radial cable (1 meter)	
Shaft Options for 2.5" Flange (for use w/Flange C, D, E, F only)						3 = Axial M12, 8-pin (<i>eurofast</i> ®)	
1 = Ø6 mm x 10 mm		6 = Ø8 mm x 15 mm				4 = Radial M12, 8-pin (<i>eurofast</i>)	
3 = Ø10 mm x 20 mm		7 = Ø1/4" x 7/8"				5 = Radial M12, 8-pin (<i>eurofast</i>)	
5 = Ø12 mm x 20 mm		8 = Ø3/8" x 7/8"				6 = Radial M12, 8-pin (<i>eurofast</i>)	
Input / Output Circuit						7 = Axial M23, 12-pin (<i>multifast</i> ®)	
1 = 5-30 VDC / TTL (26C31)						8 = Radial M23, 12-pin (<i>multifast</i>)	
2 = 5-30 VDC / Line Driver (7272)						9 = Radial MS, 6-pin	
3 = 5-30 VDC / Open Collector (7273)						W = Radial MS, 7-pin	
4 = 5 VDC / TTL (26C31)						Y = Radial MS, 10-pin	
						A = Optional axial cable length	
						B = Optional radial cable length	

2" (T8.5020) Incremental Hollow Shaft Encoder Part Number Key



T8.	5020.	X X X X.	XXXX	PXX	X	X	XXXX
Flange						Optional Cable Length (Meters)	
1 = Torque stop w/shaft seal (IP 67)*						0050 = 5 Meters	
2 = Torque stop (IP 65)*						Special Connector Wiring Formats	
3 = Single point tether w/shaft seal (IP 67)						See page 9	
4 = Single point tether (IP 65)						Capacitor	
5 = Three point tether w/shaft seal (IP 67)						0 = Standard	
6 = Three point tether (IP 65)						A = No bypass capacitor (vector motor)	
Bore						Special Output Signal Formats	
1 = Ø6 mm		6 = Ø1/2"				Consult factory	
2 = Ø1/4"		7 = Ø5/8"				Pulse Rate	
3 = Ø10 mm		8 = Ø15 mm				See below	
4 = Ø3/8"						Connection Type	
5 = Ø12 mm						1 = Radial cable (1 meter)	
Input / Output Circuit						2 = Radial M12, 8-pin (<i>eurofast</i>)	
1 = 5-30 VDC / TTL (26C31)						4 = Radial M23, 12-pin (<i>multifast</i>)	
2 = 5-30 VDC / Line Driver (7272)						5 = Radial MS, 6-pin	
3 = 5-30 VDC / Open Collector (7273)						6 = Radial MS, 7-pin	
4 = 5 VDC / TTL (26C31)						7 = Radial MS, 10-pin	
						A = Optional radial cable length	

* Requires 4 mm torque pin

Note: Bold options are stock items. (Listed on page 6.)

Standard Pulse Rates (PPR):Metal: 1, 5, 10, 12, 25, 36, 50, 60, 100, 180, 200, 250, 256, 360, 400, **500**, 512, 600, 800, **1000**, **1024**
Glass: 1200, **2000**, **2048**, **2500**, 3600

2" Incremental Specifications

MECHANICAL:

Protection Rating	IP 65, IP 67 with shaft seal
Speed	Up to 12,000 RPM (6,000 RPM with shaft seal)
Continuous Operation Speed	3000 RPM max.
Operating Temperature	-40°C to +85°C (-40°F to +185°F)
Shock/Vibration	2500 m/s ² , (6 ms) per DIN-IEC 68-2-27 / 100 m/s ² (10-2000 Hz) per DIN-IEC 68-2-6
Humidity	98% relative humidity without condensing
Housing/Shaft	Die cast aluminum / 316 stainless
Starting Torque	1.4 oz.-in. without shaft seal (<0.01 Nm); 7 oz.-in. with shaft seal (<0.05 Nm)
Radial Shaft Load	40 lbs. (Bearing life: 1.2 x 10 ⁹ revolutions, based on max. load rating at 1000 RPM)
Axial Shaft Load	20 lbs. (Bearing life: 1.2 x 10 ⁹ revolutions, based on max. load rating at 1000 RPM)
Hub Bore Tolerance	H7

ELECTRICAL:

Input/Output	5 VDC/TTL (26C31)	5-30 VDC/TTL (26C31)
Power Consumption (max.)	90 mA	90 mA
Short-circuit Protection (DIN-IEC 68-2-27)	Yes ¹⁾	Yes ¹⁾
Reverse Polarity Protection	Yes	No
Operating Frequency (max.)	300 kHz.	300 kHz
Permissible Load per Channel	±20 mA	±20 mA
Signal Level High (min.)	2.5 V	2.5 V
Signal Level Low (max.)	0.5 V	0.5 V

Input/Output	5-30 VDC/Line Driver (7272)	5-30 VDC/Open Collector (7273)
Power Consumption (max.)	100 mA	100 mA
Short-circuit Protection (DIN-IEC 68-2-27)	Yes ¹⁾	Yes ¹⁾
Reverse Polarity Protection	No	No
Operating Frequency (max.)	300 kHz.	300 kHz
Permissible Load per Channel	±40 mA	20 mA sink @ 30 VDC
Signal Level High (min.)	+V -2 V	N/A
Signal Level Low (max.)	0.5 V	N/A

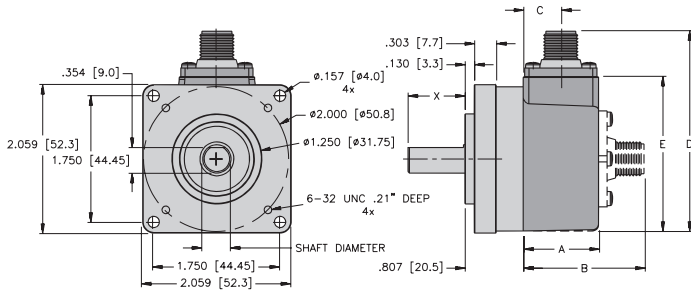
¹⁾ Only one channel at a time:
(when +V = 5 VDC, short-circuit to common or +V is permitted)
(when +V = 10-30 VDC, short-circuit to common or +V is permitted)

Stock Items:

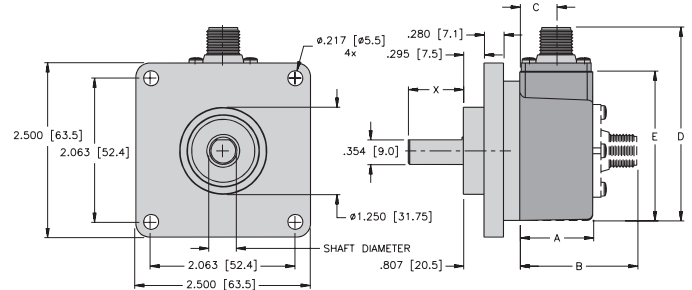
T8.5000.3424.0500	T8.5000.C824.0500	T8.5000.1424.0500	T8.5000.E824.0500	T8.5020.1722.0500	T8.5020.1622.0500	T8.5020.1422.0500
T8.5000.3424.1000	T8.5000.C824.1000	T8.5000.1424.1000	T8.5000.E824.1000	T8.5020.1722.1000	T8.5020.1622.1000	T8.5020.1422.1000
T8.5000.3424.1024	T8.5000.C824.1024	T8.5000.1424.1024	T8.5000.E824.1024	T8.5020.1722.1024	T8.5020.1622.1024	T8.5020.1422.1024
T8.5000.3424.2000	T8.5000.C824.2000	T8.5000.1424.2000	T8.5000.E824.2000	T8.5020.1722.2000	T8.5020.1622.2000	T8.5020.1422.2000
T8.5000.3424.2048	T8.5000.C824.2048	T8.5000.1424.2048	T8.5000.E824.2048	T8.5020.1722.2048	T8.5020.1622.2048	T8.5020.1422.2048
T8.5000.3424.2500	T8.5000.C824.2500	T8.5000.1424.2500	T8.5000.E824.2500	T8.5020.1722.2500	T8.5020.1622.2500	T8.5020.1422.2500

2" (T8.5000) Incremental Shaft Encoder Dimensions

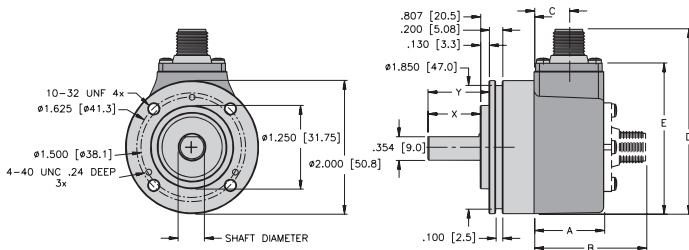
T8.5000 with 2" Square Flange



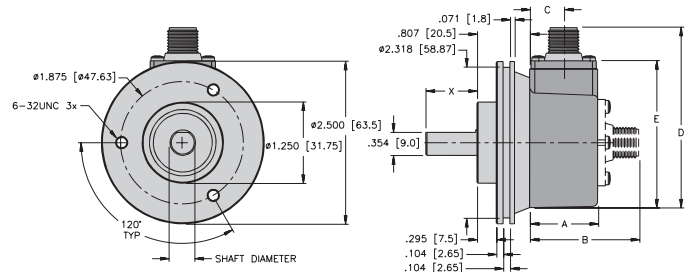
T8.5000 with 2.5" Square Flange



T8.5000 with 2" Servo Flange



T8.5000 with 2.5" Servo Flange



2" Servo Flange

Shaft Diameter	X	Y
Ø6 mm	10 mm	13.3 mm
Ø1/4"	15.7 mm	3/4"
Ø10 mm	20 mm	23.3 mm
Ø3/8"	15.7 mm	3/4"
Ø12 mm	20 mm	23.3 mm
Ø8 mm	15 mm	18.3 mm

2" Square Flange

Shaft Diameter	X
Ø6 mm	10 mm
Ø1/4"	5/8"
Ø10 mm	20 mm
Ø3/8"	5/8"
Ø12 mm	20 mm
Ø8 mm	15 mm

2.5" Square Flange and 2.5" Servo Flange

Shaft Diameter	X
Ø6 mm	10 mm
Ø1/4"	7/8"
Ø10 mm	20 mm
Ø3/8"	7/8"
Ø12 mm	20 mm
Ø8 mm	15 mm

Dimensions for Radial Connector
Inches (mm)

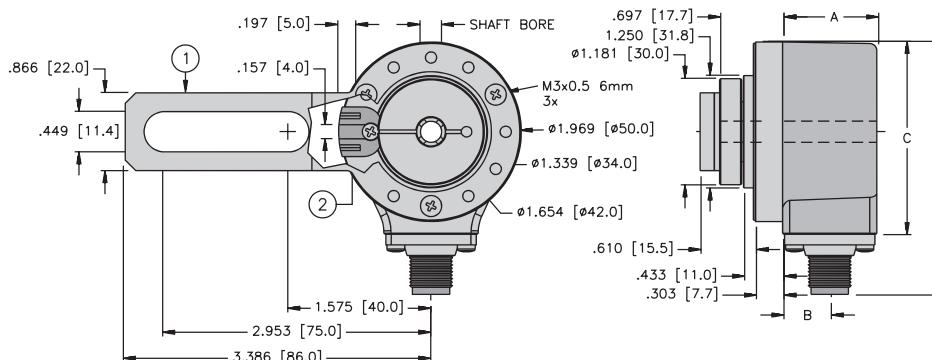
DIM	Connection Style					
	Cable	M12	M23	MS (6-pin)	MS (7-pin)	MS (10-pin)
A	1.04 (26.5)	1.04 (26.5)	1.04 (26.5)	1.42 (36.0)	1.42 (36.0)	1.42 (36.0)
C	0.52 (13.25)	0.52 (13.25)	0.52 (13.25)	0.71 (18.0)	0.71 (18.0)	0.71 (18.0)
D	2.9 (73.7)	2.81 (71.4)	3.07 (77.9)	3.38 (85.85)	3.38 (85.85)	3.6 (90.4)
E	2.14 (54.4)	2.14 (54.4)	2.14 (54.4)	2.69 (68.4)	2.69 (68.4)	2.69 (68.4)

Dimensions for Axial Connector
Inches (mm)

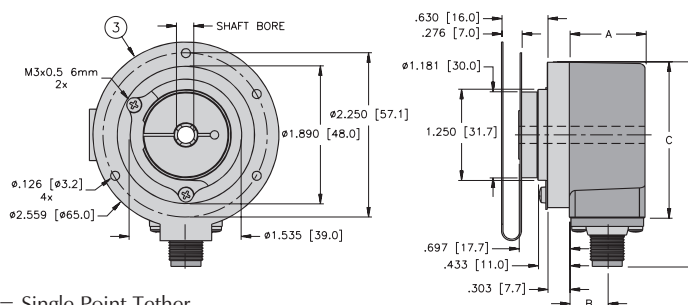
DIM	Connection Style		
	Cable	M12	M23
A	1.04 (26.5)	1.04 (26.5)	1.04 (26.5)
B	---	1.71 (43.5)	1.97 (50.0)

2" (T8.5020) Incremental Hollow Shaft Encoder Dimensions

T8.5020 with Single Point Tether and Torque Pin



T8.5020 with Three Point Tether



- 1 = Single Point Tether
- 2 = Torque Stop
- 3 = Three Point Tether

Dimensions for Radial Connector - Inches (mm)

Connection Style						
DIM	Cable	M12	M23	MS (6-pin)	MS (7-pin)	MS (10-pin)
A	1.04 (26.5)	1.04 (26.5)	1.04 (26.5)	1.42 (36.0)	1.42 (36.0)	1.42 (36.0)
B	0.52 (13.25)	0.52 (13.25)	0.52 (13.25)	0.71 (18.0)	0.71 (18.0)	0.71 (18.0)
C	2.14 (54.4)	2.14 (54.4)	2.14 (54.4)	2.69 (68.4)	2.69 (68.4)	2.69 (68.4)
D	2.9 (73.7)	2.81 (71.4)	3.07 (77.9)	3.38 (85.85)	3.38 (85.85)	3.6 (90.4)

2" Incremental Wiring Diagrams

Standard Wiring / Pin Configuration

Connection Type	Case Ground	Common	+V	A	\bar{A}	B	\bar{B}	Z	\bar{Z}	N/C	N/C
M23 multifast®	Coupling Nut	10	12	5	6	8	1	3	4	-	-
MS 6-pin	E	F	D	A	-	B	-	C	-	-	-
MS 7-pin	G	F	D	A	-	B	-	C	-	-	-
MS 10-pin	J	F	D	A	G	B	H	C	I	-	-
M12 eurofast®	Coupling Nut	1	2	3	4	5	6	7	8	-	-
Cable	Shield / Drain	WH	BN	GN	YE	GY	PK	BU	RD	BK	VT

Special Connector Pin Configuration

		Connection Type	Case Ground	Common	+V	A	\bar{A}	B	\bar{B}	Z	\bar{Z}
Output Code	7	M12 eurofast	Coupling Nut	7	2	1	3	4	5	6	8
	1	MS 6-pin	F	A	B	D	-	E	-	C	-
	4	MS 7-pin	G	F	D	A	C	B	E	-	-
	6	MS 10-pin	G	F	D	A	H	B	I	C	J

Male Encoder View	Mating Cordset
<p>M12 Pinout</p>	E-RKC 8T-930-*M
<p>M23 Pinout</p>	E-CKS 12-931-*
<p>MS Pinout (6-Pin)</p>	Consult factory

Male Encoder View	Mating Cordset
<p>MS Pinout (7-Pin)</p>	E-MK 7-930-*
<p>MS Pinout (10-Pin)</p>	E-MK 10-931-*

2" Encoder Accessories - Flex Brackets

Part Number	Description
8.0010.4800.0000 (stock item)	Single point Tether Arm for Hollow Shaft series 5020, 582X and 5870
Screws included (3) M3X6 mm	

Part Number	Description
8.0010.4R00.0000 (stock item)	Single point Tether Arm for Hollow Shaft series 5020, 582X and 5870
Screws included (3) M3X6 mm	

Part Number	Description
8.0010.40H0.0000 (stock item)	Standard Single point Tether Arm for Hollow Shaft series 5020, 582X and 5870
Includes: (1) phenolic step washer (10 mm dia.) (4) M3x6 screws (4) lock washers	

Part Number	Description
8.0010.40G0.0000 (stock item)	Three point Tether Arm for Hollow Shaft series 5020
Includes: (3) M3x6 screws (3) lock washers	

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

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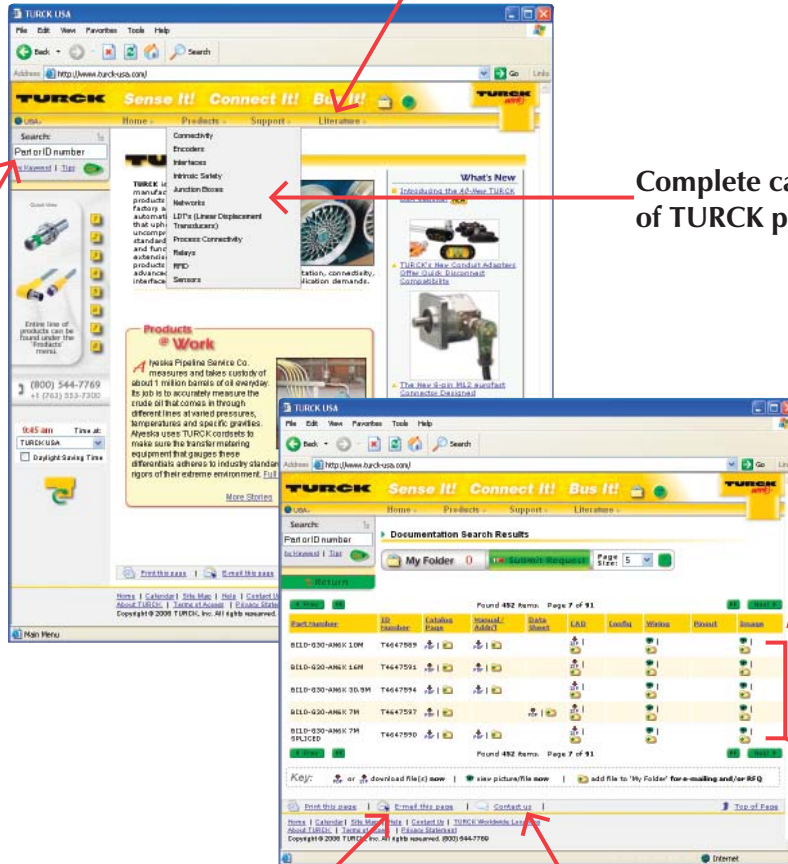
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Complete category listing of TURCK products

Access to CAD, wiring and pinout diagrams

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Option to e-mail pages
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www.turck.com

3000 Campus Drive
Minneapolis, MN 55441
Phone: 1-800-553-0016
FAX: (763) 553-0706
Application Support:
1-800-544-7769