GT CONNECTOR

- High Current Connectors
- Heat-Resistant Connectors
- Vacuum Connectors
- Connectors for Special Purpose
Introduction
What are connectors used for electrical connection?

The connector is an electrical component used to connect and disconnect components in electrical circuits. While there are other ways to connect electrical circuits, like fasteners (bolts and nuts) and soldering, if you want to connect and disconnect circuits quickly at short intervals, connectors are the most efficient.

Globetech's Connectors
To reduce the resistance of electrical conductors and connections and to enhance reliability, it is necessary to press the conductors together with appropriate contact pressure.

While, in general, a slit is inserted into the conductor to create range of motion or a spring with a simple structure is used to generate contact pressure for easy insertion and extraction, Globetech's connector employs a spring material for the electrical contact.

We manufacture connectors for many applications by choosing the electrical contact from a variety of items. We offer even a single connector specially made to meet a customer's specifications.

Features of Connectors Using Electrical Contact

- Reduces loss of electricity when high current is applied thanks to low-contact resistance
- Longer life for repeated insertion and extraction
- Capable of reducing insertion and extraction force and suitable for multi-polarity
- The multipoint contact structure moves independently for tracking when an irregular
- Applicable in high temperature environments
- Resistant to oxide film because of the self-cleaning function
- Compact size in the direction of diameter and axis
- Compensates for mating misalignment
- Stabilizes signal voltage

Contact Band and Coil Spring Contact

Two types of electrical contacts—The Contact Band and Coil Spring Contact—are used in Globetech connectors. The contact band is manufactured by pressing a sheet of high-performance spring material. The coil spring contact is manufactured by winding wire materials to create a spring consisting of canted coils and then welding them to form a circular shape.

We choose the optimum type for each contact depending on the specifications, application, and cost, and then we design a connector best suited to the needs of the customer.
Features and Type of Contact Band

- Silver plating or gold plating on beryllium copper alloy
- Louver structure suited for energization of high current
- Low cost and mass production using a progressive die
- Made-in-Japan products ensure high quality and short delivery time
- Contacts in different diameters and contact band types are available in the inventory
- Superior capability to remove oxide film thanks to the wiping function of the heat cycle

Installation width | Louver pitch | Current / louver
--- | --- | ---
18mm / 0.7in. | 2.54mm / .1in. | 25A

Features and Type of Coil Spring Contact

- The canted coil spring contact incorporated into our connectors is supplied by Bal Seal Engineering Inc. of the United States, the holder of its manufacturing technology
- Offers a wide range working deflection and the repelling property is stable
- Compensates for dimensional error and misalignment
- Various materials having superior heat resistance, corrosion resistance, and resistance to environment, including stainless steels and nickel alloy are offered in addition to beryllium copper alloy
- Applicable to different sizes with a wide range of pin diameters and lengths
- Longer life and lower insertion and extraction force from multipoint contacts and low contact pressure

The winding direction (welding direction) of the canted coil spring contact is radial or axial depending on whether it is attached to a pin and socket or a surface connection.
Installation Style of Contact Elements

Install to Socket
The standard shape of the electrical contact is installed in the inner diameter of the socket. The mating pair connected to the socket has the shape of a round bar.

Install to Plug
The shape with the electrical contact is installed in the outer diameter of the plug. The plug is connected to the inner diameter of the round hole.

Butt Contact
The shape with the electrical contact is installed using grooves on an energization block. The mating pair connected to the block is a flat surface that can be energized. This type is suitable for applications where the contacts are repeatedly pressed such as on an automation equipment.

Fork Socket
This socket is used for applications where a flat board subject to energization is laterally pinched to make the connection. The electrical contact is linearly installed.

Flat Contact
The electrical contact is mounted on an energized surface secured by screws. Effective energization is enabled by the electrical contact even when the contact area or contact pressure is reduced because of loosened screws or warpage of the flat surface.

Rotating parts
The electrical contacts can be used for electrical connections on rotating parts if they rotate at a relatively slow speed.

Application Case of Our Connectors

Power
Switch Gear / Circuit Breaker / Disconnecting Switch / Transformer / Current Transformer / GIS / C-GIS
Uninterruptible Method Equipment / Cable Head / Underground Distribution Equipment / Fuel Cell
Solar Battery / Wind-Power Generation/Inverter

Semiconductor Manufacturing Equipment
Single Crystal Pulling Apparatus / Exposure Device / Sputtering Equipment / CVD Equipment
Vacuum Coating Equipment / Etching Equipment / Ion Implantation Equipment / Prober
Electrostatic Chuck / Heater / Transfer Robot

Manufacturing Equipment and Inspection of Automotive
Inverter / IGBT / Battery / Capacitor / Motor / ECU / Electric Power Steering / Electric compressor
Magnetizing Equipment / Robot Welding Machine / Tool Changer / Quick Charger / AGV

Industrial Machinery
Laser Beam Machine / Electrical Discharge Machine / Electromagnetic Mixer / Welding Machine
Underwater Pump / Plating Equipment / Electroforming Equipment / Ultraviolet Curing Equipment
Injection Molding Machine

Railroad
Juniper Power Connector / Jumper for Communication Connector
Connector for Vehicle Underfloor Equipment / Connector for Vehicle Equipment

Medical and Study
MRI / CT Scanner / PET / Heavy Ion Radiotherapy Device / Shadowless Light / Electronic Microscope
Anpeochic Chamber / Ultrasonic Probe

Electrical Testing Equipment
Inspection for Smart Meter / CT / LED Lighting Device / Electron Tube

Other
Ground Power for Vessel / Ground Power for Aircraft / Studio Lighting / Mountain Construction Equipment
Accelerator / Nuclear Fusion Experimental Device
Standard Connectors

For customers who wish to use our products immediately, Globetech offers standard connectors like the non-insulated plug and socket and the plug with insulation case and receptacle. The simple design allows for use in a variety of applications. We can also create products from customized designs by changing the materials, plating, dimensions, or other features of the standard items. We hope this helps you consider the design for your product.

Sockets with thread termination

- **Material of Connector Body**: C3604 + Ag plating
- **Material of Contact Band**: Beryllium Copper + Au plating from MS2 to MS6. Beryllium Copper + Ag plating from MS8 to MS40.
- **Maximum Temperature**: +145°C (293°F)

Sockets with external thread termination

- **Material of Connector Body**: C3604 + Ag plating
- **Material of Contact Band**: Beryllium Copper + Au plating from MS2 to MS6. Beryllium Copper + Ag plating from MS8 to MS40.
- **Maximum Temperature**: +145°C (293°F)
Custom-Made Connectors

Features and Overview
Globetech offers connectors that are specially designed to meet different conditions, uses, and environments of individual customers. If you face any of the following issues, please consider ordering Globetech custom-made connectors.

- There is no connector available on the market because the required current capacity is high.
- A connector with highly durable contacts is needed because of frequent insertion and extraction.
- The connectors currently available do not satisfy the capacity requirements because the sizes do not fit in the limited space available.
- Only connectors with special shapes can be used.
- A connector made of a material not used in existing connectors is needed for use in a vacuum.
- A connector with superior heat resistance is needed for use in a high temperature environment.
- Corrosion resistance is required for use in an environment exposed to corrosive gas.

In the conditions above, the specifications of existing products are not appropriate. Even if the components can be used, replacement may be required in a short time, or accidents may occur because of abnormal heat and conduction failure. These cases highlight the disadvantages—the costs for the connector and the labor for replacement work reduce production efficiency from the suspension of the device for maintenance and the increase in the risk of accidents.

Our Suggestions

- High Current Connectors
  We have many experiences high current connector over 2000A.
- Longer life Connectors
  We can design highly durable connectors.
- Special Shape Connectors
  We can design according to your specifications.
- Vacuum Connectors
  We can design according to your permitted materials.
- Heat Resistance Connectors
  We can design heat resistance connectors up to 680°C (1256°F)
- Corrosion Proof Connectors
  We can design choosing from many materials and plating.

High Current Connectors
The need for high-current connectors is increasing because of the dissemination of renewable energy, electric vehicles, and other advances in technology. However, heat is easily generated from high currents (generation of Joule heat), which often cause inefficiencies and energization failure.

At Globetech, efficient energization is realized without unnecessary heat generation or energization failure by using electrical contacts. We design and manufacture custom-made items for use not covered in the standard items shown above. We have supplied many high-current connectors to manufacturers of heavy electric machinery and transmission cables. We can confidently propose products that meet the requirements of individual customers.

Features of high current connector
- Capable of manufacturing high capacity connectors that cannot be handled by existing products. (Theoretically, there is no limitation on the current value.)
- Compact connectors that are usable even under high current conditions.
- A wide range of shapes and specifications are accepted for both single-pole and multi-pole connectors.
- Taking advantage of the flexibility unique to custom-made items, we can design high current connectors in special shapes.

Example Connection Method

Our custom-made connectors reduce operating costs and automate production equipment. We will contribute to the development of new devices and equipment using our innovative mechanisms. Globetech accepts orders for custom-made items from one unit, and we offer a wide range of components for use in research and development to mass production.
Samples of high current connector

Connector for electromagnetic mixer
Current: 1000A
Plug diameter: φ30mm / 1.18in.
Electrical contact: Contact band
Silver alloy brazing to angled bar

High current Socket
Current: 2000A
Plug diameter: φ50mm / 1.96in.
Electrical contact: Contact band
The backside of connector is terminal

Socket for Power distribution equipment
Current: 1000A
Plug diameter: φ30mm / 1.18in.
Electrical contact: Contact band
The set screw use for Lock

Cable head
Current: 2000A
Plug diameter: φ60mm / 2.36in.
Electrical contact: Contact band
Contact band installed to Pulg side.

High current socket
Current: 700A
Plug diameter: φ25mm / .98in.
Electrical contact: Coil spring
There are 5 coil springs for touching multi points.

8P Draw out Connector
Current: 400A (per pole)
Plug diameter: φ14mm / .55in.
Electrical contact: Contact band
Automatic attachment and removal

3P Coaxial connector
Current: 120A (per pole)
Plug diameter: φ8mm / .31in.
Electrical contact: Contact band
2 kinds of contact band uses for shield and conductor

2P connector for AGV battery connection
Current: 46A (per pole)
Voltage: 125VAC
Plug diameter: φ3.6mm / .14in.
Electrical contact: Contact band
Wrong insertion prevention structure

Pulg In Connector
Current: 700A
Voltage: 600VAC
Plug diameter: φ20mm / .79in.
Electrical contact: Contact band
Heat Resistant Connectors

Heat-resistant connectors offer superior heat resistance compared to general connectors. The heatproof temperatures of general connectors are about 85°C (185°F) to 125°C (257°F), making it hard to use in high temperature locations, such as near a furnace in an iron mill, or as the cable connection of a heater. Globetech proposes heat-resistant connectors that can withstand up to 680°C (1256°F) by leveraging abundant experience in connector manufacturing.

**Comparison of the material**

<table>
<thead>
<tr>
<th></th>
<th>General connector</th>
<th>Our Heat Resistant Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical Element</strong></td>
<td>Copper alloy (Phosphor bronze / brass)</td>
<td>Nickel alloy / Stainless Steel / Inconel</td>
</tr>
<tr>
<td><strong>Insulator</strong></td>
<td>Plastic (PA / PBT / PPS etc)</td>
<td>PTFE / PEEK / Ceramic</td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td>General connector use only up to 125°C (257°F)</td>
<td>Inconel can use up to 680°C (1256°F) as electrical contact without reducing spring characteristics.</td>
</tr>
</tbody>
</table>

Caution) Above data is not heatproof temperature of our connectors but materials insulation will get damage and contact element reducing spring characteristics.

**Component parts**

1. **Electrical Element**
   We have electrical element with Copper alloy, Nickel alloy, Stainless Steel and Inconel.

<table>
<thead>
<tr>
<th>Material</th>
<th>Copper alloy</th>
<th>Nickel alloy</th>
<th>Stainless Steel</th>
<th>Inconel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. temp.</td>
<td>180°C / 356°F</td>
<td>220°C / 428°F</td>
<td>370°C / 698°F</td>
<td>680°C / 1256°F</td>
</tr>
</tbody>
</table>

Caution) Above temperature is total temperature of atmosphere temperature + temperature rise of connector.

2. **Conductor body**
   We choose low resistance value change rate metal from Copper, Copper alloy, Stainless Steel and Nickel.

3. **Insulator**
   We choose high and stable insulation performance at high temperature from PTFE, PEEK and ceramic.

4. **Casing (Housing)**
   We calculate coefficient of thermal expansion and choose from Aluminum, Aluminum alloy and Stainless Steel.

**Samples of Heat Resistant Connectors**

**Bulkhead Connector**
- Current : 10A (per pole)
- Poles : 5 poles
- Heatproof temperature : 150°C / 302°F
- Using existing connector casing. We changed Insulator and conductor.

**Inline Connector**
- Current : 5A (per pole)
- Poles : 6 poles
- Heatproof temperature : 200°C / 392°F
- Using existing connector casing. We changed Insulator and conductor. Casing is Nickel plated.

**Inline Connector**
- Current : 1A (per pole)
- Poles : 3 poles
- Heatproof temperature : 350°C / 662°F
- This Connector has lock.
The feedthrough and current input terminal are mounted on airtight containers and used to carry electricity (signal or power supply) in and out while retaining airtightness. The feedthrough is usually multipolar and has an allowable current range for signals to the 46A/pin and withstand voltage of up to 1500 VAC. The key feature is that it can be connected using an MIL-standard MS connector to be compact.

The current input terminal is mainly intended for use with high withstand voltage or high current. Different combinations are available for this item. For example, a basic terminal (single pole) can be directly welded to a chamber for use, or multiple terminals are welded to a flange for use as a multipolar current input terminal. Please contact us for products with specifications not covered in the catalogue.

### Electrical Feedthroughs for Power

**Insulation resistance:** over 1000MΩ (at 500VDC)

**Temperature Range:** 200°C (392°F) Baking process 350°C (662°F)

**Air tightness:** less 1 x 10^-10 Pa m^3/s (Leakage quantity of Helium gas)

<table>
<thead>
<tr>
<th>Current</th>
<th>~3A</th>
<th>~10A</th>
<th>~15A</th>
<th>~20A</th>
<th>~80A</th>
<th>~100A</th>
<th>~250A</th>
<th>~400A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1KV</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>3KV</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>5KV</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>12KV</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>30KV</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

**Pin Diameter:** φ1.6 / .06in.

**Rated Current:** 3A (per pin)

Please contact us regarding Flange Type.
Vacuum Connectors

Vacuum connectors are mounted on airtight containers (vacuum container, pressure container, container for gas and fluid) and include hermetic connectors, which carries electricity in and out while retaining airtightness and connectors that can bring electricity in containers. Depending on the intended use, we offer a wide variety of items for power supplies, signals, and thermocouples.

Socket Contact: Brass, Oxygen-free copper, Thermocouple Type K, T and E
Insulator: PTFE, PEEK and Ceramic

Samples of vacuum connectors
The fork socket is a connector used when the mating component has a flat plate shape. The socket has an opening designed to match the plate thickness of the mating component and the flat electrical contacts on the inner surface. The socket is suitable for connections between a bus bar on the rear part of the unit used in rack and panel products and the power supply on the case, connections between cells in a battery (flat terminal), and bus duct connections, which results in a wide range of applications from mounting on high-current products to simplified pre-shipment inspections.

**Features**

- Structure suitable for use with high current
- Compensates for misalignment in one direction
- Design flexibility for super-thin to thick plate thickness
- Connections are very simple

**Samples of Fork Socket**

**Fork socket for Substrate inspection**
- Bus bar thickness/width: 2mm (.08in.) / 6.4mm (.25in.)
- Current: 25A
- Contact element: GCB8 and GCB5
- This fork socket is inspection for Automotive board.

**Fork socket for AGV**
- Bus bar thickness/width: 5mm (.20in.) / 50mm (1.97in.)
- Current: 60A
- Contact element: GCB8
- Large taper and prevent Misalignment

**Fork socket for High current**
- Bus bar thickness/width: 20mm (.79in.) / 100mm (3.94in.)
- Current: 1500A
- Contact element: Coil Spring

**Multi fork sockets with insulator**
- Bus bar thickness/width: 4mm (.16in.) / 15mm (.59in.)
- Current: 100A
- Contact element: GCB8
- Easy mating to multi bus bars

**Fork socket**
- Bus bar thickness/width: 5mm (.20in.) / 25mm (.98in.)
- Current: 500A
- Contact element: GCB8
- Conductive body is copper + Ag plating

**Structure suitable for use with high current**

**Compensates for misalignment in one direction**

**Design flexibility for super-thin to thick plate thickness**

**Connections are very simple**
**Draw Out Connector (For Automatic Equipment)**

The draw out connector is mounted between devices or panels. Unlike other types of connectors inserted and extracted by hand, this one fits together on a rail or is automatically inserted and extracted by the movement of a cylinder. This is also called a rack and panel connector or an automatic connector.

Some representative issues with these applications are that the plug and receptacle are inserted even when misaligned in the event of any looseness in the rail or tolerance deviation when the cylinder is mounted. This can be a serious problem because a long service life is needed since the connector is frequently inserted and extracted.

For mating a pin and socket, care must be taken of the contact strength. Either the plug or receptacle must have a floating mechanism on a fixed point with the device or panel so that the connector tracks guide movement. For wiring of the connector side with the floating mechanism, a wiring method that does not obstruct guide movement, such as a cable or flexible conductor, is required. Rigid fixation to the bus bar disables guide movement. In such a case, only deflection of the electrical contact works to compensate for any misalignment.
While connectors are generally inserted, Globetech offers connectors that make contact by pressing the surfaces (butt contact) based on the technology of electrical contacts. Using butt contacts for pre-shipment inspections makes the work simpler (shortened time) and automated.

### Contact spring probe vs Butt Contact

<table>
<thead>
<tr>
<th>Contact spring probe</th>
<th>Butt Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the contact surface is rough ...</td>
<td>Each of the coil springs individually tracks the irregular surface to maintain stable energization.</td>
</tr>
<tr>
<td>Canted contact</td>
<td>Multipoint contact and deflection of the coil spring ensure stable energization.</td>
</tr>
<tr>
<td>Damage</td>
<td>Damage to the product can be minimized because the force is distributed to multiple contact</td>
</tr>
</tbody>
</table>

**Features**

- Small but energizes high current
- Unlikely to damage the target compared to a contact spring probe that has only one contact because the target is touched at multiple points
- The coil spring flexibly tracks the irregular surface of the target.
- Compensating for misalignment by increasing the target surface
- Applicable to high temperature environments or vacuums by changing materials
- Longer life compared to connectors using a pin and socket

**Inspection contact for IGBT and Terminal**

While a crimped terminal is connected using a screw in actual use, in a pre-shipment inspection, it is necessary to inspect as many products as possible within a limited time. By using a butt contact, time and labor for screwing the crimped terminal is eliminated, and the manufacturing and shipment lines are automated, which leads to cost reductions.

The butt contact is used in the current and breakdown tests of the pre-shipment inspection of the IGBT. Stable energization is ensured by multipoint contact, and damage to the terminal block of the IGBT can be minimized. Large deflection, which is one of the key features of a coil spring, compensates for any misalignment in the direction of height when more than one terminal is energized at the same time.

The butt contact is used in the current test of a general-use terminal board. Even more stable energization is ensured by energizing the two directions of the upper and lateral sides using two coil springs for the screw head. Designing and manufacturing custom-made products are accepted in accordance with the size of the screw head of the terminal board.
Connecters for Inspection Process

GlobeTech proposes a custom-made connectors for your product inspection process. The inspection process time and cost can be greatly reduced.

- **Inverter inspection for Automotive**

  - Butt Contact
    - High Current and stable contact
  
  - Zero Insertion Force Connector
    - Reducing scratch

- **Fork Socket**
  - Four terminal sensing method

- **Inspection process for Battery**

  - Four terminal sensing method
    - Four terminal sensing is an electrical impedance measuring technique that uses separate pairs of current-carrying and voltage-sensing electrodes to make more accurate measurements.

Connect to Hex Nuts and Screw threads

GlobeTech’s connectors use electrical contacts that can be directly connected to the lateral surfaces of hex nuts or screw threads. Thus, energization does not require a round terminal or special jigs. This is the best method when the work efficiency of pre-shipment inspections or other work is considered important. Moreover, as electrical contact tracks even sections where tolerance of the mounting hole is large, secure electrical connections are ensured.

**Example**

We can design connectors based on your specifications.

- **Connect to Hex Nuts and Screws**

- **Connect to internal thread and external thread**

- **One connector to 2 different hole size**
  - Connect to 2 different hole size at same time
  - Connect to each 2 different hole size
Other samples

Square flange with 48 poles sockets
Current : 200A/32P, 40A/16P
Voltage : 40VAC / 100VAC
Plug Diameter : φ12 and 5mm / .47 and .20in.
Electrical contact : Contact band

EV BUS Battery
Current : 300A x 3 poles
Plug diameter : φ16mm / .63in.
Electrical contact : Contact band

Connector with Latch lock (Cable assembly)
Current : 230A (singular pole)
Plug diameter : φ12mm / .47in.
Electrical contact : Contact band

Fork Socket (Cable assembly)
Current : 100A
Bus bar thickness : 5mm / .20in.
Electrical contact : Contact band

Connector for Manipulator
Current : 230A (singular pole)
Voltage : 400VAC
Plug diameter : φ12mm / .47in.
Electrical contact : Contact band
We use PEEK for insulator for Radiation-proof.

Crimp tool

4-Indent Hand Crimp Tool
This tool crimp from four directions, which ensures secure pressure bonding and does not cause the bonded portion to spread or bend.

Removal tool

Cross section
**Latch lock using Coil Spring**

**Latch lock**
The latch lock is a mechanical fixation method that uses a coil spring to lock the connector. The connector can be locked when the coil spring mounted on the housing fits into the groove on the plug. The designed insertion and extraction force can be changed individually by changing the material or wire diameter of the coil spring and taper angle of the groove on the plug. We offer a robust lock that cannot be unlocked until the coil spring is broken once locked.

**Features**
- Easy lock and unlock from a single action
- No need for tools
- Compact design is enabled even in a small space.
- Locked state can be confirmed by the clicking sound and feeling.

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**Inquiry form**

In order to design customized connector, we need to know more about your application requirements.
Please complete this form and e-mail to us at sales@globetech.jp

Company: ___________________________ Department: ___________________________
Name: ______________________________ E-mail: _______________________________
TEL: _______________________________ FAX: _________________________________

**Specification**
What connector do you want for:  
- [ ] High Current  
- [ ] Heat Resistance  
- [ ] Vacuum environment  
- [ ] Shipping inspection  
- [ ] Socket (female) and Plug (male)  
- [ ] Only Socket side  
- [ ] Only Plug side

Application: __________________________

Current problem: __________________________

Operating Temperature: °C ~ °C

What type of connector do you need?  
- [ ] Only Conductor  
- [ ] Conductor and Insulator

Total poles: ___P__

- [ ] 1Poles: ___P__ Current: A Voltage: V ___AC ___DC Cable square: mm², AWG
- [ ] 2Poles: ___P__ Current: A Voltage: V ___AC ___DC Cable square: mm², AWG
- [ ] 1Poles: ___P__ Current: A Voltage: V ___AC ___DC Cable square: mm², AWG

Inrush current: A ___Sec ___msec

Life time (Number of cycle): __________________________

Lock:  
- [ ] Yes, We need  
- [ ] No, We don’t need it

Annual Usage: __________________________ Target price: __________________________

Schedule:  
- [ ] Prototype: __________________________ Mass Production: __________________________

Cable connection:  
- [ ] Screw  
- [ ] Solder  
- [ ] Crimping

Image and drawing