



# T3H, T3P - Profinet

## T-Series III Data Sheet

| PROFINET IO Real-time Message |      |            |           |      |      |            |          |              |                    |    |
|-------------------------------|------|------------|-----------|------|------|------------|----------|--------------|--------------------|----|
| Pre-ambel                     | Svnc | Source MAC | Dest. MAC | TPID | VLAN | Ether type | Frame ID | Data         | Status Information | FC |
| 7                             | 1    | 6          | 6         | 2    | 2    | 2          | 2        | 44*-1498Byte | 4                  | 4  |

- + Updated new generation: stronger performance
- + Resolution highest up to 0.5µm
- + Profinet output, position and velocity



### THE NEW III GENERATION



High precision



Double anti-interference



High performance chip



Wide operating voltage



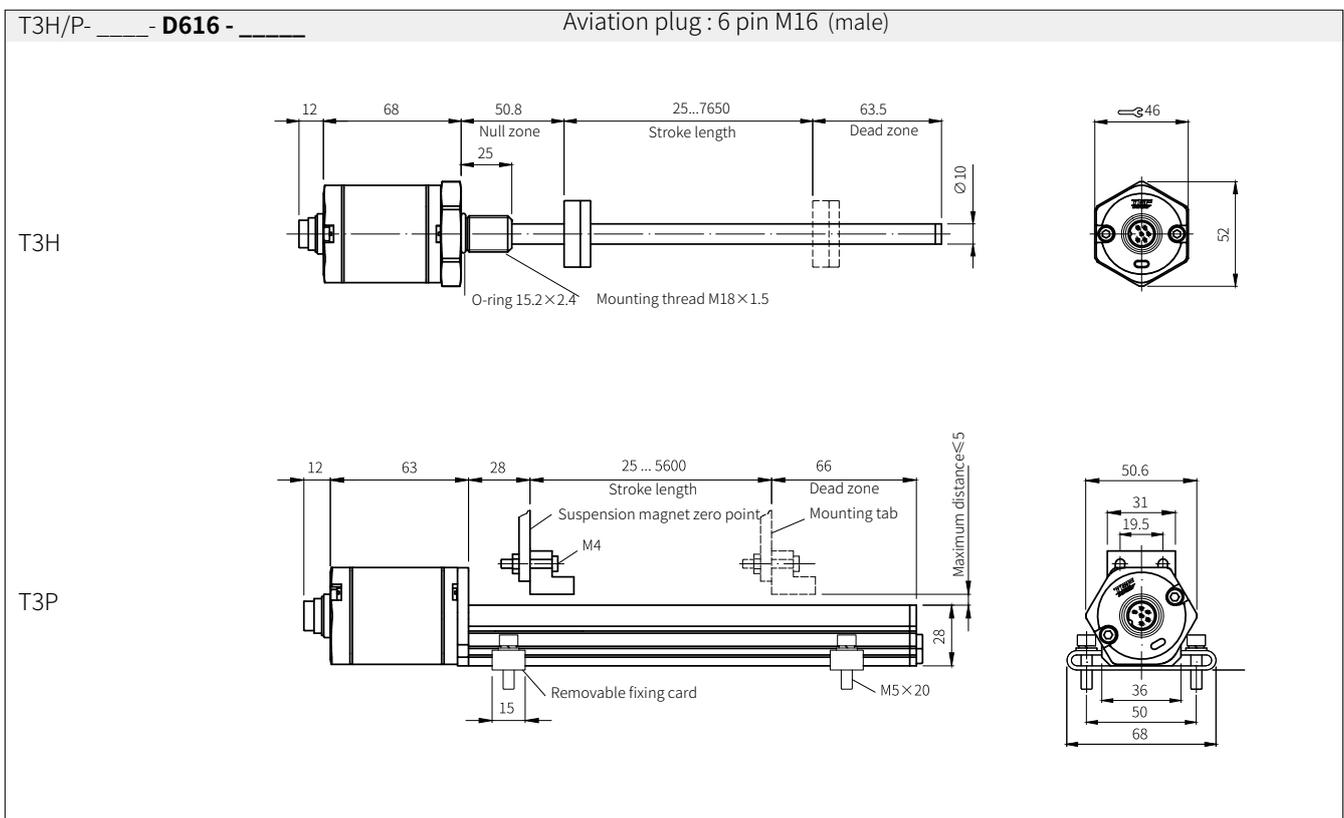
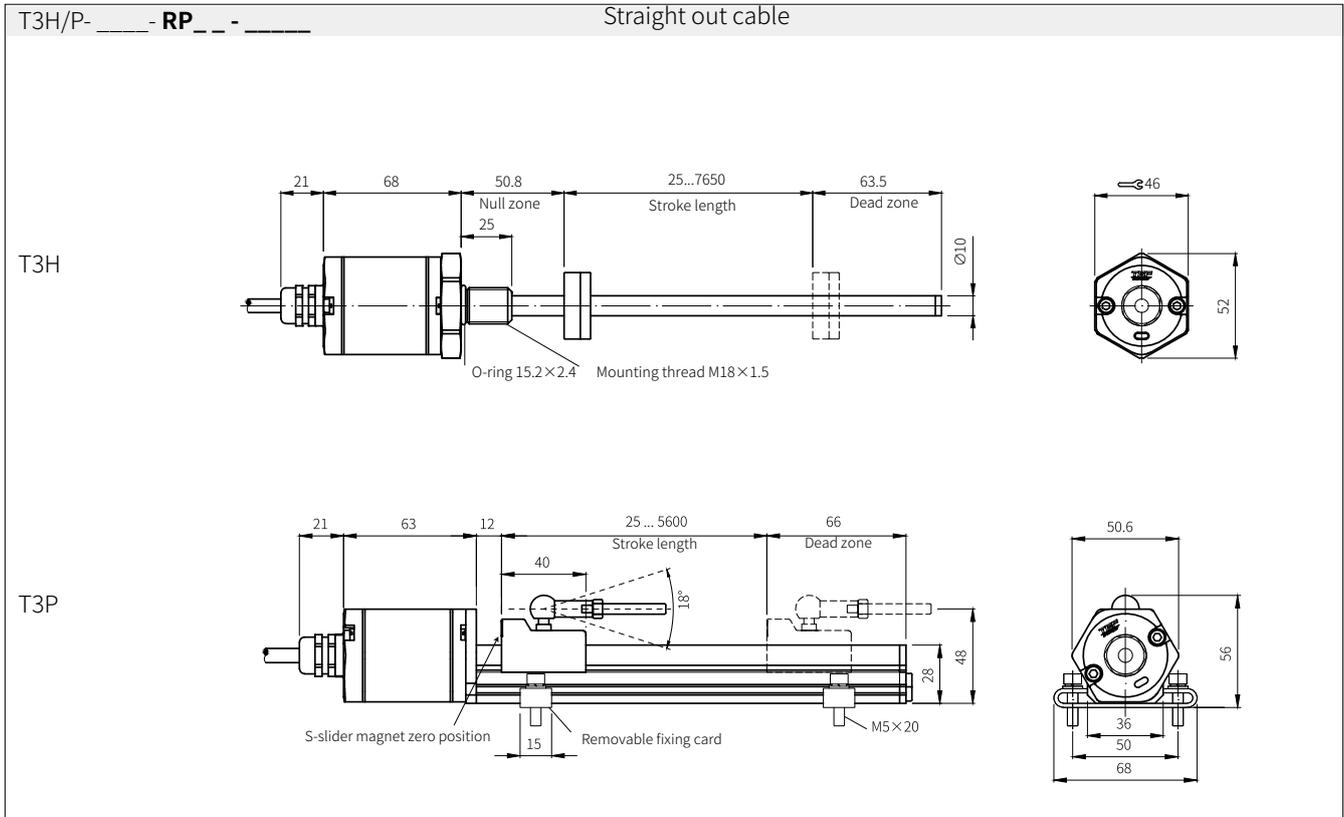
Reverse polarity protection



Shock/vibration resistant

|                              |                                   |  |
|------------------------------|-----------------------------------|--|
| <b>Input</b>                 | Measured data                     | Position/Velocity  |
|                              | Position measurement range        | T3H 25mm...7650mm<br>T3P 25mm...5600mm   |
| <b>Output</b>                | Interface                         | Profinet RT  |
|                              | Data protocol                     | Encoder Profile 4.2, compatible with MTS protocols   |
|                              | Transmission                      | Max. 100Mbit/s   |
| <b>Resolution</b>            | Position resolution               | 0.5...1000μm optional  |
|                              | None-Linearity                    | < ±0.01%F.S. (min. ±25μm)  |
|                              | Repeatability                     | < ±0.001%F.S. (min. ±2.5μm)  |
|                              | Update time                       | Depends on stroke length   |
|                              | Temperature coefficient           | < 15ppm/°C   |
| <b>Mounting</b>              | Mounting position                 | Any  |
|                              | T3P aluminum profile              | Removable fixing card  |
|                              | T3H pressure resistant outer tube | Threaded: metric M18x1.5, metric M20x1.5, metric M24x1, 3/4"-16UNF-3A  |
| <b>Design/ Material</b>      | T3H                               | Electronics housing: aluminum alloy/zinc alloy<br>Measuring rod: stainless steel 304/316L<br>Magnet: standard magnet/open magnet                   |
|                              | T3P                               | Electronics housing: aluminum alloy/zinc alloy<br>Profile: aluminum alloy<br>Magnet: slider magnet/suspension magnet/U-magnet                      |
|                              | Operating pressure                | 35MPa (continuous) ,70MPa (peak)   |
| <b>Electrical connection</b> | Wiring connection                 | 6 pin M16 connector, two 5 pin M12 connectors and one 4 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                 | < 120mA (varies with range size)   |
|                              | Dielectric strength               | 500 VDC (DC ground to machine ground)  |
| <b>Operating conditions</b>  | Magnet velocity                   | Slider magnet ≤ 10m/s; magnetic ring, any; suspension magnet, any.   |
|                              | Operating temperature             | -40...85°C   |
|                              | Humidity                          | 90 % relative humidity, no condensation  |
|                              | Ingress protection                | IP68 T3H (Pressure resistant outer tube type)<br>IP67 T3P (Aluminum outer tube)  |
|                              | Shock                             | 150 g/11 ms, IEC standard 60068-2-27   |
|                              | Vibration                         | 30 g/10...2000 Hz, IEC standard 60068-2-6 (resonant frequencies excluded)  |
|                              | EMC                               | Electromagnetic emission according to EN 61000-6-3<br>Electromagnetic immunity according to EN 61000-6-2   |

**ITEM      CATEGORY      PARAMETER**



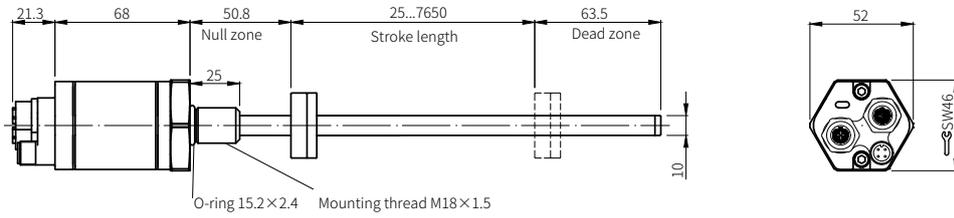
T3H/P- \_\_\_\_\_ - **D5D42** - \_\_\_\_\_

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

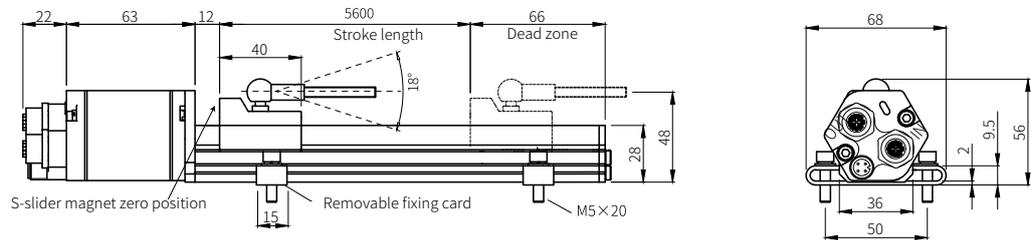
T3H/P- \_\_\_\_\_ - **D5D48** - \_\_\_\_\_

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

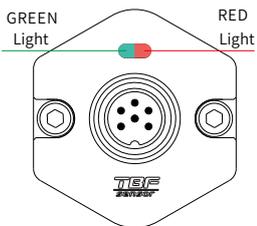
T3H



T3P



### Enhanced monitoring and diagnostic functions



| Green light | Red light | Function   |
|-------------|-----------|--|
| ON          | OFF       | View on sensor   |
| ON          | ON        | Magnet cannot be measured, nor magnet number is correct. |
| OFF         | OFF       | Communication exception                                  |

**FUNCTION**

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| 6 pin M16 male connector  | D616                                      | PIN          | Function     |
|---|---|--------------|--------------|
|   | <p>View on sensor</p>                     | 1            | TX+          |
|   |   | 2            | RX+          |
|   |   | 3            | TX-          |
|   |   | 4            | RX-          |
|   |   | 5            | 9VDC...36VDC |
|   |   | 6            | 0 VDC(GND)   |
| Two 5 pin M12 female connectors (D-coded),<br>One 4 pin M12 male connector  | D5D42                                     | PIN          | Function     |
| <p>5 pin M12 female connector(D-coded )</p> <p>4 pin M12 male connector</p> | <p>D512 ( female )<br/>View on sensor</p> | 1            | TX+          |
|   |   | 2            | RX+          |
|   |   | 3            | TX-          |
|   |   | 4            | RX-          |
|   |   | 5            | NC           |
|   | <p>D412( male )</p> <p>View on sensor</p> | PIN          | Function     |
|   |   | 1            | 9VDC...36VDC |
|   |   | 2            | NC           |
|   |   | 3            | 0 VDC(GND)   |
|   |   | 4            | NC           |
| Two 5 pin M12 female connectors (D-coded),<br>One 4 pin M8 male connector   | D5D48                                     | PIN          | Function     |
| <p>5 pin M12 female connector(D-coded)</p> <p>4 pin M8 male connector</p>   | <p>D512 ( female )<br/>View on sensor</p> | 1            | TX+          |
|   |   | 2            | RX+          |
|   |   | 3            | TX-          |
|   |   | 4            | RX-          |
|   |   | 5            | NC           |
|   | <p>D408( male )</p> <p>View on sensor</p> | PIN          | Function     |
|   |   | 1            | 9VDC...36VDC |
|   |   | 2            | NC           |
|   |   | 3            | 0 VDC(GND)   |
|   |   | 4            | NC           |
| Straight out cable  | Color                                     | Function     |              |
|   | Gray                                      | TX-          |              |
|   | Pink                                      | TX+          |              |
|   | Yellow                                    | RX+          |              |
|   | Green                                     | RX-          |              |
|   | Brown                                     | 9VDC...36VDC |              |
|   | White                                     | 0 VDC(GND)   |              |

**ORDER CODE**

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**T3H** - - - - **M**- - - - **1-U** - - - -

|   | Threaded  | Stroke length                     | Connection type  | Output        |
|---|---|-----------------------------------|--|---------------|
| M | Metric M18x1.5                                  | 0025...7650mm<br>(5mm increments) | RP__ Straight out __m high performance cable<br>(Fill in zero if less than 2 places) | (Output Code) |
| V | Metric M20x1.5                                  |                                   | D616 M16 male connector (6 pin)  |               |
| S | 3/4"-16UNF-3A                                   |                                   | D5D42 Two sets of M12 female connectors (D-coded),<br>One set of M12 male connector  |               |
| W | Metric M24x1                                    |                                   | D5D48 Two sets of M12 female connectors (D-coded),<br>One set of M8 male connector   |               |
| R | Metric M18x1.5, with M4x6<br>thread at tail end |                                   |  |               |

**T3P** - - - - **M**- - - - **1-U** - - - -

|   | Magnet                       | Stroke length                     | Connection type | Output        |
|---|------------------------------|-----------------------------------|-----------------|---------------|
| S | Magnet slider joint at top   | 0025...5600mm<br>(5mm increments) | (Same as above) | (Output Code) |
| V | Magnet slider joint at front |                                   |                 |               |
| F | Suspension magnet            |                                   |                 |               |
| U | U- magnet                    |                                   |                 |               |

| Profinet Output Code |  | [1]-U[2][3][4]-[5][6]           |
|----------------------|--|---------------------------------|
| [1] System           | [2][3][4] Output   | [5][6] Magnet number            |
| 1 Standard           | 401 Profinet RT, position measurement<br>402 Profinet RT, position and velocity measurement,<br>multi-magnets supportive | 01 one magnet<br>02 two magnets |

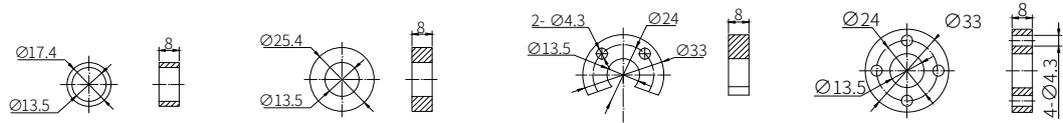
**Model selection** | Model: T3H-M-0600M-D616-1-U401-01

Explanation: T series III generation, T3H pressure resistance outer tube type, mounting thread metric M18x1.5, stroke length 600mm, 6pin M16 aviation plug, standard, Profinet output, position measurement, single magnet.

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**PARTS SELECTION**

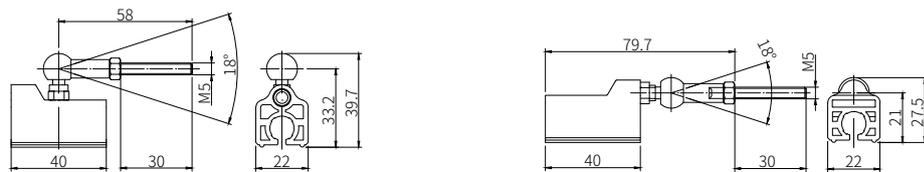
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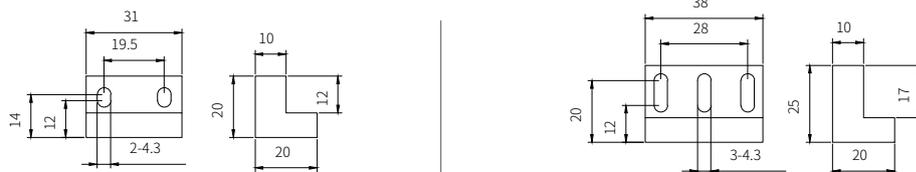
|                       |                |                |                |                |
|-----------------------|----------------|----------------|----------------|----------------|
| Name                  | Ring magnet    | Ring magnet    | U-magnet       | Ring magnet    |
| Operating temperature | -40...125°C    |                |                |                |
| <b>Order code</b>     | <b>12-1032</b> | <b>12-1019</b> | <b>12-1017</b> | <b>12-1001</b> |

|                              |                      |                      |                      |                      |
|------------------------------|----------------------|----------------------|----------------------|----------------------|
| Fitting non-permeable gasket |                      |                      |                      |                      |
| 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>12-1018</b>       | <b>12-1008</b>       |



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

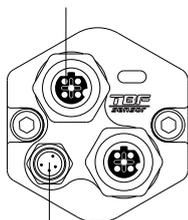


|                       |                         |                         |
|-----------------------|-------------------------|-------------------------|
| Name                  | Suspension magnet 31x20 | Suspension magnet 38x25 |
| Operating temperature | -40...105°C             |               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

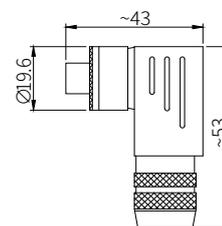
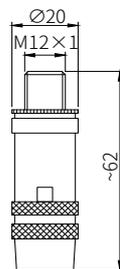
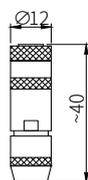


|                   |                       |                       |
|-------------------|-----------------------|-----------------------|
| Name              | Removable fixing card | Removable fixing card |
| <b>Order code</b> | <b>11-1003</b>        | <b>11-1004</b>        |

5 pin M12(D-coded) female connector

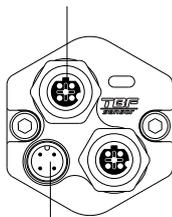


4 pin M8 male connector



| Name              | 4 pin M8 female connector   | 4 pin M12(D-coded) male connector | 4 pin M12(D-coded) male connector (90 degree angle) |
|-------------------|-----------------------------|-----------------------------------|---|
| End view drawing  |                             |                                   |   |
| Material          | Galvanized nickel           |                                   |   |
| Fitting diameter  | 3.5...5mm                   | 6...8mm                           |   |
| Connection        | Welding                     | Threaded                          |   |
| Adaptive          | 4 pin M12 (Power connector) | 5 pin M12(D-coded)                |   |
| <b>Order code</b> | <b>18-1001</b>              | <b>18-1011</b>                    | <b>18-1012</b>                                      |

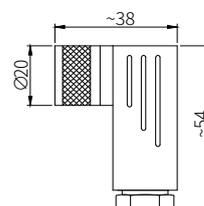
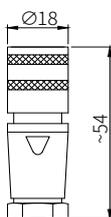
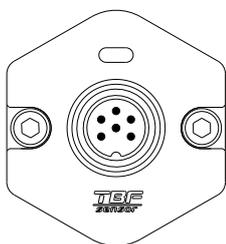
5 pin M12(D-coded) female connector



4 pin M12 male connector



| Connector         | 5 pin M12 female connector                              | 5 pin female connector (90 degree angle)                | 4pin M12(D-coded) male connector              |
|-------------------|---|---|---|
| Name              | Integral cable  | Integral cable  | Integral cable                                |
| Cable             | 5 wire 0.25mm <sup>2</sup> shielded cable               | 5 wire 0.25mm <sup>2</sup> shielded cable               | 4 wire 0.25mm <sup>2</sup> shielded cable     |
| Color/Diameter    | Orange/ Ø 6   | Orange/ Ø 6   | Green/ Ø 6                                    |
| Plug surface      | <br>1-Brown<br>2-Green<br>3-White<br>4-Gray<br>5-Yellow | <br>1-Brown<br>2-Green<br>3-White<br>4-Gray<br>5-Yellow | <br>1-Yellow<br>2-White<br>3-Orange<br>4-Blue |
| Length            | 5...30M   | 5/10/15/20/30M  | 5...30MM                                      |
| Adaptive          | 4 pin M12 (Power connector)                             | 4 pin M12 (Power connector)                             | 5 pin M12(D-coded)                            |
| <b>Order code</b> | <b>16-1035</b>  | <b>16-1040</b>  | <b>16-1045</b>                                |



|                   |   |   |
|-------------------|---|---|
| Name              | 6 pin M16 female connector  | 6 pin M16 female connector (90 degree angle)  |
| End view drawing  |  |  |
| Material          | Galvanized nickel   | Galvanized nickel   |
| Fitting diameter  | 6...8mm   | 6...8mm   |
| Connection        | Welding   | Welding   |
| <b>Order code</b> | <b>18-3001</b>  | <b>18-3003</b>  |

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