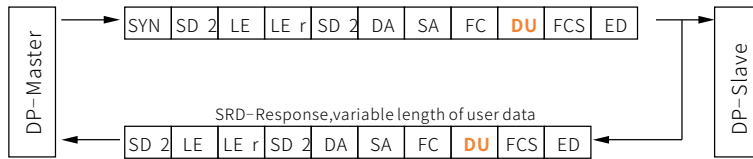




# T3F - Profibus-DP

## 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.

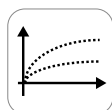


## THE NEW III GENERATION

High precision	Double anti-interference	High performance chip	Wide operating voltage	Reverse polarity protection	Shock/vibration resistant

# TECHNICAL PARAMETER

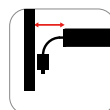
TECHNOLOGY PERCEIVES THE FUTURE



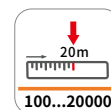
Linear/Curve measurement



Compact for transport and storage



Confined space installation

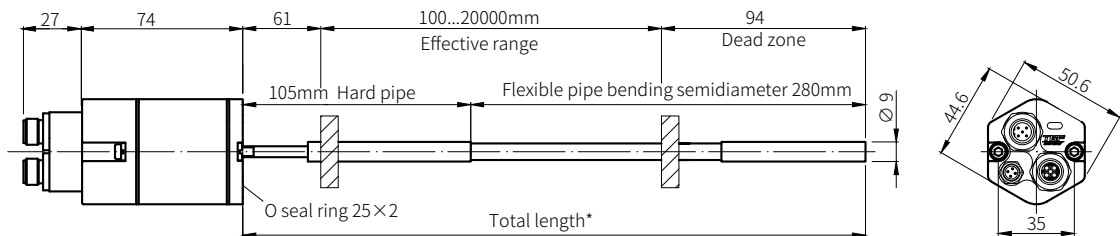


Wider stroke length range  
100...20000

<b>Input</b>	Measured data	Position/Velocity										
	Position measurement range	100mm...20000mm										
<b>Output</b>	Interface	IEC 61158 CPF3 PROFIBUS										
	Date format	Profibus-DP subordinating station										
	Data transmission rate	Max. 12Mbit/s										
<b>Resolution</b>	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 <table border="1"> <tr> <td>Stroke length</td> <td>≤ 1200mm</td> <td>≤ 2400mm</td> <td>≤ 4800mm</td> <td>≤ 7650mm</td> </tr> <tr> <td>Update time</td> <td>0.5ms</td> <td>1ms</td> <td>2ms</td> <td>4ms</td> </tr> </table> Multi magnets: For each additional position magnet, update time is extended by 0.05ms.	Stroke length	≤ 1200mm	≤ 2400mm	≤ 4800mm	≤ 7650mm	Update time	0.5ms	1ms	2ms	4ms
	Stroke length	≤ 1200mm	≤ 2400mm	≤ 4800mm	≤ 7650mm							
Update time	0.5ms	1ms	2ms	4ms								
Temperature coefficient	< 15ppm/°C											
<b>Mounting</b>	Mounting position	Any										
	Pressure resistance outer tube	Thread metric M18×1.5, 3/4"-16UNF-3A etc.										
<b>Design/Material</b>	Electronics housing	Aluminum alloy/Zinc alloy										
	Magnet	Stainless soft pipe (Teflon skin), min. bending semidiameter 280mm, shipping semidiameter 500mm										
<b>Electrical connection</b>	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)										
<b>Operating conditions</b>	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 61000-6-3 Electromagnetic immunity according to EN 61000-6-2										
<b>ITEM</b>	<b>CATEGORY</b>	<b>PARAMETER</b>										

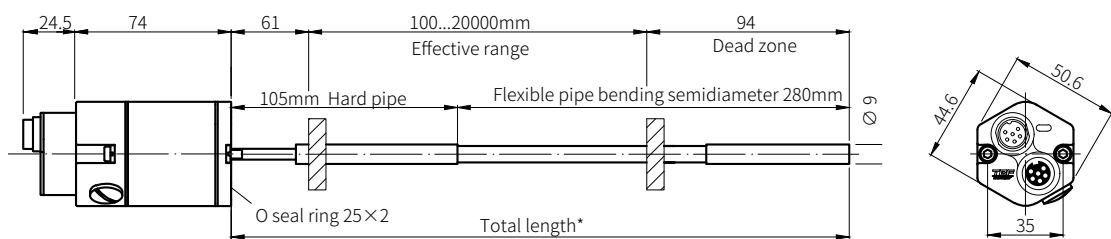
**Aviation plug : 5 pin M12 (male) + 5 pin M12 (female) + 4 pin M8(male)**

T3F- \_\_\_\_\_ - **D5D48** - \_\_\_\_\_



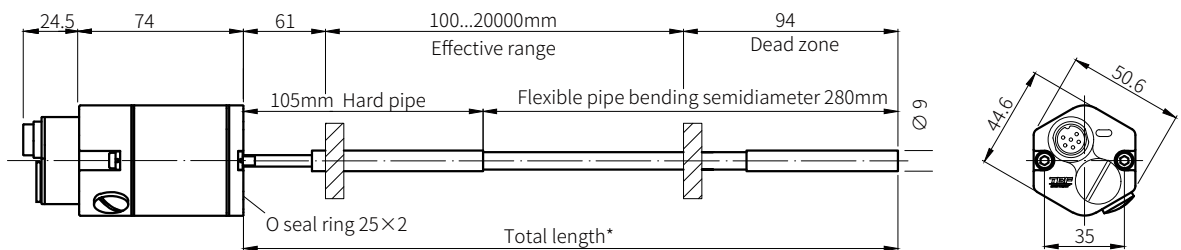
**Aviation plug : 6 pin M16 (male) + 6 pin M16 (female)**

T3F- \_\_\_\_\_ - **D6D6** - \_\_\_\_\_



**Aviation plug : 6 pin M16 (male)**

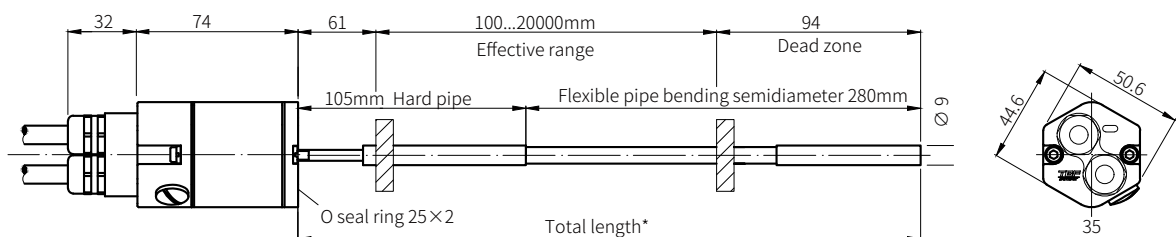
T3F- \_\_\_\_\_ - **D616** - \_\_\_\_\_



**Single/dual straight out cable**

T3F- \_\_\_\_\_ - **RP/T** - \_\_\_\_\_

T3F- \_\_\_\_\_ - **R2P/T** - \_\_\_\_\_



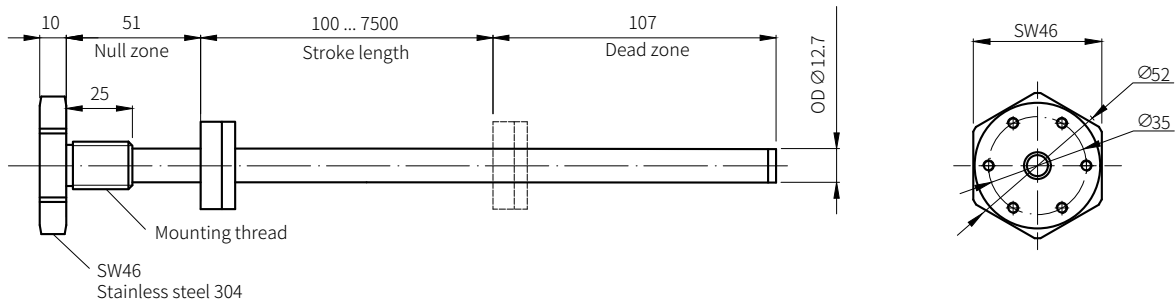
\*Total length < 7600mm, error +8mm; > 7600mm, error +15mm /-5mm;

Total length error has no impact on effective range.

# DRAWING OF PRESSURE PIPE

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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.



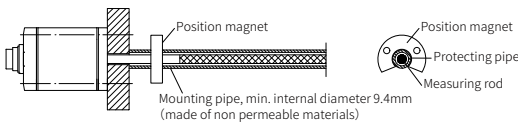
## ORDER CODE

<p><b>HD</b> - - - - - <b>M</b> - -</p> <p style="margin-left: 40px;">Stroke length</p> <p style="margin-left: 40px;">0100...7500mm (5mm increments)</p>	<p><b>Thread</b></p> <p>M Metric M18x1.5</p> <p>V Metric M20x1.5</p> <p>S 3/4"-16UNF-3A</p> <p>W Metric M24x1</p> <p>If not selected, thread M18x1.5 by default.</p>
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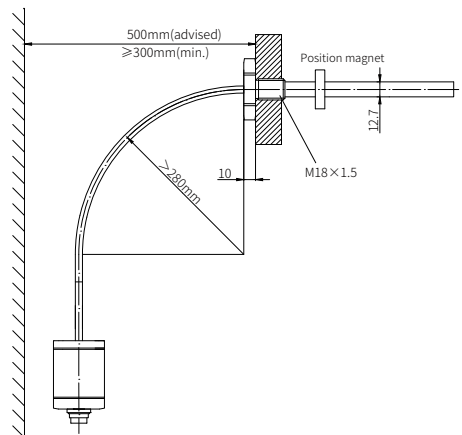
## MOUNTING DRAWING

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 280mm.  
 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.

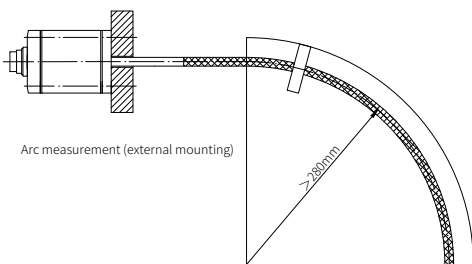
### Linear measurement



### Pressure pipe



### Arc measurement

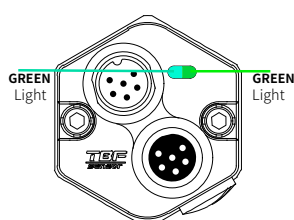


**FUNCTION**

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

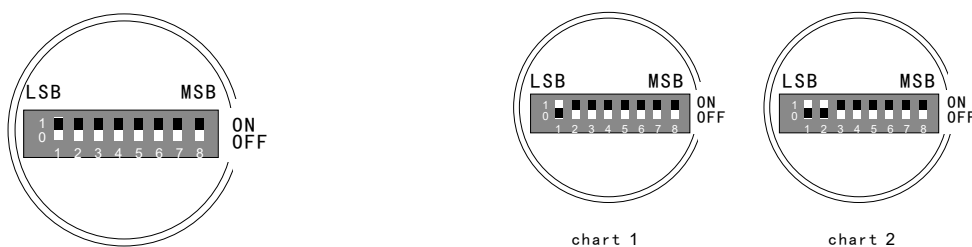
**Enhanced monitoring and diagnostic functions**



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

# 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)

## ORDER CODE

T3F - - - - M - - - - 1 - P - - - -

Pipe mounting	Stroke length	Connection type	Output
C Basic structure	00100...20000mm	R2P/T__ Dual straight out cable__m	(Output Code)
M Thread M18×1.5 with pressure pipe	(< 1000: 50mm increments)	high performance / high temperature cable	
S 3/4"-16UNF-3A with pressure pipe	(> 1000: 250mm increments)	RP/T__ Single straight out cable__m	
	Max. range 7500mm (pressure pipe installed)	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)	

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	01 one magnet
	102 Profibus-DP, single magnet, displacement	02 two magnets
	105 Profibus-DP, 1...15 magnet, position and velocity, internal linearization	... ..
	(The specified error is valid for single magnet.)	20 twenty magnets

**Model selection** | Model: T3F-M-00600M-D616-1-P102-01

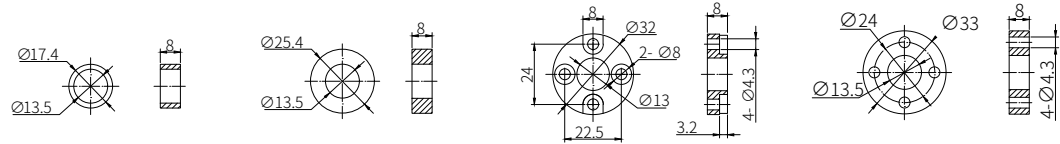
Explanation: T series III generation, T3F flexible sensor, installed inside pressure pipe, mounting thread metric M18x1.5, stroke length 600mm, 6pin M16 aviation plug, standard, Profibus-DP output, displacement, single magnet.

■ Please contact us for more customized products.

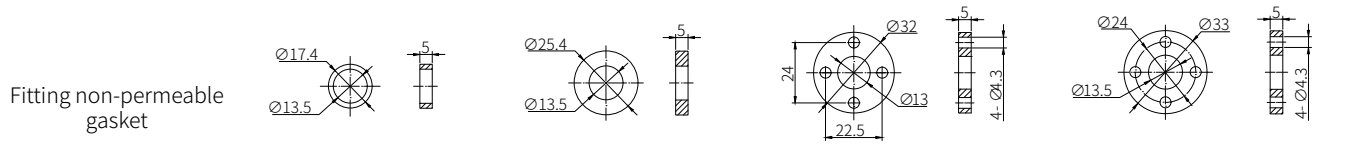
www.tbfsensor.com

**PARTS SELECTION**

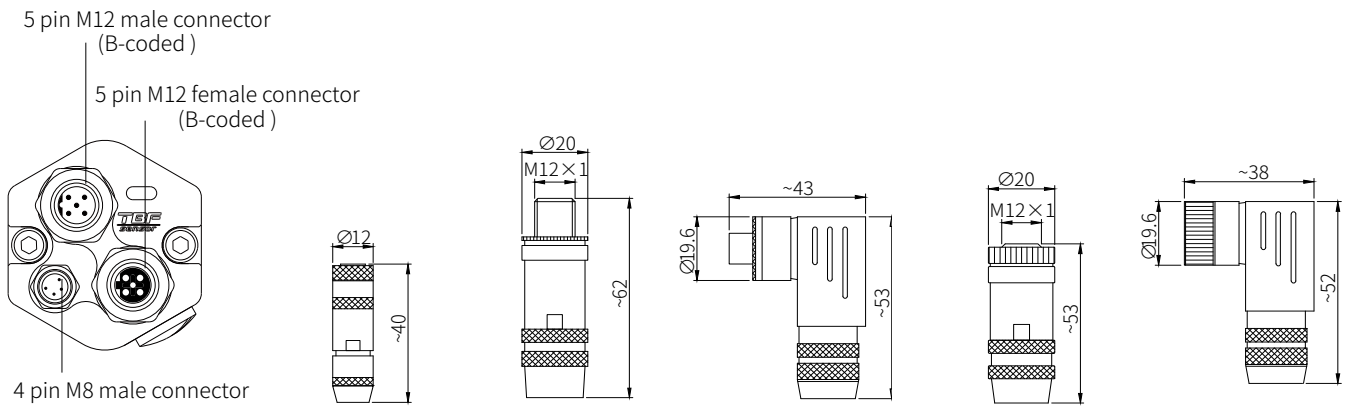
TECHNOLOGY PERCEIVES THE FUTURE



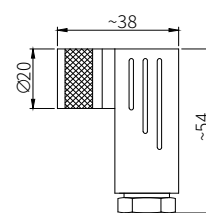
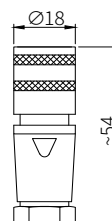
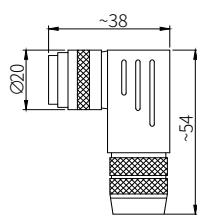
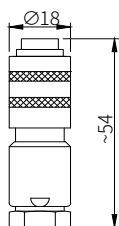
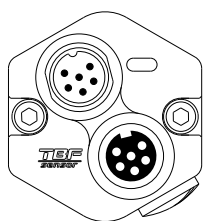
Name	Ring magnet	Ring magnet	Ring magnet	Ring magnet
Operating temperature	-40...125°C			
<b>Order code</b>	<b>12-1032</b>	<b>12-1019</b>	<b>12-1024</b>	<b>12-1001</b>



Name	Non-permeable gasket	Non-permeable gasket	Non-permeable gasket	Non-permeable gasket
Operating temperature	-40...125°C			
<b>Order code</b>	<b>12-1037</b>	<b>12-1021</b>	<b>12-1025</b>	<b>12-1008</b>



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			
<b>Order code</b>	<b>18-1001</b>	<b>18-2002</b>	<b>18-2004</b>	<b>18-2001</b>	<b>18-2003</b>



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			
<b>Order code</b>	<b>18-3002</b>	<b>18-3004</b>	<b>18-3001</b>	<b>18-3003</b>

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