

# Introduction of circular connectors



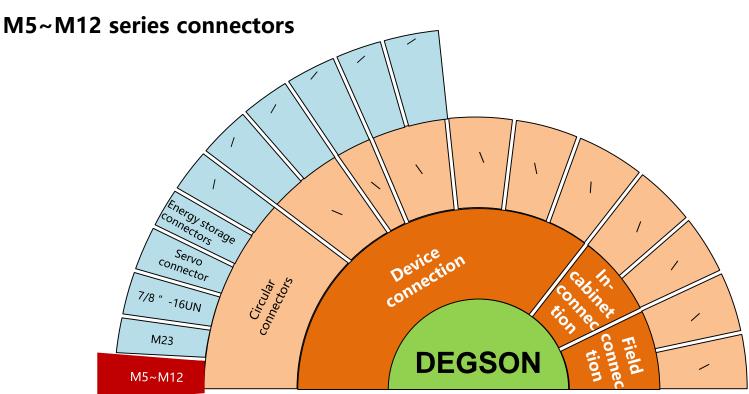


- 1. Product introduction
- 2. Product characteristics
- 3. Product manufacturing process
- 4. Product applications
- 5. Product selection elements and selling points
- 6. Main competitive selling points and cracks





### **Product map**







### 1. Introduction of M5, M8, M12 series products

#### **Product definition**

- Standard connection technology
  - ---Suitable for signal, data and power connections;
  - ---Thread specifications: M5, M8, M12;
  - ---**Current range: 1.5~12A;**
  - ---Voltage range: 30~630V.



#### How it works:

Through the coupling connection of male and female threads, the socket and the plug, or the plug and the plug move in opposite direction, so that the multi-core conductor connection of the two connectors can communicate with each other and transmit signals, power or data.

#### **Advantages:**

- Easy and quick to connect;
- Coding for error-proof;
- Multiple conductors can be connected for more flexible wiring;



### 2. Product classification and interpretation of M5, M8, M12 series products

	Panel mount	Overmolded with cable	Field assembly
M5 (Compatible thread specifications M5*0.5)			1
M8 (Compatible thread specifications M8*1.0)			
M12 (Compatible thread specifications M12*1.0)			





M12 series products		03 Pin	04 I	Pin	05	Pin	06 Pin	08 Pin	10 Pin	12 Pin	17 Pin
	Code	Α	Α	D	Α	В	Α	A	A	Α	Α
Main parameter	Rated current	4A	4A	4A	4A	4A	2A	2A	1.5A	1.5A	1.5A
S(Compatible thread specification	Rated voltage	250V	250V	250V	60V	60V	30V	30V	30V	30V	30V
M12*1.0)	Frontal view	4 • • 33 · · · · · · · · · · · · · · · ·	$\begin{bmatrix} 4 & & & & \\ & & & & \\ 1 & & & & \\ \end{bmatrix} \begin{bmatrix} 3 & & & \\ & & & \\ 2 & & & \\ \end{bmatrix} \begin{bmatrix} 0 & & \\ & & \\ \end{bmatrix} \begin{bmatrix} 4 & & \\ & & \\ \end{bmatrix}$	4 0 3 3 0 0 4	$\begin{pmatrix} 4 & 5 & 0 \\ \bullet & 5 & 0 \\ 0 & \bullet & 0 \\ 1 & \bullet & 0 \\ 0 & 0 & 0 \\ 1 & \bullet & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 1 & \bullet & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0$	$\begin{pmatrix} 4 & \bullet & 3 & 3 & 0 & 0 \\ \bullet & \bullet & 0 & 0 & 0 & 0 \\ \bullet & 5 & \bullet & 2 & 2 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 $	8 4 0 0 6 7 2 3 3 0 0 7	3 3 0 0 0 7 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0		8	9 14 4 40 15 015 9 10 11 12 13 13 13 15 10 10

#### Plug

Overmolded with cable (The standard cable color is black, the color of 4Pin D coded cable is green, the cable length is 1m, the specific model refers to the catalog and the company's official website)

Unshielded Straight		Unshielded Angled		Shielded	Straight	Shielded Angled	
Male ( needle )	Female ( hole )	Male ( needle )	Female ( hole )	Male ( needle )	Female ( hole )	Male ( needle )	Female ( hole )
						H.	

Field assembly (Two wiring methods: screw crimping, welding, the appearance of the finished product is the same. For specific models, please refer to the catalog and the company's official website)

Unshielded Straight		Unshielded Angled		Shielded	Straight	Shielded Angled	
Male ( needle )	Female ( hole )	Male ( needle )	Female ( hole )	Male ( needle )	Female ( hole )	Male ( needle )	Female ( hole )



#### Socket Panel mount with wires (standard wire length 0.5m. Specific model reference catalogue and company official website) Front lock (board back mounting and board front lock) Back lock (board front mounting board back lock) Male (needle) Female (hole) Male (needle) Female (hole) Panel mount soldering without wire (The tail is a solder cup type needle for soldering electronic wires. Specific model reference catalogue and company official website) Front lock (board back mounting and board front lock) Back lock (board front mounting board back lock) Female (hole) Female (hole) Male (needle) Male (needle) Panel mount PCB soldering (The tail is a round pin for soldering to the PCB circuit board. Specific model reference catalogue and company official website) Unshielded straight needle (180°) Unshielded angle needle (90°) Front lock Male (needle) Front lock Female (hole) Back lock Male (needle) Back lock Female (hole) Front lock Female (hole) Front lock Male (needle) Shielded straight needle (180°) Shielded angle needle (90°) Front lock Male (needle) Front lock Female (hole) Front lock Male (needle) Front lock Female (hole)





















M12 series products		03 Pin		04	Pin	08 Pin
	Code	S	Т	S	Т	х
Main parameter	Rated current	12A	12A	12A	12A	0.5A
S (Compatible thread	Rated voltage	630V	63V	630V	63V	50V AC \ 60V DC
spacification M12*1.0)	Front view					

#### Plug

S、T code overmolded with cable (The standard color is black, cable length is 1m, Specific model reference catalogue and company official website)

X code overmolded with cable (The standard color is aqua blue, cable length is 1m, Specific model reference catalogue and company official website)

Unshielde	ed Staight	Unshielde	d Angled	Shielded Straight							
Male (needle)	Female (hole)	Male (needle)	Female (hole)	Male (needle)			Female (hole)				
	(1000		U				0				
Socket	Socket										
S、T code socket (Spe	S、T code socket (Specific model reference catalogue and company official website)  X code socket										
	k mounting and board lock)	Back lock (board front mo	ounting board back lock)	Front lock (board back mounting and board front lock)  Back lock (board from board board back)			Crimped tape wire				
Male (needle)	Female (hole)	Male (needle)	Female (hole)	Female (hole)	Female (hol	le)	Female (hole)				
					6)						



M8 series p	roducts	03 Pin	04 Pin	05 Pin	06Pin	08Pin
N. d. a. C. a.	Code	Α	Α	В	Α	Α
Main paramete rs	Rated current	3A	3A	3A	1.5A	1.5A
(Compatible thread	Rated voltage	60V	60V	30V	30V	30V
specification M8*1.0)	Front view	1 0 3 3 0 0 1	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$

#### Plug

Overmolded with wire (Standard cable color is black and the length is 1m. Specific model reference catalogue and company official website)

Unshielded Straight		Unshielded Angled		Shielded	Straight	Shielded Angled	
Male (needle)	Female (hole)	Male (needle)	Female (hole)	Male (needle)	Female (hole)	Male (needle)	Female (hole)
ti e		<u>u</u>	5			E .	

#### Field assembly (Two wiring forms: welding, screw crimping. Specific model reference catalogue and company official website)

Soldering Unshielded		Soledering Shielded		Screw crimpin	g Unshielded	Screw crimping Shielded	
Male (needle)	Female (hole)	Male (needle)	Female (hole)	Male (needle)	Female (hole)	Male (needle)	Female (hole)
	0		Charles and the	ed William			





















#### **Socket** Panel mount with wires (The standard wire length is 0.5m. Specific model reference catalogue and company official website) Front lock (board back mounting and board front lock) Back lock (board front mounting board back lock) Male (needle) Female (hole) Male (needle) Female (hole) Panel mount soldering without wire (The tail is a solder cup type needle for soldering electronic wires. Specific model reference catalogue and company official website) Front lock (board back mounting and board front lock) Back lock (board front mounting board back lock) Female (hole) Male (needle) Male (needle) Female (hole) Panel mount PCB soldering (The tail is a round pin for soldering to the PCB circuit board. Specific model reference catalogue and company official website) Unshielded angle needle (90°) Unshielded straight needle (180°) Front lock Male (needle) Front lock Female (hole) Front lock Male (needle) Front lock Female (hole) Front lock Male (needle) Front lock Female (hole) Shielded straight needle (180°) Shielded angle needle (90°) Front lock Male (needle) Front lock Female (hole) Front lock Female (hole) Front lock Male (needle)























M5	M5 series products		03 Pin	04 Pin
	Main	Code	A	А
pa	paramete Rated current		1A	1A
	rs ompatible	Rated voltage	60V	60V
sp	thread ecificatio nM5*0.5)	Front view		

#### Plug

Overmolded with cable (The standard color is black, cable length is 1m, Specific model reference catalogue and company official website)

Unshielded	Straight	Unshielded Angled		
Male (needle)	Female (hole)	Male (needle)	Female (hole)	

#### Socket

Socket	ocket								
Panel mount with wires (The standard wire length is 0.5m. Specific model reference catalogue and company official website)									
Front loc	k (board back mounting and board	front lock)	Back lock (board front mounting board back lock)						
Male (needle) Female (hole)			Male (needle)		Female (hole)				
Panel mount soldering with reference catalogue and co	Panel mount soldering without wire (The tail is a solder cup type needle for soldering electronic wires. Specific model reference catalogue and company official website)  Panel mount PCB soldering (The tail is a round pin for soldering to the PCB circuit board. Specific model reference catalogue and company official website)								
Front lock (board back mounting and board front lock)  Back lock (board front			ounting board back lock)	Front lock (board back mounting and board front lock)	Back lock (board front mounting board back lock)				
Male (needle)	Female (hole)	Male (needle)	Female (hole)	Male (needle)	Female (hole)				



### 3. Characteristics of M5, M8, M12 series products

### 1. Structure of product

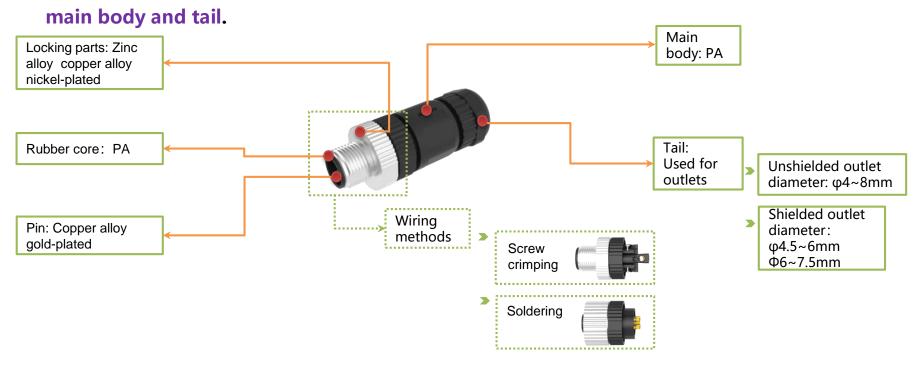
The overmolded with cable is mainly composed of four parts: pin, rubber core, locking part and cable





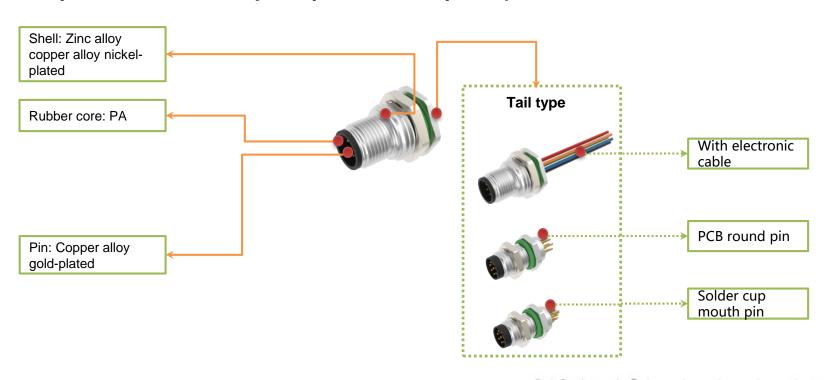


### The field assembly plug is mainly composed of five parts: pin, rubber core, locking part,



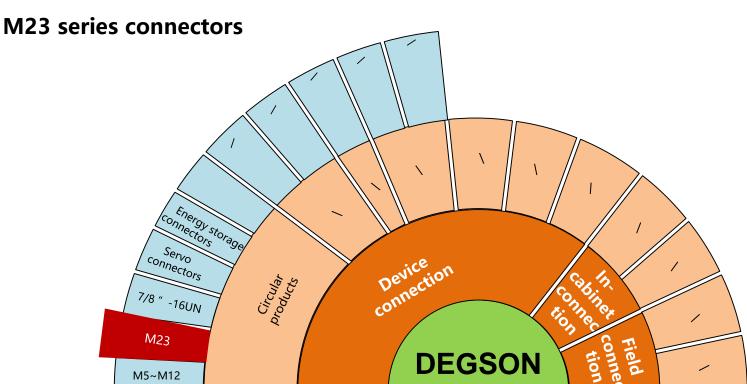


#### The panel socket is mainly composed of four parts: pin, rubber core, shell and tail.





### **Product Map**







### 1. Product introduction of M23 series products

#### **Product definition**

- Standard connection technology
  - ---Suitable for signal and power connections; I
  - ---Thread specification: M23;
  - ---Current range: 8~28A;
  - ---Voltage range: 125~630V.



#### How it works:

Through the coupling connection of male and female threads, the socket and the plug, or the plug and the plug move in opposite direction, to realize the multi-core wire connection of the two connectors, transmit signals and power supply.

#### **Advantages:**

- Cross-manufacturer compatibility and worldwide availability;
- ➤ 360° full shielding, suitable for complex electromagnetic interference and other environments;
- ➤ Installation is easy, and non-specialists can quickly assemble and replace it.





### 2. Product classification and interpretation of M23 series products

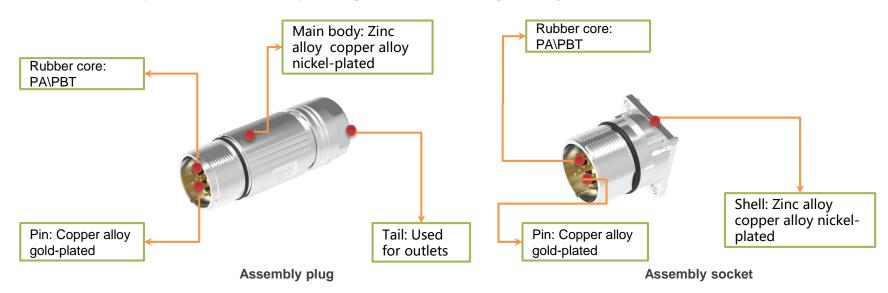
2. 1 Todaet classification and interpretation of MES series products			
Products			
Description	M23 Assembly Plug Socket Crimp Shielded Poles: 5+PE (Power)	M23 Assembly Plug Socket Crimp Shielded Poles: 12 (Signal)	M23 Assembly Plug Socket Crimp Shielded Poles: 17 (Signal)
Product model	SCSH-M23P-06P-MM-SF7001-00A(H) PCSH-M23P-06P-FF-SL7001-00A(H) PCSH-M23P-06P-MM-SL7001-00A(H)	SCSH-M23R-12P-MM-SS7000-00A (H) PCSH-M23R-12P-FF-SL7001-00A (H) PCSH-M23R-12P-MM-SL7001-00A (H)	SCSH-M23R-17P-MM-SS7000-00A (H) PCSH-M23R-17P-FF-SL7001-00A (H) PCSH-M23R-17P-MM-SL7001-00A (H)
Contact surface			(0)120,0 (0) 10 0,0 (0) 10 0,0 (0) 10 0,0 (0)
Rated current/voltage	28A/630V	8A/160V	8A/125V
Diameter	12~14AWG 18~24AWG		AWG
Insulation resistance	≥100MΩ		
Operating temperature	-40~+125°C		
Degree of protection	IP67		
Times of plugs and pulls	≥ 500 times		



### 3. Characteristics of M23 series products

#### 1. Product structure

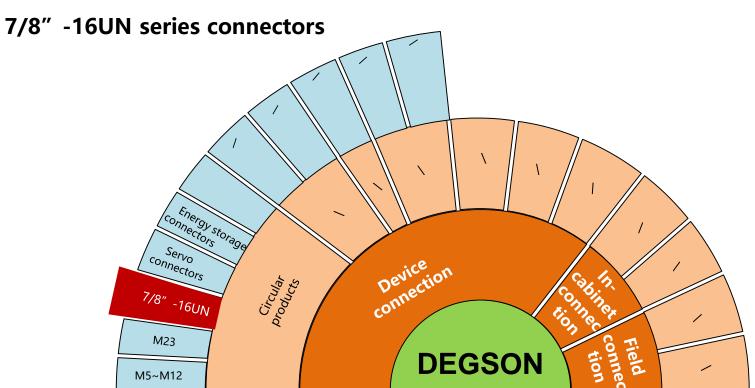
The assembly plug is mainly composed of four parts: pin, rubber core, main body and tail. The assembly socket is mainly composed of three parts: pin, rubber core and shell.







### **Product Map**







### 1. Product introduction of 7/8" -16UN series products

#### **Product definition**

- Standard connection technology
  - ---Suitable for signal and power connections;
  - ---Thread specification: 7/8" -16UN;
  - ---Current range: 9~13A;
  - ---Voltage range: 300V.



#### How it works:

Through the coupling connection of male and female threads, the socket and the plug, or the plug and the plug move in opposite direction, to realize the multi-core wire connection of the two connectors, transmit signals and power supply.

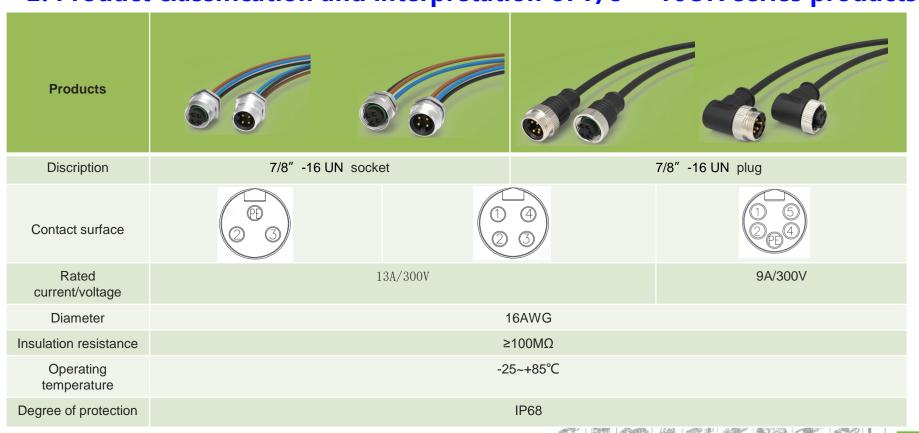
#### **Advantages:**

- > Quick and easy to connect;
- Coding for error-proof;
- Multiple conductors can be connected for more flexible wiring;





### 2. Product classification and interpretation of 7/8" -16UN series products



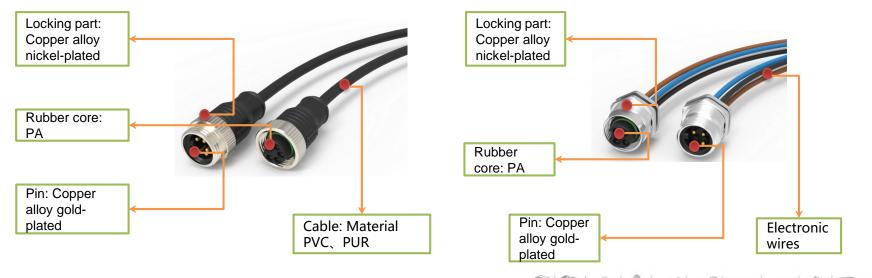


### 3. Characteristics of 7/8" -16UN series products

#### 1. Product structure

The overmolded plug with cable is mainly composed of four parts: pin, rubber core, locking part and cable.

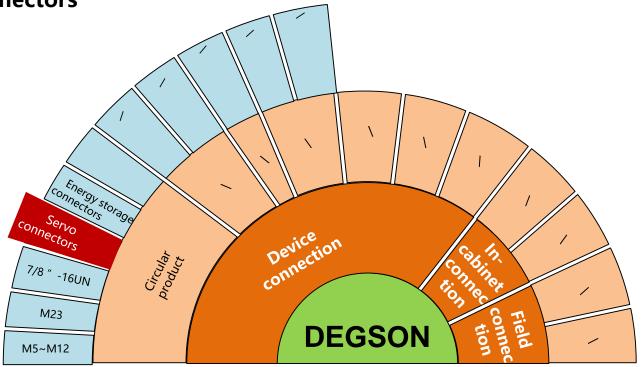
The panel socket is mainly composed of four parts: pin, rubber core, shell and electronic wire.





### **Product Map**

**Servo connectors** 







#### 1. Product introduction of servo connectors

#### **Product definition**

Standard connection technology

---Suitable for signal and power connections;

---Current range: 1~7A;

---Voltage range: 10~250V.



#### How it works:

Through the socket and plug pair mating, the two connectors can be connected and interconnected to transmit signals, power or data.

#### **Advantages:**

- Meet the harsh use environment of customers;
- Save time and improve efficiency in making harnesses;
- Small size, meet the needs of small motors.

#### **Disadvantages:**

- There is no unified standard, and it is not compatible across manufacturers;
- High customization costs.



### 2. Product classification and interpretation of servo connectors

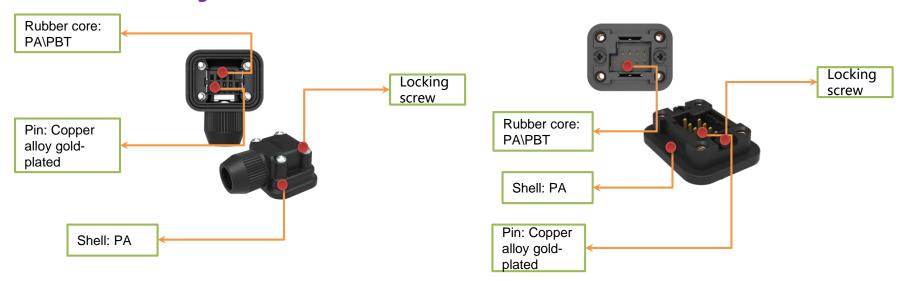
Products			
Discription	2-core servo connector (brake wire)	4-core servo connector (power wire)	9-pin servo connector (coded wire)
Product model	DGFA2S-B1-00A(H) DGFA2S-A1-00A(H)	DGFA4S-B1-00A(H) DGFA4S-A2-00A(H)	DGFA9S-B1-00A(H) DGFA9S-A1-00A(H)
Rated current/voltage	7A / 250V		1A /10V
Insulation resistance	≥ 100MΩ ≤ 5mΩ -20~+105°C		
Contact resistance			
Operating temperature			
Degree of protection	IP67		



### 3. Characteristics of servo connectors

#### 1. Product structure

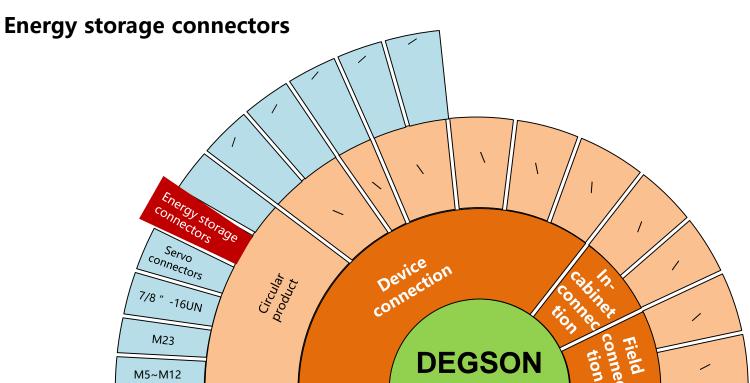
The plug and socket are composed of four parts: pin, rubber core, shell and locking screw.







### **Product Map**







### 1. Product introduction of energy storage connectors

#### **Product definition**

- Standard connection technology
  - ---Suitable for power connection;
  - ---Current range: 100~200A;
  - ---Voltage range: 1500V.



#### How it works:

Through the socket and plug pair mating, the two connectors multi-core wire connection and interconnection are realized to transmit power.

#### **Advantages:**

- ➤ The color and keyway are used to distinguish the design, prevent mis-insertion, and eliminate the risk of short circuit;
- Humanized anti-electric shock design of socket to ensure artificial safety;
  - ➤ Waterproof and dustproof. IP67 waterproof grade, can be used in outdoor and other environments; The socket is individually waterproof to protect the battery and prevent water ingress from the battery;
  - ➤ The plug can be rotated 360° after being inserted into the socket to meet the different wiring needs of customers.





### 2. Product classification and interpretation of energy storage connectors



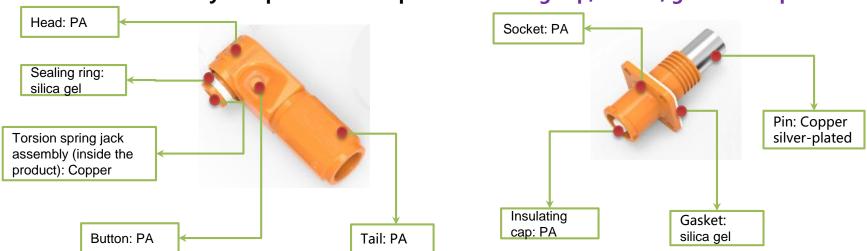


### 3. Characteristics of energy storage connectors

#### 1. Product structure

The plug is mainly composed of five parts: head, sealing ring, button, torsion spring jack assembly, and tail.

The socket is mainly composed of four parts: insulating cap, socket, gasket and pin.







### 3. Characteristics of products

### 2. Product manufacturing process

Logistics





Electroplating

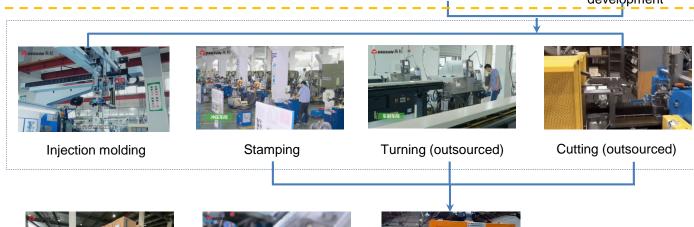
(outsourced)



Automated equipment development



Whole process performance testing



Product assembly

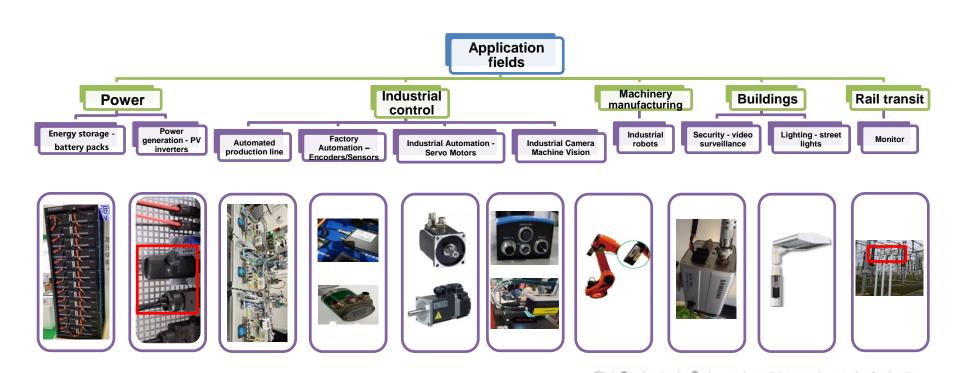


### 3. Characteristics of products

### 3. Certification and testing standards

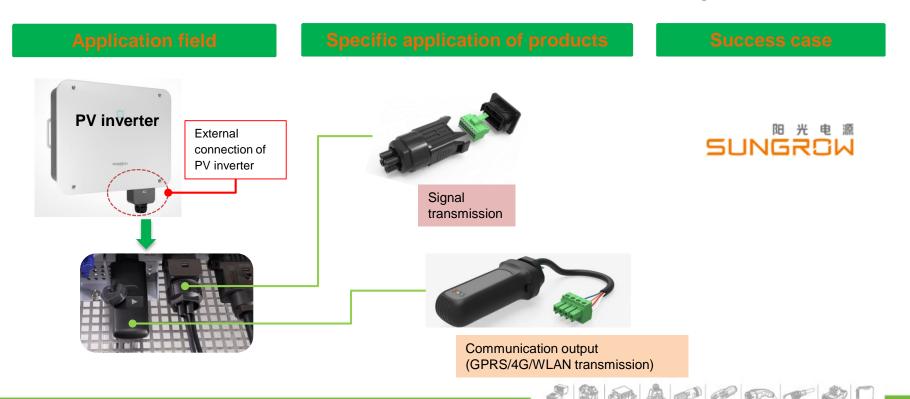
Purpose and significance of common tests			Certification standards/marks	
Test projects	Purpose of testing	IEC61984 / 💇	UL1059/ <sub>C<b>FII</b>®<sub>US</sub></sub>	
Static pull test	Verify the reliability of the product's wiring in a stationary environment	•	•	
Spin-pull test	Verify the reliability of the product's wiring in a dynamic environment	•	•	
		•	•	
rise test	product is normally used by the rated current to ensure the safety of the	•	•	
Current load capacity test	·	•		
		•		
temperature		•	•	
	Test projects  Static pull test  Spin-pull test  Impulse/withsta nd voltage test  Temperature rise test  Current load capacity test  Corrosion resistance test  High temperature and low	Test projects  Purpose of testing  Static pull test  Verify the reliability of the product's wiring in a stationary environment  Verify the reliability of the product's wiring in a dynamic environment  Impulse/withsta nd voltage test  Temperature rise test  Detect the degree of temperature rise of the metal conductor when the product is normally used by the rated current to ensure the safety of the customer during using  Current load capacity test  Corrosion  Check that in harsh environments, problems such as oxidation and rust occur in the product, which affects the performance of the product  High temperature and low temperature  In high and low temperature environment, damage can not occur, affecting normal use	Test projects  Purpose of testing  IEC61984 /   Static pull test  Verify the reliability of the product's wiring in a stationary environment  Spin-pull test  Verify the reliability of the product's wiring in a dynamic environment  Impulse/withsta verify the insulation ability of the product under specific conditions to prevent breakdowns in the client  Detect the degree of temperature rise of the metal conductor when the product is normally used by the rated current to ensure the safety of the customer during using  Current load capacity test  Corrosion  Check that in harsh environments, problems such as oxidation and rust occur in the product, which affects the performance of the product  High temperature and low temperature environment, damage can not occur, affecting normal use	

1. Application fields: Circular products are mainly used in energy, industrial control, machinery manufacturing, buildings, rail transit five fields.





- 4. Main industries and applications of circular products
- 2. Industry solution external connection of inverter for PV power generation





2. Industry solution – servo connectivity solutions

7/8" -16UN nectogroup<sup>®</sup> Servo connectors maving in better ways M23 series



### 2. Industry solutions – external electrical connections for industrial cameras

Industrial cameras are a key component in machine vision systems, and their essential function is to convert light signals into ordered electrical signals.

**Application field** 

Specific application of products



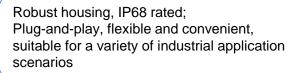






























### 2. Industry Solutions - Internal Electrical Circuit Connection for Outdoor Lighting

Outdoor lighting fixtures are modern residential areas, urban public facilities construction indispensable lighting facilities and equipment, because of the need for waterproof use outdoors.

#### Application field



#### Specific application of products



Robust housing, IP67 high degree of protection;

Plug and unplug, easy maintenance and overhaul, high current transmission.

#### ypical customers

### **OSRAM**

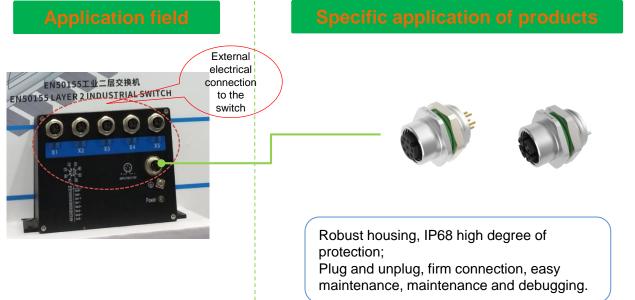






2. Industry solution - external electrical connection of industrial control switch Industrial control switch is mainly used in the field of PLC control, the working

temperature is -40 °C ~ +85 °C, and dustproof and humidity adaptability is strong, the protection level is above IP40, and the communication is through industrial Ethernet.

























### 5. Circular product selection elements



- Product types: Panel mount, Field assembly, Overmolded with cable?
- Thread specification: M5, M8, M12, M23, 7/8"?
- Code: A-code, B-code, D-code, ... ?
- Pins: 3 pin, 4pin, 5pin, 8pin, ... ?
- Shape: Straight, Angled?
- Cable material, Color, Diameter, Shielded or Unshielded, LED or not, etc.
- Operating temperature: Running in some harsh environment or not

#### Remarks:

- Peer alternative selection need to provide peer name and product name, as well as the customer's special needs point, and preferably application scenario information.
- Customer demand selection which of the above are mandatory requirements of customers, understand the primary and secondary relationship of customer needs, which are hard requirements, and which are adjustable requirements.



### 1. Selection case (Drop in)

Technical information of customer demand products 7000-40021-6140200 Product substitution:





Through the pictures and basic description, the product cable material determines that the product is PM-M12A-xxP-FL-ML

M12 male 0° / M12 female 0° A-cod.

PVC 4x0.34 bk UL/CSA2m

Art No.: 7000-40021-6140200 Alternative product: 7000-40021-6140250

Weight: 0.101 kg



Product PVC cable black, 4 wires, 2 meters



In summary: recommended existing product name PM-M12A-04P-FL-ML-8A02-00A(H)



















### 2. Selection case (Design in)

Product selection for customers who provide relevant technical information about products:

The customer's requirements are: automation industry application M12, 4 pin, straight, unshielded, female connector, 1 meter overmolded economical cable, recommended products?







- A. Analysis of technical information:
- 1) Customer industry→ automation industry;
- 2) Description of the basic performance of the product→
- M12, 4pin, unshielded straight, female, with 1m PVC cable;
- 3. Product type→ M series circular connector



- B. Tools:
- 1) Brochure;
- 2) Product modules of the website.

In summary: recommend the existing product PM-M12A-04P-FF-SL8A01, in line with customer selection requirements, if there are further requirements, you can communicate with customers.





### 5.Advantages of degson (QCDST)

No.	aspect	Advantages-contrast to domestic low-end competitors	Advantages-contrast to international high-end competitors	solution
1	Quality	<ul> <li>Consistent quality stability,80% products are achieved automatic assembly;</li> <li>Complete quality control system;</li> <li>Customize the different quality schemes according to customers' special requirements.</li> </ul>	<ul> <li>Perfect quality control points (form control key points through market feedback)</li> <li>Strong quality control ability (familiar with customer application scenarios and rich experience in dealing with problems)</li> <li>Sufficient market verification (involving a wide range of industries and a large market share)</li> </ul>	Quality close to international brands
2	Price	<ul> <li>According to the brand positioning, the price is slightly higher than the domestic low-end competitors;</li> <li>The production and operation cost of products is higher than the domestic low-end competitors.</li> </ul>	<ul> <li>Flexible price(Familiar with competitive products, have universal and upgraded products meet different requirements)</li> <li>Excellent cost control (fully automated production)</li> </ul>	Accurate positioning of industry customer groups to grasp customer pain points
3	Delivery	The product delivery of civil industry is longer than the domestic low-end competitors.	<ul> <li>With mature market and stable customer support, a good stock mechanism can be formed</li> <li>Stable application and flexible cargo transfer support</li> </ul>	Adapt the delivery mechanism to customer needs
4	Service	<ul> <li>Fast response to value-added service;</li> <li>Professional customized service team(sales, PM, technical engineer.</li> </ul>	<ul> <li>Fast response to value-added service;</li> <li>Professional customized service team(sales, PM, technical engineer.</li> </ul>	Win with responsive service
5	Technology	<ul> <li>Patent evasion (no patent conflict)</li> <li>80% products of mainstream competitors can be completely replaced.</li> </ul>	<ul> <li>Patent evasion (no patent conflict)</li> <li>80% products of mainstream competitors can be completely replaced.</li> </ul>	Absorb the superior products of peers and innovate independently



### **6. Mainly competitors**

Competitors	Series	Degson series	Mainly application industry	Features of competitors
Phoenix	M5/M8/M12/M17/M23/ M40/M58	M5/M8/M12,M23, 7/8"	Industrial control/instrumentation/energy/construction machinery/rail transit	High price, high-end positioning, high brand awareness
Binder	M5/M8/M9/M12/M16/M 18/M25, 7/8"	M5/M8/M12,M23, 7/8"	Agricultural and construction machinery, signaling equipment, machine tool construction, medical technology, measurement technology, sensors and automation technology	The price is low and the brand awareness is high
Murr	M8/M12/M15/M16/M23, 7/8"	M5/M8/M12,M23, 7/8"	Automobiles, food and beverages, warehousing and logistics, mobile machinery, robots, machine tools	Low price, complete products, high brand awareness
Escha	M8/M12/M23	M5/M8/M12,M23, 7/8"	Automotive, food and beverage, renewable energy, robotics, transportation	The product industry is highly targeted, focusing on the standard M12/M8 series, highend products



## THANK YOU!