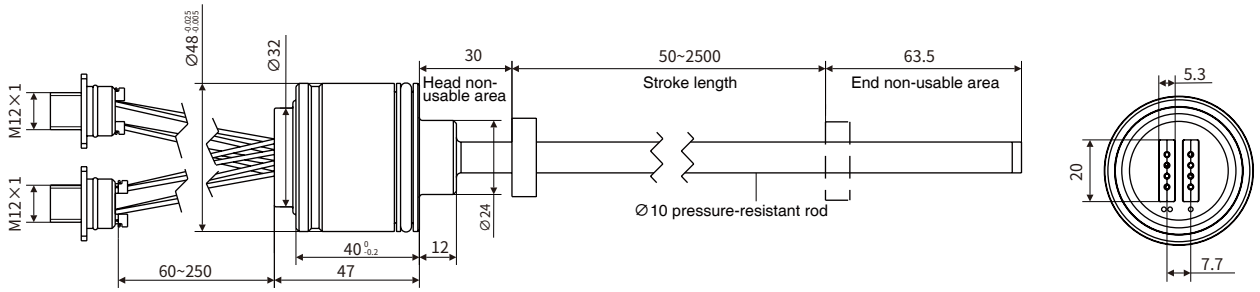
MT Displacement Sensor

Technical characteristics

- Specially designed for construction machinery
- High vibration resistance and impact resistance
- Low power consumption design effectively reduces system heating
- Multiple signal (analog and digital signal) output modes
- Linear measurement, absolute position output
- Adapt to harsh environment, IP67 protection level
- Assembled in Cylinder, free from environmental and electromagnetic interference, non-contact measurement
- Redundant sensor system to improve the safety and s tability of construction machinery

Structural shape

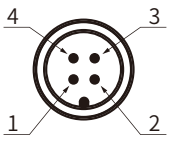
Connector external dimensions



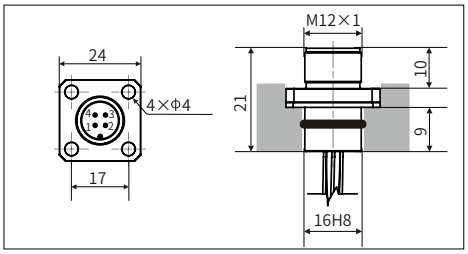
MT-Analog Output

Electrical connections

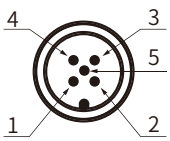
- Channel 1 analog (connector)

M12-4 Pin Definition	No.	PD
	1	Power supply
	2	Do not connect
	3	Ground
	4	Signal

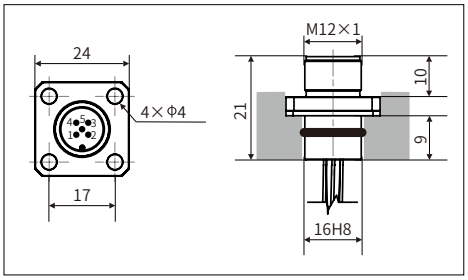
- M12-4pin socket



- Channel 2 analog (connector)

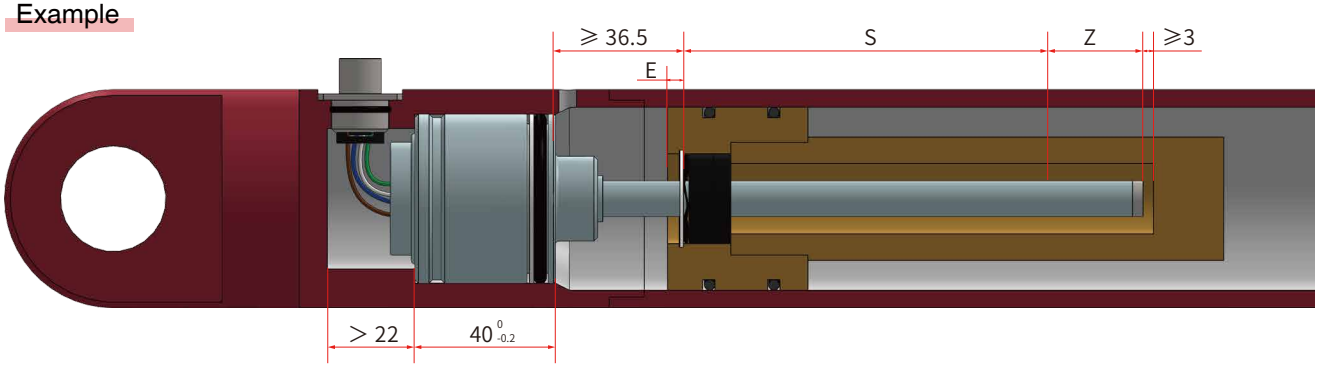
M12-5 Pin Definition	No.	PD
	1	Power supply
	2	Signal
	3	Ground
	4	Do not connect
	5	Do not connect

- M12-5pin socket



Assembly mode

Example

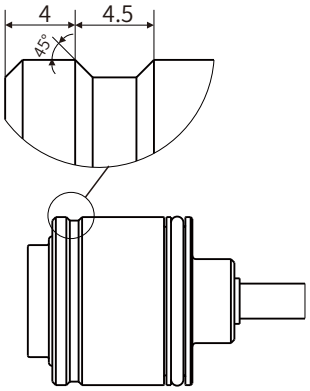


The assembly method depends entirely on the design of the hydraulic cylinder. The commonly used assembly method is to install from the rod end of the hydraulic cylinder, or to install from the cylinder head end of the hydraulic cylinder. In both assembly methods, O-ring and auxiliary gasket are used for air sealing.

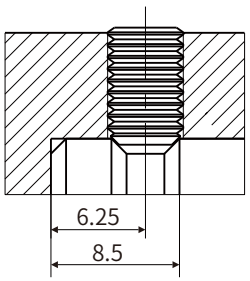
Note: 1.The position magnet should not contact the stell rod;
2.Drilling depth of piston rod ≥ E+Z+3mm;
3.Piston rod hole diameter

Stell rod	∅10
Aperture size	⩾∅13

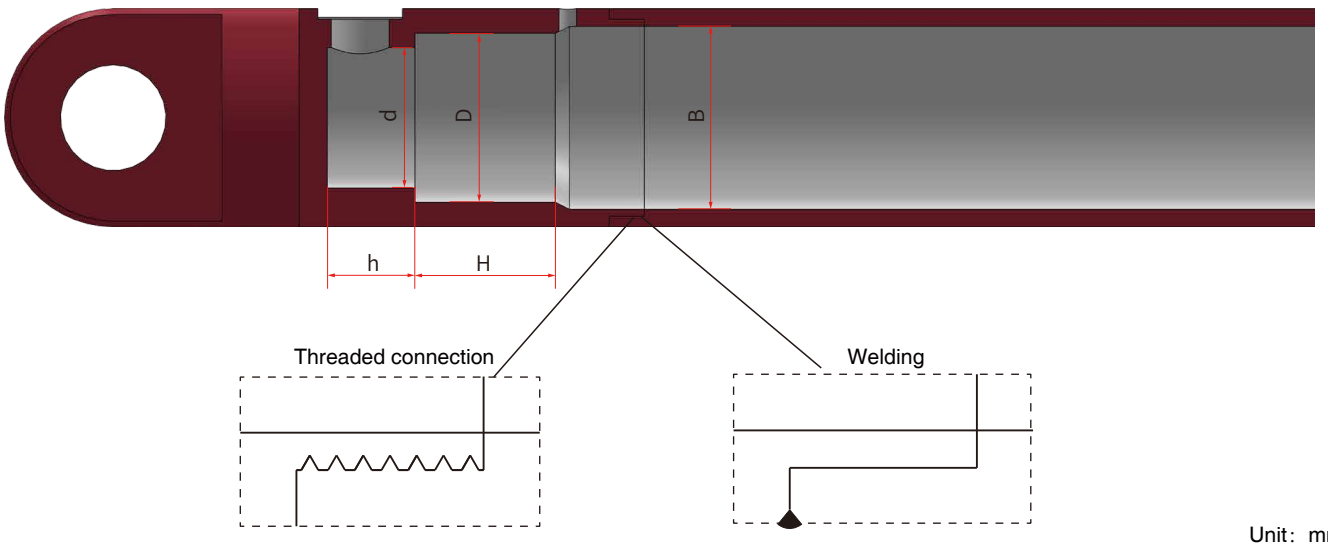
4.Do not exceed the operating pressure during use.



Flange shell with O-ring and auxiliary washer



Use M5 internal hexagon flat-end setting screws for fixation with a maximum torque of 0.5 N/m



Unit: mm

Model	B Minimum diameter of hydraulic cylinder	D Minimum diameter	H Depth	d Minimum diameter	h Depth
MT	52	48H8（thread） 48G7（welding）	40 +0.2	＞ 32.5 ＜ 40	＞22

Product parameters

• Input

Measurement data	Position (vernier magnet)
Stroke length	50~2500 mm

• Output

Current	4 ~ 20mA（load resistance≤250Ω）
Voltage	0.5 ~ 4.5Vdc or 0.25~4.75Vdc（load resistance≥10KΩ）
Resolution	±0.1mm（range＜500mm） range÷4096（range＞500mm）
Nonlinearity	±0.1mm（≤250mm）or 0.04%F.S（＞250mm）
Repetition accuracy	±0.1mm
Update time	2ms

• Operating conditions

Magnet velocity	Arbitrary
Protection level	Sensor shell IP67; M12 Connector System IP69K
Operating temperature	-40℃ ~ +105℃
Humidity/dew point	Humidity 90%, no condensation
Temperature drift coefficient	<30ppm/℃
Shock index	GB/T2423.5 100g（6ms）
Vibration index	GB/T2423.10 15g/10~2000Hz
EMC test	GB/T17626.2 Electrostatic Discharge Anti-interference, Grade 3, Class B GB/T17626.3 Radio Frequency Electromagnetic Field Radiation Anti-interference, Grade 3, Class A GB/T17626.4 Electric Fast Transient Group Anti-interference, Grade 3, Class B GB/T17626.5 Surge (Impact) Anti-interference, Grade 3, Class B GB/T17626.6 Radio Frequency Field Induced Conducted Disturbance Anti-interference, Grade 3, Class A GB/T17626.8 Power Frequency Magnetic Field Anti-interference, Grade 4, Class A

• Electrical connections

Input voltage	9~ 32Vdc
Power consumption	<1W
Polarity protection	maximum -30Vdc
Overvoltage protection	maximum 36Vdc
Insulation resistance	＞10MΩ
Insulation strength	500V
Outgoing mode	Cable outlet or connector

• Construction and materials

Electronic compartment	304L stainless steel
Measuring rod	304L stainless steel
Operating pressure grade	Rated pressure Pn: 35MPa maximum pressure Pmax: 45MPa for stell rod with diameter of 10mm
Assembly	Any direction
Position magnet	Various ring magnets

Selection Guide

M	T	–	M					–	S		–					–				–	M		–		
01	02		03	04	05	06	07		08	09		10	11	12	13		14	15	16		17	18		19	20

01 - 02	Sensor shell form
MT	Sensor shell Φ48mm

03 - 07	Measuring range
	0050~2500 mm，step length 1mm

08 - 09	Mounting thread form
SA	Pressure-resistant rod, diameter 10mm

10 - 13	Connection form
PD	Channel 1: 4 single leads, M12 IP69K, 4 pins (1-3-4)　Channel 2: 4 single leads, M12 IP69K, 5 pins (1-3-2)
PD06	60mm， minimum length of wiring harness
PD25	250mm，maximum length of wiring harness

14 - 16	Signal output mode
V20	Voltage output，0.25~4.75V，0.25~4.75V
V21	Voltage output，0.5~4.5V， 0.5~4.5V
V22	Voltage output，4.75~0.25V，4.75~0.25V
V23	Voltage output，4.5~0.5V，4.5~0.5V
V30	Voltage output，0.25~4.75V，4.75~0.25V
V31	Voltage output，0.5~4.5V，4.5~0.5V
A20	Current output，4~20mA，4~20mA
V21	Current output，20~4mA，20~4mA
A30	Current output，4~20mA，20~4mA

17- 18	Non-usable area at head and end, customizable
M1	30mm+63.5mm

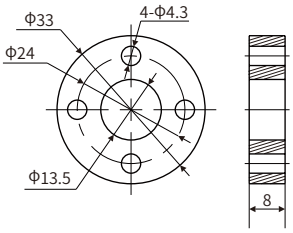
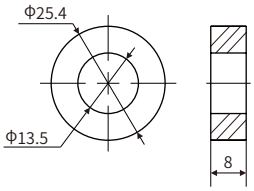
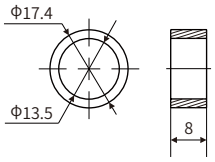
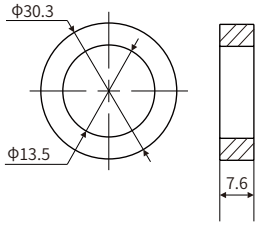
19-20	Country
	Refer to the country list

● Selection example

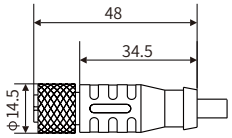
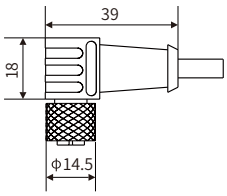
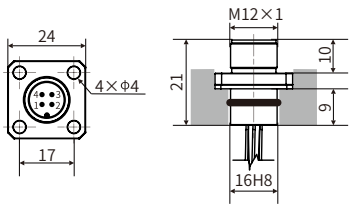
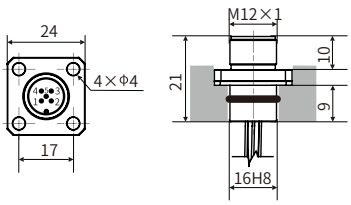
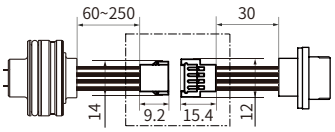
For example：MT-M0300-SA-PD08-A20-M1-CN

Indicates: MT series flange diameter 48mm, stroke length 300mm, pressure-resistant rod with diameter 10mm, two-way M12 connector, current output of 4~20mA, non-usable area at head and end of 30 +63.5.

Magnet Selection

Accessory name/model	Dimensions	Description
 Magnet ring kit Order No.：288501		Magnetic isolation gasket: size same as magnet ring, thickness 5mm Screws：GB/T70.1，M4X18，material304 Spring gasket：GB/T 93，φ 4，material304 Includes: 1 magnet ring, 1 gasket, 4 screws with elastic gasket
 Magnet ring kit Order No.：288506		Magnetic isolation gasket: size same as magnet ring, thickness 5mm Retaining ring：GB/T893,264 Includes: 1 magnet ring, 2 gaskets, 1 retaining ring
 Magnet ring kit Order No.：288507		Magnetic isolation gasket: size same as magnet ring, thickness 5mm Retaining ring：GB/T 893，18 Includes: 1 magnet ring, 2 gaskets, 1 retaining ring
 Magnet ring kit Order No.：288509		Magnetic isolation gasket: size same as magnet ring, thickness 5mm Retaining ring：GB/T893，18 Includes: 1 magnet ring, 2 gaskets, 1 retaining ring

Cable selection

Accessory name/model	Dimensions	Description
 5-pin M12 female connector Order No.：521801-2/3/5/10/15	 5×0.25mm² φ5.6±0.2mm	Conductor: 5-pin, brown/white/blue/black/gray Sheath color: Black Shielding layer: tinned copper woven mesh Sheath material：PUR Temperature：(-40~80℃) Line length: 2m/3m/5m/10m/15m
 5-pin M12 right angle female connector Order No.： 521804-2/3/5/10/15	 5×0.25mm² φ5.6±0.2mm	Conductor: 5-pin, brown/white/blue/black/gray Sheath color: Black Shielding layer: tinned copper woven mesh Sheath material: PUR Temperature：(-40~80℃) Line length: 2m/3m/5m/10m/15m
 MH 4-pin wire socket Order No.：600000		
 MH 5-pin wire socket Order No.：600001		
 MH adapter harness Order No.：522007		When the Cylinder threading hole is less than 16H8, This harness switching can be used,Plastic shell thickness: 2.8 mm