EJ Displacement Sensor

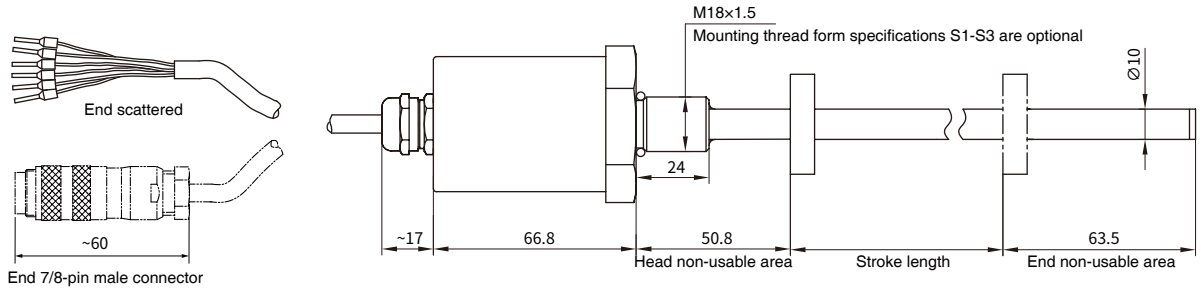
Technical Characteristics

- Rugged and fully enclosed design
- Non-wear, non-contact measuring method
- Low power consumption design effectively reduces system heating
- Absolute position output, not affected by power failure
- Adapt to harsh environment, IP68 protection class
- Multiple interfaces are available: Analog, SSI, Modbus, etc

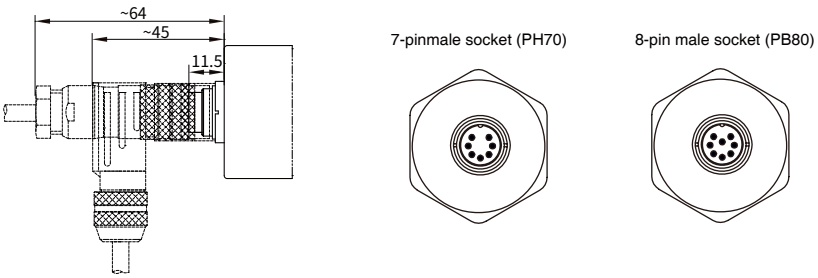
EJ-SSI Output

Structural shape

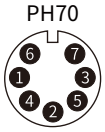
- Dimensions of cable outlet

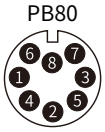


- Outline dimensions of connector outlet



Wiring and pin definition





- Pin arrangement of seven-pin male connector (facing the sensor head)

Pin	Wire color 1*	Wire color 2*	Function definition
1	White	Grey	Data (-)
2	Yellow	Pink	Data (+)
3	Blue	Yellow	Clock (+)
4	Green	Green	Clock (-)
5	Red	Brown	+24Vdc power supply (-20%~+20%)
6	Black	White	GND (power supply circuit)
7	-	-	Do not connect

Note: * Wire color 1: Cable PUR sheath, orange,-20-90℃
* Wire color 2/3: Cable PVC sheath, orange,-20-105℃

- Pin arrangement of eight-pin male connector (facing the sensor head direction)

Pin	Wire color3*	Function definition
1	Yellow	Clock (+)
2	Grey	Data (+)
3	Pink	Clock (-)
4	-	Reservation
5	Green	Data (-)
6	Blue	GND (power supply circuit)
7	Brown	+24Vdc power supply (-20%~+20%)
8	White	Reservation

EJ SSI Output-Product Parameters

• Input

Measuring data	Position magnet
Stroke length	25~5500mm，customized according to customer's needs
Number of measurings	1

• Output

Interface	SSI Synchronous Serial Interface
Data format	Binary or gray code
Data length	24/25/26 bit
Resolution	5 / 10 / 20 / 40/ 50 / 100 μm
Nonlinearity	<±0.01% of full scale, minimum±50μm
Repeatability	< ± 0.001% of full scale, minimum ± 5μm
Transmission rate	50KBD~1MBD Line length <3 <50 <100 <200 <400 (m) Rate 1000 <400 <300 <200 <100 (KBD)
Update time	Stroke 300 750 1000 2000 5000 mm Frequency 3.7 3.0 2.3 1.2 0.5 kHz
Operating mode	Asynchronous
Temperature coefficient	<30ppm/°C

• Operating conditions

Magnet ring speed	Arbitrary
Protection class	Cable outlet mode IP68; socket way IP67
Operating temperature	-40°C ~ +85°C
Humidity/dew point	Humidity 90%, no condensation
Impact Indicator	GB/T2423.5 100g(6ms)
Vibration index	GB/T2423.10 15g/10~2000Hz
EMC test	GB/T17626.2/3/4/6/8，Grade 4/3/4/3/3，Class A

• Electrical Connections

Input voltage	+24Vdc±20%
Power consumption	＜80mA ((varying with range)
Polarity protection	Maximum -30Vdc
Overvoltage protection	Maximum 36Vdc
Insulation resistance	＞10MΩ
Insulation strength	500V

• Construction and Materials

Electronic compartment	304L
Measuring rod	304L stainless steel
Outer tube pressure	35MPa (continuous) /70MPa (peak)
Position magnet	Standard magnet ring and various ring magnets
Thread form	M18×1.5、M20×1.5、3/4"-16UNF-3A （customizable）
Installation direction	Any direction
Outgoing mode	Cable outlet or connector

EJ SSI Output-Selection Guide

E	J	–	M					–	S		–					–	S						–			–		
01	02		03	04	05	06	07		08	09		10	11	12	13		14	15	16	17	18	19		20	21		22	23

01 - 02 Sensor shell form

E J	Pressure-resistant pipe

03 - 07 Range (0025~5500mm, others can be customized as needed)

0025~0500mm step length 5mm
0500~0750mm step length 10mm
0750~1000mm step length 25mm
1000~5500mm step length 50mm

08 - 09 Mounting thread form

S 1	M18X1.5，measuring rod diameter 10mm, 304 material
S 2	M20X1.5，measuring rod diameter 10mm, 304 material
S 3	3/4"-16UNF-3A，measuring rod diameter 10mm, 304 material

10 - 13 Connection form

10 - 11 Cable outlet mode

D H	PUR sheath, orange,-20~90°C, end scattered, Wire color 1
D U	PVC sheath, orange,-20~105°C, end scattered, Cable color 2
D B	PVC sheath, orange,-20~105°C, end scattered, Cable color 3
D I	PUR sheath, orange,-20~90°C, end 7-pin male connector
D V	PVC sheath, orange,-20~105°C, end 7-pin male connector
D C	PVC sheath, orange, -20~105°C, end 8-pin male connector

12 - 13 Cable length, 01~99 unit: meter (cable outlet)

10 - 13 Connector form

P H 7 0	M16 7-pin male socket
P B 8 0	M16 8-pin male socket

14 - 19 Signal output mode

15 Data length

1	24-bit	2	25-bit	3	26-bit*

* 26-bit are parity bits, 25-bit are status bits

16 Data format

B	Binary	G	Gray code

17 Resolution

1	0.1mm	2	0.05mm
3	0.02mm	4	0.01mm
5	0.005mm	8	0.04mm

18 Direction

0	Forward (when the magnet ring or floating ball is far away from the electronic compartment, the output value increases)
1	Reverse (when the magnet ring or floating ball is far away from the electronic compartment, the output value decreases)

19 Mode

0	Asynchronous

20 - 21 Front and end non-usable area

S 0	50.8mm+63.5mm
B 0	30mm+60mm

22 - 23 Country

	Refer to the country list

Selection example

For example：EJ-M0300-S1-DU02-S2B300-S0-CN

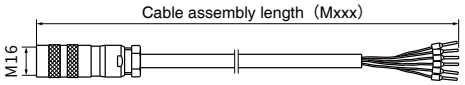
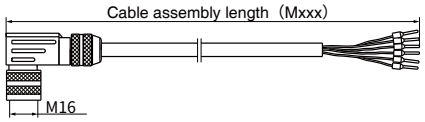
Indicates: E series EJ structure, Stroke length is 300mm, mounting thread form is M18 × 1.5, diameter is 10, material is 304 measuring rod, straight orange cable is 2 meters (PVC orange sheath, -20~105°C, end scattered), SSI interface 25-bit data binary format is 0.02 mm, resolution is forward asynchronous output, and head and end non-usable area is 50.8 mm+63.

Supply list

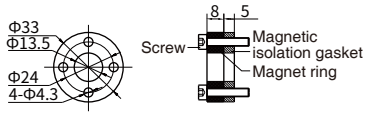
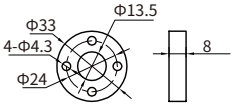
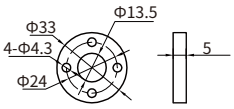
Sensor, certificate, manual, optional accessories (sold separately)

EJ SSI Output-Common Options

• Plug assembly cable

Accessory name/model	Dimensions	Description
SSI Interface Cable assembly Order No.:SSI-Mxxx-H01 (U01/U02)		Mxxx represents the cable length in meters; H01-7-pin PUR orange sheath, temperature -20~90°C cable assembly; U01-7-pin PVC orange sheath, temperature -20~105°C cable assembly; U02-8-pin PVC orange sheath, temperature -20~105°C cable assembly.
SSI Interface Right angled cable assembly Order No.:SSI-Mxxx-H03 (U03/U04)		Mxxx represents the cable length in meters; H03-7-pin PUR orange sheath, temperature -20~90°C cable assembly; U03-7-pin PVC orange sheath, temperature -20~105°C cable assembly; U04-8-pin PVC orange sheath, temperature -20~105°C cable assembly.

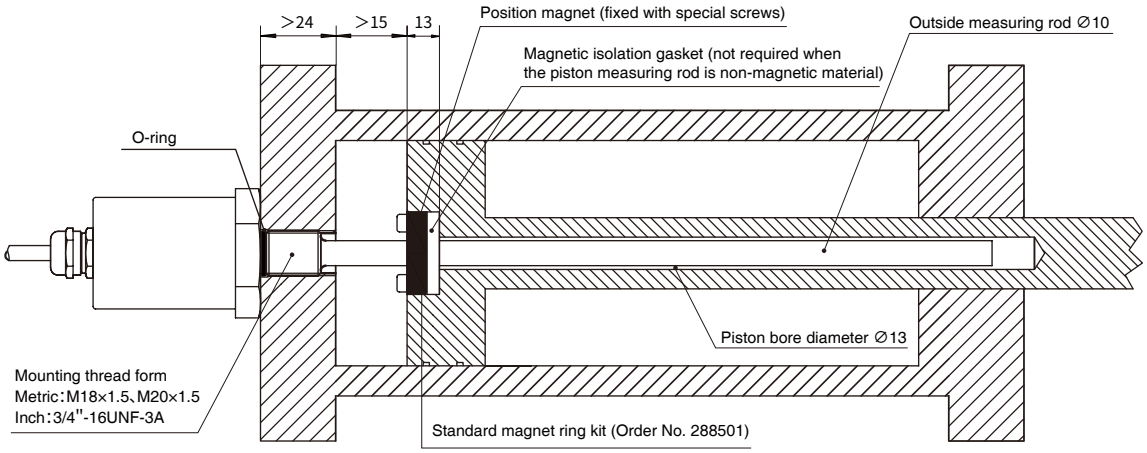
• Magnet ring

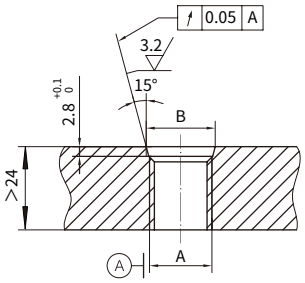
Accessory name/model	Dimensions	Description
Standard magnet ring kit Order No.:288501		One magnet ring 211501, one gasket 211521 (thickness 5mm), four M4X20 socket screws with spring wgreyers.
Standard magnet ring Order No.:211501		
Magnetic isolation gasket Order No.:211521		

Note:See general options for other accessories

EJ-Hydraulic cylinder Application

Built-in installation

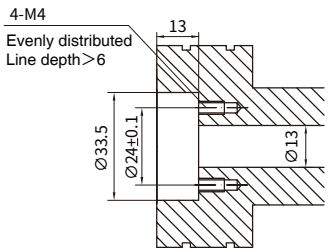




Installation accessories size list:

Code \ Size	A	B	O-ring
S1	M18×1.5	∅19.9±0.1	15.3×2.4
S2	M20×1.5	∅21.8±0.1	16×2.4
S3	3/4"-16UNF-3A	∅20.8±0.1	17×2.4

Installation and sealing surface processing requirements
Note: Recommended matching lineed hole structure size



Structural dimensions and center dimensions of accessories installed on the piston measuring rod

How to choose the sensor range according to the hydraulic cylinder

When selecting the sensor range for the existing hydraulic cylinder, ensure that the sensor range covers the cylinder piston measuring rod stroke, that is, the sensor range 0 point is before the piston measuring rod stroke starting point, and the sensor range end point is after the piston measuring rod stroke ends.

Precautions

- Hydraulic cylinder installation—the sensor of the pressure-resistant round tube casing is usually installed with a built-in hydraulic cylinder. The mounting thread form specifications Includes: M18×1.5, M20×1.5, 3/4"-16UNF-3A. Before installation, make sure that the hydraulic cylinder
- is as given in the picture book. Finished to the correct size.
- Mechanical installation - The sensor has no requirements on the installation position and direction, but must ensure that the installation is firm and reliable. The position magnet should be installed on the moving part under test and maintains a proper distance from the measuring rod. Position magnet - To ensure the accuracy of measuring, the installing parts of the position magnet must be made of non-magnetic materials, such as screws, magnetic isolation gaskets, etc.
- Notes: The sensor is a magnetic sensitive device and must be kept away from the interference of strong external magnetic fields. The stability and accuracy of the power supply should also be considered when measuring with high precision. During use, it is also necessary to prevent the electronic compartment from being hit by foreign objects.