



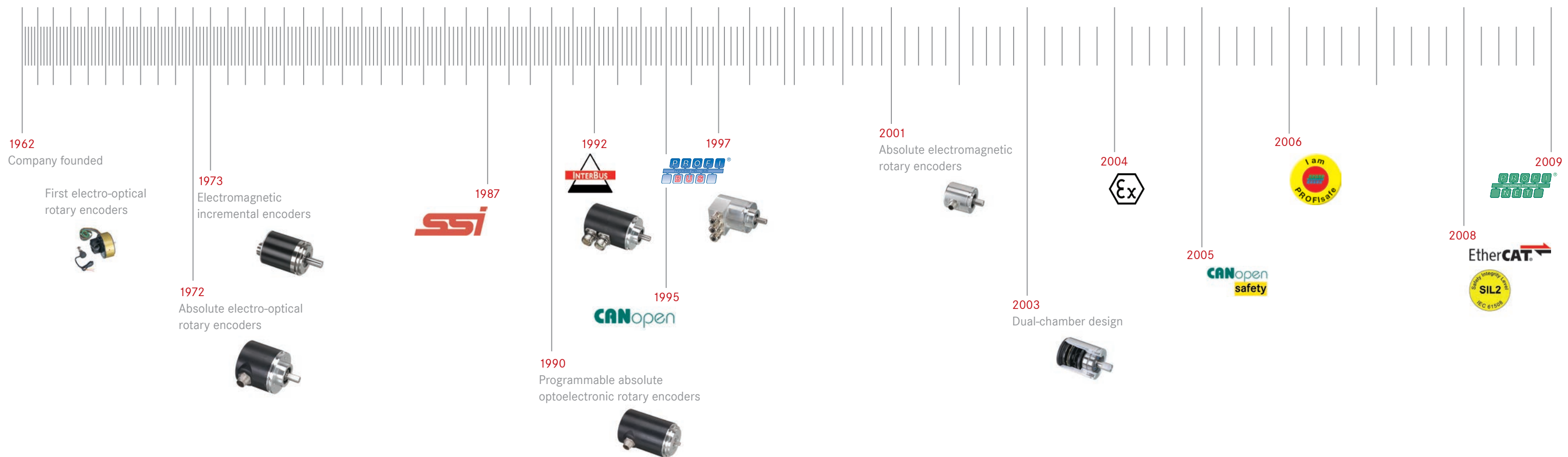
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Product Overview

Rotary Encoders



1962-2010



Our company

TWK-ELEKTRONIK was founded in 1962. For over 40 years the company has stood for experience in the development and manufacture of sensors for angle, length and position measurements.

The highly developed sensors from TWK-ELEKTRONIK are used in mechanical engineering, plant engineering and special-purpose as well as in instrument engineering. The wide ranging line of sensors is applied in all fields of industrial and measurement technology, from labelling machines to large paper machines, from camera control systems to wind power plants.

The expanding company incorporates the rapid technological developments in automation in its innovative and inventive solutions, focussed on our customers' technological requirements.

These maximum solutions are then elaborated within the company's own highly qualified team of engineers and technicians with their many years of accumulated expertise. The company also develops application-specific solutions for smaller production series.

The technically superior products from TWK-ELEKTRONIK remain available for many years of use.

Through its high level of professionalism, combined with competent advising and support, TWK-ELEKTRONIK ensures a high level of satisfaction among its customers, as is reflected by the company's strong position in the market and its annually increasing sales.

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Smaller design

The rotary encoders of the T-series are especially robust thanks to a minimum housing thickness of 5 mm. A housing diameter of 42 mm is available for applications where installation space is limited.



Additional functions

A special version of our rotary encoder is the electronic cam controller, NOC. Besides the absolute position signal, programmable switching outputs are available for the user's for the simulating of cams.

Backlash-free transmission

The protected backlash-compensating measuring gear wheel ZRS from TWK allows the tolerance-free transmission of large ring gear motions to the rotary encoder.

Gearbox or not?

For multiturn rotary encoders, the number of completed revolutions must be recorded and stored so that the actual position value can be output at any time, particularly after a power failure and machine run-on. The gearbox of the TRX series records up to 4096 revolutions mechanically. The TSX series employs a counter buffered by a long-life battery and reliably recording up to 32768 revolutions.

A more compact and lower-priced version is the TMX series, with a counter without battery that reliably records a run-on of ± 90° in the event of a power failure.

Series	T										
Product	TRD	TRE	TRN	TRA	TSD	TSE	TSN	TSA	TME	TMN	TMA
Electrical data											
Interface											
Analogue											
SSI											
PROFIBUS	PROFIBUS				PROFIBUS						
CANopen											
CANopen safety			CANopen				CANopen			CANopen	
			CANopen safety				CANopen safety			CANopen safety	
Resolution	13 Bit	13 Bit	13 Bit	12 Bit	13 Bit	13 Bit	13 Bit	12 Bit	13 Bit	13 Bit	12 Bit
Measurement range max. revolutions	4096 rotations	4096 rotations	4096 rotations	4096 rotations	32768 rotations	32768 rotations	32768 rotations	32768 rotations	32768 rotations	32768 rotations	32768 rotations
Adjustable via	Bus		Bus	Teach-In	Bus		Bus	Teach-In		Bus	Teach-In
Sensor system	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic
Supply voltage	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Mechanical data											
Housing diameter	ø 50 mm	ø 50 mm	ø 50 mm	ø 50 mm	ø 50 mm	ø 50 mm	ø 50 mm	ø 50 mm	ø 50 mm	ø 50 mm	ø 50 mm
Shaft diameter	ø 12 mm	ø 12 mm	ø 12 mm	ø 12 mm	ø 12 mm	ø 12 mm	ø 12 mm	ø 12 mm	ø 12 mm	ø 12 mm	ø 12 mm
Shaft bearing capacity, radial/axial	250 N/250 N	250 N/250 N	250 N/250 N	250 N/250 N	250 N/250 N	250 N/250 N	250 N/250 N	250 N/250 N	250 N/250 N	250 N/250 N	250 N/250 N
Optional							Without shaft, with external magnetic hub, F series				
Gearbox	Mechanical	Mechanical	Mechanical	Mechanical	Battery-buffered	Battery-buffered	Battery-buffered	Battery-buffered	Electronic	Electronic	Electronic
Connection	Connector	Connector	Connector	Connector	Connector	Connector	Connector	Connector	Connector	Connector	Connector
	cap	or cable	or cable	or cable	cap	or cable	or cable	or cable	or cable	or cable	or cable
Environmental data											
Protection class	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K
Operating temperature	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C

SIL2

For safety-relevant applications, rotary encoders with SIL2 certification as per IEC61508 are available. Thanks to the special hardware and software, the specifications for SIL2 are fulfilled. The following standards are employed: „CANopen Framework for safety-relevant communication“, profile CiA DS 304, version 1.0.1 or

„PROFIsafe Profile for Safety Technology,“ version 1.30/No. 3.092, version 2.00/No. 3.192 (PNO).



Series	K		C			
Product	KRD	KRE	CRD/CRK CRN-D/CRN-C	CRE	CRF	DAF
Electrical data						
Interface						
Analogue						Current / Volt.
SSI		SSI		SSI	SSI	
Parallel				Parallel	Parallel	
PROFIBUS	PROFIBUS		PROFIBUS			
PROFIsafe			PROFIsafe			
EtherCAT			EtherCAT			
DeviceNet			DeviceNet			
CANopen			CANopen			
CANopen safety			CANopen safety			
Resolution (max.)	16 Bit	16 Bit	13 Bit	13 Bit	12 Bit	12 Bit
Measurement range max. revol.	4096 rotations	4096 rotations	4096 rotations	4096 rotations	4096 rotations	4096 rotations
Adjustable via	Bus	Zero setting	Bus		Software	Software
Sensor system	Opto-electronic	Opto-electronic	Opto-electronic	Opto-electronic	Opto-electronic	Opto-electronic
Supply	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Mechanical data						
Housing diameter	∅ 58 mm	∅ 58 mm	∅ 65/105 mm	∅ 65 mm	∅ 65/105 mm	∅ 65/105 mm
Shaft diameter	∅ 6/10 mm	∅ 6/10 mm	∅ 6/10/12 mm	∅ 6/10/12 mm	∅ 6/10/12 mm	∅ 6/10/12 mm
Shaft bearing capa., radial/axial	60 N/40 N	100 N/100 N	250 N/250 N	250 N/250 N	250 N/250 N	250 N/250 N
Gearbox	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical
Connection			Connector			
	Connector cap	Connector cable	cable cap	Connector cap	Connector cap	Connector cap
Environmental data						
Protection class	IP65/IP66	IP65/IP66	IP65/IP66	IP65/IP66	IP65/IP66	IP65/IP66
Operating temp.						
Standard	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C
Optional	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	

Absolute single-turn rotary encoders

Assembly kits

Special installation conditions require special solutions. We can implement the mechanical or electronic requirements of your application not only with our housing-equipped rotary encoders. Should the available space be scarce, for example, we can provide magnetic rotary encoders without housing as PCB kits according to your specifications. In this case, the magnet is inserted directly into the drive shaft or attached as a magnetic hub.



Series	T					
Product	TBD 50	TBE 50	TBN 50	TBA 50	TBE 36	TBN 36
Electrical data						
Interface						
Analogue						
SSI		SSI			SSI	
PROFIBUS	PROFIBUS					
CANopen			CANopen			CANopen
CANopen safety			CANopen safety			
Resolution	13 Bit	13 Bit	13 Bit	12 Bit	13 Bit	13 Bit
Adjustable via	Bus		Bus	Teach-In		Bus
Sensor system	Electromagnetic	Electromagnetic	Electromagnetic	Electromagnetic	Electromagnetic	Electromagnetic
Supply	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Mechanical data						
Housing diameter	∅ 50 mm	∅ 50 mm	∅ 50 mm	∅ 50 mm	∅ 36 mm	∅ 36 mm
Shaft diameter	∅ 12 mm	∅ 12 mm	∅ 12 mm	∅ 12 mm	∅ 6 mm	∅ 6 mm
Optional	Without shaft, with external magnetic hub					
Shaft bearing capa., radial/axial	250 N/250 N	250 N/250 N	250 N/250 N	250 N/250 N	50 N/50 N	50 N/50 N
Connection	Connector	Connector	Connector	Connector	Cable	Cable
	cab	or cable	or cable	or cable		
Environmental data						
Protection class	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K	IP66/IP69K
Operating temperature	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C

Special mechanic













Our rotary encoders are also available with a locking shaft instead of a solid shaft for direct assembly on the drive shaft of the application.

The magnetic sensors without gearbox are also available in a very compact design with an external magnetic hub. In this way the motion of the drive shaft can be transmitted torque-free to the rotary encoder.



The bootloader feature integrated with many transducers enables the device's firmware to be updated locally by the user by means of the universal programme PMU from TWK.



Series													
Product	TBA 36	RBW 36	RNW 36	RAW 36	RBW 22	RSW 22	RAW 22	KBD	KBE	KBN	KDK KDS	CBE	DAB
Electrical data													
Interface	Current /Voltage		Current /Voltage		SIN/COS		Current /Voltage		Current /Voltage		Current /Voltage		Current /Voltage
Analogue													
SIN/COS													
SSI			SSI		SSI				SSI				SSI
Parallel			Parallel		Parallel				Parallel				Parallel
PROFIBUS									PROFIBUS				
CANopen											CANopen		
CANopen safety													
Resolution	12 Bit	12 Bit	12 Bit	12 Bit	12 Bit	Infinite	12 Bit	16 Bit	16 Bit	16 Bit	15 Bit	13 Bit	12 Bit
Adjustable via	Teach-In		Bus					Bus	Zero setting	Bus			Teach-In
Sensor system	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Optical	Optical	Optical	Optical	Optical	Optical
Supply	24 VDC	24 VDC	24 VDC	24 VDC	5 VDC	5 VDC	5 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Mechanical data													
Housing diameter	ø 36 mm	ø 36 mm	ø 36 mm	ø 36 mm	ø 22 mm	ø 22 mm	ø 22 mm	ø 58 mm	ø 58 mm	ø 58 mm	ø 58 mm	ø 65 mm	ø 65 mm
Shaft diameter	ø 6 mm	ø 6 mm	ø 6 mm	ø 6 mm	ø 4 mm	ø 4 mm	ø 4 mm	ø 6/10 mm	ø 6/10 mm	ø 6/10 mm	ø 6/10 mm	ø 6/10/12 mm	ø 6/10/12 mm
Optional	Without shaft, with external magnetic hub												
Shaft bearing radial/axial	50 N/50 N	20 N/10 N	20 N/10 N	20 N/10 N	20 N/10 N	20 N/10 N	20 N/10 N	60 N/40 N	100 N/100 N	100 N/100 N	100 N/100 N	250 N/250 N	250 N/250 N
Connection	Cable	Cable	Cable	Cable	Cable	Cable	Cable	Connector cap	Connector cable	Cap	Connector cable	Connector cable	Connector cable
Environmental data													
Protection class	IP66/IP69K	IP53/IP68	IP53/IP68	IP53/IP68	IP53/IP68	IP53/IP68	IP53/IP68	IP65/IP66	IP65/IP66	IP65/IP66	IP65/IP66	IP65/IP66	IP65/IP66
Operating temperature													
Standard	-40 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C
Optional							-25 ... +125 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C

Incremental rotary encoders



Product	GIO 12	RIW 22	GIO 24	RIW 36	TBI 36	TBI 50	GIM 5000	GIM 115	GIM 900
Electrical data									
Sensor system	Electro-optic	Magnetic	Electro-optic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic
Output voltage	20 V max	5 VDC	5/24 VDC	5/24 VDC	5/24 VDC	5/24 VDC	5/24 VDC	5/24 VDC	5/24 VDC
Supply	I = 20 mA	5 VDC	5/24 VDC	5/24 VDC	5/24 VDC	5/24 VDC	5/24 VDC	5/24 VDC	5/24 VDC
Max. pulses /revolutions	125 pulses	1024 pulses	5000 pulses	2048 pulses	2048 pulses	2048 pulses	136192 pulses	266240 pulses	273408 pulses
Mechanical data									
Housing diameter	∅ 12 mm	∅ 22 mm	∅ 24 mm	∅ 36 mm	∅ 36 mm	∅ 50 mm	∅ 58 mm	∅ 115 mm	∅ 90 mm
Shaft diameter	∅ 1,5 mm	∅ 4 mm	∅ 4 mm (3/5/6/6,35)	∅ 6 mm	∅ 6 mm	∅ 12 mm	∅ 6 mm (8/10/12)	∅ 16 mm	∅ 6 mm (8/10/12)
Optional		Without shaft with external magnetic hub		Without shaft with external magnetic hub		Without shaft with external magnetic hub			
Connection	Wires	Cable	Cable	Cable	Cable	Cable connector	Connector or cable	Connector or cable	Connector or cable
Shaft bearing capa., radial/axial	1 N/1 N	20 N/10 N	20 N/20 N	20 N/10 N	50 N/50 N	250 N/250 N	200 N/200 N	*	200 N/200 N
Environmental data									
Protection class	IP00	IP53/IP68	IP64/IP65	IP53/IP68	IP66/IP69K	IP66/IP69K	IP65	IP65	IP65
Operating temperature	0 ... +50 °C	-25 ... +85/125 °C	-40 ... +85 °C	-25 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-20 ... +80 °C	-20 ... +80 °C	-20 ... +80 °C
							* Integrated coupling		



- ❖ Besides the wide range of rotary encoders, TWK also offers a large line of accessories: from shaft bearing units for high loads to stable protective housings to cable converters and toothed belt converters for transforming linear to rotary motions.
- ❖ For applications in explosion-proof areas, Atex95 versions are available.



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