

High Current, Plastic Power Supply Connectors

EM Series



■ Features

1. 4-positions with high current capability (three-phase power supply and ground)

- Rated current of 50A per contact (50A/3contacts) with AWG#8 or corresponding wire.
- Rated current of 30A per contact (90A/3contacts) with AWG#10 or corresponding wire.
- (Please refer to the charts below concerning the relation between ambient temperature and working current value.)

2. Easy crimp termination

Crimp terminals were designed to create terminations that are both easy and uniform.

3. Standard tooling available

Terminals can be crimped with a standard tool in accordance with JIS C 9711.

4. Sequenced mating

Ground terminal makes contact first before power terminals touch.

5. One-touch lock is easy to operate

Lock operation can be done by simply snapping the receptacle and plug together.

6. Attachment Styles

- DIN rail attachment type
- Snap-on attachment to 35 mm width DIN rail.
- Panel attachment type
- Both front and back mounting applicable.

7. Ten keying combinations possible

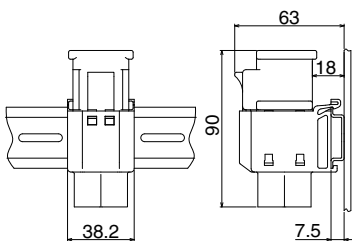
Guide keys prevent incorrect insertions when multiple connectors are used together at the same time.

8. Meets approved safety standards

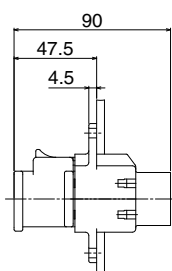
TÜV, UL certified.

Mated dimensions

(Mounted and mated dimensions on DIN rail)

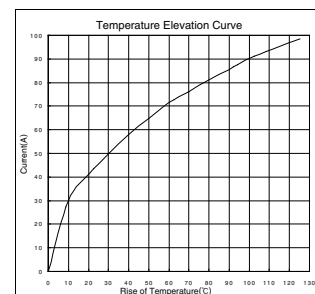
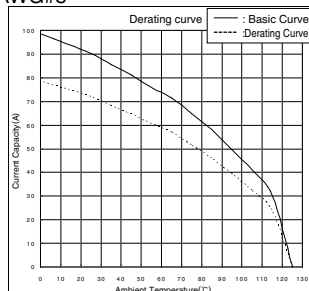


(Mounted and Mated dimensions on panel)



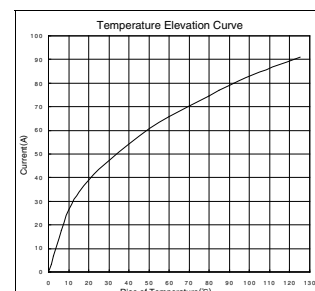
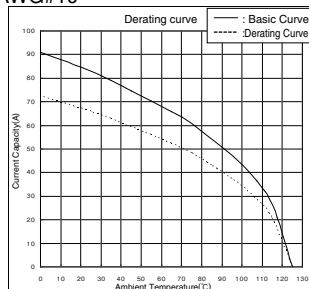
Derating curve

AWG#8



(Note 1) Derating curve is a curve that is obtained by multiplying the current value of the basic curve by derating factor of 0.8.

AWG#10



(Note 1) Derating curve is a curve that is obtained by multiplying the current value of the basic curve by derating factor of 0.8.

■Product Specifications

Rating	Current rating	50A and 30A (Refer to charts on page 1)	Operating temperature range	-40 to +125℃
	Voltage rating	AC 500V and DC 500V	Storage temperature range	-10 to +60℃

Item	Specification	Condition
1. Contact resistance	1mΩ max.	Measured at DC 1A
2. Insulation resistance	5000MΩ min.	Measured at DC 500V
3. Withstanding voltage	No flashover and insulation breakdown	AC 4260V for one minute
4. Vibration resistance	No electrical discontinuity of 10 μs or more	10→50→10Hz/cycle, single amplitude of 0.75mm, five minutes/cycle, three directions, 10 cycles for each direction
5. Shock resistance	No electrical discontinuity of 10 μs or more	Acceleration of 490m/s ² , duration of 11ms, three directions, three times for each direction
6. Durability	Contact resistance: 1mΩ max.	100 cycles
7. Temperature cycle	Insulation resistance: 5000MΩ min.	-55℃ for 30 minutes→room temperature for 2 to 3 minutes→+125℃ for 30 minutes→room temperature for 2 to 3 minutes, 5 cycles
8. Humidity resistance (Normal condition)	Insulation resistance: 50MΩ min. (at high humidity condition) 500MΩ min. (at dry condition)	Exposed for 96 hours at the temperature of 40℃ and the humidity of 90 to 95%

■Material

Item	Material	Finish	Remarks
Insulation	PBT resin	—	UL94V-0
Contact	Copper alloy	Tin plated (Nickel base plating)	—

■Explanation of part numbers

Please refer to the charts below to understand each specific portion of the part number.

●Connector

EM 35 M P - 4 S C ()**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

●Guide key

EM - GK ()**

① ④ ⑧

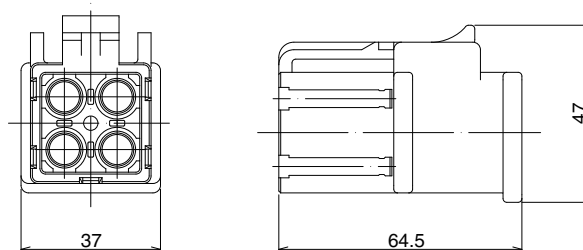
●Crimp terminal

EM - S C - 1 4 3 ()**

① ⑥ ⑦ ⑨ ⑩ ⑪ ⑧

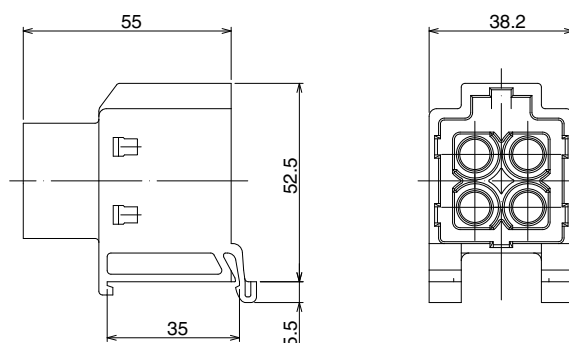
① Series name: EM	⑦ Type of termination: C = Crimp
② Shell size: 35	⑧ This position will be used to indicate changes or variations to the product. When needed, there will be a 2 digit number within the parentheses. This number will correspond to specific changes and/or variations with the part.
③ Specialty: M=Mold type(Plastic type)	
④ Connector type: P= Plug R= Receptacle(DIN rail attachment type) RA= Receptacle (Panel attachment type) GK= Guide key	
⑤ Number of contacts: 4	⑨ Terminal shape: 1= Loose piece terminal
⑥ Contact gender: S=Female contact, P=Male contact	⑩ Shape modification: 1, 3 or 4 denotes the different terminals for different wire gauges
	⑪ Plating: 3 = Tin plated

■ Plug



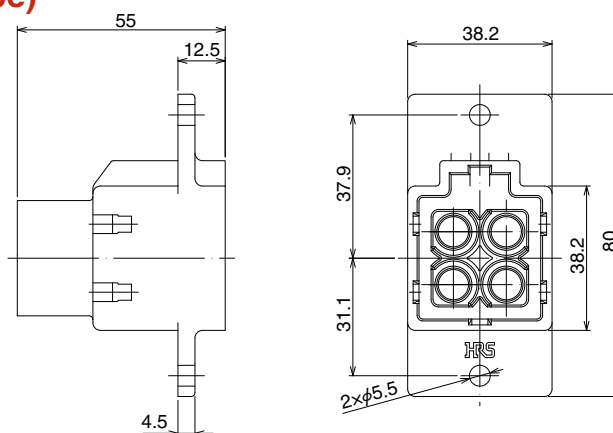
Part number	HRS No.
EM35MP-4SC	CL138-0020-9
EM35MP-4PC	CL138-0021-1

■ Receptacle(DIN rail attachment type)



Part number	HRS No.
EM35MR-4PC	CL138-0022-4
EM35MR-4SC	CL138-0023-7

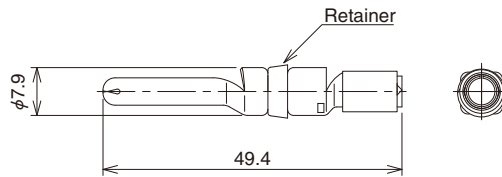
■ Receptacle(Panel attachment type)



Part number	HRS No.
EM35MRA-4PC	CL138-0028-0

■Crimp terminals

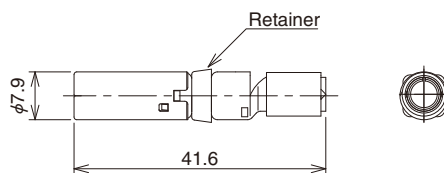
◆Male terminals



Type	Part number	HRS No.	Applicable wire	Remarks
Loose piece terminals	EM-PC-113(01)	CL138-0011-8-01	(1) Cross sectional area of conductor: 5.26 to 5.57mm ² (corresponding to AWG#10) (2) Outside diameter of conductor: ϕ 3.1 max. (3) Outside diameter of jacket: ϕ 8.7 max. (Wire needs to meet all the specifications listed in 1, 2 and 3.)	Retainer: black
	EM-PC-133	CL138-0019-0	(1) Cross sectional area of conductor: 8mm ² (2) Outside diameter of conductor: ϕ 3.7 max. (3) Outside diameter of jacket: ϕ 8.7 max. (Wire needs to meet all the specifications listed in 1, 2 and 3.)	Retainer: white
	EM-PC-143(01)	CL138-0025-2-01	(1) Cross sectional area of conductor: 8.44 to 8.92mm ² (corresponding to AWG#8) (2) Outside diameter of conductor: ϕ 4.4 max. (3) Outside diameter of jacket: ϕ 11.5 max. (Wire needs to meet all the specifications listed in 1, 2 and 3.)	Retainer: purple

(Note) Four (4) pieces per package

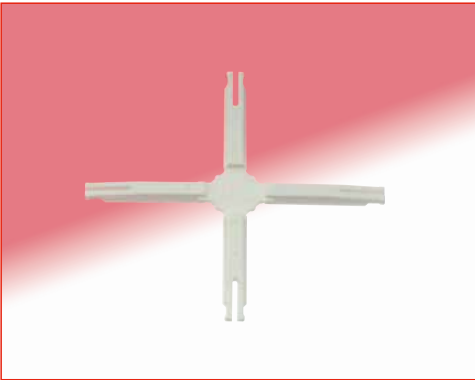
◆Female terminals



Type	Part number	HRS No.	Applicable wire	Remarks
Loose piece terminals	EM-SC-113(01)	CL138 -0010-5-01	(1) Cross sectional area of conductor: 5.26 to 5.57mm ² (corresponding to AWG#10) (2) Outside diameter of conductor: ϕ 3.1 max. (3) Outside diameter of jacket: ϕ 8.7 max. (Wire needs to meet all the specifications listed in 1, 2 and 3.)	Retainer: black
	EM-SC-133	CL138-0018-7	(1) Cross sectional area of conductor: 8mm ² (2) Outside diameter of conductor: ϕ 3.7 max. (3) Outside diameter of jacket: ϕ 8.7 max. (Wire needs to meet all the specifications listed in 1, 2 and 3.)	Retainer: white
	EM-SC-143(01)	CL138-0024-0-01	(1) Cross sectional area of conductor: 8.44 to 8.92mm ² (corresponding to AWG#8) (2) Outside diameter of conductor: ϕ 4.4 max. (3) Outside diameter of jacket: ϕ 11.5 max. (Wire needs to meet all the specifications listed in 1, 2 and 3.)	Retainer: purple

(Note) Four (4) pieces per package

■Guide key



Part number	HRS No.
EM-GK	CL138-0026-5

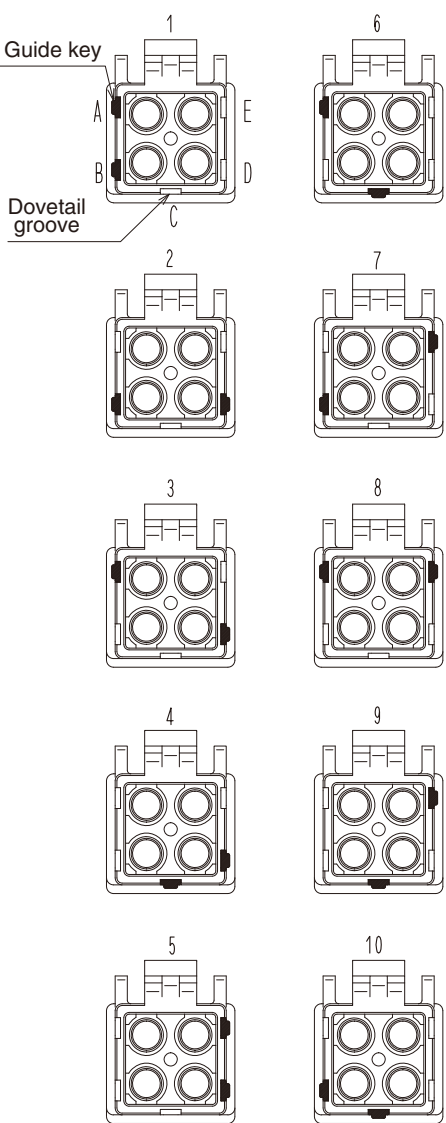
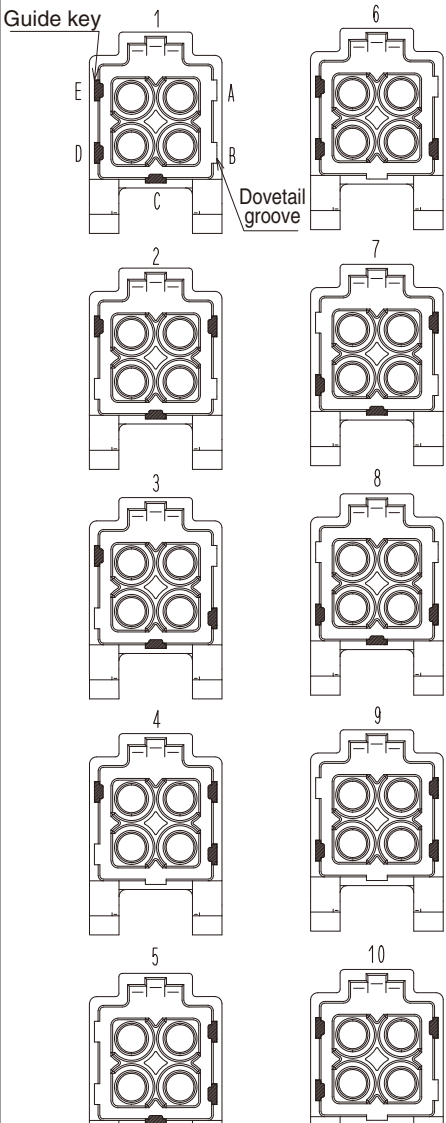
(Note)
Packaged twenty five (25) sprues to a bag.
Each sprue holds 4 guide keys and yields a total of 100 guide keys.

Guide keys are used to create keying combinations to prevent incorrect insertion. This is especially useful when multiple parts are being used together. Guide keys need to be installed on both the plug and receptacle when creating specific combinations.

Please contact a Hirose representative for details and proper use of guide keys.

◆Guide key combination table

(Using two guide keys on the plug and three on the receptacle can make up to ten different combinations.)

Positioning of guide keys on the plug	Positioning of guide keys on the receptacle
	

◆Tools

Type	Part number	HRS No.	Applicable terminal
Manual crimping tool	Note 1	—	EM-PC-113 (01) , EM-SC-113 (01) EM-PC-133 , EM-SC-133 EM-PC-143 (01) , EM-SC-143 (01)
Contact extraction tool	EM-8-TP	CL150-0249-3	EM-PC-113 (01) , EM-SC-113 (01) EM-PC-133 , EM-SC-133 EM-PC-143 (01) , EM-SC-143 (01)

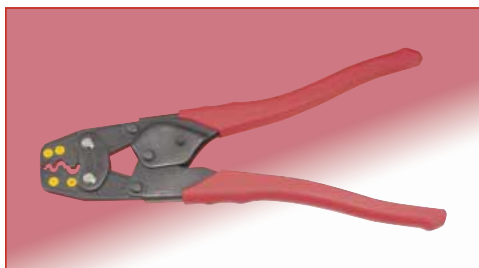
(Note 1) About manual crimping tools:

An applicable tool is a commercially available tool conforming to the JIS C 9711 standard "Compression tools for wire connector of interior wiring". Only use the recommended tools noted below.

Recommended crimping tools

Tool manufacturer	Part No.
HOZAN TOOL INDUSTRIAL CO., LTD.	P-75
LOBTEX Co., Ltd.	AK15A
NICHIFU TERMINAL INDUSTRIES Co., Ltd.	NH1

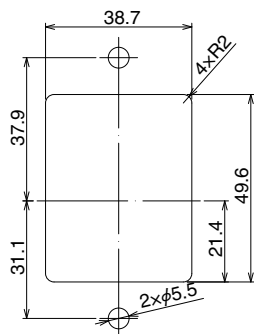
●Manual crimping tool (Example)



●Contact extraction tool

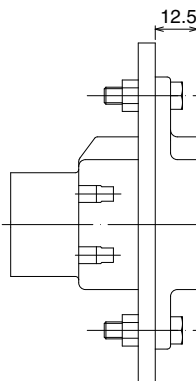


◆Panel cut out dimensions

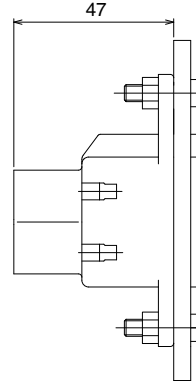


◆Panel attachment dimensions

For front mount



For back mount
(Panel thickness: 8 mm max.)



◆Precautions when using the EM series connectors

1. Switch off the power before mating or un-mating the connectors.
2. Do not touch the terminal portion when the connector is energized. Doing so is potentially dangerous and can lead to injury.
3. Please contact a Hirose representative for harness work procedures and instruction manuals.



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