

Linear measuring technology

Draw wire mechanics with redundant sensors	Draw wire encoder D125	Measuring length up to 10 m integrated inclinometer
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Thanks to its robust design and its high IP67 protection level, the draw wire encoder D125 reliably provides accurate length measurement. Its simple and optimal integration in the application is a particular highlight of this product. Many additional options, ranging from the integrated inclinometer up to the relay output, are available.

To increase plant availability, this draw wire encoder allows combining a redundant system in a very compact housing.



Analog output



 -40...+85°C Wide temperature range	 IP67 High protection level	 Shock / vibration resistant	 Redundancy
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Characteristics

- Measuring length 6 ... 10 m.
- Integrated inclinometer.
- Redundant sensors.
- Different types of sensors (analog, CANopen).
- Linearity up to $\pm 0.5\%$ of the measuring range.
- High protection level IP67 and wide temperature range from -40°C ... $+85^{\circ}\text{C}$.

Advantages

- The suitable measuring length for every application.
- Cost, space and installation work saving.
- For even higher plant availability.
- Simple selection and fast installation.
- High accuracy at economic prices.
- Reliability and long service life for outdoor applications.

Order code with analog sensor

D8 . D125 . XXXX . XXX1 . X000

- | | | |
|--|---|--|
| a Measuring length
0600 = 6 m
0700 = 7 m
0800 = 8 m
0900 = 9 m
1000 = 10 m | b Sensor type
A11 = 4 ... 20 mA
A22 = 0 ... 10 V
A44 = 0.5 ... 4.5 V
R11 = 4 ... 20 mA, redundant
R22 = 0 ... 10 V, redundant
R44 = 0.5 ... 4.5 V, redundant | c Type of connection
1 = M12 male connector, 5-pin

d Power supply
1 = 9 ... 30 V DC
2 = 5 V DC ¹⁾ |
|--|---|--|

Order code with CANopen and inclinometer

D8 . D125 . XXXX . RC11 . 1X00

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|--|---|--|---|
| a Measuring length
0600 = 6 m
0700 = 7 m
0800 = 8 m
0900 = 9 m
1000 = 10 m | b Sensor type
RC1 = CANopen redundant | c Type of connection
1 = M12 male connector, 5-pin

d Power supply
1 = 9 ... 30 V DC | e Inclinometers
0 = none
1 = 1 inclinometer
2 = 2 inclinometers

<i>Stock types</i>
D8.D125.1000.RC11.1000 |
|--|---|--|---|

1) Only in conjunction with type of sensor A44 and R44.

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Connection technology for analog sensor	Order no.
Cordset, pre-assembled	M12 female connector with coupling nut, 5-pin 2 m [6.56'] PVC cable
Connector, self-assembly (straight)	M12 female connector with coupling nut, housing metal, 5-pin M12 female connector with coupling nut, housing metal/plastic, 5-pin
Connector, self-assembly (right-angle)	M12 female connector with coupling nut, housing plastic, 5-pin

Additional connectors can be found in the connection technology section or in the connection technology area of our website at: www.kuebler.com/connection_technology.

Technical data

Mechanical characteristics (draw wire mechanics)

Measuring range	6.0 ... 10.0 m
Measuring wire	material AISI304 steel wire Nylon coated diameter \varnothing 0.9 mm
Wire fastening	eyelet internal diameter \varnothing 8 mm outer diameter \varnothing 15 mm height 2 mm
Wire pull-out speed max.	max. 1 m/s
Acceleration	max. 10 m/s ²
Linearity (whole measuring range)	analog \pm 0.8 % CANopen \pm 0.5 %
Repetition accuracy (whole measuring range)	analog \pm 0.1 % CANopen \pm 0.2 %
Pull-back force	typ. 4.5 N ¹⁾
Pull-out force	typ. 9 N
Type of connection	M12 connector, 5-pin
Housing	polycarbonate reinforced with glass fibers
Protection	IP67
Temperature range	-40°C ... +85°C [-40°F ... +185°F]
Weight	approx. 0.97 kg [34.2 oz]

Analog sensor

Output signal	analog
Resolution	12 bit

CANopen

Output signal	CANopen (DS301)
Resolution	14 bit
Resolution inclinometer	0.1°
Accuracy inclinometer	\pm 0.6°
Temperature drift inclinometer	\pm 0,01 % / °C

Electrical characteristics

Power supply	9 ... 30 V DC 5 V DC \pm 10 % ²⁾
Electromagnetic compatibility	EN 61326-1, EN 61326-3-1
CE compliant	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

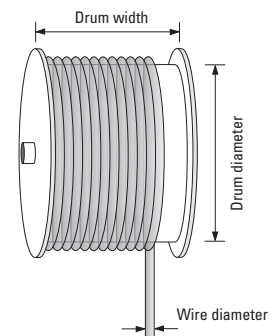
Operating principle

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.



1) May be lower at low temperatures.
2) Only in conjunction with type of sensor A44 and R44.

Linear measuring technology

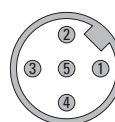
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Terminal assignment

Sensor type	Interface	Type of connection	M12 connector, 5-pin					
A11, R11 (analog sensor)	current output	1	Signal:	+V	0 V	Iout 1	Iout 2 ¹⁾	n.c.
			Pin:	1	2	3	4	5
Sensor type	Interface	Type of connection	M12 connector, 5-pin					
A22, R22, A44, R44 (analog sensor)	voltage output	1	Signal:	+V	0 V	Uout 1	Uout 2 ¹⁾	n.c.
			Pin:	1	2	3	4	5
Sensor type	Interface	Type of connection	M12 connector, 5-pin					
RC1	CANopen	1	Signal:	+V	0 V	CAN-GND	CAN-H	CAN-L
			Pin:	2	3	1	4	5

- +V : Power supply +V DC
- 0 V : Power supply GND (0V)
- Iout 1 : Current output 1
- Iout 2 : Current output 2
- Uout 1 : Voltage output 1
- Uout 2 : Voltage output 2
- n.c. : not connected

Top view of mating side, male contact base



M12 connector, 5-pin

Technology in detail

Inclinometer with option RC1

Setting possibility 360°



Setting possibility ±180°



Redundant signals possible.

Setting possibilities:

- Switching between setting possibilities 180° and 360°.
- Switching between synchronous and asynchronous output.
- Change of direction of rotation (cw/ccw).
- Setting and resetting an offset.

1) Only in case of redundant ordering option sensor type R44 (otherwise n.c.).

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with redundant sensors**

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integrated inclinometer**

Dimensions

Dimensions in mm [inch]

