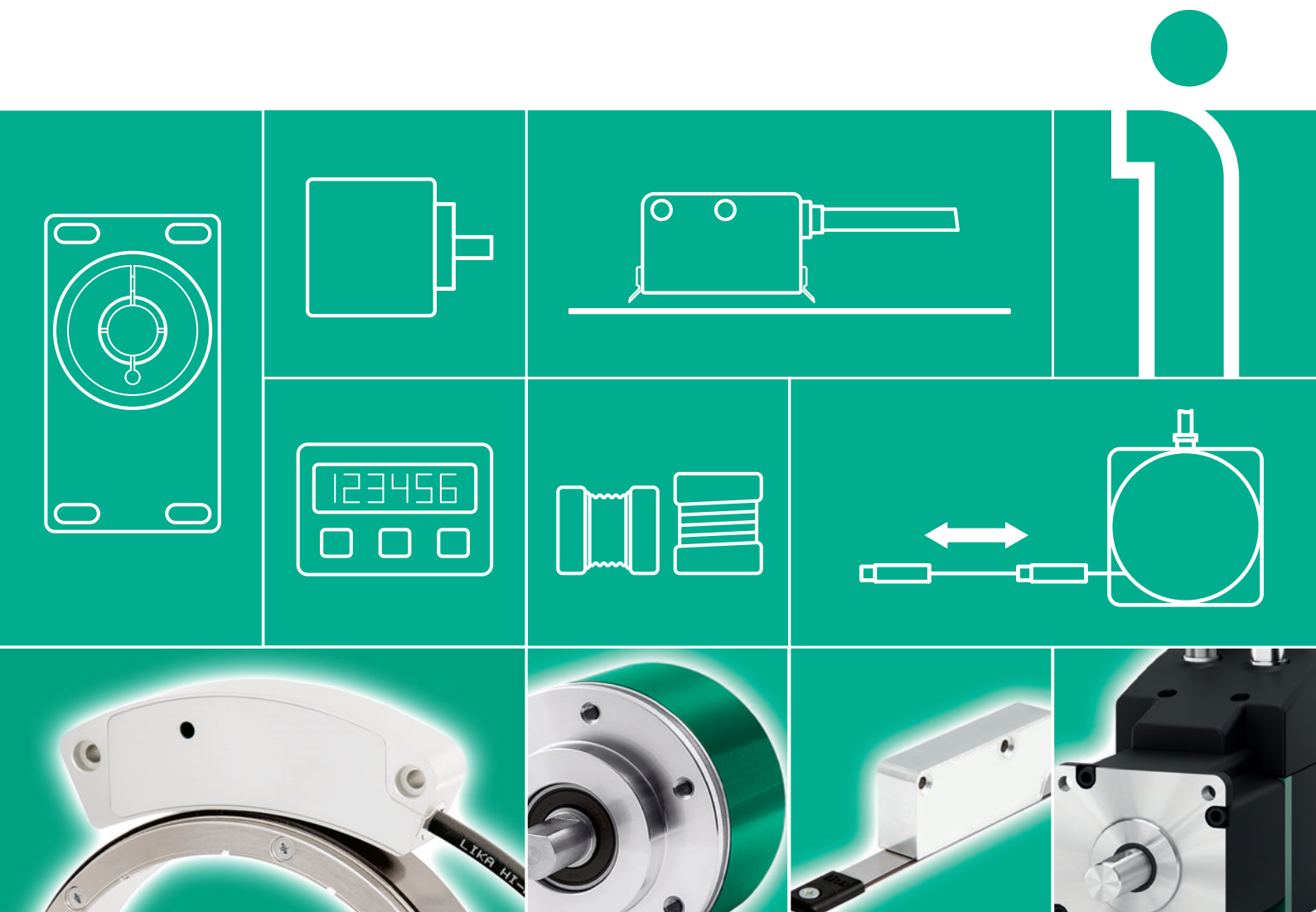




**35 YEARS
YOUNG**
1982.2017

lika

Smart encoders & actuators



General catalogue 2018



ROTAPULS • ROTACOD incremental and absolute rotary encoders		Page
Compact incremental encoders		6
Incremental encoders for industrial applications		7-8
Compact absolute encoders size ø36 mm		9
Absolute encoders for industrial applications		10
Absolute encoders for demanding applications		11
Programmable encoders		12-13
Absolute encoders with Ethernet and fieldbus interfaces		14
Incremental encoders for motor feedback		15-16
Frameless encoders		17
ATEX encoders		18
Stainless steel encoders		19
Heavy-duty encoders		20-21
Special encoders		22-23
Bearingless encoders, incremental and absolute		24-25
TILTCOD inclinometers		
Inclinometers		26
DRAW-WIRE encoders		
Incremental draw-wire encoders		28
Absolute draw-wire encoders		29
Cable-pulling mechanisms for encoders		30
LINEPULS • LINECOD incremental and absolute linear encoders		
Incremental encoders for position measurements		31-32
Linear encoders for motion control		33-34
Absolute encoders for position measurements		35
DRIVECOD rotary actuators		
Rotary actuators for format adjustment		36
LDT10 touch panel for rotary actuators		37
POSICONTROL displays and interfaces		
Displays		38-39
Signal converters for encoders		40
Gateways and safety motion monitors		41
Accessories for linear and rotary encoders		27



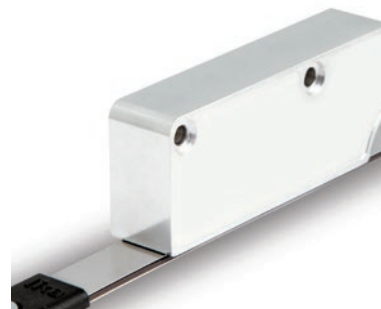
ROTAPULS • ROTACOD

Rotary encoders



ROTAMAG

Magnetic encoders & Kit-encoders



LINEPULS • LINECOD

Linear encoders



DRAW-WIRE

Draw-wire encoders



COUPLINGS

Flexible & transmission couplings



TILTCOD

Inclinometers



POSICONTROL

Displays & signal converters
Encoder Interfaces



DRIVECOD

Rotary actuators



**35 YEARS
YOUNG**
1982.2017

1982
Lika Electronic
founded in Schio (VI).

1986
Manufacturing of
absolute encoders with
integrated display and
incremental encoders
for the Italian market.

1993
Lika Electronic is the
first company in Italy
to offer a complete
portfolio of encoders
in the 58 mm diam.
range.

1995
The 100,000th
encoder
rolled off the
production line.

1997
Lika is first certified
to ISO 9001:1994.



1982

1986

1990

1995

1983
Lika numbers 8
customers.

1985
Lika starts the
production of
absolute encoders
for the German
market.

1987
Lika produces a 50 mm
diameter miniature
encoder, the smallest
absolute encoder in
Europe.

1996
ROTACAM ASR58 is the
first absolute encoder
fitted with integrated
cam programmer.

1998
First 16-bit resolution
single-turn absolute
encoder engineered for
installation in aerostatic
probes developed by
Florence University.

An international family company, corporate profile

Lika Electronic stands for encoders and position measuring systems. Since its inception in 1982, Lika Electronic develops and manufactures *incremental and absolute, optical and magnetic, rotary and linear encoders, incremental & absolute sensors, linear and rotary incremental & absolute magnetic measurement systems, rotary actuators, displays, signal converters and encoder interfaces*.

Starting as a family-owned business, thanks to its technical competence and comprehensive know-how in the automation industry along with the high quality standards and the skill in providing solutions that target specific customer needs, over the years **Lika Electronic has grown becoming a forward thinking innovative and global company** and has become one of the leading manufacturers of optical encoders and magnetic measurement systems in Europe and worldwide.

Many key features include the extensive technical engineering skills, in-depth knowledge and expertise in digital and analogical electronic design as well as the proven daily practice in co-operation with universities, research institutions and customers in order to **develop and provide advanced electronic equipment and high-tech materials & devices tailored to specific customer and market requirements**. Moreover software development and mechanical & optical components design are entirely performed within the company. Often production machinery and tools are often engineered and built internally to satisfy specific needs and performances.

Every day Lika Electronic is committed to being a step ahead and always at the forefront of innovation, looking to the future with the enthusiasm that steers the company towards new opportunities *without giving up the strength of being an international family company*.

Lika Electronic is certified for compliance with ISO 9001:2000 quality management system and is now com-

mitted to adopt an environmental management system complying with ISO 14001:2004 requirements. All Lika's products are designed and manufactured to fully meet the requirements of CE, RoHS and REACH directives, most of them are UL and CSA compliant too. ATEX certified solutions suitable to be integrated into potential explosive environments and hazardous areas are also available.

Global presence, make us closer to the customer

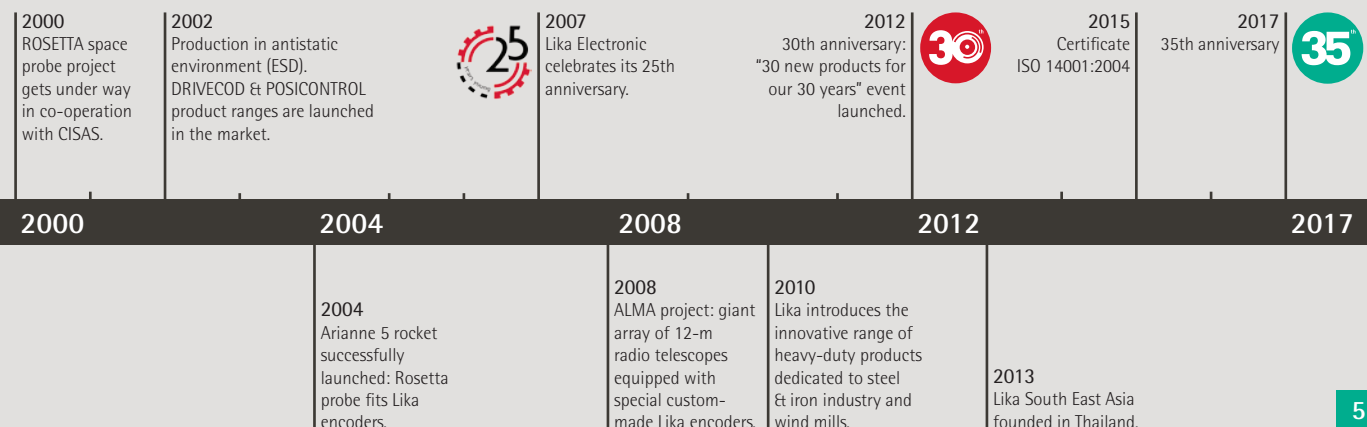


Every day, everywhere Lika Electronic works in close contact with its customers to build strong, long-lasting relationships and support them at all times in each day-to-day requirement. Lika's actions focus on customers' needs with daily challenges to develop reliable and cutting edge solutions. *Continuous innovation, outstanding expertise, overall quality, prompt action and maximum flexibility* are the fundamental values that Lika Electronic is truly proud of offering its customers when working together.

The Rosetta space mission

Lika is proud to be part of the international team of companies that, under the guide of the **European Space Agency (ESA)** has allowed to achieve this historic result. Visit our website for full information.

Lika Electronic operates all over the world providing a widespread and efficient global distribution network, offering unrivalled technical support and excellent customer service. At the present time the export share is approximately 60% of the turnover in more than 50 countries.



Compact encoder from size Ø28 to Ø40 mm Resolutions up to 4096 PPR

- Optical or magnetic sensing
- For installation in confined spaces
- Universal output circuit PP/LD

				
	I28	MI36 • MC36	I40 • I41	CK46 • CK41
Description	Miniature encoder, size 28.	Compact, size 36. Robust and reliable.	Size 40, versatile and multipurpose. Servo flange or ring nut.	Size 40, versatile and multipurpose. Blind hollow shaft.
Sensing method	optical	magnetic	optical	optical
Housing diameter	28 mm	36 mm	40 mm	41 mm
Resolution max.	2048 PPR	2048 PPR	4096 PPR	4096 PPR
Output circuit	NPN, Push-Pull, Line Driver, Universal circuit	NPN, Push-Pull, Line Driver	NPN, PNP, Push-Pull, Line Driver, Universal circuit	NPN, PNP, Push-Pull, Line Driver, Universal circuit
Power supply	+5Vdc ±5% +10÷30Vdc +5÷30Vdc	+5Vdc ±5%, +10÷30Vdc	+5Vdc ±5% +10÷30Vdc +5÷30Vdc	+5Vdc ±5% +10÷30Vdc +5÷30Vdc
Shaft diameter max.	solid shaft Ø 5 mm	solid shaft Ø 6 mm hollow shaft Ø 6 mm	solid shaft Ø 8 mm	hollow shaft Ø 8 mm
Electrical connections	cable	cable	cable	cable
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Shaft rotational speed max.	3000 rpm	12000 rpm	6000 rpm	6000 rpm
Protection max.	IP54	IP67	IP66	IP65
Application	Packaging Electromedical		Packaging Electromedical	Packaging Electromedical

ROTAPULS

Incremental encoders

Size 58 for industrial applications Precise optical or robust magnetic sensing

- Resolution up to 10000 pulses/revolution
- Solid, blind hollow or through hollow shaft



I58 • I58S



I65 • IT65



MC58 • MC59 • MC60

Description

Size 58, servo or clamp flange.
Resolution up to 10000 PPR.

Square flange or pilot flange.
US/Imperial sizes.
MIL standard connectors.

Through hollow shaft.
Sealed circuits (option).

Sensing method

optical

optical

magnetic

Housing diameter

58 mm

65 mm

58 mm

Resolution max.

10000 PPR

10000 PPR

10000 PPR

Output circuit

NPN, PNP, 1Vpp,
Push-Pull, Line Driver,
Universal circuit

NPN, PNP, Push-Pull,
Line Driver, Universal circuit

Push-Pull
Line Driver
Universal circuit

Power supply

+5Vdc $\pm$ 5%
+10÷30Vdc
+5÷30Vdc

+5Vdc $\pm$ 5%
+10÷30Vdc
+5÷30Vdc

+5Vdc $\pm$ 5%
+10÷30Vdc
+5÷30Vdc

Shaft diameter max.

solid shaft $\varnothing$ 12 mm

solid shaft $\varnothing$ 12 mm

hollow shaft $\varnothing$ 15 mm

Electrical connections

cable
M12, M23 connector

cable
MIL connector

cable
M23 connector

Operating temperature

-40°C +100°C
(-40°F +212°F)

-40°C +100°C
(-40°F +212°F)

-25°C +85°C
(-13°F +185°F)

Shaft rotational speed max.

12000 rpm

6000 rpm

6000 rpm

Protection max.

IP65

IP66

IP67

Application

Size 58 for industrial applications

- Blind hollow or through hollow shaft
- Precise optical sensing, resolution up to 10000 PPR



CK58 • CK59 • CK60



C58 • C59 • C60

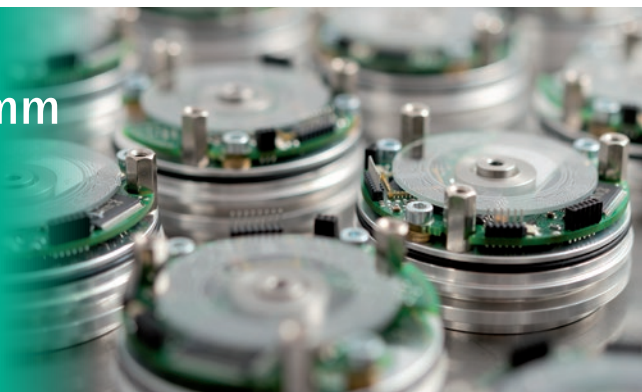


C58A • C58R

Description	Size 58, blind hollow shaft. Resolution up to 10000 PPR.	Size 58, through hollow shaft.	Size 58, through hollow shaft. Front or backside fixing with antirotation pin.
Sensing method	optical	optical	optical
Housing diameter	58 mm	58 mm	58 mm
Resolution max.	10000 PPR	5000 PPR	5000 PPR
Output circuit	NPN, PNP, 1Vpp, Push-Pull, Line Driver, Universal circuit	Push-Pull Line Driver Universal circuit	Push-Pull Line Driver Universal circuit
Power supply	+5Vdc $\pm$ 5% +10÷30Vdc +5÷30Vdc	+5Vdc $\pm$ 5% +10÷30Vdc +5÷30Vdc	+5Vdc $\pm$ 5% +10÷30Vdc +5÷30Vdc
Shaft diameter max.	hollow shaft $\varnothing$ 15 mm	hollow shaft $\varnothing$ 15 mm	hollow shaft $\varnothing$ 15 mm
Electrical connections	cable M12, M23 connector	cable M12, M23 connector	cable M12, M23 connector
Operating temperature	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)
Shaft rotational speed max.	12000 rpm	6000 rpm	6000 rpm
Protection max.	IP65	IP65	IP65
Application		Motor feedback	Motor feedback

Compact absolute encoders size Ø36 mm

- High resolution optical sensing
- Cost-effective and robust magnetic encoders
- Solid or blind hollow shaft



Description				
	MS40 • MSC40 MS41 • MSC41	MS36 • MSC36 MM36 • MMC36	AS36 • ASC36	AM36 • AMC36
Description	Size 40 with solid or blind hollow shaft.	Size 36, single and multiturn. Solid/blind hollow shaft.	Size 36, singleturn. High performance and resolution.	Size 36, optical multiturn. High performance.
Sensing method	magnetic	magnetic	optical	optical
Housing diameter	40 mm	36 mm	36 mm	36 mm
Resolution max.	SSI: 12 Bit Bit parallel: 8 Bit Analogue: 10 Bit	13 Bit 13 x 16 Bit	20 Bit	20 x 12 Bit
Output circuit	NPN, PNP, SSI, 0-5V, 0-10V, 4-20 mA	SSI	BiSS-C / SSI	BiSS-C / SSI
Power supply	+5Vdc ±5% +10÷30Vdc	+10÷30Vdc	+10÷30Vdc	+10÷30Vdc
Shaft diameter max.	solid shaft Ø 6 mm hollow shaft Ø 6 mm	solid shaft Ø 6 mm hollow shaft Ø 6 mm	solid shaft Ø 6 mm hollow shaft Ø 6 mm	solid shaft Ø 6 mm hollow shaft Ø 6 mm
Electrical connections	cable M12 connector	cable M12 connector	cable M12 connector	cable M12 connector
Operating temperature	-20°C +85°C (-4°F +185°F)	-20°C +85°C (-4°F +185°F)	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)
Shaft rotational speed max.	12000 rpm	12000 rpm	6000 rpm	6000 rpm
Protection max.	IP66	IP67	IP67	IP67
Application			Servomotors Feedback	

Absolute encoders for industrial applications

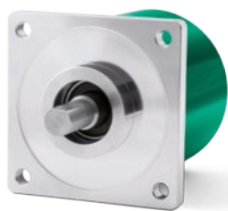
- Resolution up to 13 bit per turn
- SSI, bit parallel and analogue output
- Solid, blind and through hollow shaft

Description				
	ES58 • ES58S • ESC58	EM58 • EM58S • EMC58	MM58 • MM58S • MMC58	AS58 A • AM58 A
	Size 58, singleturn. Servo or clamp flange. Solid or blind hollow shaft.	Size 58, multiturn. Servo or clamp flange. Solid or blind hollow shaft.	Size 58, multiturn. Solid or through hollow shaft. Sealed circuits (option).	Size 58, single/multiturn, analogue output. Solid/blind hollow shaft.
Sensing method	optical	optical	magnetic	optical
Housing diameter	58 mm	58 mm	58 mm	58 mm
Resolution max.	13 Bit	13 x 14 Bit	12 x 16 Bit	12 Bit tot. 16 Bit
Output circuit	SSI Bit Parallel	SSI Modbus Bit Parallel	SSI	0-5V, 0-10V, +/-5V, +/-10V, 0-20mA, 4-20mA, 0-24mA
Power supply	+7,5÷34 Vdc	+7,5÷34 Vdc	+10÷30Vdc	+13÷30Vdc
Shaft diameter max.	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm
Electrical connections	cable M12, M23 connector	cable M12, M23, MIL connector	cable	cable M12, M23 connector
Operating temperature	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Shaft rotational speed max.	12000 rpm	12000 rpm	12000 rpm	12000 rpm
Protection max.	IP67	IP67	IP65	IP67
Application				Precise analog output

Absolute encoders for demanding applications

- Precise optical sensing with accuracy up to $\pm 0,007^\circ$
- Resolution up to 18 bit per turn
- Solid, blind hollow and through hollow shaft



				
	HS58 • HS58S • HSC58	HM58 • HM58S • HMC58	HSCT • HMCT	AST6 • AMT6
Description	High resolution singleturn. Servo or clamp flange. Solid/blind hollow shaft.	Size 58 multiturn high resolution. Servo flange with pilot. Solid/blind hollow shaft.	Size 58. Through hollow shaft. Single/multiturn. High resolution.	Square flange, US/Imperial sizes. Absolute single/multiturn. M23 and MIL connectors.
Sensing method	optical	optical	optical	optical
Housing diameter	58 mm	58 mm	58 mm	65 mm
Resolution max.	19 Bit + 2048 PPR	16 x 14 Bit + 2048 PPR	18 Bit 16 x 12 Bit	18 Bit 16 x 14 Bit
Output circuit	SSI, SSI+1Vpp, SSI + Line Driver 5V, BiSS + 1Vpp	SSI, SSI+1Vpp, SSI+Push-Pull, SSI+Line Driver 5V, BiSS+1Vpp	SSI, SSI+1Vpp, SSI+Push-Pull, SSI+Line Driver 5V, BiSS+1Vpp	SSI (RS422) NPN Bit parallel Push-Pull
Power supply	+10÷30Vdc	+10÷30Vdc	+10÷30Vdc	7,5÷34Vdc
Shaft diameter max.	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm	hollow shaft Ø 15 mm	solid shaft Ø 12 mm
Electrical connections	cable M12, M23 connector	cable M12, M23 connector	cable M12, M23 connector	cable M23, MIL connector
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-40°C +100°C (-40°F +212°F)
Shaft rotational speed	12000 rpm max.	12000 rpm max.	6000 rpm max.	6000 rpm max.
Protection max.	IP67	IP67	IP65	IP66
Application				

Programmable incremental encoders Programmable resolution up to 65536 PPR

- Universal output circuit PP/LD and configurable Line Driver 24/5V output
- Push button for index position setting
- Configurable via programming tool

			
	IQ36 • CKQ36	IQ58 • IQ58S • CKQ58	IP58 • IP58S • CKP58
Description	Size 36. Solid or blind hollow shaft. Compact and robust.	Size 58. Solid or blind hollow shaft. Universal output circuit.	Size 58. Solid or blind hollow shaft. Resolution up to 65536 PPR. Zero setting push button. Diagnostic LEDs.
Sensing method	magnetic	magnetic	optical
Housing diameter	36 mm	58 mm	58 mm
Resolution max.	from 1 to 16384 PPR	from 1 to 16384 PPR	from 1 to 65536 PPR
Programmable features	• resolution • counting direction • Index position • Index dimension • max. frequency	• resolution • counting direction • Index position • Index dimension • max. frequency	• resolution • counting direction • Index position • Index dimension • output circuit • max. RPM
Output circuit	Universal circuit	Universal circuit	Universal circuit 24/5V programmable
Power supply	+5÷30Vdc	+5÷30Vdc	+5÷30Vdc
Shaft diameter max.	solid shaft Ø 6 mm hollow shaft Ø 6 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm
Electrical connections	cable M12 connector	cable M12, M23 connector	cable M12, M23 connector
Operating temperature	-40°C +85°C (-40°F +185°F)	-40°C +85°C (-40°F +185°F)	-40°C +100°C (-40°F +212°F)
Shaft rotational speed max.	12000 rpm	12000 rpm	12000 rpm
Protection max.	IP69K	IP65	IP65

Programmable absolute encoders

- SSI, bit parallel output with up to 18 bit per turn resolution
- Configurable analogue current and voltage output
- Programmable digital outputs and cam switches



				
	HM58 P • HMC58 P	EM58 PA • EMC58 PA	EM58 TA • EMC58 TA	ASR58 • AMR58
Description	Absolute, multiturn. Solid/blind hollow shaft. Teach-in function.	Absolute multiturn. Analogue output freely programmable. Solid/blind hollow shaft.	Absolute multiturn. Analogue range setting by bush buttons. Solid/blind hollow shaft.	Absolute single or multiturn. Integrated cams programmer. Solid/blind hollow shaft.
Sensing method	optical	optical	magnetic	optical
Housing diameter	58 mm	58 mm	58 mm	58 mm
Resolution max.	18 x 14 Bit	12 x 14 Bit	12 x 14 Bit	12 Bit 12 x 18 Bit
Programmable features	• resolution • teach-in of resolution • protocol • output code • preset	• output current or voltage • counting direction • programmable • preset	• teach-in by push buttons • Over-run function	16 programs, up to 1920 electronic cams
Output circuit	SSI (RS422) NPN Bit parallel Push-Pull	Programmable current or voltage	0-5V, 0-10V, +/-5V, +/-10V, 0-20mA, 4-20mA, 0-24mA	16 x Push-Pull + analogue + SSI
Power supply	+10÷30Vdc	+13÷30Vdc	+13÷30Vdc	+10÷30Vdc
Shaft diameter max.	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm
Electrical connections	cable, M12, M23, MIL, DSub connector	cable M12, M23 connector	cable M12 connector	cable MIL, DSub connector
Operating temperature	-40°C +85°C (-40°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Shaft rotational speed max.	12000 rpm	12000 rpm	12000 rpm	6000 rpm
Protection max.	IP67	IP67	IP67	IP65

Absolute encoders with Ethernet & fieldbus interfaces

- Standard version with 13 bit per turn resolution
- High accuracy singleturn with 18 bit resolution
- High performance multiturn with 16 bit per turn

ETHERNET
POWERLINK

DeviceNet™

EtherNet/IP™

PROFI
BUS

PROFI
NET

EtherCAT®



Modbus

CANopen



AS58/AM58 PB • AS58/AM58 CB



HS58 FB • HM58 FB



AS58 CB • AM58 CB



EM58 • HS58 • HM58

Description	Absolute single & multiturn. Profibus and CANopen interface. Solid/blind hollow shaft.	High performance single/multiturn. Flexible bus interface. Solid/blind hollow shaft.	Absolute single & multiturn. Point-to-point CANopen connection. Solid/blind hollow shaft.	High performance single/multiturn, Ethernet interface. Solid/blind hollow shaft.
Sensing method	magnetic	optical	optical	optical, magnetic
Housing diameter	58 mm	58 mm	58 mm	58 mm
Resolution max.	13 Bit 13 x 12 Bit	18 Bit 16 x 14 Bit	18 Bit 16 x 14 Bit	18 Bit 16 x 14 Bit
Output circuit	CANopen Profibus-DP	CANopen, CANopen LIFT, Profibus-DP, DeviceNet	CANopen	EtherCAT, Profinet, POWERLINK, Ethernet/IP
Power supply	+10÷30Vdc	+10÷30Vdc	+10÷30Vdc	+10÷30Vdc
Shaft diameter max.	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø 12 mm hollow shaft Ø 15 mm	solid shaft Ø12 mm hollow shaft Ø15 mm
Electrical connections	connection cap with PGs or M12 connectors	connection cap with PGs or M12 connectors	cable or M12 connector	connection cap with M12 connectors
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Shaft rotational speed max.	6000 rpm	6000 rpm	6000 rpm	6000 rpm
Protection max.	IP65	IP65	IP67	IP65
Application		High performance fieldbus		

Incremental encoders for motor feedback applications Versions for asynchronous and synchronous motors

- Hollow shaft or tapered shaft
- Digital and sine/cosine commutation signals

				 new
	C50	CB50	CB59 • CB60	CB62
Description	Size 50, compact. Through hollow shaft. Extended operating temperature.	Size 50. UVW commutation signals. Through hollow shaft.	Hollow or tapered shaft. Sin/cos output with absolute CD track.	Tapered shaft. Expansion fixing plate. Sin/cos output with absolute CD track.
Sensing method	optical	optical	optical	optical
Housing diameter	50 mm	50 mm	58 mm	58 mm
Resolution max.	8192 PPR	2500 PPR/8 poli	2048 PPR + CD track	2048 PPR + CD track
Output circuit	Push-Pull Line Driver Universal circuit	Push-Pull, Line Driver	1Vpp	1Vpp
Power supply	+5Vdc $\pm 5\%$ +10÷30Vdc +5÷30Vdc	+5Vdc $\pm 5\%$, +10÷30Vdc	+5Vdc $\pm 5\%$	+5Vdc $\pm 5\%$
Shaft diameter max.	hollow shaft $\varnothing 10$ mm	hollow shaft $\varnothing 10$ mm	hollow shaft $\varnothing 15$ mm tapered shaft $\varnothing 1:10$ mm	tapered shaft $\varnothing 1:10$ mm
Electrical connections	cable	cable	PCB connector	PCB connector
Operating temperature	-40°C +100°C (-40°F +212°F)	-20°C +100°C (-4°F +212°F)	-20°C +100°C (-4°F +212°F)	-20°C +100°C (-4°F +212°F)
Shaft rotational speed max.	6000 rpm	6000 rpm	12000 rpm	12000 rpm
Protection max.	IP65	IP20	IP40	IP40
Application	Electric motors	Brushless motors	Gearless motors Elevators	Gearless motors Elevators

ROTAPULS • ROTACOD

Incremental encoders • Absolute encoders

Encoders for hoists and large motors

- Through hollow shaft diameter up to Ø50 mm
- Precise optical sensing
- Robust metal housing with flat design



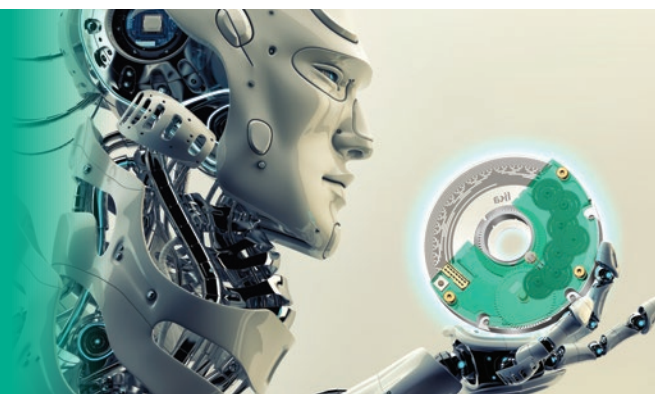
Description				
	C80	C81	C82	ASC85 new
Description	Size 80, low profile. Through hollow shaft up to Ø30 mm.	Size 80, low profile. Internal structure in steel. Through hollow shaft up to Ø44 mm.	Size 80, low profile. Through hollow shaft up to Ø44 mm. Cable or connector output.	Size 85, absolute. 25 bit singleturn. Through hollow shaft Ø50 mm.
Sensing method	optical	optical	optical	optical
Housing diameter	80 mm	80 mm	80 mm	87 mm
Resolution max.	4096 PPR	4096 PPR	8192 PPR	25 Bit
Output circuit	Push-Pull Line Driver Universal circuit	Push-Pull Line Driver Universal circuit	Push-Pull Line Driver Universal circuit	BiSS-C SSI
Power supply	+5Vdc ±5% +10÷30Vdc +5÷30Vdc	+5Vdc ±5% +10÷30Vdc +5÷30Vdc	+5Vdc ±5% +10÷30Vdc +5÷30Vdc	+5Vdc ±5% +10÷30Vdc
Shaft diameter max.	hollow shaft Ø30 mm	hollow shaft Ø44 mm	hollow shaft Ø44 mm	hollow shaft Ø50 mm
Electrical connections	cable M23 connector	cable	cable M23 connector	cable
Operating temperature	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)
Shaft rotational speed max.	6000 rpm	3000 rpm	3000 rpm	3500 rpm
Protection max.	IP65	IP65	IP65	IP65
Application	Hoists	Gearmotors	Hoists	Motors Radars systems

ROTAPULS • ROTACOD

Incremental encoders • Absolute encoders

Bearingless encoders for integration into motors

- Incremental encoders for spindle and high-speed motors
- Compact absolute encoders for digital feedback on servomotors



			
	SMG	AMM36 new	AMM8A new
Description	Gear sensor. High resolution and precision. High counting frequency.	Kit-encoder, size 36. Absolute singleturn. Compact dimensions.	Absolute multiturn kit-encoder. Through hollow shaft. Low profile.
Sensing method	magnetic	optical	optical
Housing diameter	-	36 mm	96 mm
Resolution max.	>25000 PPR	21 Bit	20 x 14 Bit 1024 PPR
Output circuit	Line Driver 1Vpp	BiSS-C RS485	BiSS-C/SSI 1Vpp sin/cos
Power supply	+5Vdc ±5%	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5% +10÷30Vdc
Shaft diameter max.	-	hollow shaft Ø6 mm	hollow shaft Ø25 mm
Electrical connections	cable M12 plug	PCB connector	PCB connector
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +100°C (-13°F +212°F)	-25°C +105°C (-13°F +221°F)
Shaft rotational speed	-	-	6000 rpm max.
Protection	IP68 max.	IP00 max.	IP00 max.
Application	High speed spindle motors	Robotics Servomotors	Robotics Servomotors

ROTAPULS • ROTACOD

Incremental encoders • Absolute encoders

Encoders with ATEX certification

- Size Ø58 mm with solid and hollow shaft
- Ø58 and Ø77 mm suitable for use in zones 1, 2, 21, 22
- Absolute encoders with SSI and programmable analogue output
- Integrated fieldbus interface



IX58 • CX58



XC77



XAC77



XAC77 PB • XAC77 CB

Description	ATEX for zones 2, 22. Incremental, size 58. Solid/blind hollow shaft.	ATEX for zones 1, 2, 21, 22. Incremental version. Heavy-duty structure.	ATEX for zones 1, 2, 21, 22. Absolute version. Heavy-duty structure.	ATEX for zones 1, 2, 21, 22. Fieldbus version. Heavy-duty structure.
Sensing method	optical	optical	optical	optical
Housing diameter	58 mm	77 mm	77 mm	77 mm
Resolution max.	10000 PPR	10000 PPR	13 Bit 13 x 14 Bit	16 x 14 Bit
Output circuit	NPN, PNP, Push-Pull, 1 Vpp, Line Driver, Universal circuit	NPN, Push-Pull, Line Driver, Universal circuit	SSI Bit parallel Analogue V/I Programmable cams	Profibus CANopen DeviceNet
Power supply	+5Vdc ±5% +10÷30Vdc +5÷30Vdc	+5Vdc ±5% +10÷30Vdc +5÷30Vdc	+10÷30Vdc	+10÷30Vdc
Shaft diameter max.	solid shaft Ø12 mm hollow shaft Ø15 mm	hollow shaft Ø14 mm	hollow shaft Ø14 mm	hollow shaft Ø14 mm
Electrical connections	cable	cable	cable	cable
Operating temperature	-25°C +85°C (-13°F +185°F)	-20°C +40°C (-4°F + 104°F)	-20°C +40°C (-4°F + 104°F)	-20°C +40°C (-4°F + 104°F)
Shaft rotational speed	12000 rpm max.	6000 rpm max.	6000 rpm max.	6000 rpm max.
Protection	IP65 max.	IP65 max.	IP65 max.	IP65 max.
Application	ATEX	ATEX	ATEX	ATEX

ROTAPULS • ROTACOD

Incremental encoders • Absolute encoders

Encoders with **stainless-steel** housing

- High resistance to environmental agents
- Incremental version, resolution up to 10000 PPR
- Absolute single and multiturn with SSI and fieldbus interface

Description			 new	
	MI36K • MC36K	I58SK	ES58K • EM58K	AM58K
Description	Size 36, compact and robust housing. Solid/blind hollow shaft. Sealed circuits (option).	Size 58. Clamp flange. High environmental protection.	Size 58. Solid/blind hollow shaft.	Size 58. Clamp flange. Fieldbus interface.
Sensing method	magnetic	optical	optical	optical
Housing diameter	36 mm	58 mm	58 mm	58 mm
Resolution max.	2048 PPR	10000 PPR	13 Bit	13 x 12 Bit
Output circuit	NPN Push-Pull Line Driver	NPN, PNP, Push-Pull, 1Vpp, Line Driver, Universal circuit	NPN, SSI, Bit Parallel Push-Pull	Profibus CANopen
Power supply	+5Vdc±5% +10÷30Vdc	+5Vdc±5% +10÷30Vdc +5÷30Vdc	+7,5÷34Vdc	+10÷30Vdc
Shaft diameter max.	solid shaft Ø6 mm hollow shaft Ø6 mm	solid shaft Ø12 mm	solid shaft Ø12 mm	solid shaft Ø12 mm
Electrical connections	cable	cable M23 connector	cable M12, M23 connector	M12 connector cap
Operating temperature	-25°C +85°C (-13°F +185°F)	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)	-25°C +85°C (-13°F +185°F)
Shaft rotational speed	12000 rpm max.	6000 rpm max.	12000 rpm max.	6000 rpm max.
Protection max.	IP65	IP67	IP67	IP67
Application	Food machinery Marine environment	Food machinery Marine environment	Food machinery Marine environment	Food machinery Marine environment

Heavy-duty encoders Mechanical and environmental durability

- Twin encoders and redundant versions
- Power output drivers for long cable transmissions
- Resistant against salt spray and seawater environment



				
	C100	C101	I115	I116
Description	Blind hollow and blind tapered shaft. Connections with terminal block. Electrically isolated shaft.	Blind hollow and blind tapered shaft. Connections with terminal block. Electrically isolated shaft.	Euro flange. Connections with terminal block.	Euro flange. Redundant version. Connections with terminal block.
Sensing method	optical	optical	optical	optical
Housing diameter	100 mm	100 mm	115 mm	115 mm
Resolution max.	2500 PPR	2048 PPR	5000 PPR	5000 PPR
Output circuit	Power Push-Pull Power Line Driver	Power Push-Pull Power Line Driver	NPN, Push-Pull, Line Driver, Universal circuit, Power Push-Pull	NPN, Push-Pull, Line Driver, Universal circuit, Power Push-Pull
Power supply	+5Vdc $\pm$ 5% +10÷30Vdc	+5Vdc $\pm$ 5% +10÷30Vdc	+5Vdc $\pm$ 5% +10÷30Vdc +5÷30Vdc	+5Vdc $\pm$ 5% +10÷30Vdc +5÷30Vdc
Shaft diameter max.	hollow shaft $\varnothing$ 16 mm tapered shaft $\varnothing$ 17 mm	hollow shaft $\varnothing$ 16 mm tapered shaft $\varnothing$ 17 mm	solid shaft $\varnothing$ 11 mm	solid shaft $\varnothing$ 11 mm
Electrical connections	cable, terminal block, M23 connector	cable, terminal block, 2 x M23 connector	terminal block	terminal block
Operating temperature	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)	-40°C +100°C (-40°F +212°F)
Shaft rotational speed	6000 rpm max.	6000 rpm max.	6000 rpm max.	6000 rpm max.
Protection max.	IP65	IP54	IP66	IP66
Application	Wind turbines, Off-shore Steel mills	Wind turbines, Off-shore Steel mills	Steel mills Big size motors	Steel mills Big size motors

ROTAPULS • ROTACOD

Incremental encoders • Absolute encoders

Heavy-duty encoders Mechanical and environmental durability

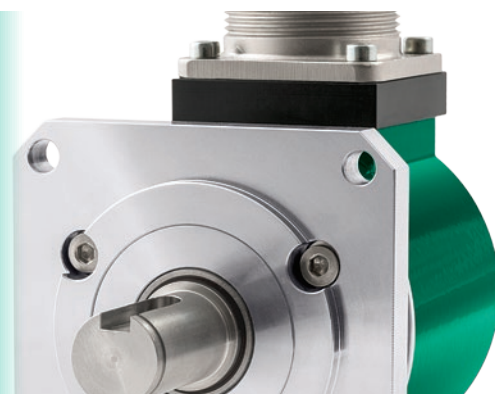
- Incremental encoders with spring-loaded shaft
- Absolute encoders with standard or fieldbus interface
- Resistant to salt spray and seawater environment

				
	ICS	MH58S	XAC80 • XAC81	SGHM new
Description	Robust housing with high protection. Spring loaded (mobile) shaft.	Single and multiturn absolute encoder. Heavy-duty design.	Single and multiturn absolute encoder. Fieldbus interface.	Magnetic encoder. Low profile. Heavy-duty connector.
Sensing method	optical	magnetic	optical	magnetic
Housing diameter	172 x 80 x 53 mm	58 mm	77 mm	-
Resolution max.	2500 PPR	12 Bit 12 x 12 Bit	18 Bit 16 x 14 Bit	16384 PPR
Output circuit	NPN, PNP, Push-Pull, Line Driver, Universal circuit	SSI Analogue output	Profibus CANopen DeviceNet	Push-Pull Line Driver
Power supply	+5Vdc ±5% +10÷30Vdc +5÷30Vdc	+10÷30Vdc	+10÷30Vdc	+5Vdc ±5% +10÷30Vdc
Shaft diameter max.	solid shaft Ø12 mm	solid shaft Ø10 mm	hollow shaft Ø14 mm	hollow shaft Ø50 mm
Electrical connections	MIL connector	cable M23 connector	connection cap with PGs	connector
Operating temperature	-25°C +85°C (-13°F +185°F)	-40°C +85°C (-40°F +185°C)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Shaft rotational speed	6000 rpm max.	6000 rpm max.	6000 rpm max.	12000 rpm max.
Protection max.	IP67	IP67	IP66	IP65
Application	Linear measures on rack	Wind turbines Pitch control		Gearmotors heavy-duty industry

ROTAPULS

Incremental encoders

Specialty encoders and unconventional designs



Description			
	I70	CH59	IR01 new
Pulley encoder for toothed timing belts. Very high shaft loading. Size 58, low profile. 204800 pulses/revolution. Wheel-encoder for conveyors. Metric and inches sizes. Fixing kit with springs.			
Sensing method	optical	optical	optical
Housing diameter	62 mm	58 mm	-
Resolution max.	500 PPR	204800 PPR	5000 PPR
Output circuit	Push-Pull	Line Driver RS422	NPN Push-Pull Universal circuit
Power supply	+10÷30Vdc	+5Vdc ±5%	+10÷30Vdc +5÷30Vdc
Shaft diameter max.	-	through hollow shaft Ø12 mm	-
Electrical connections	cable	cable	M12 connector
Operating temperature	-20°C +85°C (-4°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Shaft rotational speed	5000 rpm max.	6000 rpm max	2000 rpm max.
Protection max.	IP65	IP42	IP65
Application	Systems with toothed belt	Electromedical	Conveyors, logistics

ROTAPULS • ROTACOD

Incremental encoders • Absolute encoders

Specialty encoders and unconventional designs



I105



ASR58 • AMR58



IT68

Description	Incremental, high precision. 18000 pulses/revolution. Extended operating temperature.	Absolute single and multiturn. Integrated cam programmer. Solid or blind hollow shaft.	Square flange, Japanese standard. Robust design. Extended operating temperature.
Sensing method	optical	optical	optical
Housing diameter	105 mm	58 mm	65 mm
Resolution max.	18000 PPR	12 Bit 12 x 18 Bit	10000 PPR
Output circuit	Push-Pull Line Driver Universal circuit	16 x Push-Pull + analogue + SSI	NPN, PNP, Push-Pull, Line Driver, Universal circuit
Power supply	+5Vdc $\pm$ 5% +10÷30Vdc +5÷30Vdc	+10÷30Vdc	+5Vdc $\pm$ 5% +10÷30Vdc +5÷30Vdc
Shaft diameter max.	solid shaft Ø10 mm	solid shaft Ø12 mm hollow shaft Ø15 mm	solid shaft Ø15 mm
Electrical connections	cable	cable MIL, DSub connector	cable MIL connector
Operating temperature	-40°C +100°C (-40°F +212°F)	-25°C +85°C (-13°F +185°F)	-40°C +100°C (-40°F +212°F)
Shaft rotational speed	6000 rpm max.	6000 rpm max.	6000 rpm max.
Protection max.	IP65	IP65	IP66
Application	Test benches Rotary tables	Packaging machinery	Machine tools

ROTAPULS • ROTACOD

Incremental encoders • Absolute encoders

Magnetic bearingless encoders

- Robust magnetic sensing with protection up to IP69K
- Hollow shaft diameter up to Ø250 mm
- Resolution 180000 pulses/turn or more

Description				
	MIK36 • MSK36 • MMK36	SGSM • SGSD	SMG	SMRI2 • SMRI5
	Size 36, with hub-shaft. Incremental and absolute.	Magnetic encoder. Single or redundant version. High environmental protection.	Gear sensor. High resolution and precision. High counting frequency.	Magnetic ring encoders with several diameters. Resolutions up to 180000 PPR or more.
Sensing method	magnetic	magnetic	magnetic	magnetic
Resolution max.	2048 PPR 13 Bit 13 x 16 Bit	1024 PPR	>25000 PPR	180000 PPR
Output circuit	Line Driver 1Vpp SSI	Push-Pull Line Driver	Push-Pull Line Driver 1Vpp	Push-Pull Line Driver
Power supply	+10÷30Vdc	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5%	+5Vdc ±5% +10÷30Vdc
Shaft diameter max.	hollow shaft Ø10 mm	hollow shaft Ø50 mm	hollow shaft Ø100 mm	hollow shaft Ø250 mm
Electrical connections	cable M12 connector	cable	cable M12 connector	cable M12 connector
Operating temperature	-25°C +85°C (-13°F +185°F)	-40°C +85°C (-40°F +185°F)	-20°C +85°C (-4°F +185°F)	-25°C +85°C (-13°F +185°F)
Shaft rotational speed	30000 rpm max.	6000 rpm max.	50000 rpm max.	25000 rpm max.
Protection max.	IP68	IP68	IP68	IP67
Application	Contactless sensing Washdown	Contactless sensing Washdown	High speed spindle motors	Torque motors

ROTAPULS • ROTACOD

Incremental encoders • Absolute encoders

Magnetic bearingless encoders and arc-encoders

- Contactless and wearless magnetic sensing
- Hollow shaft up to Ø110 mm
- Resolution up to 262144 counts/turn or more



	 SMRA	 SMLA	 SMR5H	 SMAB new
Description	Absolute bearingless. Self-centering clamp ring.	Absolute, contactless. For arcs and segmented rings.	Incremental, contactless. Internal sensing on arcs and rings.	Low profile absolute encoder. Axial sensing.
Sensing method	magnetic	magnetic	magnetic	magnetic
Resolution max.	14 Bit	14 Bit	it depends on ring	18 Bit
Output circuit	SSI BiSS	SSI BiSS	Push-Pull Line Driver	SSI
Power supply	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5% +10÷30Vdc	+10÷30Vdc
Shaft diameter max.	hollow shaft Ø110 mm	-	-	hollow shaft Ø80 mm
Electrical connections	cable M12 connector	cable M12 connector	cable	cable
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Shaft rotational speed	15000 rpm max.	15000 rpm max.	it depends on ring	15000 rpm max.
Protection max.	IP68	IP68	IP67	IP69K
Application	Torque motors	Robotics	Robotics	Robotics

Inclinometers with analogue output and CANopen interface



			
	IXA	IXB	IXC
Description	Analogue A or V output. Single and 2 axes versions.	CANopen interface. One or 2 axes configurable. High accuracy.	CANopen interface. One or 2 axes configurable. Anti-vibration filter.
Measuring range (1 axis)	0...360°	±180°	±180°
Measuring range (2 axes)	±10° ±30° ±60°	±5... ±60°	±5... ±60°
Interface	Analogue output	CANopen	CANopen
Resolution	0,05%	programmable from 1.0 to 0,001°	programmable from 1.0 to 0,001°
Accuracy	±0,2° max.	±0,05° max.	±0,2° max.
Power supply	+7Vdc +30Vdc	+7Vdc +40Vdc	+7Vdc +40Vdc
Electrical connections	cable M12 connector	connector	connector
Operating temperature	-40°C +85°C (-40°F +185°F)	-40°C +85°C (-40°F +185°F)	-40°C +85°C (-40°F +185°F)
Housing material	die-cast aluminium	die-cast aluminium	die-cast aluminium
Protection	IP67	IP67	IP67
Application	Off-road	Off-road	Off-road

ACCESSORIES

Accessories for rotary & linear encoders



Couplings

Comprehensive range of couplings specific for encoders and motors

- Flexible or rigid
- Zero backlash
- Electrically insulated
- Vibration absorbing
- High torque
- Grub screw or collar fixing
- Versions with keyway
- Stainless steel versions

Mounting and connection accessories

Various types of supports, mounting bells and flanges are available to meet any fixing need



- Spring loaded brackets
- Mounting bells
- Adapter flanges
- Fixing clamps
- Connectors
- Cordset

Metric wheels

Circumference 200 or 500 mm

- Aluminium or rubber surface
- Metric wheel encoder (IR65 series)
- Rack and pinions



Standard incremental magnetic tapes
MT50, MT40, MT32, MT25, MT20 and MT10
available for lengths up to 100 m.

Version with reduced width **MTS50 and MTS20**,
available for lengths up to 30 m.

Standard absolute magnetic tapes
MTA5, MTA2, MTA1, MTAL, MTAX e MTAZ
available for lengths up to 8.2 m.



Tape terminals for magnetic tapes.

KIT LKM-1440 for 10 mm wide magnetic tape,
MTxx and MTA2 series.

KIT LKM-1439 for 20 mm wide magnetic tape,
MTAx series (except MTA2).
(each set contains 10 pieces with mounting
screws).



Cleaning wipers

Wipers for SMExx/SMSxx series.

KIT WIPERS contains 10 pieces.

DRAW-WIRE

Cable-pulling encoders

Draw-wire encoders with measuring length up to 10 m

- Potentiometer, incremental and programmable incremental output
- Resolution down to 0,01 mm
- Compact all-metal housing

				
	SFP	SFE	SFE-5000	SFE-10000
Description	Draw wire potentiometer. Current or Ohm output.	Draw wire encoder. Incremental, compact.	Incremental, 5 m range. Programmable resolution. Robust and compact.	Incremental, 10 m range. Programmable resolution. Robust and compact.
Output circuit	0-10V 4-20mA	Universal circuit	Universal circuit	Universal circuit
Resolution		0,2 mm	0,012 mm	0,012 mm
Measuring length max.	2000 mm	2000 mm	5000 mm	10000 mm
Linearity	± 0,25%		± 0,5 mm	± 0,5 mm
Measuring speed max.	2 (m/sec)	2 (m/sec)	2 (m/sec)	2 (m/sec)
Power supply	+15÷30Vdc +10÷30Vdc	+5÷30Vdc	+5÷30Vdc	+5÷30Vdc
Electrical connections	cable	cable	cable connector M12, M23	cable connector M12, M23
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-40°C +85°C (-40°F +185°F)	-40°C +85°C (-40°F +185°F)
Protection max.	IP64	IP64	IP65	IP65
Housing size	56x56x79 mm	56x56x64 mm	125x101x81 mm	125x101x112 mm
Application		Electromedical		

DRAW-WIRE

Cable-pulling encoders

Draw-wire encoders up to 10 m Linear absolute measurement

- Output interface SSI or fieldbus
- Analogue output with Teach-in function



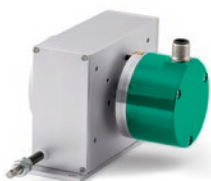
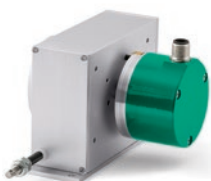
				
	SFA	SFA-5000 • SFA-10000	SFA TA	SFA FB
Description	Absolute draw wire encoder. Compact housing.	Absolute, 5 or 10 m range. Robust housing.	Settable analogue output. Teach-in with external push buttons. 5 or 10 m range.	Fieldbus interface. 5 or 10 m range.
Output circuit / Interface	SSI	SSI	0-5V 0-10V 4-20mA	Profibus-DP, CANopen, Devicenet, EtherCAT, Powerlink, Profinet
Resolution	0,012 mm	0,024 mm	programmable	0,024 mm
Measuring length max.	2000 mm	10000 mm	10000 mm	10000 mm
Linearity		± 0,5 mm	± 0,5 mm	± 0,5 mm
Measuring speed max.	2 m/sec	2 m/sec	2 m/sec	2 m/sec
Power supply	+10÷30Vdc	7,5÷34Vdc	+13÷30Vdc	7,5÷34Vdc
Electrical connections	cable M12 connector	cable M12, M23 connector	cable M12 connector	M12 connectors or PGs
Operating temperature	-25°C +85°C (-13°F +185°F)	-40°C +85°C (-40°F +185°F)	-40°C +85°C (-40°F +185°F)	-40°C +85°C (-40°F +185°F)
Protection max.	IP64	IP65	IP65	IP65
Housing size	56x56x79 mm	125x101x81 mm 125x101x112 mm	125x101x81 mm 125x101x107 mm	125x101x104 mm 125x101x135 mm
Application	Electromedical			

DRAW-WIRE

Cable-pulling encoders

Draw-wire units for encoders Flexibility in combination with common encoder types

- Measuring range up to 50 m

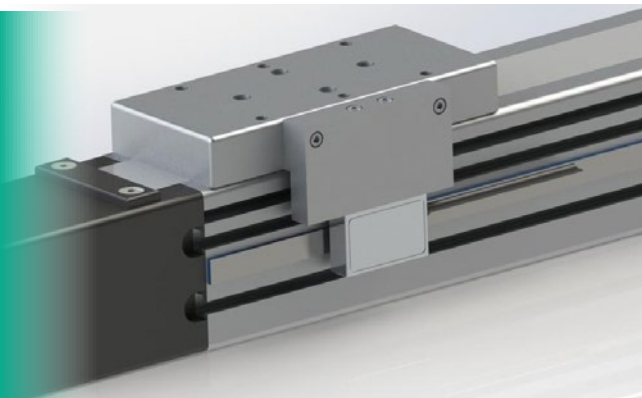
				
	SF-I	SF-A	SAK	SBK
Description	Draw-wire units for incremental encoders. 5 or 6,8 m measuring length. For blind hollow shaft encoders.	Draw-wire units for absolute encoders. 5 or 6,8 m measuring length. For blind hollow shaft encoders.	Draw-wire units for encoders. Measuring length up to 15 m. For servo flange encoders.	Draw-wire units for encoders. Measuring length up to 50 m. For servo flange encoders.
Measuring length max.	6800 mm	6800 mm	15000 mm	50000 mm
Linearity			± 0,05% FS	± 0,05% FS
Measuring speed max.	3 m/sec	3 m/sec	10 m/sec	10 m/sec
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Protection max.	depends on the encoder model	depends on the encoder model	depends on the encoder model	depends on the encoder model
Housing size	125x83x58 mm	125x83x58 mm	135x128x181 mm 135x128x276.5 mm	from 200x190x282.5 mm to 200x190x432 mm
Application			Automatic storage	Automatic storage

LINEPULS

Incremental linear encoders

Incremental linear encoders for position measurements

- Contactless and wearfree magnetic sensing
- Additional reference and limit switch outputs



	 SME51 • SME52	 SME21 • SME22	 SMP	 SME53 • SME54 new
Description	Resolution down to 5µm. SME52 with integral limit switch sensors.	Resolution down to 1µm. SME22 with integral limit switch sensors.	Lateral tape detection. Low profile on linear guides.	High resolution down to 0,08 µm. SME54 programmable version.
Resolution max.	5 µm	5 µm	12,5 µm	0,08 µm
Gap sensor/tape	0,1 ÷ 2 mm	0,1 ÷ 1 mm	0,1 ÷ 2 mm	0,1 ÷ 2 mm
Travel speed	16 m/s	16 m/s	16 m/s	16 m/s
Output circuit	Push-Pull Line Driver	Push-Pull Line Driver	Push-Pull Line Driver	Push-Pull Line Driver
Power supply	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5% +10÷30Vdc
Electrical connections	cable cable + M12 connector	cable cable + M12 connector	cable cable + M12 connector	cable cable + M12 connector
Dimensions	40 x 25 x 10 mm	40 x 25 x 10 mm	40 x 20 x 10 mm	40 x 25 x 10 mm
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Protection max.	IP67	IP67	IP67	IP67
Application			Linear guides Linear stages	

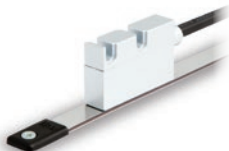
LINEPULS

Incremental linear encoders

Incremental linear encoders for position measurements

- Contactless and wearfree magnetic sensing
- Unconventional designs



Description				
	SMB2 • SMB5	SMK • SML • SMH	SMIG	SMX2 • SMX5
Description	Small reading head. External conversion circuitry.	Sensors for standard applications. Large mounting tolerances.	Guided encoder. Range up to 570 mm.	Heavy-duty Hall sensor. Universal circuit. Position and speed measurement.
Resolution max.	5 µm	10 µm	5 µm	1 µm
Gap sensor/tape	0,1 ÷ 2 mm	0,1 ÷ 4 mm	-	0,1 ÷ 3 mm
Travel speed	16 m/s	16 m/s	1 m/s	16 m/s
Output circuit	Push-Pull, Line Driver	Push-Pull, Line Driver	Push-Pull, Line Driver	Universal circuit
Power supply	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5% +10÷30Vdc	+5÷30Vdc
Electrical connections	cable	cable cable + M12 connector	cable cable + M12 connector	cable
Dimensions	25 x 15 x 8,5 mm	40 x 25 x 10 mm	80 x 48 x 28 mm	M10 x 30 mm
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Protection max.	IP67	IP67	IP67	IP67
Application	Semiconductor machines Linear motors		Press brakes Bending machines	Speed measurement

LINEPULS

Incremental linear encoders

Linear encoders for motion control

- High quality incremental signals
- Square wave and Sine/Cosine outputs
- Additional reference and limit switch outputs



				
	SMI2 • SMI5	SMS11	SMS12	SMSR
Description	Small reading head. External conversion circuitry.	1Vpp sine/cosine output. Unique reference signal.	1Vpp sine/cosine output. Integral limit switch sensors. Unique reference signal.	Small reading head. External conversion circuitry.
Resolution max.	50 µm	1000 µm	1000 µm	1000 µm
Gap sensor/tape	0,1 ÷ 2 mm	0,1 ÷ 1 mm	0,1 ÷ 0,5 mm	0,1 ÷ 2 mm
Travel speed	16 m/s	16 m/s	16 m/s	16 m/s
Output circuit	Push-Pull Line Driver	1Vpp	1Vpp	1Vpp
Power supply	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5%	+5Vdc ±5%	+5Vdc ±5%
Electrical connections	cable + DSub connector	cable cable + M12 connector	cable	cable cable + M12 connector
Dimensions	25 x 15 x 8,5 mm	40 x 25 x 10 mm	40 x 25 x 10 mm	25 x 15 x 8,5 mm
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Protection max.	IP68	IP67	IP67	IP68
Application	Semiconductor machines Linear motors	Linear motors Torque motors	Linear motors Torque motors	Semiconductor machines Linear motors

LINEPULS • LINECOD

Incremental linear encoders • Absolute linear encoders

Linear encoders for motion control

- High performance incremental versions with resolution down to 0,5µm
- Absolute encoders with BiSS/SSI and additional incremental track

				
	SME11	SME12	SMA1	SMA2
Description	High performance. Resolution down to 0,5µm.	High performance. Resolution down to 0,5µm. Integral limit switch sensor.	Absolute encoder for feedback applications. Additional sine/cosine track.	Absolute encoder for digital feedback. High performance. Measuring length up to 8,2m.
Resolution max.	0,5 µm	0,5 µm	5 µm	1 µm
Gap sensor/tape	0,1 ÷ 0,5 mm	0,1 ÷ 0,5 mm	0,1 ÷ 0,3 mm	0,1 ÷ 0,6 mm
Travel speed	16 m/s	16 m/s	5 m/s	10 m/s
Output circuit	Push-Pull Line Driver	Push-Pul Line Driver	SSI BiSS 1Vpp	SSI BiSS NPN
Power supply	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5% +10÷30Vdc	+5Vdc ±5%
Electrical connections	cable cable + connector	cable cable + connector	cable	cable cable + connector
Dimensions	40 x 25 x 10 mm	40 x 25 x 10 mm	85 x 21 x 20 mm	62 x 25 x 14 mm
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Protection max.	IP67	IP67	IP67	IP67
Application	Linear motors Torque motors	Linear motors Torque motors	Linear motor feedback	Linear motor feedback

Absolute linear encoders for position measurements

- Contactless and wearfree magnetic sensing
- Easy installation and high degree of protection up to IP68

				
	SMA5	SMA2	SMAG	SMAX • SMAZ
Description	Resolution down to 5µm. SSI interface. Measuring length up to 5,1m.	Resolution down to 1µm. BiSS-C/SSI interface. Measuring length up to 8,2m.	Guided encoder. Range up to 570 mm.	Heavy-duty sensor. IP68 protection. Low-cost for short measuring ranges.
Resolution max.	5 µm	1 µm	5 µm	100 µm
Gap sensor/tape	0,1 ÷ 1 mm	0,1 ÷ 0,6 mm	-	0,1 ÷ 2 mm
Travel speed	5 m/s	10 m/s	1 m/s	5 m/s
Output circuit	SSI	SSI BiSS BiSS-C/SSI + NPN	SSI CANopen	SSI Modbus/RS485 Analogue 4-20mA, 0-10V
Power supply	+10÷30Vdc	+5Vdc ±5%	+10÷30Vdc	Modbus, SSI: +10÷30Vdc Analogue: +13÷30Vdc
Electrical connections	cable cable + connector	cable cable + connector	cable cable + connector	cable cable + connector
Dimensions	65 x 20 x 20 mm	62 x 25 x 14 mm	80 x 48 x 28 mm	80 x 40 x 22 mm
Operating temperature	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)	-25°C +85°C (-13°F +185°F)
Protection max.	IP67	IP67	IP67	IP68
Application			Press brakes Bending machines	Off-road vehicles

Rotary actuators for format adjustment

- Integration of motor, drive, position controller and real absolute encoder
- Decentralised automation of positioning axes
- Ease of installation thanks to hollow shaft
- Network connectivity through fieldbus interface
- Available with integral hold brake

				
	RD1A • RD12A	RD5 • RD53	RD4	RD6
Description	RD12A version with integral motor brake. Job buttons. Service interface.	Compact actuator. RD53 version with integral motor brake.	Reinforced mechanism. High torque rotary actuator up to 15Nm. Oil bath reduction gears.	Rotary brushless actuator. 157 and 250W versions.
Rated speed	240 rpm 120 rpm 60 rpm	60 rpm	94 rpm 63 rpm	3000 rpm
Nominal torque	1,2 Nm 2,5 Nm 5 Nm	5 Nm	10 Nm 15 Nm	157 = 0,5 Nm 250 = 0,8 Nm
Interface	Profibus-DP CANopen Modbus RTU	Profibus-DP CANopen Modbus RTU	Profibus-DP CANopen Modbus RTU	Profibus-DP, CANopen, Modbus RTU, EtherCAT, Powerlink
Shaft diameter	hollow shaft Ø 14 mm	hollow shaft Ø 14 mm	hollow shaft Ø 14 mm	solid shaft Ø 14 mm
Integral motor brake	RD12A	RD53	-	-
Service interface	RS232	-	-	RS232
Power supply	+24Vdc ± 10%	+24Vdc ± 10%	+24Vdc ± 10%	+24Vdc ± 10%
Protection max.	IP54	IP54	IP54	IP54
Operating temperature	0°C +60°C	0°C +60°C	0°C +60°C	0°C +60°C

POSICONTROL

Touch-screen controller for format adjustment

HMI touch-screen controller for ROTADRIVE rotary actuators



LDT10 touch screen for RD rotary actuators allows to create a complete system for quick changeovers.

The operator interface is simple and intuitive, suitable to:

- connects up to 8 RD rotary actuators
- set the parameters
- edit and save the recipes
- simultaneously start the changeover process in all actuators



Display	LCD 7", 16:9 format
Screen	resistive touch screen
Dimensions	205 x 151 x 33 mm
Power supply	+24Vdc
Protection	IP65 / NEMA4

Position displays for magnetic sensors

- Battery powered displays for stand-alone applications
- Variety of display modes: linear, angular and inch
- RS232 and RS485 serial interfaces

			
	LD120	LD112	LD111 • LD141
Description	Display for magnetic sensors. RS485 interface. Backup battery input.	Compact battery display with magnetic sensor.	OEM version. Panel mounting.
Functionality		Mobile stops	Mobile stops
Display	LED 5 digit	LCD 6 digit	LCD 6 digit
Interface	RS485	-	-
Power supply	+10Vdc +30Vdc	Battery	Battery
Dimensions	72 x 36 x 62 mm	72 x 48 x 31 mm	61 x 39 x 29 mm 87 x 61 x 39 mm
Protection	IP60	IP60	IP00

POSICONTROL

Displays and interfaces

Position displays and counters

- Variety of display modes: linear, angular and inch
- Incremental and absolute encoder input
- Serial interface RS232 or RS485

			
	LD140 • LD142	LD200	LD250 • LD300
Description	Battery display. LD140 with pluggable sensor. LD142 with integral sensor.	Universal LED display 8 digits display.	Multifunction LED display. Incremental or SSI input.
Functionality	Mobile stops		
Display	LCD 6 digit	LED 8 digit	LED 6 digit
Encoder input	Magnetic sensor	ABO, ABO /ABO sin/cos 1Vpp SSI	LD250: SSI LD300: ABO
Output interface	RS232	3 digital outputs	Digital I/Os Analogue RS232/RS485 Relays
Power supply	Battery	24Vdc	24Vdc 115/230 Vac
Counting frequency max.	-	1 MHz	1 MHz
Dimensions	97 x 73 x 47 mm	96 x 48 x 49 mm	96 x 48 x 141 mm
Protection	IP60	IP65	IP65

Signal converters for incremental and absolute encoders

- High quality and speed of signal conversion
- Easy setup through DIP-switches and teach-in buttons
- Easy and comfortable DIN rail mounting

				
	IF10	IF20	IF30	IF50
Description	Level converter. Signal splitter.	Level converter. Signal amplifier.	Sine/cosine interpolator.	Incremental to analogue converter. RS232/RS485 interface.
Functionality	Adjustable signal levels (in/out). Contactless switch-over.	Conversion of signal levels. Input/Output galvanically separated. UP/DOWN output.	Adjustable interpolation rate up to x50. Adjustable pulse divider. Filtering functions.	Signal linearization. Scaling factor. Teach-in function.
Encoder input	2 inputs HTL or TTL / RS422	HTL or TTL / RS422	1Vpp	HTL or TTL / RS422
Serial interface / Outputs	2 outputs HTL or TTL / RS422	HTL or TTL / RS422	HTL (AB0) RS422 (AB0 /AB0)	± 10 V 0-20 mA 4-20 mA
Power supply	+12 +30Vdc	+5 +30Vdc	+18 +30Vdc	+18 +30Vdc
Counting frequency	1 MHz	500 kHz	400 kHz	1 MHz
Electrical connections	terminal block	terminal blocks DSub connectors	terminal blocks DSub connectors	terminal blocks DSub connectors
Protection	IP20	IP40	IP40	IP40
Dimensions	102 x 102 x 23 mm	102 x 102 x 23 mm	91 x 79 x 40 mm	91 x 79 x 40 mm

POSICONTROL

Displays and interfaces

Gateways & safety motion monitors

- Safety motion controller for standard sensors & encoders
- SSI to fieldbus gateways with robust housing
- Optical fibre modules for encoders



				
	IF51 • IF52	IF55	IFS10 SIL3 Functional Safety PLe	IF60/IF61 • IF62/IF63
Description	Signal converter. IF50: SSI to Analogue. IF51: SSI to Parallel.	Gateway for SSI encoders. Metal housing. High protection.	Motion controller. SIL3/PLe certified. For standard encoders.	Fibre-optic transmitters. Incremental and SSI version.
Functionality	Bit blanking function. Signal linearization. Scaling factor.	Compliant with each protocol specifications. Position, scaling, counting direction, diagnostic.	Sine/cosine, HTL and TTL encoder inputs. Safety functions: STO, SS1, SS2, SOS, SLS, SDI, SSM in compliance with EN61800-5-2.	Safe signal transmission up to 2000 m. Suitable for explosive areas and environments with extremely high electromagnetic fields.
Encoder input	SSI (up to 25 bit)	SSI (up to 25 bit)	1Vpp RS422 HTL	HTL or TTL / RS422 SSI
Serial interface / Outputs	RS232 RS485	EtherCAT Profibus CANopen Modbus TCP POWERLINK	RS232 USB	
Power supply	+18 +30Vdc	+10 +30Vdc	+18 +30Vdc	+5Vdc ±5% +10 +30Vdc
Counting frequency max.	1 MHz	-	500 KHz	-
Electrical connections	terminal blocks DSub connectors	M12 connectors	terminal block DSub connectors	
Protection	IP40	IP65	IP20	IP40
Dimensions	91 x 79 x 40 mm	78 x 60 x 48 mm	180 x 120 x 50 mm	111 x 93 x 19 mm



Smart encoders & actuators

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