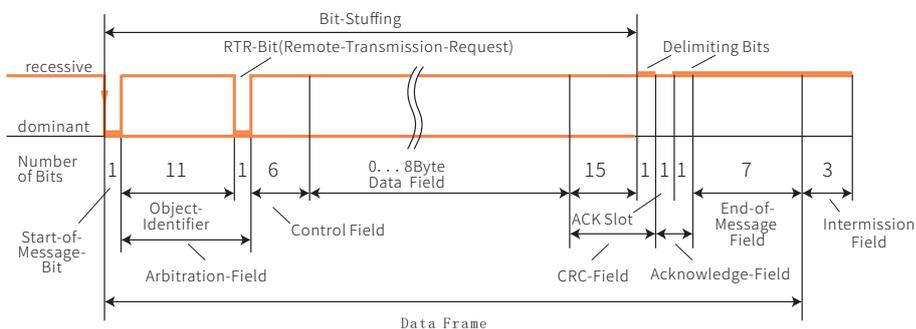




ES-CANopen

ES pressure resistant outer tube



- + Non-contact measurement, no attrition
- + High reliability, absolute output, linear measurement
- + Compact structure: placed in the hydraulic cylinder, suitable for small installation space
- + Robust and durable, fully enclosed design, highest IP68 protection level
- + Completely replaceable with potentiometers and inductive displacement sensors
- + Easy to use, standard signal output, maintenance-free



MAGNETOSTRICTIVE SENSOR

Document Number:
ES-C(V1.2)-EN

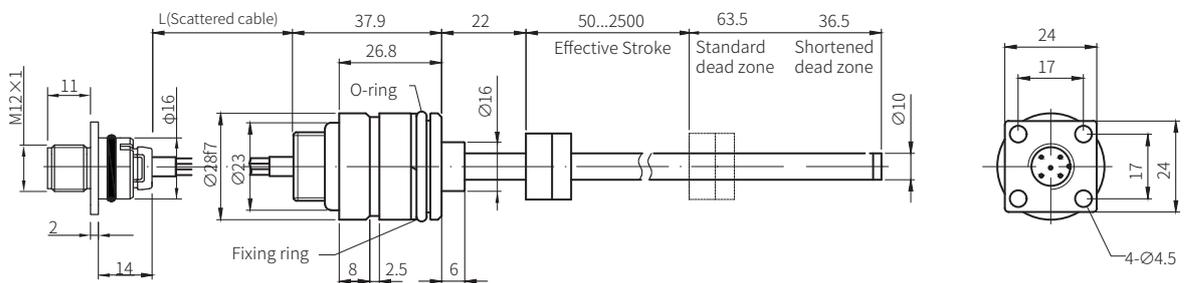
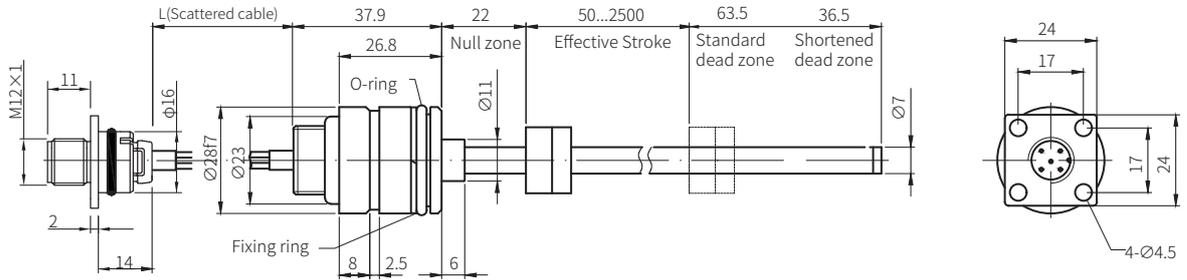


TECHNICAL PAKAMETER

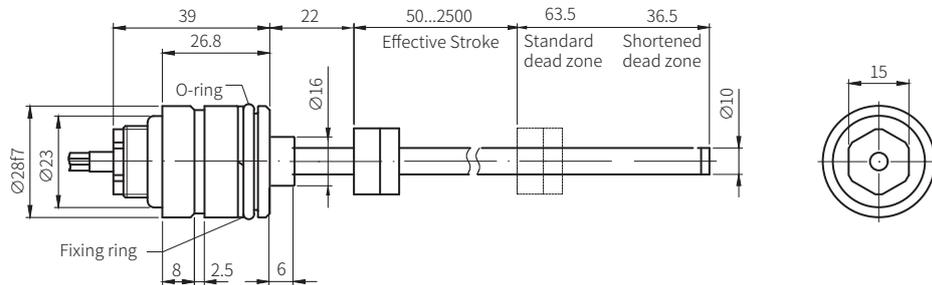
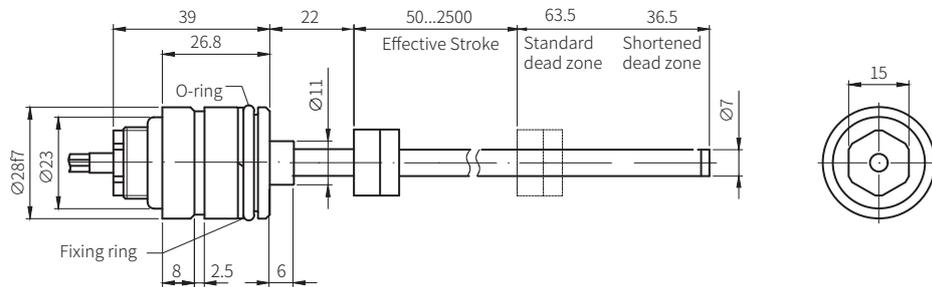
Input							
Measured data	Position/Velocity						
Measurement range	50mm...2500mm						
Output							
Communication protocols	CAN bus system protocol, ISO11898 CAN open CIA standard DS-301 V3.0 encoder profile DS-406 V3.1						
Transmission rate	10 kbps...1Mbps						
Resolution							
Resolution: position	100µm						
Resolution: velocity	1mm/s						
None-Linearity	<±0.04%F.S.(min. 0.1mm)						
Repeatability	<±0.005%F.S.						
Update time	<table border="1"> <tr> <td>Stroke length</td> <td>≤ 1200mm</td> <td>≤ 2500mm</td> </tr> <tr> <td>Update time</td> <td>0.5ms</td> <td>1ms</td> </tr> </table>	Stroke length	≤ 1200mm	≤ 2500mm	Update time	0.5ms	1ms
Stroke length	≤ 1200mm	≤ 2500mm					
Update time	0.5ms	1ms					
Temperature coefficient	<30ppm/°C						
Mounting							
Mounting position	Any						
Mounting form	Extrusion mounting						
Design/Material							
Electronics housing	Stainless steel 304						
Measuring rod	Stainless steel 304/316L						
Magnet	Standard magnet						
Electrical connection							
Wiring connection	Straight out cable, aviation plug						
Operating voltage	+24VDC(-15/+20%)						
Polarity protection	Up to -36VDC						
Overvoltage protection	Up to +36VDC						
Power consumption	<70mA (varies with range size)						
Dielectric strength	500 VDC (DC ground to machine ground)						
Operating conditions							
Loop velocity	Any						
Operating temperature	-40...105°C (customizable)						
Humidity	90 % relative humidity, no condensation						
Operating pressure	30MPa (continuous), 45MPa (peak)						
Ingress protection	IP68 (Straight out cable)						
Shock	100 g/6 ms, IEC standard 60068-2-27						
Vibration	IEC standard 60068-2-64 Φ10 rod: 20 g(root-mean-square value)10...2000 Hz (resonant frequencies excluded) Φ7 rod: 15 g(root-mean-square value)10...2000 Hz (resonant frequencies excluded)						
EMC	ISO 14982 Agricultural and forest machines ISO 16750-2 Road vehicle Immunity: ISO 11452-2(200V/m Antenna), ISO 11452-4(200mA BCI) Transiente Impulses: ISO 7637-1/2 E.S.D.: ISO/TR 10605						

TECHNICAL DRAWING

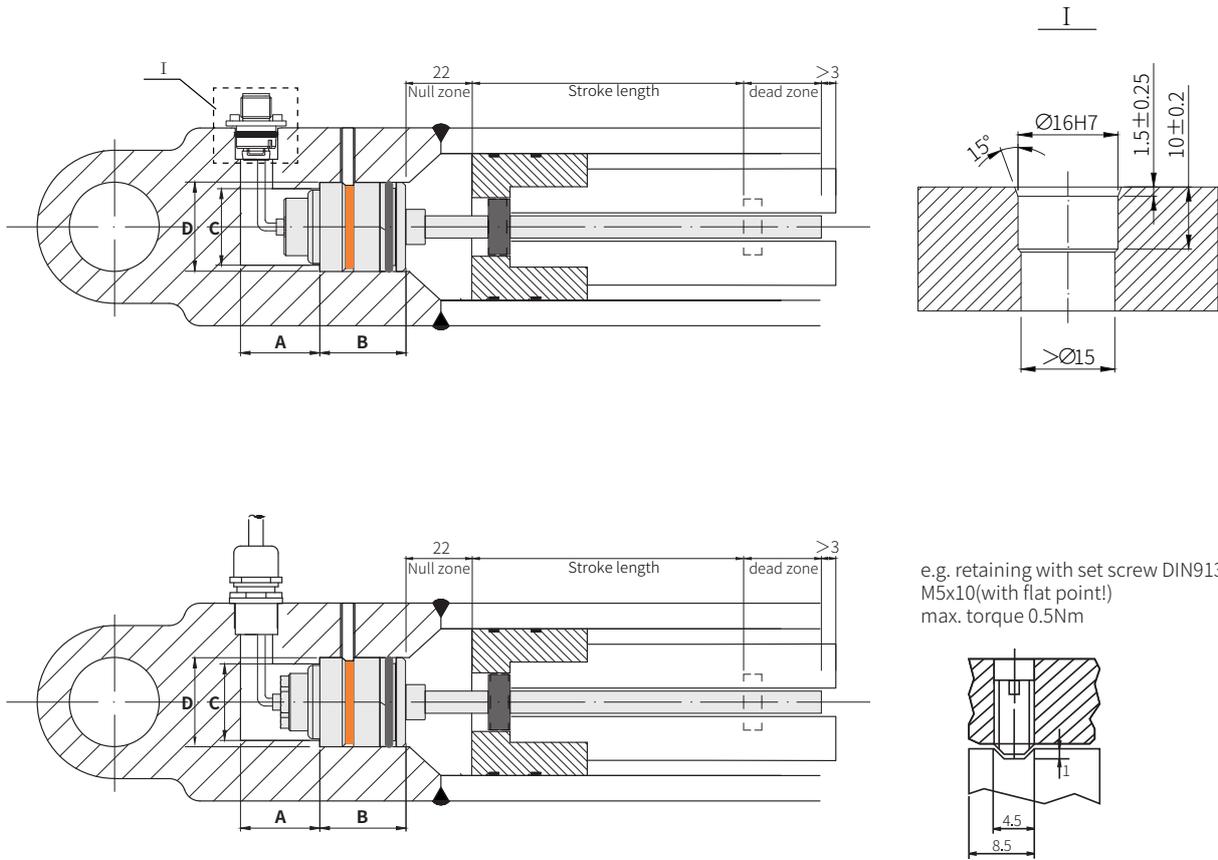
Basic type with aviation plug



Straight-out cable



MECHANICAL MOUNTING DIAGRAM



Type	A depth (mm)		B depth (mm)	C Ø (mm)	D Ø (mm)
	straight-out cable	connector			
Thimble type	≥ 25	≥ 25	$26.8^{+0.2}$	> 24	28H8

Surface Ra < 0.8mm

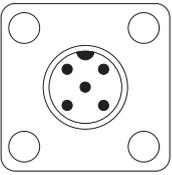
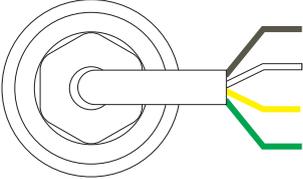
- ! + The size of hole in the piston rod depends on factors such as hydraulic pressure and piston speed. The minimum hole size is $\text{Ø}10$ ($\text{Ø}7$ measuring rods) or $\text{Ø}13.5$ ($\text{Ø}10$ measuring rods).
- + Thimble type, thimble adopts flat head wire, torque $0.5\text{N} \cdot \text{m}$.
- + The borehole depth > Stroke length + Dead zone + 3mm.

M12 connector

4 single wires, 0.5mm^2



Wiring

5 pin M12x1 male connector		PIN	Color	Function
				
				
	View on sensor	1	-	NC
		2	Brown	+24VDC (-15/+20%)
		3	White	GND
		4	Yellow	CAN H
		5	Green	CAN L

ORDER CODE

E **S** - - - - **M** - - - - - - - -

ES pressure resistance exterior rod

- D** Basic type,aviation plug
- B** Basic type,straight-out cable

Rod

- C** Rod Φ10mm (dead zone 63.5mm)
- D** Rod Φ7mm (dead zone 63.5mm)
- E** Rod Φ10mm (shortened dead zone 36.5mm)
- F** Rod Φ7mm (shortened dead zone 36.5mm)
- R** Rod Φ10mm with M4x6 thread (dead zone 63.5mm)

Stroke _ _ _ M

M=mm (5mm increments)

Connection type

Fill: [1] [2] [3] [4] [5]

[1] and [2]: Cable connection

- R** straight-out cable
- DF** 5 pin aviation plug

[3]: Cable performance

- P** high performance cable
- T** high temperature cable

[4] and [5]: Cable length

- _ _ unit: meter(R)
Fill in zero if less than 2 places
- _ _ unit: 10millimetre(DF)

Output signal mode

Fill: [1][2][3] - [4] - [5][6]

[1][2][3] Resolution ratio

C01 100µm

[4] Baud rate

- 0** 1000kBit/s
- 1** 800kBit/s
- 2** 500kBit/s
- 3** 250kBit/s
- 4** 125kBit/s
- 5** 100kBit/s
- 6** 50kBit/s
- 7** 20kBit/s
- 8** 10kBit/s

[5][6]Node-ID

- 01** Hexadecimal 01...7F
- .
- .
- .
- 7F**

Model | ESB-D-0390M-DFP10-C01-3-7F

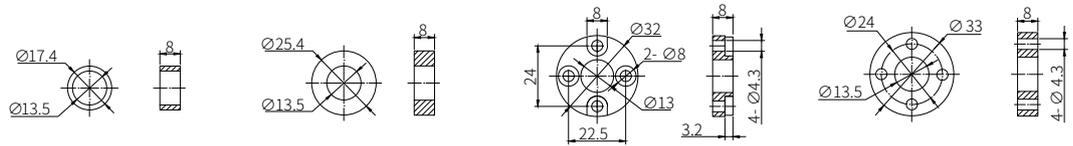
Explanation: ES series straight out cable basic type with measuring rod diameter of 7mm (dead zone 63.5mm), range 390mm, straight out 100mm high performance cable with 5 pin aviation plug, CANopen protocol, resolution 100µm, baud rate 250kBit, node ID 7F.

■ Please contact us for more customized products.



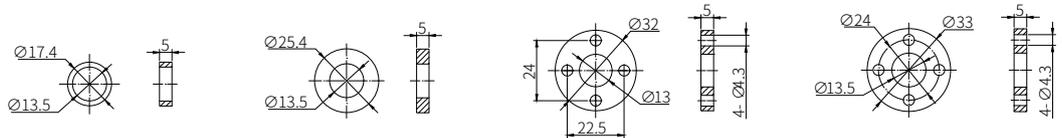
ACCESSORIES

CANopen

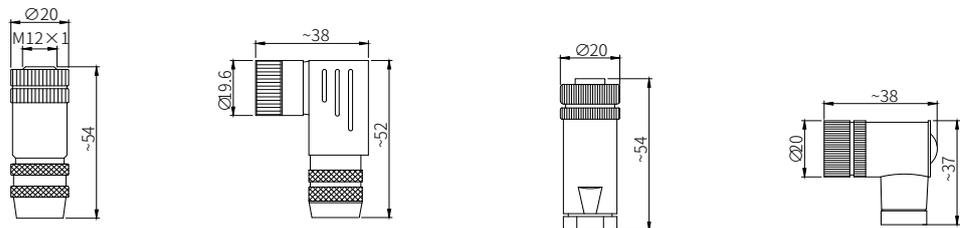


Name	Ring magnet	Ring magnet	Ring magnet	Ring magnet
Operating temperature	-40...125°C			
Order code	12-1032	12-1019	12-1024	12-1001

Fitting non-permeable gasket



Name	Non-permeable gasket	Non-permeable gasket	Non-permeable gasket	Non-permeable gasket
Operating temperature	-40...125°C			
Order code	12-1037	12-1021	12-1025	12-1008



Name	5 pin M12 female connector	5 pin female connector (90 degree angle)	5 pin M12 female connector	5 pin M12 female connector (90 degree angle)
End view drawing				
Material	Galvanized nickel		Polyamide	
Fitting diameter	6...8mm			
Connection	Threaded			
Order code	18-2008 (female)	18-2010 (female)	18-2005 (female)	18-2006 (female)



Connector	5 pin M12 female connector (90 degree angle)	5 pin female connector (90 degree angle)
Name	Integral cable	Integral cable
Cable	2×2× 0.25mm ²	2×2× 0.25mm ²
Color/Diameter	Gray/ Ø 6	Gray/ Ø 6
Plug surface	 2-Brown 3-White 4-Yellow 5-Green	 2-Brown 3-White 4-Yellow 5-Green
Length	1M	2M
Order code	16-1022	16-1023

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