Multi-contact Compact Circular Connectors

RM Series



■Features

1. Wide variations

The RM Series provides a wide selection of plug and receptacle types to satisfy various kinds of application requirements.
Available position counts : 2, 3, 4, 5, 6, 7, 8, 10, 12, 15, and 20.
Available lock mechanisms : threaded coupling type, bayonet sleeve type, and quick detachable type.

■Product Specifications

Ratings	Rated current	[RM15] 10A (2 and 4 contacts) 5A (8, 10, and 12 contacts) [RM12, 21] 5A	Operating temperature range	-25 to +85℃
	Rated voltage	[RM12] AC 600V, DC 840V (2 contacts) AC 500V, DC 700V (3 and 4 contacts) AC 350V, DC 490V (5, 6 and 7 contacts) [RM15] AC 600V, DC 840V (2 contacts) AC 500V, DC 700V (4 and 8 contacts) AC 350V, DC 490V (10 and 12 contacts) [RM21] AC 500V, DC 700V (15 contacts) AC 350V, DC 490V (20 contacts)	Storage temperature range	-10 to +60℃

Items	Specifications	Conditions
1. Contact resistance	[RM12, 21] 4mΩ max. [RM15] 4mΩ max. (8, 10, and 12 contacts) [RM15] 2mΩ max. (2 and 4 contacts)	Measured at DC 1A
2. Insulation resistance	1,000MΩ min.	Measured at DC 500V
3. Withstanding voltage	No insulation breakdown	[RM12] AC 1,800V for 1 minute (2 contacts) AC 1,500V for 1 minute (3 and 4 contacts) AC 1,000V for 1 minute (5, 6 and 7 contacts) [RM15] AC 1,800V for 1 minute (2 contacts) AC 1,500V for 1 minute (4 and 8 contacts) AC 1,000V for 1 minute (10 and 12 contacts) [RM21] AC 1,500V for 1 minute (15 contacts) AC 1,000V for 1 minute (20 contacts)
4. Vibration resistance	No electrical discontinuity for 10μs. or greater	10 to 55Hz/cycle, full amplitude : 0.75mm, 3 axis directions, 2 hours each
5. Shock resistance	No electrical discontinuity for 10μs. or greater	Acceleration : 490m/s^2, duration : 11ms 3 axis directions, 3 times each
6. Mating cycles	Contact resistance : 8mΩ max.	2,000 times
7. Temperature cycle	Insulation resistance : 100MΩ min.	-55°C : 30 minutes → Normal temperature : 2 to 3 minutes → 85°C : 30 minutes → Normal temperature : 2 to 3 minutes, left for 5 cycles
8. Moisture resistance	Insulation resistance : 100MΩ min. (when dry)	Temperature : 40°C, relative humidity : 90 to 95%, left for 96 hours

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■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.

●Plug

RM ❶ 15 ❷ T ❸ P ❹ A ❺ - 2 ❻ S ❼ (**) ❽

❶Model name : RM Series (Round Miniature Series)
❷Shell size : The shell size refers to the outer shell diameter of the mating interface of the plug.
❸Lock mechanism T : Threaded coupling type B : Bayonet sleeve type Q : Quick detachable type
❹Connector type (1) P : Plug J : Jack P-C : Plug cap R-F : Square flange for receptacle (2) R : Receptacle R-C : Receptacle cap R-B : Cord bushing
❺Form variation class : Indicates a variation or change within the series.
❻Number of contacts
❼Contact form P : Male contact S : Female contact
❽Other specifications : A two-digit number is added to indicate other specifications.

■Materials / Finish

Items	Material	Finish	Remarks
Plated shell	Brass, zinc alloy Aluminum alloy	Nickel plating Chromium plating	————
Insulator	Polycarbonate resin, PPS	————	(Black)
Contact	Brass or copper alloy	Silver plating	————

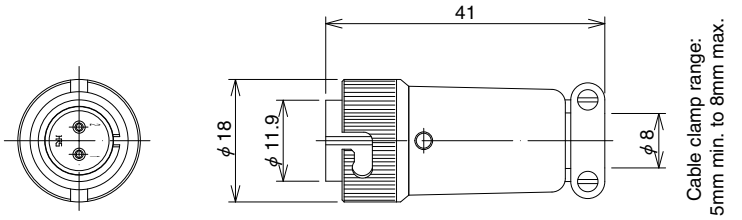
Please note that materials will differ depending on the actual part number.

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■RM12B connectors (bayonet sleeve type)

●Plug





(Representative example.)

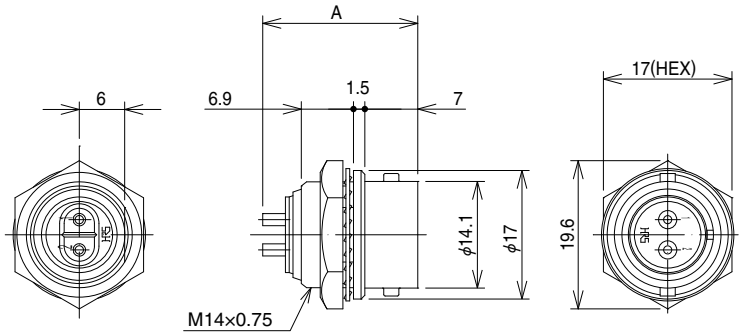
Part No.	HRS No.	No. of contacts
RM12BPE-2S(81)	109-0423-0 81	2
RM12BPE-3S(81)	109-0424-2 81	3
RM12BPE-4S(81)	109-0425-5 81	4
RM12BPE-5S(81)	109-0426-8 81	5
RM12BPE-6S(81)	109-0427-0 81	6
RM12BPE-7S(81)	109-0428-3 81	7

Part No.	HRS No.	No. of contacts
RM12BPE-2PH(81)	109-0417-7 81	2
RM12BPE-3PH(81)	109-0418-0 81	3
RM12BPE-4PH(81)	109-0419-2 81	4
RM12BPE-5PH(81)	109-0420-1 81	5
RM12BPE-6PH(81)	109-0421-4 81	6
RM12BPE-7PH(81)	109-0422-7 81	7

Remarks : Refer to the harness procedure ETAD-C0234 when connecting the wires.

●Receptacle (Jam nut to be fastened)





(Representative example.)

Part No.	HRS No.	No. of contacts	A
RM12BRD-2PH(81)	109-0823-8 81	2	20.5
RM12BRD-3PH(81)	109-0824-0 81	3	
RM12BRD-4PH(81)	109-0825-3 81	4	
RM12BRD-5PH(81)	109-0826-6 81	5	
RM12BRD-6PH(81)	109-0827-9 81	6	
RM12BRD-7PH(81)	109-0828-1 81	7	

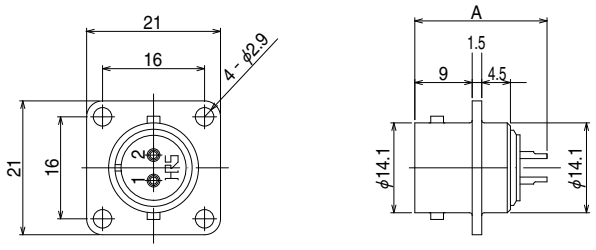
Part No.	HRS No.	No. of contacts	A
RM12BRD-2S(81)	109-0609-8 81	2	21.6
RM12BRD-3S(81)	109-0610-7 81	3	
RM12BRD-4S(81)	109-0611-0 81	4	
RM12BRD-5S(81)	109-0612-2 81	5	
RM12BRD-6S(81)	109-0613-5 81	6	
RM12BRD-7S(81)	109-0619-1 81	7	

Remarks : See page 12 for details on recommended panel cut-out.

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●Receptacle (Integral, square flange)





(Representative example.)

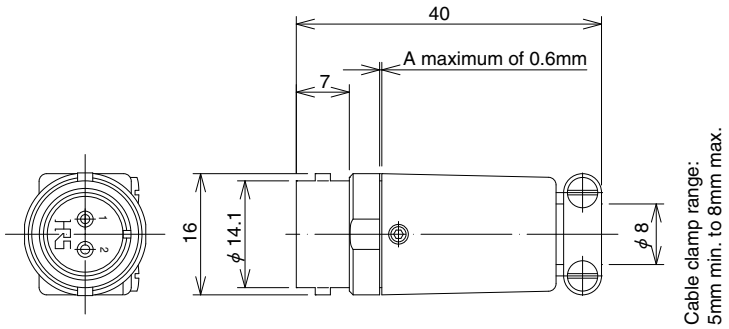
Part No.	HRS No.	No. of contacts	A
RM12BRB-2S(81)	109-0577-3 81	2	21.6
RM12BRB-3S(81)	109-0578-6 81	3	
RM12BRB-4S(81)	109-0579-9 81	4	
RM12BRB-5S(81)	109-0580-8 81	5	
RM12BRB-6S(81)	109-0581-0 81	6	
RM12BRB-7S(81)	109-0615-0 81	7	

Part No.	HRS No.	No. of contacts	A
RM12BRB-2PH(81)	109-0817-5 81	2	20.5
RM12BRB-3PH(81)	109-0818-8 81	3	
RM12BRB-4PH(81)	109-0819-0 81	4	
RM12BRB-5PH(81)	109-0820-0 81	5	
RM12BRB-6PH(81)	109-0821-2 81	6	
RM12BRB-7PH(81)	109-0822-5 81	7	

Remarks : 1. See page 12 for details on recommended panel cut-out.
2. Please note that the RM12BRB differs in mounting dimensions from the RM12BR-F.

●Jack





(Representative example.)

Part No.	HRS No.	No. of contacts
RM12BJB-2S(81)	109-0638-6 81	2
RM12BJB-3S(81)	109-0639-9 81	3
RM12BJB-4S(81)	109-0640-8 81	4
RM12BJB-5S(81)	109-0641-0 81	5
RM12BJB-6S(81)	109-0642-3 81	6
RM12BJB-7S(81)	109-0643-6 81	7

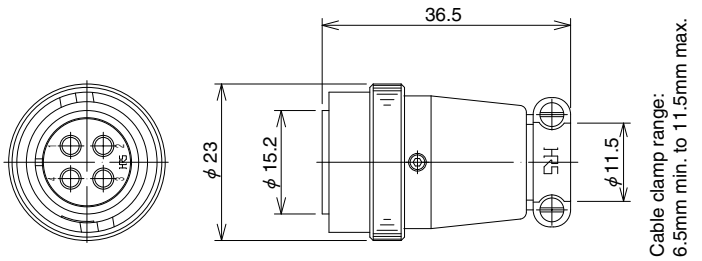
Part No.	HRS No.	No. of contacts
RM12BJB-2PH(81)	109-0829-4 81	2
RM12BJB-3PH(81)	109-0830-3 81	3
RM12BJB-4PH(81)	109-0831-6 81	4
RM12BJB-5PH(81)	109-0832-9 81	5
RM12BJB-6PH(81)	109-0833-1 81	6
RM12BJB-7PH(81)	109-0834-4 81	7

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■RM15Q connectors (quick detachable type)

●Plug





(Representative example.)

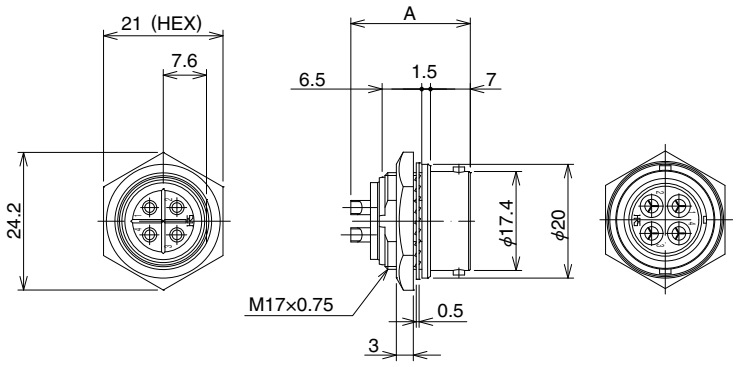
Part No.	HRS No.	No. of contacts
RM15QPS-2SA(81)	109-0839-8 81	2
RM15QPS-4SA(81)	109-0840-7 81	4
RM15QPS-8S(81)	109-0852-6 81	8
RM15QPS-10S(81)	109-0853-9 81	10
RM15QPS-12S(81)	109-0981-9 81	12

Part No.	HRS No.	No. of contacts
RM15QPS-2PA(81)	109-0896-1 81	2
RM15QPS-4PA(81)	109-0897-4 81	4
RM15QPS-8PH(81)	109-0850-0 81	8
RM15QPS-10PH(81)	109-0851-3 81	10
RM15QPS-12PH(81)	109-0980-6 81	12

Remarks : Refer to the harness procedure ETAD-C0236 when connecting the wires.

●Receptacle (Jam nut to be fastened)





(Representative example.)

Part No.	HRS No.	No. of contacts	A
RM15QRD-2PA(81)	109-0880-1 81	2	21.0
RM15QRD-4PA(81)	109-0881-4 81	4	
RM15QRD-8PH(81)	109-0854-1 81	8	20.6
RM15QRD-10PH(81)	109-0855-4 81	10	
RM15QRD-12PH(81)	109-0982-1 81	12	

Part No.	HRS No.	No. of contacts	A
RM15QRD-2SA(81)	109-0841-0 81	2	21.7
RM15QRD-4SA(81)	109-0842-2 81	4	
RM15QRD-8S(81)	109-0864-5 81	8	21.6
RM15QRD-10S(81)	109-0779-8 81	10	
RM15QRD-12S(81)	109-0983-4 81	12	

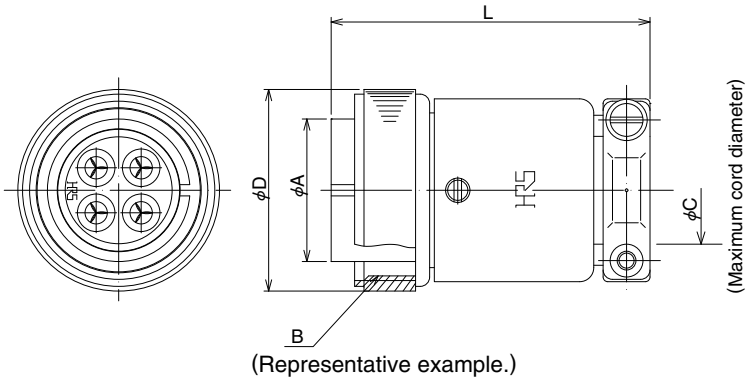
Remarks : See page 12 for details on recommended panel cut-out.

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■RM [ ]T connectors (threaded coupling type)

●Plug





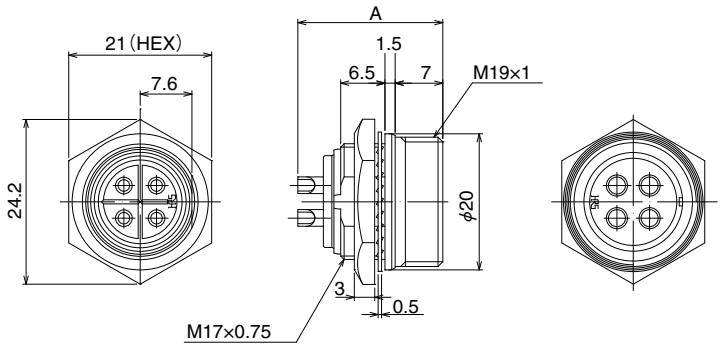
(Representative example.)

Part No.	HRS No.	No. of contacts	φA	B	φC	φD	L
RM15TP-2SA(81)	109-0845-0 81	2	15.2	M19×1	11.5	21.5	34
RM15TP-2PA(81)	109-0898-7 81						
RM15TP-4SA(81)	109-0846-3 81	4					
RM15TP-4PA(81)	109-0899-0 81						
RM15TP-8S(81)	109-0053-2 81	8					
RM15TP-8PH(81)	109-0856-7 81						
RM15TP-10S(81)	109-0055-8 81	10					
RM15TP-10PH(81)	109-0857-0 81						
RM21TP-15S(81)	109-0321-0 81	15	21	TM25×2	15	28	37
RM21TP-15P(81)	109-0323-5 81						
RM21TP-20S(81)	109-0322-2 81	20					
RM21TP-20P(81)	109-0324-8 81						

Remarks : TM25×2 represents 30° trapezoidal thread profile.

●Receptacle (Jam nut to be fastened)





(Representative example.)

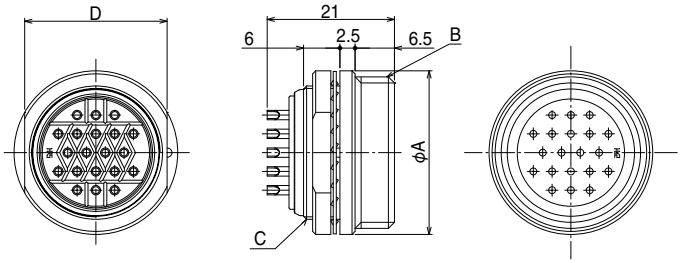
Part No.	HRS No.	No. of contacts	A
RM15TRH-2PA(81)	109-0886-8 81	2	21
RM15TRH-2SA(81)	109-0847-6 81		21.7
RM15TRH-4SA(81)	109-0848-9 81	4	21
RM15TRH-4PA(81)	109-0887-0 81		
RM15TRH-8PH(81)	109-0858-2 81	8	20.6
RM15TRH-8S(81)	109-0868-6 81		21.6
RM15TRH-10PH(81)	109-0859-5 81	10	20.6
RM15TRH-10S(81)	109-0869-9 81		21.6

Remarks : See page 12 for details on recommended panel cut-out.

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●Receptacle (Jam nut to be fastened)





(Representative example.)

Part No.	HRS No.	No. of contacts	ϕA	B	C	D
RM21TR-15S(81)	109-0327-6 81	15	27	TM25×2	M22×0.75	23.5
RM21TR-15P(81)	109-0325-0 81					
RM21TR-20S(81)	109-0328-9 81	20				
RM21TR-20P(81)	109-0326-3 81					

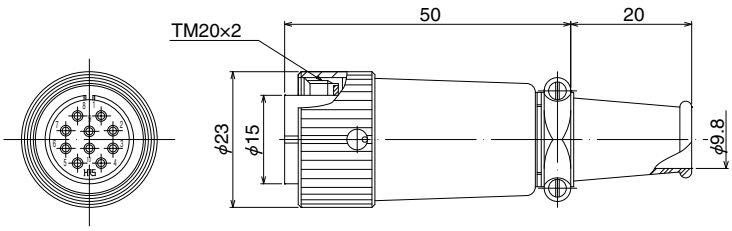
Remarks : 1. TM25×2 represents 30° trapezoidal thread profile.
2. See page 12 for details on recommended panel cut-out.

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■RM15T (type D) connectors

●Plug (solder type)



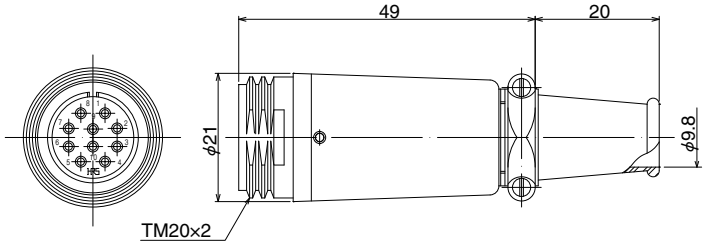


(Representative example.)

Part No.	HRS No.	No. of contacts
RM15TPD-10P(81)	109-0601-6 81	10
RM15TPD-10S(81)	109-0686-9 81	
RM15TPD-12P(81)	109-0660-5 81	12
RM15TPD-12S(81)	109-0661-8 81	

●Jack (solder type)



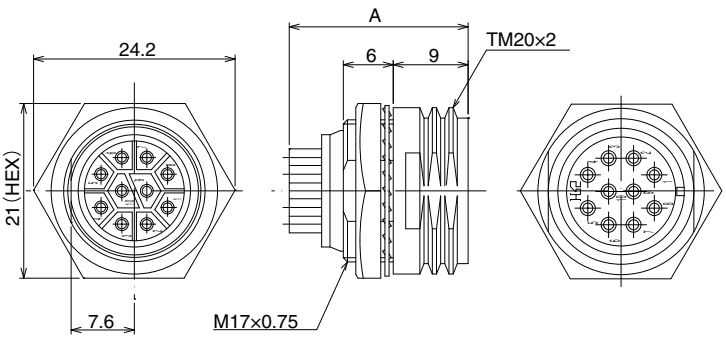


(Representative example.)

Part No.	HRS No.	No. of contacts
RM15TJD-10P(81)	109-0706-4 81	10
RM15TJD-10S(81)	109-0603-1 81	
RM15TJD-12S(81)	109-0665-9 81	12

●Receptacle (solder type)





(Representative example.)

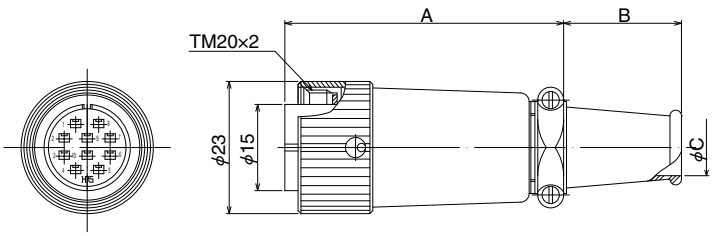
Part No.	HRS No.	No. of contacts	A
RM15TRD-10P(81)	109-0687-1 81	10	20.5
RM15TRD-10S(81)	109-0602-9 81		21.3
RM15TRD-12P(81)	109-0662-0 81	12	20.5
RM15TRD-12S(81)	109-0663-3 81		21.3

Remarks : See page 12 for details on recommended panel cut-out.

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●Plug (crimp type)



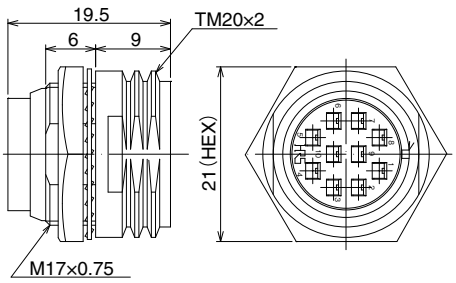


(Representative example.)

Part No.	HRS No.	No. of contacts	A	B	ϕC
RM15TPD-10PC(71)	109-0677-8 71	10	50	20	9.8
RM15TPN-10PC(31)	109-0712-7 31		40	15	8

●Receptacle (crimp type)





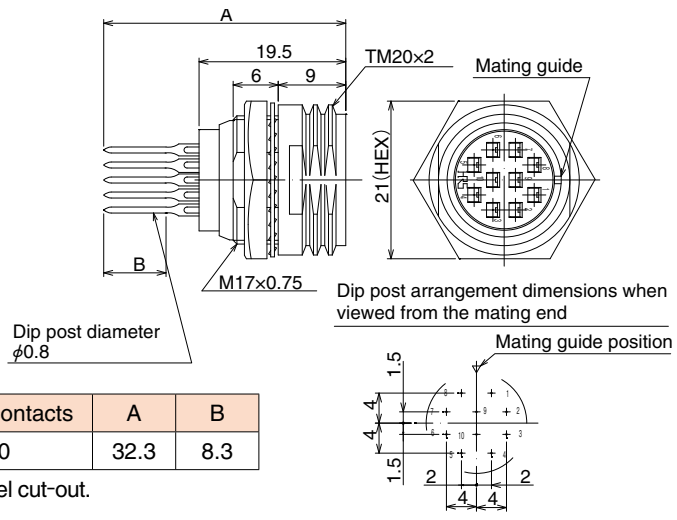
(Representative example.)

Part No.	HRS No.	No. of contacts
RM15TRD-10SC(71)	109-0676-5 71	10

Remarks : See page 12 for details on recommended panel cut-out.

●Receptacle (dip type)





(Representative example.)

Part No.	HRS No.	No. of contacts	A	B
RM15TRD-10SB(71)	109-0710-1 71	10	32.3	8.3

Remarks : See page 12 for details on recommended panel cut-out.

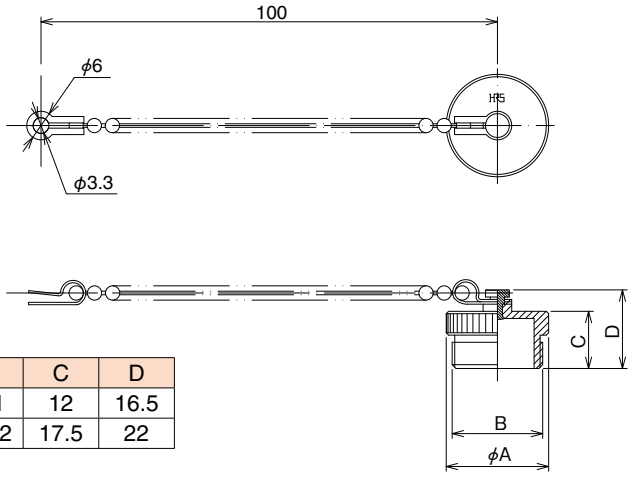
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■RM Series accessories

■Cap

●Plug cap

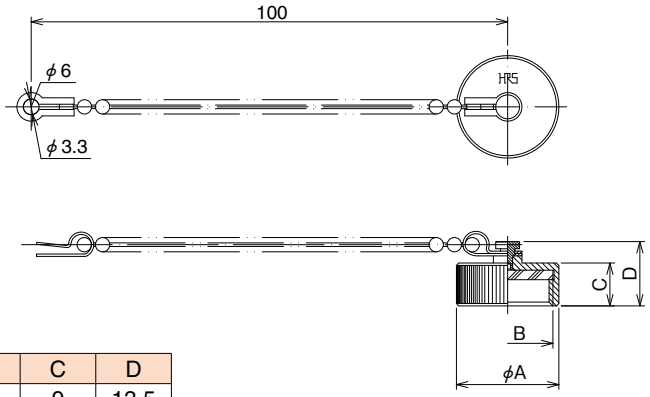




Part No.	HRS No.	ϕA	B	C	D
RM15TP-C(71)	109-0079-6 71	21.5	M19×1	12	16.5
RM21TP-C(71)	109-0353-6 71	28	TM25×2	17.5	22

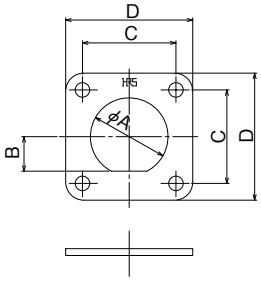
●Receptacle cap





Part No.	HRS No.	ϕA	B	C	D
RM15TR-C(31)	109-0080-5 31	21.5	M19×1	9	13.5
RM21TR-C(31)	109-0354-9 31	28	TM25×2	8	12.5

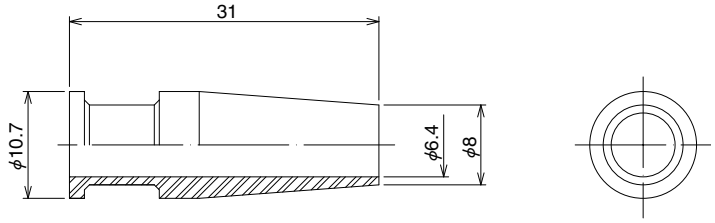
●Square flange



Part No.	HRS No.	ϕA	B	C	D
RM12BR-F(71)	109-0154-0 71	14.1	6	18	26
RM15TR-F(71)	109-0319-8 71	17.1	7.6	20.6	28

●Cord bushing



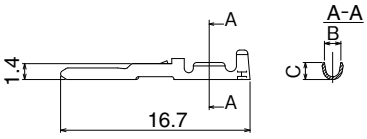


Part No.	HRS No.	Remarks
RM12BPG-B(71)	109-0776-0 71	———

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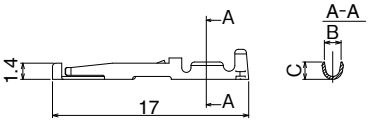
Contact

●Male contact



Type	Part No.	HRS No.	B	C	Applicable wire size
Loose piece contacts	RM-PC-112	109-0668-7	1.6	2.0	20 to 24 AWG
	RM-PC-122	109-0672-4	1.45	1.5	24 to 28 AWG
Reel contacts	RM-PC-212	109-0670-9	1.6	2.0	20 to 24 AWG
	RM-PC-222	109-0674-0	1.45	1.5	24 to 28 AWG

●Female contact



Type	Part No.	HRS No.	B	C	Applicable wire size
Loose piece contacts	RM-SC-112	109-0669-0	1.6	2.0	20 to 24 AWG
	RM-SC-122	109-0673-7	1.45	1.5	24 to 28 AWG
Reel contacts	RM-SC-212	109-0671-1	1.6	2.0	20 to 24 AWG
	RM-SC-222	109-0675-2	1.45	1.5	24 to 28 AWG

Note : Loose piece contacts are available in 100 pcs/pack. Reel contacts are available in 8,000 pcs/reel.

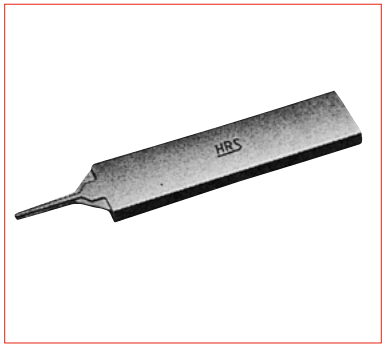
Applicable tools

Type	Items	Part No.	HRS No.	Applicable contact	Applicable wire size
Manual	Manual crimping tool	HT802/RM-11	150-0401-6	RM-PC-112	20 to 24 AWG
				RM-SC-112	
		HT802/RM-12	150-0402-9	RM-PC-122	24 to 28 AWG
				RM-SC-122	
Automatic	Automatic crimping press	CM-105C	901-0001-0	————	————
	Applicator	AP-105-RM-1	901-2017-4	RM-PC-212	20 to 24 AWG
				RM-SC-212	
		AP-105-RM-2	901-2018-7	RM-PC-222	24 to 28 AWG
				RM-SC-222	
Extraction tool		RM-TP	150-0008-7	————	————

Manual crimping tool



Contact extraction tool



Automatic crimping press (Type CM-105C)



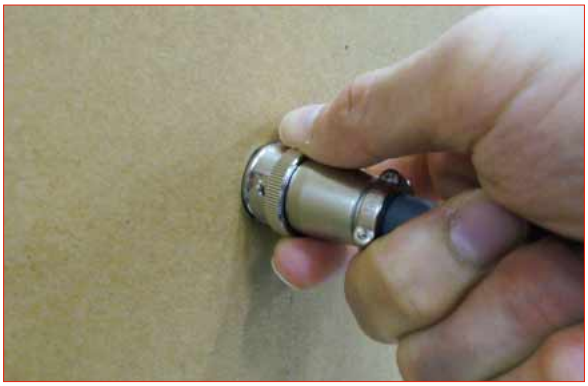
How to use the RM15Q connectors (quick detachable type)

1. Insertion



For smooth mating, while holding the plug tube, match the guide of the receptacle with the key-way on the plug and push straight it in as shown in the above figure.

2.Extraction



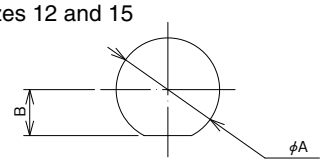
To unmate, hold the locking sleeve and twist it approximately 30 degrees to the left, then pull it straight off as shown in the above figure.

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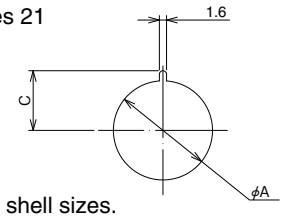
Receptacle-recommended panel cut-out

●For jam nut type

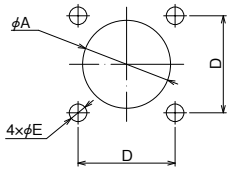
Recommended panel cut-out for shell sizes 12 and 15



Recommended panel cut-out for shell sizes 21



●For square flange type

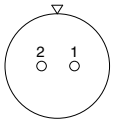
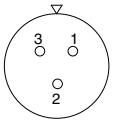
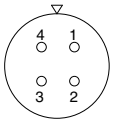
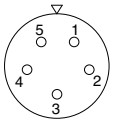
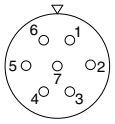
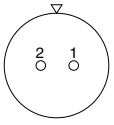
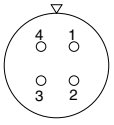


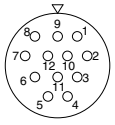
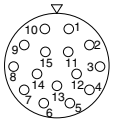
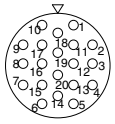
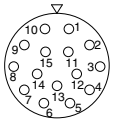
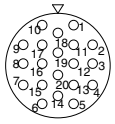
Remarks : Use a 0.5 ～ 2 mm thickness panel for all shell sizes.

Sign / Mounting method / Shell size / Locking mechanism	Nut tightening				Square flange
	12	15		21	12
	BRD	QRD	TRH · TRD	TR	BRB
ϕA	14.1	17.1		22.1	14.5
B	6.1	7.6		————	————
C	————	————	————	12.65	————
D	————	————	————	————	1.6
ϕE	————	————	————	————	2.9

Remarks : The dimensional tolerance to be +0.1 / 0.

Contact Position Arrangement and Specifications

	Shell size : 12					Shell size : 15	
Contact arrangement							
No. of contacts	2	3	4	5	7	2	4
Withstanding voltage	AC 1,800V for one minute	AC 1,500V for one minute		AC 1,000V for one minute		AC 1,800V for one minute	AC 1,500V for one minute
Rated current	5A					10A	
Insulation resistance	1,000MΩ min.					1,000MΩ min.	
Contact resistance	4mΩ max.					2mΩ max.	
Inner diameter of solder pot	ϕ1.1 (Male Contact) / ϕ1.15 (Female Contact)					ϕ1.7mm	

	Shell size : 15			Shell size : 21	
Contact arrangement					
No. of contacts	8	10	12	15	20
Withstanding voltage	AC 1,500V for one minute	AC 1,000V for one minute		AC 1,500V for one minute	AC 1,000V for one minute
Rated current	5A			5A	
Insulation resistance	1,000MΩ min.			1,000MΩ min.	
Contact resistance	4mΩ max.			4mΩ max.	
Inner diameter of solder pot	ϕ1.1 (Male Contact) / ϕ1.15 (Female Contact)			ϕ1.1 (Male Contact) / ϕ1.15 (Female Contact)	

Remarks

1. The above figures show contact arrangements viewed from the mating end of the connectors with female contacts.
2. The "▼" marks shown in the above figures represent the position of the receptacle mating guide.
3. Withstanding voltages are shown as test voltages.

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Precautions

1. Be sure the power is off before mating/unmating a connector.
2. Be sure to use a connector with female contacts for the power side of the circuit.
3. Be sure to engage the lock mechanism on the connectors.
4. Regarding plugs and jacks : the forces from cable clamping, cable rotation, and other forces may vary with the cable construction. Please make sure that your cable is suitable for use with these connectors before usage and production.
5. This product series uses silver plated contacts. Silver reacts easily to exposure to sulfur gas so the below conditions may cause tarnishing.
   - Dusty environments
   - Area with a high concentration area of gases such as sulfur dioxide gas, hydrogen sulfide gas, nitrogen dioxide gas and so on.
     Example; In close proximity to factory exhaust, automotive emissions, etc.
   - Close to heaters, or in other areas marked by extreme temperature differences or high humidity.
   - Close to rubber products includes rubber adhesives.

   The Electrical connection is not affected by tarnishing on a silver surface due to the wiping effect of the contact pins.

Storage
Packing state; Packed in original packing or equivalent container
Temperature −10 to +60°C
Humidity 85% Max
(It is recommended that the product be stored in an area of normal level of temperature and humidity, and free of any temperature fluctuation)

Please use this products within 6 months of delivery.
(After 6 month, please check the solderbility before use)
“Storage” means long-term storage of the unused products in sealed packaging, prior to assembly to PCB.

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