

EM30MSD Series

# Service Plug for 200A Applications



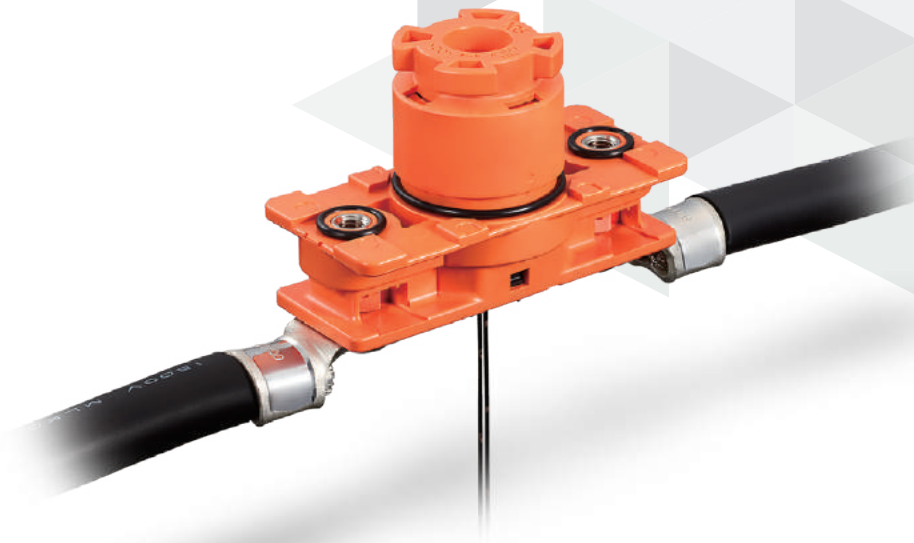
High-Current



Vibration-Proof



Waterproof



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## Features

### 1. High-current service plug for use up to 200A

### 2. Vibration-resistant with multi-point contact design

Vibration testing meets the following standards :  
 For vehicles JASO D014-3/ISO16750-3 Test IX\*  
 For railroads JIS E 4031 Division 2

\* This series is not suitable for Automotive application.

### 3. The signal contact functions as an interlock switch to detect mated state.

### 4. Water-proof performance (IPX8 compliant water resistance in mated condition)

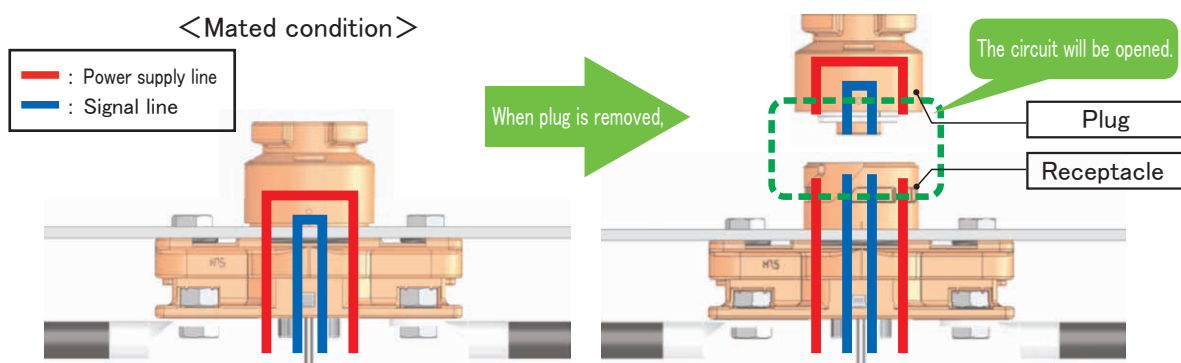
IPX8 : No water intrusion, while submerged in 2m water depth for 14 days in mated condition

### 5. Finger protection IP2X

### 6. UL TÜV Certified

#### ■ What is Service Plug?

The connector ensures to disconnect the electric circuit, to ensure the safety of workers in high-voltage areas.



When the connector is unmated, the circuit is physically disconnected, ensuring the safety of workers.

## Product Specifications

|               |                         |                 |                           |               |
|---------------|-------------------------|-----------------|---------------------------|---------------|
| Rated Current | Power terminal (Note 1) | Signal terminal | Operating Temperature     | -40 to +105°C |
|               | 200A                    | 1A              | Storage Temperature Range | -10 to +60°C  |
| Rated Voltage | Power terminal          | Signal terminal |                           |               |
|               | 1500V AC/DC             | 250V AC/DC      |                           |               |

Note 1 : When 100mm<sup>2</sup> or more wire is used

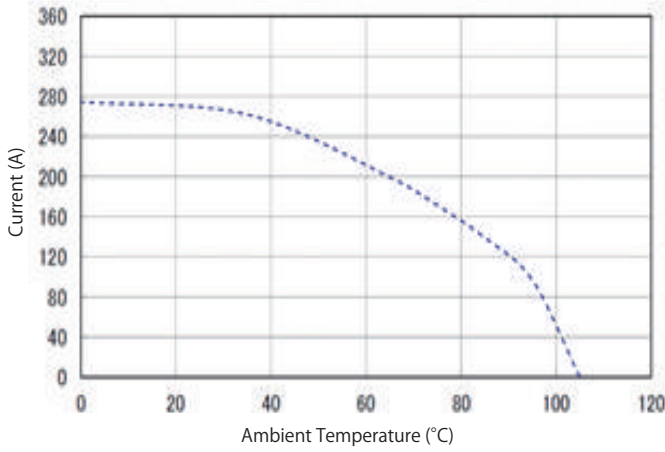
| Items                 | Specifications   | Conditions  |
|-----------------------|--|---|
| Contact Resistance    | Between power contacts : 0.5mΩ or less<br>Between signal contacts : 90mΩ or less                         | Measured at 1A DC   |
| Insulation Resistance | 5000MΩ or more   | Measured at 500V DC   |
| Withstanding Voltage  | No flashover or breakdown  | Between power contacts : 4500V AC for 1 minute<br>Between signal contacts : 750V AC for 1 minute  |
| Vibration Resistance  | No electrical discontinuity of 10 μs or more   | 10 to 55 to 10Hz/cycle, half amplitude 0.75mm<br>5 minutes/cycle, 10 cycles in each of the three axial directions   |
|                       |  | 10 to 2000Hz, average acceleration 57.9m/s <sup>2</sup><br>8 hours in three axial directions (ISO16750-3)   |
| Shock Resistance      | No electrical discontinuity of 10 μs or more   | Acceleration : 490m/s <sup>2</sup> , duration : 11ms,<br>and half-sine wave in 3 directions, 3 cycles for each  |
| Mating Durability     | Contact resistance<br>Between power contacts : 0.75mΩ or less<br>Between signal contacts : 150mΩ or less | EM30MSD between plug and receptacle<br>: 50 times (EM30MSD(O4) or EM30MSD(O6))<br>: 200 times (EM30MSD-A(O4) or EM30MSD-A(O6))<br>EM30MSD-GT8E (between signal connectors) (Note 1)<br>: 30 times |
| Temperature Cycles    | Insulation resistance : 5000MΩ or more   | -40°C : 30 minutes → Room temperature : 2 to 3 minutes<br>→ +125°C : 30 minutes → Room temperature : 2 to 3 minutes,<br>5 cycles  |
| Humidity Resistance   | Insulation resistance<br>Minimum of 50MΩ (at high humidity)<br>Minimum of 500MΩ (dry environment)        | Left at a temperature of 40°C and in humidity of<br>90 to 95% for 96 hours.   |
| Waterproof            | No water intrusion inside connector  | Submerged in 2m water depth for 14 days in mated condition.   |

Note 1 : Refer to the "Signal Connector" sections for information on the signal connector (GT8E connector).

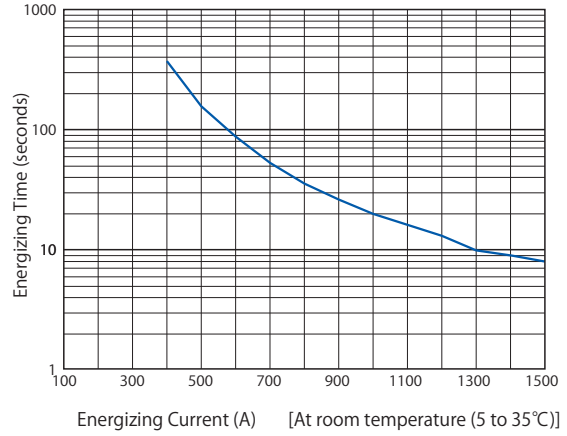
## [Reference] Derating Curve and Continuous Energizing Current (Current-Time Graph)

Measurement was performed by connecting a 100mm<sup>2</sup> wire in the mated state.

Derating Curve



Continuous Energizing Current Graph (Current-Time Graph)



Operation below the derating curve (dotted line) is recommended.  
 Note : Derating curve could vary depending on cable type and measurement even under the same conditions.  
 Therefore, above data are guidelines and not connector specifications.

The continuous energizing current graph is reference data used for current values exceeding the rated values for a short time.

## Materials / Finish

| Item      | Materials                   | Finish and Color                   | Remarks |
|-----------|-----------------------------|------------------------------------|---------|
| Insulator | PBT                         | Orange, Black                      | UL94V-0 |
| Contact   | Copper Alloy                | Power Contact Side : Silver-plated | -       |
|           |                             | Signal Contact Side : Tin Plated   | -       |
| Screw     | Brass                       | Nickel Plated                      | -       |
| O-ring    | Hydrogenated Nitrile Rubber | Black                              | -       |

## Product Number Structure

Refer to the chart below when determining the product specifications from the product number.  
Please select from the product numbers listed in this catalog when placing orders.

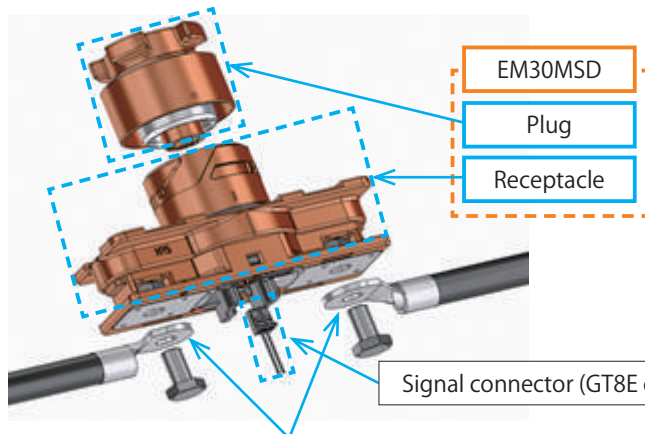
### EM 30 MSD - A (##)

① ② ③ ④ ⑤

|               |   |                 |  |
|---------------|---|-----------------|--|
| ① Series name | EM  | ④ Serial symbol | EM30MSD Plug-Receptacle<br>Mating Durability<br>Blank : 50 times<br>-A : 200 times             |
| ② Shell size  | 30  |                 |  |
| ③ Type        | MSD (Manual Service Disconnect)<br>= Service plug | ⑤ Specification | When different types of specifications are provided, attach (01), (02), ...for identification. |

## Product Composition

This product is provided with a plug and a receptacle.  
The signal section uses a separately sold GT8E connector.



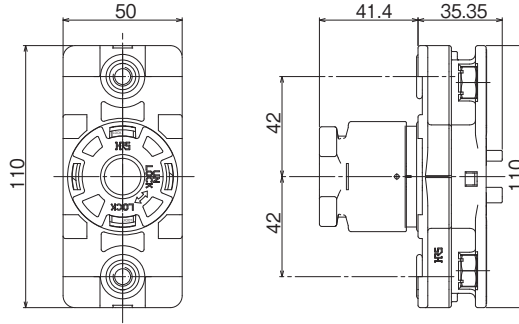
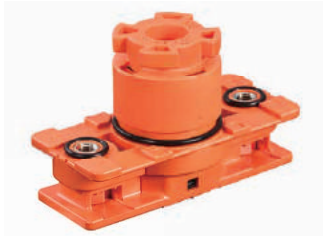
This product is provided with a plug and a receptacle.

\*Refer to the "Signal Connector" sections for information on the signal connectors used.

Signal connector (GT8E connector)

The power source section uses ring terminals and bolts  
(The size etc., are on "Applicable Bolt and Circular Contact Sizes").

## Service Plug



| Part No.      | HRS No.          | Remarks                      | Purchase Unit |
|---------------|------------------|------------------------------|---------------|
| EM30MSD(04)   | CL0138-0200-0-04 | Signal contact : Tin plated  | 1pc per box   |
| EM30MSD(06)   | CL0138-0200-0-06 | Signal contact : Gold plated |               |
| EM30MSD-A(04) | CL0138-0206-0-04 | Signal contact : Tin plated  |               |
| EM30MSD-A(06) | CL0138-0206-0-06 | Signal contact : Gold plated |               |

Note : This product does not contain fuses.

## Signal Connector : Main Body

| Part No.   | HRS No.          | Purchase Unit  |
|------------|------------------|----------------|
| GT8E-2S-2C | CL0758-0030-6-00 | 100pcs per bag |

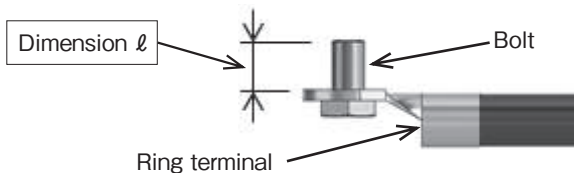
## Signal Connector : Applicable Crimp Contacts

| Part No.         | HRS No.          | Remarks     | Purchase Unit      |
|------------------|------------------|-------------|--------------------|
| GT8E-2022SCF     | CL0758-0033-4-00 | Tin Plated  | 10,000pcs per reel |
| GT8E-2022SCF(01) | CL0758-0033-4-01 | Gold Plated |                    |
| GT8B-2428SCF     | CL0758-0055-7-00 | Tin Plated  |                    |
| GT8B-2428SCF(01) | CL0758-0055-7-01 | Gold Plated |                    |
| GT8E-2022SC      | CL0758-0101-2-00 | Tin Plated  | 100pcs per bag     |

## Signal Connector : Wiring Tools

| Part No.         | HRS No.          | Remarks                            |
|------------------|------------------|------------------------------------|
| CM-105C          | CL0901-0001-0-00 | Press                              |
| AP105-GT8-2022S  | CL0901-5144-8-00 | GT8E-2022SCF for Applicator        |
| AP105-GT8B-2428S | CL0901-5172-3-00 | GT8B-2428SCF for Applicator        |
| HT304/GT8E-2022S | CL0780-0042-6-00 | GT8E-2022SC for Hand Crimping Tool |

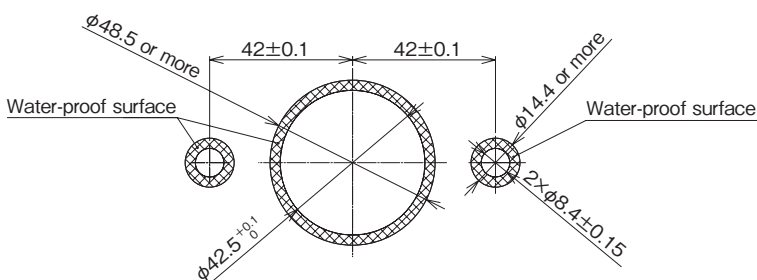
## Applicable Bolt and Circular Contact Sizes



| Secure positions            | Bolt                                |       |            | R-form contact |               |
|-----------------------------|-------------------------------------|-------|------------|----------------|---------------|
|                             | Nominal designation of screw thread | Pitch | Length     | Thickness      | Hole diameter |
| To secure the housing       | M8                                  | 1.25  | 10 to 12mm | -              | -             |
| To secure the ring terminal | M8                                  | 1.25  | 12 to 15mm | 2.5 to 3.0mm   | φ 8.4         |

Note : If you use any ring terminal with the thickness different from those shown in the above table, change the length of the bolt so that the dimension of  $l$  on the right Figure is 9 to 12.5mm.

## Panel Mount Dimensions



Recommended panel thickness  $t=2$  to 4.5mm  
Ensure that the surface roughness of the water-proof surface is  $\sqrt{Rz3.2}$ .

## Safety Notes!

### ⚠ Warning

● For safety, never carry out insertion / withdrawal operations when a connector is in an energized state. The signal contacts of this product have a sequence structure which disconnects the contact in the order shown below. For this reason, this product can be used with a circuit built for preventing operations with live wires in the power source circuit.

In order to prevent accidents during operations with live wires, be sure to use this product with a circuit built in to prevent operations with live wires.

● Be sure to check that the product is securely locked.  
The following figure shows the outward appearance when the lock is complete.

Table: Circuit-Connecting Order

| Status                       | Between A and B Power supply line<br>Between C and D Signal line |  |  |   |  |
|------------------------------|--|--|--|---|--|
| Outward appearance/operation |  |  |  |   |  |
| Connection                   |  | Power supply line is closed. When the signal line is open, no current flows. | The signal line is closed, and current flows in the power supply line. | The signal line is opened. No current flows in the power supply line. |  |
| Circuit diagram              |  |  |  |   |  |





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