

### Mini draw wire encoder, incremental



#### Introduction

Measuring length and position is one of the routine tasks in the manufacture of machinery and plant. Draw wire encoders offer proven cost-effective solutions in such applications. Linear motion is converted to rotary motion using a wire that is drawn out or in from the draw wire mechanism. This rotation is converted into corresponding electrical signals by an encoder or potentiometer connected to the mechanism.

The electrical signals can then be processed by remote displays, counters or controllers. The Kübler also provides an extensive range of displays, counters and controllers..

- Compact
- Measuring length up to 2000 mm
- Robust construction

#### Mechanical characteristics of the draw-wire encoders:

Measuring range:	up to 2000 mm
Absolute accuracy:	±0.1 % for the whole measuring range
Repetition accuracy	±0.15 mm per direction of travel
Resolution (incremental):	0.1 mm (standard encoder) with 1000 ppr.
Traversing speed:	max. 800 mm/s
Required force:	approx. 10 N (on wire)
Material:	Housing: reinforced plastic Wire: stainless steel ø 0.45 mm, plastic coated
Weight:	approx. 0.210 kg

#### Description of the incremental encoder (connected on load side)

- Compensation for temperature and ageing
- Short-circuit protected outputs
- Reverse polarity protected power-supply input
- Push-pull output

#### Mechanical characteristics:

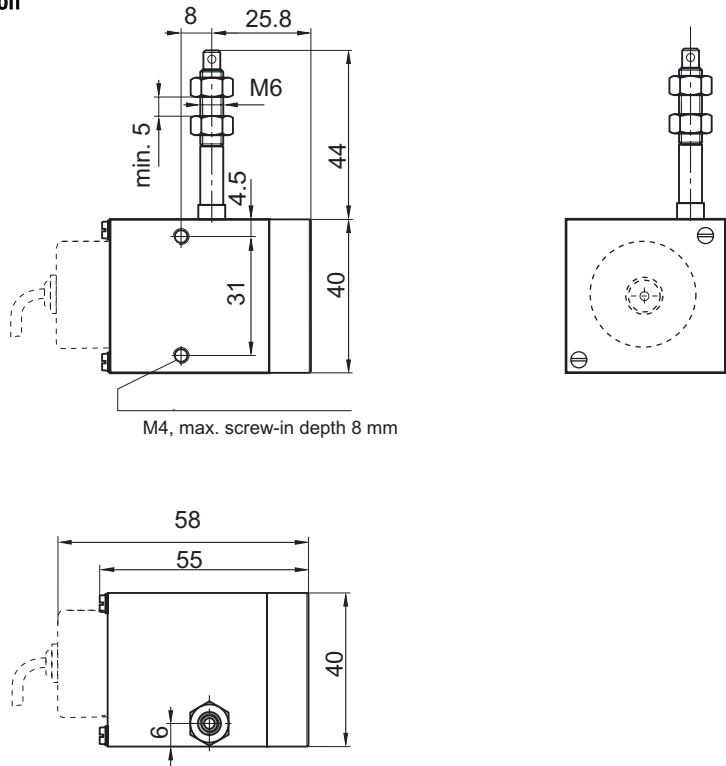
Protection acc. to EN 60529:	IP 64 from housing side
Working temperature:	-20° C ... +85 °C
Operating temperature:	-20° C ... +90 °C
Shock resistance acc. to DIN-IEC 68-2-27:	1000 m/s <sup>2</sup> , 6 ms
Vibration resistance acc. to DIN-IEC 68-2-27:	100 m/s <sup>2</sup> , 55 ... 2000 Hz

#### Electrical characteristics:

Output circuits:	Push-pull	Push-pull
Supply voltage:	5 ... 24 V DC	8 ... 30 V DC
Current consumption (without load):	max. 50 mA	max. 50 mA
Permitted load per channel:	max. 50 mA	max. 50 mA
Pulse rate:	max. 160 kHz	max. 160 kHz
Switching level high:	min. $U_B - 2.5 V$	min. $U_B - 3 V$
Switching level low:	max. 0.5 V	max. 2.5 V
Rise time $t_r$ :	max. 1 µs	max. 1 µs
Fall time $t_f$ :	max. 1 µs	max. 1 µs
Short-circuit protected outputs:	yes	yes
Conforms to CE requirements acc. to EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3		

### Mini draw wire encoder incremental

#### Dimension



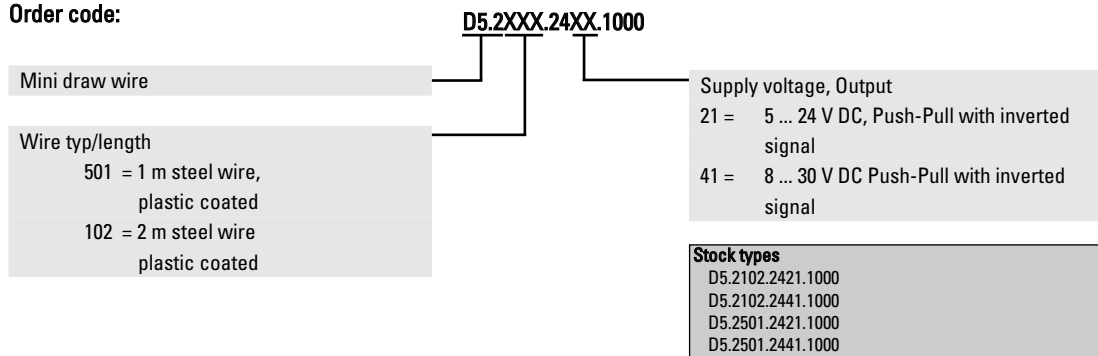
M4, max. screw-in depth 8 mm

#### Terminal assignment of the encoder:

Signal:	0V	+U <sub>B</sub>	A	$\bar{A}$
Cable colour:	WH	BN	GN	YE
Signal:	B	$\bar{B}$	0	$\bar{0}$
Cable colour:	GY	PK	BU	RD

Isolate unused outputs before start-up.

#### Order code:



### Mini draw wire encoder, analogue output



- Compact
- Measuring length up to 2000 mm
- Robust construction
- Simple processing of analogue signal by means of a digital panel meter
- Low-cost alternative to encoder version
- Voltage or current output

#### Mechanical characteristics of the draw-wire encoder:

Measuring range:	up to 2000 mm		
Absolute accuracy:	±0.35 % for the whole measuring range		
Repetition accuracy:	±0.15 mm per direction of travel		
Resolution:	analogue output signal		
	1 m ⇒ 0 ... 10 V DC	2 m ⇒ 0 ... 10 V DC	
	1 m ⇒ 4 ... 20 mA	2 m ⇒ 4 ... 20 mA	
	1 m ⇒ 0 ... 10 kΩ	2 m ⇒ 0 ... 10 kΩ	
Traversing speed:	max. 800 mm/s		
Required force:	approx. 10 N (on wire)		
Material:	Housing: reinforced plastic		
	Wire: stainless steel ø 0.45 mm, plastic coated		
Weight:	approx. 0.210 kg		

#### Electrical characteristics:

Analogue output:	0 ... 10 V	4 ... 20 mA	Potentiometer 10 kΩ
Supply voltage:	15 ... 28 V DC	15 ... 28 V DC	–
Temperature range:	0 ... 50 °C	0 ... 50 °C	0 ... 50 °C
Load:	max 500 Ω	max 500 Ω	–
Conforms to CE requirements acc. to EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3			

#### Cable colour output 0 .. 10 V

Signal:	+ 24 V	GND	Uout
Colour:	BN	WH	GN

#### Cable colour output: 4 ... 20 mA

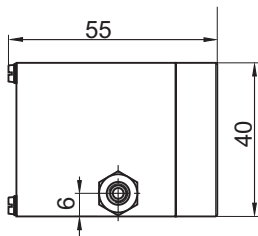
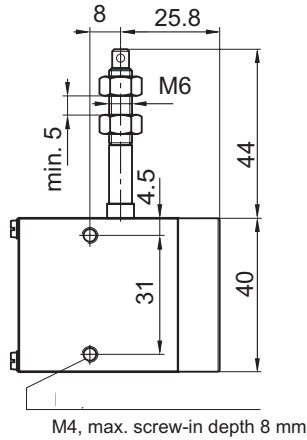
Signal:	+I	-I
Colour:	BN	WH

#### Cable colour output: Potentiometer

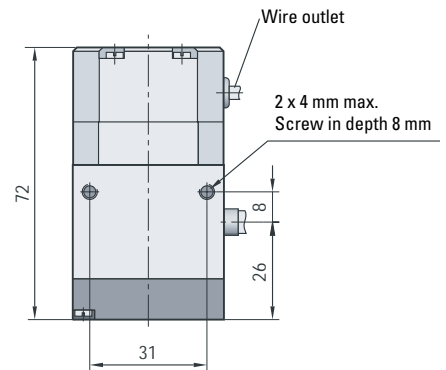
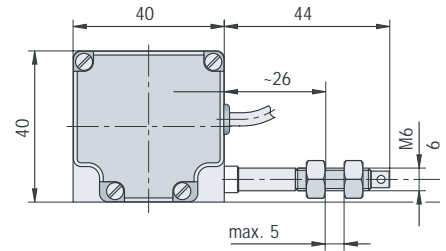
Sign	Po	Pe	S
Colour:	BN	WH	GN
	start	end	Wiper contact

### Mini draw wire encoder, analogue output

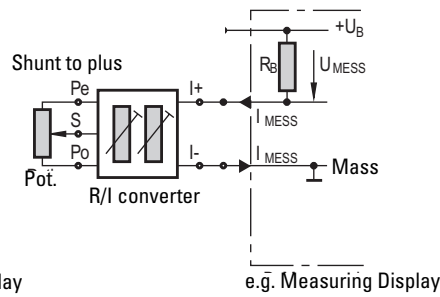
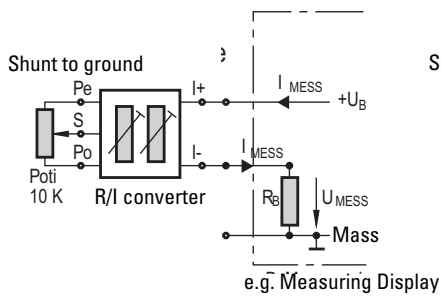
Dimensions:  
length = 1 m



Dimensions:  
length = 2 m



### Electrical connections (4 ... 20 mA):



### Order code:

**D5.350X.AXX1**

Mini draw wire

Wire typ/length

- 3501 = 1 m steel wire,  
plastic coated
- 3502 = 2 m steel wire,  
plastic coated

Supply voltage, Output

- 11 = Analogue output 4 ... 20 mA  
Supply voltage 15 ... 28 V DC
- 22 = Analogue output 0 ... 10 V DC  
Supply voltage 15 ... 28 V DC
- 33 = Potentiometer output 10 kΩ

### Stock types

- D5.3501.A111.0000
- D5.3501.A221.0000
- D5.3501.A331.0000