LinearLine | Wire-Actuated Encoders

Success is the result of a commitment to precision, innovation and customer benefit

"Precision is SIKO's top priority and standard!" True to this philosophy, SIKO has been developing and producing innovative solutions in distance and angle measurement technology for about 50 years now. Based in Buchenbach in the foothills of the Black Forest, the company produces its own measurement technologies, which are a global success in all areas of mechanical engineering. Even today, SIKO's core concept is still manifest in its innovative power, product development and company spirit. Since taking over the business in 1990, industrial engineer Horst Wandres, son of its founder, has continued to develop this philosophy with impressive results.

Intelligent solutions

Attentive ears will always find the right solution. Automation and process optimization are the cornerstones of SIKO's ambitious new technologies and goal-oriented measurement solutions. The company pursues a clear, consistent line of development, ranging from digital position indicators and handwheels through incremental encoders, absolute encoders and measurement displays to future-oriented technologies with electronically programmable or magnetic measurement systems (MagLine).

SIKO again follows the road to success with its compact, ultra-resilient actuators (DriveLine), which enable automated adjustment of machine axles.

5 distinctive product lines	
PositionLine	Mechanical and electronic position indicators, handwheels with analog indicators, control knobs
RotoLine	Magnetic and optical encoders, geared potentiometers
LinearLine	Wire-actuated encoders
DriveLine	Actuators
MagLine	Magnetic length and angle measurement systems

Consistent teamwork

The secret of SIKO's development prowess lies in the motivation and team spirit of its workers. SIKO has a conscious policy of integrating the experiences of its 170 employees, which has a dynamic effect on all areas of company life. Outstanding individual performances blend together to enhance the efficiency of the whole organization.

Not one for all but all together – this motto typifies SIKO's synergetic development process, delivering solutions which dominate the market in all aspects of "measurement technology in mechanical engineering".

This is SIKO today. Precision in motion, dynamic and open for the future ...

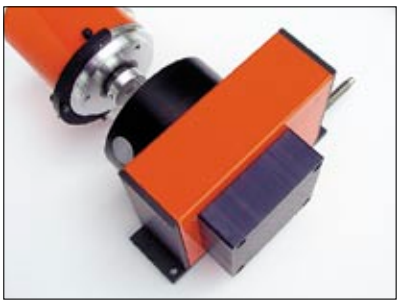
We speak the same language: At SIKO, a willingness to participate in open dialog enhances engineering performance. Our production site advantages are not interchangeable.

3.1 | Wire-Actuated Encoders

General information and areas of application		4
Technical details		6
Function and application		8
Product matrix		9
Products	SG5	10
	SG10	13
	SG20	17
	SG21	21
	SG30	24
	SG31	28
	SG32	31
	SG42	34
	SGP/1	37
	SG60	40
	SG120	43
	SGL135	46

3.2 | Accessories 49

3.3 | Product index, Contact information 57



Rotary encoders made by SIKO are optimally suited to wire-actuated technology. Custom-specific encoders can also be mounted thanks to standardized mechanical "interfaces".

3.1

The most flexible solution when the direct route goes round the corner

SIKO wire-actuated encoders are a perfect measurement solution thanks to their state-of-the-art, fail-safe technology and effortless integration. They are suitable for a wide range of measurement tasks under very varied conditions. Their sturdy design and wire types guarantee an exceptionally long, maintenance-free service life.

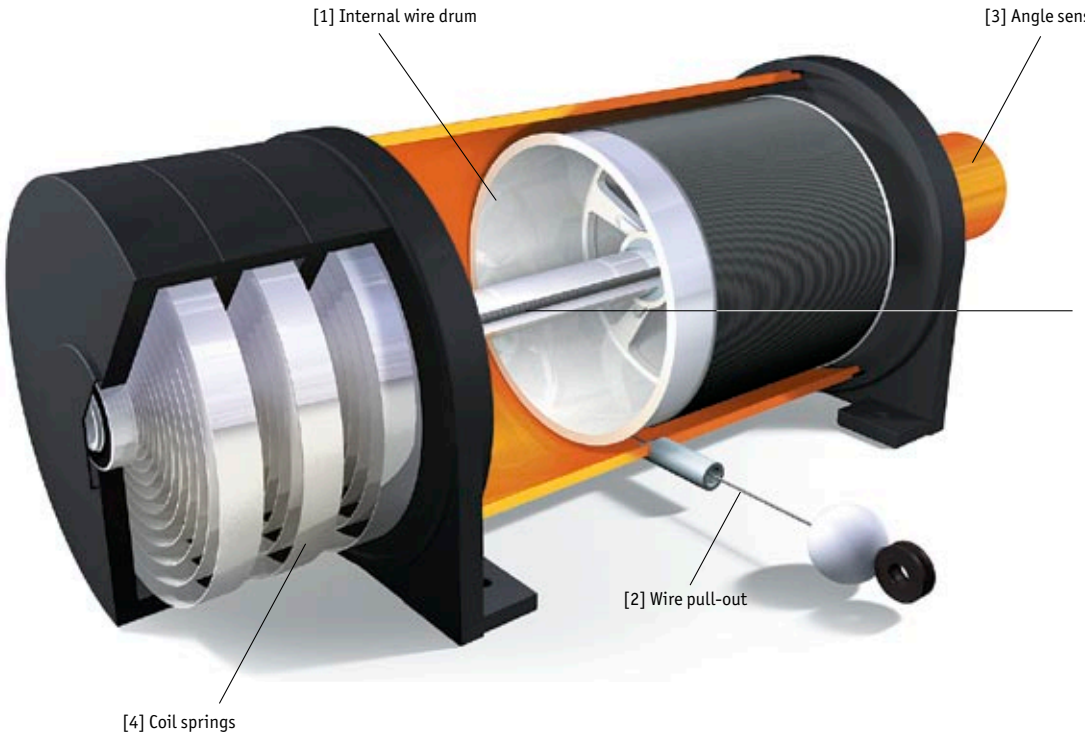
This is how the technology works

A single layer of measurement wire is wound onto an internal drum [1]. When the wire is pulled out [2], it causes the drum to rotate. The angle sensor [3] connected directly to the drum axle records this rotation and generates an arbitrarily usable measurement signal proportional to the wire movement. An integral coil spring [4] on the drum's rotation axis guarantees a safe wire return movement (see illustration). Mounting effort is low, as the wire is simply attached to the object to be measured. This means there is no need of additional guiding systems or installation of energy supply chains. Moreover, the flexibility of the wire enables linear adjustments even at sites which are hard to reach. Indirect paths can also be measured by means of guide rollers.

A choice of incremental and absolute measuring principles is generally available. SIKO wire-actuated encoders cover almost the entire range of industrial applications - from compact versions in miniature format with a measurement length of 600 mm to solutions with wire pull-out lengths of 15 m.

Benefits

- Long service life thanks to consistent technological development and application-oriented choice of materials
- Excellent price-performance ratio
- Variable measurement lengths
- Easy adaptation of measuring transducers
- Standardized interfaces
- Problem-free, fast mounting



Special SGL feature:
As the wire is extended, the internal drum moves axially, ensuring maximum safety for guiding and rewinding the extended wire.

Areas of application

Measurement systems based on the "draw-wire" principle are easy to handle, since attaching the wire to the adjustment unit is quick and inexpensive.

Wire-actuated systems perform reliably on elevating platforms or forklifts without any additional mechanical protection. They are used to measure workpiece dimensions for the stop adjustment of miter saws in metal-working processes and for various measurement tasks in applications in the wood-processing industry, as illustrated here (horizontal panel saw).

SIKO's miniature encoders are the logical answer to ongoing integration in industrial products and processes. The tiny encoders have a wide range of application: They are reliable monitors of positioning tasks for patient tables (medical technology), adjustment of seats (vehicle technology) or controlled deflection of chassis (aircraft technology).

The SGL series is a modular system of wire-actuated encoders for measurement lengths of up to 15 m which finds use in stage, storage and crane technologies.

1

2

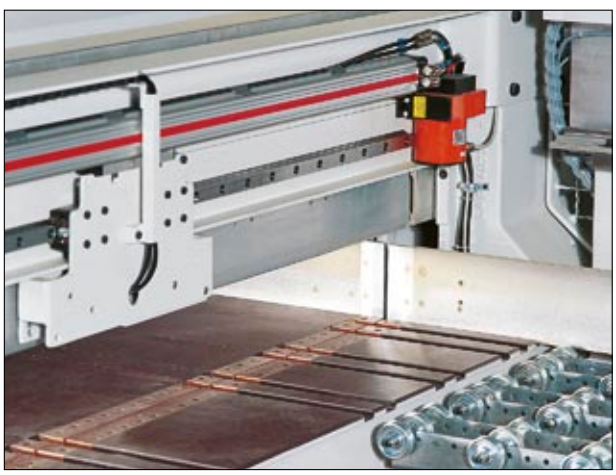
iStockphoto. Levent Konuk

3.1

3

4

5



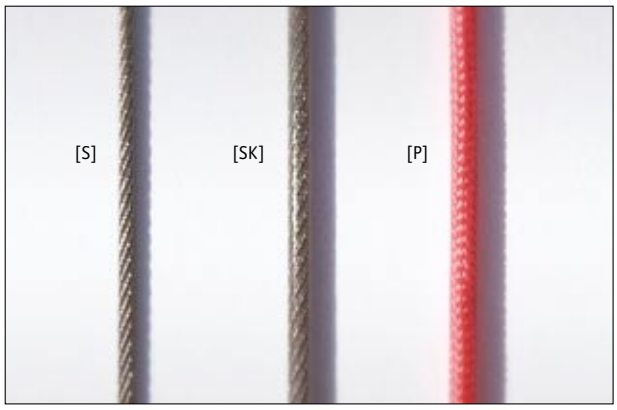
6

Retrofitting with a wire-actuated encoder enables direct selection of specified values for height and elevation. [2] Positioning of patient benches e.g. beside tomographs, surgery tables or X-ray devices. [3, 4] Finding the right place to deposit items is the key to a smooth workflow: Wire-actuated encoders are a reliable means of assigning predefined storage space. [5] Correct determination of workpiece dimensions by means of a wire-actuated encoder provides the basic value for cut and feed speeds on this metal saw. [6] SGP absolute wire-actuated encoder used for panel-cutting on a horizontal circular saw.

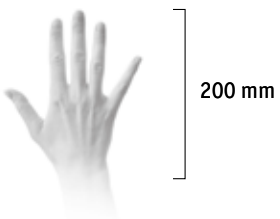
Measurement range and wire versions

Various measurement lengths and wire types are available depending on the measurement range requirements and the ambient conditions. The following table is a guide to selecting the right components (wire) when planning a linear wire measurement system.

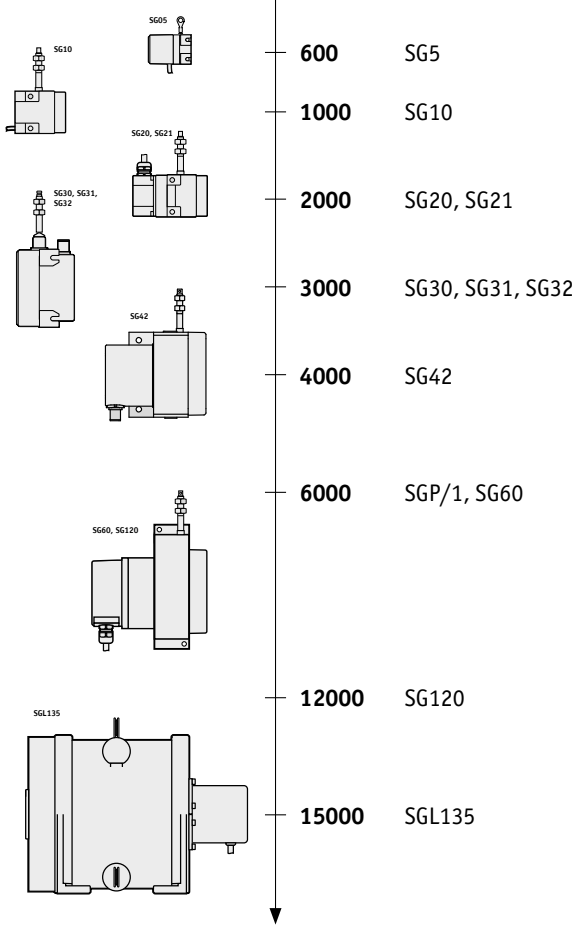
Wire versions		Poperties compared		
Type	Material	Tensile strength	Sliding properties	Measuring accuracy
S	stainless steel	•	•	•••
SK	plastic-coated steel	••	••	••
P	electric paraline non-conducting, signal color	•••	•••	•



3.1



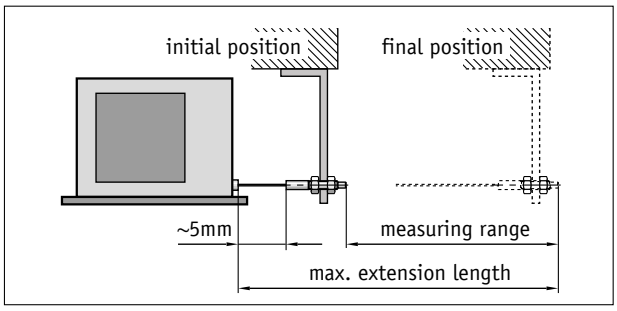
Measuring range (mm)
Type of wire-actuated encoder



Mounting note

When attaching the wire it should be pulled out straight in line with the wire outlet.

Recommendation: A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

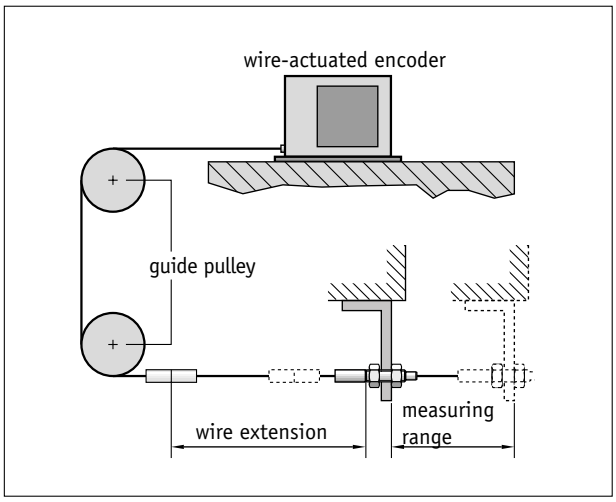
Mounting example

Guide rollers are used wherever the wire-actuated encoder cannot be installed in line with the extension direction of the wire. Several rollers can be used to redirect the wire without influencing the measurement result.

An opening slightly larger than the diameter of the wire is sufficient as a point of access at measurement sites which are hard to reach. A protective cover is recommended for use in soiled environments. Note: Mechanical stress shortens the lifespan of the wire.

A wire extension piece can be used for applications where the distance between the wire-actuated encoder and the measurement range is greater than the wire's maximum extension length. This does not extend the actual measurement range, however (see above: mounting note). This simple method is useful for measurements in areas where a sufficiently large distance is required between the wire-actuated encoder and the measured object due to high temperatures, harsh environments, measurement in liquid media, areas which are difficult to access, etc.

Detailed information on guide rollers or wire extension pieces can be found on the product page in the accessories section.

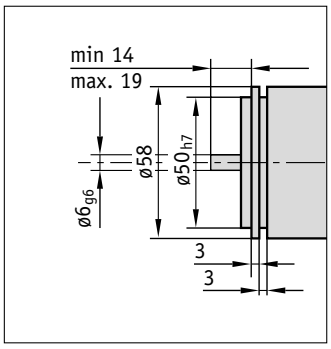


Customer-specific encoders

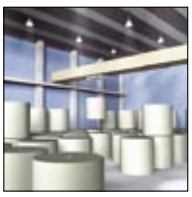
All rotary encoders with the following specifications can be installed on the SG31, SG60, SG120 and SGL135 wire-actuators (see diagram):

- 58 mm servo/synchro flange
- 6, 8 and 10 mm solid shaft*
- Maximum starting and operating torques 3 Ncm*

*depends on device: see product pages!

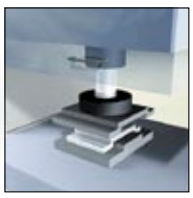


Application	Examples of use	Benefits
Rail-guided systems	Direct measurement of the guided element.	■ Little space required ■ Little assembly effort


e.g., heavy duty column lifts, gantry cranes, CT patient tables ...

Hydraulic cylinders	In combination with piston-guided systems or hydraulic cylinders, wire-actuated encoders use the deflection of these systems to gather length information.	■ Little space required ■ Mechanical tolerances do not influence measuring accuracy



e.g., presses, lifter tables, bending machines ...

Telescope-like systems	In combination with telescope-like systems, wire-actuated encoders can be ideally integrated and are also protected from environmental impact.	■ Do not require guiding ■ Mechanical tolerances do not influence measuring accuracy



e.g., mobile cranes, vehicle hoists ...

Chain, crane and cable winch adjustment	Direct position feedback after winch adjustment. The wire-actuated encoder can be positioned outside danger or humidity areas by means of wire extension.	■ Chain/wire tears are detectable ■ Mechanical tolerances do not influence measuring accuracy



e.g., forklifts, stage control systems, elevators ...

Or crane technology ...

Wire-Actuated Encoders

	SG5	SG10	SG20	SG21	SG30	SG31	SG32	SG42
Page	10	13	17	21	24	28	31	34
Measuring length								
0 to ... (mm)	600	2000	2000	2000	3000	3000	3000	4000
Encoder type								
Power output (MWI) 4 ... 20 mA	•	•	•		•	•		
Voltage output (MWU) 0 ... 10 V	•	•	•		•	•		
Potentiometer output	•	•	•		•		•	•
Incremental output		•		•		•		
SSI				•		•		
CAN-Bus				•		•		
Profibus						•		
Manufacturer of independent rotary encoder mounting				•		•		
Housing material								
Plastic	•	•						
Zinc die-cast/plastic			•		•		•	
Aluminum/plastic						•		•
Aluminum								

Wire-Actuated Encoders

	SGP/1	SG60	SG120	SGL135
Page	37	40	43	46
Measuring length				
0 to ... (mm)	6000	6000	12000	15000
Encoder type				
Power output (MWI) 4 ... 20 mA	•	•	•	•
Voltage output (MWU) 0 ... 10 V	•	•	•	•
Potentiometer output	•			•
Incremental output		•	•	•
SSI		•	•	•
CAN-Bus		•	•	•
Profibus		•	•	•
Manufacturer of independent rotary encoder mounting		•	•	•
Housing material				
Plastic	•	•		
Zinc die-cast/plastic			•	•
Aluminum/plastic				
Aluminum				

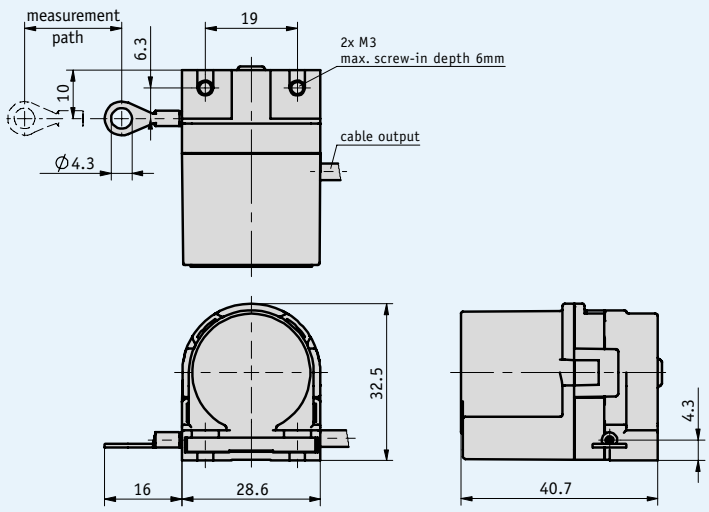
3.1

Wire-Actuated Encoder SG5

Miniature wire-actuated encoder with 600 mm measurement length

Profile

- Very small design
- Universally usable thanks to standardized interfaces
- Easy mounting
- Measurement lengths up to max. 600 mm
- Potentiometer, voltage or power output
- Housing made of reinforced plastic



Mechanical data

Feature	Technical data	Additional information
Travel speed	max. 800 mm/s	
Pull-out force required	min. 3 N	
Drum circumference	60 mm	
Repeat accuracy	±0.15 mm	
Absolute accuracy	±0.35 %	
Operating temperature	-10 ... +80 °C	
Condensation	inadmissible	
Wire design	stainless steel wire,Ø 0.4 mm	plastic-coated
Encoder portion protection categ	IP50, with factory-connected cable	according to DIN VDE 0470
Weight	approx. 60 g	
Housing	reinforced plastic	

Electrical data

P10 encoder type, potentiometer

Feature	Technical data	Additional information
Value of resistance	10 kΩ	
Linearity of potentiometer	0.25 %	
Resistance tolerance	±5 %	
Power rating	1 W	
Pull-out length	0 mm : 0 Ω	
Cable length (connection)	max. 15 m	

Additional potentiometer values on request

MWI encoder type, current source (transducer*)

Feature	Technical data	Additional information
Output current	4 ... 20 mA	
Potentiometer	10 kΩ	
Operating voltage	15 ... 28 V DC	
Load resistance	<500 Ω	
Cable length (connection)	max. 30 m	

MWU encoder type, voltage source (transducer*)

Feature	Technical data	Additional information
Output voltage	0 ... 10 V DC	
Recomm. load resistance	2 ... 10 kΩ to GND	
Max. load	10 mA	
Operating voltage	15 ... 28 V DC with 3 mA without load	
Cable length (connection)	max. 20 m	

***Transducers** allow optimum adaptation of output current or output voltage to the measurement range. The transducer is preset at delivery to provide an output signal of 4 ... 20 mA (MWI) or 0 ... 10 V DC (MWU) between the starting point and the end point of the measurement range.

Pin assignment

Potentiometric outputs P10

Signal	E1 (terminal)
Po	brown
Pe	white
S	green

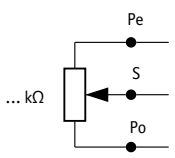
MWI transducer

Signal	Cable color
I+	brown
I-	white

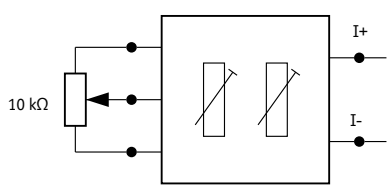
MWU transducer

Signal	Cable color
+24 V DC	brown
GND	white
U_{out}	green

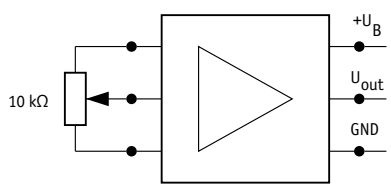
Potentiometric outputs P01, P05, P10



Transducer MWI

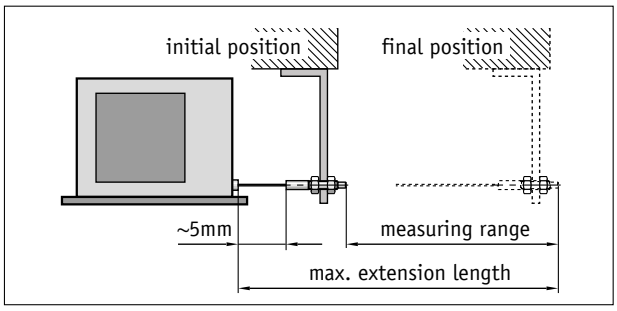


Transducer MWU



Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order table

Feature	Order data		Specifications	Additional information
Measurement range (mm)	300	A	300 mm	transducer setting, only with MWI or MWU encoder types
	600		600 mm	
Encoder type	P10	B	potentiometer with 10 kΩ	
	MWI		transducer 4 ... 20 mA	
	MWU		transducer 0 ... 10 V	
			others on request	
Cable length (m)	0K	C	without cable	
	0.5		0.5 m	
	...		1 ... 15 m in steps of 1 m	

Order code

SG5 – [A] – [B] – [C]

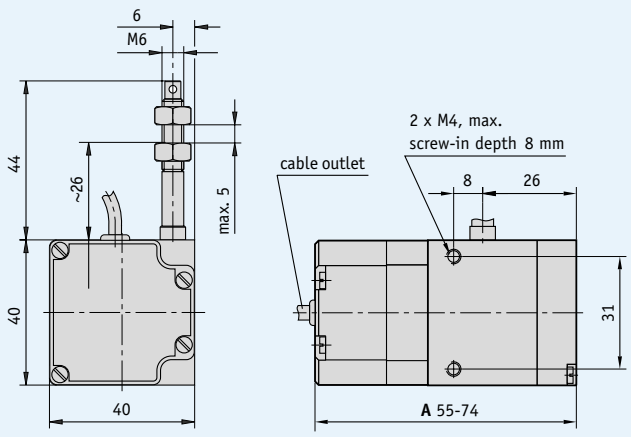
Scope of delivery: *SG5, User information*

Accessories:
Guide roller *Page 38*

Additional information:
General information and areas of application *Page 4 cont.*

Profile

- Compact design
- Universally usable thanks to standardized interfaces
- Easy mounting
- Measurement lengths up to max. 2000 mm
- Potentiometer, voltage, power output or incremental encoder
- Housing made of reinforced plastic



Encoder type	Measure A
IV28M/1-0007	74
P10, MWI, MWU: measuring range ≤ 1000 mm	55

Mechanical data

Feature	Technical data	Additional information
Travel speed	max. 800 mm/s	
Pull-out force required	min. 2 N	
Drum circumference	100 mm	
Repeat accuracy	±0.15 mm	
Operating temperature	-10 ... +80 °C	without transducer
	0 ... 50 °C	with transducer
Wire design	stainless steel wire,Ø 0.45 mm	plastic-coated
Encoder portion protection categ.	IP50 (potentiometer)	according to DIN VDE 0470
	IP54 (incremental encoder)	according to DIN VDE 0470
Weight	approx. 200 g	
Housing	reinforced plastic	

Electrical data

P10 encoder type, potentiometer

Feature	Technical data	Additional information
Value of resistance	10 kΩ	
Linearity of potentiometer	0.25 %	
Resistance tolerance	±5 %	
Power rating	1 W	
Pull-out length	0 mm : 0 Ω	
Cable length (connection)	max. 30 m	

Additional potentiometer values on request

MWI encoder type, current source (transducer*)

Feature	Technical data	Additional information
Output current	4 ... 20 mA	
Potentiometer	10 kΩ	
Operating voltage	15 ... 28 V DC	
Load resistance	<500 Ω	
Cable length (connection)	max. 30 m	

MWU encoder type, voltage source 0 ... 10 V DC (transducer*)

Feature	Technical data	Additional information
Output voltage	0 ... 10 V DC	
Recomm. load resistance	2 ... 10 kΩ to GND	
Max. load	15 mA	
Operating voltage	15 ... 28 V DC with 3 mA without load	
Cable length (connection)	max. 20 m	

***Transducer**s allow optimum adaptation of output current or output voltage to the measurement range. The transducer is preset at delivery to provide an output signal of 4 ... 20 mA (MWI) or 0 ... 10 V DC (MWU) between the starting point and the end point of the measurement range..

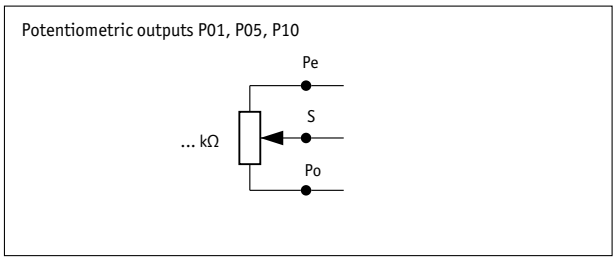
IV28M/1-0007 encoder type, incremental

Feature	Technical data	Additional information
Operating voltage	10 ... 30 V DC at 25 mA without load	
Output circuit	PP	
Output signals	AB0	
Steps per revolution	1000	
Resolution	0.1 mm (10 pulses per mm)	
Cable length (connection)	1 m	

Pin assignment

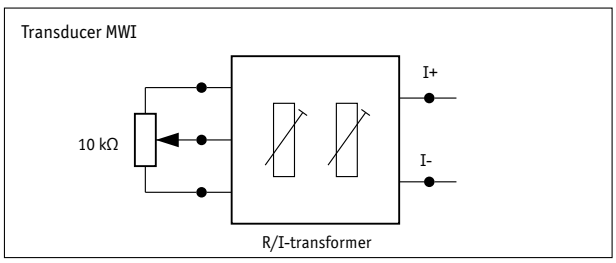
Potentiometric outputs P10

Signal	E1 (terminal)
Po	brown
Pe	white
S	green



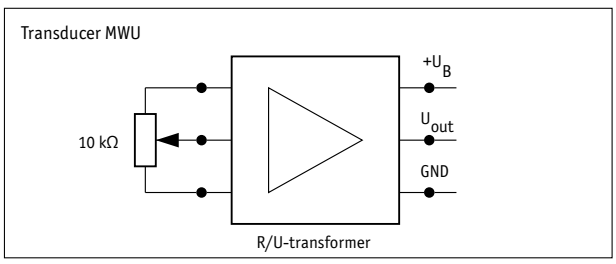
MWI transducer

Signal	Cable color
I+	brown
I-	white



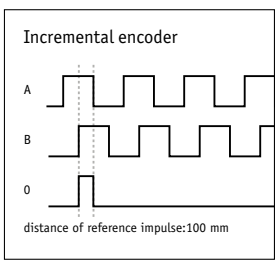
MWU transducer

Signal	Cable color
+24 V DC	brown
GND	white
U_{out}	green



IV28M/1-0007 encoder type, incremental

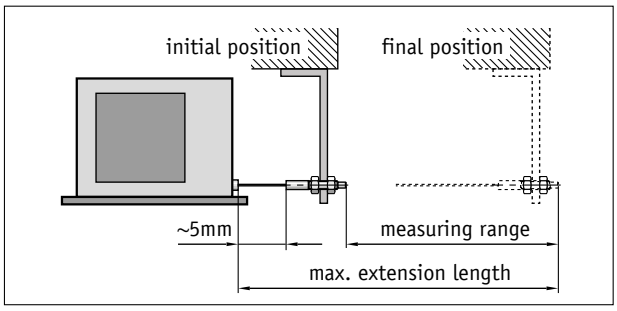
Signal	E1 (terminal)
B	white
+24 V DC	brown
0/I	green
A	yellow
GND	gray



3.1

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order table

Feature	Order data		Specifications	Additional information
Measurement range (mm)	...	A	300, 500, 1000	with encoder type Ω, I, U (potentiometer and transducer)
	2000		incremental output (IV28M/1)	
Encoder type	P10	B	potentiometer with 10 kΩ	
	MWI		transducer 4 ... 20 mA	
	MWU		transducer 0 ... 10 V	
	IV28M/1		incremental encoder	only with measuring range 2000
			others on request	
Cable length (m)	0.5	C	0.5 m	for P10 encoder type or MWI/MWU
	...		1 ... 30 m in steps of 1 m	for P10 encoder type or MWI/MWU
	IG		specified with "IV28M/1-0007" encoder type	

Order code

SG10 – [A] – [B] – [C]

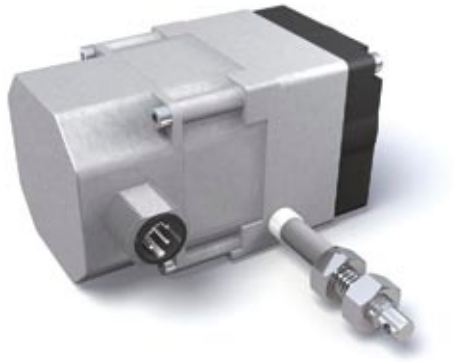
Scope of delivery: *SG10, User information*

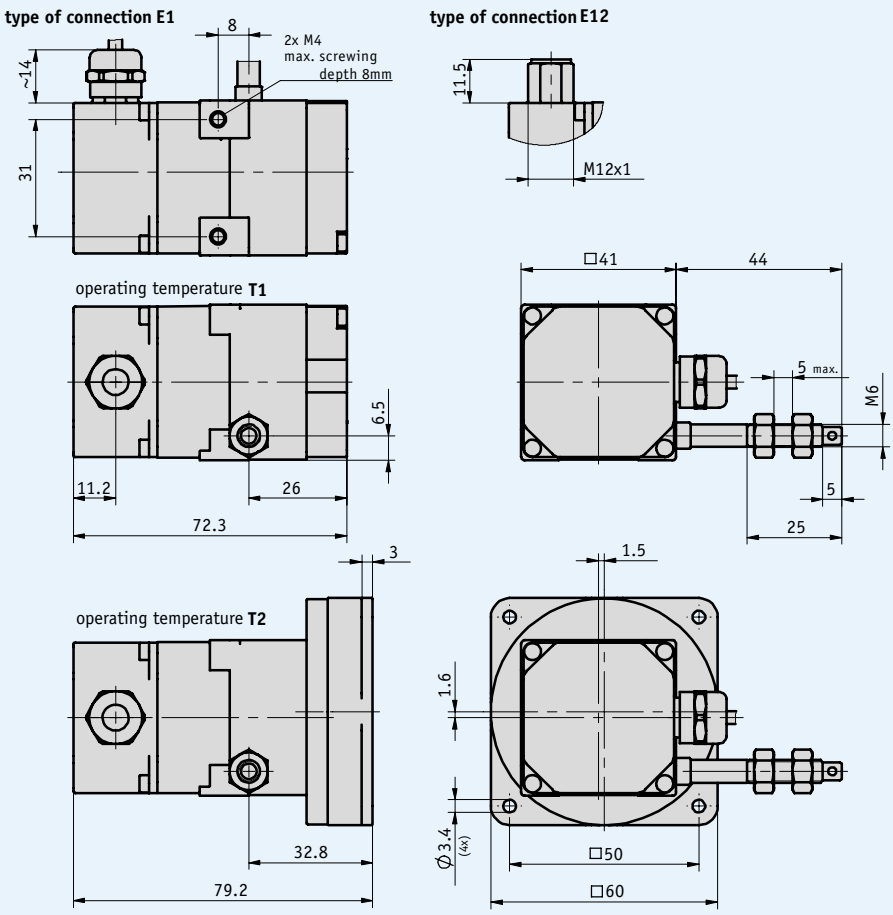
Accessories:
Guide roller *Page 38*

Additional information:
General information and areas of application *Page 4 cont.*

Profile

- Compact design
- Universally applicable thanks to standardized interfaces
- Easy mounting
- Measurement lengths up to max. 2000 mm
- Potentiometer, voltage or power output
- Robust zinc die-cast housing





Mechanical data

Feature	Technical data	Additional information
Travel speed	max. 1 m/s	
Pull-out force required	min. 2 N	with temperature range T1
	min. 11 N	with temperature range T2
Drum circumference	100 mm	
Repeat accuracy	±0.15 mm	
Absolute accuracy	±0.35 %	
Operating temperature	-10 ... +80 °C	with T1
	-40 ... +80 °C	with T2
Wire design	stainless steel wire,Ø 0.45 mm	plastic-coated
Encoder portion protection categ.	IP65	
Weight	approx. 320 g	
Housing	zinc die-cast/plastic	

Electrical data

3.1

P10 encoder type, potentiometer

Feature	Technical data	Additional information
Value of resistance	10 kΩ	
Linearity of potentiometer	0.25 %	
Resistance tolerance	±5 %	
Power rating	1 W	
Pull-out length	0 mm : 0 Ω	
Cable length (connection)	max. 30 m	

Additional potentiometer values on request

MWI encoder type, current source (transducer*)

Feature	Technical data	Additional information
Output current	4 ... 20 mA	
Potentiometer	10 kΩ	
Operating voltage	15 ... 28 V DC	
Load resistance	<500 Ω	
Cable length (connection)	max. 30 m	

MWU encoder type, voltage source 0 ... 10 V DC (transducer*)

Feature	Technical data	Additional information
Output voltage	0 ... 10 V DC	
Recomm. load resistance	2 ... 10 kΩ to GND	
Max. load	15 mA	
Operating voltage	15 ... 28 V DC with 3 mA without load	
Cable length (connection)	max. 20 m	

* **Transducer**s allow optimum adaptation of output current or output voltage to the measurement range. The transducer is preset at delivery to provide an output signal of 4 ... 20 mA (MWI) or 0 ... 10 V DC (MWU) between the starting point and the end point of the measurement range.

Pin assignment

Potentiometric outputs P10

Signal	E1	E12
Po	brown	1
Pe	white	2
S	green	3
N.C.		4

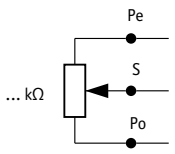
MWI transducer

Signal	E1	E12
I+	brown	1
I-	white	2
N.C.		3
N.C.		4

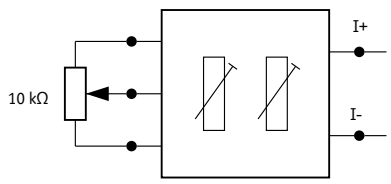
MWU transducer

Signal	E1	E12
+24 V DC	brown	1
GND	white	2
U_{out}	green	3
N.C.		4

Potentiometric outputs P01, P05, P10

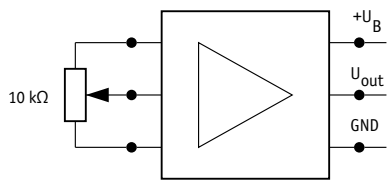


Transducer MWI



R/I-transformer

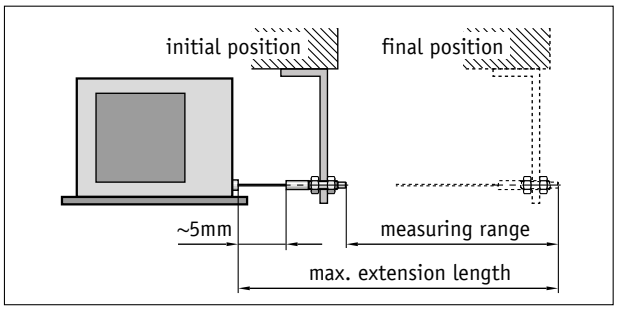
Transducer MWU



R/U-transformer

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order table

Feature	Order data		Specifications	Additional information
Measurement range (mm)	...	A	1250, 1500, 1750, 2000	
Encoder type	P10	B	potentiometer with 10 kΩ	
	MWI		transducer 4 ... 20 mA	
	MWU		transducer 0 ... 10 V	
			others on request	
Type of connection	E1	C	flying leads	
	E12		connector	
Cable length (m)	...	D	1 ... 20 m in steps of 1 m	with P10 encoder type or MWU
	...		1 ... 30 m in steps of 1 m	with MWI encoder type
Operating temperature	T1	E	-10 ... +80 °C	
	T2		-40 ... +80 °C	

Order code

SG20 - [ ] - [ ] - [ ] - [ ] - [ ]
A B C D E

Scope of delivery: *SG20, User information*

Accessories:

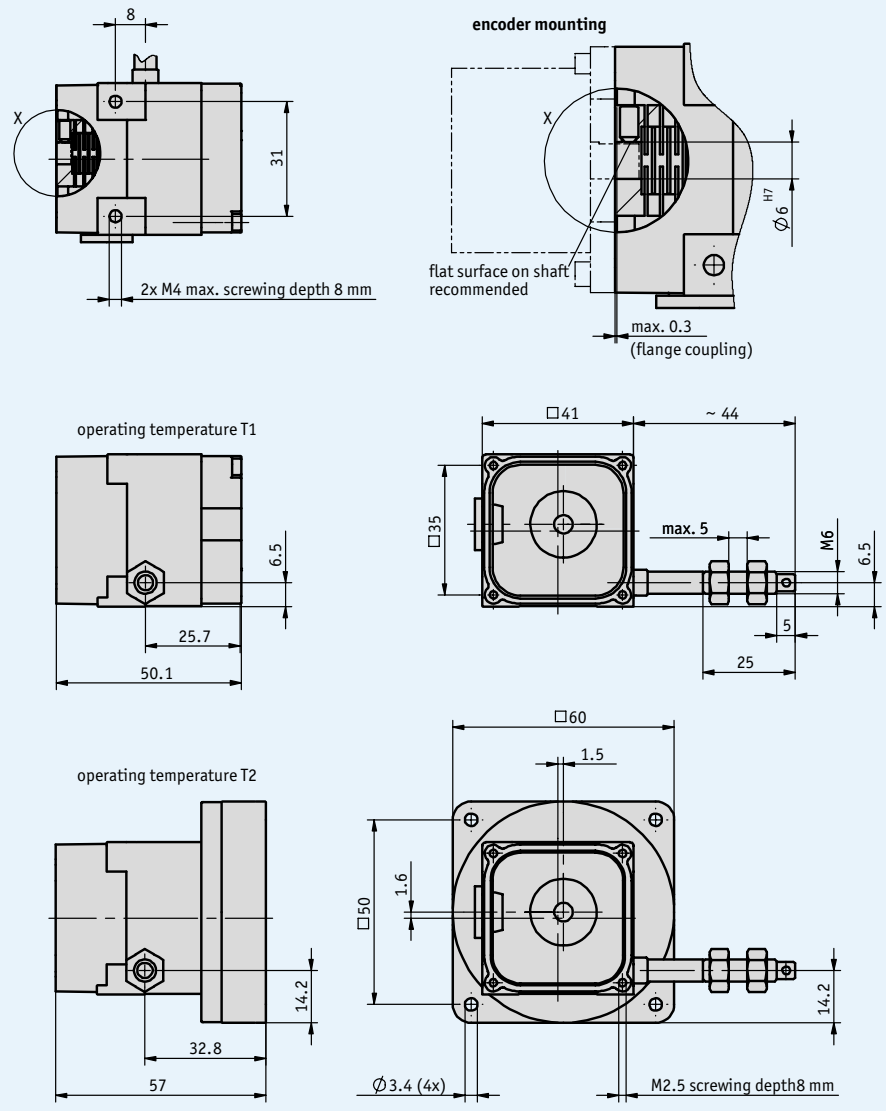
Guide roller *Page 50*
Wire Extension Piece *Page 51*
Mating Connector *Page 54*

Additional information:

General information and areas of application *Page 4 cont.*

Profile

- Wire-actuated encoder for rotary encoder with max. Ø40 mm flange
- Measurement lengths up to 2000 mm
- sturdy zinc die-cast housing, robust design, stable measuring rope (stainless steel)
- very compact design



Mechanical data

Feature	Technical data	Additional information
Travel speed	max. 1000 mm/s	
Pull-out force required	≥2 N	with temperature range T1
	≥11 N	with temperature range T1
Drum circumference	100 mm	
Repeat accuracy	±0.15 mm	depends on the direction of approach
Operating temperature	-10 ... +80 °C	T1
	-40 ... +80 °C	T2
Wire design	stainless steel wire, Ø 0.45 mm	plastic-coated
Weight	~200 g	
Housing	zinc die-cast/plastic	

Electrical data

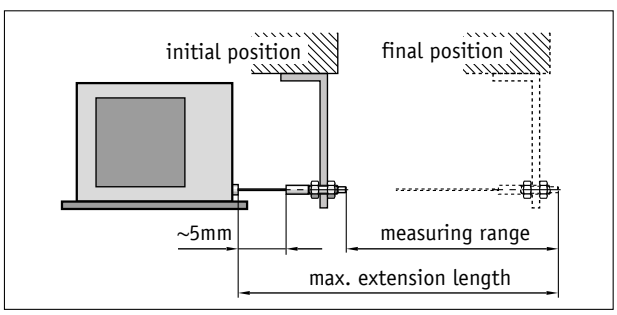
Rotary encoders suitable for use with SG21 can be found in Catalog 2 RotoLine. Depending on the output signals, the following devices can be used:

- For incremental outputs: IV28M/1
- For absolute outputs: WV36M/SSI, WV36M/CAN

Please see data sheets for technical specifications on these devices. Furthermore, various encoder variants of diverse manufacturer can be used.

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order Note

Mounting flange ZB4002 is required for final mound of the rotary encoder. See page 52.

Order table

Feature	Order data		Specifications	Additional information
Encoder type	OG	A	without encoder	
	S6		many encoder types possible	see accessories
Operating temperature	T1	B	-10 ... +80 °C	
	T2		-40 ... +80 °C	

Order code

SG21 - [ ] - [ ]
A B

3.1

Scope of delivery: *SG21, User information*

Accessories:

Rotary encoders	*Catalog 2 RotoLine*
Mounting flange ZB4002	*Page 52*
Guide roller	*Page 50*
Wire Extension Piece	*Page 51*

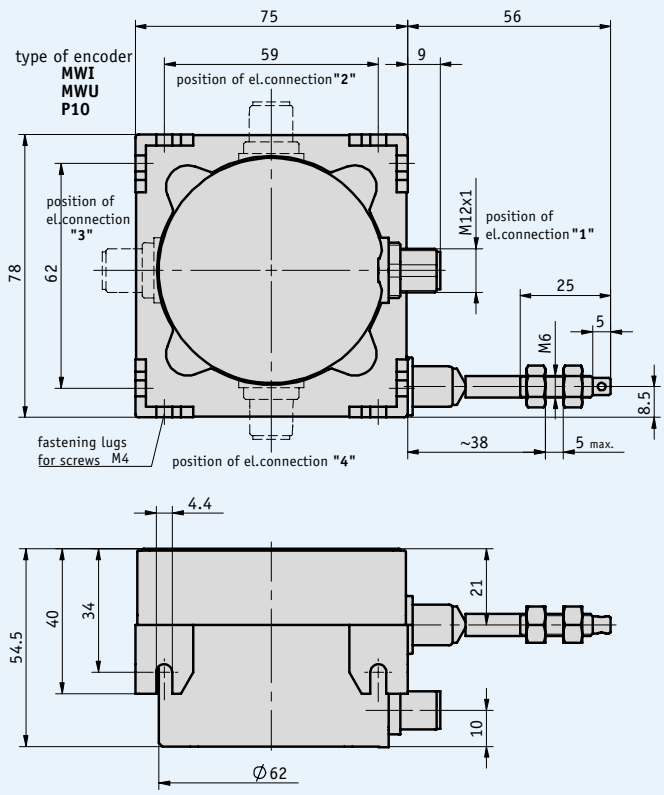
Additional information:

General information and areas of application	*Page 4 cont.*

Wire-Actuated Encoder SG30
Robust design with 3000 mm measurement length

Profile

- Compact, robust design
- Variable mounting options
- Measurement lengths up to 3000 mm
- Potentiometer, voltage or power output
- Housing made of zinc die-cast and plastic
- Closable ventilation openings to prevent condensation
- High tightness on the wire outlet
- M12 plug connection



Mechanical data

Feature	Technical data	Additional information
Travel speed	max. 800 mm/s	
Pull-out force required	min. 3 N on the wire	
Measurement range	up to 3000 mm	
Repeat accuracy	depends on the direction of approach, ±0.15 mm	
Drum circumference	200 mm	
Wire design	stainless steel wire, Ø 0.9 mm	plastic-coated
Encoder portion protection categ.	IP65	with standard encoder
Condensation	inadmissible	
Connection	connector	
Operating temperature	-40 ... +80 °C	
Weight	approx. 500 g	
Housing	zinc die-cast/plastic	

Electrical data

P10 encoder type, Potentiometer

Feature	Technical data	Additional information
Value of resistance	10 kΩ	
Linearity of potentiometer	0.25 %	
Resistance tolerance	±5 %	
Power rating	1 W	
Pull-out length	0 mm : 0 Ω	
Cable length (connection)	max. 30 m	

Additional potentiometer values on request

MWI encoder type, current source (transducer*)

Feature	Technical data	Additional information
Output current	4 ... 20 mA	
Potentiometer	10 kΩ	
Operating voltage	15 ... 28 V DC	
Load resistance	<500 Ω	
Cable length (connection)	max. 30 m	

MWU encoder type, voltage source 0 ... 10 V DC (transducer*)

Feature	Technical data	Additional information
Output voltage	0 ... 10 V DC	
Recommended load resistance	2 ... 10 kΩ to GND	
Max. load	15 mA	
Operating voltage	15 ... 28 V DC with 3 mA without load	
Cable length (connection)	max. 20 m	

***Transducer**s allow optimum adaptation of output current or output voltage to the measurement range. The transducer is preset at delivery to provide an output signal of 4 ... 20 mA (MWI) or 0 ... 10 V DC (MWU) between the starting point and the end point of the measurement range.

Pin assignment

Potentiometric outputs P10

Signal	PIN
Po	1
Pe	2
S	3
	4

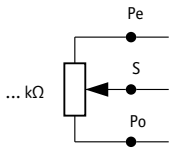
MWI transducer

Signal	PIN
I+	1
I-	2
N.C.	3
N.C.	4

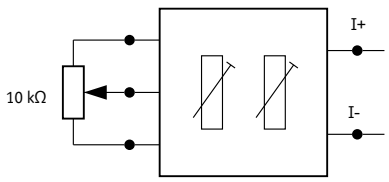
MWU transducer

Signal	PIN
+24 V DC	1
GND	2
U_{out}	3
N.C.	4

Potentiometric outputs P01, P05, P10

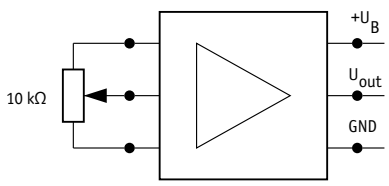


Transducer MWI



R/I-transformer

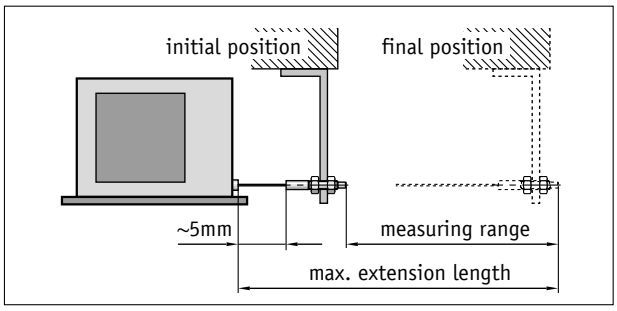
Transducer MWU



R/U-transformer

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order table

Feature	Order data		Specifications	Additional information
Measurement range (mm)	...	A	2000, 2500, 3000	
	MWI	B	transducer current	
	MWU		transducer voltage	
	P10		potentiometer	
Position of electrical connection	1	C	0°	
	2		90°	
	3		180°	
	4		270°	

Order code

SG30 – [A] – [B] – [C]

Scope of delivery: SG30, User information

Accessories:

Guide roller	Page 50
Wire Extension Piece	Page 51
Mating Connector	Page 54

Additional information:

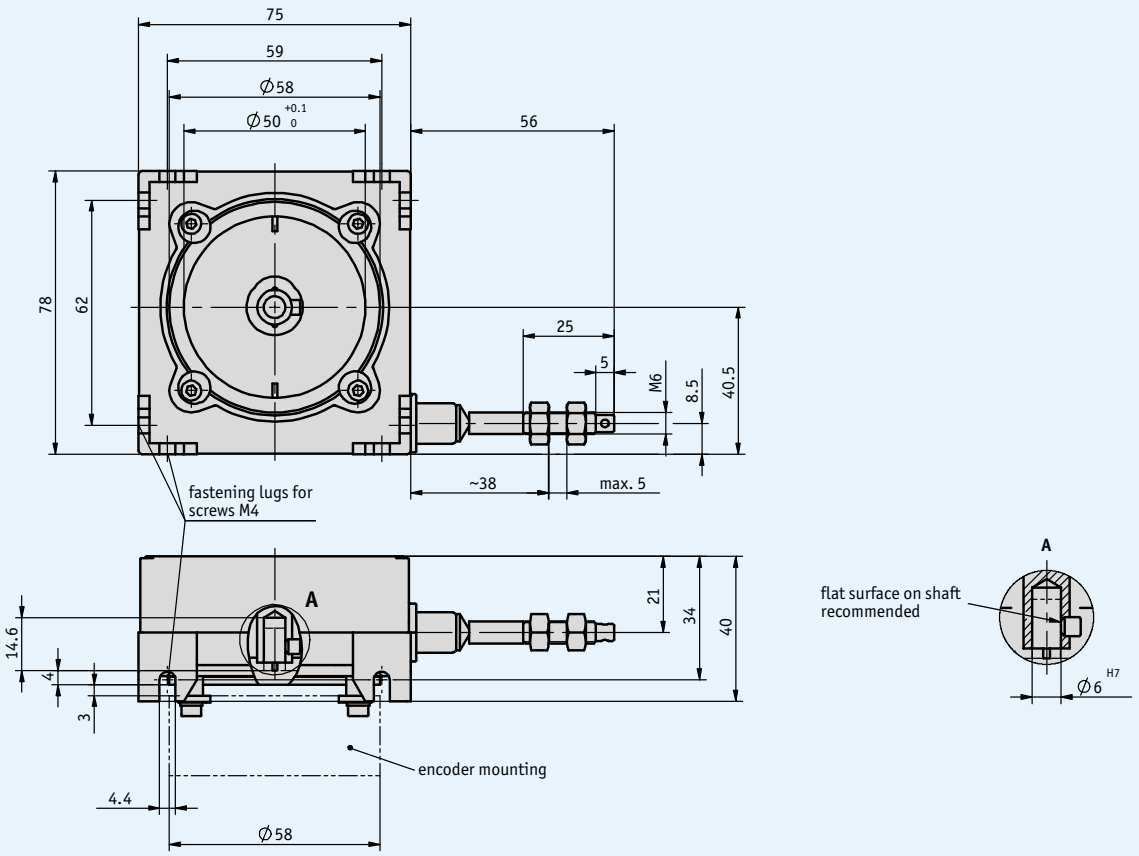
General information and areas of application	Page 4 cont.

Wire-Actuated Encoder SG31

Robust design for rotary encoder mounting with 3000 mm measuring length

Profile

- Robust design
- Measuring lengths up to 3000 mm
- Wire-actuated encoder for rotary encoder with 58 mm servo-flange
- Variable mounting options
- Lockable ventilation holes against condensation
- Very robust measuring rope (stainless steel)
- High tightness at the rope outlet



Mechanical data

Feature	Technical data	Additional information
Travel speed	≤800 mm/s	
Pull-out force required	≥3 N	
Drum circumference	200 mm	
Repeat accuracy	±0.15 mm	depends on the direction of approach
Operating temperature	-40 ... +80 °C	
Wire design	stainless steel wire, Ø 0.87 mm	plastic-coated
Weight	~350 g	
Housing	zinc die-cast/plastic	

Electrical data

Rotary encoders suitable for use with SG31 can be found in Catalog 2 RotoLine. Depending on the output signals, the following devices can be used:

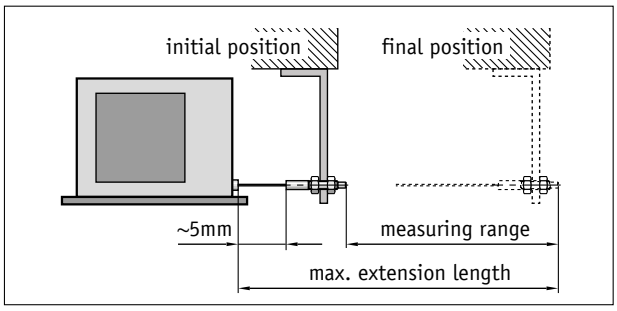
- For analog outputs such as current or voltage: AV58M
- For incremental outputs: IV58M
- For absolute outputs: WV36M/SSI, WV36M/CAN

Please see data sheets for technical specifications on these devices. Furthermore, various encoder variants of diverse manufacturer can be used.

Wire-Actuated Encoder SG31
Robust design for rotary encoder mounting with 3000 mm measuring length

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

3.1

Order table

Feature	Order data		Specifications	Additional information
Encoder type	OG	A	without encoder	
	S6		many encoder types possible	see accessories

Order code

SG31 – [ ]
A

Scope of delivery: *SG31, User information*

Accessories:

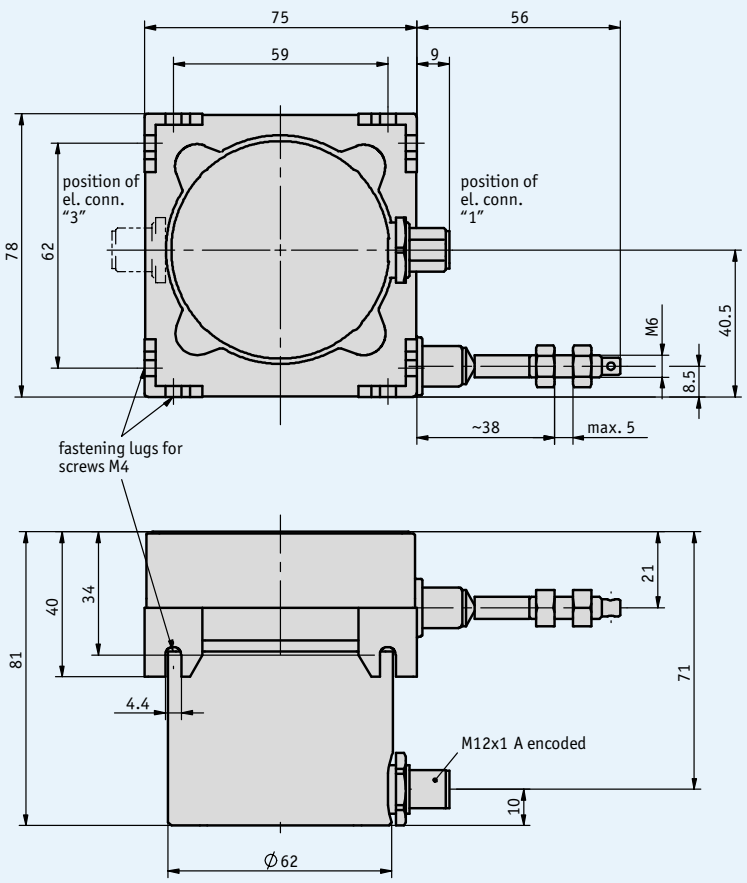
Rotary encoders	*Catalog 2 RotoLine*
Guide roller	*Page 50*
Wire Extension Piece	*Page 51*

Additional information:

General information and areas of application	*Page 4 cont.*

Profile

- Robust design
- Measuring lengths up to 3000 mm
- analogue signal output in redundant design (double potentiometer)
- Variable mounting options
- Lockable ventilation holes against condensation
- Very robust measuring rope (stainless steel)
- High tightness at the rope outlet
- M12 plug connection



Mechanical data

Feature	Technical data	Additional information
Travel speed	≤800 mm/s	
Pull-out force required	≥3 N	
Repeat accuracy	±0.15 mm	depends on the direction of approach
Absolute accuracy	±0.35 %	regarding the measuring length
Operating temperature	-40 ... +80 °C	
Wire design	stainless steel wire, Ø 0.87 mm	plastic-coated
Encoder portion protection categ.	IP65	DIN VDE 04070
Weight	~500 g	
Housing	zinc die-cast/plastic	

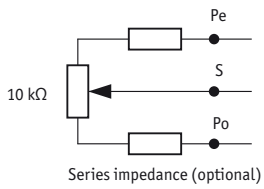
Electrical data

Feature	Technical data	Additional information
Encoder type	potentiometer	
Operating voltage	≤30 V	power loss at the potentiometer <1 W
Value of resistance	10 kΩ	
Linearity	±0.25 %	
Resistance tolerance	±5 %	
Power rating	1 W	at 70 °C
Terminal resistor	0.5 % or 1 Ω	

Pin assignment

Signal	PIN	Additional information
Po	1	potentiometer 1
Po	2	potentiometer 2
S	3	potentiometer 2
Pe	4	potentiometer 2
N.C.	5	
Pe	6	potentiometer 1
S	7	potentiometer 1
N.C.	8	

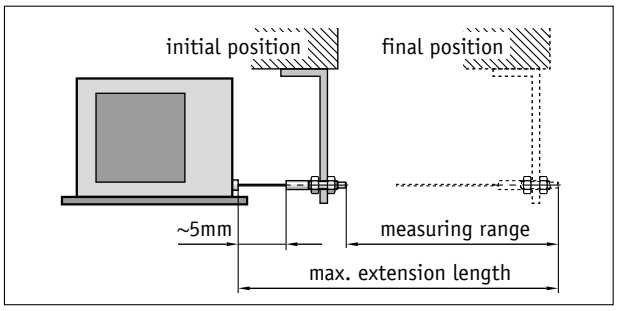
Potentiometric output



Series impedance (optional)

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order table

Feature	Order data		Specifications	Additional information
Measuring range	...	A	2000, 2500, 3000	
Position of electrical connection	1	B	0°	
	3		180°	
Series impedance	0	C	0 Ω	
	1k2		1.2 kΩ	

Order code

SG32 - [A] - P10/10 - [B] - [C]

Scope of delivery: SG32, User information

Accessories:

Mating Connector	Page 54
Guide roller	Page 50
Wire Extension Piece	Page 51

Additional information:

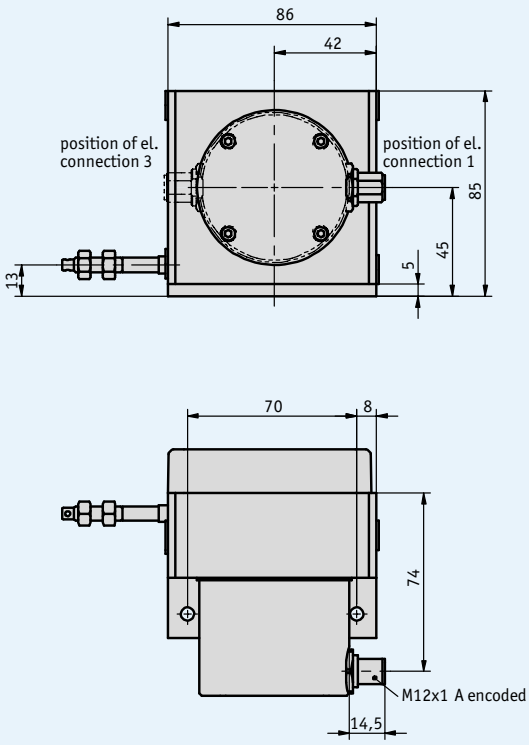
General information and areas of application Page 4 cont.

Wire-Actuated Encoder SG42

Robust design and redundant sensorics system with 4000 mm measuring length

Profile

- Robust design
- Measuring lengths up to 4000 mm
- analogue signal output in redundant design (double potentiometer)
- Lockable ventilation holes against condensation
- Very robust measuring rope (stainless steel)
- M12 plug connection



Mechanical data

Feature	Technical data	Additional information
Travel speed	≤800 mm/s	
Pull-out force required	≥8 N	
Repeat accuracy	±0.25 mm	depends on the direction of approach
Absolute accuracy	±0.35 %	regarding the measuring length
Operating temperature	-40 ... +80 °C	
Wire design	stainless steel wire, Ø 0.87 mm	plastic-coated
Encoder portion protection categ.	IP65	DIN VDE 04070
Weight	~790 g	
Housing	aluminum/plastic	

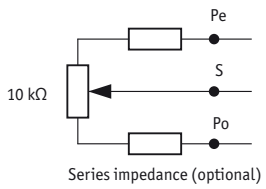
Electrical data

Feature	Technical data	Additional information
Encoder type	potentiometer	
Operating voltage	≤30 V	power loss at the potentiometer <1 W
Value of resistance	10 kΩ	
Linearity	±0.25 %	
Resistance tolerance	±5 %	
Power rating	1 W	at 70 °C
Terminal resistor	0.5 % or 1 Ω	

Pin assignment

Signal	PIN	Additional information
Po	1	potentiometer 1
Po	2	potentiometer 2
S	3	potentiometer 2
Pe	4	potentiometer 2
N.C.	5	
Pe	6	potentiometer 1
S	7	potentiometer 1
N.C.	8	

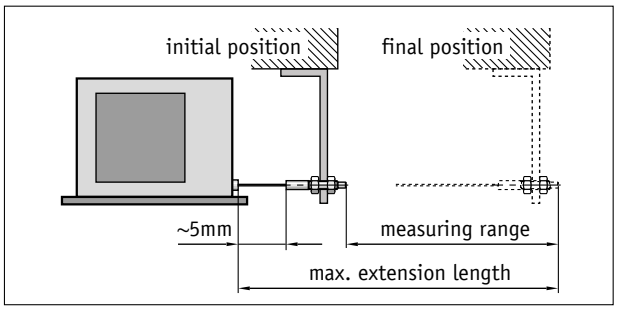
Potentiometric output



Series impedance (optional)

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order table

Feature	Order data		Specifications	Additional information
Measuring range	...	A	3300, 3700, 4000	
Position of electrical connection	1	B	0°	
	3		180°	
Series impedance	0	C	0 Ω	
	1k2		1.2 Ω	

Order code

SG42 - [ ] - P10/10 - [ ] - [ ]
A B C

Scope of delivery: *SG42, User information*

Accessories:

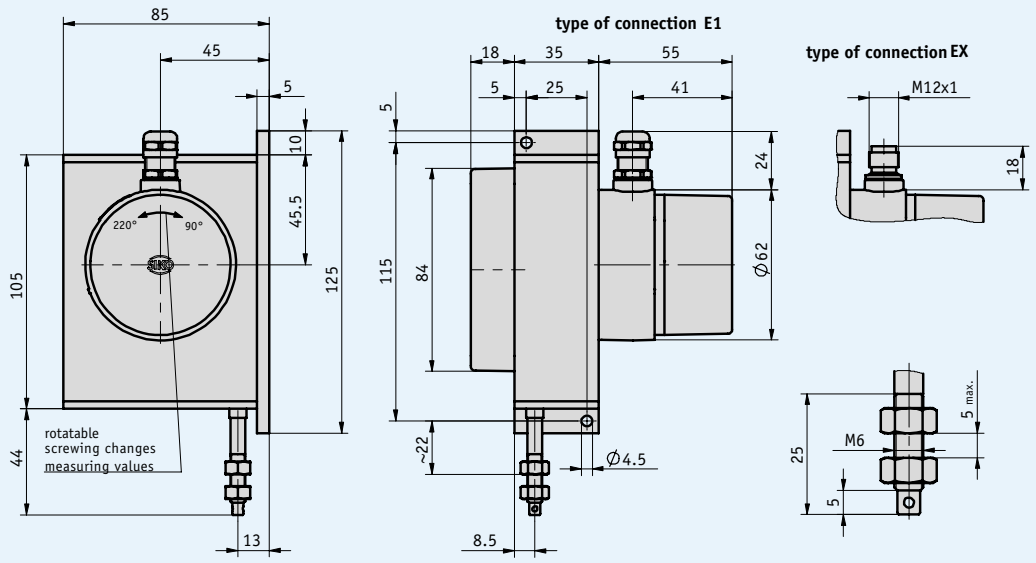
Mating Connector *Page 54*
Guide roller *Page 50*
Wire Extension Piece *Page 51*

Additional information:

General information and areas of application *Page 4 cont.*

Profile

- Robust design
- Measurement lengths up to max. 6000 mm
- Potentiometer, voltage or power output
- Housing made of aluminum and plastic
- Potentiometer/resistance range adapted to actual measurement length via an integrated gear
- Various wire types



Mechanical data

Feature	Technical data	Additional information
Travel speed	see table	
Pull-out force required	min. 8 N on the wire	
Drum circumference	200 mm	
Wire design	steel wire Ø 0.54 mm	
	plastic-coated steel wire, Ø 0.87 mm	
	paraline Ø 1.05 mm	
Repeat accuracy	depends on the direction of approach ~0.5 mm	
Protection category	for potentiometer portion: IP65	
Operating temperature	-20 ... +80 °C	T1
	-40 ... +80 °C	T2 (max. pull-in speed 800 mm/s)
Weight	approx. 730 g	
Housing	aluminum/plastic	

- **Max. travel speed**

Measurement range (mm)	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	... 6000
Max. travel speed (mm/s)	200	300	300	400	490	500	600	700	800	800	900	1000	... 1000

Electrical data

Potentiometric encoder type

Feature	Technical data	Additional information
Value of resistance	1, 2, 5, 10 kΩ	
Pull-out length	0 mm : 0 Ω	

Potentiometer option

Feature	(Type 02)	(Type 03)
Linearity	±0.25 %	±0.25 %
Resistance tolerance	±5 %	±5 %
Power rating	1 W	2 W

MWI encoder type, current source (transducer*)

Feature	Technical data	Additional information
Output current	4 ... 20 mA	
Potentiometer	10 kΩ	
Operating voltage	15 ... 28 V DC	
Load resistance	<500 Ω	

MWU encoder type, voltage source 0 ... 10 V DC (transducer*)

Feature	Technical data	Additional information
Output voltage	0 ... 10 V DC	
Recomm. load resistance	2 ... 10 kΩ to GND	
Max. load	15 mA	
Operating voltage	15 ... 28 V DC with 3 mA without load	

*Transducers allow optimum adaptation of output current or output voltage to the measurement range. The transducer is preset at delivery to provide an output signal of 4 ... 20 mA (MWI) or 0 ... 10 V DC (MWU) between the starting point and the end point of the measurement range..

Pin assignment

Potentiometric outputs P10

Signal	E1 (terminal)	E12 (plug-in pin)
Po	brown	1
Pe	white	2
S	green	3
N.C.		4

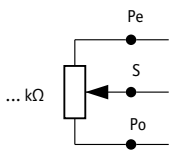
MWI transducer

Signal	E1 (terminal)	E12 (plug-in pin)
I+	1	1
I-	2	2
N.C.	3	3
N.C.		4

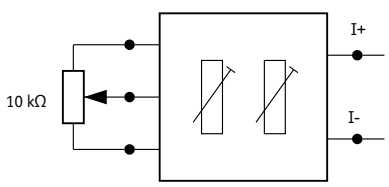
MWU transducer

Signal	E1 (terminal)	E12 (plug-in pin)
+24 V DC	1	1
GND	2	2
U_{out}	3	3
N.C.		4

Potentiometric outputs P01, P05, P10

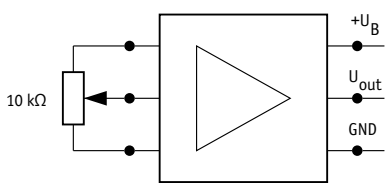


Transducer MWI



R/I-transformer

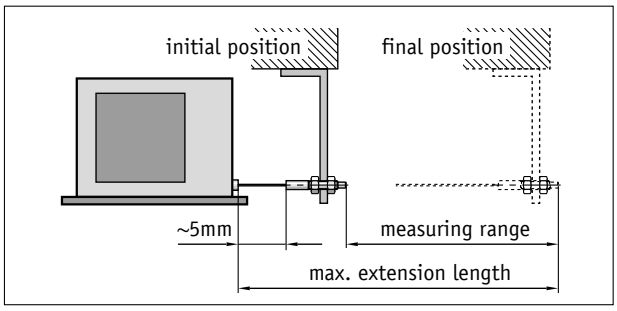
Transducer MWU



R/U-transformer

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order table

Feature	Order data		Specifications	Additional information
Measurement range (mm)	...	A	750 ... 6000	in steps of 250 mm
Wire design	S	B	stainless steel wire	measurement range max. 6000 mm
	SK		steel wire, plastic-coated	measurement range max. 4000 mm
	P		paraline, non-conducting, signal color	measurement range max. 2800 mm
Type of connection	E1	C	screwed cable gland PG7	cable Ø 3-6.5 mm
	EX		for M12 connector	
Potentiometer type	02	D	10 turns/wire	(P01, P05, P10)
	03		10 turns/hybrid	(P01, P05, P10)
Analog output	MWI	E	transducer 4 ... 20 mA	
	MWU		transducer 0 ... 10 V	
	P01		potentiometer 1 kΩ	
	P05		potentiometer 5 kΩ	
	P10		potentiometer 10 kΩ	
Operating temperature	T1	F	-20 ... +80 °C	
	T2		-40 ... +80 °C	max. pull-in speed 800 mm/s

Order code

SGP/1 – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]
A B C D E F

Scope of delivery: *SGP/1, User information*

Accessories:

Guide roller *Page 50*
Wire Extension Piece *Page 51*
Mating Connector *Page 54*

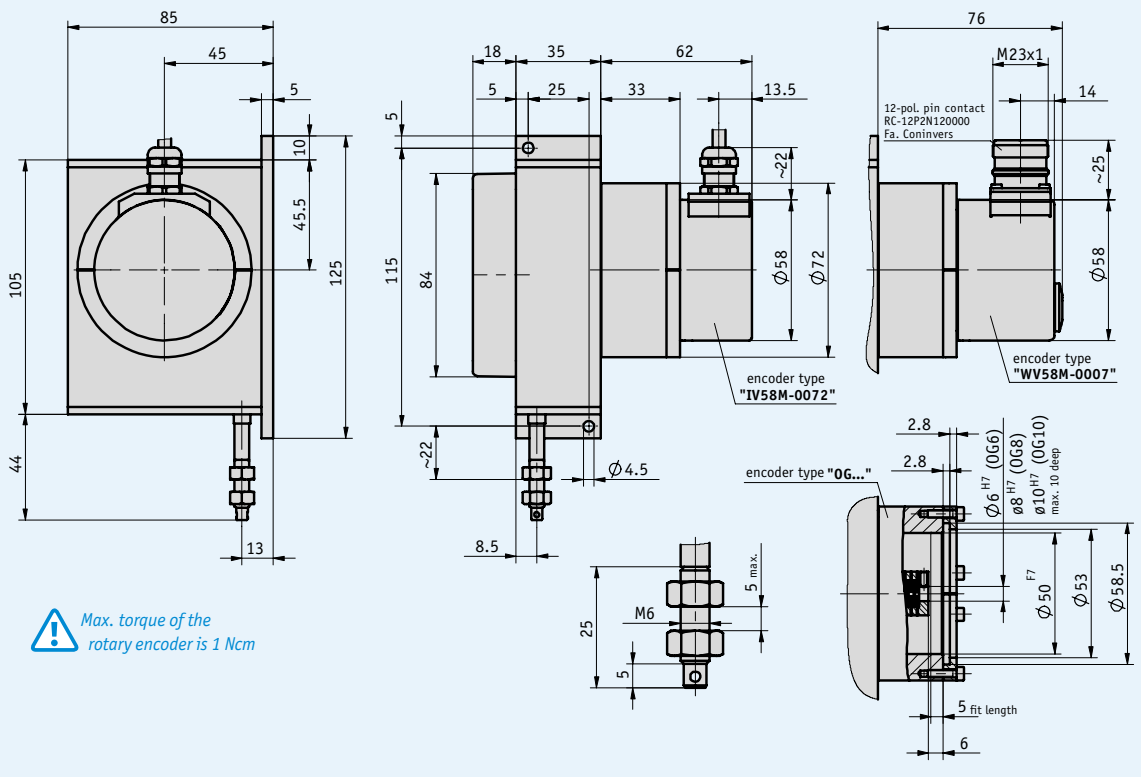
Additional information:

General information and areas of application *Page 4 cont.*

Wire-Actuated Encoder SG60
Robust design with 6000 mm measurement length

Profile

- Robust design
- Easy mounting
- Measurement lengths up to max. 6000 mm
- Incremental or absolute encoder
- Housing made of aluminum and plastic
- High flexibility thanks to freely selectable rotary encoders with 58 mm standard flange
- Various wire types



Mechanical data

Feature	Technical data	Additional information
Travel speed	max. 3000 mm/s	
Pull-out force required	min. 8 N on the wire	
Measurement range	up to 6000 mm	
Repeat accuracy	depends on the direct. of approach, ±0.15 mm	
Drum circumference	200 mm	
Wire design	steel wire Ø 0.54 mm	
	steel wire, plastic-coated Ø 0.87 mm	
	paraline Ø 1.05 mm	
Protection category	IP65 (with standard encoder)	protection category may vary depending on the rotary encoder type
Operating temperature	-20 ... +80 °C	T1
	-40 ... +80°C	T2 (max. pull-in speed 800 mm/s)
Weight	approx. 700 g	
Housing	aluminum/plastic	

Electrical data

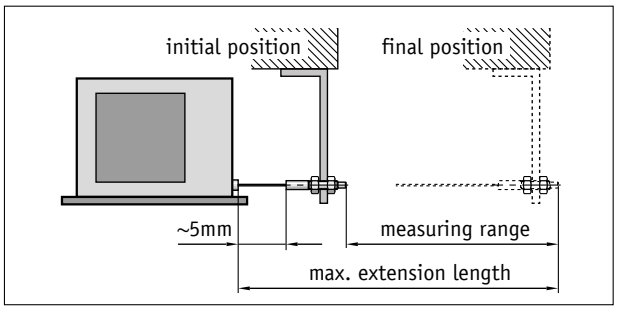
Rotary encoders suitable for use with SG60 can be found in Catalog 2 RotoLine. Depending on the output signals, the following devices can be used:

- For analog outputs such as current or voltage: AV58M
- For incremental outputs: IV58M
- For absolute outputs: WV36M/SSI, WV36M/CAN

Please see data sheets for technical specifications on these devices. Furthermore, various encoder variants of diverse manufacturer can be used.

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order table

Feature	Order data		Specifications	Additional information
Measurement range (mm)	...	A	1000 ... 6000	in steps of 100 mm
Wire design	S	B	stainless steel wire	measurement range max. 6000 mm
	SK		steel wire, plastic-coated	measurement range max. 4000 mm
	P		paraline, non-conducting, signal color	measurement range max. 2800 mm
Encoder type	OG6	C	without encoder, with coupling diameter= 6 mm	see accessories
	OG8		without encoder, with coupling diameter= 8 mm	see accessories
	OG10		without encoder, with coupling diameter= 10 mm	see accessories
Operating temperature	T1	D	-20 ... +80 °C	
	T2		-40 ... +80 °C	max. pull-in speed 800 mm/s
Color	N	E	nature anodized	
			others on request	

Order code

SG60 – [A] – [B] – [C] – [D] – [E]

Scope of delivery: *SG60, User information*

Accessories:

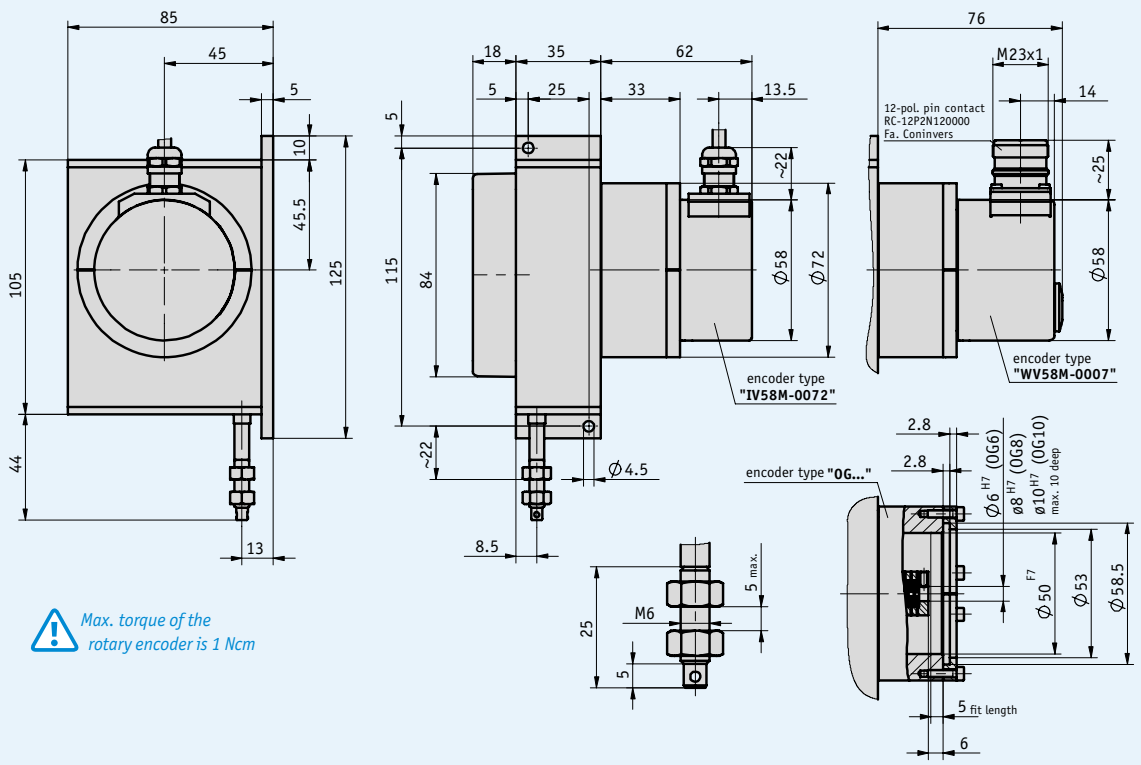
Rotary encoders IV58M, WV36M/CAN, WV36M/SSI	*Catalog 2 RotoLine*
Guide roller	*Page 50*
Wire Extension Piece	*Page 51*

Additional information:

General information and areas of application	*Page 4 cont.*

Profile

- Robust design
- Easy mounting
- Measurement lengths up to max. 12000 mm
- Incremental or absolute encoder
- Housing made of aluminum and plastic
- High flexibility thanks to free choice of rotary encoders with 58 mm standard flange
- Various wire types



Mechanical data

Feature	Technical data	Additional information
Travel speed	max. 3000 mm/s	
Pull-out force required	min. 8 N on the wire	
Measurement range	up to 12000 mm	
Repeat accuracy	depends on the direct. of approach ±0.15 mm	
Drum circumference	200 mm	
Wire design	steel wire Ø 0.54 mm	
	steel wire, plastic-coated Ø 0.87 mm	
	paraline Ø 1.05 mm	
Protection category	IP65 (with standard encoder)	protection category may vary depending on the rotary encoder type
Operating temperature	-20 ... +80 °C	
Weight	approx. 700 g	
Housing	aluminum/plastic	

Electrical data

Rotary encoders suitable for use with SG120 can be found in Catalog 2 RotoLine. Depending on the output signals, the following devices can be used:

- For analog outputs such as current or voltage: AV58M
- For incremental outputs: IV58M
- For absolute outputs: WV36M/SSI, WV36M/CAN

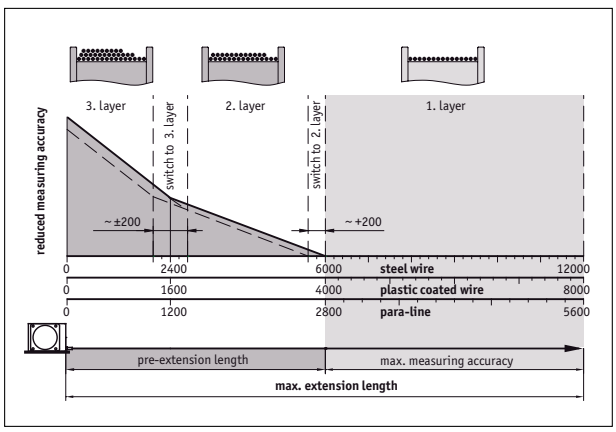
Please see data sheets for technical specifications on these devices. Furthermore, various encoder variants of diverse manufacturer can be used.

Pull-out length/Measurement range

The high degree of accuracy provided by SIKO's wire-actuated encoders is due to the fact that the whole wire length (measurement range) is wound on the drum in only a single layer. The comparably small diameter of the steel wire in the SG120 encoder enables achievement of the encoder's 6000 mm maximum measurement range using only the first drum layer. More room is required for the larger diameters of plastic-coated steel wire and synthetic paraline, resulting in measurement ranges which are accordingly shorter.

If a reduction in measurement accuracy is accepted, winding in 2 or 3 layers is also available, which alters the possible measurement lengths accordingly.

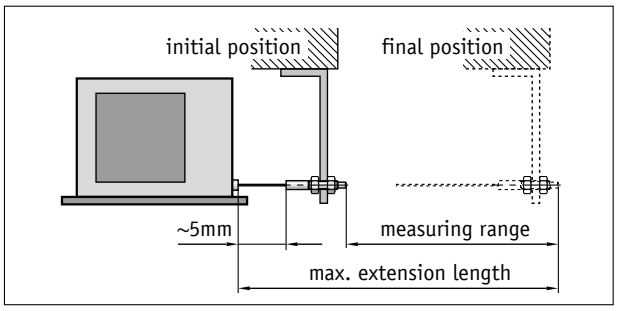
Pull-out lengths SG120	1st layer	2nd and 3rd layer
Steel wire	6000 mm	12000 mm
Steel wire, plastic-coated	4000 mm	8000 mm
Paraline	2800 mm	5600 mm



Dimensions indicated in millimeters

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order table

Feature	Order data		Specifications	Additional information
Measurement range (mm)	...	A	2900 ... 12000	in steps of 100 mm
Wire design	S	B	stainless steel wire	measurement range max. 6100–12000 mm
	SK		steel wire, plastic-coated	measurement range max. 4100–8000 mm
	P		paraline, non-conducting, signal color	measurement range max. 2900–5600 mm
Encoder type	0G6	C	without encoder, with coupling diameter= 6 mm	see accessories
	0G8		without encoder, with coupling diameter= 8 mm	see accessories
	0G10		without encoder, with coupling diameter= 10 mm	see accessories
Color	N	D	nature anodized	
			others on request	

Order code

SG120 – [A] – [B] – [C] – [D]

Scope of delivery: *SG120, User information*

Accessories:

Rotary encoders IV58M, WV36M/CAN, WV36M/SSI	*Catalog 2 RotoLine*
Guide roller	*Page 50*
Wire Extension Piece	*Page 51*

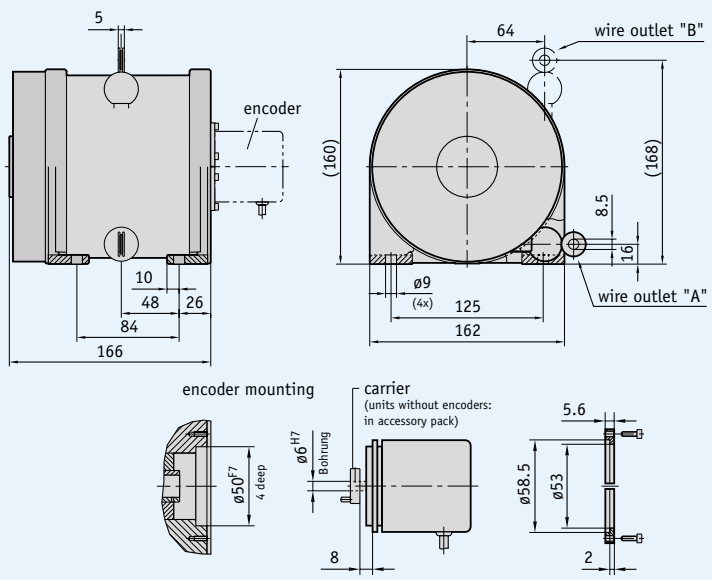
Additional information:

General information and areas of application	*Page 4 cont.*

Wire-Actuated Encoder SGL135
Aluminum housing and 15 m measurement length

Profile

- measurement lengths max. 15000 mm
- Potentiometer, voltage or power output
- Incremental or absolute encoder
- Housing made of aluminum
- High flexibility thanks to free choice of rotary encoders with 58 mm standard flange
- High operational safety owing to forced-guided wire drum
- Various wire types



Mechanical data

Feature	Technical data	Additional information
Travel speed	max. 4 m/s	
Pull-out force required	min. 25 N, on the wire	
Drum circumference	400 mm	
Wire design	steel wire Ø 1 mm	
	paraline Ø 1.05 mm	
Protection category	specified by the mounted encoder	
Operating temperature	-20 ... +80 °C	encoder-specific values, see also encoder technical data
Color	orange, RAL 2004	others on request
Weight	~4400 g	
Wire outlet	plastic	
Housing/spring housing	aluminum	

Electrical data

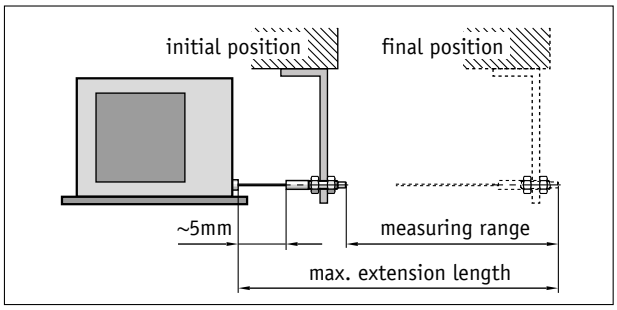
Rotary encoders suitable for use with SGL135 can be found in Catalog 2 RotoLine. Depending on the output signals, the following devices can be used:

- For analog outputs such as potentiometers, current or voltage: AV58M, GP03/1 and GP43 (with switching outputs)
- For incremental outputs: IV58M
- For absolute outputs: WV36M/CAN, WV36M/SSI

Please see data sheets for technical specifications on these devices. Furthermore, various encoder variants of diverse manufacturer can be used.

Mounting note

When you attach the wire, it should be pulled out straight in line with the wire outlet. **Recommendation:** A 5 mm wire extension is recommended before the measurement starting point. This prevents the wire snapping back to the stop on rewinding.



Symbolic representation

Order

Order table

Feature	Order data		Specifications	Additional information
Measuring range	13.5	A	measurement range max. 13500 mm	
	15		measurement range max. 15000 mm	
Wire design	S	B	stainless steel wire	
	P		paraline, non-conducting, signal color	
Wire outlet	A	C	horizontal	
	B		vertical	
Encoder type	SFP	D	many encoder types possible	see accessories
	OG		without encoder	

Order code

SGL135 - [A] - [B] - [C] - [D]

Scope of delivery: *SGL135, User information*

Accessories:
Rotary encoders IV58M, WV36M/CAN, WV36M/SSI *Catalog 2 RotoLine*
Guide roller *Page 50*

Additional information:
General information and areas of application *Page 4 cont.*

3.2

3.1 | Wire-Actuated Encoders 3

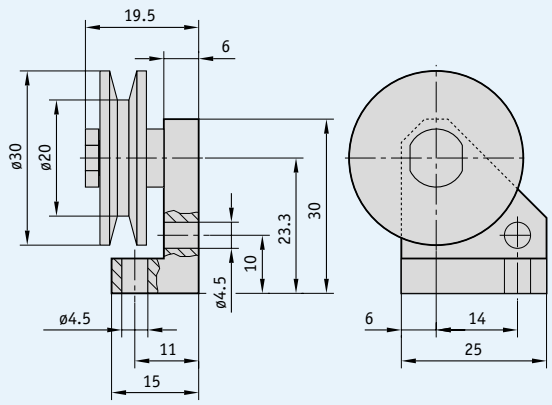
3.2 | Accessories

Products	Guide Roller UR	50
	Wire Extension Piece SV	51
	Mounting flange ZB4002	52
	Mating Connector	54

3.3 | Product index, Contact information 57

Profile

- For changing the measurement direction. Guide rollers are used when the wire-actuated encoder cannot be installed in line with the extension direction of the wire
- Several guide rollers can be combined



Mechanical data

Feature	Technical data	Additional information
Roller material	plastic	
Accommodation material	aluminum	
Weight	25 g	

Order

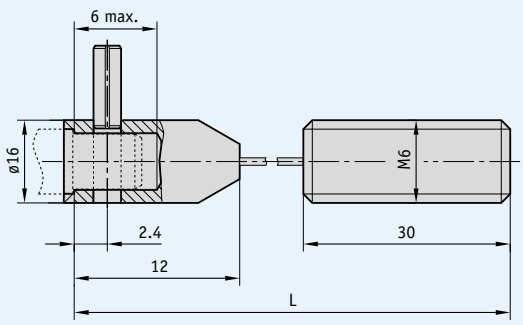
- **Mounting example** (see page 7)
- **Order code**

UR

Scope of delivery: *Guide roller*

Profile

- For extending the measurement wire or bridging the gap to the object to be measured. This does not extend the actual measurement range of the encoder, however
- Easy mounting



Order

Order table

Feature	Order text		Specification	Additional information
Wire length	...	A	0.1 ... 20 m, in steps of 0.1 m	
	SK	B	steel wire, plastic-coated	
	P		paraline	

Order code

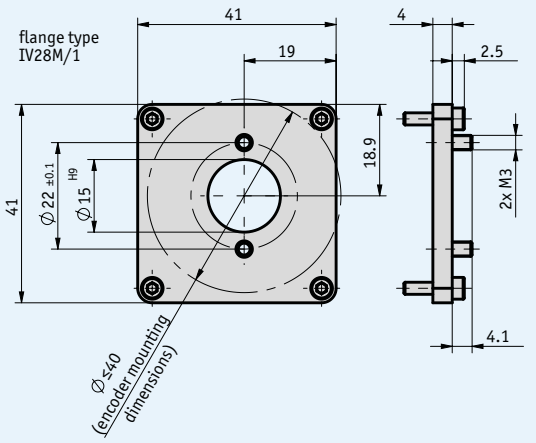
SV – [ ] – [ ]
A B

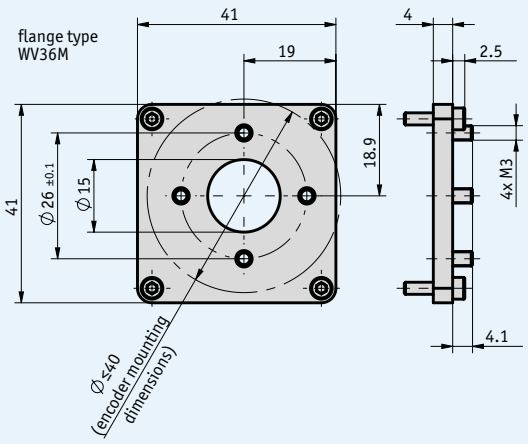
Scope of delivery: *Wire extension piece, User information*

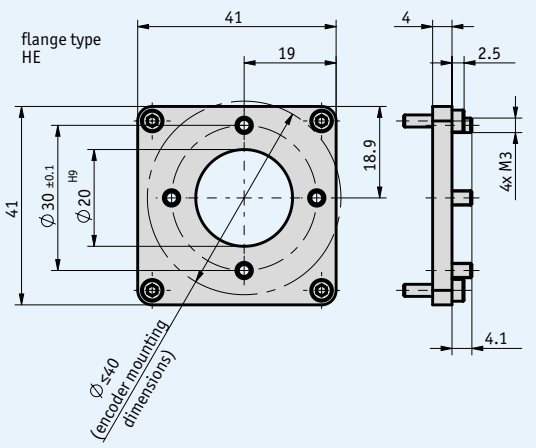
Mounting flange ZB4002
Accessories SG21

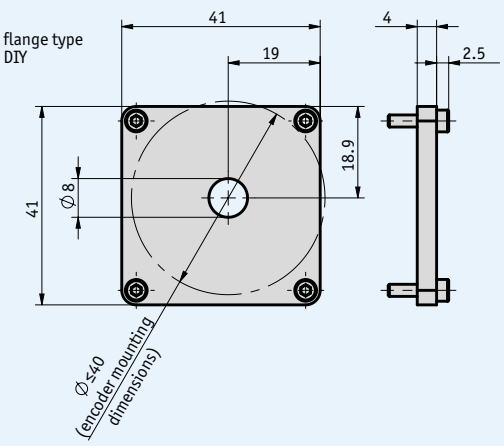
Profile

- For easy mountimg of rotary encoders to SG21
- For rotary encoders with max. Ø40 mm
- Diverse variants available
- Basic version for own adjustment







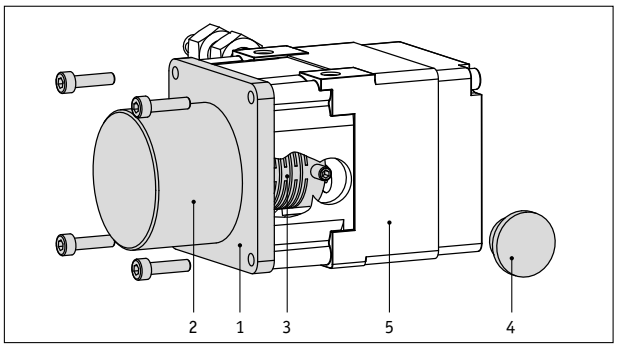


Mechanical data

Feature	Technical data	Additional information
Material	aluminium	

Mounting note

The mounting flange [1] is directly mounted to the encoder flange [2]. After mounting the self-aligning coupling [3] to the encoder shaft, the rotary encoder with flange and coupling is placed on the wire-actuation housing [5]. The flange is screwed onto the housing and the coupling fixed on the drum shaft of the wire actuation mechanism via the lateral opening. The plastic cover [4] protects the wire actuation housing from the intrusion of foreign bodies.
For detailed instructions regarding encoder mounting please refer to the User Information for the wire-actuated encoder SG21.



Order

Order table

Feature	Order data	Specifications	Additional information
Series impedance	IV28M/1 A	for rotary encoder IV28M/1	
	WV36M	for rotary encoders WV36M/CAN and MV36M/SSI	
	HE	for rotary encoder with hole circle Ø30 mm	
	DIY	flange processing for the encoder by the customer	

Order code

ZB4002 – [ ]
A

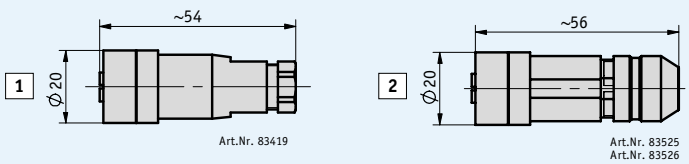
Scope of delivery: *ZB4002, fastening screws for flange and encoder*

Profile

- Mating connector, straight

When screwed on, the distance to the device will increase by approx. 3 mm.

Mating connectors, straight



3.2

Order

- **Order matrix**

					Wire-Actuated Encoders			
					SG20	SG30	SG32 SG42	SGP/1
	Pict.	PIN	Ø cable	Order data				
Mating connectors, straight								
	1	4	4 ... 6	83419	E12	P10, MWI, MWU		EX
	2	8	6 ... 8	83525			•	
	2	4	6 ... 8	83526		P10, MWI, MWU		

- **Order code**

Scope of delivery: *Mating connector*


3.3

3.1 | Wire-Actuated Encoders 3
3.2 | Accessories 49

3.3 | Product index, Contact information 58

Wire-Actuated Encoders

Device	Type	Page
M		
	Mating Connector	54
S		
SG5	Wire-Actuated Encoder	10
SG10	Wire-Actuated Encoder	13
SG20	Wire-Actuated Encoder	17
SG21	Wire-Actuated Encoder	21
SG30	Wire-Actuated Encoder	24
SG31	Wire-Actuated Encoder	28
SG32	Wire-Actuated Encoder	31
SG42	Wire-Actuated Encoder	34
SGP/1	Wire-Actuated Encoder	37
SG60	Wire-Actuated Encoder	40
SG120	Wire-Actuated Encoder	43
SGL135	Wire-Actuated Encoder	46
SV	Wire extension piece	51
U		
UR	Guide Roller	50
Z		
ZB4002	Mounting flange	52

Germany

A dealer near you? Our website will help you.
Just enter your postal code at **www.siko.de/en/contact/germany** and you will find the current contact data of the representative in your area. Or give us a call and we will be pleased to pass on the contact data.

International

SIKO is represented by our subsidiaries and trade partners all over the world: **www.siko.de/en/contact/international**

Africa
Republic of South Africa

Asia
China
India
Indonesia
Israel
Japan
Malaysia
South Korea
Singapore
Taiwan
Thailand
Vietnam

Australia
Australia
New Zealand

Europe
Austria
Belgium
Bulgaria
Croatia
Czech Republic
Denmark
Finland
France
Greece
Hungary
Italy
Lithuania
Luxembourg
Netherlands
Norway
Poland
Portugal
Romania
Russian Federation
Serbia and Montenegro
Slovakia
Slovenia
Spain
Sweden
Switzerland
Turkey
Ukraine
United Kingdom

America
Brazil
Canada
Mexico
United States

SIKO GmbH
Weihermattenweg 2
D-79256 Buchenbach

Telephone
+49 7661 394-0
Telefax
+49 7661 394-388

E-Mail
info@siko.de
Internet
www.siko.de

Subject to technical alterations 01/2012 – Nr. 84811