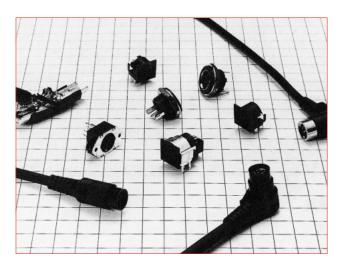
High Performance Miniature Circular Connectors

HR12 Series



IFeatures

- ·Snap lock allows for easy insertion and extraction and prevents the accidental un-mating of the connector due to vibration or impact.
- •The plug diameter range from ϕ 12mm to ϕ 16mm, and satisfies the need for small-size, light-weight and high-density electronic components.
- ·Equipped with internal metal parts and a shielding mechanism, the HR12 (20-contacts) and HR212 feature enhanced protection against EMI.

■Product Specifications

Ratings		Rated current	Operating temperature range	Storage temperature range
Ü	100V AC, 140V DC	1A	-15°C to +60°C	-10°C to +60°C

Items	Specifications	Conditions
1. Contact resistance	$30m\Omega$ max. (excluding the cable conductor resistance)	Measured at DC 1mA
2. Insulation resistance	100MΩ min.	Measured at DC 250V
3. Withstanding voltage	No flashover or dielectric breakdown.	AC 300V for 1 minute
4. Vibration resistance	No electrical discontinuity for $10\mu s$ or greater.	10 to 55 Hz/cycle, amplitude : 0.75mm, 3 axis directions, 2 hours each
5. Shock resistance	No electrical discontinuity for $10\mu s$ or greater.	Acceleration: 490m/s², duration: 11ms, 3 axis directions, 3 cycles each
6. Mating Cycles	$30m\Omega$ max. of contact resistance (excluding the cable conductor resistance)	1,000 times
7. Temperature cycle	Insulation resistance : a minimum of 100MΩ	-25°C: 30 minutes → Normal temperature: 10 to 15 minutes → 70 °C: 30 minutes → Normal temperature: 10 to 15 minutes, left for 5 cycles
8. Moisture resistance Insulation resistance : $1M\Omega$ min. (at high humidity) $10M\Omega$ min. (when dry)		Temperature : 40° C, relative humidity : 90 to 95%, left for 96 hours

■Material / Finish

Part	Material	Finish
Soft vinylchloride (UL94-0) and Polypropylene (UL94V-0) Insulator PBT resin (UL94V-0) and Polycarbonate (UL94V-1)		
	Brass, and Zinc alloy	Tin plated and Nickel plated
Contacts	Copper alloy or phosphor bronze	Tin plated or selective gold plated and silver plated

■Product Number Structure

●Cable Plug

 $\frac{\mathsf{HR}12}{\mathsf{A}} \stackrel{\mathsf{A}}{=} \frac{\mathsf{A}}{\mathsf{A}} = \frac{\mathsf{A}}{\mathsf{A}} \stackrel{\mathsf{A}}{=} \frac{\mathsf{A}}{\mathsf{A}} \stackrel{\mathsf{B}}{=} \frac{\mathsf{P}}{\mathsf{A}} \stackrel{\mathsf{C}}{=} \frac{\mathsf{A}}{\mathsf{A}} \stackrel{\mathsf{300}}{=} \frac{\mathsf{A}}{\mathsf{A}} \stackrel{(**)}{=} \frac{\mathsf{A}}{\mathsf{A}}$

Plug (Assembly type) and Receptacle

 $\frac{\mathsf{HR}12}{\bullet} - \frac{10}{\bullet} \frac{\mathsf{R}}{\bullet} \frac{\mathsf{C}}{\bullet} - \frac{8}{\bullet} \frac{\mathsf{SDL}}{\bullet} \frac{(**)}{\bullet}$

Attachment

 $\frac{HR12}{0} - \frac{10}{0} \frac{R}{0} - \frac{SP}{0} \frac{(**)}{0}$

Model: Series name.

HR212 is a enhanced shielding type.

2 Indication of terminal connector provided or not:

For models with connectors on both sides, different signs are used depending on the type of connector on one side.

Shell size :

Indicates the outside diameter of the plug mating part.

4 Connector form :

P: Straight plug

LP or L : Right angle

R: Receptacle

- **6** Cable removal directions for a right angle plug are classified as follows:
 - A: The cable removal direction is on the right with the guide facing upward viewed from the mating part.
 - B: The cable removal direction is on the left with the guide facing upward viewed from the mating part.
- **6**Types of connector:

A connector with two or more varieties is classified by A, B, C,......

- Number of contacts
- 8 Contact form :

Classifies the type of contacts as follows: The plug has only male contacts, and the receptacle has only female contacts.

PC: Crimp male contact (assembly type plug) P : Male contact

SC : Crimp female contact SD : Straight dip female contact SDL : Right angle dip female contact

Shape of cable :

C : Curled cord S: Straight cord

Type of cable :

Cables connected to the plug are identified by A, B, C,..... when they are different in construction and number of cores.

Cable length:

indicates the length in mm of the cable connected to the plug.

Curled cord length: Length of curled part

Straight cable length: Cable length

Shape of cable end:

Plugs with cables of the same shape but different in cable end dimensions and finishing are identified by A, B, C,.....

Types of accessories :

SP: Stopper plate

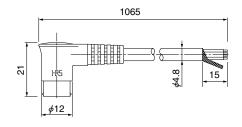
1Other specifications:

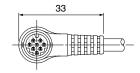
A two-digit character is added to indicate other specifications as needed.

HR12 Type

■Right Angle Plug



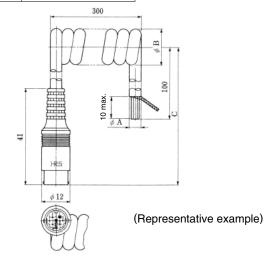




Part No.	HRS No.	No. of contacts	No. of conductors of cable	Remarks
HR12-10LA8PS1065(71)	112-3040-0 71	8	8-conductor (Shielded)	Straight cord Terminal tin plated

■Straight Plug





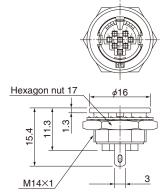
Part No.	HRS No.	No. of contacts	φA	φB	С	No. of conductors of cable	Remarks				
HR12-10P5PCD300(71)	112-0101-6 71	5	4.8	l.8 15 720 -		1.0 1.5 700		40 15 7		5-conductor (Shielded)	Curled cord
HR12-10P8PC300(71)	112-0102-9 71	8	4.0	4.0		720	720	8-conductor (Shielded)	Terminal tin plated		
HR12-10P10PCAE300(71)	112-0133-2 71	10	5.5	17.5	700	10-conductor (Shielded)	Curled cord Terminal gold plated				

■Receptacle (Crimp Type)



Part No.	HRS No.	No. of contacts
HR12-10R-5SC(71)	112-0501-4 71	5
HR12-10R-8SC(71)	112-0504-2 71	8

Remarks: For the mounting holes, see page 4.



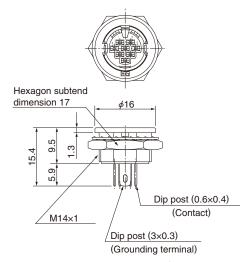
(Representative example)

■ Receptacle (Straight Dip Type)



Part No.	HRS No.	No. of contacts	Remarks
HR12-10R-5SD(71)	112-0502-7 71	5	Terminal
HR12-10R-8SD(71)	112-0505-5 71	8	tin plated

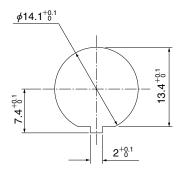
Remarks : Refer to following diagram for panel mounting dimensions and dip post arrangement dimensions.



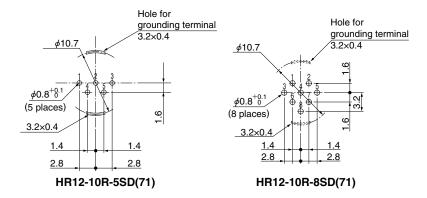
(Representative example)

◆Panel mounting dimensions

(Panel thickness 1 to 4.7)



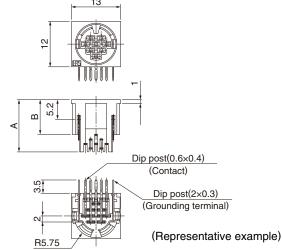
● Receptacle Dip Post



Remarks : Dimensional tolerance of $\pm 0.05 \text{mm}$ is recommended for the board arrangement.

■Receptacle(Right Angle Dip)





(Note)

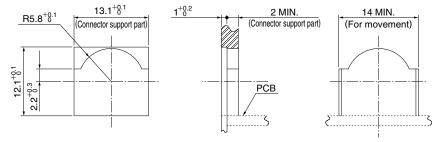
This product should be mounted on the panel to hold with the interface portion,as shown in the panel mounting hole dimension diagram.

When it is difficult to press the connector into the panel, we recommend using the attached stopper plate HR12-10R-SP(71) (112-0507-0 71) as described on page 7.

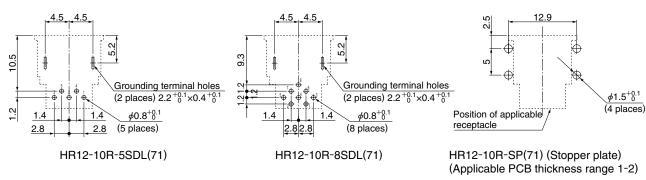
Part No.	HRS No.	No. of contacts	Α	В	Remarks
HR12-10R-5SDL(71)	112-0503-0 71	5	13	10.5	Torminal tip plated
HR12-10R-8SDL(71)	112-0506-8 71				Terminal tin plated
HR12-10RC-8SDL(71)	112-0514-6 71	8	13.8	9.3	Equipped with stopper plate
11112 10110 03DE(71)	SDL(71) 112-0514-671				Terminal tin plated

Remarks: For dip post arrangement see below figure.

●Panel mounting dimensions



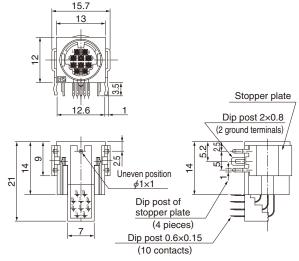
Note: Pay attention that this dimension is not available for 10 contacts.



Remarks : Dimensional tolerance of $\pm\,0.05$ mm is recommended for the board arrangement.

■ Receptacle (Right Angle Dip)

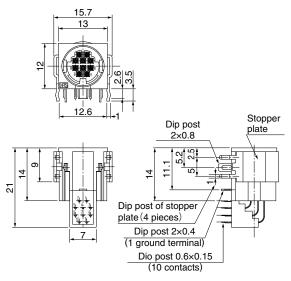




Part No.	HRS No.	No. of contacts	Remarks
HR12-10RC-10SDL(73)	112-0511-8 73	10	Color: Black Stopper plate Terminal gold plated

Remarks: For dip post arrangement see below figure.



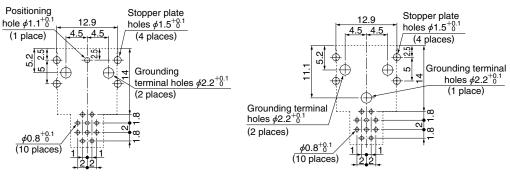


HR12-10RD-10SDL(71)

Part No.	HRS No.	No. of contacts	Remarks
HR12-10RD-10SDL(71)	112-0512-0 71	10	Color: Black Stopper plate Terminal gold plated

Remarks: For dip post arrangement see below figure.

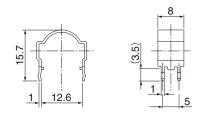
HR12-10RC-10SDL(73)



Remarks: Dimensional tolerance of ± 0.05 mm is recommended for the board arrangement.

■Stopper Plate





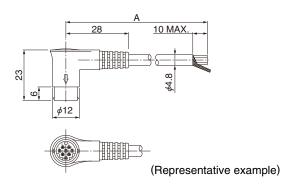
Part No.	HRS No.	Applicable connector	Applicable PCB thickness
HR12-10R-SP(71)	112-0507-0 71	HR12-10R-*SDL	t:1 to 2

Remarks: 1. The *mark shows the number of pins.
2. For dip post arrangement, see page 5.

HR12 Type (20 contacts) /HR212 Type

■Right Angle Plug (With straight)





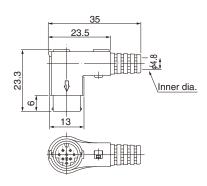
Part No.	HRS No.	No. of contacts	Α	No. of conductors of cable	Remarks
HR212-10LA8PSAT1028(72)	112-2120-1 72	0	1028	8-conductor (Shielded)	Color: Black
HR212-10LA8PSAT3028(72)	112-2121-4 72	0	3028		Terminal: Selective gold plated

Remarks: Cable can be taken-out only in direction A.

■Right Angle Plug (Assembly Type)

Solder Type





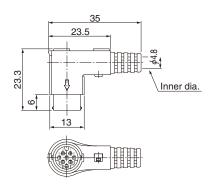
Part No.	HRS No.	No. of contacts	Remarks
HR212-10LP-8P(73)	112-4002-6 73	0	Color : Black Terminal : Selective gold plated
HR212-10LP-8P(74)	112-4002-6 74	8	Color : Sand beige Terminal : Selective gold plated

Remarks: Cable can be taken-out only in direction A.

Note: Because the cable clamping and rotational forces may vary with different cable types, it is recommended to verify the suitability of the cable assembly before use or production.

Crimp Type





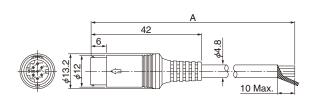
Part No.	HRS No.	No. of contacts	Remarks
HR212-10LP-8PC(71)	112-4101-8 71	8	Color : Black

Remarks: Cable can be taken-out only in direction A.

Note: Because the cable clamping and rotational forces may vary with different cable types, it is recommended to verify the suitability of the cable assembly before use or production.

■Straight Plug (With straight cable)





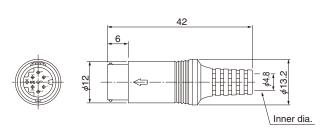
(Representative example)

Part No.	HRS No.	No. of contacts	Α	No. of conductors of cable	Remarks
HR212-10P8PSAT1042(72)	112-2220-6 72	8	1042	8-conductor (Shielded)	Color : Black Terminal : Selective gold plated

■Straight Plug (Assembly Type)

Solder Type





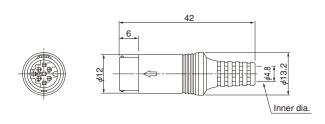
(Representative example)

Part No.	HRS No.	No. of contacts	Remarks
HR212-10P-8P(71)	112-4001-3 71		Color : Black Terminal : Tin plated
HR212-10P-8P(72)	112-4001-3 72	8	Color : Sand beige Terminal : Tin plated
HR212-10P-8P(73)	112-4001-3 73	0	Color : Black Terminal : Selective gold plated
HR212-10P-8P(74)	112-4001-3 74		Color : Sand beige Terminal : Selective gold plated

Note: Because the cable clamping and rotational forces may vary with different cable types, it is recommended to verify the suitability of the cable assembly before use or production.

Crimp Type





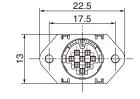
(Representative example)

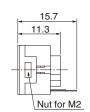
Part No.	HRS No.	No. of contacts	Remarks
HR212-10P-8PC(71)	112-4051-1 71	0	
HR212-10P-8PC(72)	112-4051-1 72	0	Color: Sand beige
HR212-10P-10PC(71)	112-4052-4 71	10	***************************************
HR212-10P-10PC(72)	112-4052-4 72	10	Color: Sand beige

Note: Because the cable clamping and rotational forces may vary with different cable types, it is recommended to verify the suitability of the cable assembly before use or production.

■ Receptacle (Crimp Type)





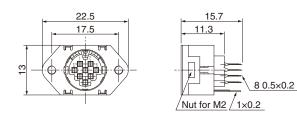


(Representative example)

Part No.	HRS No.	No. of contacts	Remarks
HR212-10R-8SC(71)	112-2001-2 71	8	

■ Receptacle (Straight Dip Type)



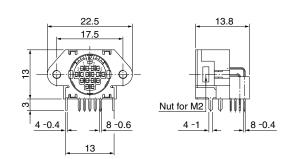


Part No.	HRS No.	No. of contacts	Remarks
HR212-10R-8SD(73)	112-2002-5 73	8	Color : Black Terminal : Tin plated
HR212-10R-8SD(74)	112-2002-5 74	0	Color : Black Terminal : Selective gold plated

Remarks: For dip post arrangement, see below figure.

■ Receptacle (Right Angle Dip Type)



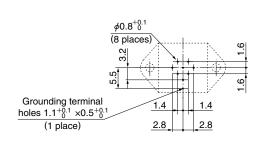


(Representative example)

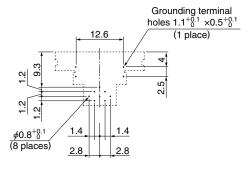
Part No.	HRS No.	No. of contacts	Remarks
HR212-10R-8SDL(73)	112-2003-8 73	0	Color : Black Terminal : Tin plated
HR212-10R-8SDL(72)	112-2003-8 72	0	Color : Sand beige Terminal : Selective gold plated

Remarks: For dip post arrangement, see below figure.

● Receptacle Dip Post Layout



HR212-10R-8SD

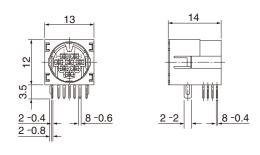


HR212-10R-8SDL

Remarks : Dimensional tolerance of $\pm 0.05 mm$ is recommended for the board arrangement.

■ Receptacle (Right Angle Dip Type)

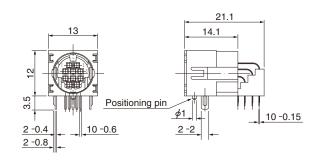




Part No.	HRS No.	No. of contacts	Remarks
HR212-10RA-8SDL(74)	112-2004-0 74		Color : Sand beige Terminal : Tin plated
HR212-10RA-8SDL(72)	112-2004-0 72	8	Color : Sand beige Terminal : Selective gold plated
HR212-10RA-8SDL(73)	112-2004-0 73		Color : Black Terminal : Selective gold plated

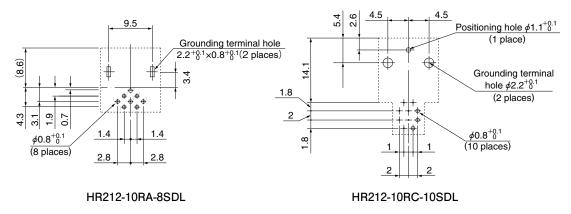
Remarks: For dip post arrangement, see below figure.





Part No.	HRS No.	No. of contacts	Remarks
HR212-10RC-10SDL(74)	112-2009-4 74	10	Color : Black Terminal : Selective gold plated

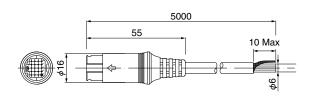
Remarks: For dip post arrangement, see below figure.



Remarks : Dimensional tolerance of $\pm 0.05 \text{mm}$ is recommended for the board arrangement.

■Straight Plug



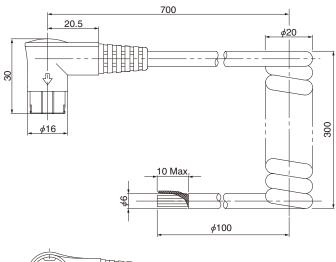


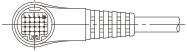
(Representative example)

Part No.	HRS No.	No. of contacts	No. of conductors of cable	Remarks
HR12-14P20PSD5000(71)	112-1105-2 71	20	20-conductor (Shielded)	Straight cord Terminal : silver plated

■Right Angle Plug





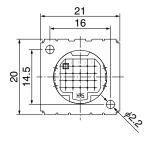


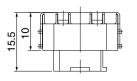
Part No.	HRS No.	No. of contacts	No. of conductors of cable	Remarks
HR12-14LA20PC300(71)	112-1001-7 71	20	20-conductor (Shielded)	Curled cord Terminal : silver plated

Remarks: Cable can be taken-out only in direction A.

■ Receptacle (Crimp Type)





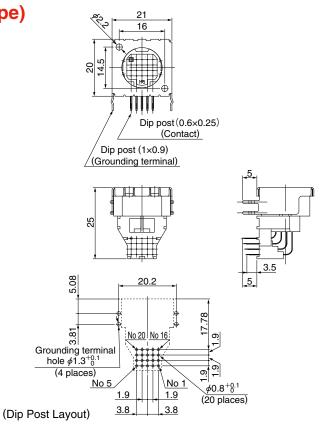




Part No.	HRS No.	No. of contacts	Remarks
HR12-14RA-20SC	112-1504-8	20	With hexagon nut

■Receptacle (Right Angle Dip Type)



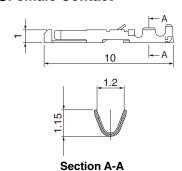


Part No.	HRS No.	No. of contacts	Remarks
HR12-14RA-20SDL	112-1502-2	20	With hexagon nut Terminal: silver plated

Remarks : Dimensional tolerance of ± 0.05 mm is recommended for the board arrangement.

♦ Contact

●Female Contact

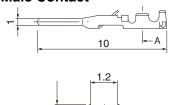


Туре	Part No.	HRS No.	Plated	Applicable wire
	HR12-SC-111	112-0410-0	Selective gold plated	
Loose	HR12-SC-112	112-0411-3	Silver plated	
Contacts	HR12-SC-113	112-0412-6	Tin plated	26 to 30 AWG
	HR12-SC-211	112-0407-6	Selective gold plated	26 10 30 AWG
Reel contacts	HR12-SC-212	112-0408-9	Silver plated	
Contacts	HR12-SC-213	112-0409-1	Tin plated	

Note 1. Use cables with cable covering outer dia. ϕ 1mm or less.

2. Loose piece contacts are packaged 100 pcs/pack. Reel contacts are packaged 10,000 pcs/reel.

●Male Contact



Section A-A

Type	Part No.	HRS No.	Plated	Applicable wire
Loose	HR10-PC-111	110-0515-6	Selective gold plated	
contacts	HR10-PC-113(71)	110-0519-7 71	Tin plated	26 to 30 AWG
Reel	HR10-PC-211	110-0516-9	Selective gold plated	26 10 30 AWG
contacts	HR10-PC-213(71)	110-0520-6 71	Tin plated	

Note 1. Use cables with cable covering outer dia. ϕ 1mm or less.

2. Loose piece contacts are packaged 100 pcs/pack. Reel contacts are packaged 10,000 pcs/reel.

Applicable tools

Туре	Item	Part No.	HRS No.	Applicable terminal	Applicable wire
al	Manual	HR12-SC-TC	150-0052-9	HR10-PC- 111 113(71)	
Manual	Manual crimping tool			111 HR12-SC- 112 113	26 to 30 AWG
	Automatic crimping machine body	CM-105C	901-0001-0		
Automatic		AP105-HR12-1	901-2015-9	HR10-PC- 211 213(71)	26 to 30AWG
Aı	Applicator			211 HR12-SC- 212 213	
Extraction tool		HR12-SC-TP	150-0050-3	111 112 HR12-SC- 113 211 212 213	
		RP6-SC-TP	150-0039-0	HR10-PC- 211 213(71)	



(HR12-SC-TC) **Hand Crimp Tool**



(HR12-SC-TP) (RP6-SC-TP) **Extraction Tool**



● Cable Connecting Procedures

Works Process

WOIK	s Process			
	Right-angle Plug	Straight Plug		
1	Use cables of finished dia. 4.8mm and nominal conductor (Inner dia. of solder pot of soldering terminal is ϕ 0.7mm.)	cross section of 0.129mm² (AWG#26) and under.		
2	Insert bushing over cable as shown in Fig.1.	Install hood over cable. Figure of straight type is omitted.		
3	Copper tape Crimping type: 1.5 + 0.1 Cable Bushing Shied cable Mold b			
	Fig	.1		
	given below. (1) Firmly wrap the cable sheath end with copper tape 6 including adhesive). (2) Bundle up the shield cables, and tight twist. (Twist at lea (3) Cut the shield cables at 6 -1 mm from the cable sheath the			
4	(Soldering Type) Solder cables to mold block into which terminals are assembled. (Crimping Type) Use applicable tool (HR12-SC-TC or CM-105) to crimp connect cables to applicable crimping terminals, then insert crimped terminals into mold and fix them to complete the mold block.			
5	Assemble mold block having cables connected to location Carefully note that mold block and P shell A have direction			
6	Assemble bundled shield cables so that they are positioned at the center (C section) of cable outlet of P shell A as shown in Fig.1.			
7	Install P shell B over P shell A as shown in Fig.2 and avoid screws supplied (shape of screw head is phillip #0 for preciplaces).	catching of internal cables. Use the M2 self-tapping ision machinery) to secure from the direction of P shell B (2 Casing Self-tapping screw		
	Fig.2.	P shell B		
8	Move bushing to the end face of P shell, and put P shell and bushing into the casing as shown in Fig.2. Groove of P shell P shell	With groove of hood and protruding portion of P shell aligned, install hood over P shell as shown in Fig.3. Hood Cable Protruding portion		
9	Install casing over P shell as shown in Fig.4. Cable Fig.4	Fig.3		
10	Now assembling is completed.			

◆Terminal Arrangement and performance

Shell size	10 sizes				
Terminal arrangement					
No. of contacts	5	8	10		
Withstand voltage	300V AC for 1 minute				
Rated current	1A				
Insulation resistance	200MΩ or more at 250V DC				
Contact resistance	30mΩ or less (excluding cable conductor resistance)				

Shell size	14 sizes	
Terminal arrangement		
No. of contacts	20	
Withstand voltage	300V AC for 1 minute	
Rated current	1A	
Insulation resistance	200mΩ or more at 250V DC	
Contact resistance	30mΩ or less (excluding cable conductor resistance)	

Remarks: 1. The above figures show the receptacle pin inserts as viewed from the mating side.

- 2. Withstand voltage shows the testing voltage.
- 3. Contact resistance is as measured at 1A DC.

Precautions

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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