

# FTM Series Marine Anti-corrosion Watertight Connector

## Description

- Quick bayonet coupling
- Application: between equipment and cable and between cables in the severe environments such as moisture and water immersion
- 50m watertight after being mated
- Termination: plug: crimping or soldering
- receptacle: soldering
- Five key orientation to blindly mate and avoid mis-mating
- High reliable hyperboloid wire spring socket make connector soft insertion and separation and small contact resistance
- Plug and receptacle loaded with either pin or socket
- Enterprise standard: Q/21EJ184



## Main technical characteristic

### [Mechanical]

- Shell: stainless steel passive, copper alloy satin nickel plating or aluminum alloy electroless nickel plating
- Insulator: thermosetting material
- Grommet and sealing ring: silicon rubber
- Contact: copper alloy, gold plating
- Vibration: frequency 10~2000Hz, acceleration: 196 m/ s<sup>2</sup>
- Shock: acceleration 980 m/ s<sup>2</sup>
- Constant acceleration: 980 m/ s<sup>2</sup>
- Endurance: 1000 cycles

### [Electrical]

#### —Contact resistance and rated current

| Contact size (mm) | Contact resistance (mΩ) | Rated current (A) | Inner dia. of solder cup (mm) |
|-------------------|-------------------------|-------------------|-------------------------------|
| φ1.0              | 5                       | 5                 | φ1.3                          |
| φ1.5              | 2.5                     | 10                | φ1.8                          |
| φ2.0              | 1.25                    | 20                | φ2.5                          |
| φ3.0              | 0.75                    | 40                | φ3.4                          |

#### —Rated voltage, withstanding voltage and insulation resistance:

| Operating condition | Rated voltage (V) | Withstanding voltage (V) | Insulation resistance (MΩ) |
|---------------------|-------------------|--------------------------|----------------------------|
| Normal              | 500               | 2300                     | ≥5000                      |
| Heat & damp         | 500               | 1300                     | ≥100                       |
| Altitude (1Kpa)     | 250               | 300                      | —                          |

#### —EMI shielding: the minimum attenuation should be 60dB at 100MHz~1GHz

### [Environmental]

- Operating environment: -55°C~+200°C
- Relative humidity: 95% at 60°C
- Hermetic: 0~50m water immersion
- Salt spray: stainless steel—1000h; copper alloy—500h; aluminum alloy—48 h
- Fungus and dust resistance

## Ordering information

[Plug]

|  |                            |                                       |          |          |                      |          |           |            |
|--|----------------------------|---------------------------------------|----------|----------|----------------------|----------|-----------|------------|
| <b>Basic series</b>                                      | <b>FTM</b>                 | <b>22</b>                             | <b>T</b> | <b>7</b> | <b>K<sub>1</sub></b> | <b>P</b> | <b>40</b> | <b>(W)</b> |
| <b>Shell size</b> (9 sizes)                              |                            |                                       |          |          |                      |          |           |            |
| 18-22-24-27-30-33-36-39-42                               |                            |                                       |          |          |                      |          |           |            |
| <b>Shell type</b>  |                            |                                       |          |          |                      |          |           |            |
| T – plug (with crimped contact)                          |                            |                                       |          |          |                      |          |           |            |
| TB- receptacle (with soldered contact)                   |                            |                                       |          |          |                      |          |           |            |
| <b>Contact number</b>                                    | See the insert arrangement |                                       |          |          |                      |          |           |            |
| <b>Contact style</b>                                     |                            |                                       |          |          |                      |          |           |            |
| Z <sub>1</sub> - pin, gold plating                       |                            | K <sub>1</sub> - socket, gold plating |          |          |                      |          |           |            |
| <b>Shell structure</b>                                   |                            |                                       |          |          |                      |          |           |            |
| P –thread termination, with accessory                    |                            |                                       |          |          |                      |          |           |            |
| <b>Material and plating</b>                              |                            |                                       |          |          |                      |          |           |            |
| 1 - aluminum alloy, electroless nickel plating           |                            |                                       |          |          |                      |          |           |            |
| 1 <sub>1</sub> –copper alloy, electroless nickel plating |                            |                                       |          |          |                      |          |           |            |
| 1 <sub>2</sub> –copper alloy, satin nickel plating       |                            |                                       |          |          |                      |          |           |            |
| 40 - stainless steel, passive                            |                            |                                       |          |          |                      |          |           |            |
| <b>Polarization</b> (5 keys)                             |                            |                                       |          |          |                      |          |           |            |
| Blank—N, (W) —W, (X) —X, (Y) —Y, (Z) —Z                  |                            |                                       |          |          |                      |          |           |            |

[Receptacle]

|  |                            |                                       |          |          |                      |          |           |            |
|--|----------------------------|---------------------------------------|----------|----------|----------------------|----------|-----------|------------|
| <b>Basic series</b>                          | <b>FTM</b>                 | <b>22</b>                             | <b>F</b> | <b>7</b> | <b>K<sub>1</sub></b> | <b>P</b> | <b>40</b> | <b>(W)</b> |
| <b>Shell size</b> (9 sizes)                  |                            |                                       |          |          |                      |          |           |            |
| 18-22-24-27-30-33-36-39-42                   |                            |                                       |          |          |                      |          |           |            |
| <b>Shell type</b>                            |                            |                                       |          |          |                      |          |           |            |
| F- square flange receptacle                  |                            |                                       |          |          |                      |          |           |            |
| <b>Contact number</b>                        | See the insert arrangement |                                       |          |          |                      |          |           |            |
| <b>Contact style</b>                         |                            |                                       |          |          |                      |          |           |            |
| Z <sub>1</sub> - pin, gold plating           |                            | K <sub>1</sub> - socket, gold plating |          |          |                      |          |           |            |
| <b>Shell structure</b>                       |                            |                                       |          |          |                      |          |           |            |
| D - no thread termination, without accessory |                            |                                       |          |          |                      |          |           |            |
| P - thread termination, with accessory       |                            |                                       |          |          |                      |          |           |            |

### Material and plating

- 1 - aluminum alloy, electroless nickel plating
- 11 - copper alloy, electroless nickel plating
- 12 - copper alloy, satin nickel plating
- 40 - stainless steel, passive

### Polarization (5 keys)

Blank—N, (W) —W, (X) —X, (Y) —Y, (Z) —Z

[Thru-bulkhead sealed adapter]

|                              |                            |   |          |          |                      |          |           |            |
|------------------------------|----------------------------|---|----------|----------|----------------------|----------|-----------|------------|
| <b>Basic series</b>          | <b>FTM</b>                 | <b>22</b>   | <b>S</b> | <b>7</b> | <b>M<sub>1</sub></b> | <b>D</b> | <b>40</b> | <b>(W)</b> |
| <b>Shell size</b> (9 sizes)  |                            | 18-22-24-27-30-33-36-39-42  |          |          |                      |          |           |            |
| <b>Shell type</b>            |                            | S- jam nut thru-bulkhead sealed adapter, socket on one end without thread, pin on the other end with thread   |          |          |                      |          |           |            |
| <b>Contact number</b>        | See the insert arrangement |   |          |          |                      |          |           |            |
| <b>Contact style</b>         |                            | M <sub>1</sub> - Thru-bulkhead sealed contact, gold plating   |          |          |                      |          |           |            |
| <b>Shell structure</b>       |                            | D - no thread termination, without accessory  |          |          |                      |          |           |            |
| <b>Material and plating</b>  |                            | <ul style="list-style-type: none"> <li>1 - aluminum alloy, electroless nickel plating</li> <li>11 - copper alloy, electroless nickel plating</li> <li>12 - copper alloy, satin nickel plating</li> <li>40 - stainless steel, passive</li> </ul> |          |          |                      |          |           |            |
| <b>Polarization</b> (5 keys) |                            | Blank—N, (W) —W, (X) —X, (Y) —Y, (Z) —Z   |          |          |                      |          |           |            |

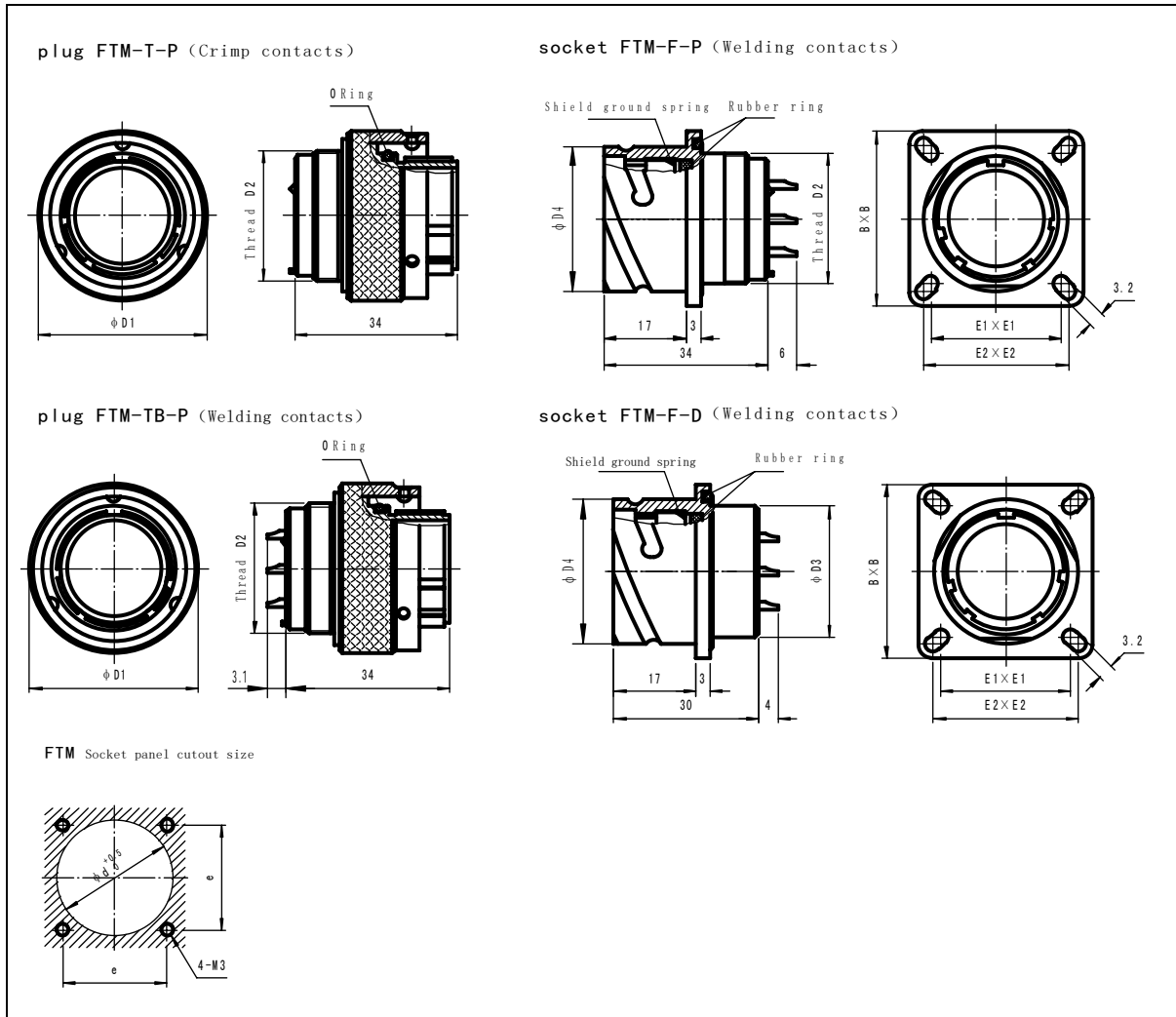
### Weight table for FTM series plug and receptacle (Material: stainless steel)

Unit: Gram

| Shell size | Plug | Receptacle (without thread termination) | Receptacle (with thread termination) |
|------------|------|---|--------------------------------------|
| 18         | 52   | 48                                      | 50                                   |
| 22         | 68   | 60                                      | 62                                   |
| 24         | 83   | 66                                      | 69                                   |
| 27         | 100  | 81                                      | 85                                   |
| 30         | 124  | 92                                      | 97                                   |
| 33         | 142  | 103                                     | 108                                  |
| 36         | 160  | 117                                     | 123                                  |
| 39         | 176  | 146                                     | 152                                  |
| 42         | 192  | 175                                     | 181                                  |

Note: the values in the table are the average values of insert arrangement of the shell with pin or socket and are only for reference

## Outline dimensions



| Shell size | D1   | D2    | D3   | D4   | B    | E1   | E2   | d    | e         |
|------------|------|-------|------|------|------|------|------|------|-----------|
| 18         | 26.0 | M18×1 | 18.0 | 20.8 | 27.5 | 21.0 | 22.0 | 18.5 | 21.0~22.0 |
| 22         | 30.0 | M22×1 | 22.0 | 24.8 | 30.0 | 23.0 | 24.5 | 22.5 | 23.0~24.5 |
| 24         | 32.0 | M24×1 | 24.0 | 26.8 | 33.0 | 25.0 | 27.0 | 24.5 | 25.0~27.0 |
| 27         | 35.0 | M27×1 | 27.0 | 29.8 | 36.0 | 27.0 | 30.0 | 27.5 | 27.0~30.0 |
| 30         | 38.0 | M30×1 | 30.0 | 32.8 | 39.0 | 29.0 | 32.0 | 30.5 | 29.0~32.0 |
| 33         | 41.0 | M33×1 | 33.0 | 35.8 | 42.0 | 31.0 | 34.5 | 33.5 | 31.0~34.5 |
| 36         | 44.0 | M36×1 | 36.0 | 38.8 | 45.0 | 33.0 | 37.0 | 36.5 | 33.0~37.0 |
| 39         | 47.0 | M39×1 | 39.0 | 41.8 | 48.0 | 35.5 | 39.0 | 39.5 | 35.5~39.0 |
| 42         | 50.0 | M42×1 | 42.0 | 44.8 | 51.0 | 38.0 | 41.5 | 42.5 | 38.0~41.5 |

### Thru-bulkhead sealed adapter FTM-S-M<sub>1</sub>D

|  |            |          |      |    |
|--|------------|----------|------|----|
|  | Shell size | Thread A | D1   | D2 |
|  | 18         | M24×1    | 20.8 | 32 |
|  | 22         | M27×1    | 24.8 | 37 |
|  | 24         | M30×1    | 26.8 | 39 |
|  | 27         | M33×1    | 29.8 | 42 |
|  | 30         | M36×1    | 32.8 | 45 |
|  | 33         | M39×1    | 35.8 | 48 |
|  | 36         | M42×1    | 38.8 | 51 |
|  | 39         | M45×1    | 41.8 | 54 |
|  | 42         | M48×1    | 44.8 | 57 |

### Recommended panel cut-out dimensions

|                              |            |      |      |
|------------------------------|------------|------|------|
| <p>Panel thickness 2~6mm</p> | Shell size | D    | P    |
|                              | 18         | 24.2 | 23.2 |
|                              | 22         | 27.2 | 26.2 |
|                              | 24         | 30.2 | 29.2 |
|                              | 27         | 33.2 | 32.2 |
|                              | 30         | 36.2 | 35.2 |
|                              | 33         | 39.2 | 38.2 |
|                              | 36         | 42.2 | 41.2 |
|                              | 39         | 45.2 | 44.2 |
|                              | 42         | 48.2 | 47.2 |

### Crimped contact size and the applicable tool for FTM series

| Contact size mm | Inner diameter of barrel mm | Outer diameter of barrel mm | Applicable wire cross section mm <sup>2</sup> | Crimping tool/ locator | Removal tool |
|-----------------|-----------------------------|-----------------------------|---|------------------------|--------------|
| φ1.0            | φ1.3                        | φ2.1                        | 0.75  | XCXY/DWQ-01            | XCQZ-φ1.0    |
| φ1.5            | φ1.8                        | φ2.8                        | 1.20、1.50                                     | XCXY/DWQ-01            | XCQZ-φ1.5    |
| φ2.0            | φ2.5                        | φ3.6                        | 2.50、3.00                                     | XCXY/DWQ-01            | XCQZ-φ2.0    |
| φ3.0            | φ3.4                        | φ4.6                        | 5.00  | XCXY/DWQ-01            | XCQZ-φ3.0    |

# FTM series insert arrangement (Mating face of pin inserts)

|            |   |   |   |   |
|------------|---|---|---|---|
| Shell size | 1 | 2 | 3 | 4 |
| 18         |   |   |   |   |
| 22         |   |   |   |   |
| 24         |   |   |   |   |
| 27         |   |   |   |   |
| 30         |   |   |   |   |
| 33         |   |   |   |   |
| 36         |   |   |   |   |
| 39         |   |   |   |   |
| 42         |   |   |   |   |
|            |   |   |   |   |

○  $\phi 1.0$ Contact   ●  $\phi 1.5$ Contact   ◐  $\phi 2.0$ Contact   ◑  $\phi 3.0$ Contact