



Non-Contact Absolute Position Transducer

Leading technology revolutionary determine who will hold the competitive advantage today and tomorrow.

ABSOPOS SERIES

Germanjet®
PART OF YOUR POSITIONING

The 18 series non-contact absolute position transducer adopts the non-contact magnetostrictive measuring technology for precise, direct and absolute measurement. The absence of electrical contact on the cursor eliminates all wear and guarantees almost unlimited mechanical life expectancy. The non-contact (Floating) cursor provides exceptional ease of installation with a variety of available cursor position target.

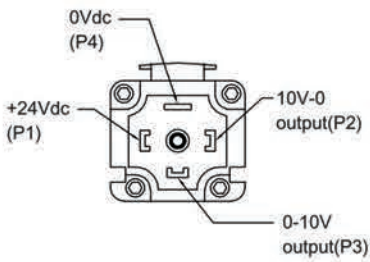
The high versatile profile housing (IP67, need to match a suitable connector) offers full protection against outside agents for use in harsh environments with high contamination and presence of dust. Mounting is accomplished using clamps that allow precise mechanical adjustment. The 18 series is the most reliable and durable non-contact absolute position transducer among all.



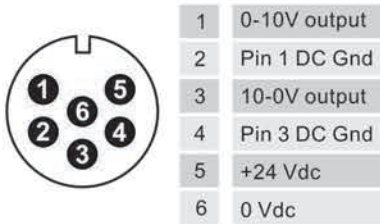
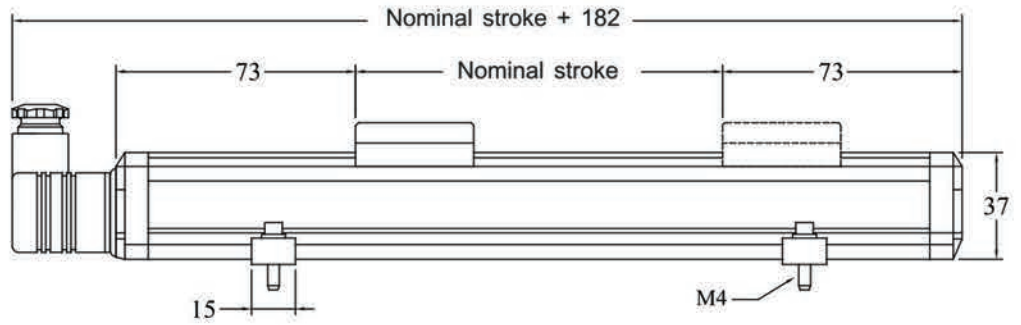
Specifications

Order Code	180
Output	0-10Vdc, 10-0Vdc dual-output. minimum load 5k Ω
Measurement Type	Linear displacement
Resolution	Infinite, restricted by output ripple
Input Voltage	+24Vdc (20.4 - 28.8Vdc)
Input Protection	Polarity protection up to -30Vdc, Over voltage protection up to 36Vdc
Current Consumption	50-140mA (stroke range dependent)
Dielectric Strength	500Vdc (DC ground to machine ground)
Repeatability	< $\pm 0.005\%$ of full scale
Non-Linearity	< $\pm 0.01\%$ of full scale (minimum $\pm 90\mu\text{m}$)
Update Time	0.5 ms up to 1200 mm / 1.0 ms up to 2400 mm 2.0 ms up to 4800 mm / 5.0 ms up to 7600 mm
Operation Temp.	-40 to 75°C, Humidity 90% non-condensing
Sealing	IP65 / IP67 (with connector)
Vibration Rating	15g / 10-2000Hz / IEC standard 68-2-6
Shock Rating	100g single hit per IEC standard 68-2-27
EMC	Emission EN 61000-6-3, Immunity EN 61000-6-2 EN 61000-4-2/3/4/6

Infinite resolution ...

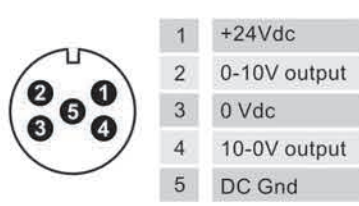


(View toward sensor pins)



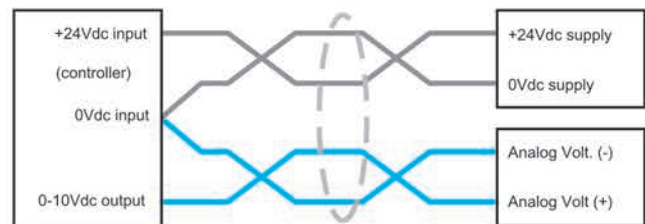
D60 connector

(View toward sensor pins)



M12 connector

(View toward sensor pins)



(connection example)

Order Code

1 8 0 X X X X X X X

Output

0-10Vdc, 10-0Vdc Dual-output

Connector

- 0 = 4 pins connector (IP65)
- 1 = Cable outlet (P.A4 to select cable length)
- 2 = D60 connector (not include 6 pins female connector)
- 3 = 4 pins connector (IP67)
- 4 = 5 pins M12 connector (not include 5 pins female connector)

Mounting (P. A1)

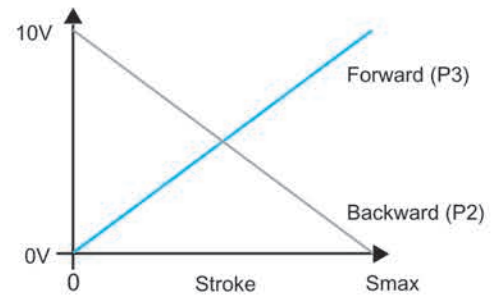
- 1 = 42.5mm mounting
- 2 = 42.5mm isolation mounting
- 3 = 50mm mounting

Magnet Type (P. A1)

- 1 = Captive
- 2 = Floating
- 3 = Die-cast
- 4 = Large floating

Stroke Length

0 1 0 0 , 0 1 3 0 , 0 1 5 0 , 0 1 7 5 , 0 2 0 0 , 0 2 2 5 , 0 2 7 5
 0 3 0 0 , 0 3 6 0 , 0 4 0 0 , 0 4 2 5 , 0 4 5 0 , 0 5 0 0 , 0 5 2 5
 0 5 5 0 , 0 6 0 0 , 0 6 5 0 , 0 7 0 0 , 0 7 5 0 , 0 8 0 0 , 0 8 7 5
 0 9 0 0 , 0 9 5 0 , 1 0 0 0 , 1 1 0 0 , 1 2 5 0 , 1 3 5 0 , 1 5 0 0
 1 6 0 0 , 1 7 5 0 , 2 0 0 0 , 2 2 5 0 , 2 5 0 0 , 2 7 5 0 , 3 0 0 0
 3 2 5 0 , 3 5 0 0 , 4 0 0 0 (other length upon request)



Caution:

Please do not connect controller analog input (-) to machine 0V or ground. Only connect directly to transducer 0V (P4).

Use 4 wires shielded twisted pair cable, dia. 0.2mm.

Do not connect power supply +24Vdc to transducer 0Vdc, and at the same time connect power supply 0Vdc to transducer output. This will cause transducer permanent failure.

(Warning: warranty does not include such source of failure)

The 18 series non-contact absolute position transducer adopts the non-contact magnetostrictive measuring technology for precise, direct and absolute measurement. Analog current interfaces are significantly less sensitive for signal traveling a long distance and passing through severe electrical interference.

The 18 series analog current output are available in 0-20mA, 20-0mA, 4-20mA, and 20-4mA. The output signal is directly proportional to the magnet position along the measuring stroke.

The absence of electrical contact on the magnet eliminates all wear and guarantees almost unlimited mechanical life expectancy.

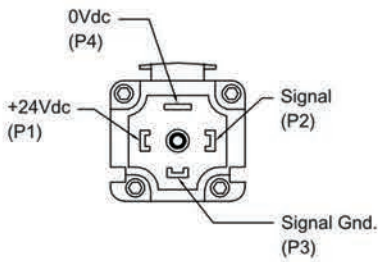


Specifications

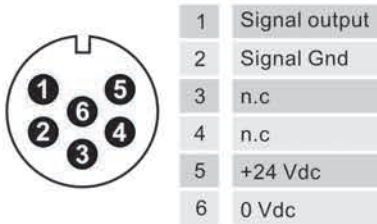
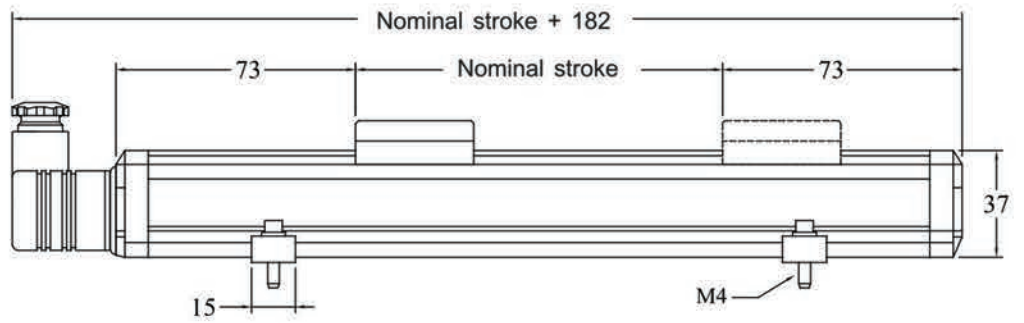
	181	182	184	185
Order Code	0-20 mA	20-0 mA	4-20 mA	20-4 mA
Output	Linear displacement			
Measurement Type	Infinite, restricted by output ripple			
Resolution	+24Vdc (20.4 - 28.8Vdc)			
Input Voltage	Polarity protection up to -30Vdc, Over voltage protection up to 36Vdc			
Input Protection	50-140mA (stroke range dependent)			
Current Consumption	500Vdc (DC ground to machine ground)			
Dielectric Strength	< ±0.005% of full scale			
Repeatability	< ±0.01% of full scale (minimum ±90µm)			
Non-Linearity	0.5 ms up to 1200 mm / 1.0 ms up to 2400 mm			
Update Time	2.0 ms up to 4800 mm / 5.0 ms up to 7600 mm			
Operation Temp.	-40 to 75°C, Humidity 90% non-condensing			
Sealing	IP65 / IP67 (with connector)			
Vibration Rating	15g / 10-2000Hz / IEC standard 68-2-6			
Shock Rating	100g single hit per IEC standard 68-2-27			
EMC	Emission EN 61000-6-3, Immunity EN 61000-6-2 EN 61000-4-2/3/4/6			



...Non-contact technology



(View toward sensor pins)



D60 connector

(View toward sensor pins)



M12 connector

(View toward sensor pins)



Order Code

1 8 X X X X X X X X

Output

- 1 = 0 - 20 mA
- 2 = 20 - 0 mA
- 4 = 4 - 20 mA
- 5 = 20 - 4 mA

Connector

- 0 = 4 pins connector (IP65)
- 1 = Cable outlet (P.A4 to select cable length)
- 2 = D60 connector (not include 6 pins female connector)
- 3 = 4 pins connector (IP67)
- 4 = 5 pins M12 connector (not include 5 pins female connector)

Mounting (P.A1)

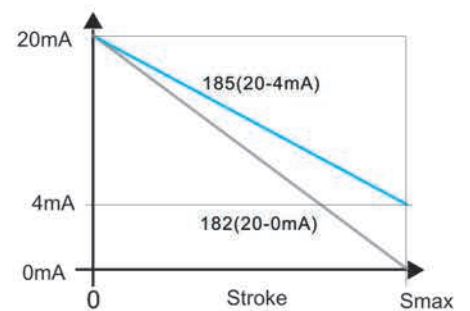
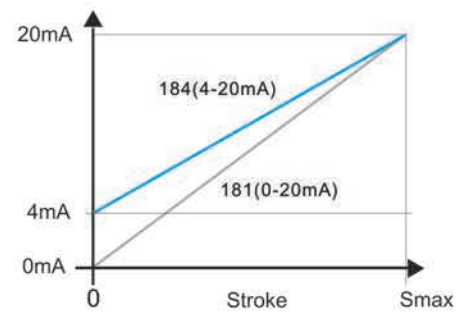
- 1 = 42.5mm mounting
- 2 = 42.5mm isolation mounting
- 3 = 50mm mounting

Magnet Type (P.A1)

- 1 = Captive
- 2 = Floating
- 3 = Die-cast
- 4 = Large floating

Stroke Length

0 1 0 0 , 0 1 3 0 , 0 1 5 0 , 0 1 7 5 , 0 2 0 0 , 0 2 2 5 , 0 2 7 5
 0 3 0 0 , 0 3 6 0 , 0 4 0 0 , 0 4 2 5 , 0 4 5 0 , 0 5 0 0 , 0 5 2 5
 0 5 5 0 , 0 6 0 0 , 0 6 5 0 , 0 7 0 0 , 0 7 5 0 , 0 8 0 0 , 0 8 7 5
 0 9 0 0 , 0 9 5 0 , 1 0 0 0 , 1 1 0 0 , 1 2 5 0 , 1 3 5 0 , 1 5 0 0
 1 6 0 0 , 1 7 5 0 , 2 0 0 0 , 2 2 5 0 , 2 5 0 0 , 2 7 5 0 , 3 0 0 0
 3 2 5 0 , 3 5 0 0 , 4 0 0 0 (other length upon request)



4 pins connector (IP65)

The 18 series start / stop interface is a simple and economical digital interface. The benefit of these interfaces has strong immunity to noise interference. The time between an assessment and the reply signal is directly proportional to the magnet position along the measuring stroke. The start / stop digital are transmitted using RS485/422 differential line drivers.

The 18 series non-contact absolute position transducer adopts the non-contact magnetostrictive measuring technology for precise, direct and absolute measurement. The absence of electrical contact on the magnet eliminates all wear and guarantees almost unlimited mechanical life expectancy.



Specifications

Order Code	1 8 3
Output	Start / Stop Digital Output
Measurement Type	Linear displacement
Resolution	Infinite, restricted by output ripple
Input Voltage	+24Vdc (20.4 - 28.8Vdc)
Input Protection	Polarity protection up to -30Vdc, Over voltage protection up to 36Vdc
Current Consumption	50-140mA (stroke range dependent)
Dielectric Strength	500Vdc (DC ground to machine ground)
Repeatability	< ±0.005% of full scale
Non-Linearity	< ±0.01% of full scale (minimum ±90µm)
Update Time	0.5 ms up to 1200 mm / 1.0 ms up to 2400 mm 2.0 ms up to 4800 mm / 5.0 ms up to 7600 mm
Operation Temp.	-40 to 75°C, Humidity 90% non-condensing
Sealing	IP65 / IP67 (with connector)
Vibration Rating	15g / 10-2000Hz / IEC standard 68-2-6
Shock Rating	100g single hit per IEC standard 68-2-27
EMC	Emission EN 61000-6-3, Immunity EN 61000-6-2 EN 61000-4-2/3/4/6

Economical digital solution ...

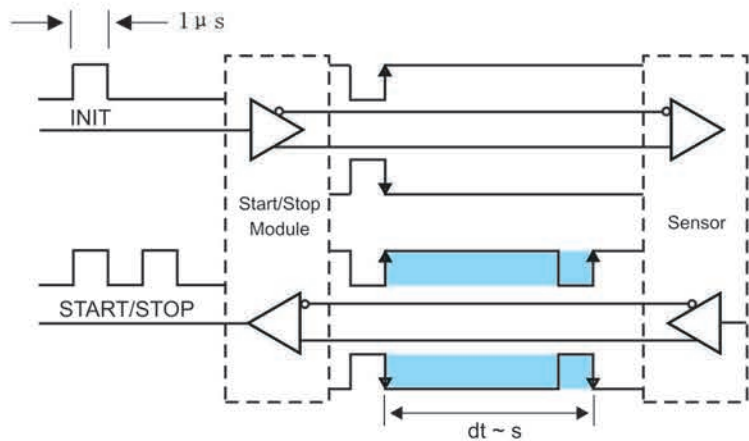
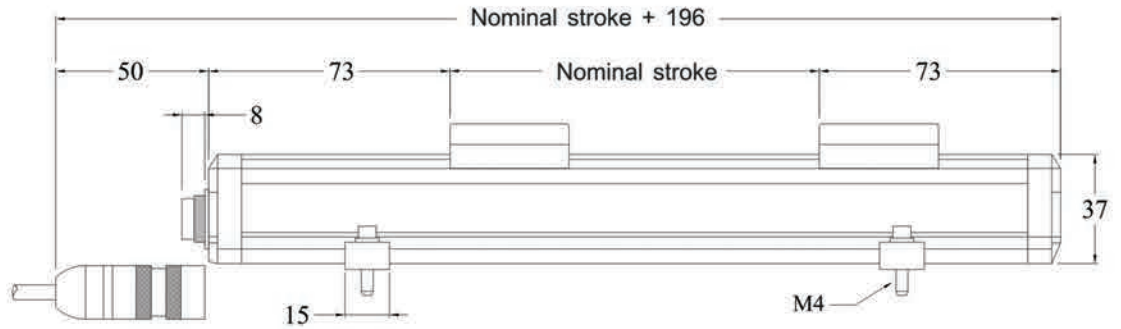




(View toward sensor pins)

Cable Shield connects to connector shell and grounded at controller side.

1	Stop (-)
2	Stop (+)
3	Start (+)
4	Start (-)
5	+24 V d c
6	0 V d c



Order Code

1 8 3 2 X X X X X X

Output

3 = Start / Stop Digital output

Connector

2 = D60 connector (not include 6 pins female connector)

Mounting (P. A1)

- 1 = 42.5mm mounting
- 2 = 42.5mm isolation mounting
- 3 = 50mm mounting

Magnet Type (P. A1)

- 1 = Captive
- 2 = Floating
- 3 = Die-cast
- 4 = Large floating

Stroke Length

0 1 0 0 , 0 1 3 0 , 0 1 5 0 , 0 1 7 5 , 0 2 0 0 , 0 2 2 5 , 0 2 7 5
 0 3 0 0 , 0 3 6 0 , 0 4 0 0 , 0 4 2 5 , 0 4 5 0 , 0 5 0 0 , 0 5 2 5
 0 5 5 0 , 0 6 0 0 , 0 6 5 0 , 0 7 0 0 , 0 7 5 0 , 0 8 0 0 , 0 8 7 5
 0 9 0 0 , 0 9 5 0 , 1 0 0 0 , 1 1 0 0 , 1 2 5 0 , 1 3 5 0 , 1 5 0 0
 1 6 0 0 , 1 7 5 0 , 2 0 0 0 , 2 2 5 0 , 2 5 0 0 , 2 7 5 0 , 3 0 0 0
 3 2 5 0 , 3 5 0 0 , 4 0 0 0 (other length upon request)

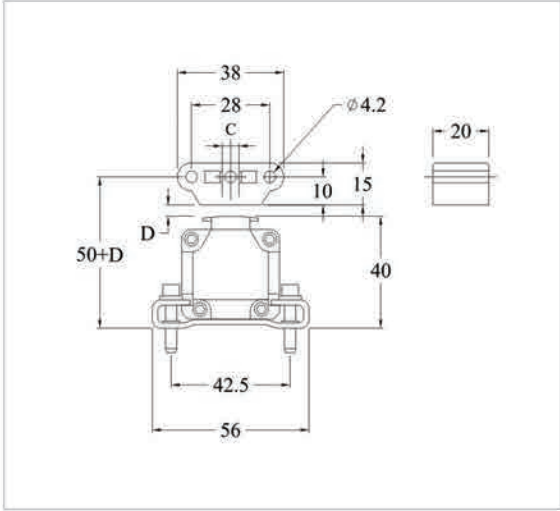
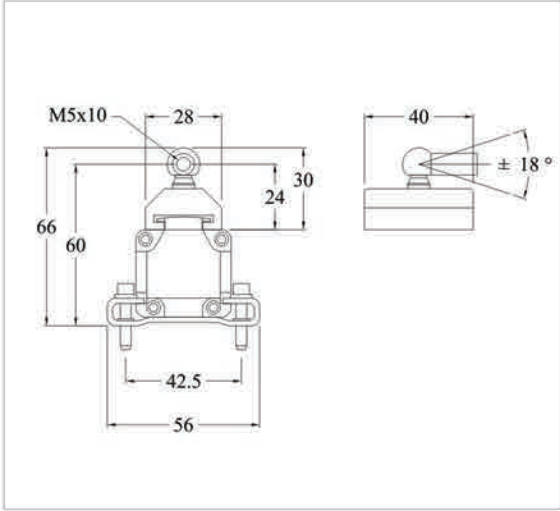
- Included :
- Transducer
 - Connector
 - Mounting
 - Magnet



Discription
For series

Captive
18 Series

Floating
18 Series



Order Code
Material
Weight
Vertical distance (D)
Lateral offset (C)
Operation Temperature

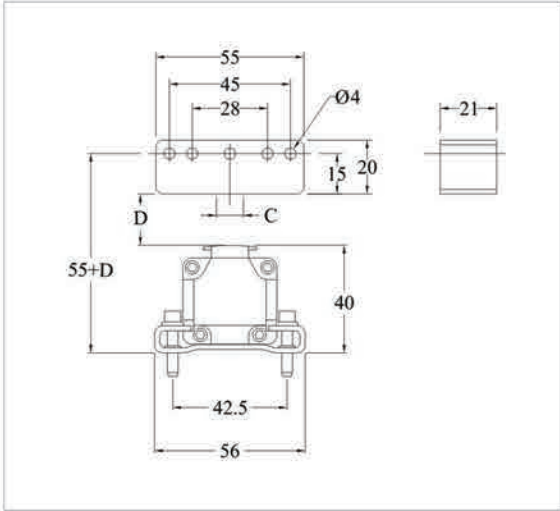
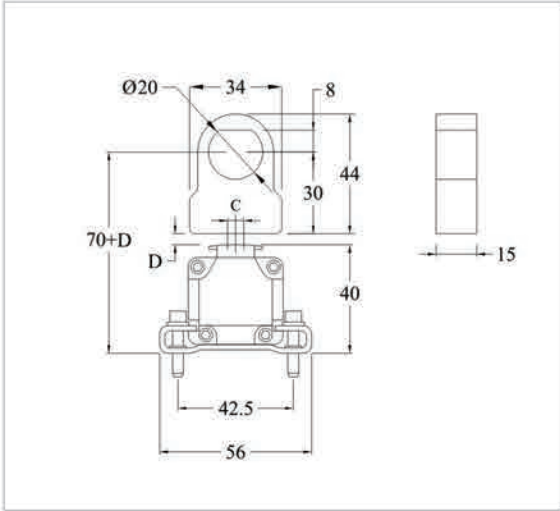
1800 951 001
Plastic
~30g
Fixed
Fixed
-40 to 75°C

1800 951 002
Plastic
~12g
0.1 - 4mm
±8 m m
-40 to 75°C

Discription
For series

Die-cast
18 Series

Large floating
18 Series



Order Code
Material
Weight
Vertical distance (D)
Lateral offset (C)
Operation Temperature

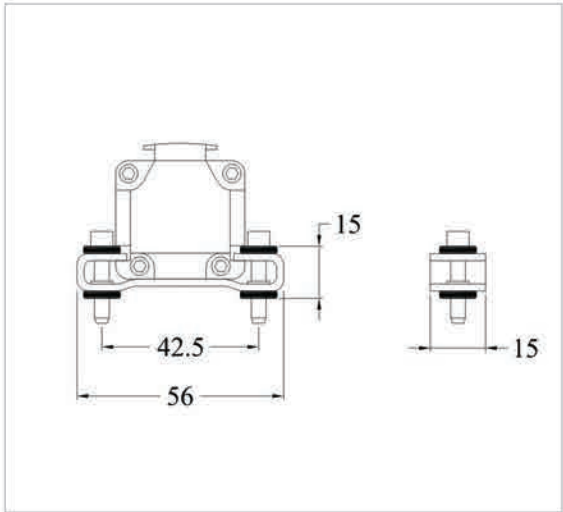
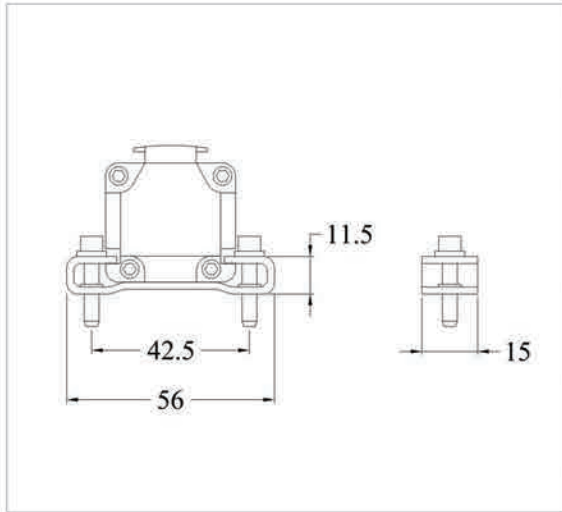
1800 951 003
Plastic
~12g
0.1 - 4mm
±8 m m
-40 to 75°C

1800 951 004
Plastic
~40g
0.1 - 10mm
±20 m m
-40 to 75°C

Discription
For series

42.5mm Mounting
18 Series

42.5mm Isolation Mounting
18 Series



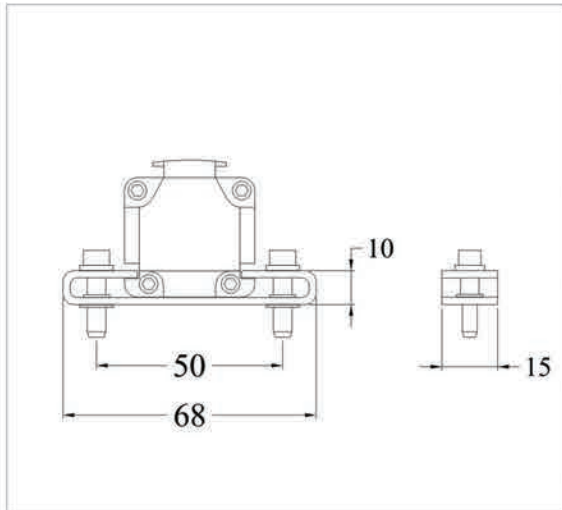
Order Code
Material
Installation
Torque

1800 951 007
Stainless Steel
M4 x 20 (not included)
Max. 4 Nm

1800 951 008
Stainless Steel
M4 x 20 (not included)
Max. 0.5 Nm

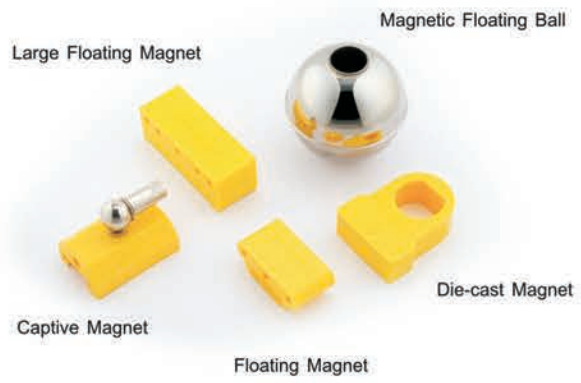
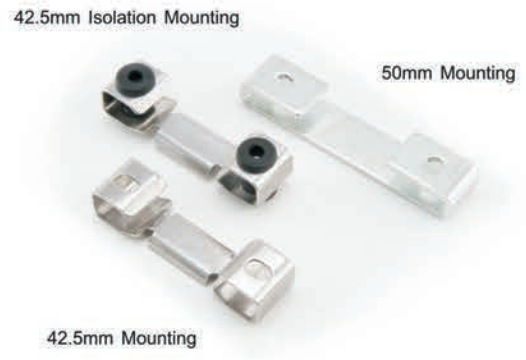
Discription
For series

50mm Mounting
18 Series



Order Code
Material
Installation
Torque

1800 951 009
Stainless Steel
M5 x 20 (not included)
Max. 5 Nm



Discription

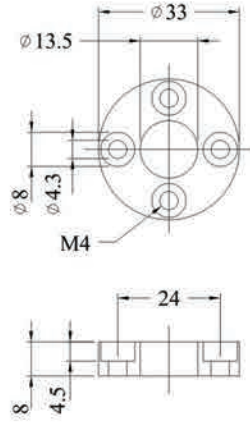
For series

Order Code

Dia. 33mm ring

12/17/19 Series

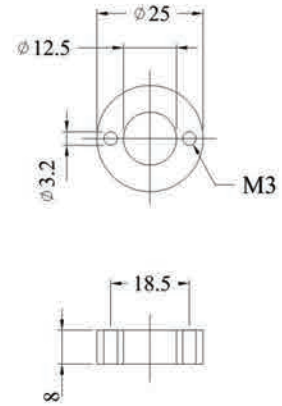
1700 951 001



Dia. 25mm ring

12/17/19 Series

1700 951 003



Material

Weight

Plastic

~8g

Plastic

~8g

Discription

Order Code

Material

Dia. 33mm Spacer

1700 951 002

Plastic

Dia. 25mm Spacer

1700 951 004

Plastic

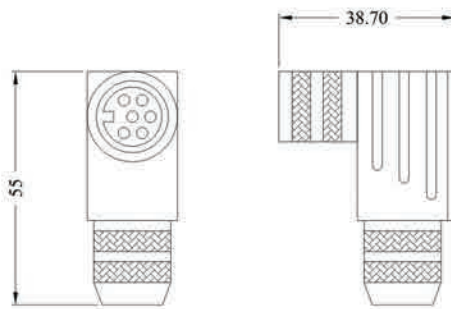
Discription

Model

90Deg. 6/7pin. Connector (female)

D60

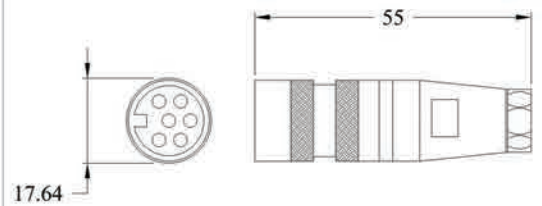
D70



6/7pin. Connector (female)

D60

D70



Order Code

Material

Weight

1800 951 011

1800 951 013

Housing: Zinc nickel platedI

~60g

1800 951 010

1800 951 012

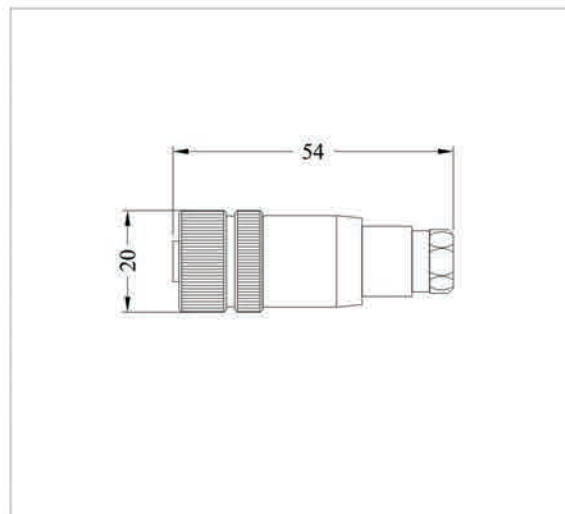
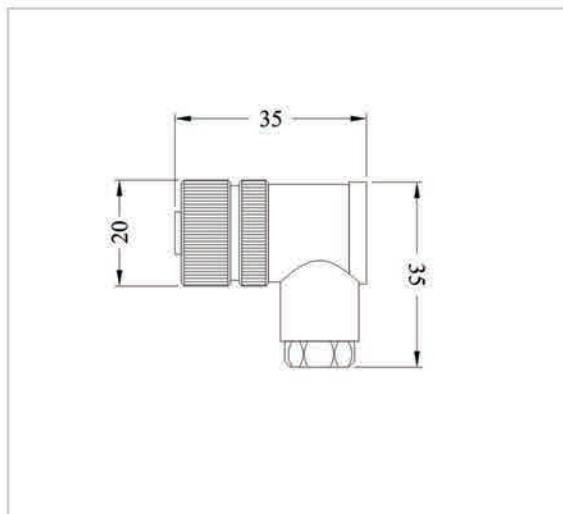
Housing: Zinc nickel platedI

~40g

Discription
Order Code

M12 90Deg 5pins Connector (Female)
1800 951 018

M12 5pins Connector (Female)
1800 951 017



Material
Cable Diameter

Cu Zn / Plastic
6 - 8 m m

Cu Zn / Plastic
6 - 8 m m



Discription	Floating Ball	Floating Ball	Floating Ball	Floating Ball
Order Code	1700 951 005	1700 951 006	1700 951 007	1700 951 008
Material	304 SS	304 SS	304 SS	304 SS
Inside Dia. (ID)	15 mm	23 mm	23 mm	9 mm
Out Dia./Height	52 x 52 mm	75 x 70 mm	125 x 120 mm	28 x 28 mm
Density	0.7	0.7	0.7	0.7
Pressure Rating	40 bar	40 bar	40 bar	40 bar



Discription	Floating Marker	Floating Marker	Floating Marker	Floating Marker
Order Code	1700 951 009	1700 951 010	1700 951 011	1700 951 012
Material	PP Plastic	PP Plastic	PP Plastic	PP Plastic
Inside Dia. (ID)	8 mm	8 mm	9 mm	9 mm
Out Dia./Height	18 x 8 mm	19 x 17 mm	24 x 10 mm	26 x 17 mm
Density	0.7	0.7	0.7	0.7

* use for special 7mm Stainless Steel tube



Discription	Floating Ball Stopper	Floating Ball Stopper
Order Code	1700 951 013	1700 951 014
Material	304 SS	304 SS
Inside Dia. (ID)	10 mm	7 mm
Out Dia./Height	20 x 13 mm	16 x 13 mm



3 Twisted Pairs Cable Order Code

1 8 0 0 9 5 1 1 X X

Cable Length

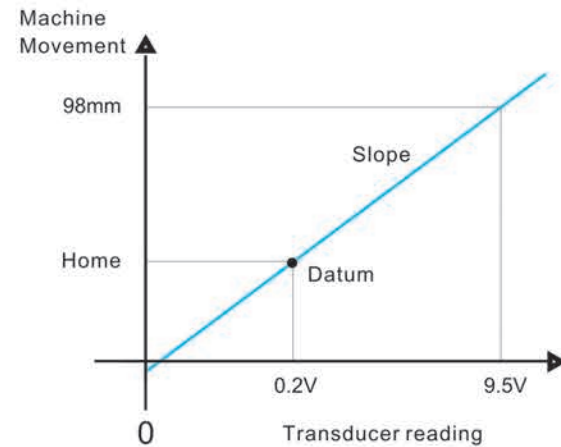
Please select the cable length in unit Meter
 For example, 01 = 1 Meter
 (Cable price not include connector)
 If purchase the connector together, we can install
 the connector with cable for free of charge.

Color Code	D60	D70	4 Pins Voltage	4 Pins Current
Black	1	1	P3	N.C
White	2	2	P3 Gnd.	N.C
Yellow	3	3	P2	P2
Green	4	4	P2 Gnd.	P2 Gnd.
Red	5	5	P1	P1
Blue	6	6	P4	P4
		7 (N.C)		

Transducer on machine calibration

To make sure the nominal stroke length is fully covered, all analog position transducers' output signal were calibrated slightly wider than the stroke. After installation, the machine needs to go through calibration. The step is as follow.

- 1) Move the machine to home position and record the transducer reading.
Example: at home, the transducer reading = 0.2V
- 2) Move the machine away from home position, measure the actual movement and record the transducer reading.
Example: actual movement = 98mm,
transducer actual movement reading = 9.5V
- 3) Calculate the "slope"
Slope = actual movement / (transducer actual movement reading - transducer home reading).
Example: slope = 98mm / (9.5V - 0.2V) = 10.537
- 4) Calculate the "datum"
Datum = slope x transducer home reading
Example: datum = 10.537 x 0.2V = 2.106
- 5) Machine position = (slope x transducer reading) - datum
Example: machine position = (10.537 x transducer reading) - 2.106



International Protection Rating (IP)

IP X X

Solid particle protection

- 4 = >1mm object size protected against
- 5 = Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment;
- 6 = No ingress of dust; complete protection against contact

Liquid ingress protection

- 0 = Not protected
- 5 = Water projected by a nozzle (6.3mm) against enclosure from any direction shall have no harmful effects.
- 7 = Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).



Transducer may in touch with dust and water, having proper IP rating is needed. Potentiometer IP rating is IP 40 or 50 but non-contact position transducer IP rating is IP 65 or even 67.

Installation of floating magnet



Installation of floating magnet is very simple. Compared to captive magnet, floating magnet can truly demonstrate the advantage of non-contact sensing and eliminate the wear of captive magnet socket.

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