The modular variety of rotary encoders

Rotary and linear measurement technology has represented TR-Electronic's main business for more than twenty years. On this page, we want to present to you our modular system for aboslute rotary encoders and our latest generation of programmable incremental encoders, which - we are confident - offers a suitable sensor for your automation task.

1. Series

Compact encoder	**F**eedback encoder	**Q**-bic encoder	**A**TEX encoder	**I**ncremental encoder
For standard industrial applications	**For closed drive systems**	**For open drive systems**	**For explosion-risk areas**	**For standard industrial applications**
The traditional type, but at the same time extremly flexible. Available as solid shaft encoder or also in different versions with hollow shaft, blind shaft or integrated coupling.	Due to their minimal depth, our feedback encoders are especially suitable for installation on drives - a fact that influenced their design as hollow shaft encoders or encoders with integrated coupling.	The cubic design offers space for more - whether for the hollow shaft with up to 25 mm diameter or for the over sized connector panal which e.g. either allows simultaneous output of communication, SSI and fieldbus signals or accepts two connectors for redundancy.	Our ATEX encoders are especially designed for applications in potentially explosive atmospheres. To be more precise: for the EX range of protection II 2 G/D EEx de IIC T6, PTB 03 ATEX 1051.	The traditional type, but at the same time extremely flexible. Available as solid shaft incremental encoder or also in different versions with hollow shaft, blind shaft or integrated coupling.

2. Detection

M	**E**	**O**	**X**	**D**
Magnetical	**Optical up to 15 bits**	**Optical 16 bits and up**	**Optical 17 bits and up**	**Double encoder**
Our "M" detection is very well suited for applications that do not have high demands on resolution, accuracy and interface variety.	The resolution of 13 / 15 bits (programmable), as single- or multi turn encoder, meets the requirements of most applications in industrial automation. The expanded choice of interfaces and numerous options enable particular and individual solutions.	Up to 17 bits / revolution (programmable) solve almost every industrial measurement problem, when high demands on resolution are made. Also available as multi turn encoder.	Probably the only detection available on the market with programmable Sine/Cosine output (each resolution up to 65536 pulses). In combination with the 17 bits absolute signal, almost unlimited possibilities are created e.g. for gearless drives, safty applications, ...	Two redundant encoders with a common shaft or two detection units with a central disc e.g. for redundancy applications. Various combinations of interfaces are possible.

3. Mechanical version

V	**H**	**S**	**K**	**W**
Solid Shaft	**Hollow shaft**	**Blind shaft**	**Integrated coupling**	**String pot**
Acutally, so ordinary that there's not much to write about it. However, we have solid shafts with flats, with or without keys, and in both the US and metric dimensions.	With or without key / slot. Up to 25 mm diameter, according to the encoder series.	In contrast to a hollow shaft, a blind shaft has the advantage of only one opening. Therefore, it is generally more suitable for high rotation speeds.	Combines torsion resistant mounting of a solid shaft encoder with the compact design of a blind shaft. Vibrations and shaft eccentricity are balanced by a cross coupling element made of plastic (PUR).	Graduated drum with extremely robust spring retraction and precise single-layer wind off mechanism. Backlash-free coupling element between encoder and wire. Especially, suitable for applications in storages and logistics as well as in stage engineering.
				

Example: CEV58M - XXXXX

- Compact encoder
- „E" detection
- Solid shaft
- Size 58 mm
- Multi turn
- 5-digit number

The article numbers of the absolute rotary encoders and our latest generation of programmable incremental encoders, that are shown in this overview, are all coded according to the example on the left.

So you only have to have a look at the article number to find out about the basic features of the device.

We realize your vision!

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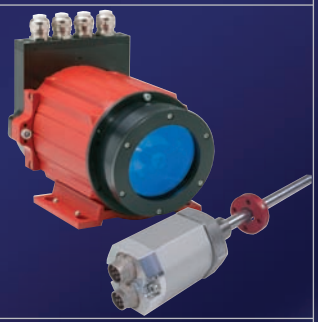
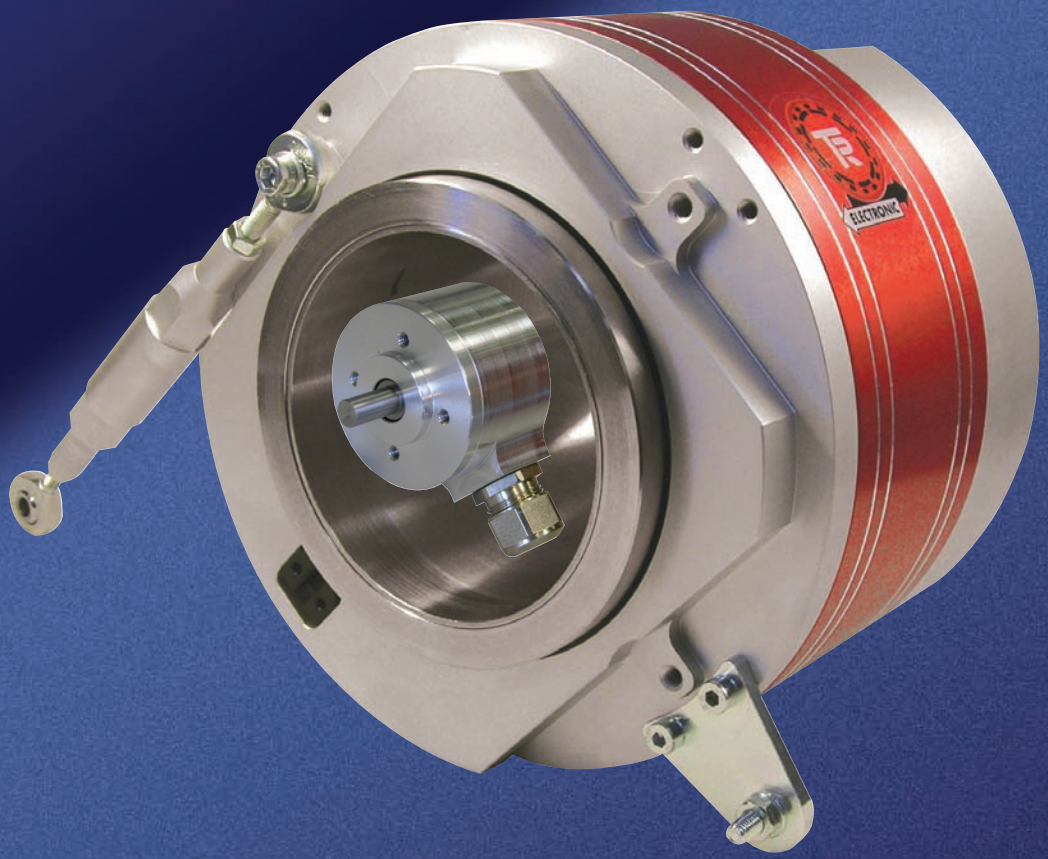
	sensors	motion	systems	controls
TR electronic	Angular measurement Displacement measurement Application modules	Compact drives		
TR systeme		Integrated controller for hydraulics Axis controller	Fieldbus I/Os Industrial PCs Condition monitoring	Programmable logic controller Cam controller
TR unidor	Sensors for stamping and metal forming machines		Measurement and control systems for stamping and metal forming machines	Process optimization and monitoring tools

www.tr-electronic.de

Overview
Rotary Encoders





TR-Electronic - Your Partner in the World of Automation

Interfaces

Of course, TR rotary encoders are available with interfaces that have been established on the market for many years. But also the most innovative interfaces, such as ETHERNET Powerlink or EtherCAT, are part of our wide range of interfaces.

A	Analog 0 ... 20 mA, 4 ... 20 mA, 0 ... +10 V, +10 ... 0 V, -10 ... V
AS-i	Actuator sensor interface
ASI	Asynchronous serial interface
Co	CANopen in compliance with ISO/DIS 11898 Profile for encoder CIA DS-406 V2.0
DN	CAN DeviceNet in compliance with ISO/DIS 11898
EPL	ETHERNET Powerlink Interoperability with other devices, such as TCP/IP
ETC	EtherCAT Ethernet for Control Automation Technology
IBS	INTERBUS
ISI	Incremental serial interface
LWL	Optical waveguide
NSW	Camshaft gear
P	Parallel with different output codes, such as binary, BCD, Gray, etc.
PB	PROFIBUS-DP in compliance with PNO profile class 2
SC	Sine/Cosine
SSI	Synchronous serial interface
	Push-pull
	Line driver

Series
Short-cut
Mechanical version
Steps per revolutions (max.) **Accuracy (max.)**
Number of revolutions (max.) **single turn** **multi turn (optional)**
Interfaces **Synchronous serial (SSI)** **Incremental serial (ISI)** **Asynchronous serial(ASI)** **Parallel (P)** **Analog (A)** **Camshaft gear (NSW)** **Sine/Cosine (SC)** **Push-pull** **Line driver**
CANopen (Co) **DeviceNet (DN)** **Profibus-DP (PB)** **Actuator sensor (AS-i)** **Optical waveguide (LWL)** **Interbus (IBS)** **EtherCAT (ETC)** **Powerlink (EPL)**
Supply voltage
Shaft diameter in mm
Connection **Cable gland** **Connector**
Temperature range
Protection grade (max.)
Programmability
Features
Options, depending on the interface

1) programmable
2) only for single turn devices
3) AS-i devices according AS-i-specification
4) Motor shaft: IP 41

TR Standard Absolute Rotary Encoders

22	41	50	58	58	58	58
						
CMV22	CMV41	CEV50	CMV58	CEV58S	CEV58M	COV58
Solid shaft	Solid shaft	Solid shaft	Solid shaft	Solid shaft	Solid shaft	Solid shaft
1024 ± 0,5° / 4096 ± 1°	1024[1] ± 0,5° / 4096[1] ± 1°	4096[1] ± 1 Bit	1024[1] ± 0,5° / 4096[1] ± 1°	8192[1] ± 1 Bit / 32768[1] ± 1 Bit	8192[1] ± 1 Bit / 32768[1] ± 1 Bit	131072[1] ± 1 Bit
1 256	1 256	1	1 4096	1	32768 (256000)	1 4096 (256000)
ASI	SSI	SSI	SSI	SSI ISI ASI Parallel	SSI ISI ASI	SSI
		CANopen	CANopen DeviceNet Profibus		CANopen DeviceNet Profibus AS-i	CANopen DeviceNet Profibus
5 VDC ± 20%	5 VDC ± 20%	11 ... 27 VDC	11 ... 27 VDC	11 ... 27 VDC	11 ... 27 VDC[3]	11 ... 27 VDC
6	6	6	6 / 8 / 10 / 12	6 / 8 / 10 / 12	6 / 8 / 10 / 12	6 / 8 / 10 / 12
radial	radial	radial radial / axial	radial / axial radial / axial	radial / axial radial / axial	radial / axial radial / axial	radial / axial radial / axial
-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C
IP 65	IP 65	IP 65	IP 65	IP 65	IP 65	IP 65
	TRWinProg	TRWinProg Bus	TRWinProg Bus	TRWinProg	TRWinProg Bus	TRWinProg Bus
- Digital potentiometer						
			- Preset input	- Preset input - A, B, Z up to 8192 pulses	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods

Intelligent Positioning Drive

Absolute positioning directly via fieldbus.
Integrated motor, power amplified position control-loop controller, absolute encoder, PLC functions and fieldbus interface.

Also with linear encoder for hydraulic axes.

Heavy-Duty Industrial PC

Double shock proof mounted housing isolates the electronics from vibration, while front access (MIPC) simplifies configuration and start up.
Choose from our wide selection of housings.

Motor Feeback Systems

Feedback encoder for modern positioning drives. Optionally integrated or directly mounted on the drive shaft via hollow shaft.

SPC - The PLC for PC

Turns every PC into an efficient PLC under S5/S7 or IEC 1131 protocols. Combines the comfort of PC control with the safety of a seperate processor for PLC tasks.

@ctiveIO - More Than Fieldbus Modules

Modular, rugged fieldbus node system
I/O-node, small-scale PLC, decentralized axis controller, high performance cam controller, DIN-rail mounted industrial PC... with commercial fieldbus systems, such as, Profibus-DP, CANopen, DeviceNet, LightBus ... and ETHERNET as an option!

58	58	58	58	58	58	58
						
CMH58	FEH58	CEH58S	CEH58M	FOH58	COH58	CMS58
Hollow shaft	Hollow shaft	Hollow shaft	Hollow shaft	Hollow shaft	Hollow shaft	Blind shaft
1024[1] ± 0,5° / 4096[1] ± 1°	8192[1] ± 1 Bit / 32768[1] ± 1 Bit	8192[1] ± 1 Bit / 32768[1] ± 1 Bit	8192[1] ± 1 Bit / 32768[1] ± 1 Bit	131072[1] ± 1 Bit	131072[1] ± 1 Bit	1024[1] ± 0,5° / 4096[1] ± 1°
1 4096	1 32768	1	32768 (256000)	1 4096	1 4096 (256000)	1 4096
SSI	SSI ISI ASI Parallel[2]	SSI ISI ASI Parallel	SSI ISI ASI	SSI ISI ASI Parallel[2]	SSI ISI ASI Parallel[2]	SSI
CANopen DeviceNet	CANopen Profibus AS-i		CANopen DeviceNet Profibus AS-i	CANopen Profibus	CANopen DeviceNet Profibus AS-i	CANopen DeviceNet Profibus
11 ... 27 VDC	11 ... 27 VDC[3]	11 ... 27 VDC	11 ... 27 VDC[3]	11 ... 27 VDC	11 ... 27 VDC[3]	11 ... 27 VDC
8 / 10 / 12	8 / 10	8 / 10 / 12	8 / 10 / 12	8 / 10	8 / 10 / 12	6 / 8 / 10
radial / axial radial / axial	radial	radial radial	radial radial	radial	radial radial	radial / axial radial / axial
-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C
IP 65	IP 00	IP 54	IP 54	IP 00	IP 54	IP 65
TRWinProg Bus	TRWinProg Bus	TRWinProg	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus
	- Torque support spring - Clamping ring	- Torque support spring - Clamping ring	- Torque support spring - Clamping ring	- Torque support spring - Clamping ring	- Torque support spring - Clamping ring	
- Preset input	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B, Z up to 8192 pulses	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input

TR Standard Absolute Rotary Encoders

58	58	58	58	58	58	58
						
FES58	CES58S	CES58M	FOS58	COS58	CMK58	FEK58
Blind shaft	Blind shaft	Blind shaft	Blind shaft	Blind shaft	Coupling	Coupling
8192[1)] ± 1 Bit	8192[1)] ± 1 Bit	32768[1)] ± 1 Bit	8192[1)] ± 1 Bit	32768[1)] ± 1 Bit	131072[1)] ± 1 Bit	1024[1)] ± 0,5°	4096[1)] ± 1°	8192[1)] ± 1 Bit
1 32768	1	32768 (256000)	1 4096	1 4096 (256000)	1 4096	1 32768
SSI ISI ASI Parallel[2)]	SSI ISI ASI Parallel	SSI ISI ASI	SSI ISI ASI Parallel[2)]	SSI ISI ASI Parallel[2)]	SSI	SSI ISI ASI Parallel[2)]
CANopen Profibus		CANopen DeviceNet Profibus AS-i	CANopen Profibus	CANopen DeviceNet Profibus AS-i	CANopen DeviceNet Profibus	CANopen Profibus
11 ... 27 VDC	11 ... 27 VDC	11 ... 27 VDC[3)]	11 ... 27 VDC	11 ... 27 VDC[3)]	11 ... 27 VDC	11 ... 27 VDC
8 / 10	8 / 10 / 12	8 / 10 / 12	8 / 10	8 / 10 / 12	Integ. coupling	Integ. coupling
radial	radial radial	radial radial	radial	radial	radial / axial radial / axial	radial
20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C
IP 00	IP 65	IP 65	IP 00	IP 65	IP 65	IP 00
TRWinProg Bus	TRWinProg	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus
- Torque support spring - Calmping ring	- Torque support spring - Calmping ring	- Torque support spring - Calmping ring	- Torque support spring - Calmping ring	- Torque support spring - Calmping ring		
- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B, Z up to 8192 pulses	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods

58	58	58	58	65	65	65
						
CEK58S	CEK58M	FOK58	COK58	CEV65	CXV65	CES65
Coupling	Coupling	Coupling	Coupling	Solid shaft	Solid shaft	Blind shaft
8192[1] ± 1 Bit / 32768[1] ± 1 Bit	8192[1] ± 1 Bit / 32768[1] ± 1 Bit	131072[1] ± 1 Bit	131072[1] ± 1 Bit	8192[1] ± 1 Bit / 32768[1] ± 1 Bit	131072[1] ± 1 Bit	8192[1] ± 1 Bit / 32768[1] ± 1 Bit
1	32768 (256000)	1 4096	1 4096 (256000)	1 4096 (256000)	1 65536	1 4096 (256000)
SSI ISI ASI Parallel	SSI ISI ASI	SSI ISI ASI Parallel[2]	SSI ISI ASI Parallel[2]	SSI ISI ASI Parallel[2] Analog NSW	SSI ISI ASI Parallel[2] Analog Sinus/Cosinus	SSI ISI ASI Parallel[2] Analog NSW
	CANopen DeviceNet Profibus AS-i	CANopen Profibus	CANopen DeviceNet Profibus AS-i	CANopen DeviceNet Profibus LWL Interbus EtherCAT Powerlink	CANopen DeviceNet Profibus EtherCAT Powerlink	CANopen DeviceNet Profibus LWL Interbus EtherCAT Powerlink
11 ... 27 VDC	11 ... 27 VDC[3]	11 ... 27 VDC	11 ... 27 VDC[3]	11 ... 27 VDC	11 ... 27 VDC	11 ... 27 VDC
Integ. coupling	Integ. coupling	Integ. coupling	Integ. coupling	8 / 10 / 12 / 14	8 / 10 / 12 / 14	8 / 10 / 12 / 14
radial / axial radial / axial	radial / axial radial / axial	radial	radial / axial radial / axial	radial / axial radial / axial	radial / axial radial / axial	radial / axial radial / axial
-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C
IP 65	IP 65	IP 00	IP 65	IP 65	IP 65	IP 65
TRWinProg	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus
					- Sine/Cosine up to 32768 periods in steps of 1	
- Preset input - A, B, Z up to 8192 pulses	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods -Latch	- Preset input - max. output frequency programmable - Latch	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - Latch

TR Standard Absolute Rotary Encoders

65	65		65	66	70
					
CXS65	CEK65		CXK65	CMV66	FXH70
Blind shaft	Coupling		Coupling	Solid shaft	Hollow shaft
131072[1)] ± 1 Bit	8192[1)] ± 1 Bit	32768[1)] ± 1Bit	131072[1)] ± 1 Bit	4096[1)] ± 1°	131072[1)] ± 1 Bit
1 65536	1 4096 (256000)		1 65536	1	65536
SSI ISI ASI Parallel[2)] Analog Sinus/Cosinus	SSI ISI ASI Parallel[2)] Analog NSW		SSI ISI ASI Parallel[2)] Analog Sinus/Cosinus	Analog	SSI ISI ASI Sinus/Cosinus
CANopen DeviceNet Profibus EtherCAT Powerlink	CANopen DeviceNet Profibus LWL Interbus EtherCAT Powerlink		CANopen DeviceNet Profibus EtherCAT Powerlink	CANopen DeviceNet Profibus	CANopen DeviceNet Profibus
11 ... 27 VDC	11 ... 27 VDC		11 ... 27 VDC	11 ... 27 VDC	11 ... 27 VDC
8 / 10 / 12	Integ. coupling		Integ. coupling	6	8 / 10 / 12 / 14
radial radial	radial / axial radial / axial		radial / axial radial / axial	radial / axial radial / axial	radial
-20 ... +70°C	-20 ... +70°C		-20 ... +70°C	-20 ... +70°C	-20 ... +70°C
IP 65	IP 65		IP 65	IP 54	IP 00
TRWinProg Bus	TRWinProg Bus		TRWinProg Bus	TRWinProg Bus	TRWinProg Bus
- Torque support spring - Clamping ring - Sine/Cosine up to 32768 peroids in steps of 1			- Sine/Cosine up to 32768 peroids in steps of 1	- Joystick encoder - Circular or square shaft	- Torque support spring - Clamping ring - Sine/Cosine up to 32768 peroids in steps of 1
- Preset input - max. output frequencey porgrammable - Latch	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - Latch		- Preset input - max. output frequency programmable - Latch	- Perset input - Cubic, square and linear profiles programmable	- Preset input - max. output frequency programmable - Latch

75	80		80	81		160	
							
QEH75	QEH80		QOH80	QEH81		CEH160	
Hollow shaft	Hollow shaft		Hollow shaft	Hollow shaft		Hollow shaft	
64 ± 1 Bit	8192[1)] ± 1 Bit	32768[1)] ± 1Bit	131072[1)] ± 1 Bit	8192[1)] ± 1 Bit	32768[1)] ± 1Bit	8192[1)] ± 1 Bit	32768[1)] ± 1Bit
1 65536	1 32768 (256000)		1 4096	1 32768 (256000)		1 32768 (256000)	
SSI ISI ASI Parallel[2)]	SSI ISI ASI Parallel[2)]		SSI ISI ASI Parallel[2)]	SSI ISI ASI Parallel[2)]		SSI ISI ASI Parallel[2)]	
CANopen DeviceNet Profibus	CANopen DeviceNet Profibus		CANopen DeviceNet Profibus	CANopen DeviceNet Profibus EtherCAT Powerlink		CANopen DeviceNet Profibus EtherCAT Powerlink	
11 ... 27 VDC	11 ... 27 VDC		11 ... 27 VDC	11 ... 27 VDC		11 ... 27 VDC	
20	16 / 20 / 24 / 25		16 / 20 / 24 / 25	16 / 20 / 24 / 25		80	
radial radial	radial radial		radial radial	radial radial		radial / axial radial / axial	
-20 ... +70°C	-20 ... +70°C		-20 ... +70°C	-20 ... +70°C		-20 ... +70°C	
IP 50	IP 54		IP 54	IP 54		IP 54	
	TRWinProg Bus		TRWinProg Bus	TRWinProg Bus		TRWinProg Bus	
- Bus operable - 6 / 8-digit LED display of actual value - Setting of address via DIP switch	- Torque support spring - Clamping ring		- Torque support spring - Clamping ring	- Torque support spring - Clamping ring - Enhanced connection technique		- Torque support spring - Clamping ring - Adapter sleeve - Bearing control	
	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - 16 / 20 mm shaft with groove		- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - 16 / 20 mm shaft with groove	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - 16 / 20 mm shaft with groove		- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	

Double Rotary Encoders

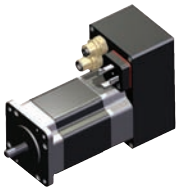
58	58	58	65	65
				
CDV58	CDS58	CDK58	CDV65	CDS65
Solid shaft	Blind shaft	Coupling	Solid shaft	Blind shaft
2x 8192[1] ± 1 Bit / 2x 32768[1] ± 1 Bit	2x 8192[1] ± 1 Bit / 2x 32768[1] ± 1 Bit	2x 8192[1] ± 1 Bit / 2x 32768[1] ± 1 Bit	2x 8192[1] ± 1 Bit / 2x 32768[1] ± 1 Bit	2x 8192[1] ± 1 Bit / 2x 32768[1] ± 1 Bit
2x 1 2x 32768	2x 1 2x 32768	2x 1 2x 32768	2x 1 2x 32768	2x 1 2x 32768
SSI ISI ASI Parallel[2] Analog	SSI ISI ASI Parallel[2] Analog	SSI ISI ASI Parallel[2] Analog	SSI ISI ASI Parallel[2] Analog	SSSI ISI ASI Parallel[2] Analog
CANopen DeviceNet Profibus LWL	CANopen DeviceNet Profibus LWL	CANopen DeviceNet Profibus LWL	CANopen DeviceNet Profibus LWL EtherCAT Powerlink	CANopen DeviceNet Profibus LWL EtherCAT Powerlink
11 ... 27 VDC	11 ... 27 VDC	11 ... 27 VDC	11 ... 27 VDC	11 ... 27 VDC
6 / 8 / 10 / 12	8 / 10 / 12	Integ. coupling	6 / 8 / 10 / 12 / 14	8 / 10 / 12
radial radial	radial radial	radial radial	radial radial	radial radial
-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C
IP 65	IP 65	IP 65	IP 65	IP 65
TRWinProg Bus	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus
- 2 redundant measurnig systems - Limited combination of interfaces	- 2 redundant measurnig systems - Limited combination of interfaces	- 2 redundant measurnig systems - Limited combination of interfaces	- 2 redundant measurnig systems - Every combination of interfaces	- 2 redundant measurnig systems - Every combination of interfaces
- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - Latch	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - Latch

65		80		81		115	
							
CDK65		QDH80		QDH81		CDV115	
Coupling		Hollow shaft		Hollow shaft		Solid shaft	
2x 8192[1)] ± 1 Bit	2x 32768[1)] ± 1 Bit	2x 8192[1)] ± 1 Bit	2x 32768[1)] ± 1 Bit	2x 8192[1)] ± 1 Bit	2x 32768[1)] ± 1 Bit	2x 8192[1)] ± 1 Bit	2x 32768[1)] ± 1 Bit
2x 1 2x 32768		1 4096		1 4096		2x 1 2x 32768	
SSI ISI ASI Parallel[2)] Analog		SSI ISI ASI Parallel[2)] Analog		SSI ISI ASI Parallel[2)] Analog		SSI ISI ASI Parallel[2)] Analog	
CANopen DeviceNet Profibus LWL EtherCAT Powerlink				CANopen DeviceNet Profibus		CANopen DeviceNet Profibus LWL EtherCAT Powerlink	
11 ... 27 VDC		11 ... 27 VDC		11 ... 27 VDC		11 ... 27 VDC	
Integ. coupling		16 / 20 / 24 / 25		16 / 20 / 24 / 25		8 / 10 / 12	
radial radial		radial radial		radial radial		radial/axial radial/axial	
-20 ... +70°C		-20 ... +70°C		-20 ... +70°C		-20 ... +70°C	
IP 65		IP 65		IP 65		IP 65	
TRWinProg Bus		TRWinProg		TRWinProg Bus		TRWinProg Bus	
- 2 redundant measurnig systems - Every combination of interfaces		- 2 detection units - Limited combination of interfaces - Above-mentioned interfaces + INC signal - Torque support spring - Clamping ring		- 2 detection units - Every combination of interfaces - Enhanced connection technique - Torque support spring - Clamping ring		- 2 redundant measurnig systems - Every combination of interfaces - Enhanced connection technique Protective housing: - Type 3 against mechanical forces	
- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - Latch		- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - 16 / 20 mm shaft with groove		- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - 16 / 20 mm shaft with groove		- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	

Specials

58	58	65	70	70	84
					
CEV58H	CEW58	CEW65	AEV70	CXV70	CEV84
Solid shaft	Solid shaft	Solid shaft	Solid shaft	Solid shaft	Solid shaft
100 ± 1 Bit / 250 ± 1 Bit	8192[1] ± 1 Bit / 32768[1] ± 1Bit	8192[1] ± 1 Bit	8192[1] ± 1 Bit	2097152[1] ± 1 Bit	8192[1] ± 1 Bit / 32768[1] ± 1Bit
1	32768 (256000)	4096	1 32768 (256000)	1	1 32768 (256000)
SSI	SSI ISI ASI	SSI ISI ASI Analog NSW	SSI ISI ASI	Analog	SSI ISI ASI Parallel Analog NSW
CANopen	CANopen DeviceNet Profibus AS-i	CANopen DeviceNet Profibus LWL Interbus			CANopen DeviceNet Profibs AS-i
11 ... 27 VDC	11 ... 27 VDC[3]	11 ... 27 VDC	11 ... 27 VDC[3]	22 ... 27 VDC	11 ... 27 VDC[3]
6	6	6	10 / 12	6	8 / 10 / 12
radial	radial radial	radial radial	radial / axial radial / axial	radial	radial radial
-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +40°C	-20 ... +70°C	-20 ... +70°C
IP 65	IP 65	IP 65	IP 65	IP 65	IP 68
TRWinProg Bus	TRWinProg Bus	TRWinProg Bus	TRWinProg Bus	TRWinProg	TRWinProg Bus
Handwheel encoder: - Incremental output	String pot: - String length 2 - 50 m	String pot: - String length 2 - 50 m	EX-Protective housing: - EX range of protection II 2 G/D EEx de IIC T6 PTB 03 ATEX 1051 - Zone 1, 21 and 2, 22	Tacho encoder: - Max. rpm 1 - 10000 min^{-1} - Programmable speed - DA converter 14 bits	Protective housing: - Type MP01 for aggressive media - Stainless steel 1.4305
	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - Latche	- Preset input	- Programmable dynamics	- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods

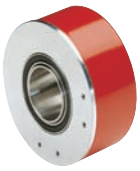
encoTRive

115		encoTRive	encoTRive	encoTRive
				
CEV115		MD-025	MMV-200	MD-300
Solid shaft		Solid shaft	Solid shaft	Solid shaft
8192[1)] ± 1 Bit	32768[1)] ± 1Bit	4096 shaft sided	4096 motor sided	1025 motor sided
1 4096		256	4096	256
SSI ISI ASI Parallel Analog NSW				
CANopen DeviceNet Profibus LWL Interbus		CANopen Profibus	CANopen	CANopen Profibus
11 ... 27 VDC		24 VDC	24 / 48 VDC	24 / 48 VDC
8 / 10 / 12		10 / 12	8 / 14	8 / 14
radial radial		radial radial	radial radial	radial radial
-20 ... +70°C		0 ... 40°C	0 ... 40°C	0 ... 40°C
IP 65		IP 54[4)]	IP 54[4)]	IP 54[4)]
TRWinProg Bus		Bus	Bus	Bus
Protective housing: - Type 3 against mechanical forces		Positioning drive: - DC motor with brushes - Absolute encoder - For short operation times	Positioning drive: - Maintanance free EC motor - Absolute encoder - For cont. operation - Diagnostic interface - Planetary gear	Positioning drive: - Maintanance free EC motor - Absolute encoder - For continuous operation - Diagnostic interface - Planetary gear
- Preset input - A, B up to 8192 pulses - Sine/Cosine 4096 periods - Latch - Mounting pod			- Brake - EtherCAT, Powerlink	- Brake - EtherCAT, Powerlink - Angular gear

Programmable Incremental Encoders

58	58	58	58	58
				
ZI58	IEV58	IEH58	IES58	IEK58
Solid shaft	Solid shaft	Hollow shaft	Blind shaft	Coupling
5 - 32768[1)] ± 1 Bit	2 - 8192[1)] ± 1 Bit	2 - 8192[1)] ± 1 Bit	2 - 8192[1)] ± 1 Bit	2 - 8192[1)] ± 1 Bit
1	1	1	1	1
Push-pull Line driver	Push-pull Line driver	Push-pull Line driver	Push-pull Line driver	Push-pull Line driver
11 ... 27 VDC	11 ... 27 / 5 VDC	11 ... 27 / 5 VDC	11 ... 27 / 5 VDC	11 ... 27 / 5 VDC
6 / 10	6 / 10	8 / 10 / 12	8 / 10 / 12	Integ. coupling
radial / axial radial / axial	radial / axial radial / axial	radial radial	radial / axial radial / axial	radial / axial radial / axial
-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C
IP 65	IP 65	IP 54	IP 65	IP 65
Eprog	TRWinProg	TRWinProg	TRWinProg	TRWinProg
- Arbitrary mechanical position of Z - Overspeed output	- Arbitrary mechanical position of Z - Number of zero pulses = integer multiple of steps per revolution - Duration of zero pulse 1/4 - 16/4 periods	- Arbitrary mechanical position of Z - Number of zero pulses = integer multiple of steps per revolution - Duration of zero pulse 1/4 - 16/4 periods	- Arbitrary mechanical position of Z - Number of zero pulses = integer multiple of steps per revolution - Duration of zero pulse 1/4 - 16/4 periods	- Arbitrary mechanical position of Z - Number of zero pulses = integer multiple of steps per revolution - Duration of zero pulse 1/4 - 16/4 periods

Hardware Incremental Encoders

35	58	58	58	58	76	80	120
							
IE35	IE58	IH58	IS58	IK58	IH76	IE80	IH120
Hollow shaft	Solid shaft	Hollow shaft	Blind shaft	Coupling	Hollow shaft	Solid shaft	Hollow shaft
1 - 1024 ± 1 Bit	1 - 10000 ± 1 Bit	1 - 10000 ± 1 Bit	1 - 10000 ± 1 Bit	1 - 10000 ± 1 Bit	1 - 10000 ± 1 Bit	1 - 9000 ± 1 Bit	1 - 10000 ± 1 Bit
1	1	1	1	1	1	1	1
Push-pull Line driver	Push-pull Line driver	Push-pull Line driver	Push-pull Line driver	Push-pull Line driver	Push-pull Line driver	Push-pull Line driver	Push-pull Line driver
11 ... 27 VDC	11...27/5 VDC	11...27/5 VDC	11...27/5 VDC	11...27/5 VDC	11 ... 27 VDC	11 ... 27 VDC	11 ... 27 VDC
20	6 / 10	8 / 10 / 12	8 / 10 / 12	Integ. coupling	6 ... 28	6	27 ... 55
radial radial	radial / axial radial / axial	radial radial	radial / axial radial / axial	radial / axial radial / axial	radial	axial	radial radial
-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	0 ... +80°C	0 ... +60°C	-30 ... +80°C
IP 54	IP 65	IP 54	IP 65	IP 65	IP 54	IP 65	IP 54
- Z, Z neg. once	- Z, Z neg. once	- Z, Z neg. once	- Z, Z neg. once	- Z, Z neg. once	- Z, Z neg. once - 5- or 10-fold division	- 2 separate outputs - Track 1: 1 - 9000 - Track 2: 1 - 6500	-Z, Z neg. once - No arbitrary number of pulses available. 1024, 2500, 3600, 10000
					- Sine signal 160KHz current or tension		- Sine signal 160KHz current or tension

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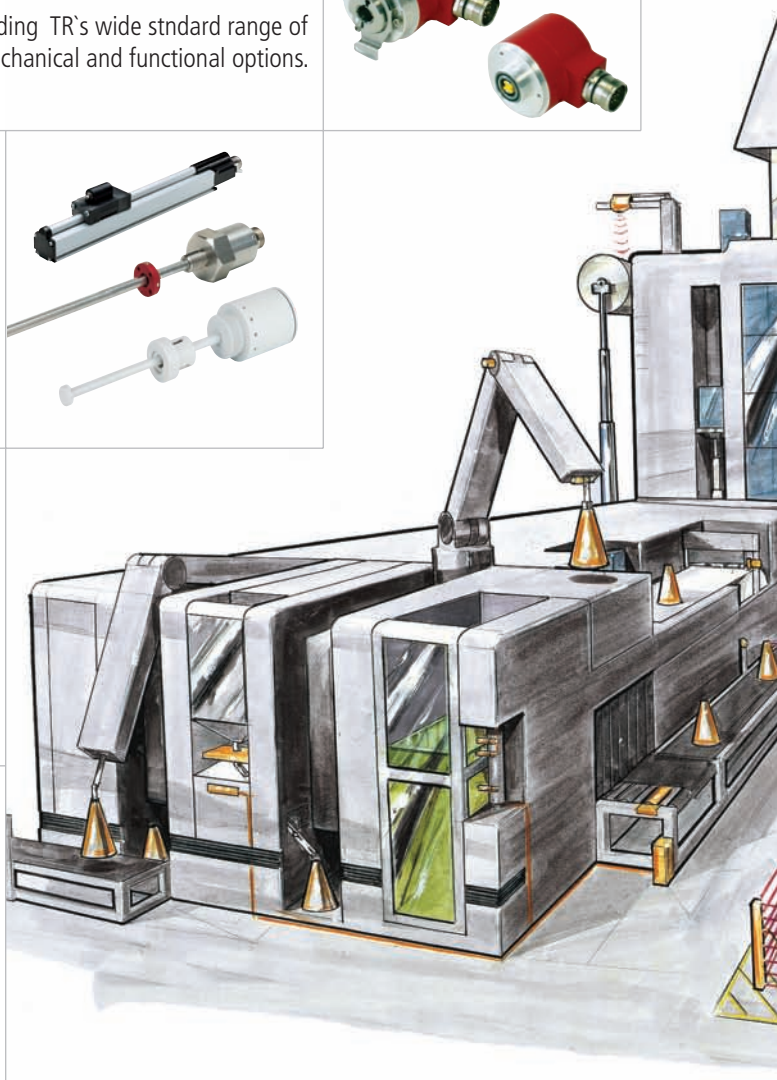

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Linear measurement with absolute, sub-micron resolution without referencing.

Incremental Encoders

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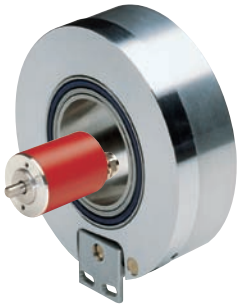

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Absolute and wear-free measurement of distances up to 200 m via SSI or fieldbus.