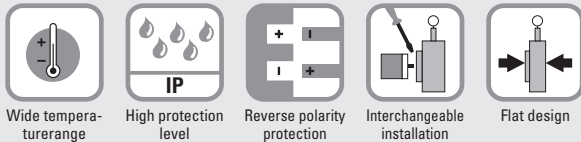


# Linear measuring technology

<b>Draw-wire encoder C105</b>	<b>Compact-Line</b>	<b>Measuring length max. 6 m</b>
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The draw-wire encoder C105 features a compact design. It is available with various wire types. All encoders with 58 mm synchro flange and 6 mm shaft, as well as analog sensors with redundant interfaces can be combined with this draw-wire mechanism. The cable and connector orientations of the encoder can easily be adapted to the position of the mechanism. A flexible wire outlet compensates mounting tolerances.



## Flexible and compact

- Encoder replacement and connection technology adaptation possible by the user.
- Measuring lengths from 3 m to 6 m.
- Simple adaptation of the position for the connection technology.
- Flexible wire outlet and different wire types.
- Compact design.
- Simple installation.
- Scalable analog output with limit switch function.
- Redundant sensors.

## Order code with encoder (incremental, absolute)

**D8.1** **X****X****X** . **X****X****X****X** . **X****X****X****X**

Type    **a**    **b**    **c**    **d**    **e**    **f**

- a** Wire type  
1 = steel wire  
2 = Para-Line <sup>1)</sup>  
5 = Steel wire, plastic coated
  - b** Measuring range  
A1 = 3 m  
04 = 4 m  
05 = 5 m  
06 = 6 m <sup>1)</sup>
  - c** Encoder used  
2Z = Sendix 5000, incremental  
M3 = Sendix M5863, absolute  
F3 = Sendix F5863, absolute  
63 = Sendix 5863, absolute  
M8 = Sendix M5868, absolute  
F8 = Sendix F5868 absolute  
68 = Sendix 5868, absolute
  - d** Output circuit  
depends on the encoder used
  - e** Type of connection  
depends on the encoder used
  - f** Resolution / Protocol / Options  
depends on the encoder used
- Draw-wire mechanism without encoder write 0 in **c**, **d**, **e** + **f**  
Example: D8.1106.0000.0000*

Standard resolutions for draw-wire with incremental encoder Sendix 5000			
Drum circumference [mm]	200	200	200
Pulses / revolution [ppr]	200	2000	4000
Pulses / mm	1	10	20
Resolution [mm]	1	0.1	0.05

Standard resolutions for draw-wire with absolute encoder Sendix M5863 (12 bit ST) or M5868 (12 bit ST, programmable via bus)	
Drum circumference [mm]	200
Pulses / revolution [ppr]	4096
Pulses / mm	20.5
Resolution [mm]	0.05

## Recommended standard variants (with incremental, absolute encoder)

Order no. draw-wire encoder	Mounted encoder	Interface	Power supply	Type of connection	Resolution / Protocol	Option
D8.1xxx.2254.2000	Sendix 5000 (8.5000.B154.2000)	Push-pull with inverted signal	10 ... 30 V DC	1 x radial M12 connector	2000 ppr	-
D8.1xxx.M324.G222	Sendix M5863 (8.M5863.4124.G222)	SSI	10 ... 30 V DC	1 x radial M12 connector	4096 ppr / SSI-Gray-Code	-
D8.1xxx.M824.2122	Sendix M5868 (8.M5868.4124.2122)	CANopen	10 ... 30 V DC	1 x radial M12 connector	CANopen encoderprofil DS406 V4.0	-

<sup>1)</sup> Wire type **a** = 2 (Para-Line) not available for measuring range 6 m.

# Linear measuring technology

**Draw-wire encoder C105**

**Compact-Line**

**Measuring length max. 6 m**

## Other variants (with absolute encoder)

Order no. draw-wire encoder	Mounted encoder	Interface	Power supply	Type of connection	Resolution / Protocol	Option
D8.1xxx.F326.G223	Sendix F5863 (8.F5863.2126.G223)	SSI	10 ... 30 V DC	1 x radial M12 connector	4096 ppr / SSI-Gray-Code	SET button + status LED
D8.1xxx.6326.G223	Sendix 5863 (8.5863.2126.G223)	SSI	10 ... 30 V DC	1 x radial M12 connector	4096 ppr / SSI-Gray-Code	SET button + status LED
D8.1xxx.F82E.2123	Sendix F5868 (8.F5868.212E.2123)	CANopen	10 ... 30 V DC	1 x radial M12 connector	CANopen encoder profile DS406 V3.2	SET button
D8.1xxx.6822.2123	Sendix 5868 (8.5868.2122.2123)	CANopen	10 ... 30 V DC	2 x radial M12 connector	CANopen encoder profile DS406 V3.2	SET button
D8.1xxx.M834.3222	Sendix M5868 (8.M5868.4134.3222)	SAE J1939	10 ... 30 V DC	1 x radial M12 connector	SAE J1939	-
D8.1xxx.M844.4122	Sendix M5868 (8.M5868.4144.4122)	IO-Link	18 ... 30 V DC	1 x radial M12 connector	IO-Link	-
D8.1xxx.6832.3113	Sendix 5868 (8.5868.2132.3113)	PROFIBUS	10 ... 30 V DC	3 x radial M12 connector	Profibus-DP V0 encoder profile Class 2	SET button
D8.1xxx.68B2.B212	Sendix 5868 (8.5868.21B2.B212)	EtherCAT	10 ... 30 V DC	3 x radial M12 connector	EtherCAT with CoE 3.2.10	-
D8.1xxx.F8CN.C122	Sendix F5868 (8.F5868.21CN.C122)	PROFINET IO	10 ... 30 V DC	3 x axial M12 connector	PROFINET encoder profile version 4.2	-
D8.1xxx.F8AN.A222	Sendix F5868 (8.F5868.21AN.A222)	EtherNet/IP	10 ... 30 V DC	3 x axial M12 connector	EtherNet/IP	-

## Order code with encoder (analog, scalable with limit switch function)

**D8.1** **XXX** . **M1XX** . **XXXX**  
 Type **a** **b** **c** **d** **e** **f**

- a** Wire type  
 1 = steel wire  
 2 = Para-Line <sup>1)</sup>  
 5 = Steel wire, plastic coated
  - b** Measuring range  
 A1 = 3 m  
 04 = 4 m  
 05 = 5 m  
 06 = 6 m <sup>2)</sup>
  - c** Encoder used  
 M1 = Sendix M5861, absolute <sup>2)</sup>
  - d** Output circuit  
 depends on the encoder used
  - e** Type of connection  
 depends on the encoder used
  - f** Resolution / Protocol / Options  
 depends on the encoder used
- Draw-wire mechanism without encoder write 0 in **c**, **d**, **e** + **f***  
 Example: D8.1106.0000.0000

## Recommended standard variants (with encoder analog, scalable with limit switch function)

Order no. draw-wire encoder	Mounted encoder	Interface	Power supply	Type of connection	Resolution / Protocol	Option
D8.1xxx.M134.3512	Sendix M5861 (8.M5861.4134.3512)	Analog, 4 ... 20 mA	10 ... 30 V DC	radial M12 connector	12 Bit / 4 ... 20 mA	scalable with limit switch function <sup>3)</sup>
D8.1xxx.M144.4512	Sendix M5861 (8.M5861.4144.4512)	Analog, 0 ... 10 V	15 ... 30 V DC	radial M12 connector	12 Bit / 0 ... 10 V	scalable with limit switch function <sup>3)</sup>
D8.1xxx.M134.3612	Sendix M5861 (8.M5861.4134.3612)	Analog, 4 ... 20 mA	10 ... 30 V DC	radial M12 connector	12 Bit / 4 ... 20 mA	scalable without limit switch function <sup>3)</sup>
D8.1xxx.M144.4612	Sendix M5861 (8.M5861.4144.4612)	Analog, 0 ... 10 V	15 ... 30 V DC	radial M12 connector	12 Bit / 0 ... 10 V	scalable without limit switch function <sup>3)</sup>

## Order code with analog sensor (scaled to measuring range)

**D8.3** **1XX** . **XXX** **2** . **0000**  
 Typ **a** **b** **c** **d**


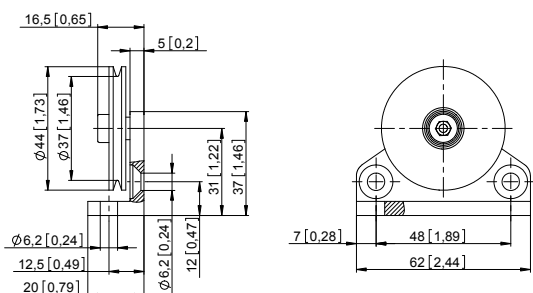
- a** Wire type  
 1 = steel wire (ø 0,6 mm)
- b** Measuring range  
 05 = 5 m  
 06 = 6 m
- c** Redundant sensor / supply voltage  
 R11 = 2 x 4 ... 20 mA / 10 ... 30 V DC  
 R33 = 2 x potentiometer 10 kΩ / max. 30 V DC
- d** Type of connection  
 2 = radial M12 connector, 8-pin


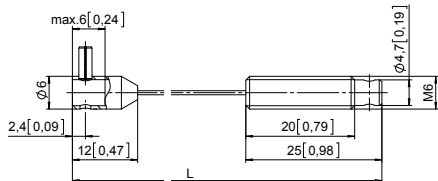
1) Wire type **a** = 2 (Para-Line) not available for measuring range 6 m.  
 2) With ccw option.  
 3) Delivery condition: unscaled.  
 Description for scaling and limit switch function see data sheet M5861.

# Linear measuring technology

<b>Draw-wire encoder C105</b>	<b>Compact-Line</b>	<b>Measuring length max. 6 m</b>
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Accessories for draw-wire encoder	Dimensions in mm [inch]	Order no.
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<b>Guide pulley</b>  	<p><b>Technical data:</b></p> <ul style="list-style-type: none"> <li>- mounting bracket (anodized alum.)</li> <li>- guide pulley (plastic POM)</li> <li>- ball bearing (type 696-2R5)</li> </ul> <p><b>Scope of delivery:</b></p> <ul style="list-style-type: none"> <li>- 2 x countersunk screws for lateral fixing</li> <li>- 2 x hexagonal screws for fixing on a flat surface</li> </ul>	<b>8.0000.7000.0045</b>
		

<b>Extension cable</b> (further on request)  		<p>Steel wire 2 m [6.56'] <b>8.0000.7000.0033</b></p> <p>Steel wire 5 m [16.40'] <b>8.0000.7000.0034</b></p> <p>Steel wire 10 m [32.81'] <b>8.0000.7000.0035</b></p> <p>Paraleine 2 m [6.56'] <b>8.0000.7000.0032</b></p>
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Cables and connectors	Order no.
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<b>Preassembled cables</b>	<p>M12 female connector with coupling nut, 4-pin, A coded, straight single ended 2 m [6.56'] PUR cable <b>05.00.6061.6211.002M</b></p> <p>M12 female connector with coupling nut, 5-pin, A coded, straight single ended 2 m [6.56'] PVC cable <b>05.00.6081.2211.002M</b></p> <p>M12 male connector with external thread, 4-pin, D coded, straight single ended 2 m [6.56'] PUR cable <b>05.00.6031.4411.002M</b></p> <p>M12 female connector with coupling nut, 8-pin, A coded, straight single ended 2 m [6.56'] PVC cable <b>05.00.6041.8211.002M</b></p>	
<b>Connectors</b>	<p>M12 female connector with coupling nut, 5-pin, A coded, straight (metal) <b>8.0000.5116.0000</b></p> <p>M12 female connector with coupling nut, 5-pin, A coded, straight (metal/plastic) <b>05.B-8151-0/9</b></p> <p>M12 female connector with coupling nut, 5-pin, A coded, straight (metal, Ex approval) <b>8.0000.5121.0000.Ex</b></p>	

Further Kübler cables and connectors can be found at: [kuebler.com/connection-technology](http://kuebler.com/connection-technology)

# Linear measuring technology

<b>Draw-wire encoder C105</b>	<b>Compact-Line</b>	<b>Measuring length max. 6 m</b>
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## Technical data

Mechanical characteristics	
<b>Measuring range</b>	3000 ... 6000 mm
<b>Speed max.</b>	3000 mm/s
<b>Acceleration max.</b>	23.5 m/s <sup>2</sup>
<b>Extension force F<sub>min</sub></b>	8 N
<b>Repeat accuracy</b>	±0.25 mm
<b>Working temperature</b>	with encoder -20 °C ... +80 °C [-4 °F ... +176 °F] -40 °C ... +80 °C [-40 °F ... +176 °F], optional on request, speed max. 800 mm/s with analog sensor -40 °C ... +80 °C [-40 °F ... +176 °F]
<b>Weight</b>	approx. 800 g [28.22 oz]
<b>Drum circumference</b>	200 mm
<b>Wire</b>	Para-Line ø 0,6 mm steel wire ø 0,6 mm

Electrical characteristics analog sensor R11	
<b>Supply voltage</b>	10 ... 30 V DC
<b>Output current</b>	4 ... 20 mA (2x) 20 ... 4 mA (2x) 4 ... 20 mA + 20 ... 4 mA

**For the electrical characteristics as well as for the terminal assignment, please refer to the data sheet of the encoder used.**

Electrical characteristics analog sensor R33	
<b>Analog output</b>	2 x potentiometer
<b>Output</b>	10 kΩ
<b>Supply voltage</b>	max. 30 V DC
<b>Load capacity</b>	2 W at 70 °C
<b>Resistance tolerance</b>	±5 %
<b>Standard terminal resistance</b>	0.5% or 1Ω
<b>Linearity tolerance</b>	±0.25 %

Approvals	
<b>CE compliant</b> in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

### Terminal assignment (analog output)

Analog sensor <b>R11</b> , redundant (2 x 4 ... 20 mA)			R/I-converter 1		R/Iconverter 2						
		<b>Signal:</b>	+V 1	I <sub>out</sub> 1	+V 2	I <sub>out</sub> 2	n.c.	n.c.	n.c.	n.c.	
	M12 connector, 8 pin	<b>Pin:</b>	1	3	5	7	2	4	6	8	
Analog sensor <b>R33</b> , redundant (2 x Potentiometer 1 kΩ)			Potentiometer 1		Potentiometer 2						
		<b>Signal:</b>	+V 1	Out 1	0 V 1	n.c.	+V 2	Out 2	0 V 2	n.c.	
	M12 connector, 8 pin	<b>Pin:</b>	1	2	3	4	5	6	7	8	

### Top view of mating side, male contact base



M12 connector, 8-pin

# Linear measuring technology

## Draw-wire encoder C105

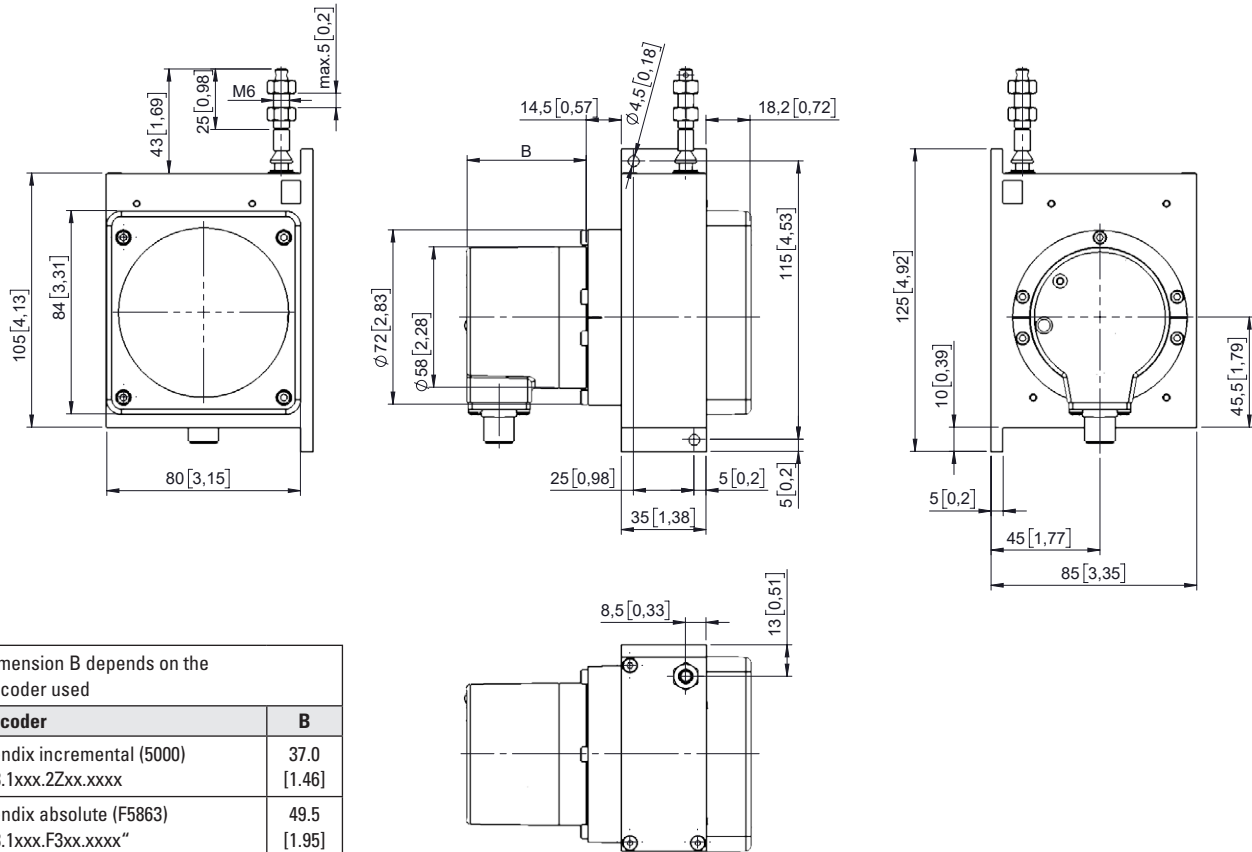
Compact-Line

Measuring length max. 6 m

### Dimensions

Dimensions in mm [inch]

#### Draw-wire mechanics with encoder



Dimension B depends on the encoder used	
Encoder	B
Sendix incremental (5000) D8.1xxx.2Zxx.xxxx	37.0 [1.46]
Sendix absolute (F5863) D8.1xxx.F3xx.xxxx"	49.5 [1.95]
Sendix absolute (5863) D8.1xxx.63xx.xxxx	49.5 [1.95]
Sendix absolute (F5868, CANopen) D8.1xxx.F8xx.21xx	70.0 [2.76]
Sendix absolute (F5868, EtherNet/IP) D8.1xxx.F8xx.A2xx	59.5 [2.34]
Sendix absolute (F5868, EtherNet/IP) D8.1xxx.68xx.A2xx	77.2 [3.04]
Sendix absolute (F5868, EtherNet/IP) D8.1xxx.Mxxx.xxxx	49.8 [1.96]

## Draw-wire encoder C105

Compact-Line

Measuring length max. 6 m

### Dimensions

Dimensions in mm [inch]

#### Draw-wire mechanics with encoder

