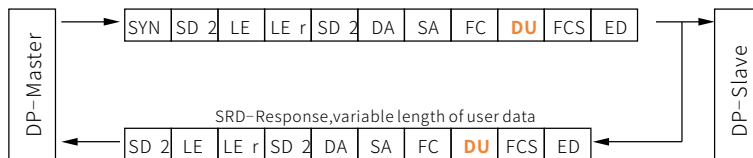




T3F - Profibus-DP

T-Series III Data Sheet



- + Updated new generation: stronger performance
- + Stroke length up to 20 m
- + The sensor address is set by dialing code, which is convenient and reliable without manual operator.



THE NEW III GENERATION



High precision



Double anti-interference



High performance chip



Wide operating voltage



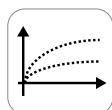
Reverse polarity protection



Shock/vibration resistant

TECHNICAL PARAMETER

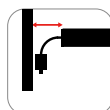
TECHNOLOGY PERCEIVES THE FUTURE



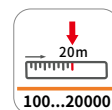
Linear/Curve measurement



Compact for transport and storage



Confined space installation



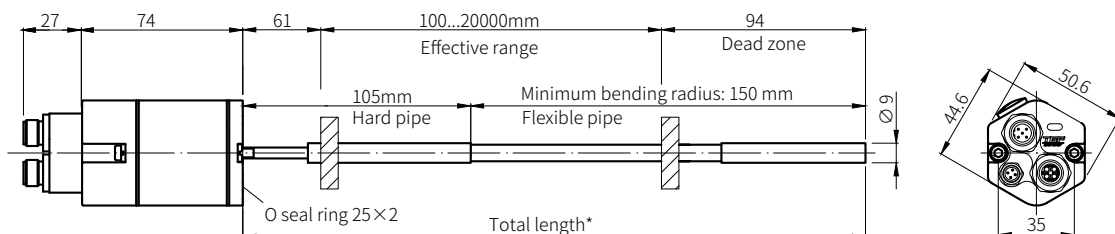
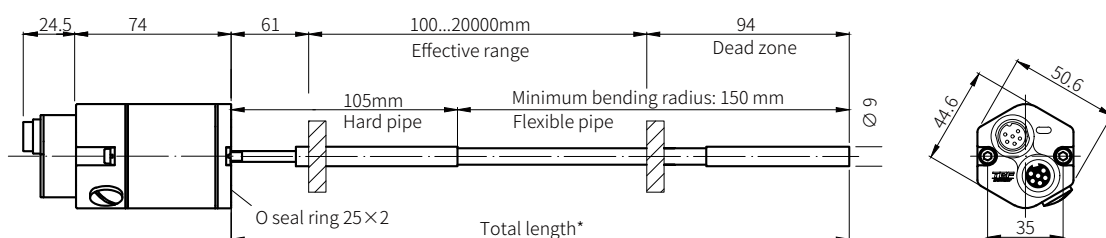
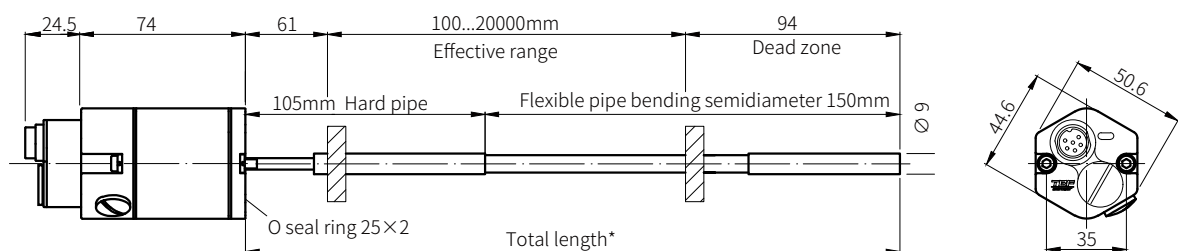
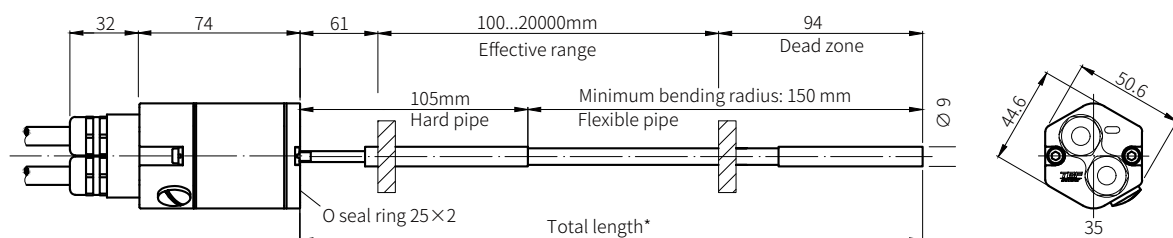
Wider stroke length range

Input	Measured data	Position/Velocity			
	Position measurement range	100mm...20000mm			
Output	Interface	IEC 61158 CPF3 PROFIBUS			
	Date format	Profibus-DP subordinating station			
	Data transmission rate	Max. 12Mbit/s			
Resolution	Position resolution	1...1000μm, users can select by using GSD file			
	None-Linearity	< ±0.02%F.S. (min. ±100μm)			
	Repeatability	< ±0.001%F.S. (min. ±2.5μm)			
	Update time	Single magnet			
		Stroke length	≤ 1200mm	≤ 2400mm	≤ 4800mm
		Update time	0.5ms	1ms	2ms
		Multi magnets: For each additional position magnet, update time is extended by 0.05ms.			
	Temperature coefficient	< 15ppm/°C			
Mounting	Mounting position	Any			
	Pressure resistance outer tube	Thread metric M18×1.5, 3/4"-16UNF-3A etc.			
Design/Material	Electronics housing	Aluminum alloy/Zinc alloy			
	Magnet	Stainless soft pipe (Teflon skin), min. bending semidiameter 150mm, shipping semidiameter 500mm			
Electrical connection	Wiring connection	6 pin M16 connector, double 6 pin M12 connector , two 5 pin M12 connectors and one 4 pin M8 connector, straight out cable			
	Operating voltage	9VDC...36VDC			
	Polarity protection	Up to -36VDC			
	Overvoltage protection	Up to +36VDC			
	Power consumption	< 90mA (varies with range size)			
	Dielectric strength	500 VDC (DC ground to machine ground)			
Operating conditions	Loop velocity	Any			
	Operating temperature	-40...85°C			
	Humidity	90 % relative humidity, no condensation			
	Ingress protection	IP67 installed into pressure pipe (top IP68)			
	Shock	100 g/11 ms, IEC standard 60068-2-27			
	Vibration	5 g/10...2000 Hz, IEC standard 60068-2-6 (resonant frequencies exclusive)			
	EMC	Flexible sensor installed into pressure pipe Electromagnetic emission according to EN 61000-6-4 Electromagnetic immunity according to EN 61000-6-2			

ITEM

CATEGORY

PARAMETER

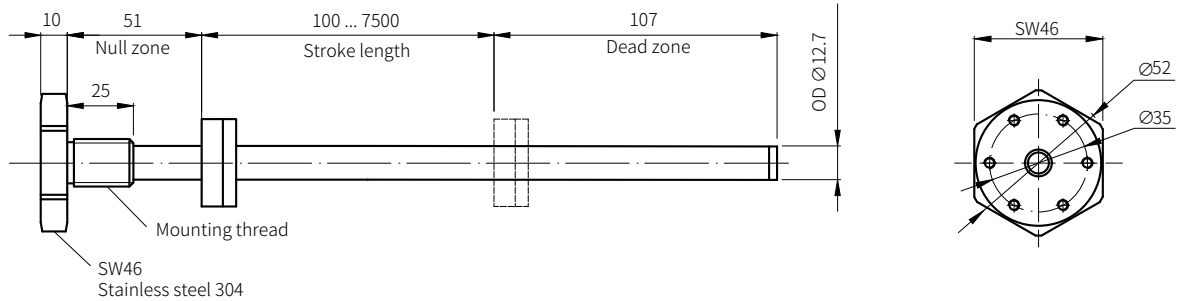
Aviation plug : 5 pin M12 (male) + 5 pin M12 (female) + 4 pin M8(male)
T3F- ____ - **D5D48** - ____
Aviation plug : 6 pin M16 (male) + 6 pin M16 (female)
T3F- ____ - **D6D6** - ____
Aviation plug : 6 pin M16 (male)
T3F- ____ - **D616** - ____
Single/dual straight out cable
T3F- ____ - **RP/T** - ____T3F- ____ - **R2P/T** - ____

*Total length < 7600mm, error 0/+8mm; > 7600mm, error +15mm /-5mm;

Total length error has no impact on effective range.

Continuous pressure tolerance of the pressure pipe is 35MPa (70MPa peak).

T3F flexible sensor is installed into pressure pipe, straight out cable IP68, aviation plug IP67.

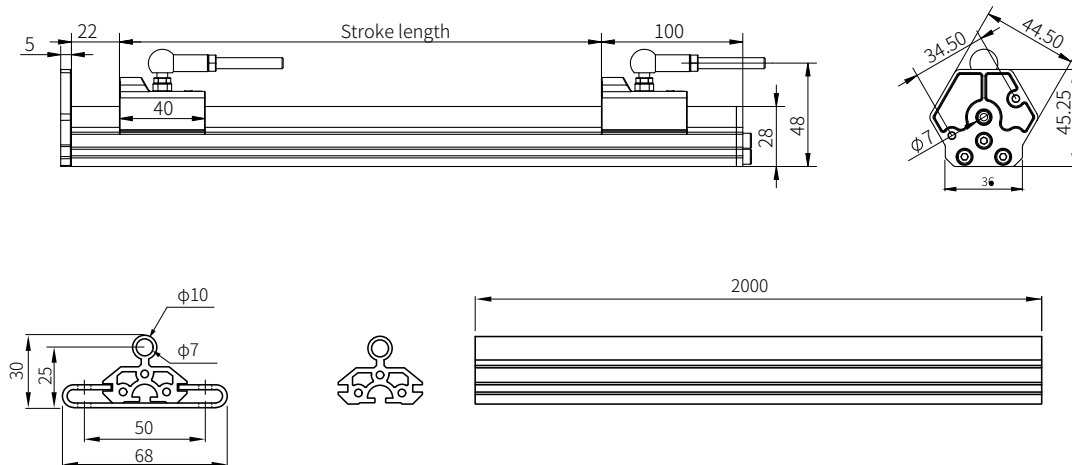
**ORDER CODE**

HD - **M** -

Stroke length
0100...7500mm
(5mm increments)

Thread
M Metric M18x1.5
V Metric M20x1.5
S 3/4"-16UNF-3A
W Metric M24x1
If not selected, thread M18x1.5 by default.

Aluminum profile

**ORDER CODE**

H3P - **M** -

Stroke length **Magnet**

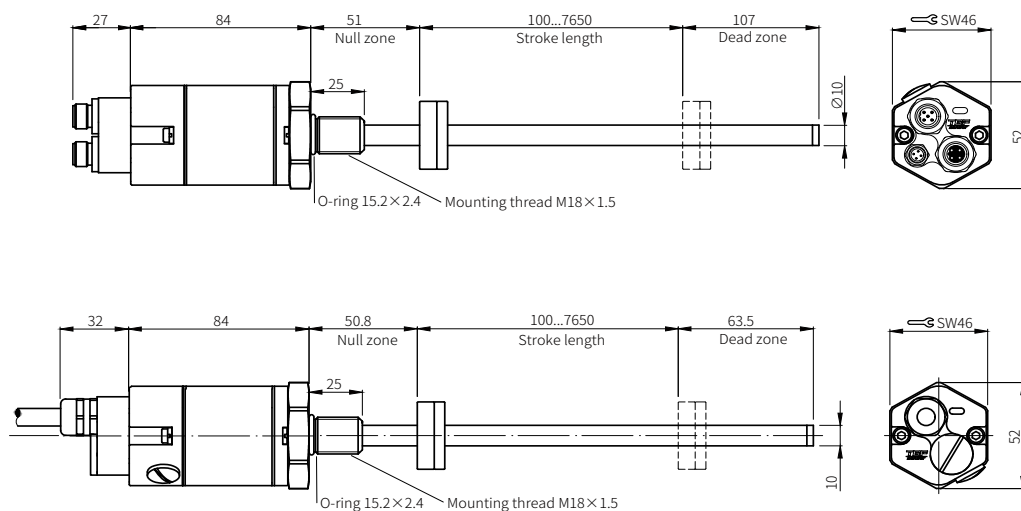
0025...5600mm
(5mm increments)

S Magnet slider joint at top
V Magnet slider joint at front
F Suspension magnet
U U- magnet

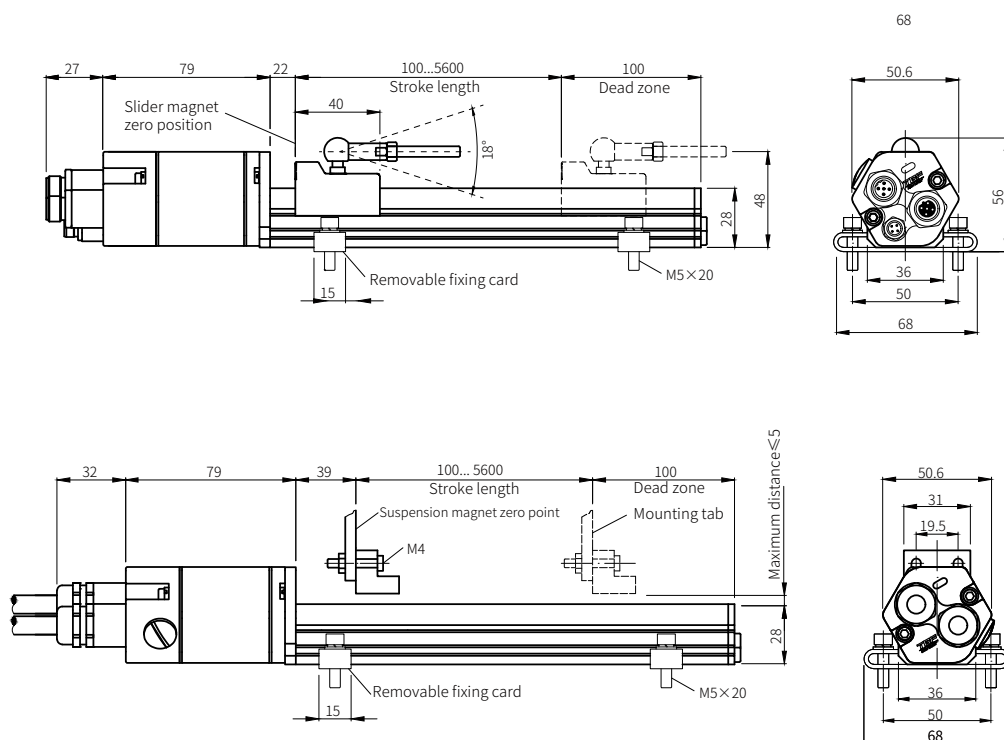
Combination example drawings

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Flexible sensor installed into pressure pipe



Flexible sensor installed into aluminum profile



MOUNTING DRAWING

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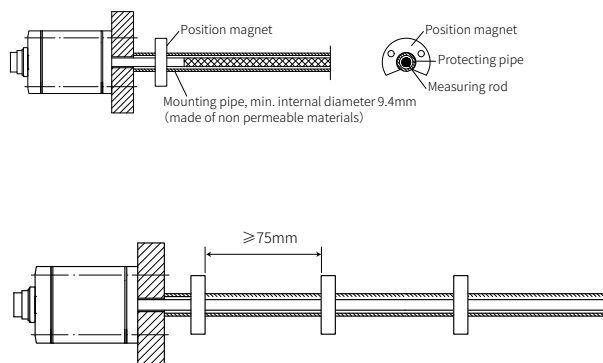
T3FH type of installation diagram

Electronics housing for T3F flexible sensor employs two M4x60 non permeable screws for installation.

When arc measurement is adopted, the flexible pipe can be bended into required shape with min. bending semidiameter 150mm.

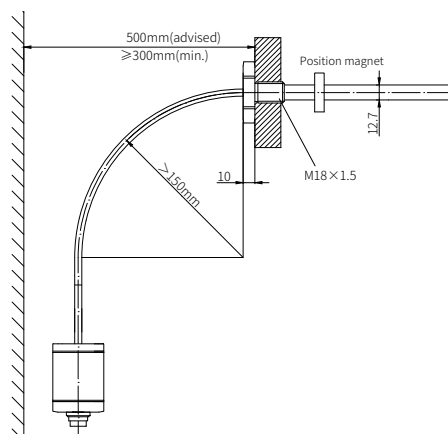
With long range sensor, pipes made of non permeable materials can be used as support. In addition, pressure pipe with flange can also be ordered to support and protect the sensor.

Linear measurement



Spacing between multiple magnets shall be $\geq 75\text{ mm}$

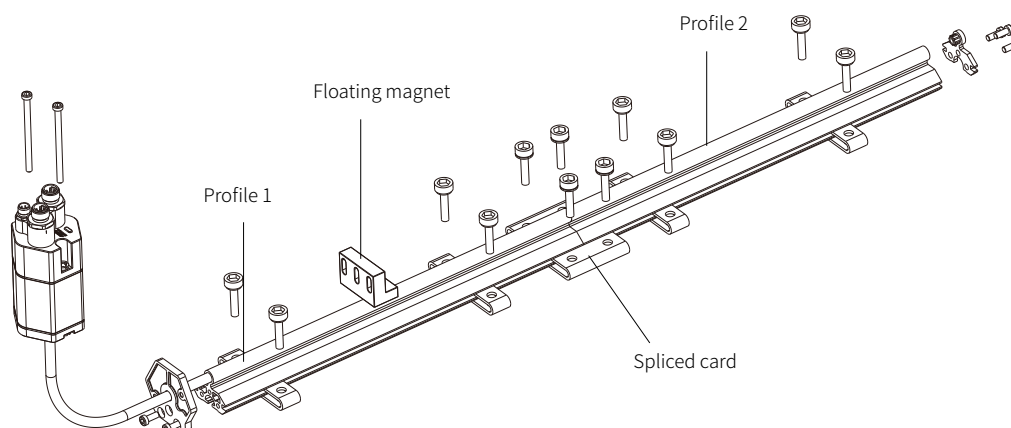
Pressure pipe



T3FP type of installation diagram

T series external guide rail sensors are fixed with removable fixing cards. The distance between the cards should be with in 500mm.

When the sensors are used under extremely severe shock and vibration conditions, it is recommended to configure a removable fixing card every 250mm.



For spliced profiles:

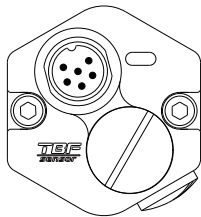
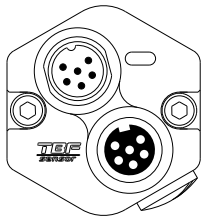
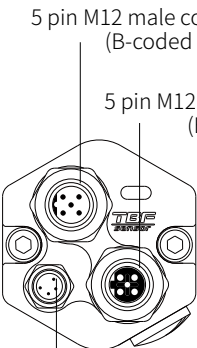
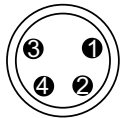
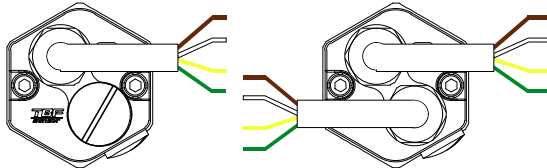


Ensure the joints are flush.

Only compatible with floating magnets or U-shaped magnets.

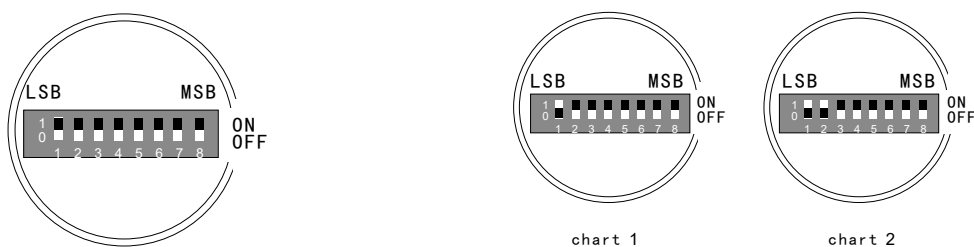
FUNCTION

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6 pin M16 male connector		Double 6 pin M16 (male , female) connector		D616/D6D6		PIN	Function
						1 2 3 4 5 6	RxD/TxD-N (Bus) RxD/TxD-P (Bus) DGnd (Bus termination only)* VP (Bus termination only)* 9VDC...36VDC 0 VDC (GND)
				D616 (male)	D616 (female)	View on sensor	
5 pin M12 (male, female) connector (B-coded) , 4 pin M8 male connector				D5D48		PIN	Function
 5 pin M12 male connector (B-coded) 5 pin M12 female connector (B-coded) 4 pin M8 male connector						1 2 3 4 5	VP+5N (Bus termination only)* RxD/TxD-N (Bus) DGnd (Bus termination only)* RxD/TxD-P (Bus) Mechanical grounding of cable shield wire
				D512 (male) D512 (female)		View on sensor	
				D408 (male)		PIN	Function
						1 2 3 4	9VDC...36VDC NC 0 VDC (GND) NC
				View on sensor			
Single/dual straight out cable				Color		Function	
				Brown White Yellow Green		9VDC...36VDC 0 VDC(GND) RxD/TxD-P (Bus) RxD/TxD-N (Bus)	
*Female connector only							

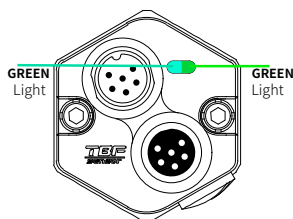
Address dialing position description

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1. When the needle at position "1" is dialed from "0" to "1", the address is "00000001" (decimal 1), see chart1.
2. When the needles at position "1" and "2" are dialed from "0" to "1", the address is "00000011" (decimal 3), see chart2.
3. By parity of reasoning, when the needle at position "3" is dialed from "0" to "1", the address is "00000111" (decimal 7).
4. When the needle at position "4" is dialed from "0" to "1", the address is "00001111" (decimal 15).
5. When the needle at position "5" is dialed from "0" to "1", the address is "00011111" (decimal 31).
6. When the needle at position "6" is dialed from "0" to "1", the address is "00111111" (decimal 63).
7. When the needle at position "7" is dialed from "0" to "1", the address is "01111111" (decimal 127).

Enhanced monitoring and diagnostic functions



Green light	Green light	Function
ON	OFF	Power on normal
ON	ON	Communication normal
OFF	OFF	No power

ORDER CODE

TECHNOLOGY PERCEIVES THE FUTURE

Basic structure

T3F - - - - M- - - - 1-P - - - -			
Pipe mounting	Stroke length	Connection type	Output
C Basic structure	00100...20000mm (< 1000: 50mm increments) > 1000: 250mm increments) Max. range 7500mm (pressure pipe installed)	R2P/T_ _ Dual straight out cable_ _m high performance / high temperature cable RP/T_ _ Single straight out cable_ _m high performance / high temperature cable (Fill in zero if less than 2 places) D6D6 Two sets of M16 female and male connectors (6pin) D5D48 Two sets of M12 female and male connectors (5 pin), one M8 male connector (4 pin) D616 One M16 male connector (6pin)	(Output Code)

Flexible sensor installed into pressure pipe

T3F - - - - M- - - - 1-P - - - -			
Pipe mounting	Stroke length	Connection type	Output
M Thread M18×1.5 with pressure pipe S 3/4"-16UNF-3A with pressure pipe	0100...7500mm	Same as above	(Output Code)

Flexible sensor installed into aluminum profile

T3FP - - - - M- - - - 1-P - - - -			
Magnet	Stroke length	Connection type	Output
S Magnet slider joint at top V Magnet slider joint at front F Suspension magnet U U- magnet	00100...5600mm (5mm increments)	Same as above	(Output Code)

Profibus-DP Output Code [1]-P[2][3][4]-[5][6]

[1] System	[2][3][4] Output	[5][6] Magnet number
1 Standard	101 Profibus-DP, 1...20 magnet, displacement 102 Profibus-DP, single magnet, displacement 105 Profibus-DP, 1...15 magnet, position and velocity, internal linearization (The specified error is valid for single magnet.)	01 one magnet 02 two magnets ... 20 twenty magnets

Model selection

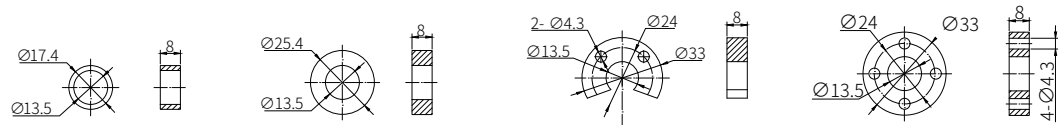
Model: T3F-M-00600M-D616-1-P102-01

Explanation: T series III generation, T3F flexible sensor, installed inside pressure pipe, mounting thread metric M18x1.5, stroke length 600mm, 6pin M16 aviation plug, standard, Profibus-DP output, displacement, single magnet.

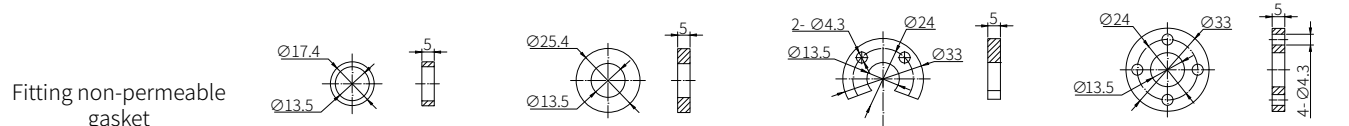
■ Please contact us
for more customized
products.

PARTS SELECTION

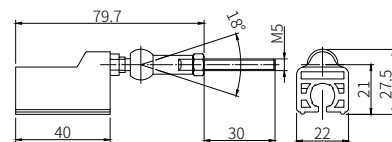
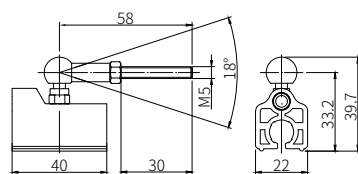
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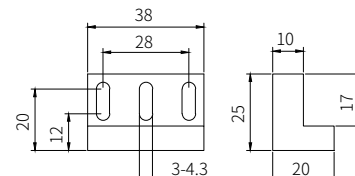
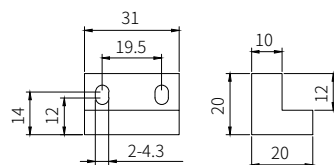
Name	Ring magnet	Ring magnet	U-magnet	Ring magnet
Operating temperature	-40...125°C			
Order code	12-1032	12-1019	12-1017	12-1001



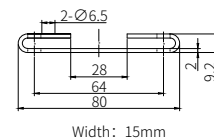
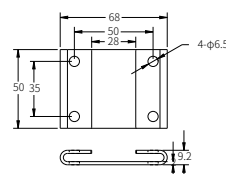
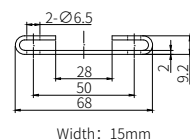
Name	Non-permeable gasket	Non-permeable gasket	Non-permeable gasket	Non-permeable gasket
Operating temperature	-40...125°C			
Order code	12-1037	12-1021	12-1018	12-1008



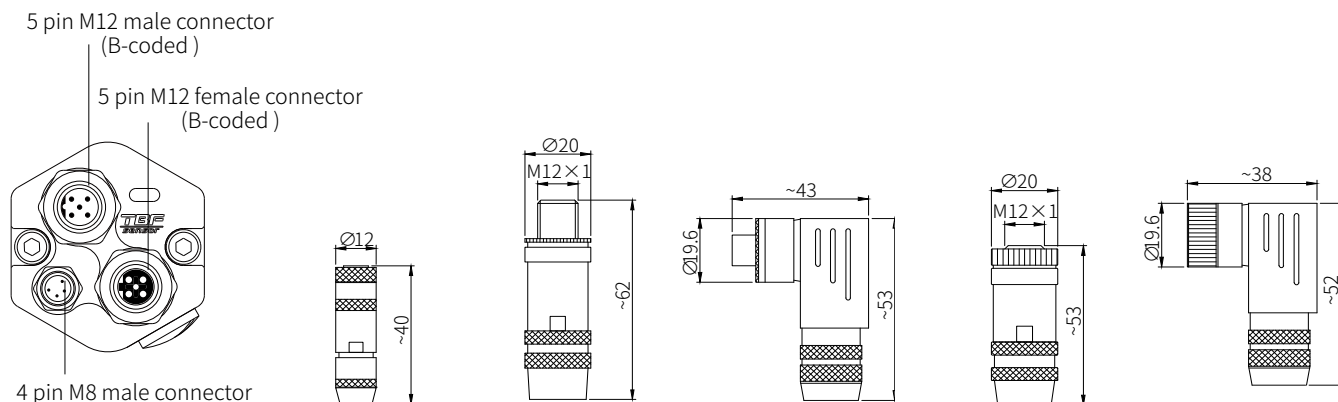
Name	Magnet slider S, joint at top	Magnet slider V, joint at front
Operating temperature	-40...105°C	
Order code	12-1114	12-1115

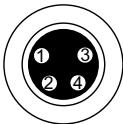


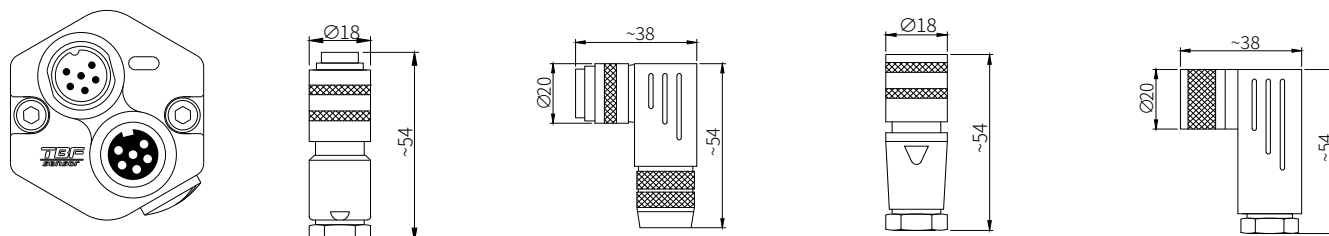
Name	Suspension magnet 31x20	Suspension magnet 38x25
Operating temperature	-40...105°C	
Order code	12-1010	12-1009



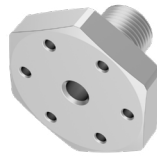
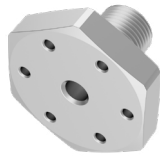
Name	Removable fixing card	Splicing Fixing Clip	Removable fixing card
Order code	11-1003	11-1058	11-1004



Name	4 pin M8 female connector	5 pin M12 male connector	5 pin M12 male connector (90 degree angle)	5 pin M12 female connector	5 pin M12 female connector (90 degree angle)
End view drawing		(B-coded) 		(B-coded) 	
Material	Galvanized nickel				
Fitting diameter	3.5...5mm	6...8mm			
Connection	Welding	Threaded			
Order code	18-1001	18-2002	18-2004	18-2001	18-2003



Name	6 pin M16 male connector	6 pin M16 male connector (90 degree angle)	6 pin M16 female connector	6 pin M16 female connector (90 degree angle)
End view drawing				
Material	Galvanized nickel			
Fitting diameter	6...8mm	6...8mm	4...6mm	6...8mm
Connection	Welding			
Order code	18-3002	18-3004	18-3001	18-3003



Name	Threaded flange M18×1.5-6g	Threaded flange 3/4"-16UNF-3A	Pressure rod with threaded flange M18×1.5-6g	Pressure rod with threaded flange 3/4"-16UNF-3A
Material	Stainless steel 304/316L			
Order code	11-1075	11-1076	HD-XXXXM-M	HD-XXXXM-S



Name	Profile with flange length ≤ 5600mm	Profile length: 2000mm
Material	Aluminum alloy, Zinc alloy	Aluminum alloy
Order code	H3P-XXXXM-X	11-1077

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