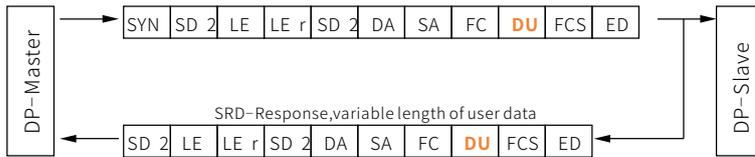




T3F - Profibus-DP

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.

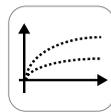


THE NEW III GENERATION

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

TECHNICAL PARAMETER

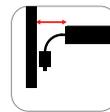
TECHNOLOGY PERCEIVES THE FUTURE



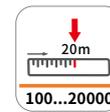
Linear/Curve measurement



Compact for transport and storage



Confined space installation



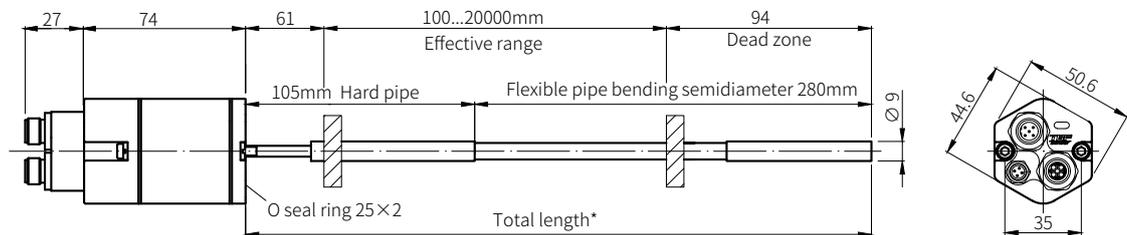
Wider stroke length range

| | | | | | | | | | | | | |
|------------------------------|--------------------------------|--|----------------|----------------|----------------|----------------|----------------|-------------|-------|-----|-----|-----|
| 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 μ m, users can select by using GSD file | | | | | | | | | | |
| | None-Linearity | $< \pm 0.02\%$ F.S. (min. $\pm 100\mu$ m) | | | | | | | | | | |
| | Repeatability | $< \pm 0.001\%$ F.S. (min. $\pm 2.5\mu$ m) | | | | | | | | | | |
| | 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 | ≤ 1200 mm | ≤ 2400 mm | ≤ 4800 mm | ≤ 7650 mm | Update time | 0.5ms | 1ms | 2ms | 4ms |
| | Stroke length | ≤ 1200 mm | ≤ 2400 mm | ≤ 4800 mm | ≤ 7650 mm | | | | | | | |
| Update time | 0.5ms | 1ms | 2ms | 4ms | | | | | | | | |
| Temperature coefficient | < 15 ppm/ $^{\circ}$ C | | | | | | | | | | | |
| Mounting | Mounting position | Any | | | | | | | | | | |
| | Pressure resistance outer tube | Thread metric M18 \times 1.5, 3/4"-16UNF-3A etc. | | | | | | | | | | |
| Design/ Material | Electronics housing | Aluminum alloy/Zinc alloy | | | | | | | | | | |
| | Magnet | Stainless soft pipe (Teflon skin), min. bending semidiameter 280mm, shipping semidiameter 500mm | | | | | | | | | | |
| Electrical connection | Wiring connection | 6 pin M16 connector, double 6 pin M12 connector , two 5 pin M16 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 | < 90 mA (varies with range size) | | | | | | | | | | |
| | Dielectric strength | 500 VDC (DC ground to machine ground) | | | | | | | | | | |
| Operating conditions | Loop velocity | Any | | | | | | | | | | |
| | Operating temperature | -40...85 $^{\circ}$ 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 | | | | | | | | | | |

ITEM CATEGORY PARAMETER

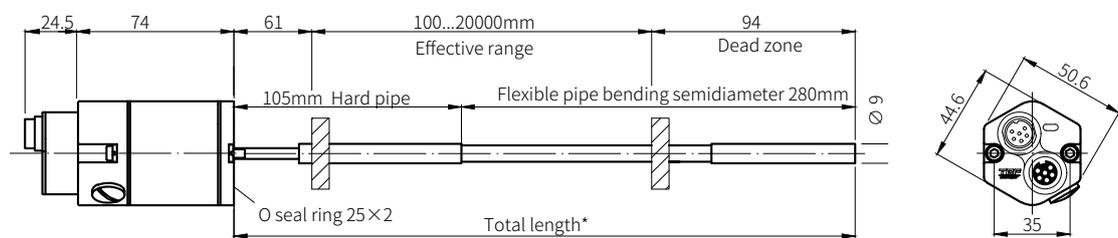
Aviation plug : 5 pin M12 (male) + 5 pin M12 (female) + 4 pin M8(male)

T3F- _____ - **D5D48** - _____



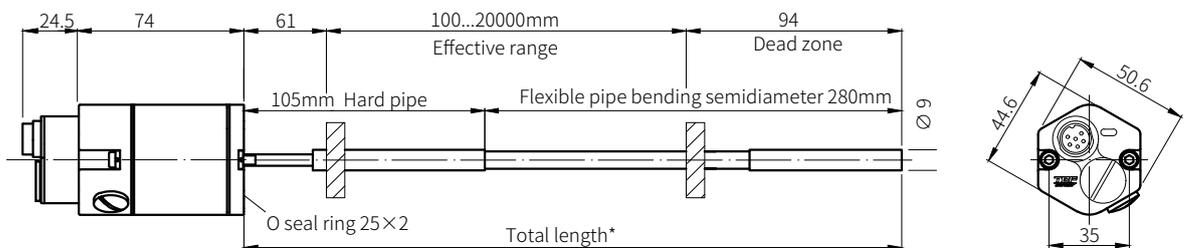
Aviation plug : 6 pin M16 (male) + 6 pin M16 (female)

T3F- _____ - **D6D6** - _____



Aviation plug : 6 pin M16 (male)

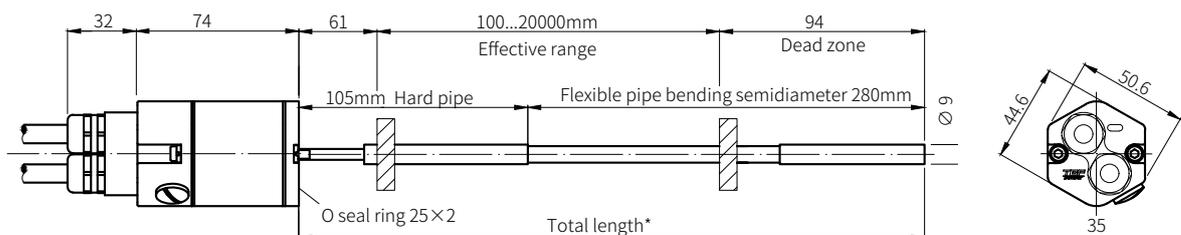
T3F- _____ - **D616** - _____



Single/dual straight out cable

T3F- _____ - **RP/T** - _____

T3F- _____ - **R2P/T** - _____



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

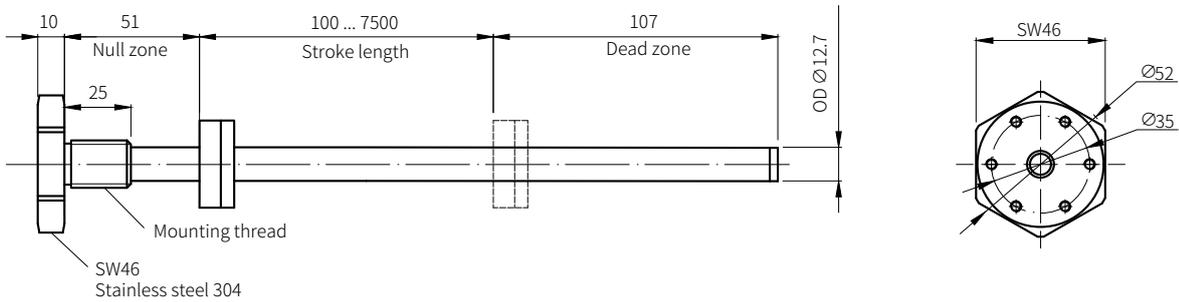
Total length error has no impact on effective range.

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

| | | | |
|-------------|-----------------------------------|------------|---|
| HD - | --- | M - | --- |
| | Stroke length | | Thread |
| | 0100...7500mm (5mm increments) | M | Metric M18x1.5 |
| | | V | Metric M20x1.5 |
| | | S | 3/4"-16UNF-3A |
| | | W | Metric M24x1 |
| | | | If not selected, thread M18x1.5 by default. |

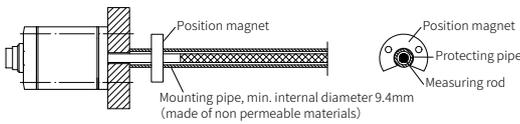
MOUNTING DRAWING

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

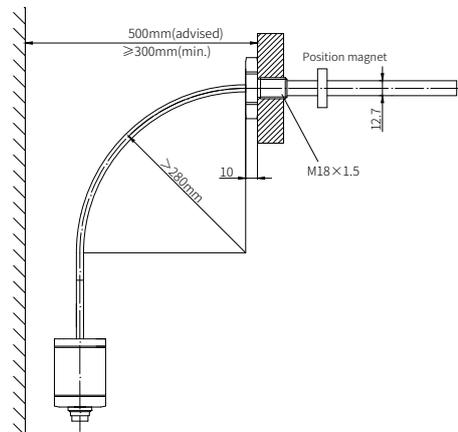
When arc measurement is adopted, the flexible pipe can be bended into required shape with min. bending semidiameter 280mm.

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.

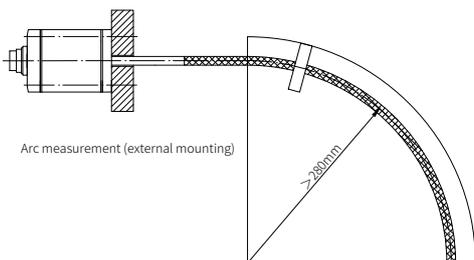
Linear measurement



Pressure pipe



Arc measurement

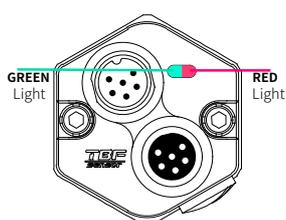


FUNCTION

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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) | | |
| *Female connector only | | | | |

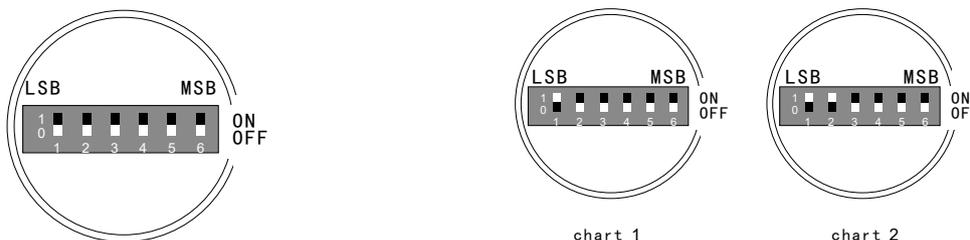
Enhanced monitoring and diagnostic functions



| Green light | Red light | Function |
|-------------|-----------|--|
| ON | OFF | Normal work |
| ON | ON | Magnet cannot be measured, nor magnet number is correct. |
| Flash | OFF | Parameter from control machine awaits |
| Flash | ON | Enter programming status |

Address dialing position description

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1. When the needle at position "1" is dialed from "0" to "1", the address is "000001" (decimal 1), see chart 1.
2. When the needles at position "1" and "2" are dialed from "0" to "1", the address is "000011" (decimal 3), see chart2.
3. By parity of reasoning, when the needle at position "3" is dialed from "0" to "1", the address is "000111" (decimal 7).
 When the needle at position "4" is dialed from "0" to "1", the address is "001111" (decimal 15).
 When the needle at position "5" is dialed from "0" to "1", the address is "011111" (decimal 31).
 When all needles are dialed from "0" to "1", the address is "111111" (decimal 63).

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) > 1000: 250mm increments) | RP/T__ Single straight out cable__m | high performance / high temperature cable |
| S 3/4"-16UNF-3A with pressure pipe | Max. range 7500mm (pressure pipe installed) | D6D6 Two sets of M16 female and male connectors (6pin) | high performance / high temperature cable |
| | | D5D48 Two sets of M12 female and male connectors (5 pin), one M8 male connector (4 pin) | (Fill in zero if less than 2 places) |
| | | 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.

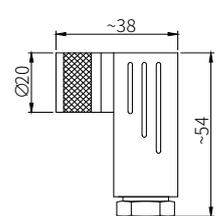
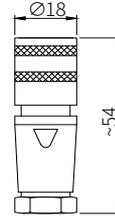
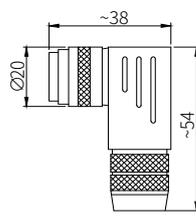
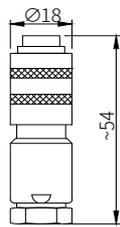
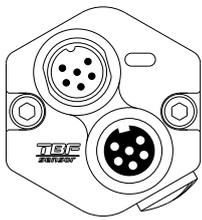
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PARTS SELECTION

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| | | | | |
|------------------------------|----------------------|----------------------|----------------------|----------------------|
| | | | | |
| Name | Ring magnet | Ring magnet | Ring magnet | Ring magnet |
| Operating temperature | -40...125°C | | | |
| Order code | 12-1032 | 12-1019 | 12-1024 | 12-1001 |
| | | | | |
| Fitting non-permeable gasket | Non-permeable gasket | Non-permeable gasket | Non-permeable gasket | Non-permeable gasket |
| Operating temperature | -40...125°C | | | |
| Order code | 12-1037 | 12-1021 | 12-1025 | 12-1008 |

| | | | | | |
|-------------------|-------------------------|--------------------------------------|--|--------------------------------------|--|
| | | | | | |
| Name | 4 pin M8 male connector | 5 pin M12 female connector (B-coded) | 5 pin M12 male connector (90 degree angle) (B-coded) | 5 pin M12 female connector (B-coded) | 5 pin M12 female connector (90 degree angle) (B-coded) |
| End view drawing | | | | | |
| 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 | | | |
| Connection | Welding | | | |
| Order code | 18-3002 | 18-3004 | 18-3001 | 18-3003 |

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