

Service Plug for 200A Applications

EM30MSD Series



■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
3. The signal contact functions as an interlock switch to detect mated state.
4. Water-proof performance (IP68 compliant water resistance in mated condition)
IP68 : No water intrusion, while submerged in 2m water depth for 14 days in mated condition
5. Finger protection IP2X
6. UL TÜV application pending

■Product Specifications

Ratings	Rated current	Power contact side : 200A* Signal contact side : 1A	Operation temperature range	-40 to +105°C
	Rated voltage	Power contact side : AC/DC 1500V Signal contact side : AC/DC 250V	Storage temperature range	-10 to +60°C

*When 100mm² or more wire is used

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

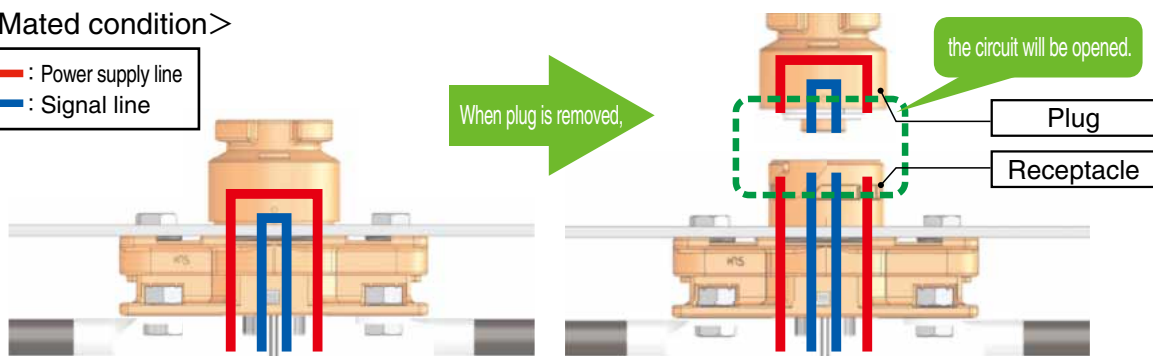
※Refer to page 3 for signal connector (GT8E connector).

■What is Service Plug?

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

<Mated condition>

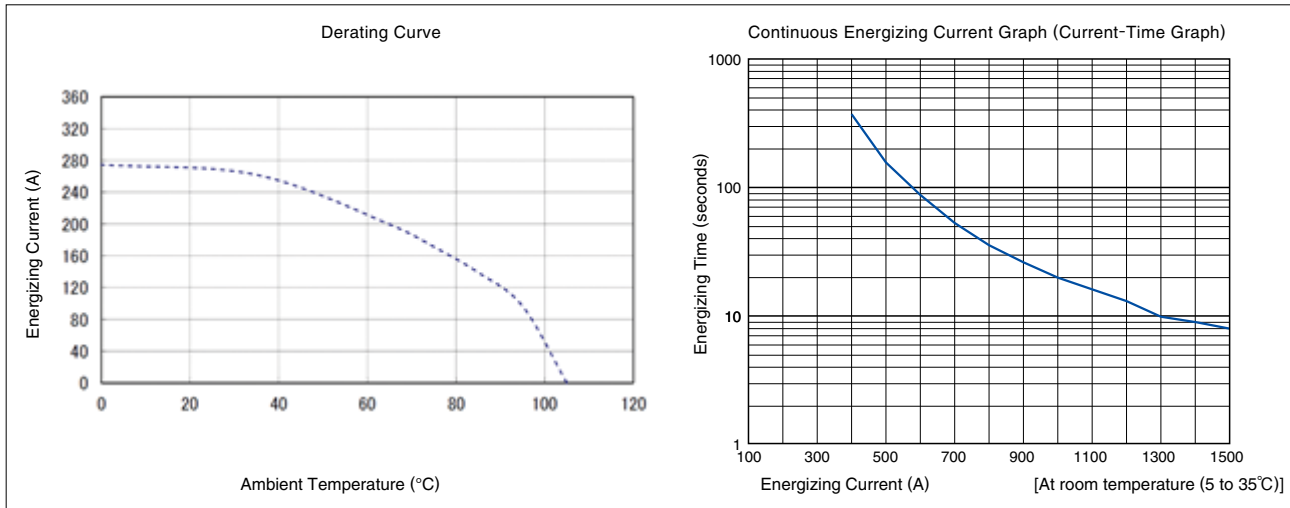
— : Power supply line
— : Signal line



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

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

Measurement was performed by connecting a 100mm² wire in the mated state.



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, the data noted above are reference values, 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 resin	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.

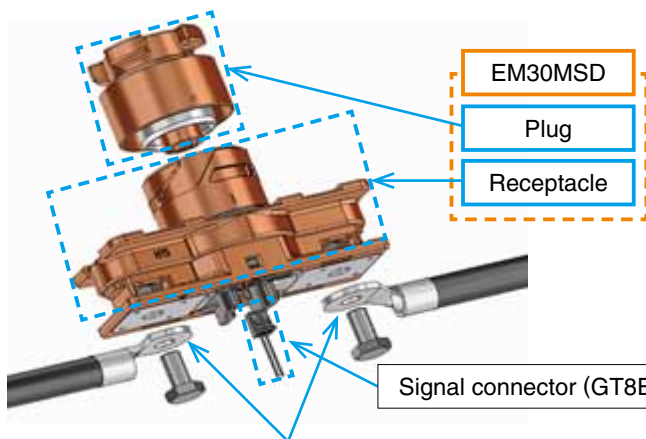
EM 30 MSD – A ()**

① ② ③ ④ ⑤

① Series name : EM
② Shell size : 30
③ Type: MSD (Manual Service Disconnect)=Service plug
④ Serial symbol : Unmarked: Standard product -A : Products which can withstand a different number of repetitive operations (200 times for EM30MSDs between the plug and the receptacle)
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.

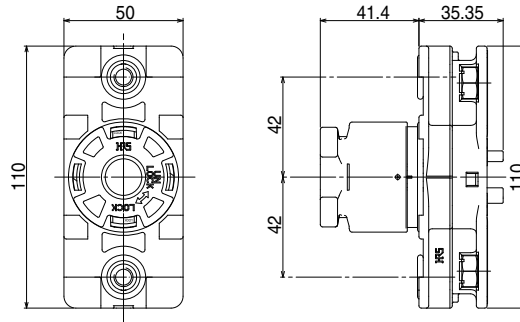
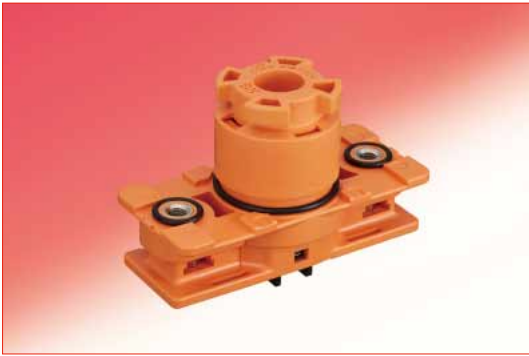


This product is provided with a plug and a receptacle.

Signal connector (GT8E connector) *Refer to page 3 for signal connector.

The power source section uses ring terminals and bolts (The size etc. are described on page 3.).

Service Plug



Part No.	HRS No.	Remarks
EM30MSD	138-0200-0	Signal contact : Tin plated
EM30MSD(02)	138-0200-0 02	Signal contact : Gold plated
EM30MSD-A	138-0206-0	Signal contact : Tin plated
EM30MSD-A(02)	138-0206-0 02	Signal contact : Gold plated

*This product does not contain fuses.

Signal Connector : Main Body

Part No.	HRS No.	Remarks
GT8E-2S-2C	758-0030-6	—

Signal Connector : Applicable Crimp Contacts

Part No.	HRS No.	Remarks
GT8E-2022SCF	758-0033-4	Tin plated (10,000pcs/reel)
GT8E-2022SCF(01)	758-0033-4 01	Gold plated (10,000pcs/reel)
GT8B-2428SCF	758-0055-7	Tin plated (10,000pcs/reel)
GT8B-2428SCF(01)	758-0055-7 01	Gold plated (10,000pcs/reel)
GT8E-2022SC	758-0101-2	Tin plated (100pcs/pack)

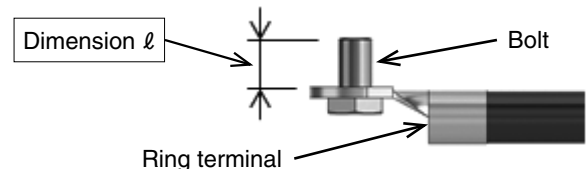
Signal Connector : Wiring Tools

Part No.	HRS No.	Remarks
CM-105C	901-0001-0	Press
AP105-GT8-2022S	901-5144-8	GT8E-2022SCF for applicator
AP105-GT8B-2428S	901-5172-3	GT8B-2428SCF for applicator
HT-304/GT8E-2022S	780-0042-6	GT8E-2022SC for hand crimping tool

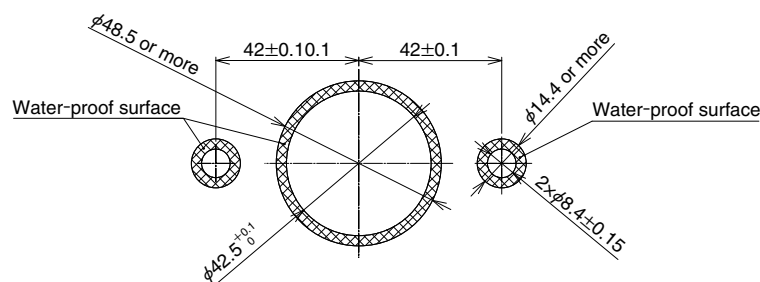
Applicable Bolt and Circular Contact Sizes

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	φ8.4

*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.

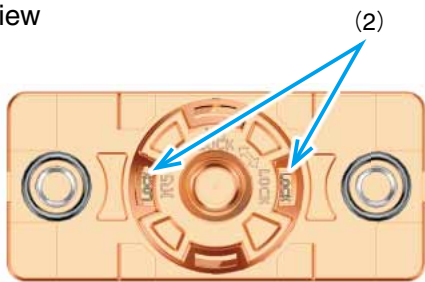
Table : Circuit-Connecting Order

Between A and B	Power supply line
Between C and D	Signal line

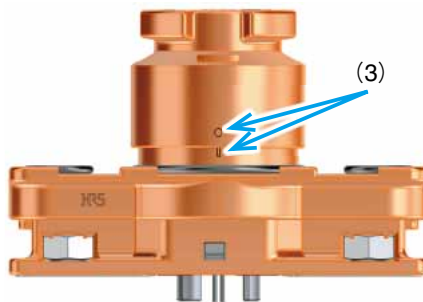
Status	① Not mated	② Plug inserted	③ Rotation/lock completed	④ Lock released	⑤ Unmated
Outward appearance/operation					
Connection		Power supply line is closed. When the signal line is open, no current flows.	The signal line is closed, and current flows in the power supply line.	The signal line is opened. No current flows in the power supply line.	
Circuit diagram					

Figure : Outward appearance of the completely locked state

Front View



Side View



- (1) HRS display and LOCK / UNLOCK display follow the positional relationship shown in the Figure.
- (2) LOCK display is visible.

- (3) The position marks shown of the plug and the receptacle match with each other.
 Plug position mark Circular concave shape
 Receptacle position mark Rectangular concave shape



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