TURCK works

Industrial Automation

Sendix®

COMPACT INDUSTRIAL ENCODERS

Kübler by TURCK

- Industry Standard 2 Inch Diameter
- Safety Lock Plus™ Robust Bearing Design
- M12 *eurofast*® Connector
- Quick Delivery
- High Performance

····Sense It!····Connect It!····Bus It!····Solve It!

www.turck.us

TURCK

YOUR **AUTOMATION SOLUTIONS** PROVIDER


DETECTION SENSORS


CORDSETS


I/O STATIONS


INSTRUMENTATION


RFID


INTERFACE MODULES


CUSTOM CONNECTIVITY


MEASUREMENT


ENCODERS

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.

TURCK
Industrial
Automation

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Sendix® Incremental
Sets the New Standard

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°F to 185°F) and speed capabilities of 12,000 RPM. Premium materials are used in the encoder's construction, such as Butyl rubber lip seals and o-rings, robust stainless steel hub, disk tables, and a corrosion resistant cover that makes the Sendix 2 inch line robust for harsh applications.

Sendix Incremental 5000

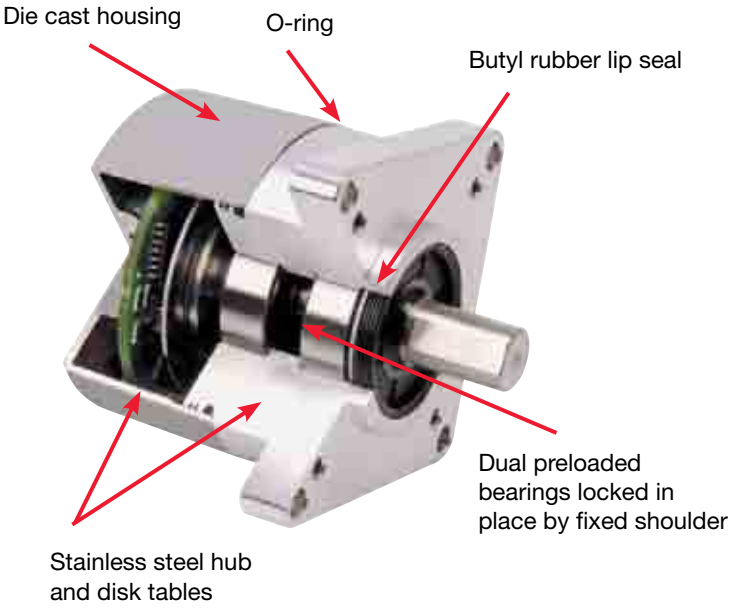
Small at the back - big at the front:

Housing Ø 50 mm, 47 mm construction depth, shaft up to 12 mm. Compatible with all 58 mm standard flanges, opening up a broad spectrum of applications.

Sendix Incremental 5020

Performs like a large encoder:

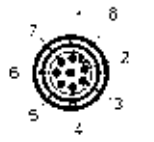
Up to 15 mm hollow shaft with stable bearings, housing sizes of only 50 mm and a construction depth of 37.5 m. Slit hollow shaft improves hold on the shaft with fewer vibrations and greater shaft tolerance.

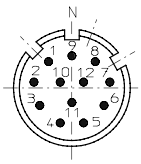


Flexible and Universal in Application

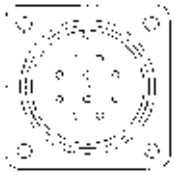
The rotary encoders are compatible with all current U.S. and European standards with regard to mechanics, connection technology, interfaces and signal sequence.

The Sendix Incremental 5000 / 5020 rotary encoders cover practically all fields of application, thanks to their broad input voltage range of 5-30 VDC, many variations of interfaces, wide temperature range and high protection class.


M12 Connector


M23 Connector


MIL 7-pin


MIL 10-pin

Bracket and Measurement Accessories

Flex bracket for hollow shaft series 5020

Single point tether arm for hollow shaft series 5020

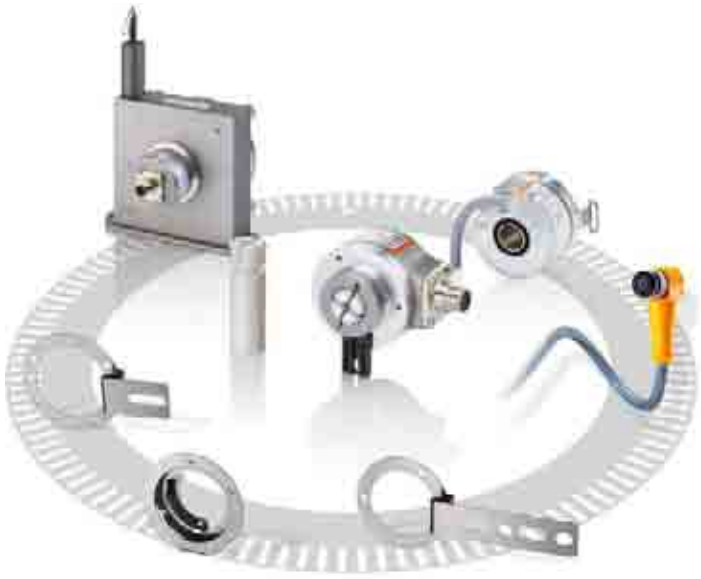
Spring loaded bracket

D135 draw wire with 2" Sendix® encoder

The Kübler and TURCK Inc. partnership continues to progress and has been further enhanced by the establishment of a production line in Minneapolis, Minn. to build the Sendix 2 inch Incremental encoders found in this catalog.

The manufacturing line, its equipment, operators and support staff are certified by Kübler. As a result of Kübler and TURCK's commitment to becoming an industry leader in encoder products, we build all encoders with metal disks (pulse count 1024 and lower) in most styles of encoders found in this catalog within days of your order.

The German engineering of the Sendix Incremental line is joined with the American craftsmanship of building high quality products quickly to meet your production needs.



Kübler by TURCK

Fast Technical Local

Sendix Incremental Type 5000 (Shaft) / 5020 (Hollow Shaft)

Safety-Lock™ | High rotational speed | Temperature | High IP | High shaft load capacity | Shock/vibration resistant | Magnetic field proof | Short-circuit proof | Reverse polarity protection

Flexible:

- **The right connection for every application:** Cable, M12 connector, M23 connector, and MIL Spec Connectors.
- **Wide variety of standard industrial mounting options:** Servo, square, clamping flanges.
- **Standardized designs for worldwide use:** Compatible with US and European standards; 5-30 volt supplies; Various output options; Up to 5000 ppr.

Sendix incremental

Compact

- **Small footprint:** Outer diameter 2"x 2"; Can utilize 2" or 2.5" flanges.

Rugged & Tough

- **High tolerance to vibration, shock and alignment issues:** Sturdy double bearing "Safety Lock Design".
- **Environmentally protected design:** Die-cast housings; Butyl rubber shaft seals and O-rings; Robust stainless steel hubs, flanges, and disc tables. Ratings up to IP67.
- **Wide temperature range:** -40°F to +185°F (-40°C to +85°C)

Mechanical characteristics:

Speed IP 65[1]:	max. 12000 RPM
Speed IP 67[2]:	max. 6000 RPM
Rotor moment of inertia:	
Shaft version:	approx. 0.098 oz. in²
Hollow shaft version:	approx. 0.328 oz. in²
Starting torque:	<1.4 oz.in (< 0.01 Nm, IP 65)
	<7 oz.in (< 0.05 Nm, IP 67)
Radial load capacity shaft:	40 lbs. (80 N)
Axial load capacity shaft::	20 lbs. (40 N)

[1] For continuous operation 6000 RPM
[2] For continuous operation max. 3000 RPM

Weight:	0.9 lbs (approx. 0.4 kg)
Protection acc. to EN 60 529 without shaft sealing:	IP 65
Protection acc. to EN 60 529 with shaft sealing:	IP 67
Working temperature:	-40° to +185°F (-40 °C[3] to +85 °C)
Shaft:	stainless steel
Shock resistance acc. to DIN-IEC 68-2-27:	2500 m/s², 6 ms
Vibration resistance to DIN-IEC 68-2-6:	100 m/s², 10...2000 Hz

[3] with connector: -40 °C, cable fixed: -30 °C, cable moved: -20 °C

Electrical characteristics:

Output circuit:	RS 422 (TTL compatible)	RS 422 (TTL compatible)	Push-Pull (IC-DL)	Push-Pull (7272)
Supply voltage:	5 to 30 V DC	5 V ±5%	10-30 V DC	5-30 V DC
Power consumption (no load):	typ. 40 mA / max. 90 mA	typ. 40 mA max. 90 mA	typ. 50 mA max. 100 mA	typ. 50 mA max. 100 mA
Permissible load/channel:	max. ±20 mA	max. ±20 mA	max. ±30 mA	max. ±20 mA
Pulse frequency:	max. 300 kHz	max. 300 kHz	max. 300 kHz	max. 300 kHz[3]
Signal level high:	min. 2.5 V	min. 2.5 V	min. UB - 1.0 V	min. UB-2.0 V
Signal level low:	max. 0.5 V	max. 0.5 V	max. 0.5 V	max. 0.5 V
Rise time t_r	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs
Fall time t_f	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs
Short circuit proof outputs[1]:	yes[2]	yes[2]	Yes	yes[2/4]
Reverse connection protection at U_B:	yes	no	Yes	no
UL certified	File 224618			
Conforms to CE requirements acc. to EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3				
RoHS compliant acc. to EU guideline 2002/95/EG				

1) If supply voltage correctly applied
2) Only one channel allowed to be shorted-out:
(If UB=5 V, short-circuit to channel, 0 V, or +UB is permitted.)
(If UB=5-30 V, short-circuit to channel or 0 V is permitted.)
3) Max. recommended cable length 30 m
4) Approximately one minute

Sendix Incremental Type 5000 (Shaft) / 5020 (Hollow Shaft)

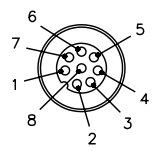
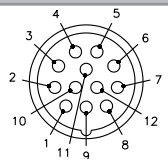
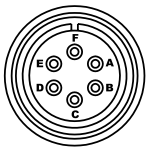
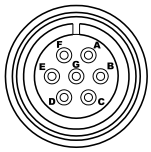
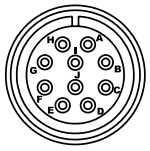
Standard wiring / pin configuration

Connection Type	Case Ground	Common (0V)	+V	A	$\overline{A}$	B	$\overline{B}$	Z	$\overline{Z}$	N/C	N/C	0V [1] Sens	+V [2] Sens
M23 ***multifast***®	Coupling nut	10	12	5	6	8	1	3	4	-	-	11	2
MS 6-pin	-	A	B	E	_	D	-	C	-	-	-		
MS 7-pin	G	F	D	A	-	B	-	C	-	-	-		E
MS 10-pin	J	F	D	A	G	B	H	C	I	-	-		E
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	GY/PK	RD/BU

1) The sensor cables are connnected to the supply voltage internally,if long feeder cables are involved they can be used to adjust or control the voltage at the encoder
2) Isolate unused outputs before initial startup

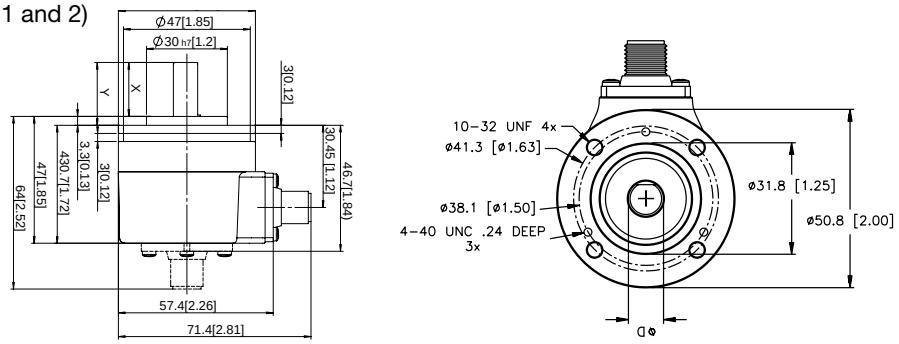
Special connector pin configuration

		Connection Type	Case Ground	Common	+V	A	$\overline{A}$	B	$\overline{B}$	Z	$\overline{Z}$
Output Code	07	M12 ***eurofast***	Coupling nut	7	2	1	3	4	5	6	8
	01	MS 6-pin	-	A,F	B	D	-	E	-	C	-
	04	MS 7-pin	G	F	D	A	C	B	E	-	-
	06	MS 10-pin	G	F	D	A	H	B	I	C	J

Male Encoder View	Male Encoder View	Male Encoder View	Male Encoder View	Male Encoder View
				
M12 Pinout	**M23 Pinout**	**MS Pinout (6-pin)**	**MS Pinout (7-pin)**	**MS Pinout (10-pin)**
Mating Cordset	Mating Cordset	Mating Cordset	Mating Cordset	Mating Cordset
E-RKC 8T-930-*	**E-CKM 12-931-***	**E-MK 6-930-***	**E-MK 7-930-***	**E-MK 10-931-***

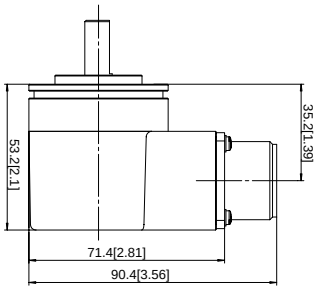
Synchronous flange (servo)

ø 50.8 mm [2.0 inch] M12, M23 and cable version
(Flange type 1 and 2)



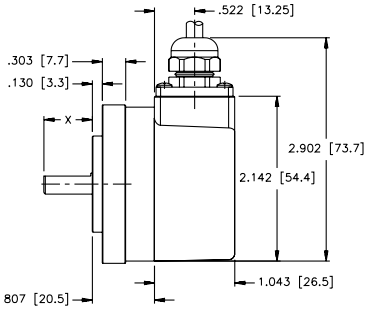
Synchronous flange (servo)

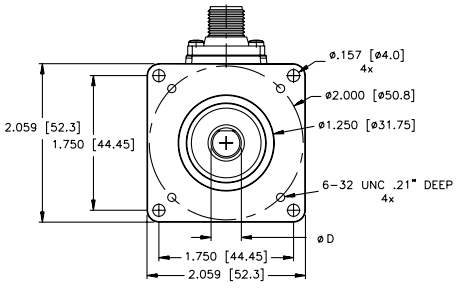
ø 50.8 mm [2 inch]
MIL-connector version



Square flange

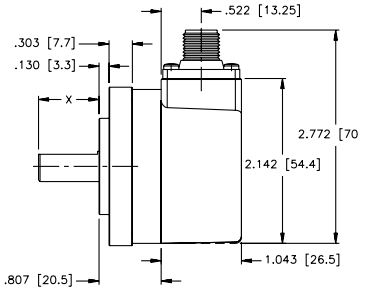
ø 50.8 mm [2.0 inch] M12, M23 and cable version
(Flange type 3 and 4)





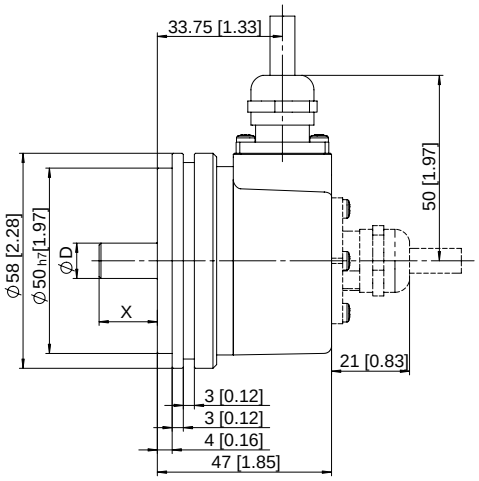
Square flange

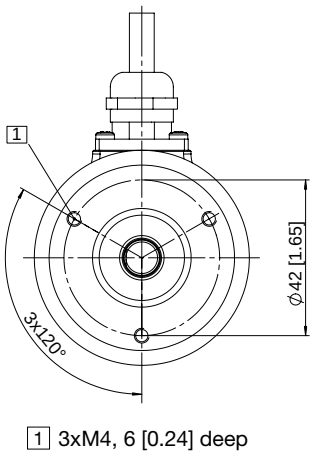
ø 50.8 mm [2 inch]
M12 connector version



Sendix Incremental Type 5000 (Shaft) / 5020 (Hollow Shaft)

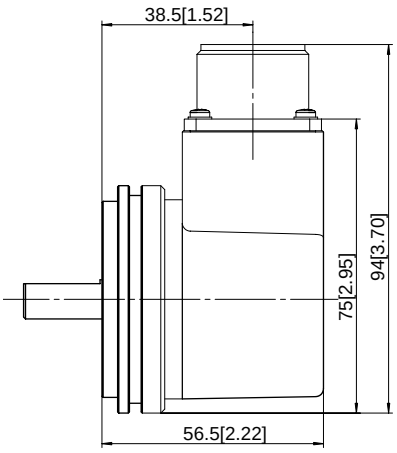
Synchronous flange (servo)
ø 58 mm M12, M23 and cable versions
(Flange type A and B)



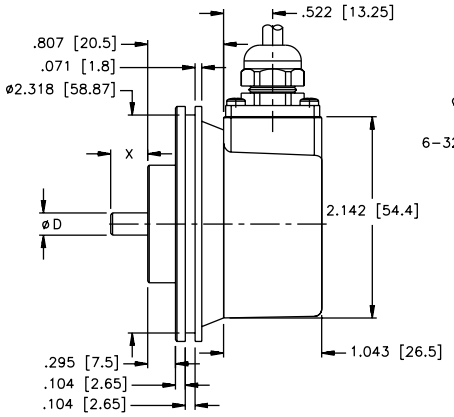


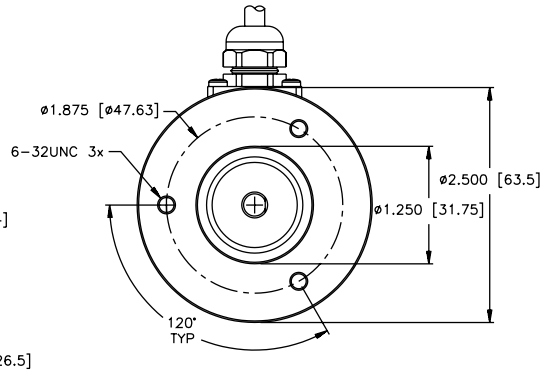
1 3xM4, 6 [0.24] deep

Synchronous flange (servo)
ø 58 mm
MIL-connector version

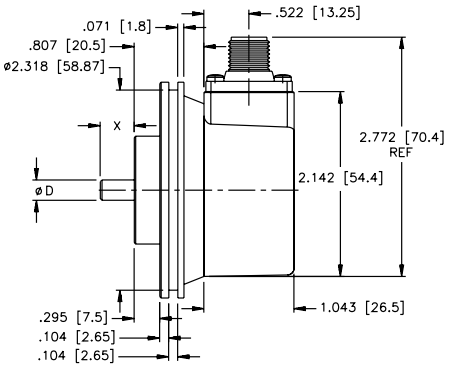


Synchronous flange (servo)
ø 63.5 mm M12, M23 connector and cable versions
(Flange type E and F)

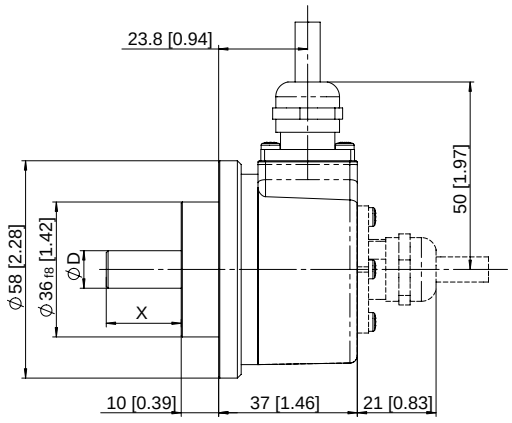


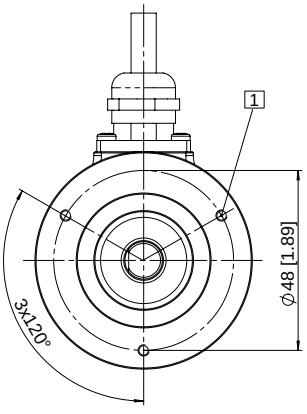


Synchronous flange (servo)
ø 63.5 mm
M12 connector version



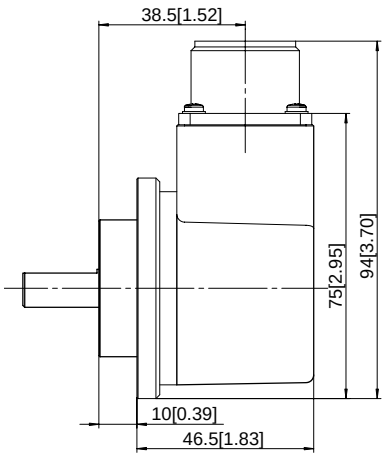
Clamping flange
ø 58 mm M12, M23 connector and cable versions
(Flange type 7 and 8)





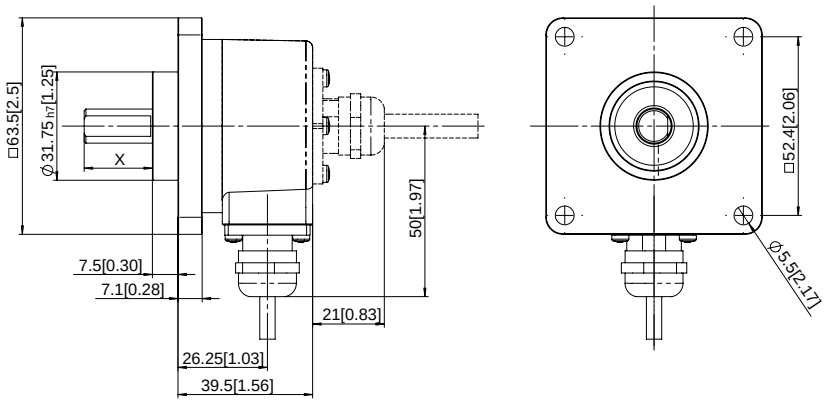
1 M3, 6 [0.24] deep

Clamping flange
ø 58 mm
MIL-connector version

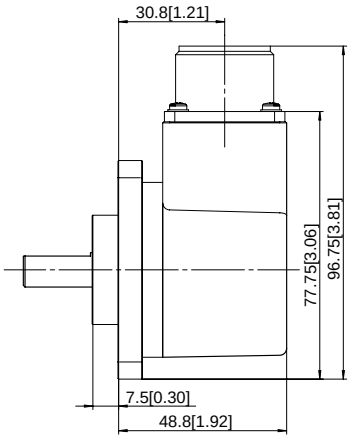


Sendix Incremental Type 5000 (Shaft) / 5020 (Hollow Shaft)

Dimensions shaft version:
Rectangular flange
63.5 mm [2.5 inch]
M12, M23 connector and cable versions
(Flange type C and D)



Rectangular flange
63.5 mm [2.5 inch]
MIL-connector version



T8.	5000.	XXXX.	XXXX	PXX	X	X	XXXX

Flange - 2" (50 mm)

1 = Servo flange w/shaft seal (IP 67)
2 = Servo flange
3 = Square flange w/shaft seal (IP 67)
4 = Square flange

Flange - 58 mm

7 = Clamping flange w/shaft seal (IP 67)
8 = Clamping flange
A = Servo flange w/shaft seal (IP 67)
B = Servo flange

Flange - 2.5" (63.5 mm)

C = Square flange w/shaft seal (IP 67)
D = Square flange
E = Servo flange w/shaft seal (IP 67)
F = Servo flange

Shaft Options for 2" Flange

1 = Ø6 mm x 10 mm
2 = Ø1/4" x 5/8"
3 = Ø10 mm x 20 mm
4 = Ø3/8" x 5/8"
5 = Ø12 mm x 20 mm
6 = Ø8 mm x 15 mm

Shaft Options for 58 mm and 2.5" Flange

1 = Ø6 mm x 10 mm
3 = Ø10 mm x 20 mm
5 = Ø12 mm x 20 mm
4 = Ø3/8" x 5/8"
6 = Ø8 mm x 15 mm
7 = Ø1/4" x 7/8"
8 = Ø3/8" x 7/8"

Input / Output Circuit

1 = 5-30 VDC / TTL (26C31)
3 = 5-30 VDC / Open Collector (7273)
4 = 5 VDC / TTL (26C31)
5 = 10-30 VDC / Line Driver (IC-DL)
8 = 5-30 VDC / Line Driver (7272 without bypass capacitor)

Connection Type

1 = Axial cable (1 meter)
2 = Radial cable (1 meter)
3 = Axial M12, 8-pin (***eurofast***®)
4 = Radial M12, 8-pin (***eurofast***)
7 = Axial M23, 12-pin (***multifast***®)
8 = Radial M23, 12-pin (***multifast***)
9 = Radial MS, 6-pin
W = Radial MS, 7-pin
Y = Radial MS, 10-pin
A = Optional axial cable length
B = Optional radial cable length
E = Tangential cable (1 Meter)

Pulse Rate

See below

Special Output Signal Formats

See page 21

Capacitor

0 = Standard
A = No bypass capacitor (vector motor)
(Only valid with output codes 1, 3, 4, 5)

Special Connector Wiring Formats

See page 6

Optional Cable Length (Meters)

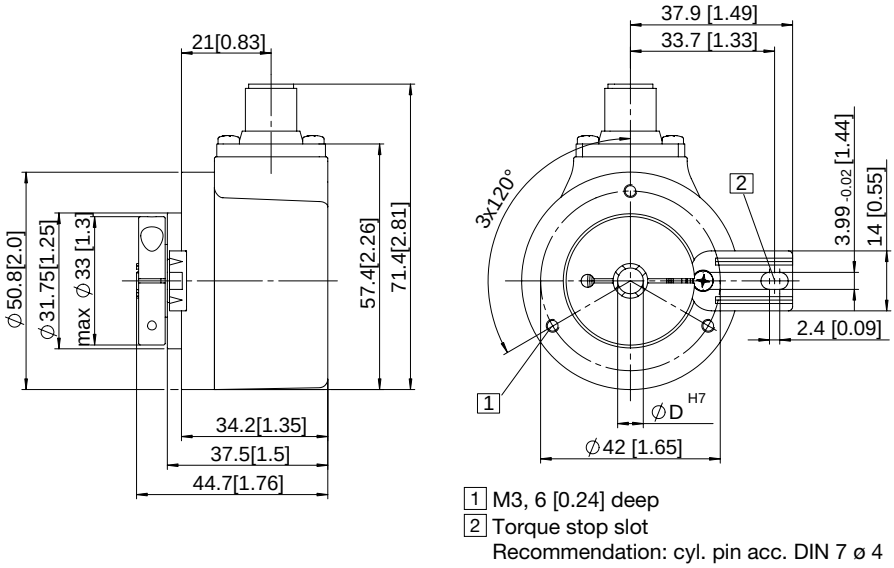
0050 = 5 Meters

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
All 5000 series encoders, 1024 and below assembled in the US!
Glass: 1200, 2000, 2048, 2500, 3600, 4096, 5000 (Built in Germany)

Sendix Incremental Type 5000 (Shaft) / 5020 (Hollow Shaft)

Dimensions hollow shaft version:
Flange with long torque stop

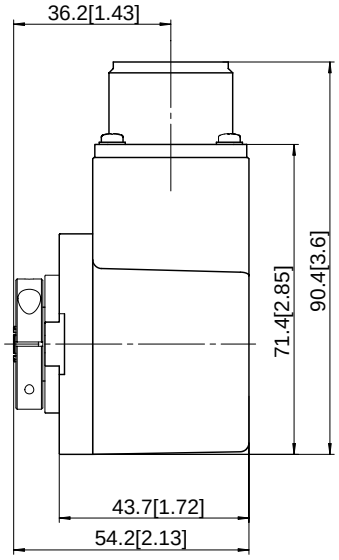
ø 50.8 mm [2 inch]
M12, M23 connectors and cable versions
(Flange type 1 and 2)



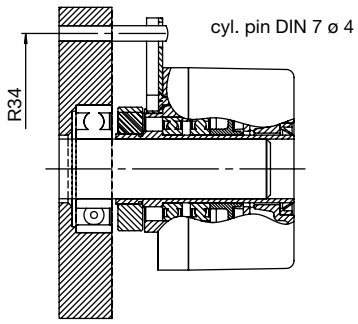
1 M3, 6 [0.24] deep
2 Torque stop slot
Recommendation: cyl. pin acc. DIN 7 ø 4

Flange with long torque stop

ø 50.8 mm [2 inch]
MIL-connector version

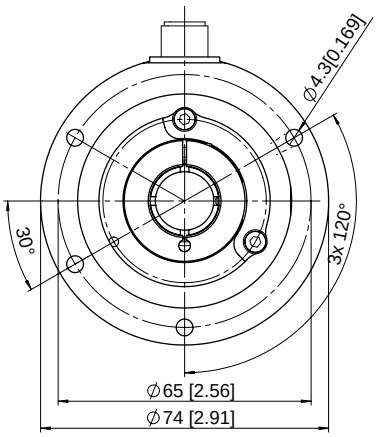


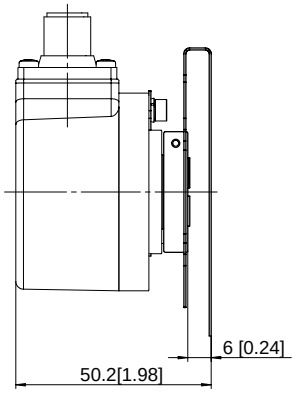
Mounting note:



Flange with stator coupling

Pitch circle 65 mm
(Flange type 7 and 8) (Direct cross for T8.5820 flange 3 & 4)

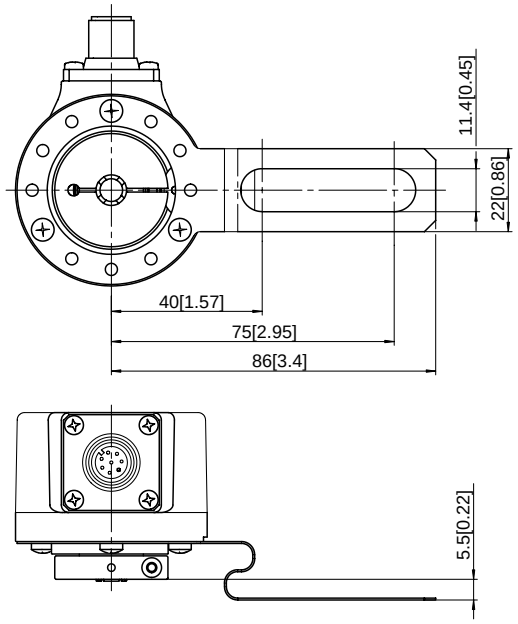




Sendix Incremental Type 5000 (Shaft) / 5020 (Hollow Shaft)

Dimensions hollow shaft version:

Flange with tether arm
(Flange type 3 and 4)



2" Encoder with Available Tangential Cable
(Connection Type E)

T8.	5020.	XXXX.	XXXX	PXX	X	X	XXXX

Flange - 2”

1 = Torque stop w/shaft seal (IP 67)*
2 = Torque stop (IP 65)*
3 = Single point tether w/shaft seal (IP 67)
4 = Single point tether (IP 65)
5 = Three point tether w/shaft seal (IP 67)
6 = Three point tether (IP 65)
7 = Flexmount w/shaft seal (IP 67)
8 = Flexmount

Bore

1 = Ø6 mm
2 = Ø1/4"
3 = Ø10 mm
4 = Ø3/8"
5 = Ø12 mm
6 = Ø1/2"
7 = Ø5/8"
8 = Ø15 mm

Input / Output Circuit

1 = 5-30 VDC / TTL (26C31)
3 = 5-30 VDC / Open Collector (7273)
4 = 5 VDC / TTL (26C31)
5 = 10-30 VDC / Line Driver (IC-DL)
8 = 5-30 VDC / Line Driver (7272 without bypass capacitor)

Connection Type

1 = Radial cable (1 meter)
2 = Radial M12, 8-pin (***eurofast***®)
4 = Radial M23, 12-pin (***multifast***®)
5 = Radial MS, 6-pin
6 = Radial MS, 7-pin
7 = Radial MS, 10-pin
A = Optional radial cable length
E = Tangential cable (1 Meter)

Pulse Rate

See below

Special Output Signal Formats

See page 21

Capacitor

0 = Standard
A = No bypass capacitor (vector motor)
(Only valid with output codes 1, 3, 4, 5)

Special Connector Wiring Formats

See page 6

Optional Cable Length (Meters)

0050 = 5 Meters

* Requires 4 mm torque pin

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
All 5020 series encoders, 1024 and below assembled in the US!
Glass: 1200, 2000, 2048, 2500, 3600, 4096, 5000 (Built in Germany)

2.5" Encoder Accessories - Couplings

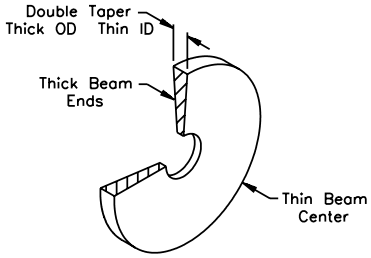
Kübler by TURCK precision flexible couplings are engineered for optimum performance when used with Kübler by TURCK encoders. Designed to connect two misaligned shafts, our beam style couplings offer superior performance, reliability, long life and are easy to install.

Performance: Designed with six overlapping double tapered beams to offer even load distribution, constant velocity and torsional rigidity.

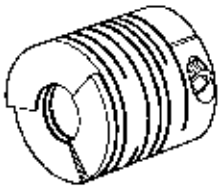
Reliability: Our couplings have exceeded the U.S. military MIL-HDBK-SA specification for flexing beams. Accelerated life tests with excessive loads at 10,000 RPM and 50 million revolutions indicate no sign of fatigue.

Installation: Clean and degrease all shafts, check parallel alignment. Do not exceed misalignment and axial motion specifications. Clamp one end of the coupling to the drive shaft. Insert encoder into the other end. Tap lightly on the coupling hub to stabilize system. Tighten the second screw.

Note: Light should be visible through the beams.



Cross section of one beam.

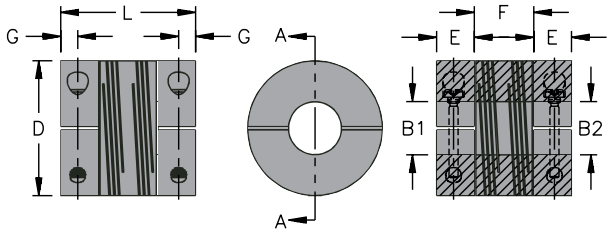


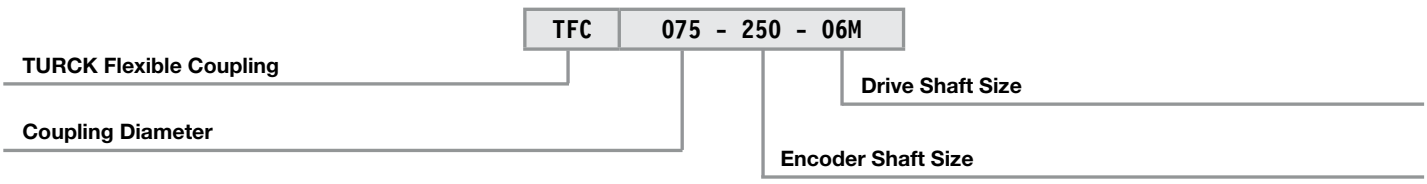
Two sets of three overlapping curved beams.

Coupling Tabulation - Inches (mm)

Part Number	D	L	E	F	G	Parallel Misalignment	Angular	Axial Motion
TFC075	0.745 (19.0)	0.750 (19.0)	0.220 (5.6)	0.310 (7.8)	0.095 (2.4)	0.008 (0.20)	5°	±0.005 (0.13)
TFC100	0.995 (25.4)	1.000 (25.4)	0.280 (7.1)	0.440 (11.2)	0.125 (3.2)	0.010 (0.25)	5°	±0.010 (0.25)
TFC125	1.240 (31.5)	1.250 (31.75)	0.310 (7.87)	0.630 (16.0)	0.140 (3.55)	0.010 (0.25)	5°	±0.012 (0.30)

B1 = Encoder shaft
B2 = Drive shaft with G10 insert





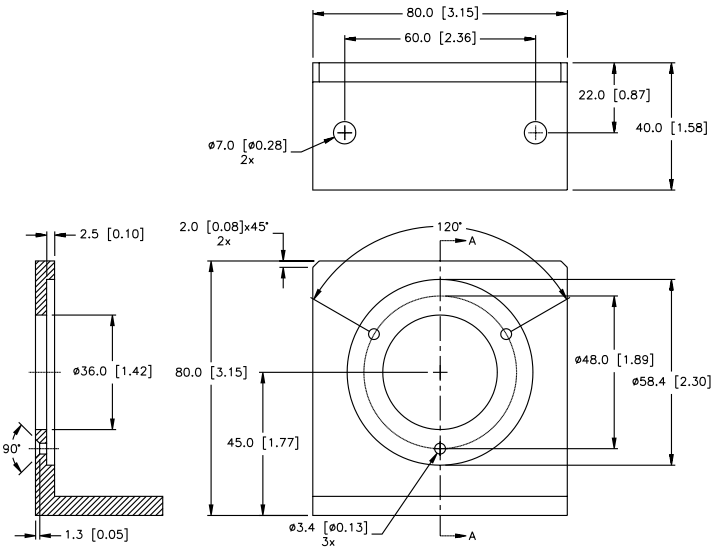
2.5" Encoder Accessories - Couplings

Part Number	Coupling Diameter	Encoder Shaft	Drive Shaft
TFC075-250-MKIT TFC075-250-M04	0.750 0.750	0.25 0.25	4, 5, 6, 8 mm 4 mm
TFC075-250-M05 TFC075-250-M06	0.750 0.750	0.25 0.25	5 mm 6 mm
TFC075-250-M08 TFC075-250-IKIT	0.750 0.750	0.25 0.25	8 mm 0.125, 0.187, 0.250
TFC075-250-125 TFC075-250-187	0.750 0.750	0.25 0.25	0.125 0.187
TFC075-250-250 TFC075-06M-MKIT	0.750 0.750	0.25 6 mm	0.25 4, 5, 6, 8 mm
TFC075-06M-M04 TFC075-06M-M05	0.750 0.750	6 mm 6 mm	4 mm 5 mm
TFC075-06M-M06 TFC075-06M-M08	0.750 0.750	6 mm 6 mm	6 mm 8 mm
TFC075-06M-IKIT TFC075-06M-125	0.750 0.750	6 mm 6 mm	0.125, 0.187, 0.250 0.125
TFC075-06M-187 TFC075-06M-250	0.750 0.750	6 mm 6 mm	0.187 0.250
TFC100-375-IKIT TFC100-375-125	1.000 1.000	0.375 0.375	0.125, 0.187, 0.250, 0.375 0.125
MTFC100-375-187 TFC100-375-250	1.000 1.000	0.375 0.375	0.187 0.25
TFC100-375-375 TFC100-375-MKIT	1.000 1.000	0.375 0.375	0.375 4, 5, 6, 8, 10 mm
TFC100-375-M04 TFC100-375-M05	1.000 1.000	0.375 0.375	4 mm 5 mm
TFC100-375-M06 TFC100-375-M08	1.000 1.000	0.375 0.375	6 mm 8 mm
TFC100-375-M10 TFC100-12M-IKIT	1.000 1.000	0.375 12 mm	10 mm 0.250, 0.375, 0.500
TFC125-12M-125 TFC125-12M-187	1.250 1.250	12 mm 12 mm	0.125 0.187
TFC125-12M-250 TFC125-12M-375	1.250 1.250	12 mm 12 mm	0.250 0.375
TFC125-12M-500 TFC125-12M-MKIT	1.250 1.250	12 mm 12 mm	0.5 6, 8, 10, 12 mm
TFC125-12M-M06 MTFC125-12M-M08	1.250 1.250	12 mm 12 mm	6 mm 8 mm
TFC125-12M-M10	1.250	12 mm	10 mm
TFC125-12M-M12 TFC125-375-M12	1.250 1.250	12 mm 0.375	12 mm 12 mm
TFC125-375-500	1.250	0.375	0.5

2" Incremental Encoder Accessories - Brackets (Shaft)

Part Number	Description
8.0010.2300.0010	Right angle bracket.

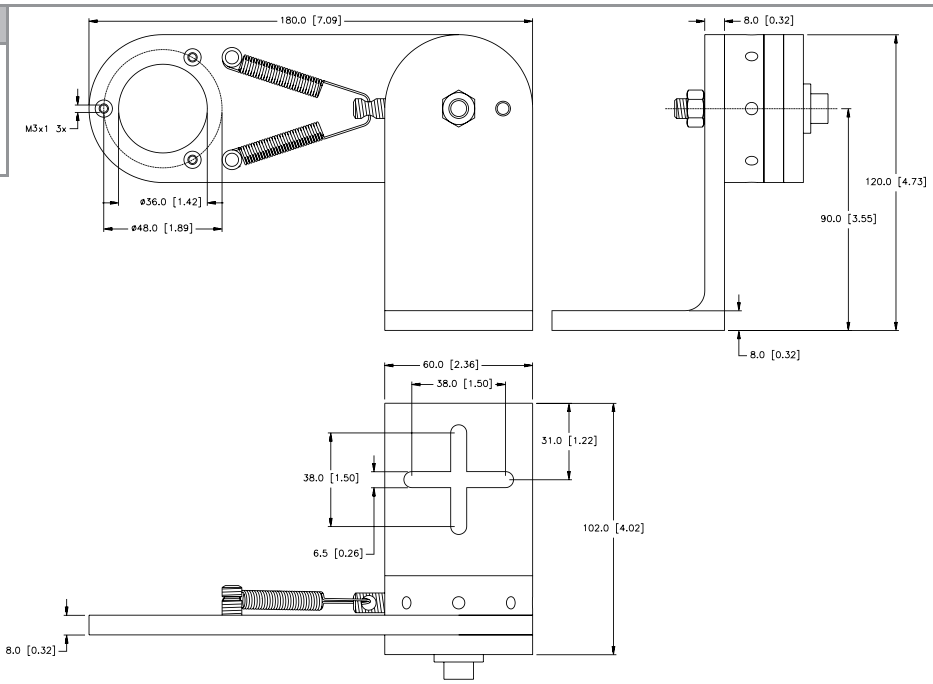
Used with clamping flange Ø58 mm face mount.
Screws included.



2" Encoder Accessories - Brackets

Part Number	Description
8.0010.7000.0010	Spring loaded right angle bracket for measuring wheels and rack and pinion systems.

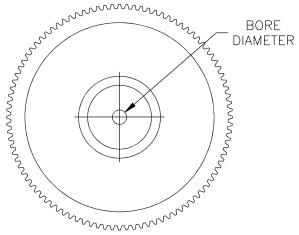
Used with clamping flange Ø58 mm face mount.
Screws included.



2.5" Encoder Accessories - Wheels

Part Number	Description
8.0000.3751.0006	6 mm bore, rubber wheel, 12" circumference.
8.0000.3751.0010	10 mm bore, rubber wheel, 12" circumference.
8.0000.3751.0006.35	1/4" bore, rubber wheel, 12" circumference.
8.0000.3751.0009.52	3/8" bore, rubber wheel, 12" circumference.

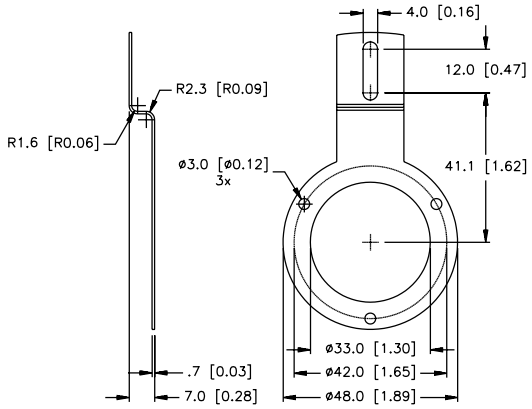
Temperature rating -30 to +80° C (-22 to +176° F).



2" (T8.5020) Incremental Encoder Accessories - Flex Brackets (Hollow Shaft)

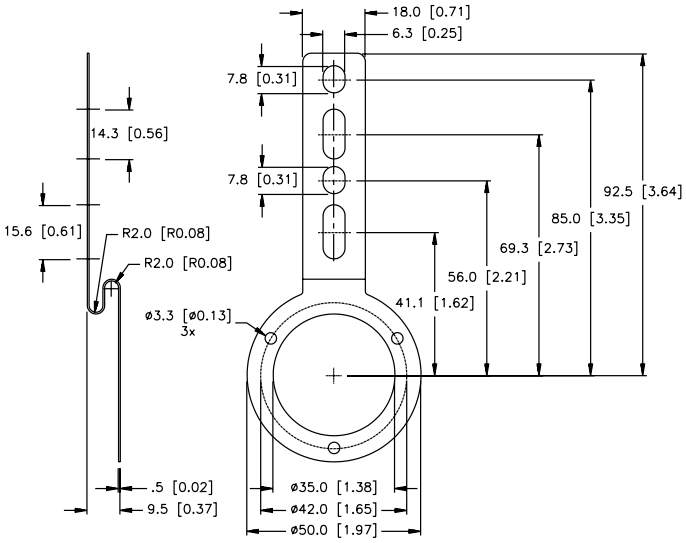
Part Number	Description
8.0010.4800.0000	Single point Tether Arm for Hollow Shaft series 5020.

Screws included (3)
M3x6 mm



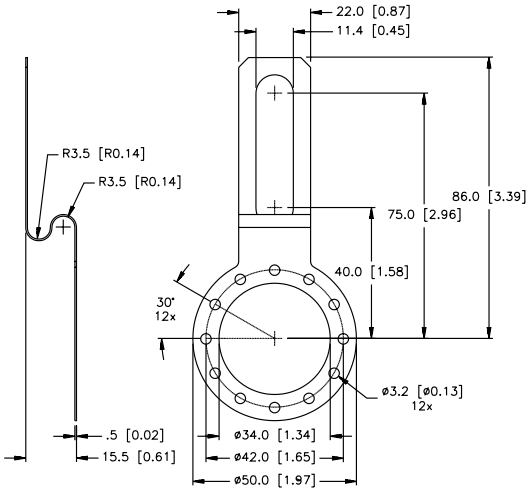
Part Number	Description
8.0010.4R00.0000	Single point Tether Arm for Hollow Shaft series 5020.

Screws included (3)
M3x6 mm



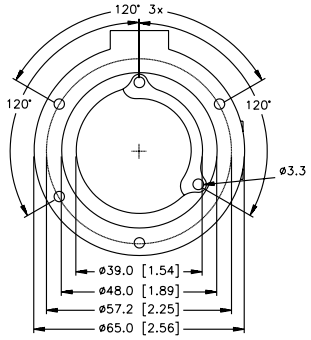
Part Number	Description
8.0010.40H0.0000	Standard Single point Tether Arm for Hollow Shaft series 5020, flange 3 & 4.

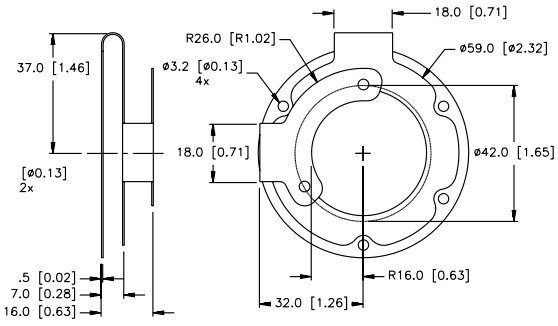
Includes:
(1) phenolic step washer (10 mm dia.)
(4) M3x6 screws
(4) lock washers



Part Number	Description
8.0010.40G0.0000	Standard three point Tether Arm for Hollow Shaft series 5020, flange 5 & 6.

Includes:
(3) M3x6 screws
(3) lock washers

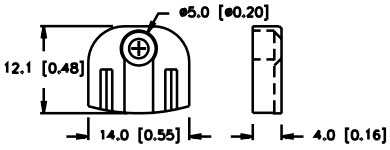


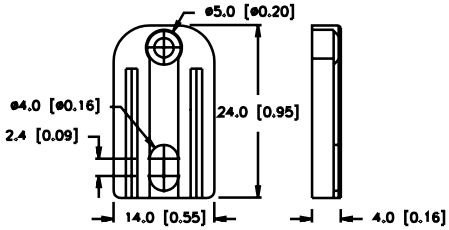


2.5" Encoder Accessories -Torque Stop (Hollow Shaft)

Part Number	Description
8.0010.4H00.0000 (short)	Torque stop for 3720 and 5020 encoders.
8.0010.4I00.0000 (long)	

Screw included (1) M2.5x5 mm.



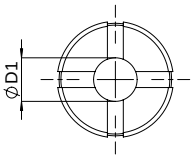


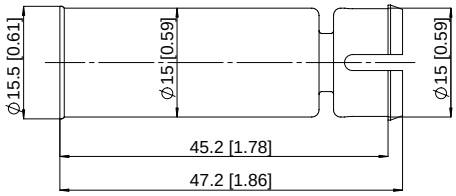
2" Encoder Accessories - Inserts

Isolation/adapter inserts for hollow shaft encoders *

Thermal and electrical isolation of the encoders:
Isolation inserts prevent currents from passing through the encoder bearings. These currents can occur when using inverter controlled three-phase or AC vector motors and considerably shorten the service life of the encoder bearings. In addition, the encoder is thermally isolated as the plastic does not transfer the heat to the encoder.

Tip:
By using these adapter inserts, you can achieve six different hollow shaft diameters, all on the basis of one 15 mm encoder.



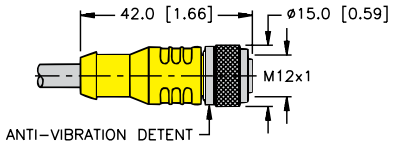
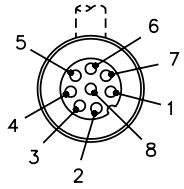
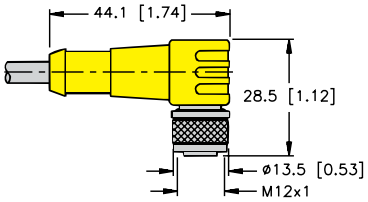


Isolation insert	D1 [mm]	D1 [Inch]
8.0010.4021.0000	6	
8.0010.4022.0000	6.35	(1/4)
8.0010.4023.0000	10	
8.0010.4024.0000	9.53	(3/8)
8.0010.4025.0000	12	
8.0010.4026.0000	12.7	(1/2)

* **Use with 15 mm bore size hollow shaft T8.5020 encoder.**

8-Pin M12 *eurofast*®, Encoder Cordsets

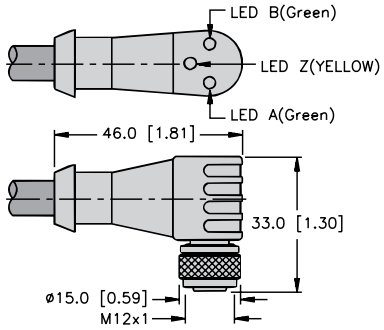
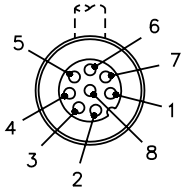
- **For use with Kübler by TURCK's Incremental Encoders**
- **Straight and Right Angle Female Connectors**
- **NEMA 1, 3, 4, 6P, and IEC IP 68**
- **60 VAC/75 VDC, 2 A**

Drawing	Part Number	Cable	Features	Pinouts	
	E-RKC 8T-930-*	AWM PVC Black 8x24 AWG 105°C 7.3 mm OD RF50930-*M+	*Differential Mode Applications, RFI/ EMI Protection*	1. WH 2. BN 3. GN 4. YE 5. GY 6. PK 7. BU 8. RD	
	E-WKC 8T-930-*				
	E-RKC 8T-930-*/S1115	AWM PVC Black 5x24 AWG 105°C 7.3 mm OD RF50930-*M+	*Single Ended Mode Applications, RFI/EMI Protection*	1. WH 2. BN 3. GN 4. N/C 5. GY 6. N/C 7. BU 8. N/C	
	E-WKC 8T-930-*/S1115				
	E-RKC 8T-274-*/S3012	AWM PVC Grey 3x22 AWG 105°C 5.2 mm OD RF51074-*M+	*Single Ended Mode, Single Channel Applications, RFI/ EMI Protection*	1. BN 2. BU 3. BK 4. N/C 5. N/C 6. N/C 7. N/C 8. N/C	
	E-WKC 8T-274-*/S3012				
	E-RKC 8T-264-*	AWM PVC Black 8x24 AWG, 4 STP 105°C 7.3 mm OD RF51264-*M+	*Differential Mode Applications, RFI/ EMI Protection*	1. WH 2. BN 3. GN 4. YE 5. GY 6. PK 7. BU 8. RD	
	E-WKC 8T-264-*				

* Length in meters. Standard cable lengths are 2, 5, 10 and 15 meters. Consult factory for other lengths.
** Standard coupling nut material is nickel plated brass "E-RKC../E-WKC..; "E-RKCV../E-WKCV.. indicates 316 stainless steel.
\+ For ***reelfast***® cable information see Connectivity Catalog.
STP = Shielded twisted pair.

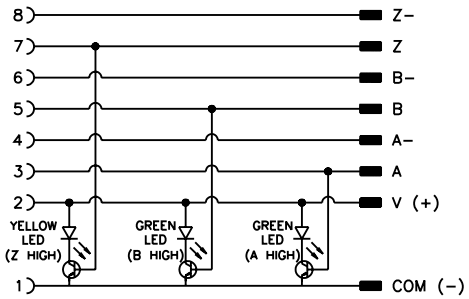
8-Pin M12 *eurofast*®, Encoder Cordset with LEDs

- **For use with Kübler by TURCK's Incremental Encoders**
- **Right Angle Female Connector**
- **NEMA 1, 3, 4, 6P, and IEC IP 68**
- **5-30 VDC**

Drawing	Part Number	Cable	Features	Pinout	
	**E-WKC 8T-PX3-930-***	**AWM PVC Black 8x24 AWG 105°C 7.2 mm OD RF50930-*M†**	***3 indicator LEDs in translucent molded connector-for use with Kübler Incremental Encoders***	1. WH 2. BN 3. GN 4. YE 5. GY 6. PK 7. BU 8. RD	

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters.
** Standard coupling nut material is nickel plated brass "WKC.."; "WKCV.." indicates 316 stainless steel.
† For ***reelfast***® cable information see Connectivity Catalog.

Wiring Diagram

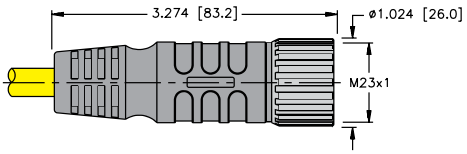
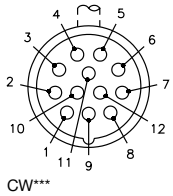


8-pin Cordset with Encoder

Note: LEDs for indication of channels A, B and Z. Green LEDs indicate channels A and B, while amber is used for the index channel. LEDs can also be used during machine set-up for home position indication, and provide operational status of encoder output channels.

12-Pin *multifast*® Encoder Cordsets

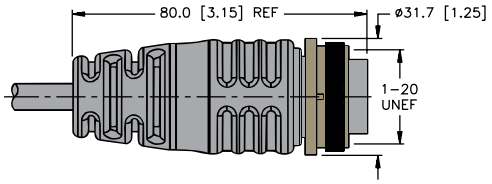
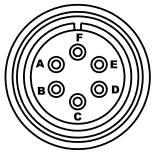
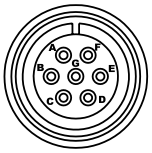
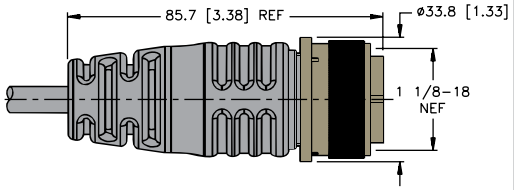
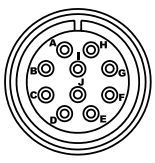
- **Female Coupling Nut, Female Contact**
- **Shielded High Grade Oil and UV Resistant PVC**

Drawing	Part Number	Specifications	Application	Pinouts	
	E-CKM 12-931-*	**12x24 Black PVC 7.2 mm O.D. 26 AWG Drain, Foil and Braided Shield 105°C**	***12-pin Incremental***	1. PK 7. N/C 2. RD/BU 8. GY 3. BU 9. N/C 4. RD 10. WH 5. GN 11. PK/GY 6. YE 12. BN	 CW***
	E-CKM 12-1687-*/A	**12x26 Grey PVC 7.3 mm O.D. 26 AWG Braided Shield 80°C**	***12-pin Absolute***	1. WH 7. BU 2. BN 8. RD 3. GN 9. BK 4. YE 10. VT 5. GY 11. PK/GY 6. PK 12. RD/BU	

* Length in meters. Standard cable lengths are 2, 5, 10 and 15 meters. Consult factory for other lengths.
** Standard coupling nut material is nickel plated brass "E-RKC../E-WKC..; "E-RKCV../E-WKCV.. indicates 316 stainless steel.
*** Reversed.
\+ For ***reelfast***® cable information see Connectivity Catalog.
STP = Shielded twisted pair.

Military Cordsets

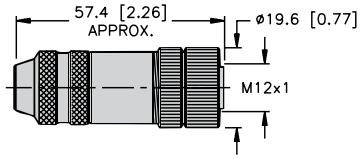
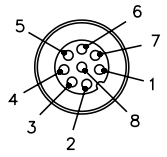
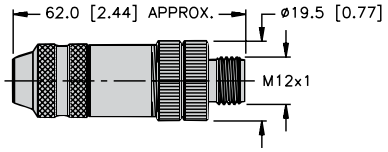
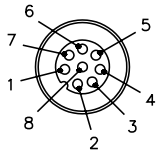
- **6, 7 and 10-Pin**
- **Shielded High Grade Oil + UV Resistance + PVC**

Drawing	Part Number	Specifications	Application	Pinouts	
	E-MK 6-930-*	**24 AWG, Black PVC 7.3 mm O.D. 26 AWG Drain, Foil & Braided Shield, 105°C**	***6-pin, Threaded Mates with 6-pin encoder***	A. WH B. BN C. BU D. GY E. GN F. N/C	
	E-MK 7-930-*	**24 AWG, Black PVC 7.3 mm O.D. 26 AWG Drain, Foil & Braided Shield, 105°C**	***7-pin, Threaded Mates with 7-pin encoder***	A. GN B. GY C. BU D. BN E. WH F. N/C G. N/C	
	E-MK 10-931-*	**24 AWG, Black PVC 7.2 mm O.D. 26 AWG Drain, Foil & Braided Shield, 105°C**	***10-pin, Threaded Mates with 10-pin encoder***	A. GN F. WH B. GY G. YE C. BU H. PK D. BN I. RD E. BK J. Drain	

*** Reversed.

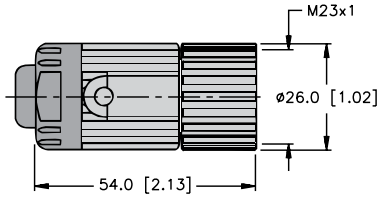
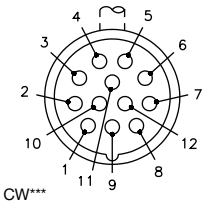
8-Wire M12 *eurofast*® Encoder Field Wireable Connectors, Shielded, Screw Terminals

- Screw Terminals
- No Soldering Required
- IEC IP 67 Protection

Drawing	Part Number	Specifications	Application	Pinouts
	CMB 8181-0	Nickel Plated Brass PG9 cable gland accepts 6-8 mm cable diameter. Screw terminal accepts up to 18 AWG conductors. 85°C 60 VAC/75 VDC, 4 A	*Metal,* *Fully Shielded* *Mates with standard key 8-pin cordsets and receptacles*	
	CMBS 8181-0		*Metal,* *Fully Shielded* *Mates with standard key 8-pin cordsets and receptacles*	

12-Pin M23 *multifast*® Field Wireable Encoder Connectors, Shielded, Solder Cup

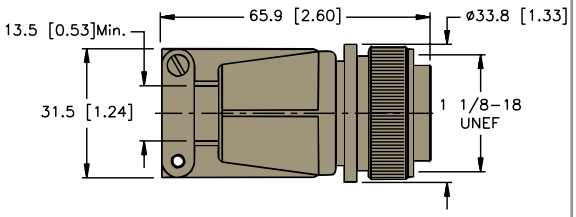
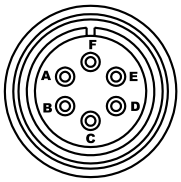
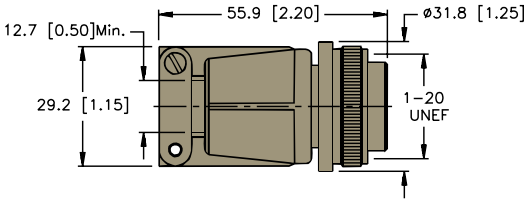
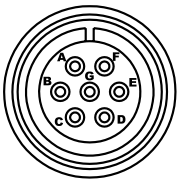
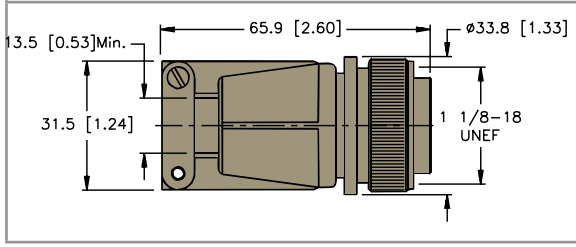
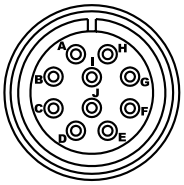
- 12-pin
- Female Coupling Nut
- Female Contact Holders

Drawing	Part Number	Specifications	Application	Pinout
	E-CKS 12-0 1)	Solder Cup up to 18 AWG	*Metal, fully shielded* *Mates with 12-pin encoders*	

*** Reversed.

Military Cordsets - Field Wireable Connectors

- 7 and 10-Pin
- Threaded and Bayonet Styles

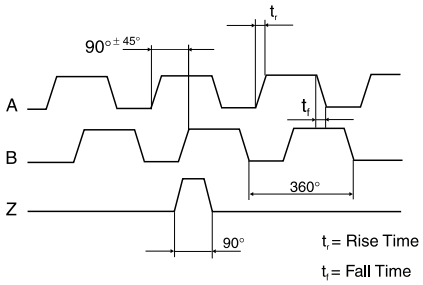
Drawing	Part Number	Specifications	Application	Pinouts
	E-MK 6-0	Solder cup connection	*6-pin, Threaded* *Mates with 6-pin encoder*	
	E-MK 7-0		*7-pin, Threaded* *Mates with 7-pin encoder*	
	E-MK 10-0		*10-pin, Threaded* *Mates with 10-pin encoder*	

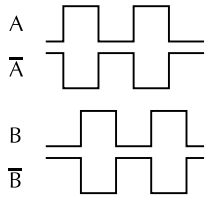
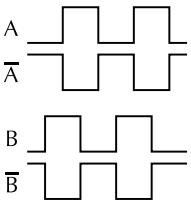
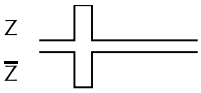
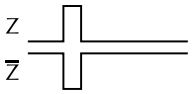
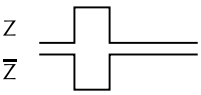
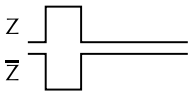
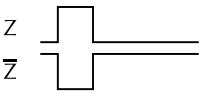
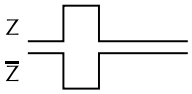
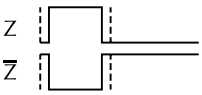
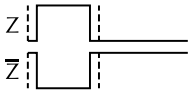
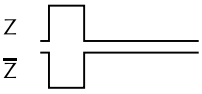
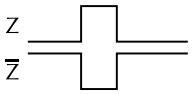
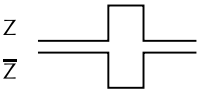
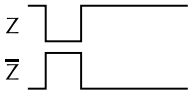
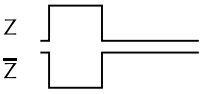
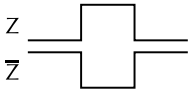
Wave Forms

Outputs

All **Kübler by TURCK** encoders come standard with six channels where A leads B in the clockwise direction and the standard index is gated with A & B. The tolerance of the wave form affects the control and, in some cases, may affect the smoothness of system operation.

Wave Form Tolerances



A leads B when the shaft is turned in the clockwise direction viewing the shaft or collet end. This is the **Kübler by TURCK** standard. This format applies to the pin key codes listed below.		B leads A when the shaft is rotated in the clockwise direction viewing the shaft or collet end. This format applies to the pin key codes listed below.	
A leads B, Z gated with A & B. This is the **Kübler by TURCK** standard. Z is 90° wide.		**Code 04:** B leads A, Z gated with A & B. Z is 90° wide.	
Code 01: A leads B, Z gated with B. Z is 180° wide.		**Code 05:** B leads A, Z gated with B. Z is 180° wide.	
Code 02: A leads B, Z gated with A. Z is 180° wide.		**Code 06:** B leads A, Z gated with A. Z is 180° wide.	
Code 03: A leads B, Z ungated. Z is 330° to 360° wide.		**Code 07:** B leads A, Z is ungated. Z is 330° to 360° wide.	
Code 08: A leads B, Z is 180° wide.		**Code 09:*** B leads A, Z gated with $\overline{B}$. Z is 180° wide.	
Code 13:* A leads B, Z gated with $\overline{B}$. Z is 180° wide.		**Code 10:** B leads A, Z is a negative marker gated with B. Z is 180° wide.	
Code 11: A leads B, Z is a minimum with of 270° (electrical degrees).		**Code 12:** B leads A. Z has a minimum width of 270°.	

*Note: For 50xx encoders, Z is 160° wide.

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