

# Linear Measuring Technology

## Draw wire mechanics with encoder or analogue sensor Draw wire encoder D135 Measuring length max. 42,5 m



140 m/s<sup>2</sup>

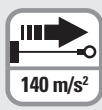
-20° +90°



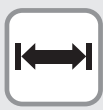
These draw-wire mechanics D135 can be used up to a measuring length of 40,5 metres.

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

With its compact construction, the D135 suits perfectly all measuring tasks from 8 up to 40 metres.



Max. acceleration



Long service life



Temperature



High IP value



Reverse polarity protection

### Robust

- The titanium-anodised aluminium housing and the stainless steel wires allow for using the mechanics even in harsh conditions
- Wear-free wire exit thanks to diamond- polished ceramic guide

### Versatile

- High traverse speed and high acceleration
- Flexible mounting thanks to fastening tabs or fastening grooves
- Various connection possibilities available

### Order code with encoder

**D8.4D1 . XXXX . XX XX . XXXX**  
Type                      a                      b                      c                      d                      e

#### a Measuring range

0800 = 8 000 mm	3000 = 30 000 mm
1000 = 10 000 mm	3500 = 35 000 mm
1200 = 12 000 mm	4250 = 40 000 mm
1500 = 15 000 mm	4000 = 42 500 mm
2000 = 20 000 mm	other measuring ranges
2500 = 25 000 mm	on request

#### b Encoder used

00 = Sendix incremental 5000
63 = Sendix absolute 5863
68 = Sendix absolute 5868

#### c Output circuit

depends on the encoder used

#### e Resolution / Protocol / Options

depends on the encoder used

#### d Type of connection

depends on the encoder used

#### Standard resolutions for draw wire with incremental encoder Sendix 5000, drum circumference 333.33 mm (357.14 mm for the 8 000 mm measuring range)

Pulses / revolution	500	2000
Pulses / mm	1.5 (1.4)	6 (5.6)
Resolution (mm)	~ 0.66 (0.71)	~ 0.17 (0.18)

#### Standard resolutions for draw wire with absolute encoder Sendix 5863 or 5868, drum circumference 333.33 mm (357.14 mm for the 8 000 mm measuring range)

Absolute encoder	5863	5868
Pulses / revolution	2048 / 11 bit	4096, programmable via the bus / 12 bit
Pulses / mm	6.14 (5.73)	12.28 (11.47)
Resolution (mm)	~ 0.16 (0.17)	~ 0.08 (0.09)

#### Recommended standard device:

##### D8.4D1.XXXX.0054.2000

Draw wire with mounted encoder Sendix 5000 incremental (8.5000.8354.2000)

- Push-pull with inverted signals
- Supply voltage 10...30 V DC
- M12 connector, 8-pin, radial
- 2000 pulses per revolution

##### D8.4D1.XXXX.6324.G123

Draw wire with mounted encoder Sendix 5863 (8.5863.1224.G123)

- SSI Interface
- Supply voltage 10...30 V DC
- SSI Gray Code
- M23 connector, 12-pin, radial
- Resolution 2048 PPR
- SET button and status LED

##### D8.4D1.XXXX.6822.2113

Draw wire with mounted encoder Sendix 5868 (8.5868.1222.2113)

- CANopen Interface
- Supply voltage 10...30 V DC
- M12 connector
- CANopen Encoder profile V3.2
- SET button

##### D8.4D1.XXXX.6832.3113

Draw wire with mounted encoder Sendix 5868 (8.5868.1232.3113)

- Profibus Interface
- Supply voltage 10...30 V DC
- M12 connector
- Profibus Encoder profile Class2
- SET button

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

**Draw wire encoder D135**

**Measuring length max. 42,5 m**

**Order code**

**with analogue sensor**

**D8.3D1 . XXXX . XXX X . 0000**

Type

**a**

**b**

**c**

**a Measuring range**

0800 = 8 000 mm  
 1000 = 10 000 mm  
 1500 = 15 000 mm  
 2000 = 20 000 mm  
 2500 = 25 000 mm  
 3000 = 30 000 mm  
 3500 = 35 000 mm  
 4000 = 40 000 mm  
 other measuring ranges on request

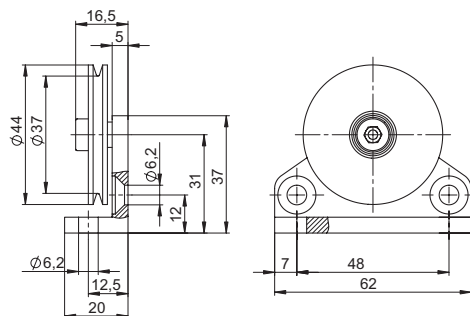
**b Analogue sensor output / Supply voltage**

A11 = 4 ... 20 mA / 12 ... 30 V DC  
 A22 = 0 ... 10 V / 12 ... 30 V DC  
 A33 = Potentiometer 1 kOhm / max. 30 V DC

**c Type of connection**

1 = cable axial (2 m PVC cable)  
 3 = M12 connector, 4-pin

**Guide pulley for draw-wire encoder**



- Order code for the set:
- Guide pulley (anodised aluminium)
  - 2x countersunk screws for lateral fixing
  - 2x hexagonal screws for fixing on a flat surface

**8.0000.7000.0045**

**Mechanical characteristics (draw wire mechanics)**

Measuring range	8000 mm	10000/15000 mm	20000 mm	25000/30000 mm	35000/40000/42500 mm
Extension force	$F_{min}$	7.2 N	8.7 N	7.0 N	7.0 N
	$F_{max}$	16.0 N	16.9 N	12.4 N	15.7 N
Max. speed	10 m/s	6 m/s	5 m/s	5 m/s	5 m/s
Max. acceleration	140 m/s <sup>2</sup>	80 m/s <sup>2</sup>	60 m/s <sup>2</sup>	60 m/s <sup>2</sup>	60 m/s <sup>2</sup>
Linearity	analogue output	0.1 % (of the measuring range)			
	encoder	0.05 % (of the measuring range)			
Weight	(depending on the measuring and the sensor/encoder used)				
Materials	housing	titanium-anodised aluminium			
	wire	stainless steel $\varnothing$ 0.5 mm			
Protection (sensor)	IP65 (IP67 on request for encoders)				

**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

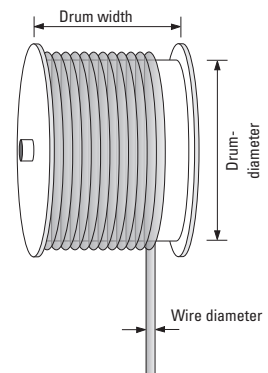
**Operating principle**

**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.



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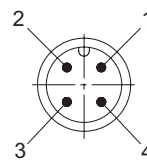
## Draw wire mechanics with encoder or analogue sensor | Draw wire encoder D135 | Measuring length max. 42,5 m

Electrical characteristics (analogue output)			
Analogue output	0 ... 10 V	4 ... 20 mA	Potentiometer
Output	0 ... 10 V galvanically isolated, 4 conductors	4 ... 20 mA 2 conductors	1 kOhm
Supply voltage	12 ... 30 V DC	12 ... 30 V DC	max. 30 V DC
Recommended slider current	–	–	< 1 µA
Max. current consumption	22.5 mA (no load)	50 mA	–
Reverse polarity protection	yes	yes	–
Operating temperature	-20°C ... +60°C	-20°C ... +60°C	-20°C ... +85°C
Connection diagrams			
CE compliant acc. to	EN 61000-6-2, EN 61000-6-3		
RoHS compliant acc. to	EU guideline 2002/95/EG		

### Terminal assignment (analogue output)

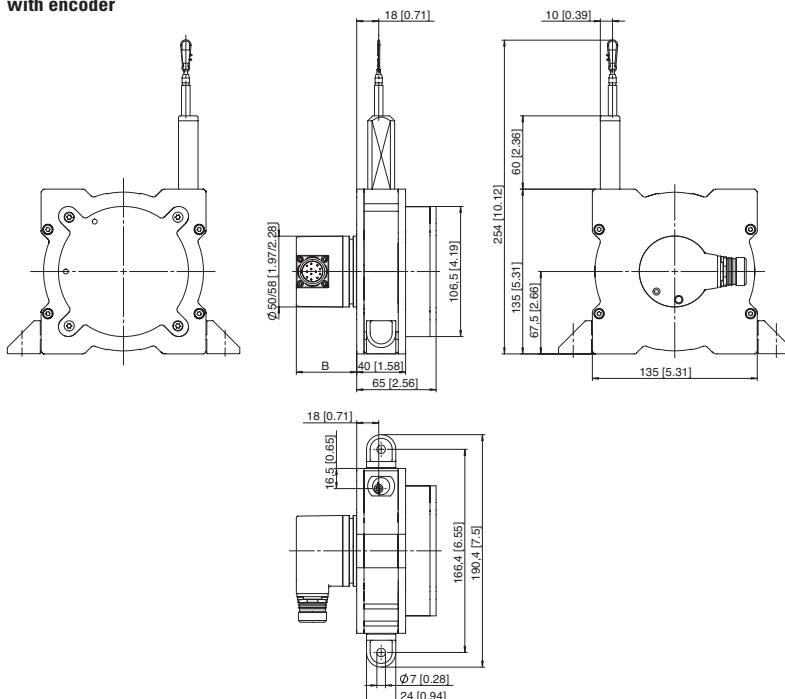
Pin	1	2	3	4
Cable colour	brown	white	blue	black
0 ... 10 V	V+	Signal	GND	GND Sig.
4 ... 20 mA	V+	n. c.	Signal	n. c.
1 kOhm	V+	Slider	GND	n. c.

### Connector (analogue output)



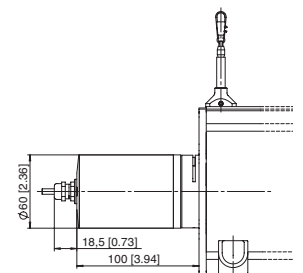
### Dimensions

Draw wire mechanics, Measuring range 8000 mm  
with encoder



Dimension B depends on the encoder used		
Encoder		B
Sendix incremental (5000)	D8.4D1.XXXX.00XX.XXXX	37.00
Sendix absolute (5863)	D8.4D1.XXXX.63XX.XXXX	49.50
Sendix absolute (5868)	D8.4D1.XXXX.68XX.XXXX	76.00

with analogue output



# Linear Measuring Technology

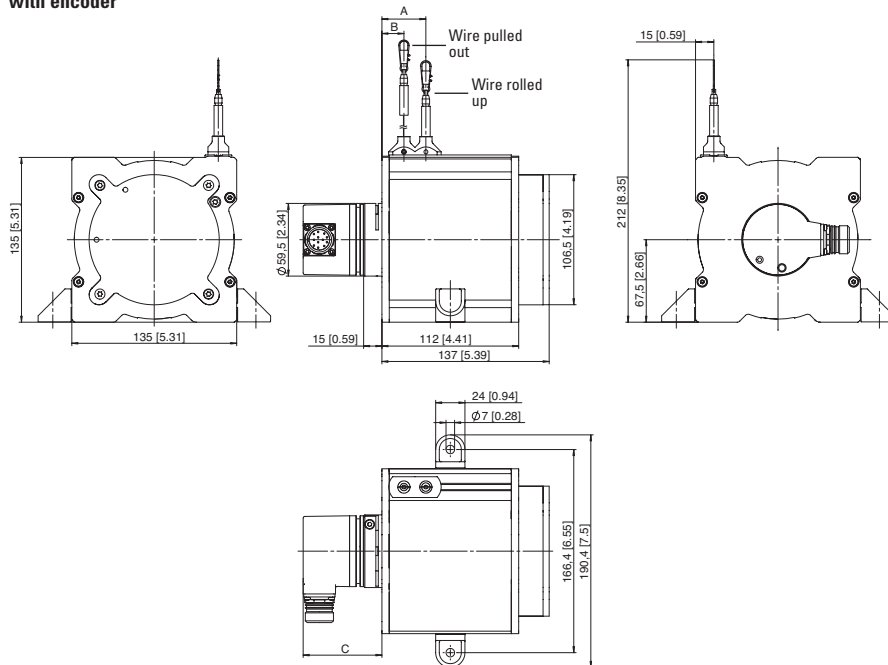
## Draw wire mechanics with encoder or analogue sensor

### Draw wire encoder D135

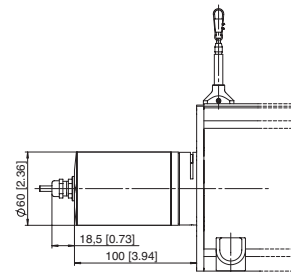
### Measuring length max. 42,5 m

#### Dimensions

Draw wire mechanics, Measuring range 10000 - 12000 mm  
with encoder

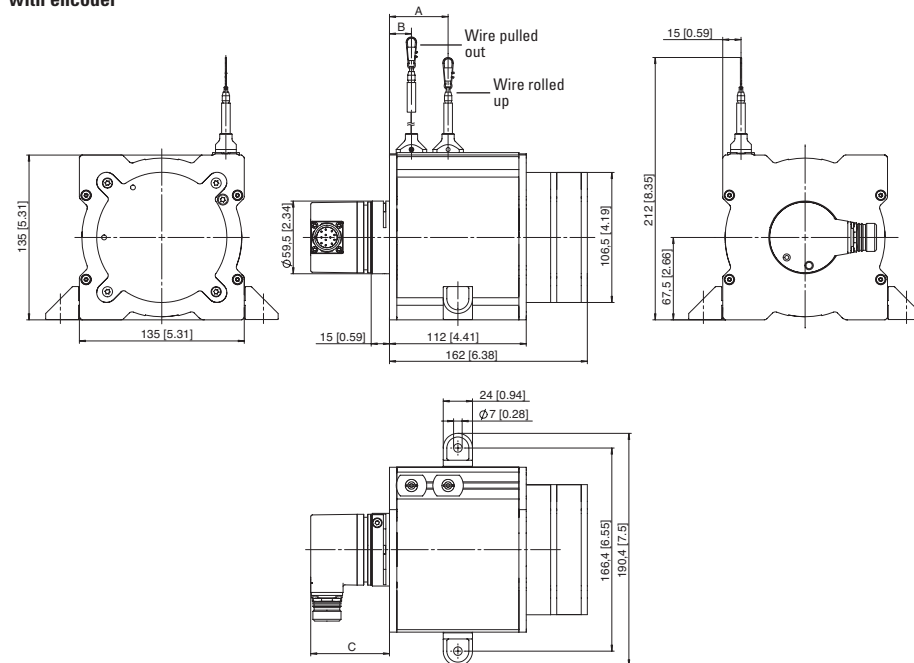


with analogue output

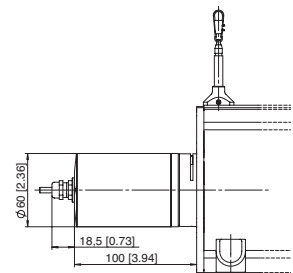


Draw wire mechanics, Measuring range 15000 - 20000 mm

with encoder



with analogue output



Dimension C depends on the encoder used	
Encoder	C
Sendix incremental (5000) D8.4D1.XXXX.00XX.XXXX	37.00
Sendix absolute (5863) D8.4D1.XXXX.63XX.XXXX	49.50
Sendix absolute (5868) D8.4D1.XXXX.68XX.XXXX	76.00

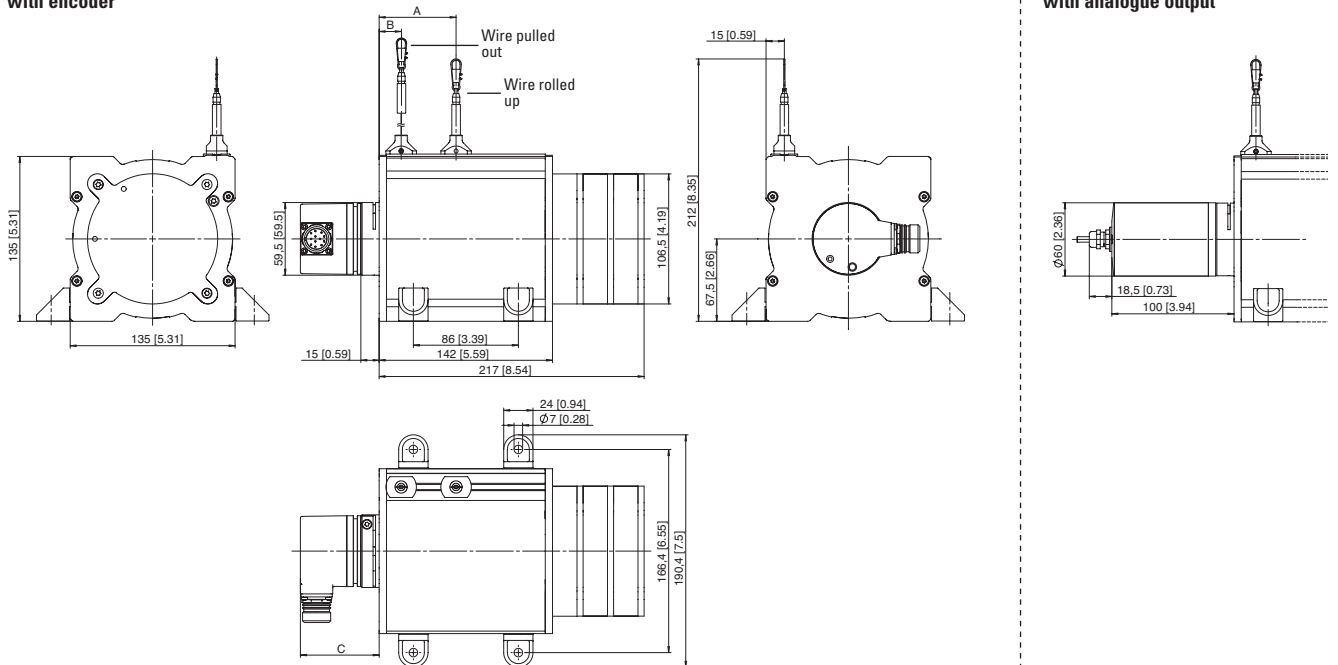
Measuring range	A - Wire rolled up	B - Wire pulled out
10 m	33 mm	18 mm
12 m	36 mm	18 mm
15 m	41 mm	18 mm
20 m	48 mm	18 mm

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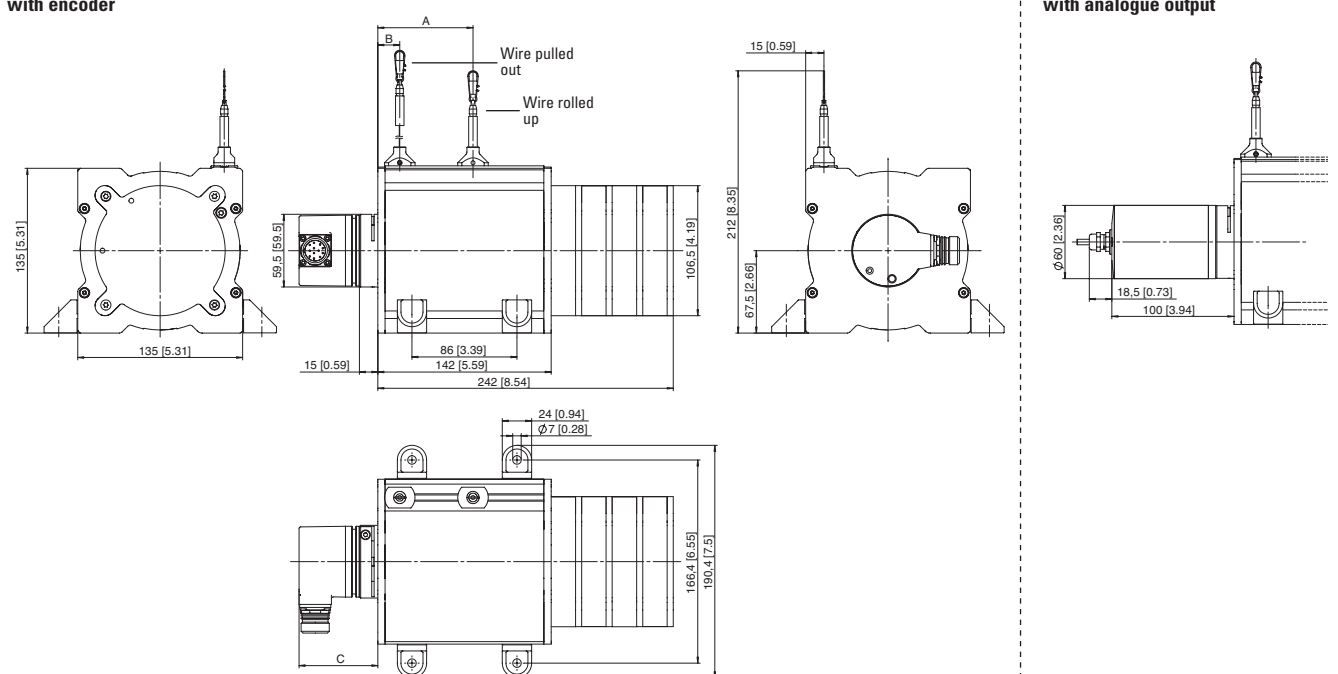
### Dimensions

Draw wire mechanics, Measuring range 25000 - 30000 mm  
with encoder



with analogue output

Draw wire mechanics, Measuring range 35000 - 42500 mm  
with encoder



with analogue output

Dimension C depends on the encoder used	
Encoder	C
Sendix incremental (5000) D8.4D1.XXXX.00XX.XXXX	37.00
Sendix absolute (5863) D8.4D1.XXXX.63XX.XXXX	49.50
Sendix absolute (5868) D8.4D1.XXXX.68XX.XXXX	76.00

Measuring range	A - Wire rolled up	B - Wire pulled out
25 m	56 mm	18 mm
30 m	63 mm	18 mm
35 m	71 mm	18 mm
40 m	78 mm	18 mm
42.5 m	82 mm	18 mm