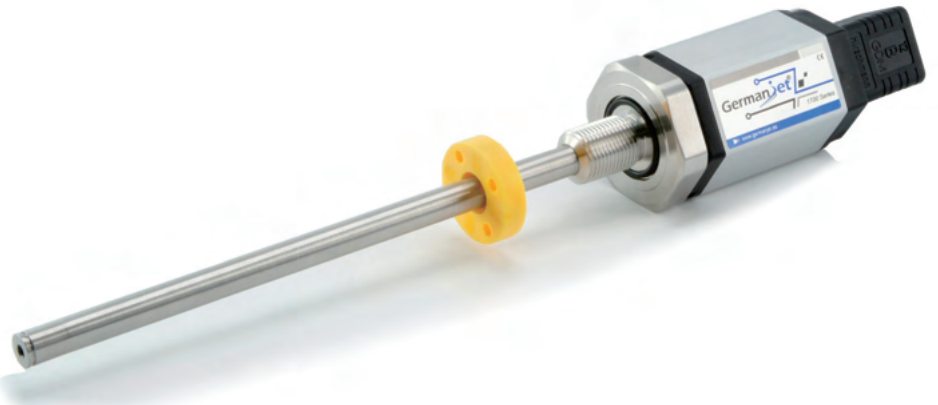


The 17 series non-contact absolute position transducer is specially designed for hydraulic cylinder to provide precise, direct and absolute position feedback. Hydraulic body is made by stainless steel; it can be inserted directly into hydraulic cylinder. Electronic component and hydraulic body are modular design which can be detached easily.

The transducer is rated for IP65 which offers full protection against outside agents for use in harsh environments with high contamination and presence of dust. The connector is common for use in hydraulic device and easy for field connection. Besides for hydraulic system, it is also suitable for machine installation. The absence of electrical contact eliminates all wear and guarantees almost unlimited mechanical life expectancy.



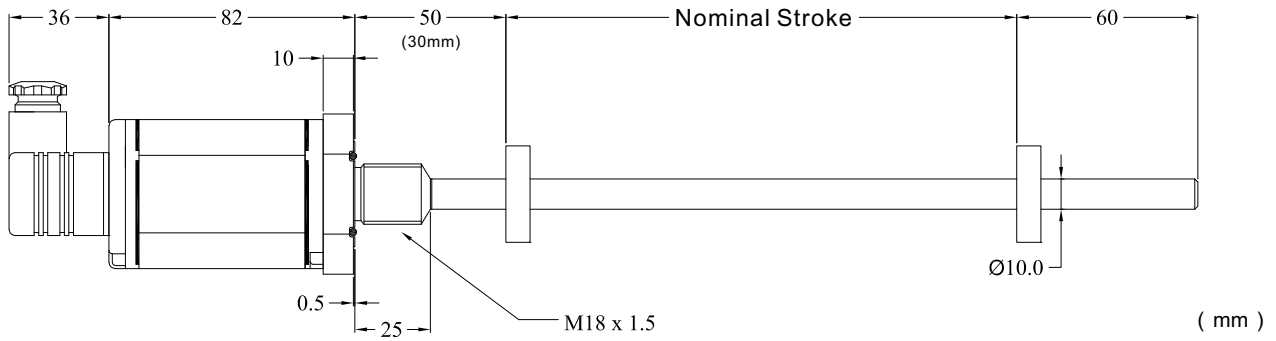
Specifications

Order Code	170	171	172	174	175	173
Output	0 - 10 V 10 - 0 V	0 - 20 mA	20 - 0 mA	4 - 20 mA	20 - 4 mA	Start/Stop
Measurement Type	Linear displacement					
Resolution	Infinite, restricted by output ripple					0.1 / 0.01 / 0.005mm
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	< ±0.02% of full scale (minimum ±90µm)					
Update Time	0.5 ms up to 1200 mm / 1.0 ms up to 2500 mm					
Operation Temp.	-40 to 75°C, Humidity 90% non-condensing					
Sealing	IP65 (with 4 pin connector) / IP67 (with D60 and M12 connectors)					
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					
Pressure Rating	350 bar / 600 bar peak					
Mounting	M18 x 1.5					
Housing Material	Anodized aluminum sensor cartridge, Stainless steel tube and flange, Plastic cartridge cover					

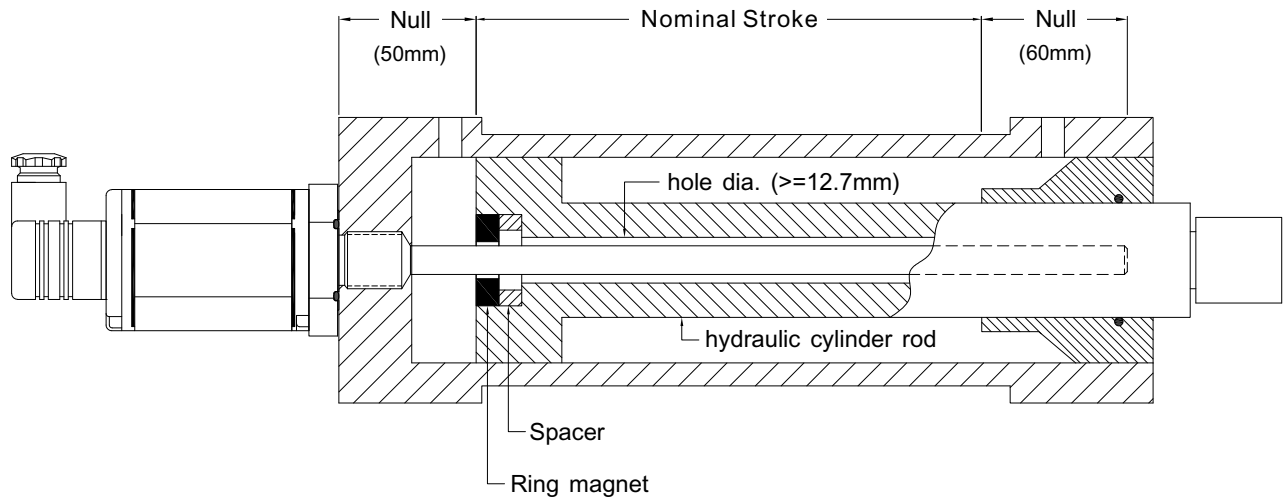
Non-contact technology ...



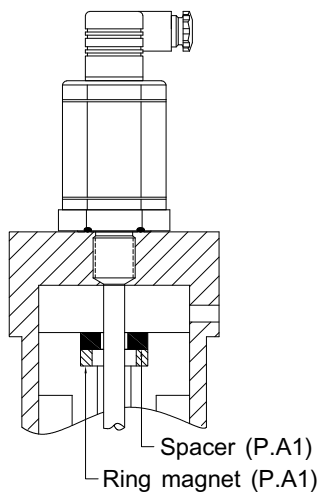
## Dimension



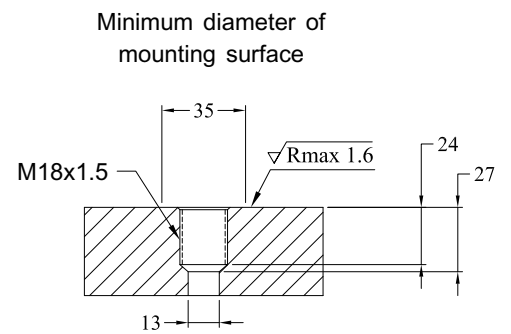
## Installation



## Magnet installation



## Mounting surface requirement



Installation hole must be perpendicular with mounting surface and center with sensor rod.

### Remarks:

Mounting screw must be made of non-magnetizable materials. If cylinder is made of magnetizable materials, ring spacer must be installed

## Order Code

1 7 X X X X X X X X X X X X X X X

### Output

- 0 = 0-10Vdc and 10-0Vdc
- 1 = 0-20mA
- 2 = 20-0mA
- 3 = Start/Stop
- 4 = 4-20mA
- 5 = 20-4mA

### Connector (Voltage / Current)

- 0 = 4 pin connector (IP65)
- 3 = 4 pin connector (IP67)
- 4 = 5 pin M12 male connector (not include connector)
- 5 = S15 - 8 pin M12 male connector (not include connector)
- 7 = S32 - 8 pin M16 male connector (not include connector)
- 8 = Cable outlet
- 9 = D60 - 6 pin M16 male connector (not include connector)

### Connector (Start/Stop)

- 0 = 4 pin connector (IP65, in use with module)
- 6 = 8 pin M12 connector (not include connector)
- 7 = S32 - 8 pin M16 male connector (not include connector)
- 9 = D60 - 6 pin M16 male connector (not include connector)

### Mounting thread

- 1 = 3/4" 16 - UNF 3A
- 2 = M18 x 1.5
- 3 = Raised-face 3/4" 16 - UNF 3A

### Magnet Type (P.A1)

- 1 = Dia. 33mm ring
- 2 = Dia. 25mm ring
- 3 = Floating ball
- 4 = Dia. 60mm ring
- 5 = Dia. 32mm ring
- 6 = Large floating

### Stroke Length

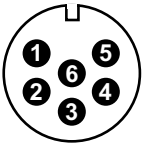
- 0 0 7 5 , 0 1 0 0 , 0 1 2 5 , 0 1 5 0 , 0 1 7 5 , 0 2 0 0 , 0 2 2 5
- 0 2 5 0 , 0 2 7 5 , 0 3 0 0 , 0 3 2 5 , 0 3 5 0 , 0 3 7 5 , 0 4 0 0
- 0 4 2 5 , 0 4 5 0 (25mm increment after and up to 2500mm)

### Option

BF = 30mm front dead zone

### Cable Type (if cable outlet is selected)

- R02 = PVC direct cable, option: R01-R10 (1-10m)
- H02 = PUR direct cable, option: H01-H10 (1-10m)
- T02 = Teflon direct cable, option: T01-T10 (1-10m)
- W02 = Waterproof direct cable, option: W01-W10 (1-10m)

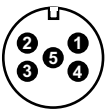


D60

	Voltage	Current	Start/Stop
1	0-10V output	Signal output	Stop (-)
2	Pin 1 DC Gnd.	Signal Gnd	Stop (+)
3	10-0V output	N.C.	Start (+)
4	Pin 3 DC Gnd.	N.C.	Start (-)
5	+24 Vdc	+24 Vdc	+24 Vdc
6	0 Vdc	0 Vdc	0 Vdc

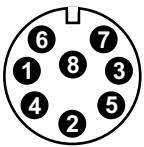
\* View toward sensor pins

\* Cable shield connects to connector shell and grounded at controller side.



5 pins M12

	Voltage	Current
1	+24Vdc	+24Vdc
2	0-10V output	Signal output
3	0 Vdc	0 Vdc
4	10-0V output	N.C.
5	DC Gnd	Signal Gnd



S32

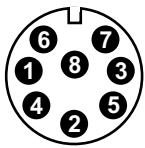
	Voltage	Current			
		0 - 20mA	20 - 0mA	4 - 20mA	20 - 4mA
1	N.C.	0 - 20mA	20 - 0mA	4 - 20mA	20 - 4mA
2	Signal Gnd	Signal Gnd			
3	10 - 0V	N.C.			
4	N.C.	N.C.			
5	0 - 10V	N.C.			
6	0 Vdc	0 Vdc			
7	+24 Vdc	+24 Vdc			
8	N.C.	N.C.			

(View toward sensor pins)



S15

	Voltage	Current			
		0 - 20mA	20 - 0mA	4 - 20mA	20 - 4mA
1	Signal Gnd (P3)	N.C.			
2	Signal Gnd (P5)	Signal Gnd			
3	10 - 0V	N.C.			
4	N.C.	N.C.			
5	0 - 10V	0 - 20mA	20 - 0mA	4 - 20mA	20 - 4mA
6	0 Vdc	0 Vdc			
7	+24 Vdc	+24 Vdc			
8	N.C.	N.C.			



S32

	Start / Stop
1	Start (+)
2	Stop (+)
3	Start (-)
4	N.C.
5	Stop (-)
6	0 Vdc
7	+24 Vdc
8	N.C.



8 pins M12

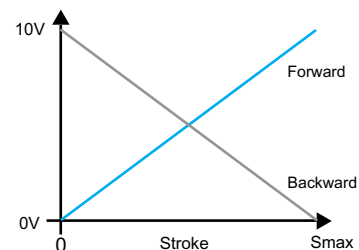
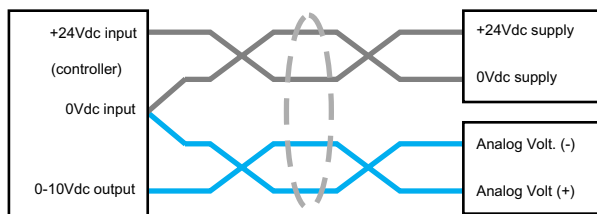
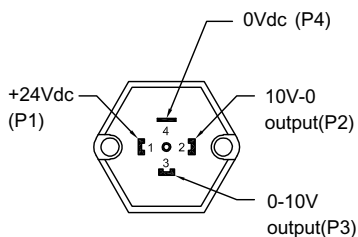
	Start /Stop
1	Start (+)
2	Start (-)
3	Stop (+)
4	Stop (-)
5	N.C.
6	N.C.
7	+24 Vdc
8	0Vdc

Cable Outlet

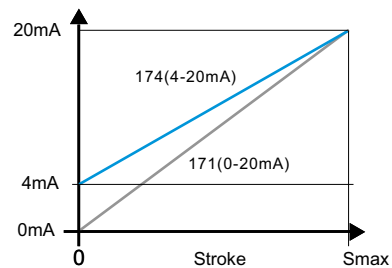
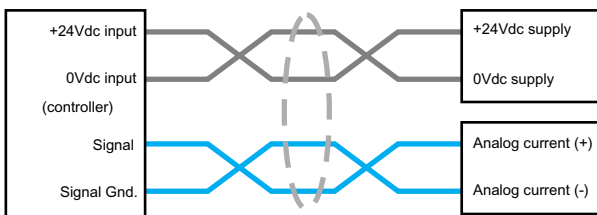
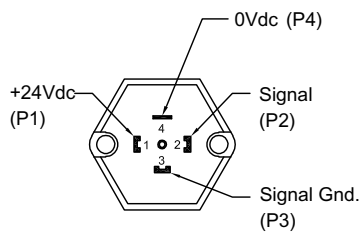
	Color	Voltage	Current
1	Black	0-10V Output	Signal Output
2	White	Pin 1 DC Gnd	Signal Gnd
3	Yellow	10-0V Output	N.C.
4	Green	Pin 3 DC Gnd	N.C.
5	Red	+24 Vdc	+24 Vdc
6	Blue	0 Vdc	0 Vdc

(View toward sensor pins)

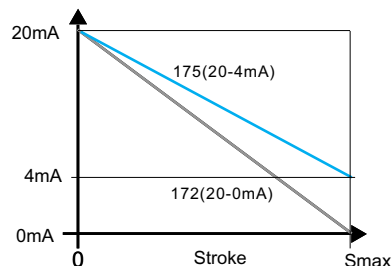
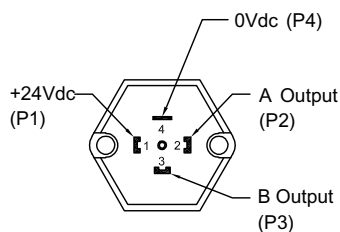
Analog voltage



Analog current



Start/Stop digital output



## Sensor cartridge replacment

O-ring face seal provide an ease of machining on the machine.

O-ring Face Seal



Standard Magnet

A wide selection of ring magnet to choose from.

Modular Design

The sensor cartridge can be removed from the flange while still installed in the cylinder. This allows quick sensor cartridge replacement without the loss of hydraulic pressure.

The 17EX series non-contact absolute position transducer is specially developed for use in explosion-protected atmospheres and hazardous location. It comply with GB 3836.1-2010 (Explosive atmospheres Part 1: Equipment general requirements), and GB 3836.4-2010 (Explosive atmospheres Part 4: Equipment protection by intrinsic safety I).

Explosion Rating : Ex ia IIB T4 Ga

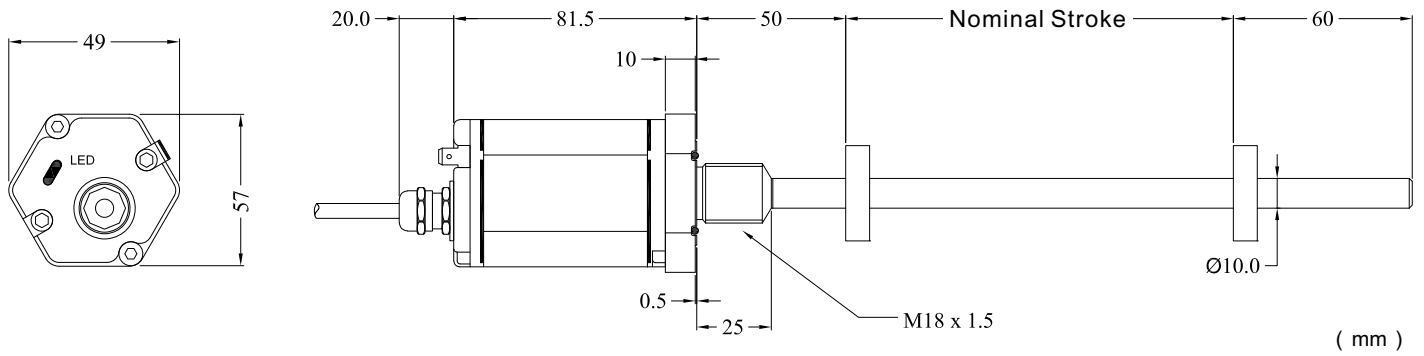
With IP67 rating, it offers full protection against outside agents for use in harsh environments with high contamination and presence of dust. Sensing rod is made by stainless steel and can be inserted directly into hydraulic cylinder to provide precise, direct and absolute position feedback.



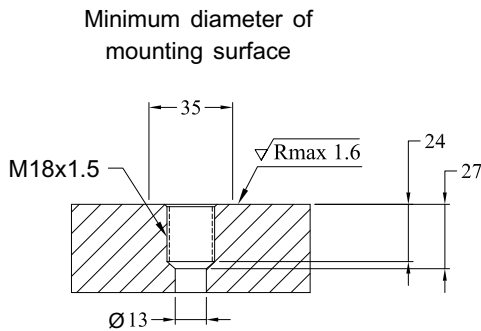
Specifications

Order Code	17 EX
Output	Voltage / Current
Measurement Type	Linear displacement
Resolution	Infinite, restricted by output ripple
Repeatability	< ±0.005% of full scale
Non-Linearity	< ±0.02% of full scale (minimum ±90µm)
Update Time	0.5 ms up to 1200 mm / 1.0 ms up to 2500 mm
Input Voltage	+12Vdc
Input Protection	Polarity protection up to -30Vdc, Over voltage protection up to 36Vdc
Current Consumption	100mA (stroke range dependent)
Dielectric Strength	500Vdc (DC ground to machine ground)
Connection Type	Cable Outlet
Operation Temp.	-40 to 75°C, Humidity 90% non-condensing
Sealing	IP67
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
Pressure Rating	350 bar / 600 bar peak
Explosion Protection	GB 3836.1-2010 (Explosive Atmospheres Part 1: Equipment General Requirements) GB 3836.4-2010 (Explosive Atmospheres Part 4: Equipment Protection by Intrinsic Safety i) Explosion Protection Rating : Ex ia IIB T4 Ga Certification number : CNEx21.4049X

**Dimension**



**Mounting surface requirement**



Installation hole must be perpendicular with mounting surface and center with sensor rod.

**Wiring**

Cable	Function
Black	Signal Output
White	Signal Gnd
Yellow	N.C.
Green	N.C.
Red	+12 Vdc
Blue	0 Vdc

**Order Code**

1 7 E X X X X X X X X X X

**Output**

- 0 = 0 - 10 V d c
- 1 = 10 - 0 V d c
- 4 = 4 - 20 m A (max. loading: 0/250 Ohms)
- 5 = 20 - 4 m A

**Connection Type**

- R02 = 2m PVC Direct Cable, Option: R01-R10 (1-10m)
- H02 = 2m PUR Direct Cable, Option: H01-H10 (1-10m)

**Mounting Thread**

- 2 = M18 x 1.5

**Magnet Type (P.A1)**

- 1 = Dia. 33mm ring      5 = Dia. 32mm ring
- 2 = Dia. 25mm ring    6 = Dia. 60mm ring

**Stroke Length**

- 0 0 7 5 , 0 1 0 0 , 0 1 2 5 , 0 1 5 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 3 7 5 , 0 4 0 0
- 0 4 2 5 , 0 4 5 0 , (25mm increment after and up to 2500mm)