

# Linear measuring technology

**Draw wire mechanics with encoder or analog sensor**

**Draw wire encoder B75**

**Measuring length max. 3 m  
Traverse speed max. 0.8 m/s**



The draw wire mechanics B75 can be used up to a measuring length of 3 meters.

These draw wire mechanics may be combined with the proven Kübler Sendix encoders with incremental or absolute interface, as well as with analog sensors.



## Compact and versatile

- Compact housing.
- Variable mounting possibilities.
- Low-wear wire exit.
- Scalable analog interface with limit switch function.
- Various field bus interfaces.

## Order code with encoder (incremental, absolute)

**D8.15** **03** . **XX****XX** . **XXXX**  
Type      **a**      **b** **c** **d**      **e**

Standard variants are represented **bold underlined>**

- a** *Measuring range*  
03 = 3000 mm
- b** *Encoder used*  
**M3 = Sendix M5863, absolute**  
F3 = Sendix F5863, absolute  
**M8 = Sendix M5868, absolute**  
63 = Sendix 5863, absolute  
F8 = Sendix F5868, absolute  
68 = Sendix 5868, absolute
- c** *Output circuit*  
depends on the encoder used
- d** *Type of connection*  
depends on the encoder used
- e** *Resolution / Protocol / Options*  
depends on the encoder used  
  
*Optional on request*  
- Other measuring ranges

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 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
D8.1503.2Z54.2000	Sendix 5000 (8.5000.B154.G2000)	Push-pull with inverted signal	10 ... 30 V DC	radial M12 connector	2000 ppr	-
D8.1503.M324.G222	Sendix M5863 (8.M5863.4124.G222)	SSI	10 ... 30 V DC	radial M12 connector	4096 ppr / SSI-Gray-Code	-
D8.1503.M824.2122	Sendix M5868 (8.M5868.4124.2122)	CANopen	10 ... 30 V DC	radial M12 connector	CANopen encoder profile DS406 V4.0	-

## Other variants (with absolute encoder)

Order no. draw wire encoder	Mounted encoder	Interface	Power supply	Type of connection	Resolution / Protocol	Option
D8.1503.F324.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
D8.1503.6324.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
D8.1503.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
D8.1503.6822.2123	Sendix 5868 (8.5868.2122.2123)	CANopen	10 ... 30 V DC	2 x radial M12 connector	CANopen encoder profile DS406 V3.2	SET button
D8.1503.6832.3113	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
D8.1503.68B2.B212	Sendix 5868 (8.5868.21B2.B212)	EtherCAT	10 ... 30 V DC	3 x radial M12 connector	EtherCAT with CoE 3.2.10	-
D8.1503.68C2.C212	Sendix 5868 (8.5868.21C2.C212)	PROFINET IO	10 ... 30 V DC	3 x radial M12 connector	PROFINET encoder profile version 4.1	-
D8.1503.F8AN.A222	Sendix F5868 (8.F5868.21AN.A222)	EtherNet/IP	10 ... 30 V DC	3 x axial M12 connector	EtherNet/IP	-

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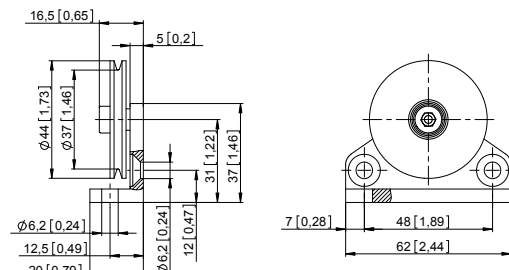
<b>Order code with encoder (analog, scalable with limit switch function)</b>	<b>D8.15</b> Type	<b>03</b> <b>a</b>	<b>M1XX</b> <b>b c d</b>	<b>XXXX</b> <b>e</b>	Standard variants are represented <b>bold underlined</b>
<b>a</b> Measuring range 03 = 3000 mm	<b>b</b> Encoder used <b>M1 = Sendix M5861, absolute</b>	<b>c</b> Output circuit depends on the encoder used	<b>e</b> Resolution / Protocol / Options depends on the encoder used		
<b>d</b> Type of connection depends on the encoder used			Optional on request - Other measuring ranges		


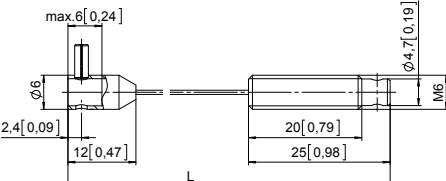
**Recommended standard variants (with encoder analog, scalable with limit switch function)**

Order no. draw wire encoder	Mounted encoder	Interface	Power supply	Type of connection	Resolution / Protocol	Option
D8.1503.M134.3312	Sendix M5861 (8.M5861.4134.3312)	Analog, 4 ... 20 mA	10 ... 30 V DC	radial M12 connector	12 Bit / 4 ... 20 mA	scalable with limit switch function <sup>1)</sup>
D8.1503.M144.4312	Sendix M5861 (8.M5861.4144.4312)	Analog, 0 ... 10 V	15 ... 30 V DC	radial M12 connector	12 Bit / 0 ... 10 V	scalable with limit switch function <sup>1)</sup>
D8.1503.M134.3412	Sendix M5861 (8.M5861.4134.3412)	Analog, 4 ... 20 mA	10 ... 30 V DC	radial M12 connector	12 Bit / 4 ... 20 mA	scalable without limit switch function <sup>1)</sup>
D8.1503.M144.4412	Sendix M5861 (8.M5861.4144.4412)	Analog, 0 ... 10 V	15 ... 30 V DC	radial M12 connector	12 Bit / 0 ... 10 V	scalable without limit switch function <sup>1)</sup>

<b>Order code with analog sensor (scaled to measuring range)</b>	<b>D8.35</b> Type	<b>03</b> <b>a</b>	<b>XXX</b> <b>b</b>	<b>2</b> <b>c</b>	<b>0000</b>
<b>a</b> Measuring range 03 = 3000 mm	<b>b</b> Analog sensor output / power supply A11 = 4 ... 20 mA / 12 ... 30 V DC A22 = 0 ... 10 V DC / 12 ... 30 V DC A33 = potentiometer 10 kΩ / max. 30 V DC		<b>c</b> Type of connection 2 = radial M12 connector, 4-pin (wire outlet direction)		Optional on request - Other measuring ranges

**Accessories for draw wire encoder** Order no.

<b>Guide pulley</b>	 	Order code for the set: - Guide pulley (anodized aluminum) - 2 x countersunk screws for lateral fixing - 2 x hexagonal screws for fixing on a flat surface	<b>8.0000.7000.0045</b>
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<b>Extension cable</b>	 	Steel wire 2 m [6.56'] Steel wire 5 m [16.40'] Steel wire 10 m [32.81'] Paraleine 2 m [6.56']	<b>8.0000.7000.0033</b> <b>8.0000.7000.0034</b> <b>8.0000.7000.0035</b> <b>8.0000.7000.0032</b>
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**Connection technology for analog sensor** Order no.

<b>Cordset, pre-assembled</b>	M12 female connector with coupling nut, 5-pin 2 m [6.56'] PVC cable	<b>05.00.6081.2211.002M</b>
<b>Connector, self-assembly (straight)</b>	M12 female connector with coupling nut, 5-pin	<b>8.0000.5116.0000</b>

<sup>1)</sup> Delivery condition: unscaled.  
Description for scaling and limit switch function see data sheet M5861.

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## Technical data

### Mechanical characteristics (draw wire mechanics)

<b>Measuring range</b>	3000 mm
<b>Traversing speed</b>	max. 0.8 m/s
<b>Working temperature</b>	-40°C ... +80°C [-40°F ... +176°F]
<b>Protection acc. to EN 60529</b>	IP65
<b>Weight</b>	approx. 500 g [17.67 oz]
<b>Required force <math>F_{min}</math></b>	3 N
<b>Linearity</b>	±0.35 %
<b>Repetition accuracy</b>	±0.15 mm
<b>Material</b>	housing: plastic / zinc die-cast wire: stainless steel $\varnothing$ 0.9 mm, plastic-coated

### Electrical characteristics

<b>Analog output</b>	0 ... 10 V DC	4 ... 20 mA	potentiometer 10 k $\Omega$
<b>Power supply</b>	15 ... 28 V DC	–	–
<b>Operating range</b>	–	15 ... 28 V DC	max. 48 V DC
<b>Load</b>	max. 500 $\Omega$	max. 500 $\Omega$	–
<b>Temperature range</b>	-40°C ... +80°C [-40°F ... +176°F]		
<b>CE compliant acc. to</b>	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU		

### Terminal assignment (analog output)

Color	BN	WH	GN	
Pin M12	1	2	3	4
0 ... 10 V DC	+24 V DC	0 V	$U_{out}$	n.c.
4 ... 20 mA	+I	-I	n.c.	n.c.
Potentiometer 10 k $\Omega$	Po	Pe	S	n.c.

### Electrical characteristics (digital output)

The electrical characteristics of the draw wire mechanics with digital output can be found in the data sheets of the encoders.

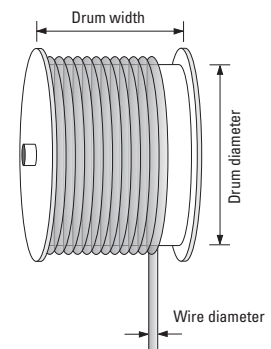
### Operating principle

#### Construction

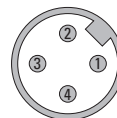
The core of a draw wire device is a drum mounted on bearings, onto which a wire is wound. Winding takes place via a spring-loaded device.

#### Note

Exceeding the maximum extension length of the draw wire will lead to damage to the wire and the mechanics.



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



M12 connector, 4-pin

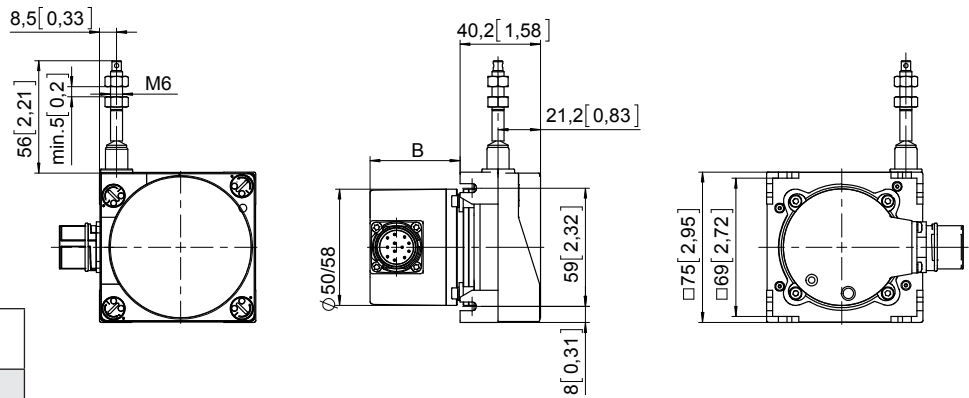
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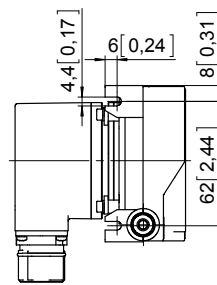
## Dimensions

Dimensions in mm [inch]

### Draw wire mechanics with encoder



Dimension B depends on the encoder used	
Encoder	B
Sendix incremental (5000) D8.1503.xxxx.2Zxx.xxxx	43.00 [1.69]
Sendix absolute (F5863) D8.1503.xxxx.F3xx.xxxx	55.50 [2.19]
Sendix absolute (5863) D8.1503.xxxx.63xx.xxxx	55.50 [2.19]
Sendix absolute (F5868, CANopen) D8.1503.xxxx.F8xx.21xx	65.50 [2.58]
Sendix absolute (F5868, EtherNet/IP) D8.1503.xxxx.F8xx.A2xx	65.50 [2.58]
Sendix absolute (5868) D8.1503.xxxx.68xx.xxxx	83.20 [3.28]
Sendix absolute (M586x) D8.1503.xxxx.Mxxx.xxxx	55.80 [2.20]



### Draw wire mechanics with analog sensor (scalable on measuring range)

