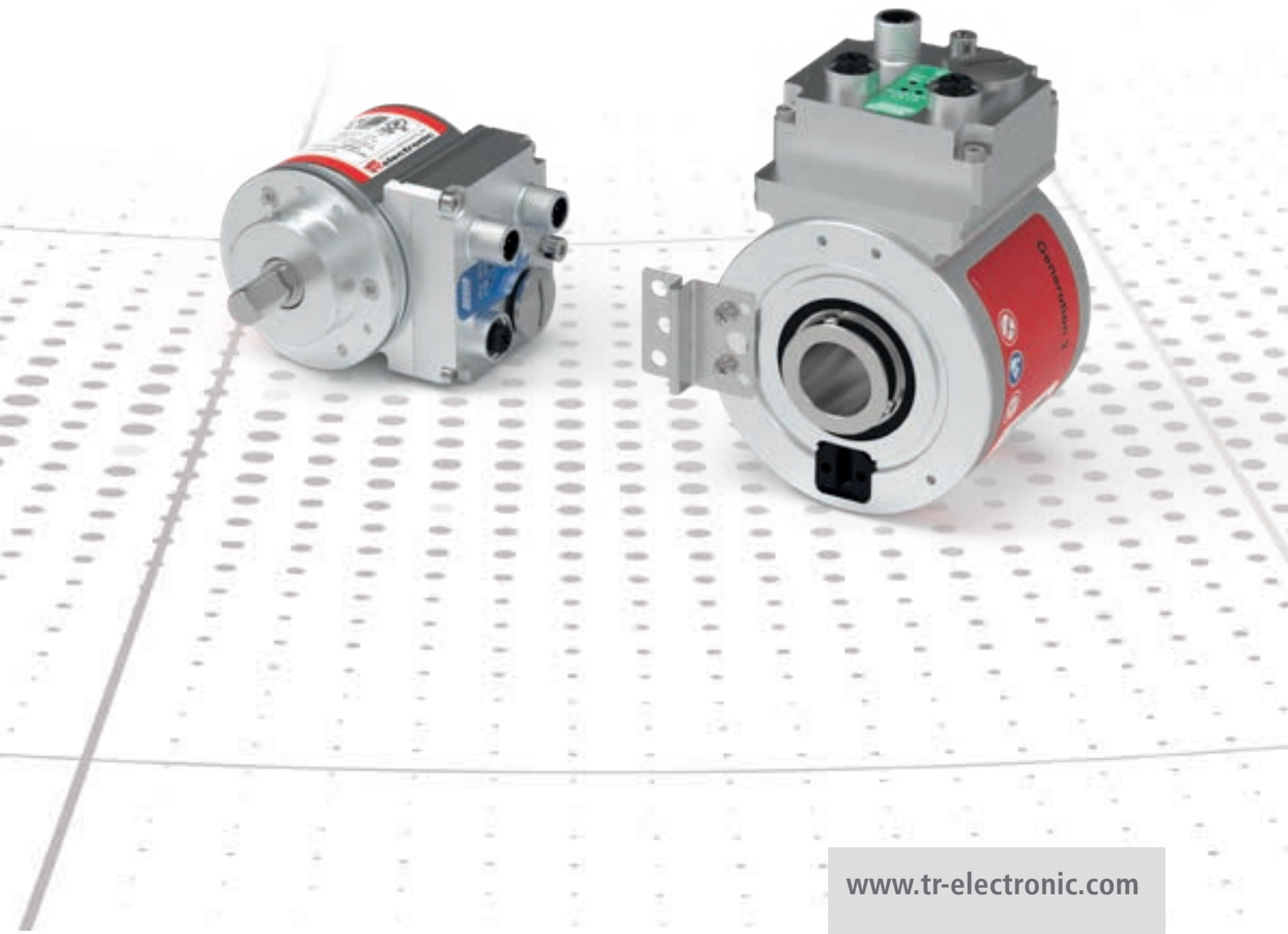
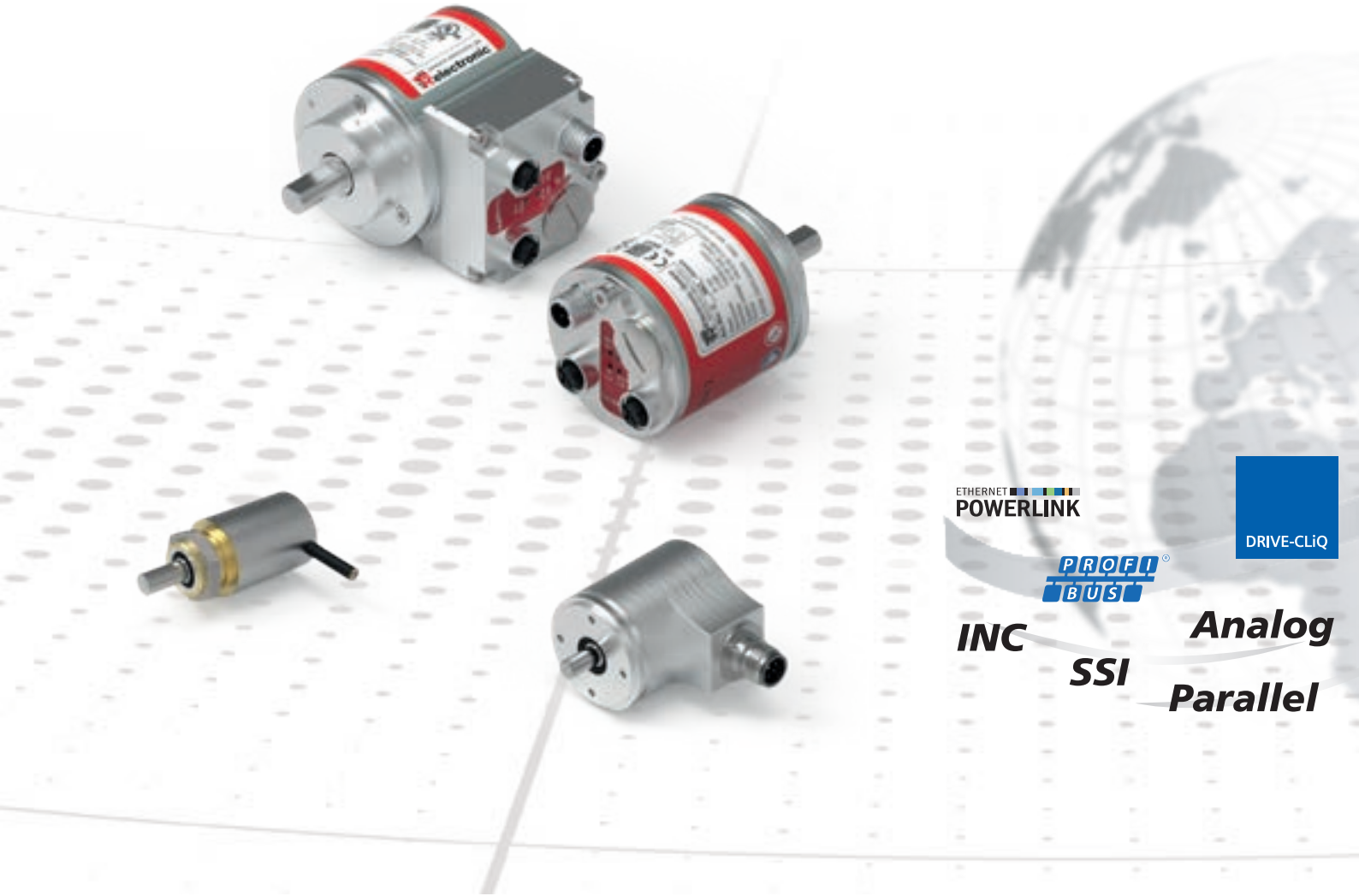
Absolute Rotary Encoders
Overview



www.tr-electronic.com

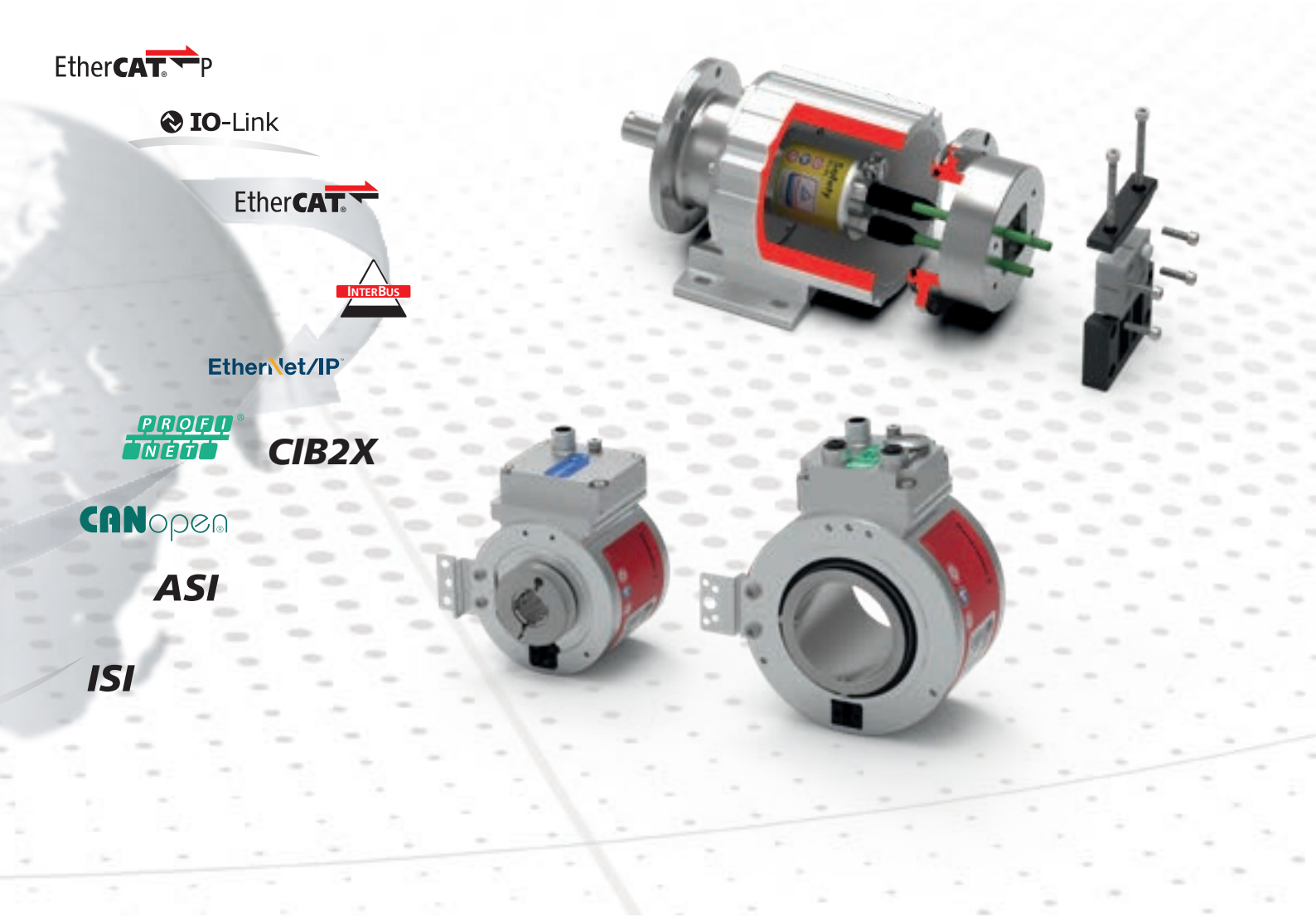
Absolute Rotary Encoders



Rotary encoders for industrial applications

TR Electronic rotary encoders with optical or magnetic scanning precisely acquire position in steel production, wind power plants, cranes and ships as well as in explosion-proof versions in painting lines. Miniature versions ensure the correct position in medical technology and SIL-approved absolute rotary encoders ensure the necessary safety.

In addition to high-quality rotary encoders for almost every application, we also offer extensive accessories such as programming tools, displays and assembly components for quick and simple implementation and seamless integration into your processes.



Content

C _ _ 362

Round

D-Cut

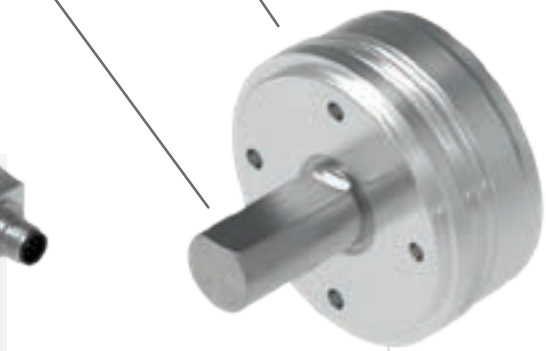
ZB 33
D 36

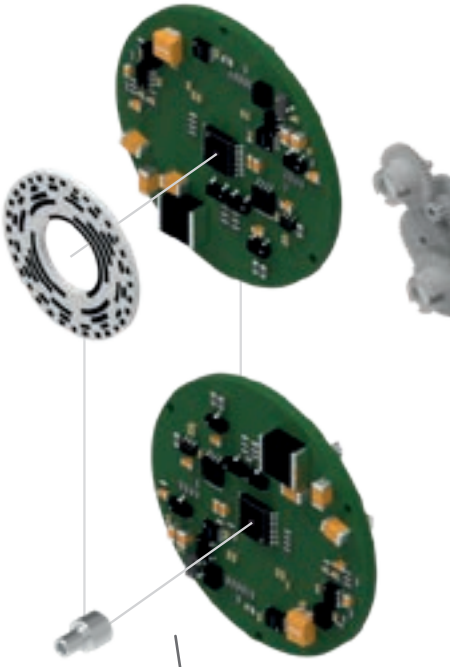
C_V
IP 65

_ 6
_ 8
_ 10

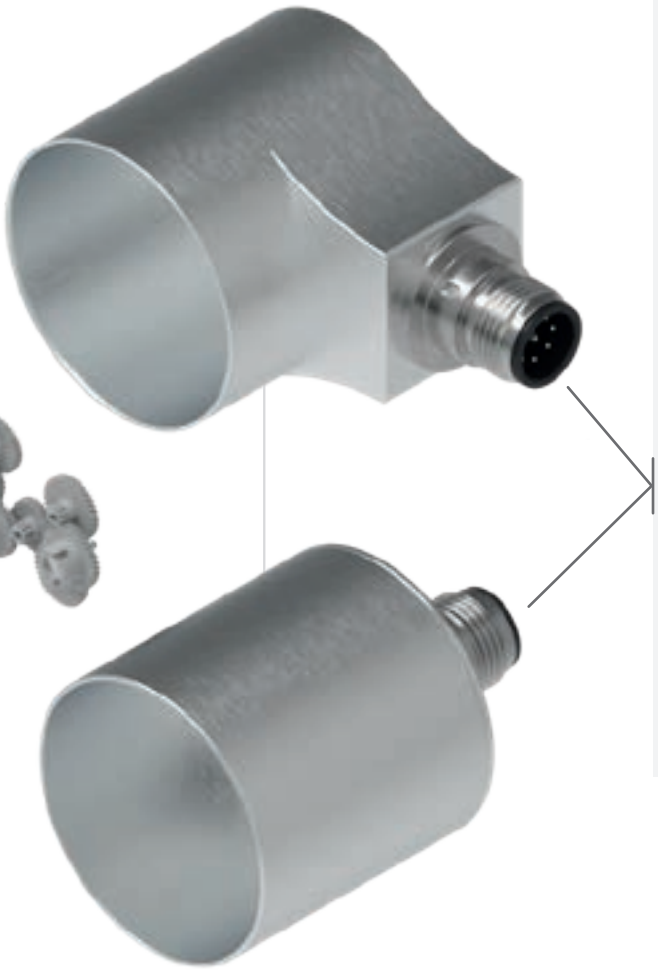
C_S
IP 65

_ 6
_ 8
_ 10
_ 15





	CM_ Mag.	CE_ Opt.
C_ _ 362S Singleturn	≤ 13 bit 1 ↺	≤ 18 bit 1 ↺
C_ _ 362M Multiturn	≤ 13 bit 4096 ↺	≤ 18 bit 4096 ↺



	axial	radial
CANopen		
IO-Link		
SSI		
SSI SSI+INC		

Dimensional drawings, data sheets and order numbers:
https://www.tr-electronic.com/s/S025605

C __ 582

Round

D-Cut

Key Way

D-Cut
Key Way M4

etc.

C_V
IP 65
IP 67

_6 _12
_8 _1/4“
_10 _3/8“
_11 _1/2“

C_S
IP 65
IP 67

C_H
IP 54

_8 _14
_9 _15
_10 _1/4“
_11 _3/8“
_12 _1/2“

ZB 36
D 58

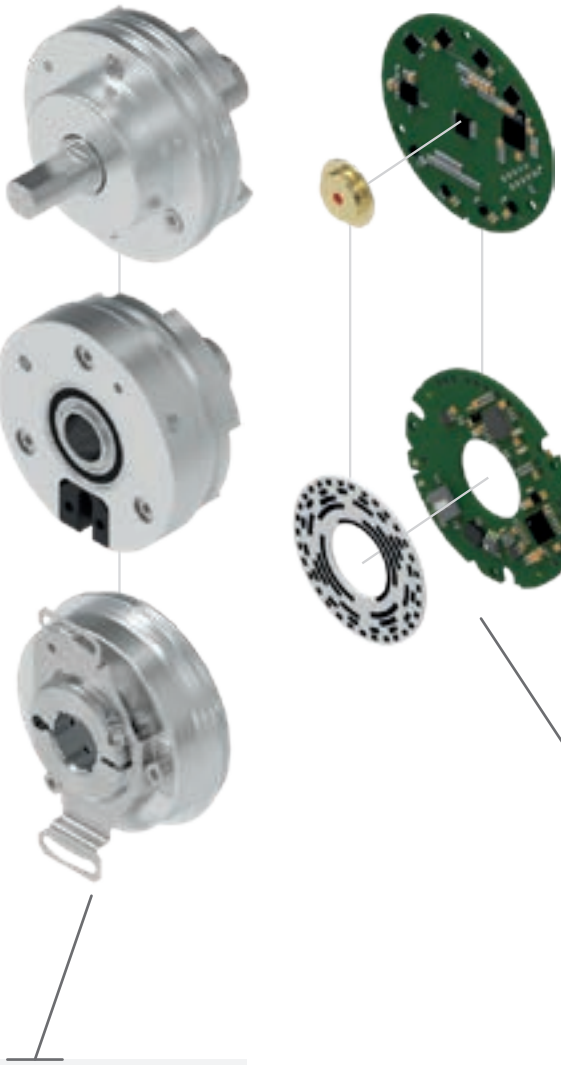
ZB 36
D 65

ZB 50
D 58

ZB 50
D 65

ZB 40
D 80

ZB 2,5
Q 5“



CM_
Mag.

C__ 582S
Singleturn

≤ 13 b
1 ↺

C__ 582M
Multiturn

≤ 13 b
4096

5“

etc.

PROFINET · EtherNet/IP · EtherCAT · ETHERNET POWERLINK

PROFIBUS · IO-Link · DRIVE-CLiQ

CANopen · ASI RS485

Analog

SSI

PROFINET · EtherNet/IP · EtherCAT · ETHERNET POWERLINK

PROFIBUS · IO-Link · EtherCAT P · DRIVE-CLiQ

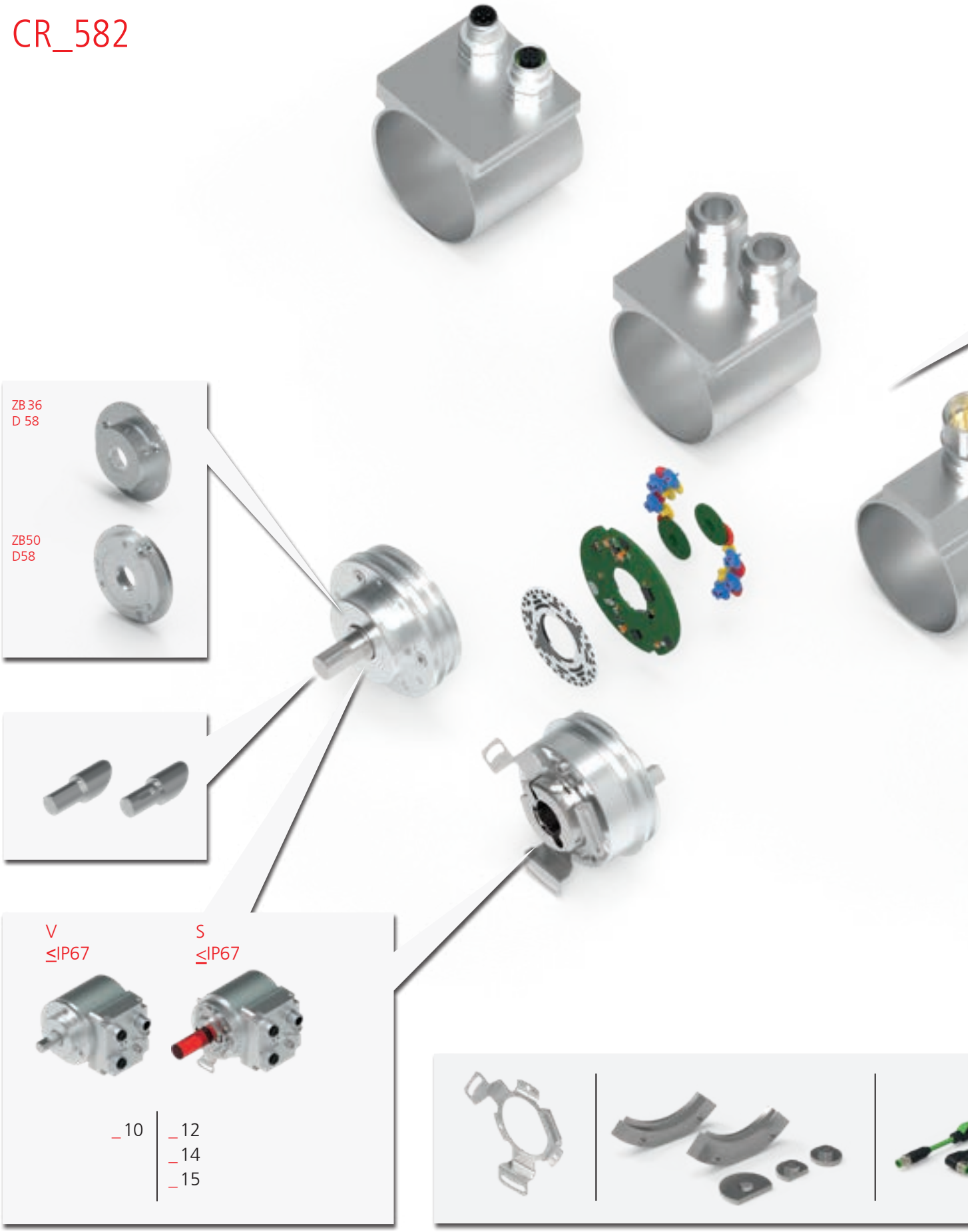
PROFIBUS KV · CANopen · ASI RS485

Analog · Parallel · INTERBUS · + INC + SSI

SSI · + INC

	CE_ Opt.	CO_ Opt. High
bit	≤ 15 bit 1 ↺	≤ 18 bit 1 ↺
bit ↺	≤ 15 bit 4096 ↺	≤ 18 bit 4096 ↺

CR_582



	2× CANopen	SSI + INC	2×SSI
M12	✓	✓	✓
KV		✓	✓
1× M23		✓	✓
2× M23			✓

C_H802 / C_H1102

C _H802

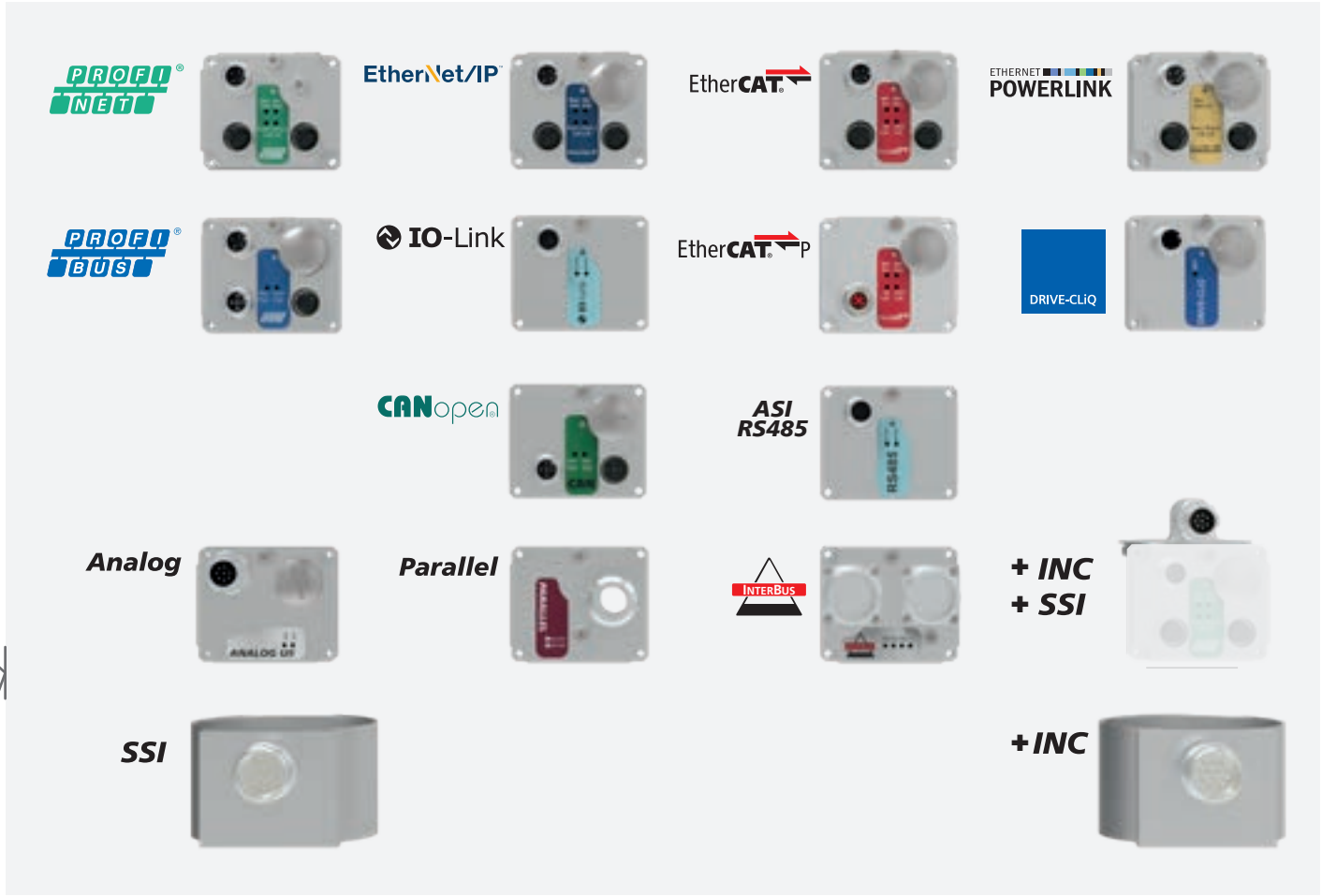
C_H
IP 54

_ 16
_ 20
_ 25
_ 27

C _H1102

C_H
IP 54

_ 28
_ 30
_ 38
_ 40
_ 45
_ 50



	CE_ Opt.	CO_ Opt. High
C_ _ 802S/C_ _ 1102S Singleturn	≤ 15 bit 1 ↺	≤ 18 bit 1 ↺
C_ _ 802M/C_ _ 1102M Multiturn	≤ 15 bit 4096 ↺	≤ 18 bit 4096 ↺

Interface box CIB2X

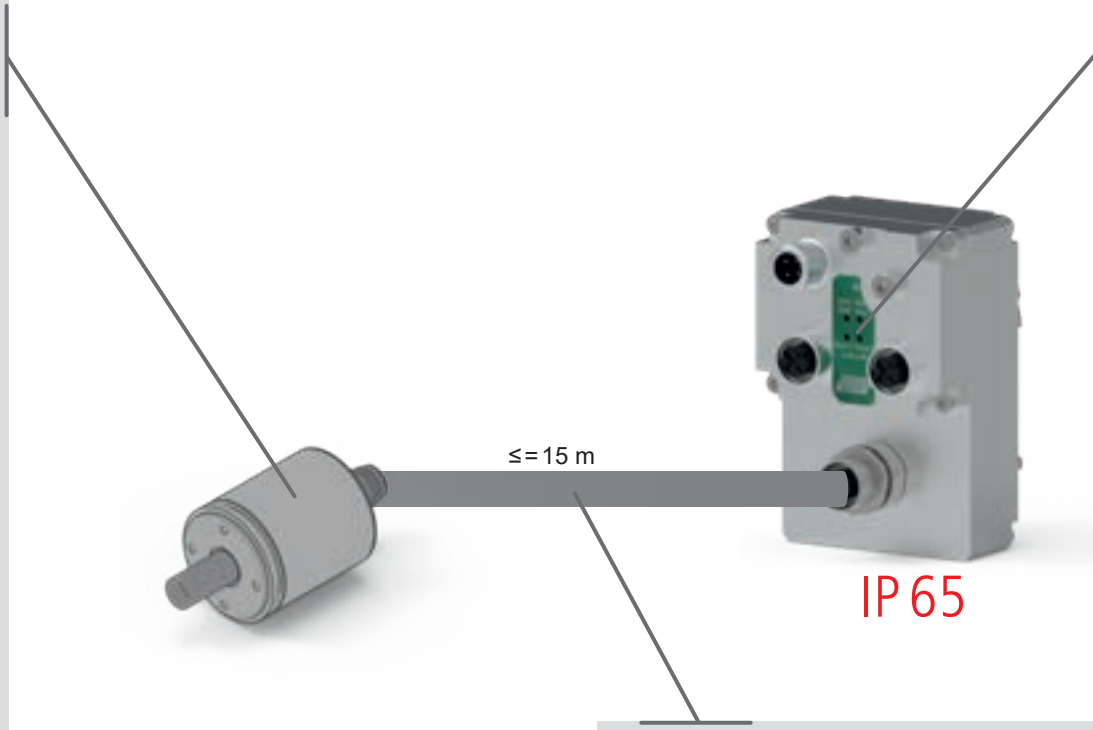
Ø 36 mm

stainless steel

Zone 1/21

D 80 mm

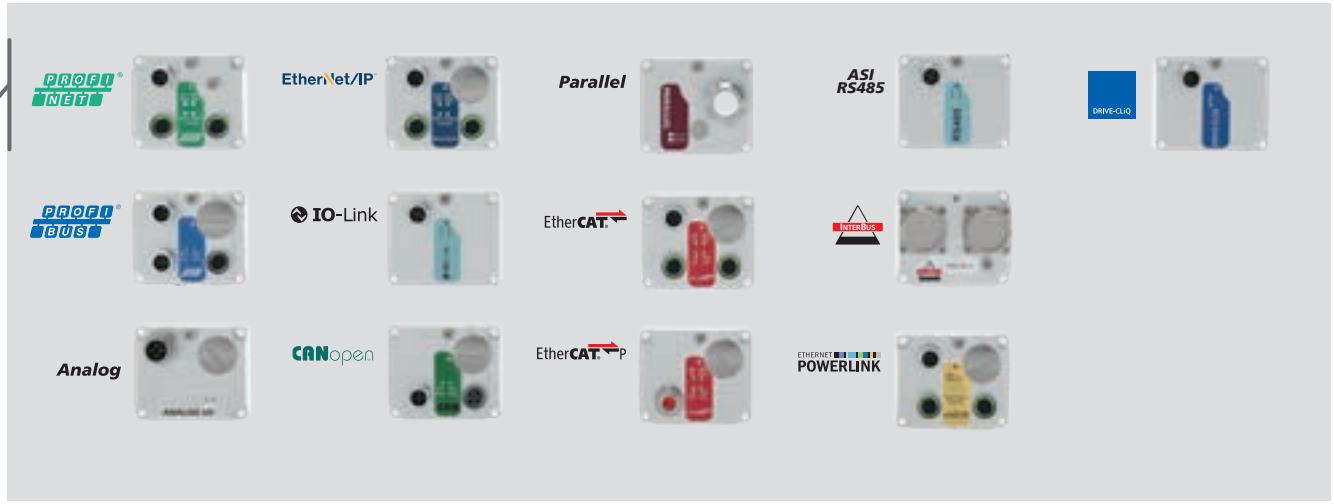
D 110 mm



V 1

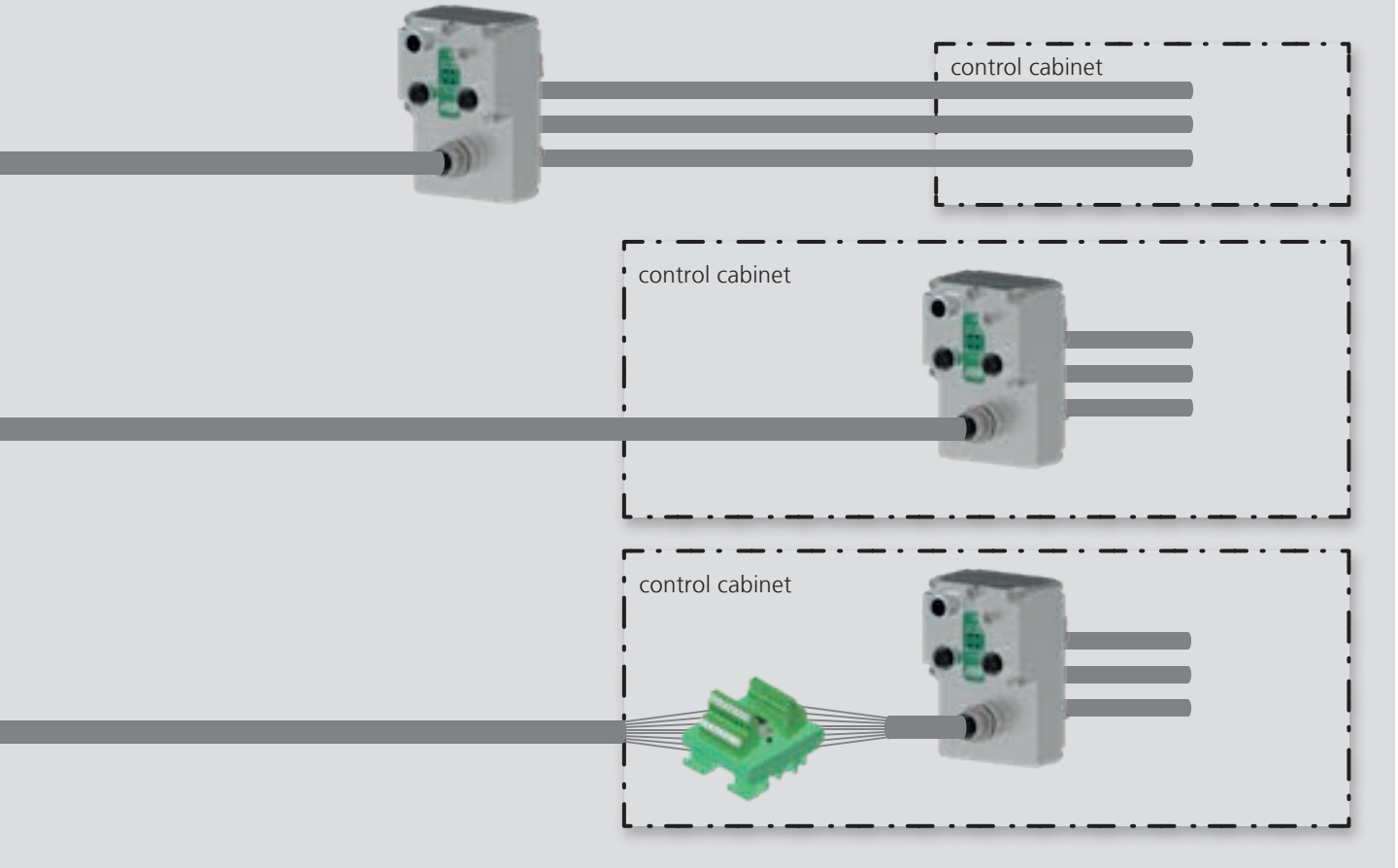
V 2

V 3



standard
35 mm mounting
rail attachment

accesories
Mounting plate
(mat.-no. 49995506)



Many plugs, little installation space?

Compact Interface Box – CIB2X

In standard applications, interface cables are routed directly to the encoder, which can be up to four cables. If space is very tight at the installation site, this can present a challenge. It is not uncommon for the union nuts of several M12 connectors to have to be tightened by hand or with special tools, which requires that there is also sufficient movement space on the side with the connectors. With the freedom of choice for axial and radial connection fields in TR encoders, some of the situations can be mitigated, but sometimes there is simply no space for standardized bus cabling directly on the shaft, motor or measuring wheel.

TR Electronic now offers a solution for this with the "Compact Interface Box" CIB2X: the encoder and interface box are mounted separately from each other and connected via a single cable. The interface box is therefore located where the required cables have sufficient space for routing and installation. As the encoders only require one cable, the installation space can be much more compact.

Examples of applications

Lack of space

If there is not enough space on site to lay the bus and supply cable to a 582, 802 or 1102 series encoder or if a connection is not possible due to lack of access. The encoder only requires one cable; connecting cables up to 15 m long are available as standard between the encoder and the compact interface box.

ATEX

Explosion-proof atmosphere on the encoder. Certified protective housings are usually used for ATEX zones 1/21. However, the protective function requires special cable glands. Standardized M12 connectors cannot be used for this purpose. The CIB2X is installed in a safe area and the interface is connected there using standard connectors without ATEX requirements. The AEV70M rotary encoder is pre-wired in the Zone 1/21 protective housing; only one cable leads to the compact interface box.

environmental condition

Aggressive environments at the encoder. If the place of use requires special housing materials, e.g. stainless steel, this also applies to the signal cables. Not all sheath and connector materials are available pre-assembled. The connection to the device itself also requires special attention. Particularly when the stainless steel housing option for 58 mm encoders with Industrial Ethernet cannot be used, the use of the compact interface box eases the challenges: Only the encoder itself and the CIB2X connection cable are exposed to the aggressive environment.

With CIB2X, TR Electronic also implements the wide range of interfaces available with the 582 series encoders for the **ultra-compact C__362 encoders.** Ultimately, the encoder housing is simply too small to accommodate the connections, e.g. for Industrial Ethernet. With the Compact Interface Box CIB2X, the encoder diameter remains at 36 mm and the larger connection areas for network, power supply and, if necessary, additional interface are mounted in a suitable, remote location.

Features – Interfaces C__362

_ Output position / speed

Absolute rotary encoders can transmit both position and speed values. Depending on the interface, the output must be configured accordingly.

_ Encoderprofile

Communication between controller and complex participants such as rotary encoders is supported by so-called profiles in fieldbus and Industrial Ethernet systems. Conventions for the transmission of the measured values as well as for the parameterization of the rotary encoder are defined by the controller. These profiles are maintained and standardized by the user- and standardization organisations.
Examples are:
CANopen: CiA DS 406 (Can in Automation CiA)

_ Free digital input/output

Depending on the interface, different options are available concerning digital inputs and outputs.

_ Free process data mapping

For EtherCAT, the transmitted telegram can be freely designed to meet the programmers needs. Choose free from current reading position, speed, warnings, alarms, software-cams … what is needed for your process / your control architecture.

_ Industry 4.0 + IIoT-Pionier

The new C__362 generation of industrial standard rotary encoders is rigorously equipped with state-of-the-art chip families.

_ Intelligent diagnostics

How's about my machine? To know that at any time is one of the core aspects of industry 4.0. Be it capacity utilisation or upcoming services: C__362 provides all necessary alarms and diagnostic messages for long term machine and plant surveillance.

_ Connectors

Pigtail

_ M12 plug-in technology

Standard connector with M12 thread.

_ Parameterizable gear unit

Fractional gear parameters (numerator/denominator) for almost any mapping of gear factors. Also for exact acquisition of closed rotary axes.

_ Preset "on the fly"

Preset values are transferred via the real-time capable process image area. This allows absolute adjustments (also called "preset" or "offset adjustment") even during ongoing system operation synchronized with the control cycle. Axis standstill is not required any more.

C__582 – the next generation:
Standard size with outstanding features

C__582
connector axial

C__582
connector radial

_Efficient design

Everything the application needs – reduce to the max.

_Robust magnetic multiturn rotary encoder CM_582

13 bit resolution within one revolution (singleturn)
12 bit revolutions (multiturn), optionally 16 bit.
Output up to 256,000 revolutions.

_Servo flange, clamping flange Slip-on hollow shaft up to 15 mm

Plenty of shaft diameters, flanges and torque supports make the magnetic encoders CM_582 fit into the mechanic surroundings of many applications.

_Precise optical multiturn encoder CE_582, CO_582

15 or 18 bit resolution in one revolution (singleturn)
12 bit revolutions (multiturn), optionally 16 bit.
Output of up to 256,000 revolutions."

_Servo flange, clamping flange Slip-on hollow shaft up to 15 mm Hollow-through-shaft up to 15 mm

CE_582 and CO_582 add hollow-through shafts with diameters up to 15 mm to the standard range of solid and slip-on blind shafts and flanges.

_Connectors axial or radial

Mounting space is valuable. Do not let cabling interfere with other parts and components.
For solid and slip-on shafts (blind shaft), you can choose between connectors axial (at the side opposite to the shaft) or radial (at the side of the encoder housing).

PROFINET® EtherCAT® EtherNet/IP™

_Parameterizable gearbox

Fractional gearbox parameters (numerator/denominator) for almost any reproduction of gearbox factors.
Also for exact detection of closed rotary axes.

_Latest communication standards for Industry 4.0

The new C__582 generation of industrial standard rotary encoders is rigorously equipped with state-of-the-art chip families.

_Easy installation with open configuration options

TR absolute rotary encoders fulfill the standards of the respective user organizations for parameterization. Users can thus navigate the standard parameters without difficulty. The free configuration also offers easy access to all functions which are available in addition to the standard functions.

_Alarms and diagnostics

How's about my machine? To know that at any time is one of the core aspects of industry 4.0.
Be it capacity utilisation or upcoming services: C__582 provides all necessary alarms and diagnostic messages for long term machine and plant surveillance.

_"On the fly" preset for adjustment during the process

Preset values are transmitted via the real-time capable process image area. This means that absolute adjustments (also called "preset" or "offset adjustment") can be performed synchronously with the control cycle even while the system is in operation. No more axis stops necessary.

_Update time <1 ms

Suitable for quick position control with less than 1 ms encoder actual value updating for the bus output.

_Speed output with adjustable averaging

The time base for the speed evaluation can be freely set within a range of one millisecond to one second and can also be scaled in any units.

EtherCAT®

_Free mapping of process data in Ethernet Telegram

For EtherCAT, the transmitted telegram can be freely designed to meet the programmers needs. Choose free from current reading position, speed, warnings, alarms, software-cams … what is needed for your process / your control architecture.

_Software-Cams

Since industrial revolution, cams were a propriate way to control automated processes. At first with mechanical camshafts and then with electromechanic cam switches. Now, cam signals are calculated in the central conrol - or, even more comfortable – directly in C__582 ETC. Cam signals are mapped arbitrarily into the process data channel and are available to other bus nodes.

_Distributed Clocks down to 100 µs cycle time

For precise position and path control of moving axes, all sensors and actors involved must be synchonized. With EtherCAT, this is achieved by distributed clocks. The smallest possible cycle time in C__582 is 100 µs.

EtherNet/IP™

_Firmware Update via TCP/IP

Computer and smartphones are the role model: New functionality by new firmware. New firmware for C__582 EIP can be loaded via the asynchronous TCP/IP-cannel. Existing hardware is future-proof and can be equipped even for new applications.

_Device Level Ring DLR

A ring makes the network safe. Similar to MRP with PROFINET, DLR provides higher availability to machines and plants with Ethernet/IP. With one additional connection from the last encoder in a branch back to the switch, connection is closed to a ring with much higher reliability. Break in signal transmission is detected at once and bypassed. A single cable break this does not lead to failure of all nodes behind the break in a branch.

PROFINET®

_Encoderprofile

C__582 EPN consequently supports the EPN-Encoder profile of Profibus International standardisation organisation.

_Profinet with IRT

The PROFINET variant therefore uses cutting-edge technology with long-term availability and is absolutely compliant with the latest standards of the PI User Organization. Real-time synchronization (IRT) enables precisely synchronized positioning of several axes.

_Neighborhood detection

With neighborhood detecion, you exchange devices without the use of an engineering tool. An encoder that is connected newly to the network can determine his position and function in the network by help of his physical neighbours and then requests the parameter data for this function from the master control.

_Fast Startup for quick system availability

C__582 PROFINET starts faster than any other bus rotary encoder. Once configured a stable, valid absolute position value is available in the PROFINET control just a few instants after restoration of supply. System startup is greatly accelerated and modular machine concepts in particular (with periodically decoupled modules) benefit directly from this technology.*

_Media-Redundancy Protocol for highest reliability

One ring for reliability. The PROFINET interface of the C__582 supports the innovative Media Redundancy Protocol MRP. Normally PROFINET only supports a linear/tree structure. A redundant connection is not primarily provided as standard. MRP significantly increases availability with one simple device! Branches are connected to a ring with an additional line from the last node to the next switch. The appropriately configured nodes detect this. One of the nodes now disconnects this ring, by “ignoring” the second connection. If a connection fails (due to cable breakage or failure of a node), the nodes detect this and attempt to find another way to the rest of the system. The previously opened connection is now closed and all nodes are reconnected to the network.*

*An encoder can either be configured for Fast Startup or for MRP.

_ Low connection costs:
M12, 4-pin, A-coded, without shield, supply and data in one cable.

An IO-Link master is often already present in a machine, usually to read in and parameterize initiators. TR Electronic rotary encoders with IO-Link use exactly this infrastructure to communicate with the control.

_ Cyclical transfer:
Position, speed, 2 independent position limit switches, speed monitor.

If a machine or system already has IO-Link integrated as a bus system, the obvious approach is to also control absolute rotary encoders with this bus system. The actual value communication uses a star distribution system between rotary encoder and the next distribution node and is compatible with normal, digital initiator communication.

_ Transferred parameters can be configured.

The zero position of the rotary encoder is conveniently adjusted via IO-Link and the usual bus parameterization tools – without turning the encoder itself.
This makes installation child's play. The transferred parameters can also be selected at the same time.

_ Cycle time for cyclical transfer ≥ 1 ms.

_ Acyclical transfer:
Error messages, operating hours.

Machine condition monitoring made easy: Important status information is transferred via the acyclical services.

_ Hardware switching output programmable:
Either speed monitor, limit switches …

C_ _582 with IO-Link enables internal states to be converted into programmable switching states of the digital output. This enables simple implementation of e.g. speed monitoring, position limit value monitoring, limit switches and much more. The rotary encoder reacts to exceeding of a speed range, for example, through a digital signal like a normal initiator and can also send status messages to a very simple electronic analysis module.

_The direct route for mounted encoders to SINAMICS© drives.

DRIVE-CLiQ is the open system interface for position sensors for the SINAMICS© drive family from Siemens AG for motion control. This fast absolute encoder interface connects the converter centrally installed in the switch cabinet to the rotary encoders and position sensors directly on the respective axes.

_Direct position measurement without gear backlash

For increased reliability and precision, it may be desirable not only to use the encoder in the motor for position control. Encoders mounted directly on the axis to be measured eliminate the uncertainties caused by gear backlash.

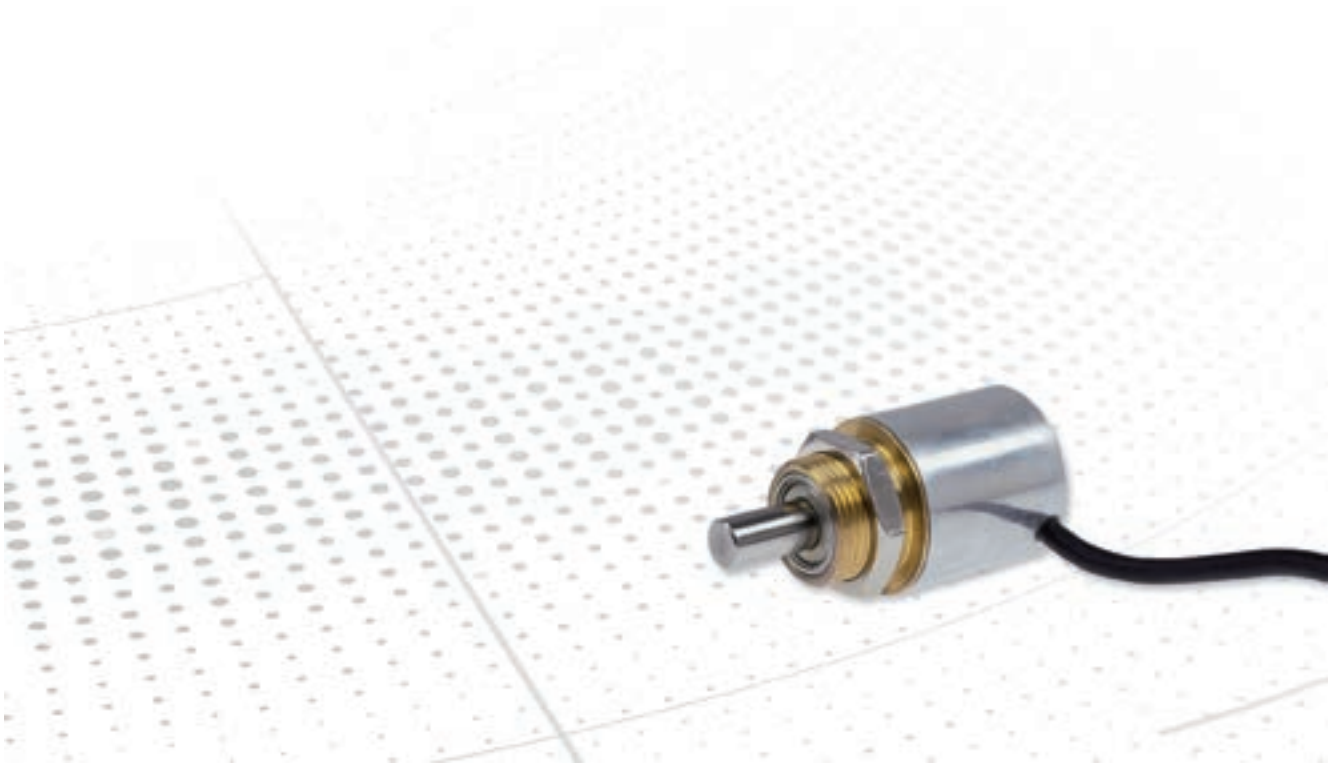
_Reliability through redundancy

Mounted encoders used in conjunction with motor-integrated systems can reliably detect slipping of connections or even shaft/gear breakage.

_All mechanical variants of Generation 2

The C_ _582s from TR Electronic are available with the DRIVE-CLiQ interface.
The design engineers thus have access to the entire mechanical diversity of the modular system with full integration into the SINAMICS© drive technology family.

Encoder – Family C__22 - Housing 22 mm



Tiny but an absolutely real encoder!

Within the CMV 22 M we have combined our innovative ideas of rotary encoder technology and the experience gained over the years and placed it into a miniature rotary encoder. With a 22 mm diameter, it is the smallest absolute multi-turn rotary encoder of its kind. Amazingly compact, it can be easily mounted in the most confined machine spaces. The contact-free detection guarantees shock and vibration resistance which combined with its low mass make it perfect for use in demanding environments.

Application

Direct installation into servo drives for wear-free, absolute position detection over several revolutions. The small size of 22 mm enables real multi-turn position measuring without battery back-up in fields such as apparatus construction and medical engineering, where up till now only incremental rotary encoders or multiple-ganged potentiometers were used.

Magnet detection (M)

Products	CMV22M 	CMV22M 
Detection	Magnet detection (M)	Magnet detection (M)
Single / multi	(M) Multi	(M) Multi
Supply	7 ... 26 VDC	14 … 30 VDC
Steps per turn	4,096	4,096
Number of turns	265	4,096
Presicion	±1,0 °	±1,0 °
Shaft diameters available	3 mm, 6 mm, 1/4"	3 mm, 6 mm, 1/4"
Connectors	Cable outlet radial	Cable outlet radial
Ambient temperature	0 … +60 °C	0 … +60 °C
Protection class	IP64	IP64
Interface	***SSI*** ***ASI***	***Analog***
Weblink	www.tr-electronic.com/s/S007235	www.tr-electronic.com/s/S007234
QR-Code		

Can't find the right variant? Please contact us (info@tr-electronic.de)

Absolute Rotary Encoders – family C_ _362 - housing 36 mm

The 36 mm-housing for small instalation places

The new generation of absolute rotary encoders in size 36 mm is ideally suited for tight installation situations. The C_ _362 family is small, compact and combinable.

_ various interface connections:
CANopen, IO-Link, SSI+INK, SSI with M12 plug-in technology or direct cable outlet
_ cost-optimized scanning:
magnetically robust or optically high-resolution
_ Singleturn or genuine, battery-free multiturn gearbox
_ Singleturn encoders are approx. 1 cm shorter than the multiturn variant
_ various shaft and mounting variants:
Solid or blind hole shaft
_ robust bearing unit
_ compact cable length encoder
with cable length 1.25 m available
_ protection class up to and including IP65
_ customized solutions
_ extensive range of add-ons

Designation key

C			362			
	M				magnet detection up to 13 bit	Up to 13 bit with in the revolution. Inexpensive and robust!
	E				optical up to 18 bit	Up to 18 bit with in the revolution. For fast and synchronous acquisition of position values.
		V			solid shaft	The shaft of the system / machine is usually connected to the shaft with a coupling connected to the encoder. Flexible couplings reduce the force to the encoder shaft so maximum bearing loads of the encoder are not exceeded.
		S			blind shaft	The shaft of the system/machine penetrates the encoder. The dead weight of the rotary encoder is usually carried by the shaft, the rotary encoder is fitted with a torque support or groove / pin connection secured against rotation.
		W			wire	With the cable pull principle, a linear movement is converted into a rotary movement. The measuring cable is pulled off a drum by the application mechanism and pulled back by a spring assembly. The winding drum is axially coupled to a rotary encoder.
				S	singleturn	The detection measures absolutely within one revolution. The determined measured value is repeated in each revolution of the encoder.
				M	multiturn	The scanning of the encoder detects the position of the encoder both within the revolution and the position of the encoder over several revolutions. The measured value output can be scaled electronically independently of this („gear function“).
					radial connection	The electrical connector sits at the side of the encoder (90° angle to the shaft orientation).
					axial connection	The electrical connector sits on the opposite side of the encoder relative to the shaft. Available only with blind- and solid shaft.

Features – Interfaces C_ _362

	CANopen	IO-Link	SSI
Output position / speed	x	x	x
Encoderprofile	x		
Free digital input / output			x
Free process data mapping	x		
Industry 4.0 + IIoT-Pionier		x	
Intelligent diagnostics		x	
Connectors	x	x	x
M12 plug-in tchnology	x	x	x
Parameterizable gear unit	x	x	x
Preset "on the fly"		x	

Magnet detection (M)

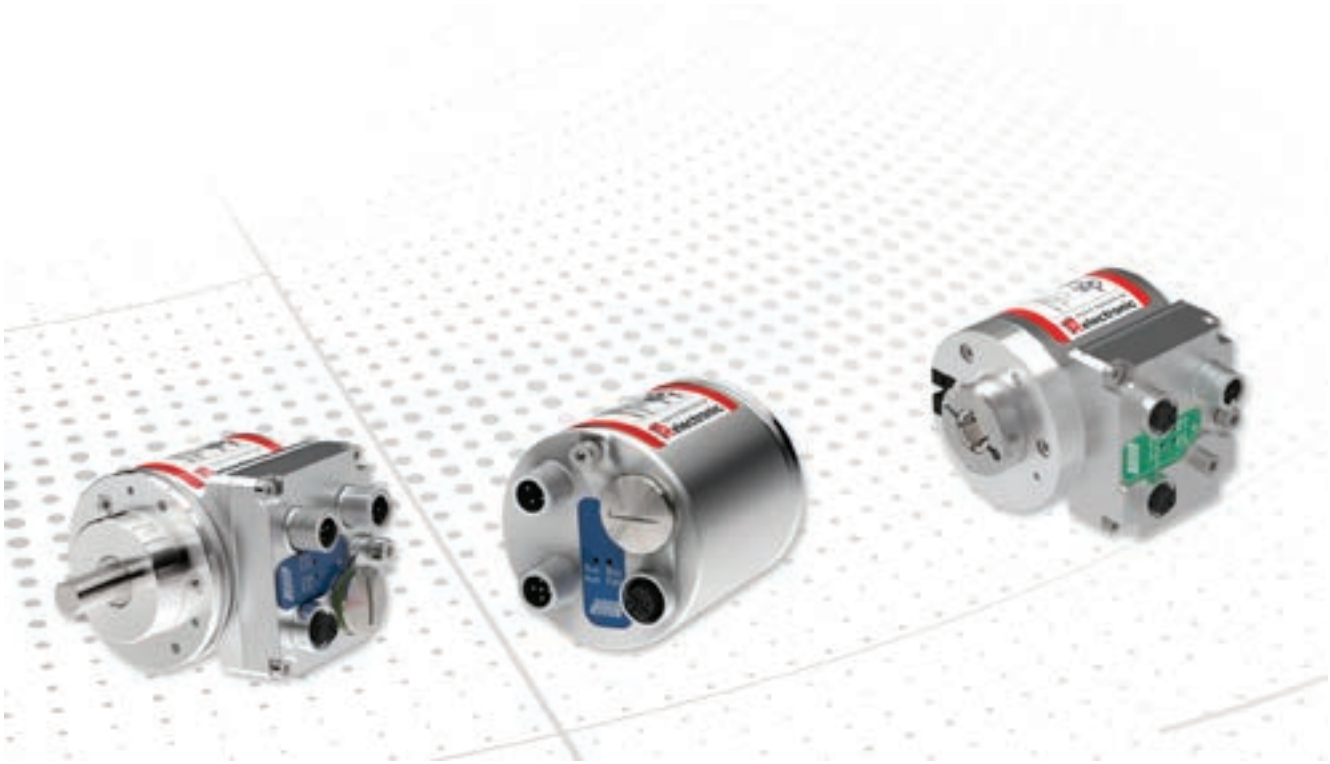
fits to CIB2X

Product	CMV362	CMS362	CMW362
			
Shaft types	Solid shaft	Blind shaft	Wire
Scanning	Magnet detection 13 bit	Magnet detection 13 bit	Magnet detection 13 bit
Supply	10 … 30 V DC	10 … 30 V DC	10 … 30 V DC
Number of steps / revolution	8.192	8.192	8.192
Steps per turn	256.000	256.000	256.000
Precision	± 0,5°	± 0,5°	± 0,5°
Shaft diameters available	6, 8, 10 mm	6, 8, 10, 15 mm	1,25 m measuring length
Connectors	Connector axial or radial	Connector axial or radial	Connector axial or radial
Ambient temperature	-20 … +75 °C, option -40 … +85 °C	-20 … +75 °C, option -40 … +85 °C	-20 … +70 °C, option -30 … +70 °C
Protection class	IP65	IP65	IP50
ATEX-zone	option 2/22	option 2/22	option 2/22
Interface	SSI CANopen IO-Link SSI+INC CIB2X	SSI CANopen IO-Link SSI+INC CIB2X	SSI CANopen IO-Link SSI+INC CIB2X
Weblink: www.tr-electronic.de/s/	S025660	S025661	S025662
QR-Code			

Optical 18 Bit (E)

Product	CEV362	CES362	CEW362
			
Shaft types	Solid shaft	Blind shaft	Wire
Scanning	Optical detection 18 bit	Optical detection 18 bit	Optical detection 18 bit
Supply	10 … 30 V DC	10 … 30 V DC	10 … 30 V DC
Number of steps / revolution	262.144	262.144	262.144
Steps per turn	256.000	256.000	256.000
Precision	± 0,02°	± 0,02°	± 0,02°
Shaft diameters available	6, 8, 10 mm	6, 8, 10, 15 mm	1,25 m measuring length
Connectors	Connector axial or radial	Connector axial or radial	Connector axial or radial
Ambient temperature	-20 … +75 °C, option -40 … +85 °C	-20 … +75 °C, option -40 … +85 °C	-20 … +70 °C, option -30 … +70 °C
Protection class	IP65	IP65	IP50
ATEX-zone	option 2/22	option 2/22	option 2/22
Interface	SSI CANopen IO-Link SSI+INC CIB2X	SSI CANopen IO-Link SSI+INC CIB2X	SSI CANopen IO-Link SSI+INC CIB2X
Weblink: www.tr-electronic.de/s/	S025658	S025657	S025659
QR-Code			

Absolute Rotary Encoders – Family C__582 - Housing 58 mm



58 mm housing for standard industrial applications

Encoders with size 58 mm have been established as the industrial standard for absolute and incremental encoders. With TR-Electronic, you get as a standard what is special with other manufacturers.
Absolute encoders of Series 58 are modular. Your demands can be realized precisely and in most cases without any special development.

_Industrial standard size 58 mm
_Cost optimized by different resolution ranges
_Compatible with a vast number of control systems
_Shaft-, flange - and assembly versions
_Same mechanics - plenty of interfaces
_Compact Connector System - perfect for machines produced in series
_Can be adaptedto singular applications via parametrization done by user
_Available with customer-specific connector systems
_UL approval
_salt water-resistant

Magnet detection (M)

fits to CIB2X

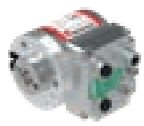
Product	CMV582*	CMS582
		
Shaft types	Solid shaft	Blind shaft
Scanning	Magnet detection 13 bit	Magnet detection 13 bit
Supply	10…30 V dc	10…30 V dc
Number of steps / revolution*	8.192	8.192
Steps per turn	256,000	256,000
Precision	± 0,5°	± 0,5°
Shaft diameters available	6, 8, 10, 12, 14, 1/4", 3/8", 1/2"	8, 10, 12, 14, 15, 1/4", 3/8", 1/2"
Connectors*	Connector axial or radial	Connector axial or radial
Ambient temperature	-20...+75°C, option -40...+85°C	-20...+75°C, option -40...+85°C
Protection class	IP65, option IP67	IP65, option IP67
ATEX-zone	option 2/22	option 2/22
Interface*	SSI, InterBus, ASI, PROFINET, Analog, EtherCAT, Parallel, EtherCAT P, DRIVE-CLiQ, EtherNet/IP, PROFIBUS, ETHERNET POWERLINK, CANopen, IO-Link, CIB2X	SSI, InterBus, ASI, PROFINET, Analog, EtherCAT, Parallel, EtherCAT P, DRIVE-CLiQ, EtherNet/IP, PROFIBUS, ETHERNET POWERLINK, CANopen, IO-Link, CIB2X
Option, additional interfaces (on request)	SSI	SSI
Weblink	www.tr-electronic.com/s/S013306	www.tr-electronic.com/s/S013307
QR-Code		

*Please enquire about availability for specific combinations

Can't find the right variant? Please contact us (info@tr-electronic.de)

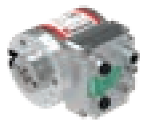
Optical 15 bit (E)

fits to CIB2X

Product	CEV582 	CEH582 	CES582 
Shaft types	Solid shaft	Hollow shaft	Blind shaft
Scanning	Optical 15 bit	Optical 15 bit	Optical 15 bit
Supply	10…30 V dc	10…30 V dc	10…30 V dc
Number of steps / revolution*	32,768	32,768	32,768
Steps per turn	256,000	256,000	256,000
Precision	± 0,02°	± 0,02°	± 0,02°
Shaft diameters available	6, 8, 10, 12, 14, 1/4", 3/8", 1/2"	8, 10, 12, 14, 15, 1/4", 3/8", 1/2"	8, 10, 12, 14, 15, 1/4", 3/8", 1/2"
Connectors*	Connector axial or radial	radial	Connector axial or radial
Ambient temperature	-20...+75°C, option -40...+85°C	-20...+75°C, option -40...+85°C	-20...+75°C, option -40...+85°C
Protection class	IP65, option IP67	IP54	IP65, option IP67
ATEX-zone	option 2/22	option 2/22	option 2/22
Interface*	SSI, INTERBUS ASI, PROFINET Analog, EtherCAT Parallel, EtherCAT P DRIVE-CLiQ, EtherNet/IP PROFIBUS, ETHERNET POWERLINK CANopen, IO-Link CIB2X	SSI, INTERBUS ASI, PROFINET Analog, EtherCAT Parallel, EtherCAT P DRIVE-CLiQ, EtherNet/IP PROFIBUS, ETHERNET POWERLINK CANopen, IO-Link CIB2X	SSI, INTERBUS ASI, PROFINET Analog, EtherCAT Parallel, EtherCAT P DRIVE-CLiQ, EtherNet/IP PROFIBUS, ETHERNET POWERLINK CANopen, IO-Link CIB2X
option, additional interfaces* (on request)	SSI INC	SSI INC	SSI INC
Weblink	www.tr-electronic.com/s/ S013308	www.tr-electronic.com/s/ S013312	www.tr-electronic.com/s/ S013313
QR-Code			

*Please enquire about availability for specific combinations

Optical 18 bit (O)

	COV582	COH582	COS582
			
	Solid shaft	Hollow shaft	Blind shaft
	Optical 18 bit	Optical 18 bit	Optical 18 bit
	10…30 V dc	10…30 V dc	10…30 V dc
	262,144	262,144	262,144
	256,000	256,000	256,000
	± 0,01°	± 0,01°	± 0,01°
	6, 8, 10, 12, 14, 1/4" ", 3/8", 1/2"	8, 10, 12, 14, 15, 1/4", 3/8", 1/2"	8, 10, 12, 14, 15, 1/4", 3/8", 1/2"
	Connector axial or radial	radial	Connector axial or radial
	-20...+75°C, option -40...+85°C	-20...+75°C, option -40...+85°C	-20...+75°C, option -40...+85°C
	IP65, option IP67	IP54	IP65, option IP67
	option 2/22	option 2/22	option 2/22
	SSI, INTERBUS, ASI, PROFINET, Analog, EtherCAT, Parallel, EtherCAT P, DRIVE-CLiQ, EtherNet/IP, PROFIBUS, ETHERNET POWERLINK, CANopen, IO-Link, CIB2X	SSI, INTERBUS, ASI, PROFINET, Analog, EtherCAT, Parallel, EtherCAT P, DRIVE-CLiQ, EtherNet/IP, PROFIBUS, ETHERNET POWERLINK, CANopen, IO-Link, CIB2X	SSI, INTERBUS, ASI, PROFINET, Analog, EtherCAT, Parallel, EtherCAT P, DRIVE-CLiQ, EtherNet/IP, PROFIBUS, ETHERNET POWERLINK, CANopen, IO-Link, CIB2X
	SSI INC	SSI INC	SSI INC
	www.tr-electronic.com/s/ S013314	www.tr-electronic.com/s/ S013315	www.tr-electronic.com/s/ S013316
	[QR code]	[QR code]	[QR code]

*Please enquire about availability for specific combinations

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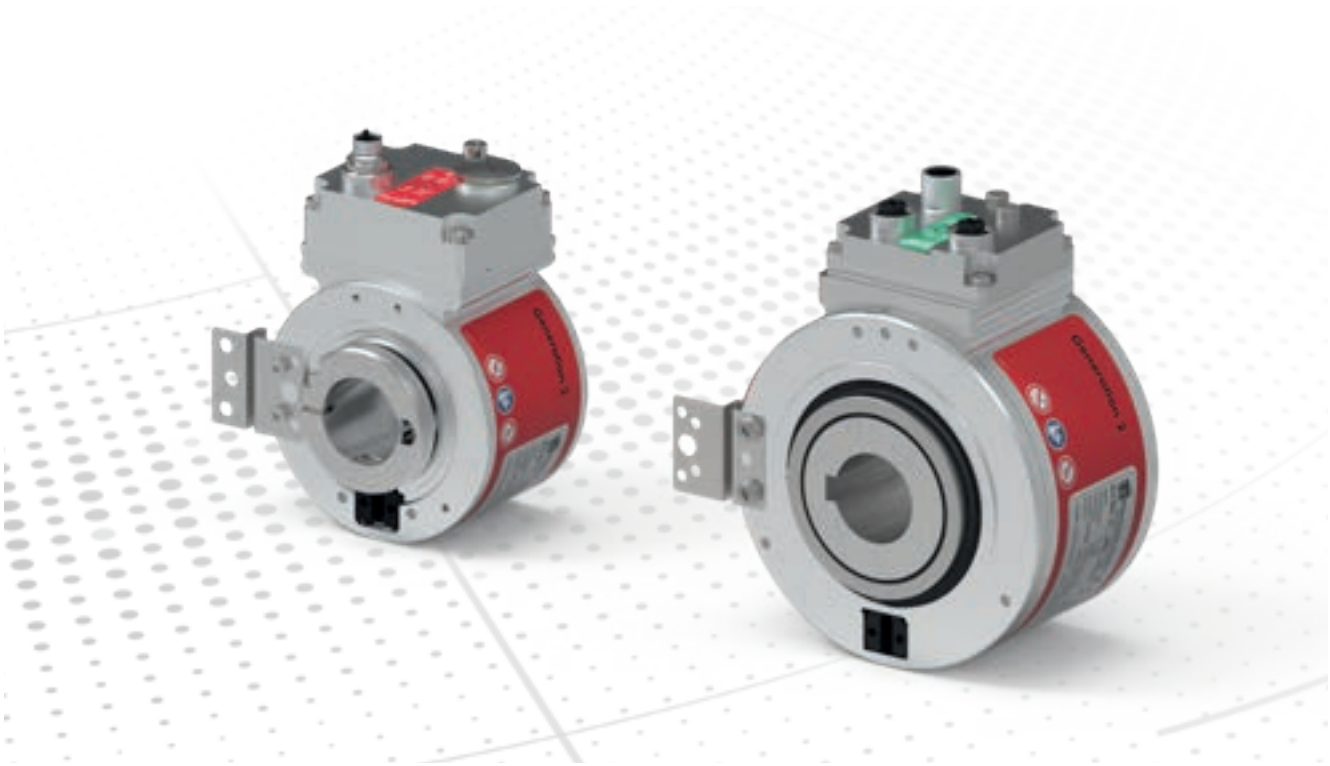
Encoder – Family C_H80 / 110 – Housing 80 / 110 mm



Hollow shaft encoder for shafts up to 27 mm / 50 mm

Hollow shaft encoders made by TR Electronic provide a current absolute position reading value immediately after power up without any referencing, counters or batteries. The enncoder is supported mechanically by the passing shaft. To prevent the encoder from turning with the shaft, a compact torque support spring can be used or a pin/groove connection in the flange of the encoder. Family 80 covers shaft diameters from 10 to 27 mm with an extensive choice of industrial interfaces as you´ve come to expect from TR-Electronic. Two resolution classes meet your demands perfectly: CEH measures up to 15 bits per turn, COH up to 18 bits per turn. Both detections measure up to 256,000 absolute turns. C_H80 is available for ATEX Zones 2/22 named A_H80. See chapter "Absolute rotary encoders – ATEX - Zone 2/22".

Family 110 covers shaft diameters from 15 up to 50 mm with an extensive choice of industrial interfaces as you´ve come to expect from TR Electronic. Two resolution classes fit your demands perfectly: CEH measures up to 15 bits per turn, COH up to 18 bits per turn. Both detections measure up to 262,144 absolute turns.

Optical 15 bit (E)
Optical 18 bit (O)

fits to CIB2X

Product	CEH80	CEH802	COH80
			
Detection	Optical 15 bit (E)	Optical 15 bit (E)	Optical 18 bit (O)
Single / multi	(M) Multi (S) Single	(M) Multi (S) Single	(M) Multi (S) Single
Supply	24 VDC (11…30)	24 VDC (11…30)	24 VDC (11…30)
Steps per turn	32768	32768*	262144
Number of turns	256000	256000	262144
Shaft diameters available	16, 20, 24, 25, 27	16, 20, 24, 25, 27	16, 20, 24, 25, 27
Connectors	Connector radial (option: cable*)	3x M12	Connector radial (option: cable*)
Ambient temperature	-20…+75 °C (option -40…+75 °C)	-20…+75 °C (option -40…+85 °C)	-20…+75 °C (option -40…+75 °C)
Protection class	IP54	IP54	IP54
Interface			
Option, additional interfaces (on request)	***INC***	***SSI+INC***	***INC***
Weblink	www.tr-electronic.com/s/S008496	www.tr-electronic.com/s/S019339	www.tr-electronic.com/s/S008497
QR-Code			

* depending on the interface

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Optical 15 bit (E)
Optical 18 bit (O)

fits to CIB2X

Product	COH802	CEH1102	CEH1102	
				
Detection	Optical 18 bit (O)	Optical 15 bit (E)	Optical 15 bit (E)	
Single / multi	(M) Multi (S) Single	(M) Multi (S) Single	(M) Multi (S) Single	
Supply	24 VDC (11…27)	24 VDC (11…30)	24 VDC (11…30)	
Steps per turn	262144	32768	32768	
Number of turns	262144	256000	256000	
Shaft diameters available	16, 20, 24, 25, 27	15, 28, 30, 35, 38, 40, 45, 50	15, 28, 30, 35, 38, 40, 45, 50	
Connectors	3x M12	connector radial	connector radial	
Ambient temperature	-20...+75°C (Option: -40...+85°C)	-20…+75 °C (option -30…+85 °C)	-20…+75 °C (option -30…+85 °C)	
Protection class	IP54	IP54	IP54	
Interface				
Option, additional interfaces (on request)	***SSI+INC***	***INC***	***INC***	
Weblink	www.tr-electronic.com/s/S019339	www.tr-electronic.com/s/S008519	www.tr-electronic.com/s/S008519	
QR-Code				

Can't find the right variant? Please contact us (info@tr-electronic.de)

	COH1102 	COH1102 
	Optical 18 bit (O)	Optical 18 bit (O)
	(M) Multi (S) Single	(M) Multi (S) Single
	24 VDC (11…30)	24 VDC (11…30)
	262144	262144
	256000	256000
	15, 28, 30, 35, 38, 40, 45, 50	15, 28, 30, 35, 38, 40, 45, 50
	connector radial	connector radial
	-20…+75 °C (option -30…+85 °C)	-20…+75 °C (option -30…+85 °C)
	IP54	IP54
	INC	***INC***
	www.tr-electronic.com/s/S008520	www.tr-electronic.com/s/S008520

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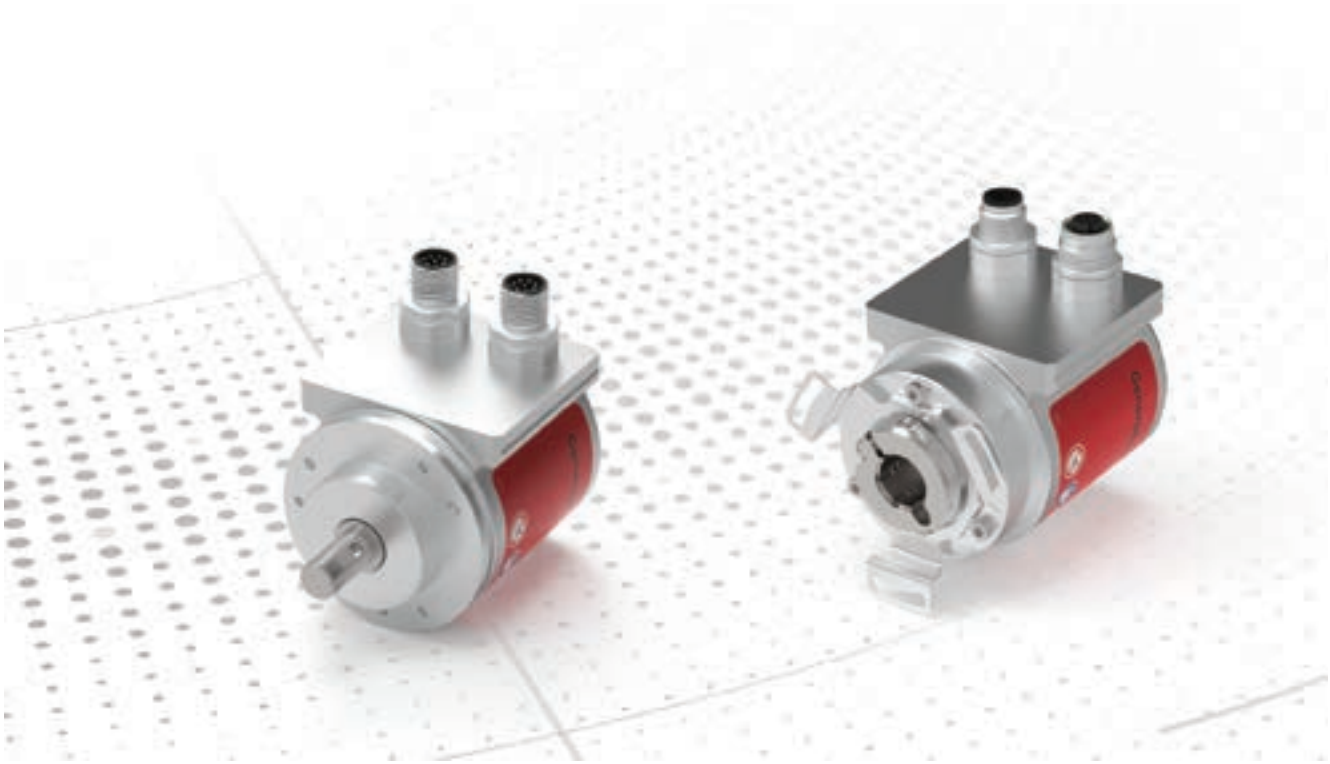
Redundant absolute rotary encoders CR_582 - 58 mm



One housing, two independent rotary encoders, many flexible safety concepts!

The requirements for reliability, availability and safety of machines and systems are increasing. Users meet the requirements with strategies for the design of the machine, system and control technology that are adapted to the application. TR Electronic has set itself the goal of supporting a wide variety of structures and strategies with high-quality technical solutions.
In addition to the SIL/PL-certified sensor solutions, there are also redundant versions that also enable other safety and high-availability concepts in the design.
The CR_582 family integrates two rotary encoders in the space of a standard industrial encoder with a size of 58 mm. The position values are determined by two independent sensors and processed separately.
Both sensors can also be parameterized differently from each other. The encoder transmits the values either via SSI, incremental or CANopen interface.

_ Industrial standard size 58 mm
_ two separate detections
_ SSI/SSI and SSI/Incremental-Interface: Fully separated galvanically
_ CANopen: two participants in the bus system, CAN-Signals galvanically isolated from supply.
_ solid shaft, blind shaft and wire lenght encoder
_ compact industrial standard connectors

Redundant sensor system

Product	CRV582	CRS582	CRW582
			
Shaft type	solid shaft	blind shaft	coupling
Detection	double, 36 bit	double, 36 bit	double, 36 bit
Supply	10…30 V dc	10…30 V dc	10…30 V dc
Steps per turn	262.144	262.144	262.144
Number of absolutely detected turns	256.000	256.000	256.000
Measurement range	-	-	2,5/5/7,5/10/15/30/40 m
Available shaft dimensions	10 flat, 10 round with keyway	12 H7, 14 H7, 15 H7	-
Connector orientation	radial	radial	radial
Working temperature	-20...+75°C, option -40...+85°C	-20...+75°C, option -40...+85°C	-20...+75°C, option -40...+85°C
Protection class	IP65, others on request	IP65, others on request	IP65, others on request
Interfaces	CANopen + CANopen SSI + SSI SSI + INC	CANopen + CANopen SSI + SSI SSI + INC	CANopen + CANopen SSI + SSI SSI + INC
Weblink	https://www.tr-electronic.com/s/S024782	https://www.tr-electronic.com/s/S024783	https://www.tr-electronic.com/s/S024784
QR-Code			

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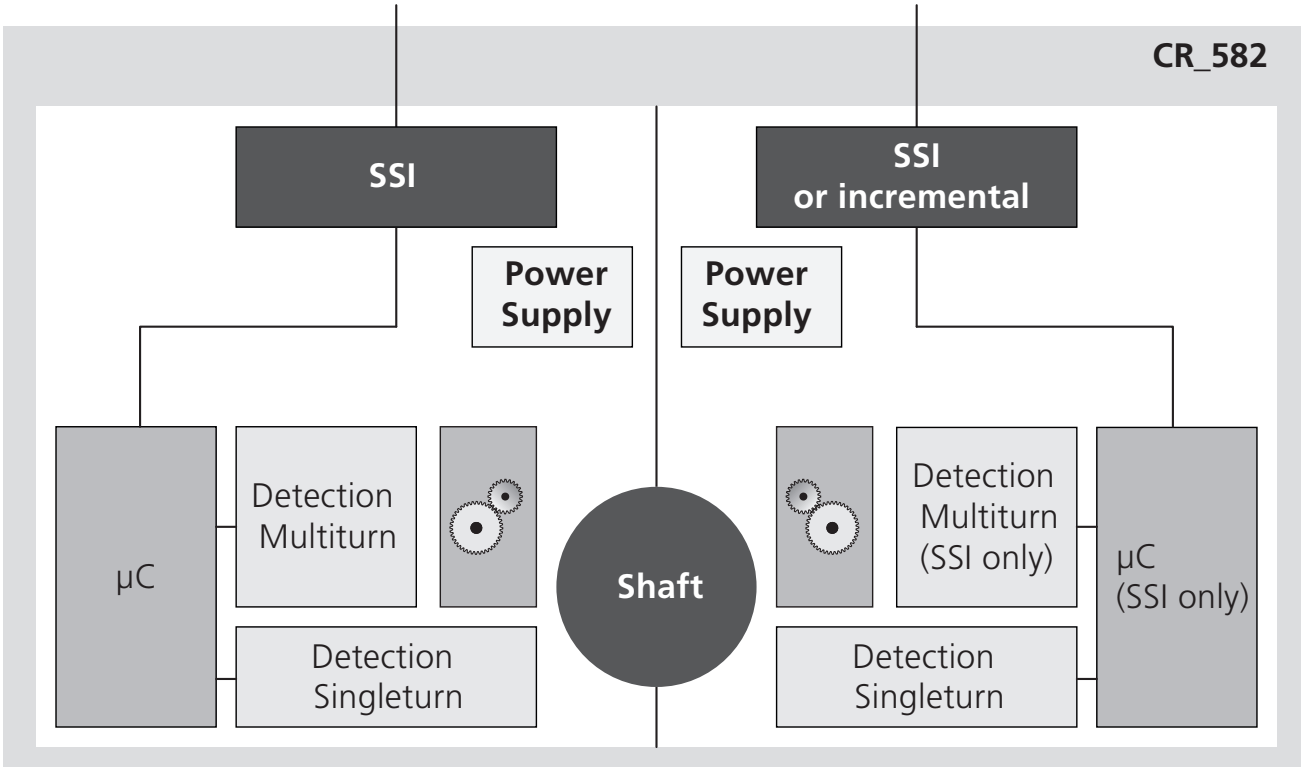
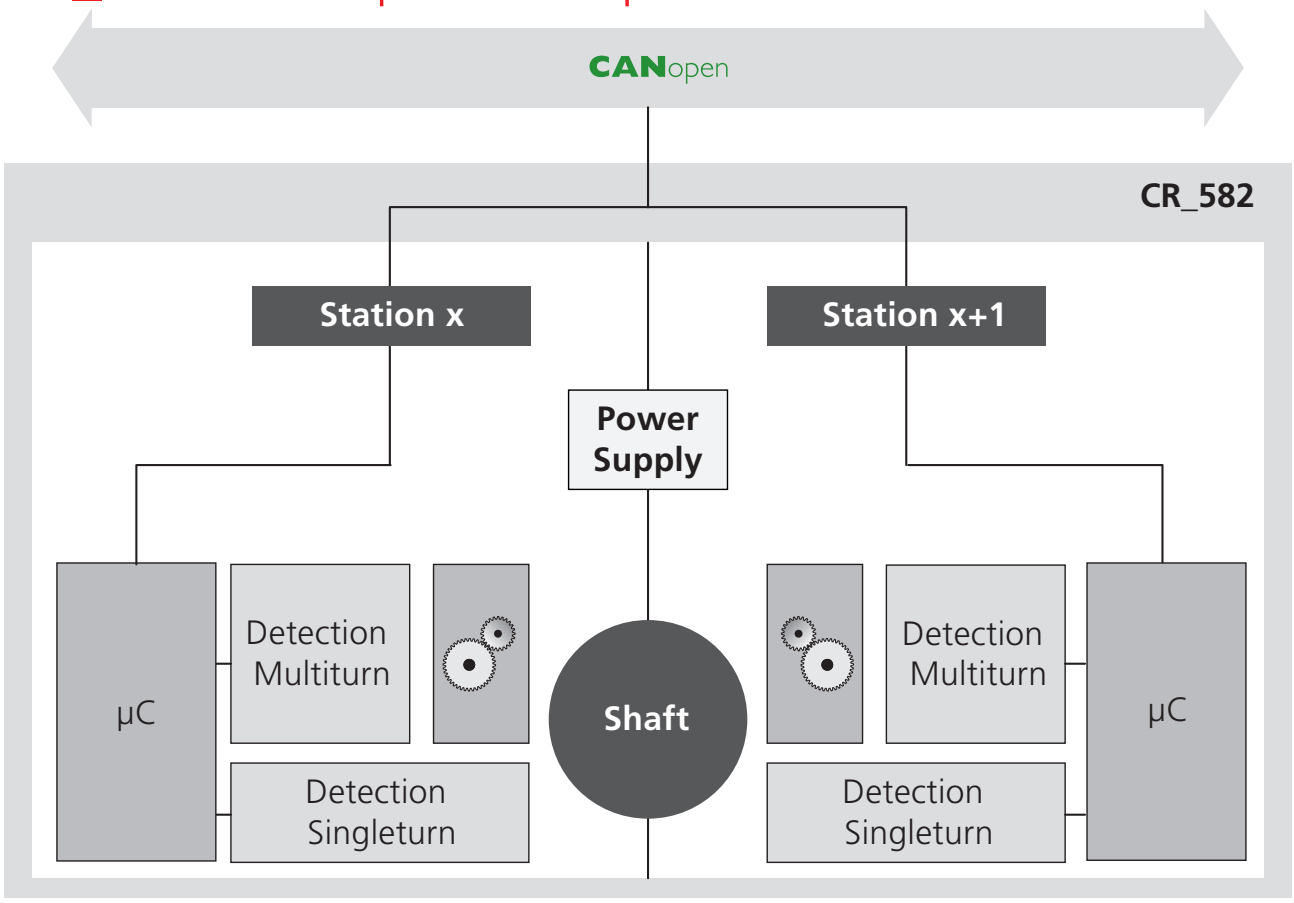
CR_582 – SSI+SSI, SSI+INK



CR_582 – CANopen+CANopen



C __ 582 stainless steel

ZB 36
D 58

more on request

D10 D-cut

V
≤ IP67

1.4404
AISI 316L

PROFINET®

EtherCAT®

EtherNet/IP™

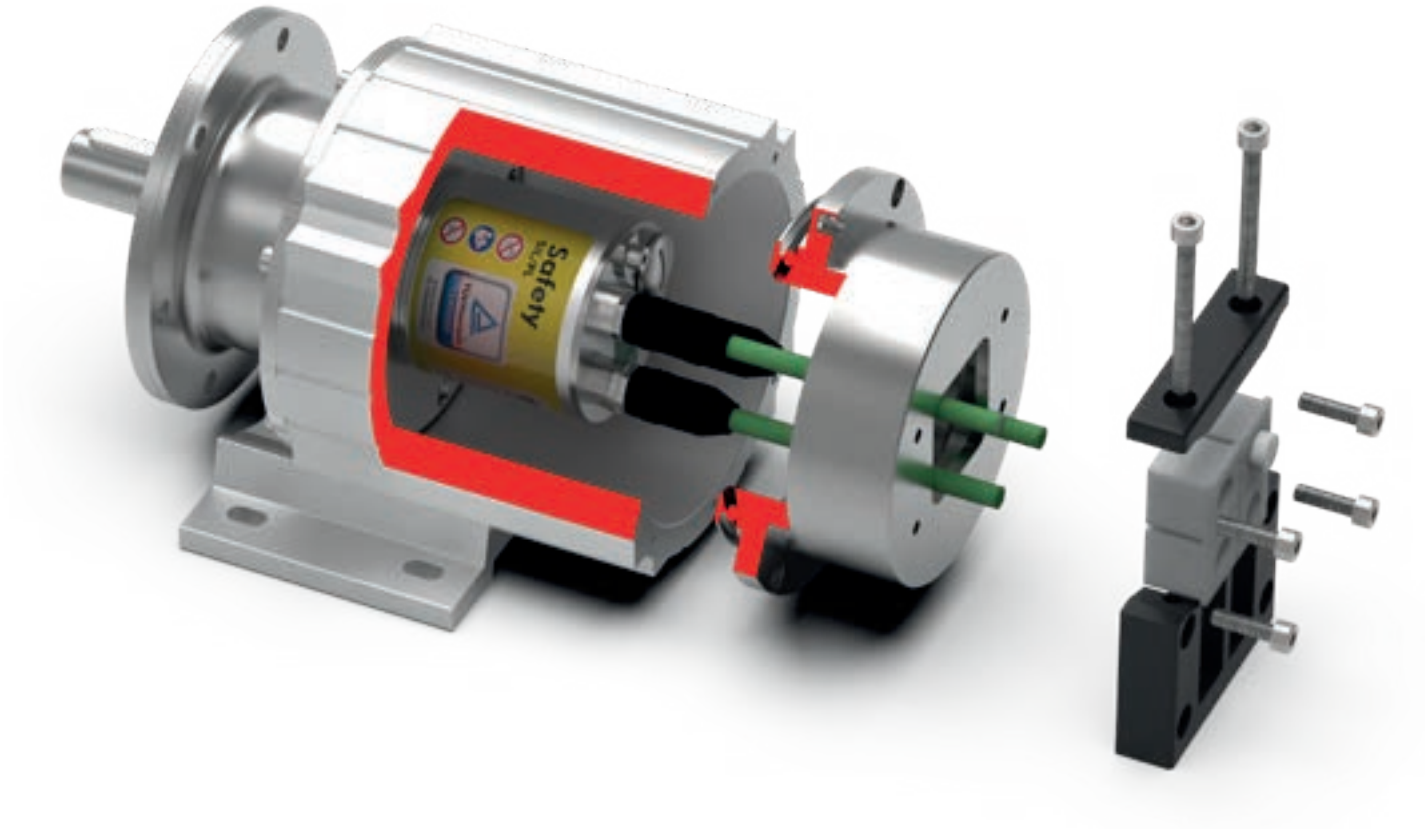
+ *INC*
+ *SSI*

CIB2X
SSI **cable gland**
SSI + INC **cable gland**

more on request

	CM_ Mag.	CE_ Opt.	CO_ Opt. High
C_ _ 582S Singleturn	≤ 13 bit 1 ↺	≤ 15 bit 1 ↺	≤ 18 bit 1 ↺
C_ _ 582M Multiturn	≤ 13 bit 4096 ↺	≤ 15 bit 4096 ↺	≤ 18 bit 4096 ↺

Heavy-duty protective housing



Heavy-duty protective housing with convenient field cabling

Reinforced bearings and additional housing layers make the rotary encoder almost impervious to external mechanical influences.

An M12 connector is not particularly resistant to mechanical influences. What is very practical and effective for normal environments can quickly lead to headaches in adverse conditions. Sometimes these different requirements come together: SIL encoders (CD_582+FS series from TR Electronic), increased forces on the shaft, risk of mechanical impacts on the housing and the desire to use pre-assembled cables. This requires a special solution.

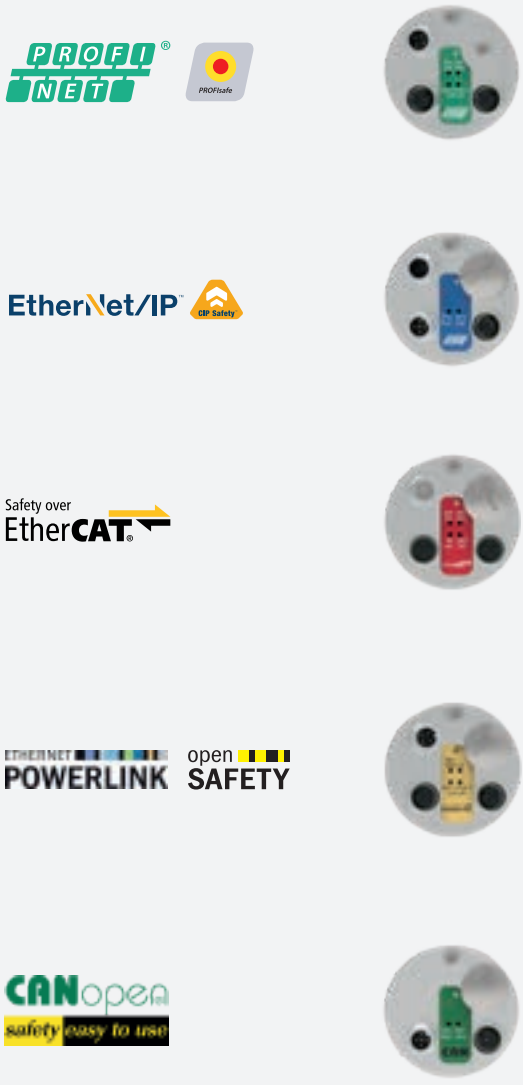
Our answer to these challenges is the new protective housing with an outer diameter of 115 mm.

The proven mechanics of the 115 protective housing offer a reinforced mounting flange and a robust mounting foot. Forces acting on the shaft are dissipated into the flange by two strong bearings. The internal rotary encoder is shielded from harmful influences by the surrounding continuous cast aluminum housing with a wall thickness of 20 mm.

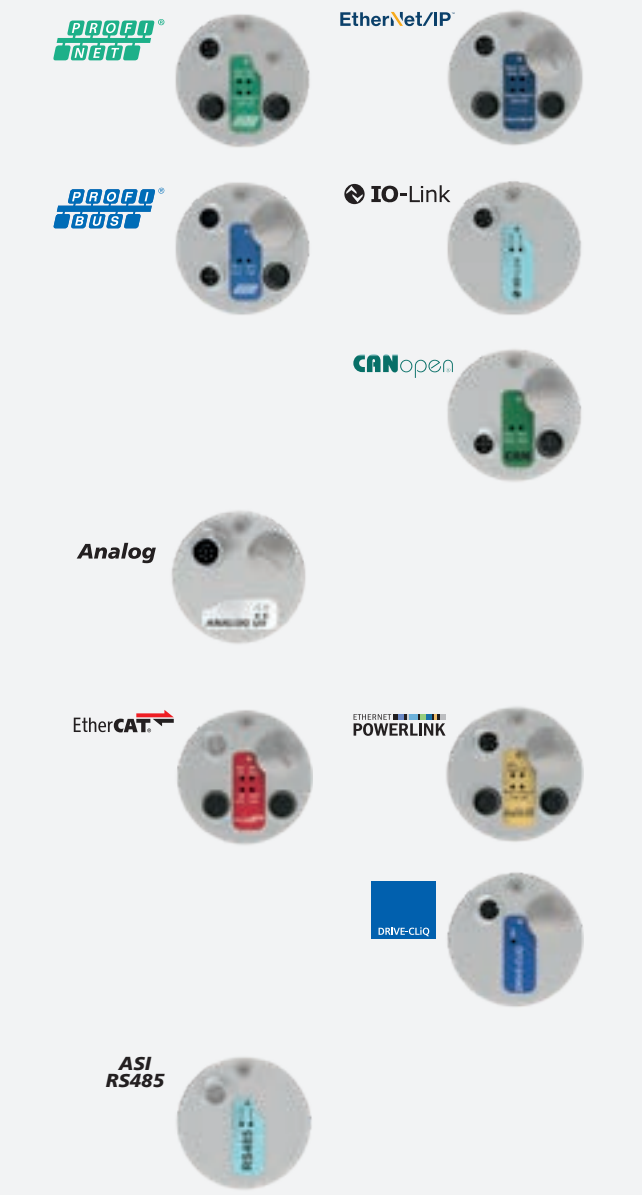
The innovation in the new protective housing version lies in the connection bell. This can be fully opened by the user and thus provides direct access to the M12 connections of the encoder. Even when the protective housing is open, the internally installed encoder offers the tightness of a CDV582+FS, so that the protective housing can also be opened for cabling in dusty environments. The protective housing is of course suitable for all encoders in the 582 series.

communication interfaces

CD_582+FS



C__582



CR_582

Would you like more information about the interfaces?
Get in touch with us: info@tr-electronic.de

TR Electronic – your partner in automation

Rotary encoders

Absolute encoder, incremental rotary encoder, wire-actuated encoder

Rotary encoders precisely measure position in a wide variety of applications and industries.
Our range extends from miniature versions for medical technology to SIL3-certified rotary encoders, including those with the necessary OT safety. Naturally, we also offer a comprehensive range of accessories for our rotary encoders.

Linear encoders

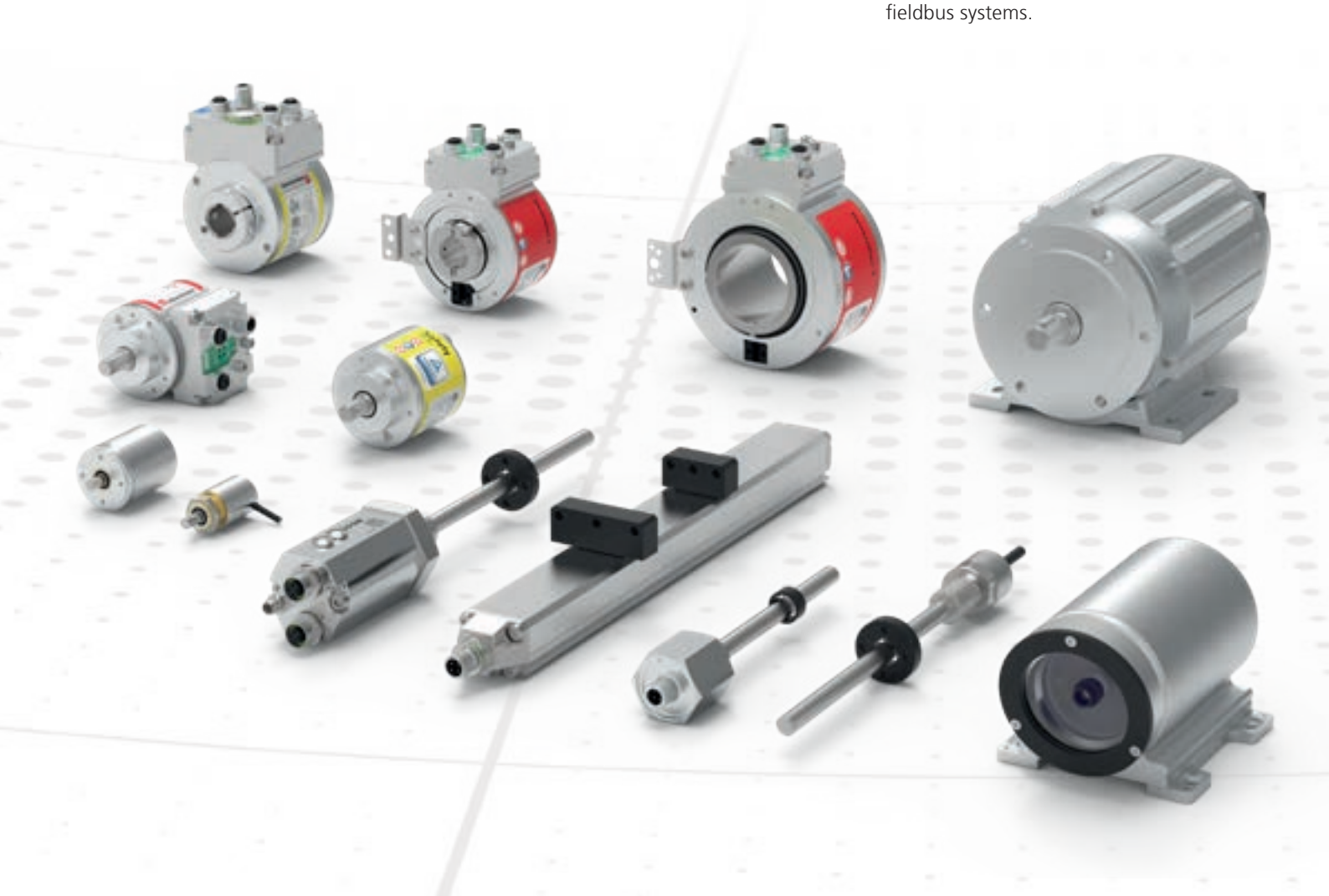
Linear absolute measuring systems, laser displacement measurement

Linear encoders register linear motions in machines, tools and systems according to specific requirements using different technologies.
Linear encoders allow measuring distances of max. 20 m almost without any wear. This value is max. 240 m for laser measuring systems. Machines and systems can be precisely controlled to reach their desired positions.

Motion

Compact actuating and positioning drives

EncoTRive compact drives offer decentralised solutions in the power range from 50 to 400 watts. The combination of flexibly selectable gear motors and integrated positioning controllers saves space in the control cabinet and simplifies cabling. The integrated absolute encoder provides the current position at any time without referencing.
Uniform control of all variants enables easy integration into all common fieldbus systems.



Components

Industrial PC, field bus I/O, PLC, HMI controller

Industrial PCs are available in numerous variants and offer customized calculation power for PC-assisted automation. Programmable logic controllers (PLC) are the traditional means for automation. HMI controllers establish the interface to the user. Field bus nodes, I/O modules and cam controllers complete the range of automation components.

Automation

Consulting and implementation for new machines and retrofit

You want to set up a largely automated new machine or retrofit and modernize your existing machine with automation systems? Then you just need our extensive expert knowledge and the more than 20 years of our experience.

Unidor

Blanking and forming, systems, controls and sensors

Trendsetting blanking and forming technology for more than 30 years. We are your reliable partner in the world of blanking and pressing and can prove this with thousands of machines which we have successfully installed all over the world. Sensors, controls and systems ensure optimal results in machines, tools and retrofit projects.

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