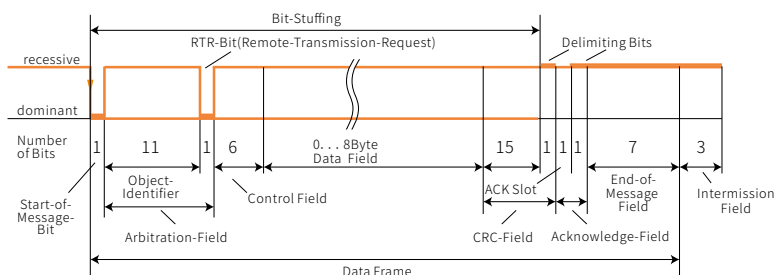




T3F - CANopen

T-Series III Data Sheet



- + Updated new generation: stronger performance
- + Stroke length up to 20 m
- + Multi-magnets position measurement: max. three measured positions



THE NEW III GENERATION



High precision



Double anti-interference



High performance chip



Wide operating voltage



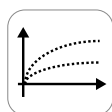
Reverse polarity protection



Shock/vibration resistant

TECHNICAL PARAMETER

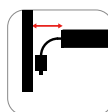
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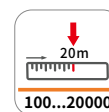
Linear/Curve measurement



Compact for transport and storage



Confined space installation

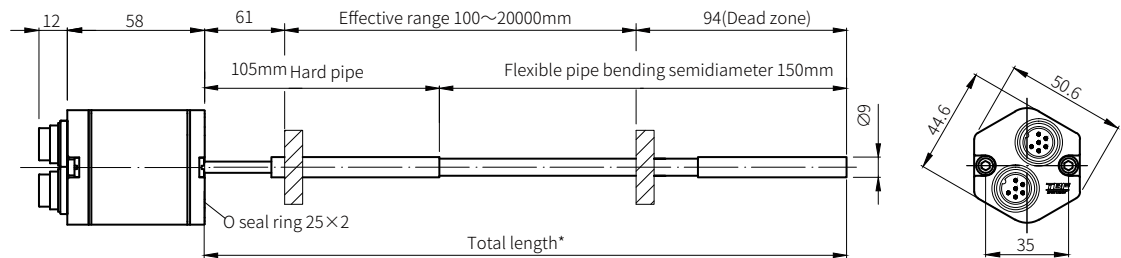


Wider stroke length range

Input	Measured data	Position/Velocity							
	Position measurement range	100mm...20000mm							
	Velocity measurement range	0.01...10m/s							
Output	Communication protocols	CAN bus system protocol, ISO11898 CAN open CIA standard DS-301 V3.0 encoder profile DS-406 V3.1							
	Transmission rate	Rate(kbit/s)	1000	800	500	250	125	50	20
		Cable length (meter)	< 25	< 50	< 100	< 250	< 500	< 1000	< 2500
Resolution	Position resolution	1/2/5/10/20/50/100μm							
	Velocity resolution	0.2mm/s							
	None-Linearity	< ±0.02%F.S. (min. ±100μm)							
	Repeatability	< ±0.001%F.S. (min. ±2.5μm)							
	Update time	Stroke length	≤ 1200mm	≤ 2400mm	≤ 4800mm	≤ 7650mm			
		Update time	0.5ms	1ms	2ms	4ms			
Mounting	Temperature coefficient	< 15ppm/°C							
	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 M16 connector, single/dual straight out cable							
	Operating voltage	9VDC...36VDC							
	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)							
	Terminal resistance	120Ω(Software-adjustable on and off)							
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							

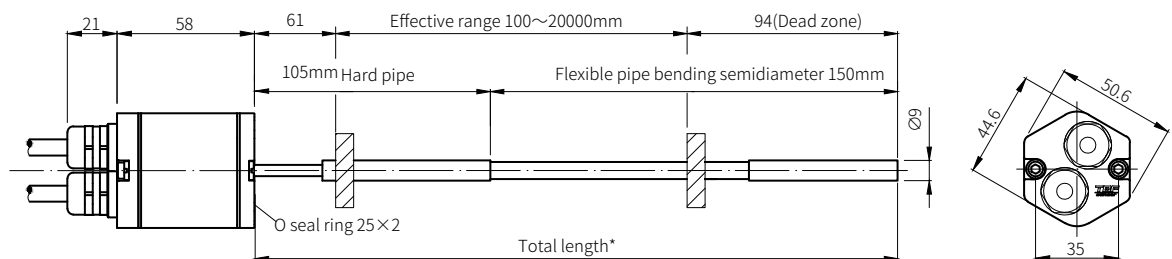
Double 6 pin M16 connector plug

T3F- ____ - D6D6 - ____

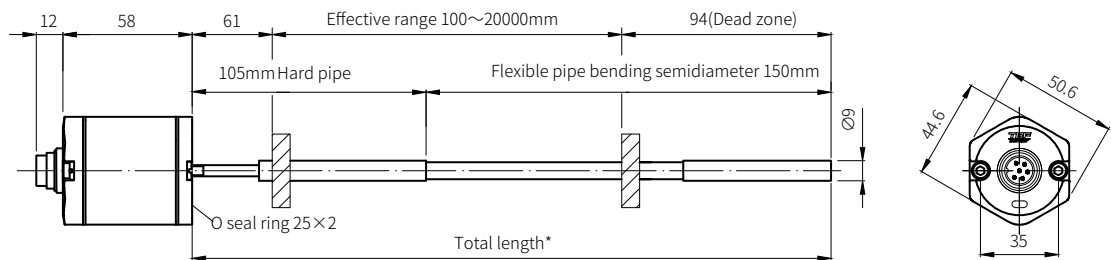

Dual straight out cable

T3F- ____ - R2P ____ - ____

T3F- ____ - R2T ____ - ____

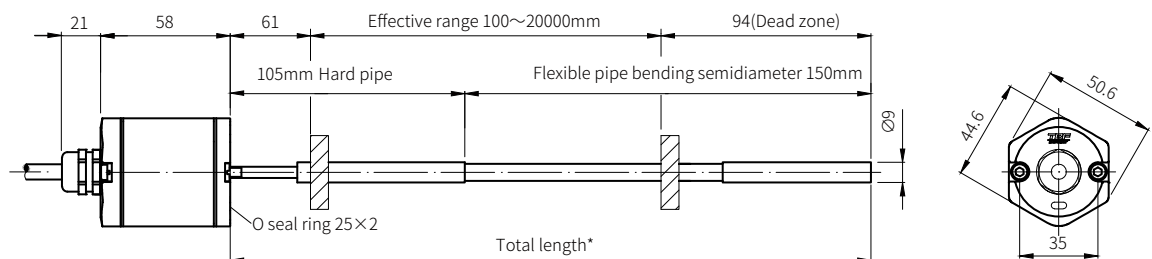

M16 connector (6 pin)

T3F- ____ - D616 - ____


Straight out cable

T3F- ____ - RP ____ - ____

T3F- ____ - RT ____ - ____



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

Total length error has no impact on effective range.

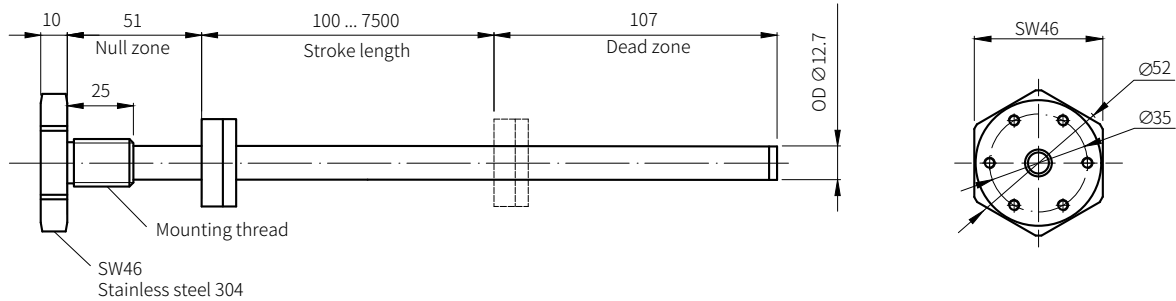
DRAWING

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Pressure pipe

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

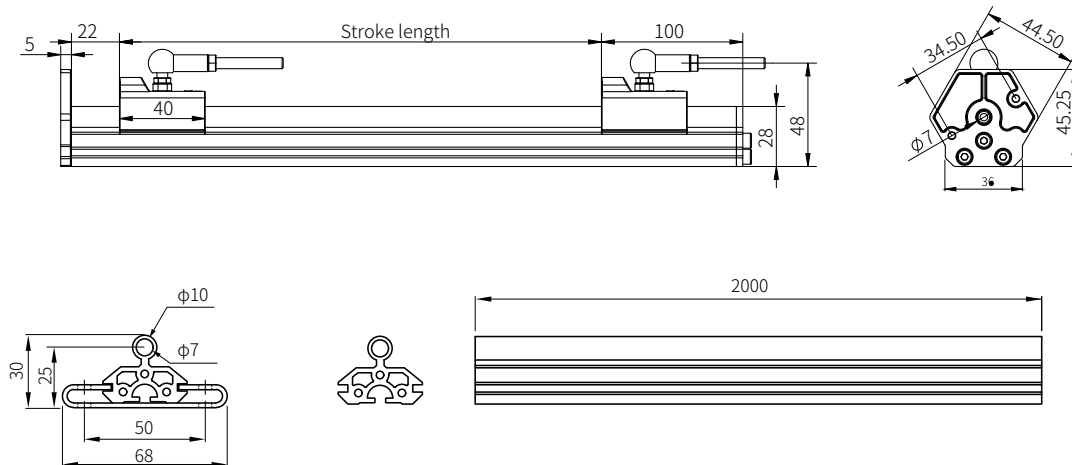
T3F flexible sensor is installed into pressure pipe, straight out cable IP68, aviation plug IP67.



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



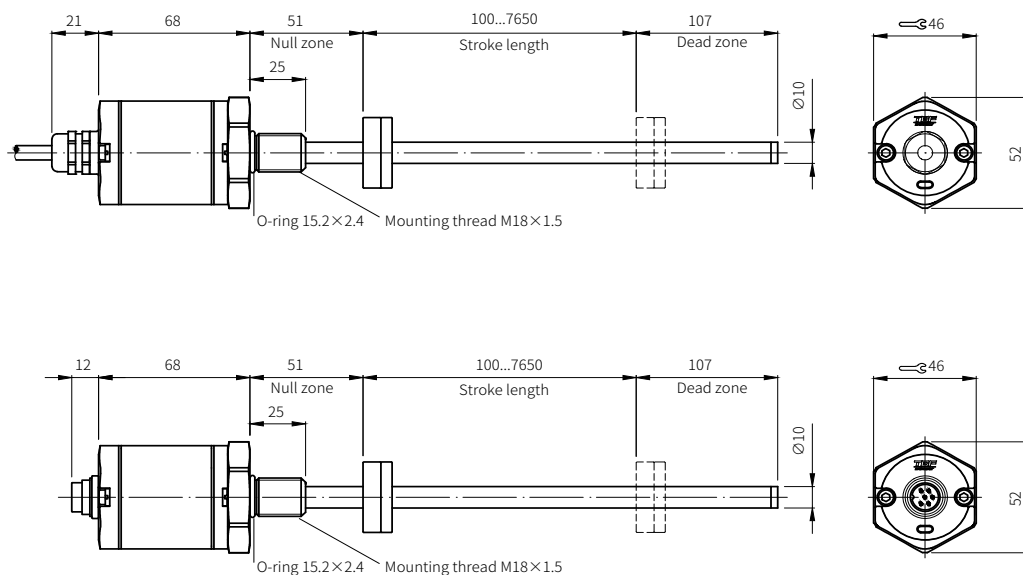
ORDER CODE

H3P	M	
		Stroke length
		0025...5600mm (5mm increments)
		Magnet
	S	Magnet slider joint at top
	V	Magnet slider joint at front
	F	Suspension magnet
	U	U- magnet

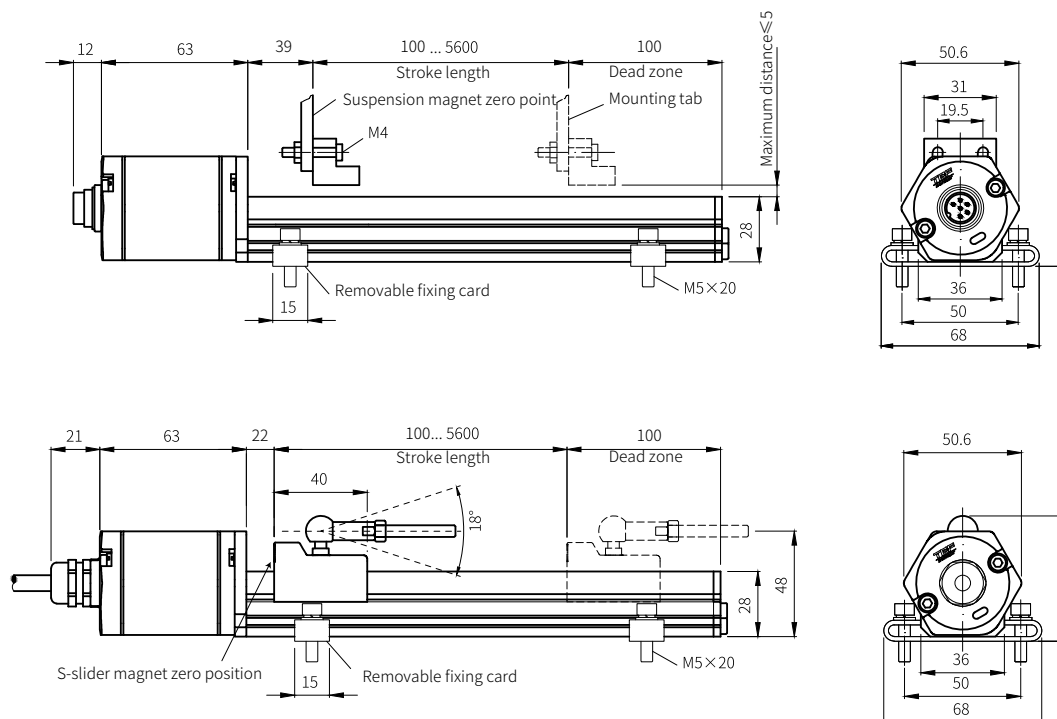
Combination example drawings

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Flexible sensor installed into pressure pipe



Flexible sensor installed into aluminum profile



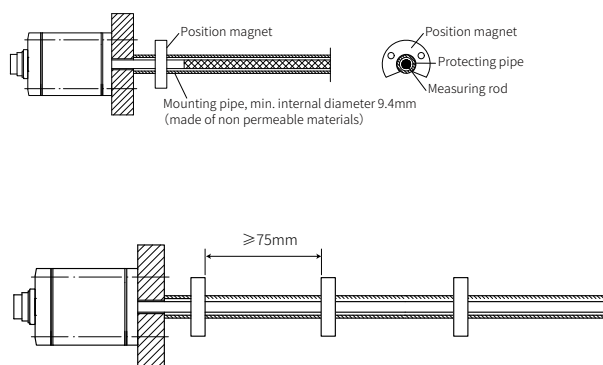
T3FH type of installation diagram

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.

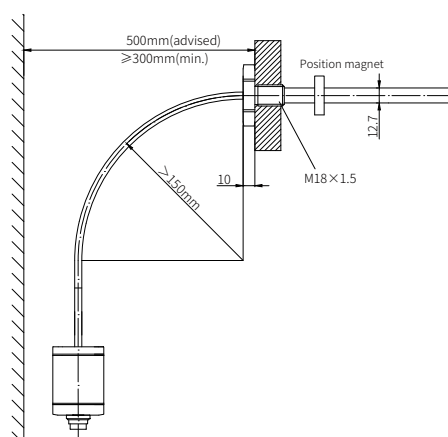
With long range sensor, pipes made of non permeable materials can be used as support. In addition, pressure pipe with flange can also be ordered to support and protect the sensor.

Linear measurement



Spacing between multiple magnets shall be ≥ 75 mm

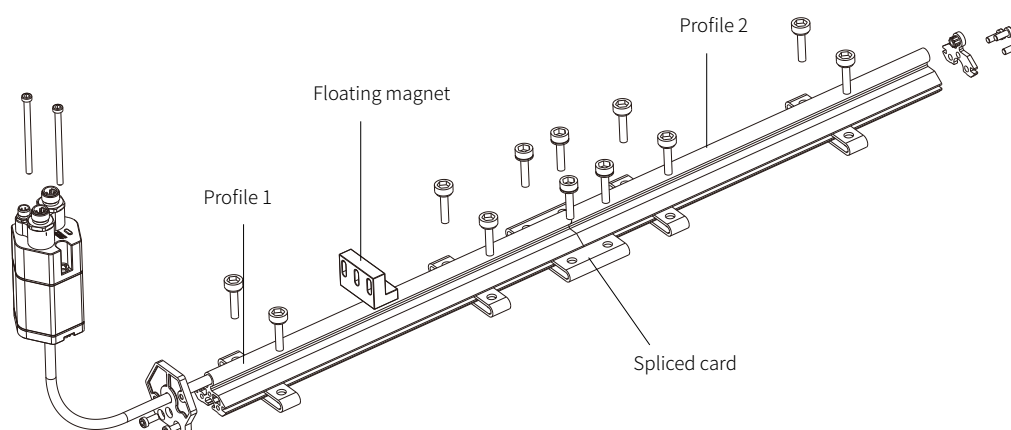
Pressure pipe



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.

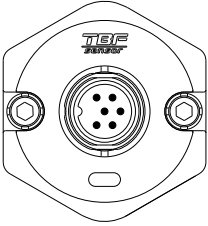
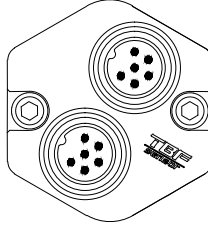
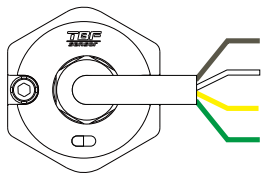
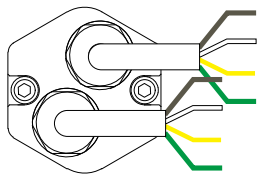


For spliced profiles:

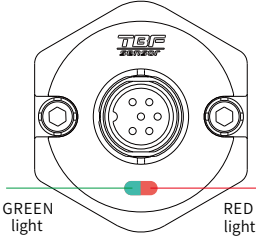


Ensure the joints are flush.

Only compatible with floating magnets or U-shaped magnets.

6 pin M16 connector	Double 6 pin M16 connector	D616/D6D6	PIN	Function
		 View on sensor	1 2 3 4 5 6	CAN L CAN H NC NC 9VDC...36VDC 0 VDC(GND)
Straight out cable	Dual straight out cable	Color	Function	
		Brown White Yellow Green	9VDC...36VDC 0 VDC(GND) CAN H CAN L	

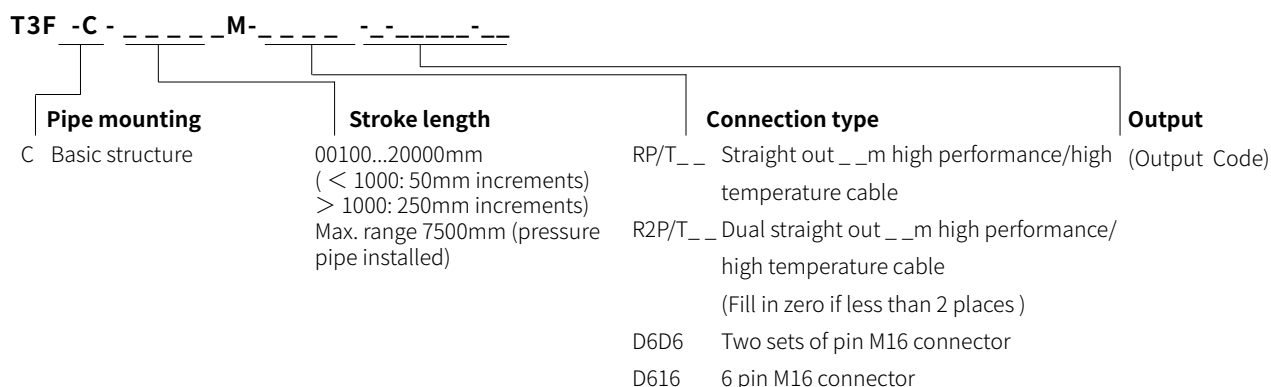
Enhanced monitoring and diagnostic functions

	Green light	Function	Red light	Function
	Slow flash	Pre-operating mode	ON	No magnet or slider measured
	Fast flash	LSS mode(parameter- setting mode)	OFF	Normal work
	ON	Normal communication		

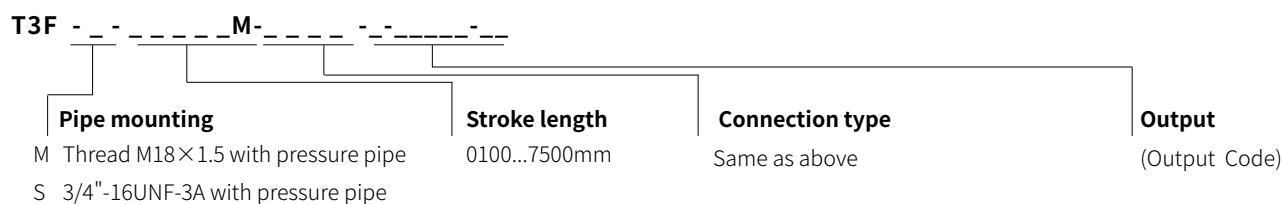
ORDER CODE

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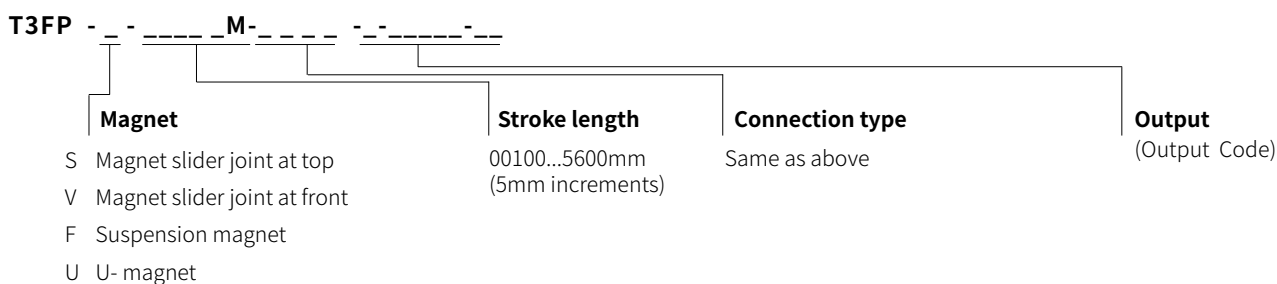
Basic structure



Flexible sensor installed into pressure pipe



Flexible sensor installed into aluminum profile



CANopen Output Code

[1]System		[2]Resolution ratio		[3]Baud rate		[4]PDO cycle		[5][6]Node-ID		[7][8]	
3	Standard*	1	5μm*	0	1000kBit/s	1	1ms	Hexadecimal		01	one magnet
4	CANopen (Internal terminal resistance)	2	2μm	1	800kBit/s	2	10ms*	01...7F*		02	two magnets
		3	10μm	2	500kBit/s	3	100ms			03	three magnets
		4	50μm	3	250kBit/s*	4 Customizable(1- 65535ms)					
		5	100μm	4	125kBit/s						
		7	20μm	5	100kBit/s						
		8	1μm	6	50kBit/s						
				7	20kBit/s						
				8	10kBit/s						

K=Anti-vibration program(Note: for special request, fill in last digit)

Model selection | Model: T3F-M-00600M-D616-3-C2327F-01

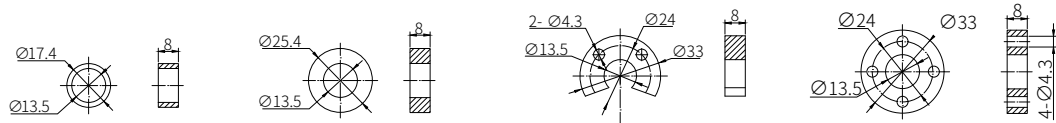
Explanation: T series III generation, T3F flexible sensor, installed inside pressure pipe, mounting thread metric M18x1.5, stroke length 600mm, 6pin M16 aviation plug, standard, CANopen output, resolution 2μm, baud rate 250kBit/s, PDO cycle 10ms, node -ID 7F, single magnet.

■ Please contact us
for more customized
products.

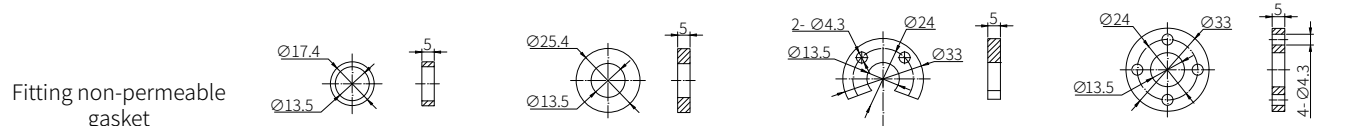
www.tbfsensor.com

PARTS SELECTION

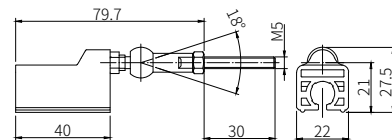
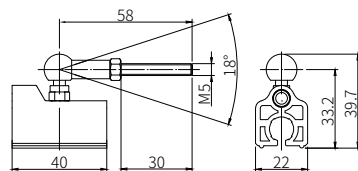
TECHNOLOGY PERCEIVES THE FUTURE



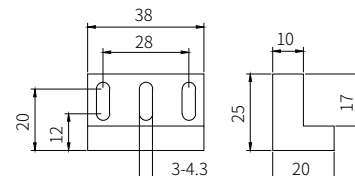
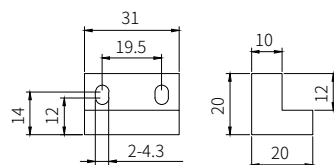
Name	Ring magnet	Ring magnet	U-magnet	Ring magnet
Operating temperature	-40...125°C			
Order code	12-1032	12-1019	12-1017	12-1001



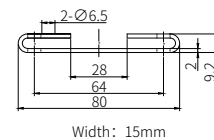
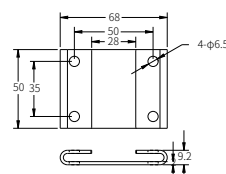
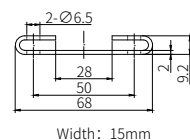
Name	Non-permeable gasket	Non-permeable gasket	Non-permeable gasket	Non-permeable gasket
Operating temperature	-40...125°C			
Order code	12-1037	12-1021	12-1018	12-1008



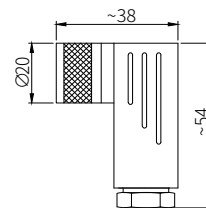
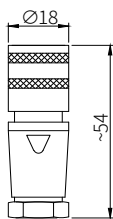
Name	Magnet slider S, joint at top	Magnet slider V, joint at front
Operating temperature	-40...105°C	
Order code	12-1114	12-1115



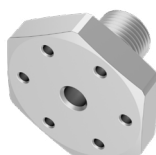
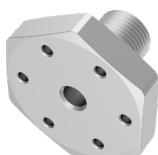
Name	Suspension magnet 31x20	Suspension magnet 38x25
Operating temperature	-40...105°C	
Order code	12-1010	12-1009



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



Name	6 pin M16 female connector	6 pin M16 female connector (90 degree angle)
End view drawing		
Material	Galvanized nickel	Galvanized nickel
Fitting diameter	8...10mm	6...8mm
Connection	Welding	Welding
Order code	18-3007	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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