CD120 – DRAW-WIRE SENSOR
INCREMENTAL OUTPUT
MEASUREMENT STROKE UP TO 3 500 mm

TECHNICAL DATA

Measurement stroke	Up to 3 500 mm
Maximum velocity	2 m/s (1)
Maximum acceleration	4 m/s² (1)
Minimum retraction force	Approx. 13.0 N
Maximum retraction force	Approx. 18.0 N
Protection class	Housing: IP54 Encoder: IP65 (IP67 optional)
Measuring wire diameter	0.60 mm
Materials	RoHS aluminum (main housing and encoder) PA6.6 polyamide with 40 % glass microbeads (spring housing) 316L stainless steel (measuring wire)
Operating temperature	Min: -20 °C / Max: +80 °C (1)
Storage temperature	Min: -30 °C / Max: +85 °C (1)
Weight	Approx. 1.8 kg

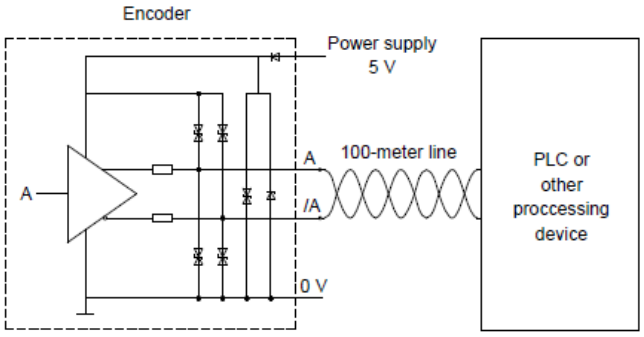
(1) *Recommended values to prevent premature wear of the sensor.*

ELECTRICAL DATA

Power supply	5 V DC Power consumption without load: 50 mA	8-30 V DC Power consumption without load: 55 mA at 8 V DC 50 mA at 12 V DC 30 mA at 24 V DC 25 mA at 30 V DC
Sensing element	Optical incremental encoder CIO58P	
Resolution	From 1 up to 100 pulses/mm (ppmm)	
Linearity	Up to ± 0.01 % FS	
Output stage	Push-Pull, RS422 compatible	
Connection types	M23 male connector, 12 pins (CW) M16 male connector, 8 pins (DIN) M12 male connector, 8 pins (A coding) Shielded PVC cable, 8 x 0.14 mm² (LIYCY)	
Protection against power surges, reverse polarity and overcurrent		

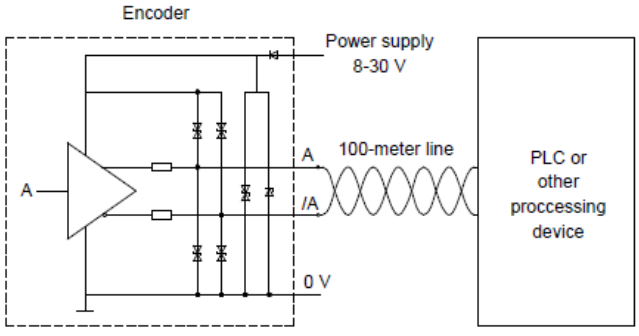
Connection diagrams / Power supply

Push-Pull, RS422 compatible
Power supply: 5 V DC



Same principle applies to channels B, /B, Z, /Z

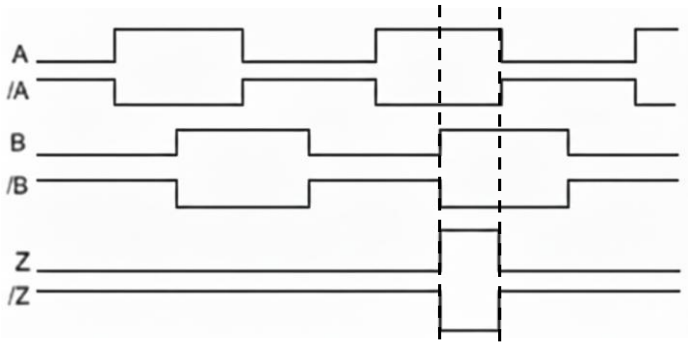
Push-Pull, RS422 compatible
Power supply: 8-30 V DC



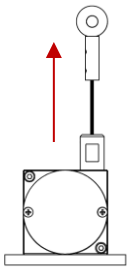
Same principle applies to channels B, /B, Z, /Z

Output signals / Channel settings (Standard)

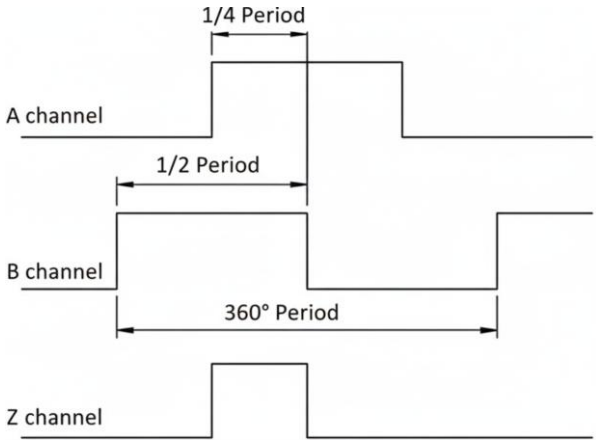
✓ Channels A ; /A ; B ; /B ; Z ; /Z.
✓ Z is calibrated on channels A and B.



A channel rises before B channel when the wire unwinds.



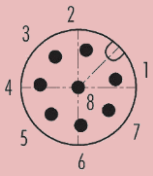
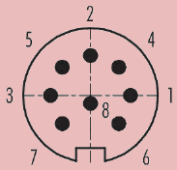
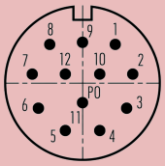
Signal tolerance



Period: 360° (electrical).
Duty cycle: 180° (electrical) ± 10 %.
Phase shift: 90° (electrical) ± 20 %.
Starting time < 100 ms.

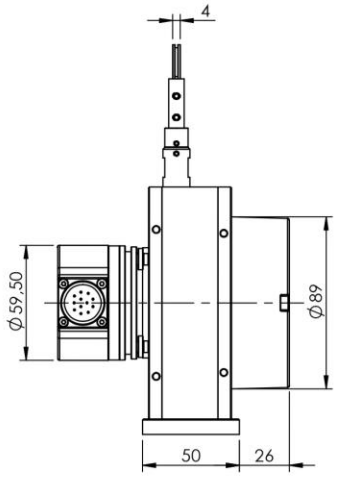
WIRING AND PINOUT

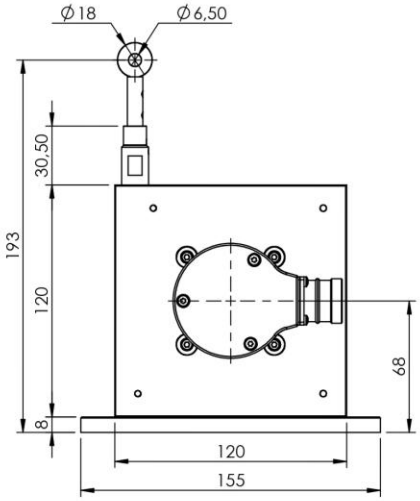
Standard pin / electrical wire assignment (type 1)

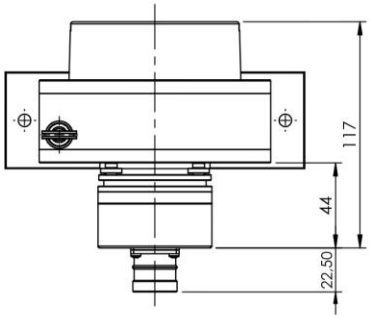
M12 connector, 8 pins	**M16 connector, 8 pins**	**M23 connector, 12 pins**	**PVC cable** 8 wires
 View of the mating side	 View of the mating side	 View of the mating side	
Pin 1: GND Pin 2: +V_{CC} Pin 3: A Pin 4: B Pin 5: Z Pin 6: /A Pin 7: /B Pin 8: /Z	Pin 1: GND Pin 2: +V_{CC} Pin 3: A Pin 4: B Pin 5: Z Pin 6: /A Pin 7: /B Pin 8: /Z	Pin 1: GND Pin 2: +V_{CC} Pin 3: A Pin 4: B Pin 5: Z Pin 6: /A Pin 7: /B Pin 8: /Z *Pins 9 to 12: n.c*	White: GND Brown: +V_{CC} Green: A Yellow: B Grey: Z Pink: /A Blue: /B Red: /Z

Note: wire colors according to DIN 47100.

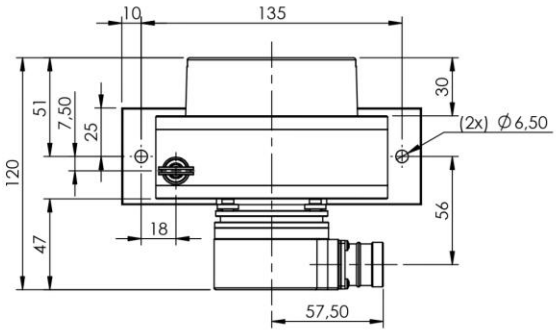
DIMENSIONAL DRAWINGS



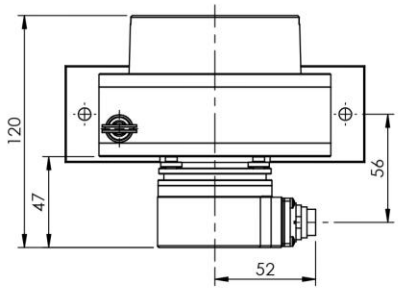




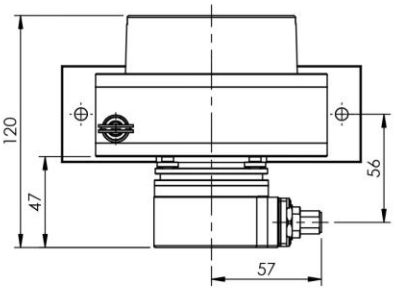
M23 connector, 12 pins
Axial position



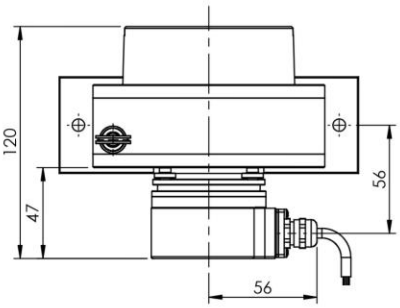
M23 connector, 12 pins
Radial position



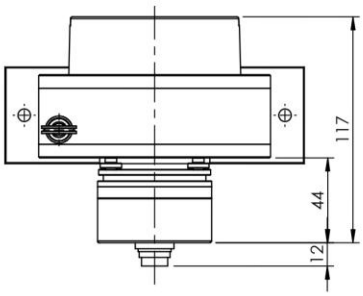
M16 connector, 8 pins
Radial position



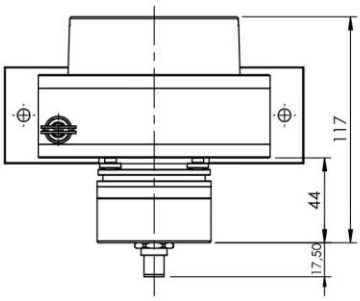
M12 connector, 8 pins
Radial position



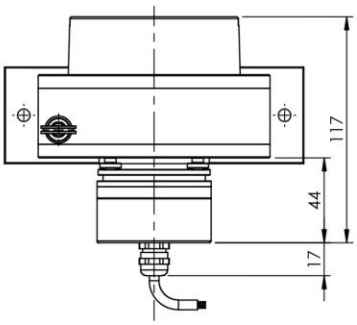
PVC cable
Radial position



M16 connector, 8 pins
Axial position



M12 connector, 8 pins
Axial position

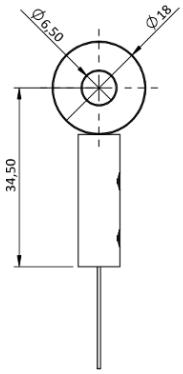


PVC cable
Axial position

OPTIONS

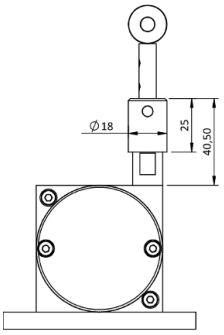
Measuring wire attachment with a lug

The lug is fastened with an M6 screw or a clevis.



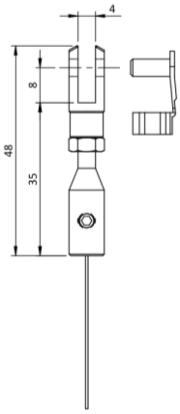
Measuring wire cleaning brush

The brush is used to remove dust from the measuring wire.



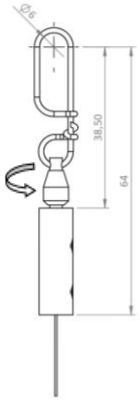
Measuring wire attachment with a clevis

The clevis is secured using a supplied pin.



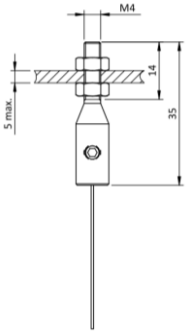
Measuring wire attachment with a clip

This type of attachment allows the hook to rotate around its axis.



Measuring wire attachment with a M4 threaded rod

The threaded rod is fastened with 2 supplied nuts.
The mounting plate must not be thicker than 5 mm.

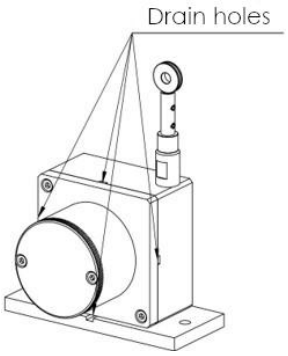


Caution

Please never screw the threaded rod Into an already locked nut! Twisting the measuring wire would damage it.

Drain holes

The holes allow the liquid to escape so that it doesn't accumulate into the sensor.



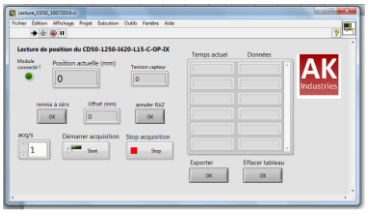
ACCESSORIES

➲***Mating female connectors***

	M23	M16, angled	M16, straight	M12, angled	M12, straight
	12 contacts	8 contacts (DIN)		8 contacts (A-coding)	
Protection class	IP67				
Operating temperature	-20 °C to +125 °C	-25 °C to +90 °C			
Connecting method	To be soldered	To be soldered		With a screw clamp	
Cable diameter	∅ 6 to 10 mm	Ø 4 to Ø 6 mm			
Conductor cross-section	Max 1 mm²	0.14 to 0.34 mm²			
	Good resistance to oil and chemicals				
					

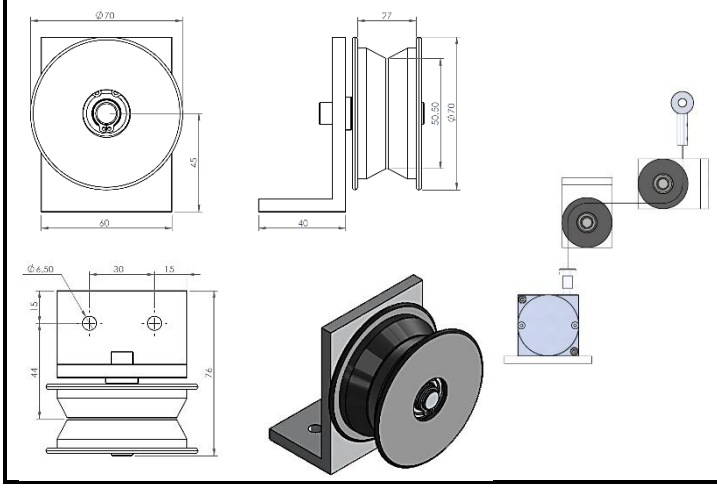
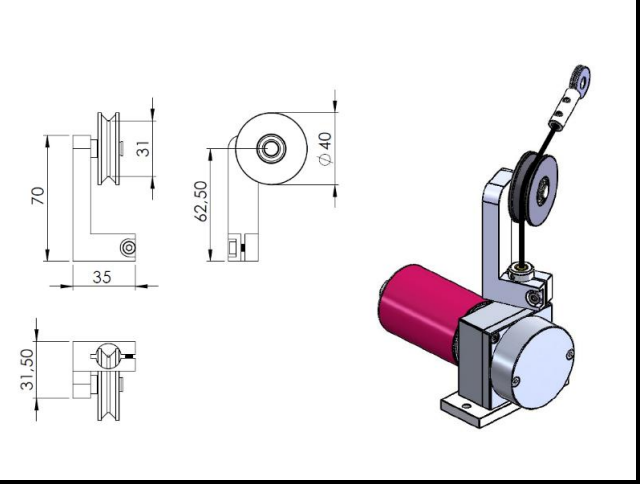
💡 ***Available pre-wired with custom cable lengths.***

➲ ***Acquisition and processing of measurement data: interface unit***

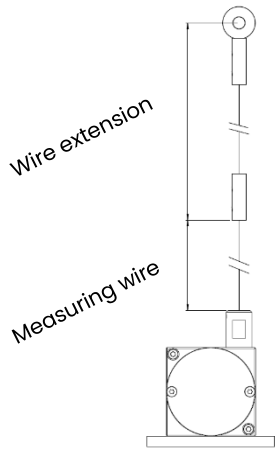
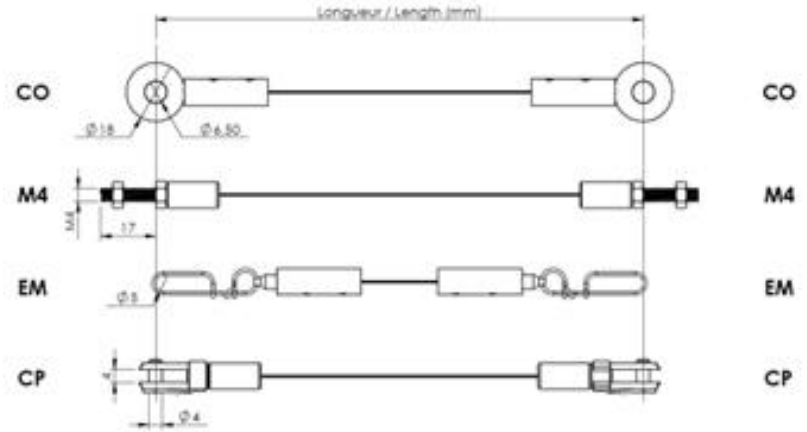


The interface unit connects the draw-wire sensor to a PC, allowing measurement data to be processed directly in spreadsheet.
See details about interface unit

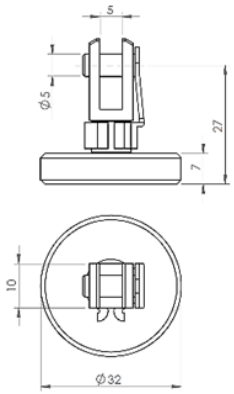
➲***Deflection pulley***

Separated deflection pulley	Integrated deflection pulley
Deflection pulleys are required the measuring wire path is not a straight line.	
	

➲***Measuring wire extension***

Integrated wire extension	Separated wire extension
The measuring wire extension provides a mechanical offset, enabling the measurement starting point to be relocated as required.	
	**Attachment on side A** **Attachment on side B** 

➲***Fixing magnet***



The neodymium mounting magnet allows quick attachment of the measuring wire's end on the displacing element.

ORDER CODE

Example: **CD120 - 3500 - 010 - PPCAO - L05 - AR1 - OP - AC - ...**

Model
CD120

Measurement stroke
3500 = 3 500 mm

Resolution
001 = 1 ppmm
100 = 100 ppmm
Any resolutions between 1 et 100 ppmm

Output stage
PP = Push-Pull, RS422 compatible

Power supply
A = 5 V DC
C = 8-30 V DC

Channel settings
A = A ; /A ; B ; /B ; Z ; /Z
Z is calibrated on channels A and B.
A channel rises before B channel.
Other settings on request.

Technology
O = Optical

Linearity
L05 = ± 0.05 % F.S (standard)
L01 = ± 0.01 % F.S (optional)

Electrical connection
A = M23 male connector, 12 pins (CW)
D = M16 male connector, 8 pins (DIN)
F = M12 male connector, 8 pins (A-coding)
G = Shielded PVC cable – 8 x 0.14 mm² (LIYCY)
Other electrical connections on request

Connection position
A = Axial
R = Radial (side position)

Connecting instructions
1 = standard connecting (see table on page 3)
Other connecting types on request

Customized PVC cable length when G is the connection type
/xx Example: **/03** if customized length = 3 meters

Options
AC = Fully anodized sensor
BR = Measuring wire cleaning brush
CP = Measuring wire attachment with a clevis
EM = Measuring wire attachment with a clip
IP67 = IP67 protection class
M4 = Measuring wire attachment with a M4 threaded rod
TEV = Drain holes