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## **III. M8 / M12 Connector Overview**

[M8 / M12 Connectors](#) are recommended in almost all of the field bus specification now, and according to the standard IEC 61076-2-101/104 comply with IP67 protection level, traditionally used for connecting sensors and actuator in the automation technology. The correction 1 in the standard accounts the D encoding 4 pins type connector applied for industrial Ethernet and with high level of protection.

### **1. EIA/TIA Standard**

According to EIA / TIA standard, the conditions of transmission technology of M8 / M12 connectors correspond to the 5th Category of modular jack's (RJ45). Using D coding can prevent error connection with A-coding (used for sensor and actuator wiring) and B coding (used in some fieldbus).

M8 / M12 connector is not available for the type of printed circuit board before this until SMT termination circular M8 / M12 connector was born in 2005. SMT end connection contributes to the miniaturization for field devices. Firm pin makes it packed in bulk, and accordingly used by the feed process of vibratory bowl. Another packing way is tape and reel.

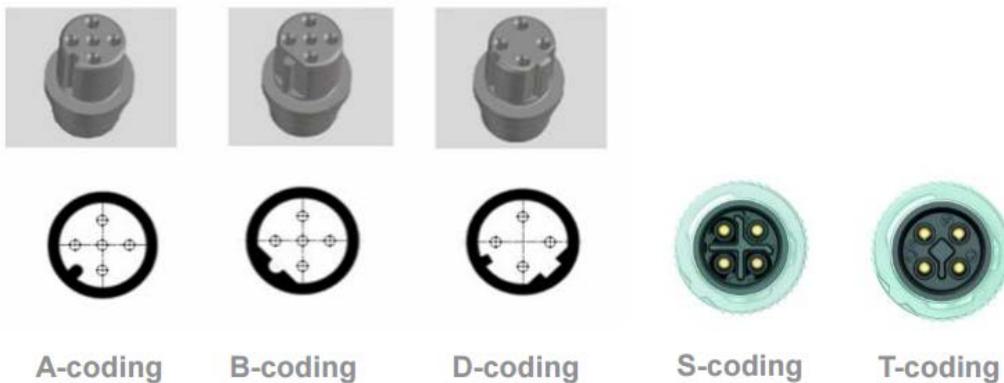
### **2. Technology Standard**

Based on modular design concept contributes to a variety of different installation height and needle-type connectors. Based on the needs of users, provided termination methods includes surface mount, crimp or through-hole reflow technology, amount which technologies the surface mount is standard. The black insulator of connector is made of high-temperature plastic, therefore, there is so as not to exist problems in all conventional SMT soldering procedures.

In the past, the controller in switch cabinet drives field devices by I / O card. Today, industrial automation trends decentralized systems, on-site actuators and sensors often connected to a passive or fieldbus performance of I / O box. In order to provide the lowest cost solution for a variety of applications, specific field device requires a high level of flexible modular connector solutions. To this end, the various types of printed circuit board of M8 / M12 circular connector are supplemented by a cable system. Different models, shapes, pin number, cable's quality and length help to achieve cost-effective and customized automation solutions.

### 3. M8/M12 – The codings

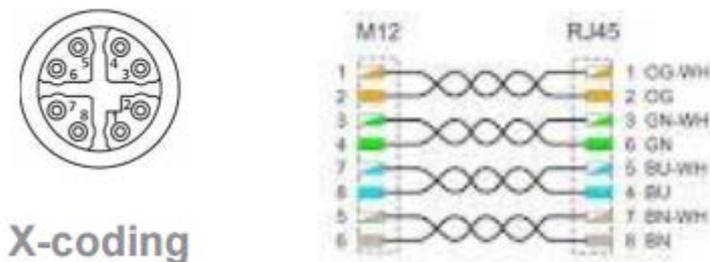
- A-coding:** actuator-sensor plug connections for DeviceNet, IO link and Profibus
- B-coding:** Fieldbus connections for Profibus and Interbus
- D-coding:** Industrial Ethernet, Profinet, Ethernet/IP and EtherCat
- S-coding:** Motor, Frequency-convertors, motor operated switches, PSUs for Power, 620V, 12A
- T-coding:** Fieldbus comp, passive distribution boxes, motors, PSUs for Power, 63V, 12A



#### M8/M12 – X-coding

**X-coding:** Cat6A, high-speed 10Gbit rugged industrial Ethernet applications

IEC 61076-2-109



#### M8/M12 – C&P-coding

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### 4. Application Fields

**M8 / M12 connector** is mainly used for outdoor light boxes, construction machinery, iron and steel production equipment, electrical equipment, mining machinery, ship machinery, automotive equipment, automatic production equipment, temperature transmitters, hydraulic tools, sensors, solenoid valves, instrumentation, pressure transmitter, and so on.

- Switches

– M12 for Rugged Ethernet



- PLCs / Ethernet modules



## ***The professional Knowledge Introduction for M8 M12 connectors***

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- **I/O Interfaces**

**1 x 5pin M12 connector for POWER Adapter**

**1 x 8pin M12 connector for two USB**

**1 x 5pin M12 connector for CAN bus and Audio line out**

**1 x 8pin M12 connector for UART RS-232/422/485**

**1 x 8pin M12 connector for UART RS-232**

**1 x 8pin M12 connector for GbE LAN**

M12 Receptacle

M12 Plug

Specialized Cables 8pos PUR 5.0m M12 straight socket pig shield A

M8/M12 connector portfolio includes a full range of A, B, C, D, S, T and X-coded (up to 10 Gigabit/s) versions to serve various application needs.

The requirements of the design environment of M8 / M12 connector product are very harsh. Both product performance and testing standards have passed the international quality control standards.

Meanwhile M8 / M12 connectors are used for the connection of field sensors and actuators.

## **IV. M8 / M12 Sensor connectors**

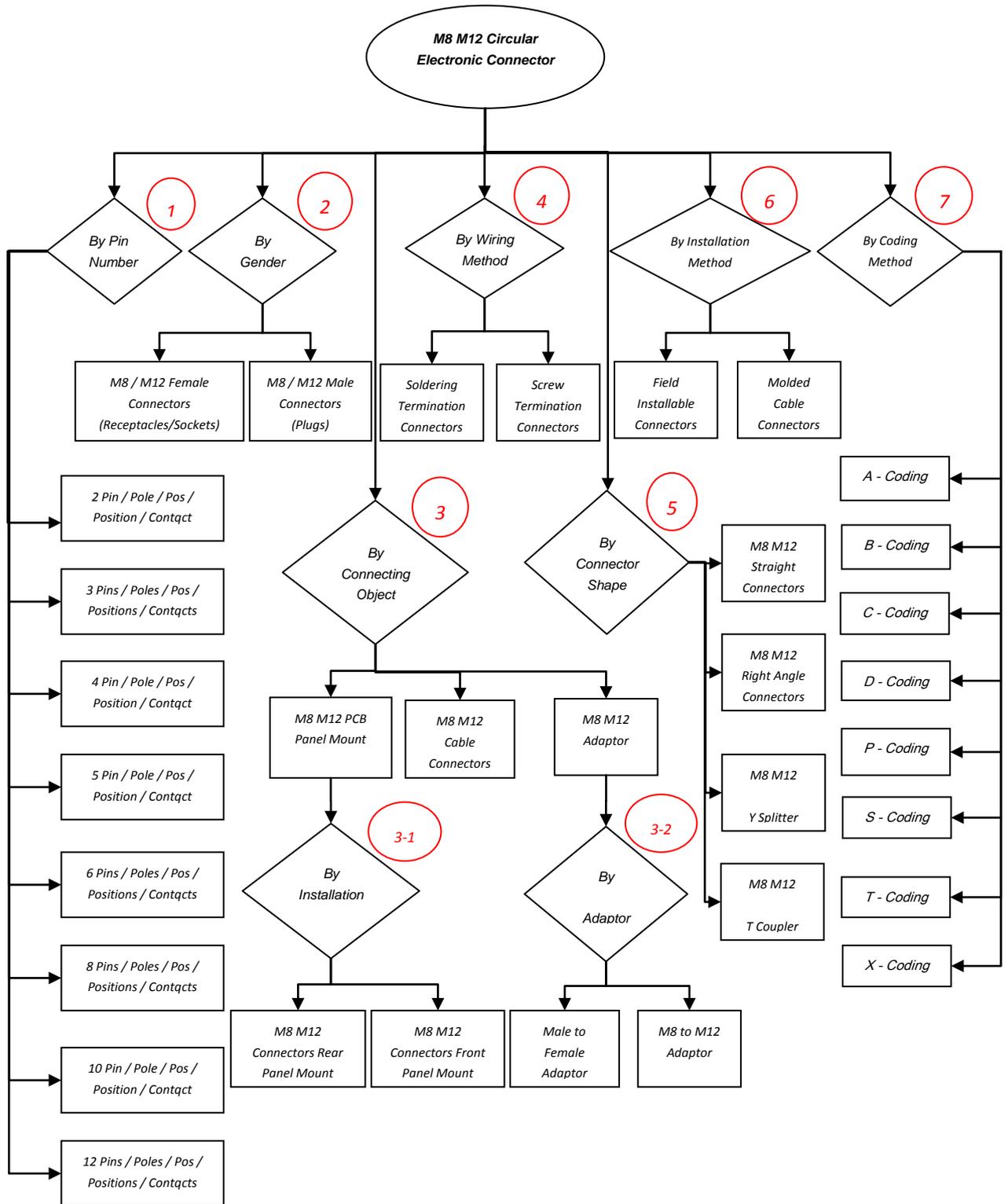
**Sensor connectors** commonly used have M12 connectors, M8 connectors. The thread of M12 connector is M12 \* 1 and the thread of M8 connector is M8 \* 1. The connection method is a screw connection, enclosure protection class is IP67. Both M12 Connector and M8 Connector are divided into two types with cable and without cable, the material of the cable has PVC (Normal) or PUR (oil wear) optional, the length of the cable can be customized by user requirements.

**A-coded M8 M12 sensor connectors** can provide power, data and signal transmission for position sensor, pressure sensor, acceleration sensor, deformation sensor, humidity sensor, temperature sensor, heat-sensitive sensor, photosensitive sensor, photoelectric sensor, acoustic sensor, Robots, Servo motor, controller, Encoder, Man-machine Interface Industrial Robots.

## **V. The Product Classification for M8 M12 Circular Electronic Connectors**

### **0. M8 M12 connector classification diagram**

# The professional Knowledge Introduction for M8 M12 connectors



## 1. By Pin Number

## ***The professional Knowledge Introduction for M8 M12 connectors***

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M8 M12 Circular Electronic Connectors may be classified by pin number such as 2 3 4 5 6 8 10 12 Pins / Poles / Ports / Pos / Positions.

### ***2. By Gender***

M8 M12 Circular Electrical Connectors can be divided into M8/M12 male Connector (M8/M12 Plugs) and M8/M12 female connector (M8/ M12 Receptacles / Sockets) by gender.

### ***3. By Connecting Object***

M8 M12 Circular Electrical Connectors have these categories by connecting object such as M8 / M12 PCB Panel Mount Connectors, M8 M12 Cable Connectors and M8 M12 Adaptor.

#### **3-1. By Installation Position**

M8 / M12 PCB Panel Mount Connectors are also classified as M8 / M12 Connectors Rear Panel Mount and M8 / M12 Connectors Front Panel Mount by Installation Position.

#### **3-2. By Adaptor Object**

M8 M12 Adaptor can be divided into Male to Female Adaptor and M8 to M12 Adaptor by Adaptor Object.

For example: M12 male to M12 female adaptor, M8 male to M8 female adaptor, M8 male to M12 male adaptor, M8 male to M12 female adaptor, M8 female to M12 male adaptor, M8 female to M12 female adaptor.

### ***4. By Wiring Method***

M8 M12 Circular Electrical Connectors can be classified as Soldering Termination Connectors and Screw Termination Connectors by Wiring Method.

### ***5. By Connector Shape***

M8 M12 Circular Electric Connectors can be classified as M8 / M12 Straight Connectors, M8 / M12 Right Angle Connectors, M8 / M12 Y Shape Connectors and M8 / M12 T Shape Connectors by Connector Shape.

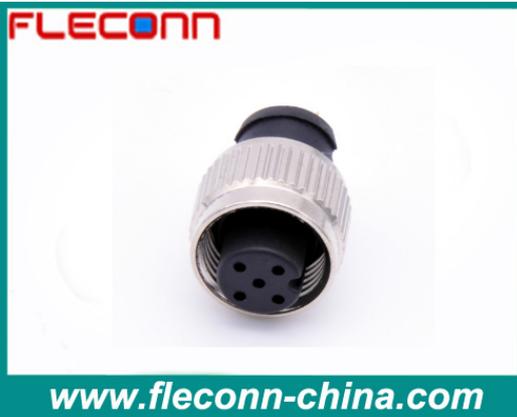
### ***6. By Installation Method***

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## 2. M8 Molding Type Connectors

*M8 Molding Type Connector, Solder Terminal,  
Female Cable Socket, 2 3 4 5 6 8 Pos*



*M8 Molded Cable Connector, 6 pin Solder Type,  
Straight Male Plug*



## 3. M8 Panel Mount Connectors

*6 Pin Female M8 Connector, Front Panel Mount,  
Solder Wires type*



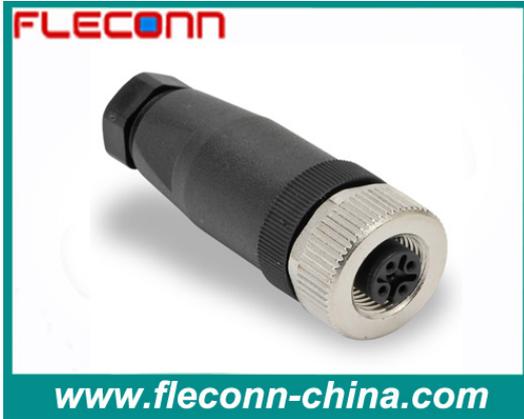
*6 Pos M8 Female Connector, Rear Panel Mount,  
Soldering Wires*





## 5. M12 Field Wireable Connectors

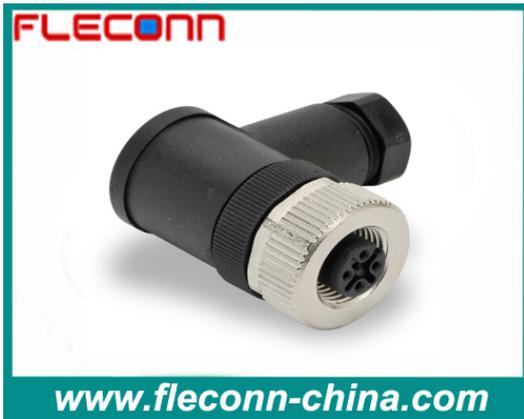
*M12 Female Connector, Plastic Shell, Assembly  
Type PG9 Thread*



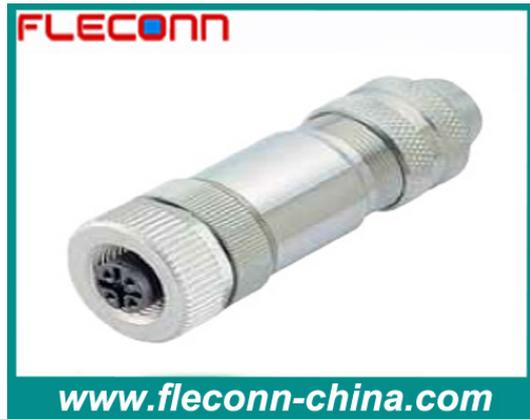
*M12 Connectors, Metal and Plastic Cover  
Shielded and Unshielded, Field Mountable*



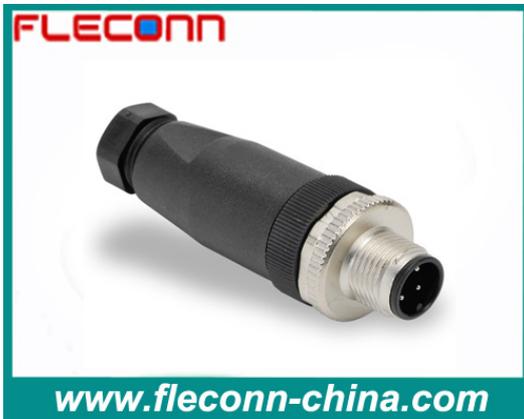
*M12 Right Angled Connector, Female Fieldable  
Assembly A-Coding*



*M12 Sensor Connector, Metal Shell, Shielded  
Female Socket*



*M12 Sensor Cable Plug, Stainless Steel  
Threaded Lock, 4 Pin Connector*



*M12 Cable Plug, Shieldable Connector,  
Soldering Type 4 Pins*



## 6. M12 Panel Mount Connectors

*M12 A Coding Connector, 4 pin Male Plug, M12 Thread Rear Panel Mount*



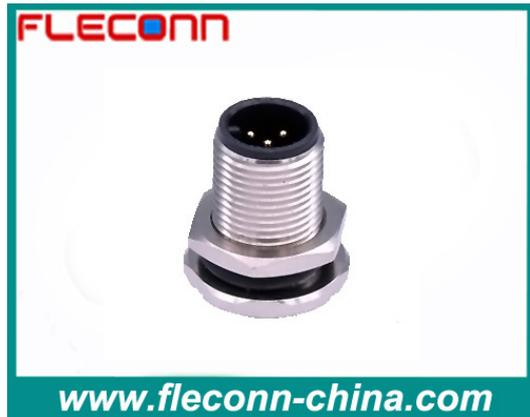
*M12 Female Connector, Panel Type Rear Mount, Chassis Side Thread PG9*



*M12 Panel Mount Connector, Front Installation, 4 5 6 8 12 Pin Female Connector*



*M12 Panel Mount Connector, A Coding, 4 5 6 8 12 Pin Male Plug*



*IP 67 M12 Waterproof Connector, Male Front Panel Mount, PG9/ M16x1.5 Thread*



*M12 Male Connector, Panel Mount, Rear Thread PG9, 4 5 8 12 Pin*



## 7. M12 X-Coded Ethernet Connectors

M12 X Coding Connector, Cat6A Ethernet Connector, Shielded Female 8 Pos



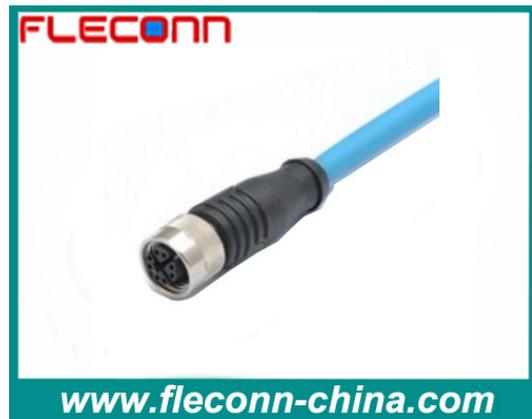
M12 X Coded Connector, Field Installation, Gigabit Ethernet Male Connector



M12 Ethernet Connector Cable, 8P X-coded Male Plug 10 Gbps Speed



M12 X Coded Ethernet Cable, 8 pin Female Connector, High speed Transmission



## The professional Knowledge Introduction for M8 M12 connectors

### 8. M12 Y/T Splitter Connectors

M12 T Coupler, Female-Male-Female  
Connector, 3 ways Splitters



M12 Y Splitter, 4 pin Molded Male Female  
connector 3 ways Coupler

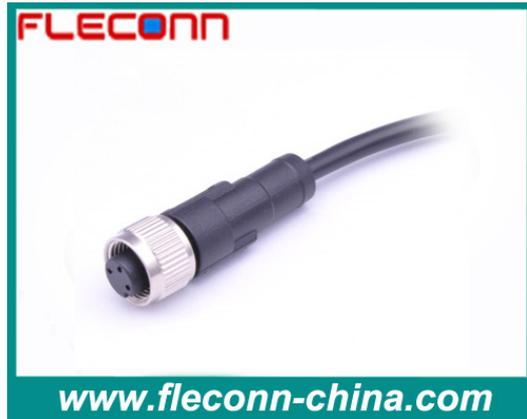


### 9. M12 Connector Cable Assembly

M12 Male to Female Cable and Cordset, 3 Pin  
IP67 Waterproof Connector



M12 Sensor Cable, Shielded Female 3 Pos  
Straight Waterproof Connector



M12 Molded Cable, Female 12 Pins Connectors  
Soldering Receptacle



Shielded M12 Male Molded Cable, 3P 4P 5P 6P  
connectors



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## ***The professional Knowledge Introduction for M8 M12 connectors***

[M12 5 pin A code straight female connector cable](#)



[M12 8pin A code male connector and overmolded cable](#)



[12 pin M12 right angle female connector cable, A coded IP67 / IP68 Waterproof Receptacle](#)



### ***10. FLECONN M8 M12 connector Brief Introduction***

FLECONN is a manufacturer and supplier of standard and custom M8 and M12 circular cable connectors for industrial automation applications.

Types of connectors include M12 high speed signal and data connectors, power and push-pull connectors. Signal connectors have voltage rating of 160 V to 400 V 150 V to 300 V. Power connectors are available in voltage rating of 300 V to 800 V. Connectors are shielded and IP-rated to IP 67 and IP 68. M8 M12 connectors are available in 90 degree right angle and straight versions with solder & screw terminals & front & back panel mounts. Connectors are available with solder & screw terminals & front & back panel mounts. These connectors are designed for use in harsh environment applications such as heavy equipment, rail and mass transit, process control and factory automation.

Welcome to inquire the quotations, Thanks.

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