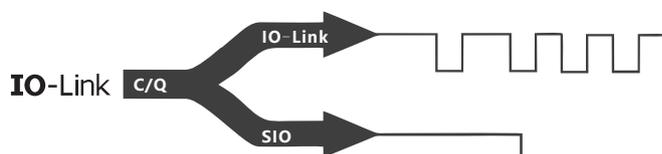
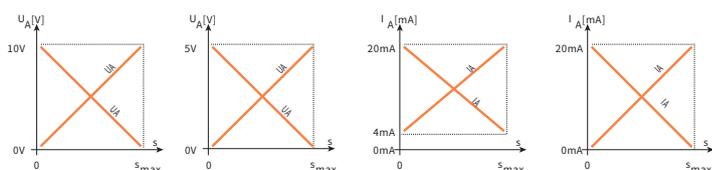




GA-Analog(+IO-Link)

GA-pressure resistant outer tube



- + Compact structure: flat structure design, flange mounting, suitable for use inside U-shaped and other space-limited hydraulic cylinder
- + Durable: fully enclosed design with maximum IP67 protection
- + Linear displacement, absolute value output
- + Easy to use, standard signal output, maintenance-free
- + Maximum durability, continuous non-contact
- + Full scale adjustable, 100% adjustable zero and full scale
- + Output Analog+IO-Link



Document Number:
GA-AIO(V1.4)-EN

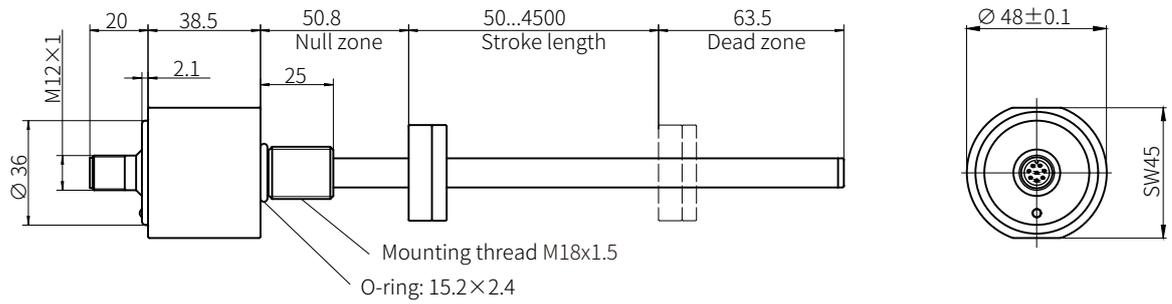
TECHNICAL PARAMETER

Input									
Measured data	Position/Speed								
Measurement range	50mm...4500mm								
Output									
Voltage	0...10VDC, 10...0VDC, 0...5VDC, 5...0VDC (Controller min. load impedance >5K Ω)+IO-Link								
Current	4...20mA, 20...4mA, 0...20mA, 20...0mA (min./max. load 0/750 Ω)+IO-Link								
Transmission rate (IO-Link)	<table border="1"> <thead> <tr> <th>Rate(bit/s)</th> <th>4800</th> <th>38400</th> <th>230400</th> </tr> </thead> <tbody> <tr> <td>Port</td> <td>COM1</td> <td>COM2</td> <td>COM3*</td> </tr> </tbody> </table>	Rate(bit/s)	4800	38400	230400	Port	COM1	COM2	COM3*
Rate(bit/s)	4800	38400	230400						
Port	COM1	COM2	COM3*						
Resolution									
Position resolution	<table border="1"> <thead> <tr> <th>Analog</th> <th>16 bit D/A</th> </tr> </thead> <tbody> <tr> <td>IO-Link</td> <td>1/2/5/10/20/50/100μm</td> </tr> </tbody> </table>	Analog	16 bit D/A	IO-Link	1/2/5/10/20/50/100 μ m				
Analog	16 bit D/A								
IO-Link	1/2/5/10/20/50/100 μ m								
None-Linearity	< $\pm 0.02\%$ F.S. (min. $\pm 50\mu$ m)								
Repeatability	< $\pm 0.005\%$ F.S. (min. $\pm 10\mu$ m)								
Update time	<table border="1"> <thead> <tr> <th>Stroke length</th> <th>≤ 1200mm</th> <th>≤ 2400mm</th> <th>≤ 4800mm</th> </tr> </thead> <tbody> <tr> <td>Update time</td> <td>0.5ms</td> <td>1ms</td> <td>2ms</td> </tr> </tbody> </table>	Stroke length	≤ 1200 mm	≤ 2400 mm	≤ 4800 mm	Update time	0.5ms	1ms	2ms
Stroke length	≤ 1200 mm	≤ 2400 mm	≤ 4800 mm						
Update time	0.5ms	1ms	2ms						
Temperature coefficient	< 30ppm/ $^{\circ}$ C								
Mounting									
Mounting direction	Any								
Thread	Metric M18x1.5								
Design/Material									
Electronics housing	Stainless steel 304								
Measuring rod	Stainless steel 304、316L								
Operating pressure ratings	35MPa (continuous) ,70MPa (peak)								
Electrical connection									
Wiring connection	8 pin M12 connector, 8 pin M16 connector								
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									
Magnet speed	Any								
Operating temperature	-40...85 $^{\circ}$ C								
Humidity	90 % relative humidity, no condensation								
Ingress protection	IP67								
Shock	100 g (single shock) IEC standard 60068-2-27								
Vibration	15g/10...2000 Hz, IEC standard 60068-2-6 (resonant frequencies excluded)								
EMC	Electromagnetic emission according to EN 61000-6-3 Electromagnetic immunity according to EN 61000-6-2								

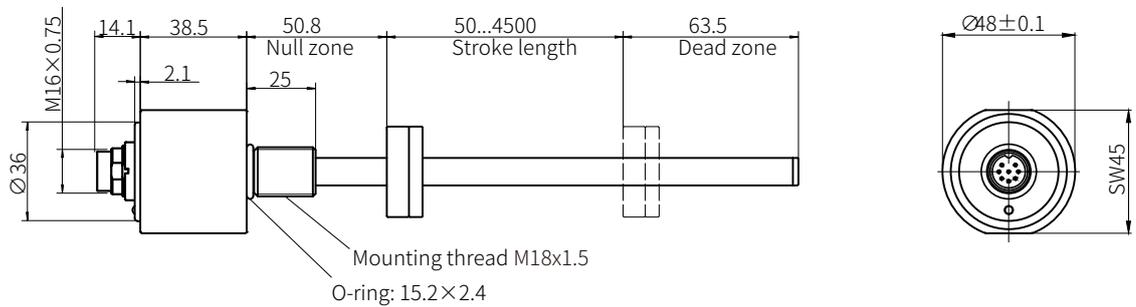
Note: “*” as default

TECHNICAL DRAWING

8 pin M12 connector



8 pin M16 connector



For selection of supporting magnetic rings and non-permeable gaskets, please refer to the attachment for details.



Magnetic ring

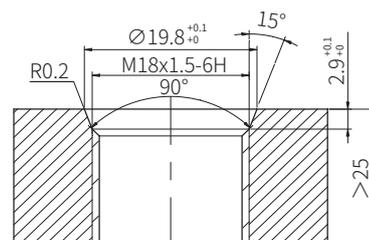


Non-permeable gasket

MECHANICAL MOUNTING DIAGRAM

Thread fixation

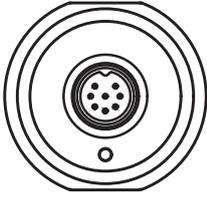
GA series built-in pressure resistant outer tube sensors are equipped with metric M18x1.5 threads to be fixed.



Metric M18x1.5, reference to the hole size

Wiring

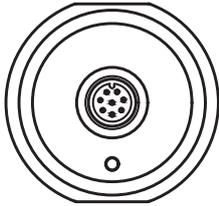
8 pin M16 connector



View on sensor

PIN	Current	Voltage
1	Output 1 (Current signal)	NC
2	SGND	SGND
3	Output 2 (Current signal)*	Output 2 (Voltage signal)*
4	C/Q (communication line)	C/Q(communication line)
5	NC	Output 1 (Voltage signal)
6	GND	GND
7	+24VDC (-15/+20%)	+24VDC (-15/+20%)
8	NC	NC

8 pin M12 connector

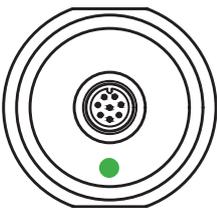


View on sensor

PIN	Color	Function
1	Grey	SGND 2*
2	Yellow	SGND 1
3	Pink	Signal output 2*
4	Red	C/Q(communication line)
5	Green	Signal output 1
6	White	GND
7	Brown	+24VDC(-15/+20%)
8	-	NC

"*" adaptable for dual output signal connection

Enhanced monitoring and diagnostic functions



light	Function
Red	Magnetic ring can't be detected or the position is wrong.
Green	Normal work
OFF	Communication exception

The built-in LED indicator light provides basic fault feedback and fault alarm of the sensor.

ORDER CODE

GA - - - - M- - - -					Output (Output Code)
Thread	Stroke length	Connection type			
M Metric M18x1.5, Rod Φ 10mm	0050...4500mm (5mm increments)	D812	8 pin M12 connector		
R Metric M18x1.5, Rod Φ 10mm, with M4x6 thread at tail end		D816	8 pin M16 connector		

Analog Output Code | [1][2][3]-[4] [5][6]

[1] System	[2] Resolution	[3] Output	[4][5] Current/Voltage	[6] Magnet
L +IO-Link (COM3)	1 5 μ m*	1 Position	A0 4...20mA (forward) V0 0...10V (forward)	1 one magnet *
	2 2 μ m	2 Position and speed*	A1 20...4mA (reverse) V1 10...0V (reverse)	2 two magnets
	3 10 μ m	3 2 positions	A2 0...20mA (forward) V2 0...5V (forward)	
	4 50 μ m	4 2 positions and 2 speeds	A3 20...0mA (reverse) V3 5...0V (reverse)	
	5 100 μ m	5 Configurable outputs		
	7 20 μ m			
	8 1 μ m	(Speed : μ m/s)		

Note: forward, data grows larger when the magnet is distant from the electronics housing;
reverse, data grows larger when the magnet approaches the electronics housing.

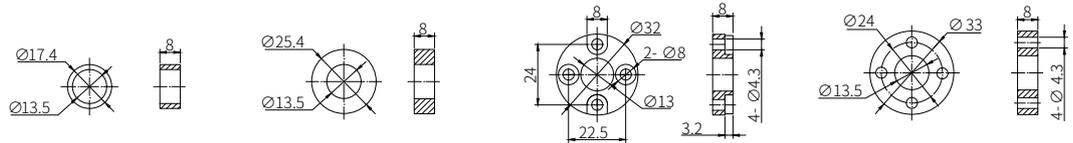
Model | GA-M-0390M-D812-L11-A01

Explanation: GA series pressure resistance outer tube type, mounting thread metric M18x1.5, range 390mm, 8 pin M12 connector, Interface Analog+IO-Link, IO-Link resolution 5 μ m, position measurement, analog output of 4..20mA (forward), single magnet.

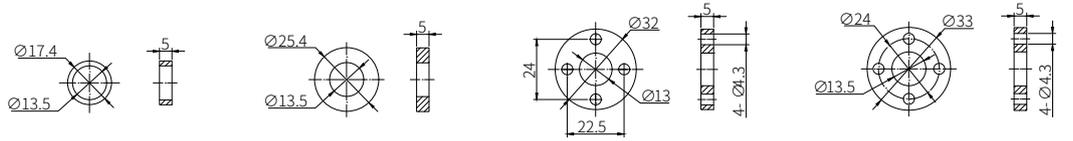


ACCESSORIES

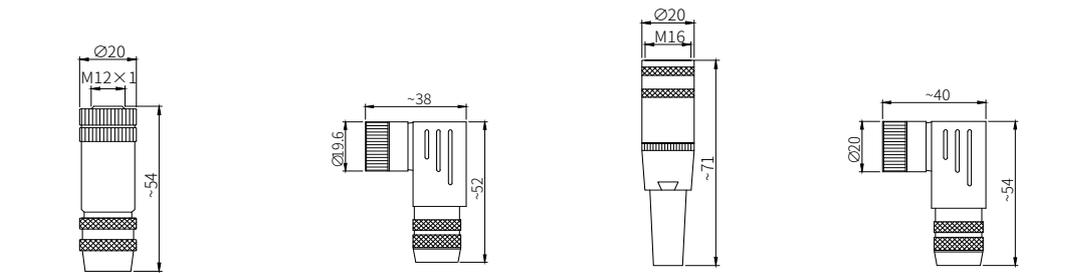
Analog(+IO-Link)



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



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



Name	8 pin M12 female connector	8 pin M12 female connector (90 degree angle)	8 pin M16 female connector	8 pin M16 female connector (90 degree angle)
End view drawing				
Material				
Fitting diameter	8...10mm	6...8mm	6...8mm	6...8mm
Connection	Threaded		Welding	
Order code	18-5004	18-5005	18-5002	18-5003

Building 6, Dazu Enterprise Bay,
8th yard of Liangshuihe 2nd street, BDA Beijing P.R.China

Tel: +86 10-67948976 67948916
Fax: +86 10-67948979
Technical support: +86 (0)13370126657

Beijing Tebeifu Electronic Technology Co., Ltd.

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