

HR10 SERIES SHELL SIZE 7mm PUSH-PULL CONNECTORS

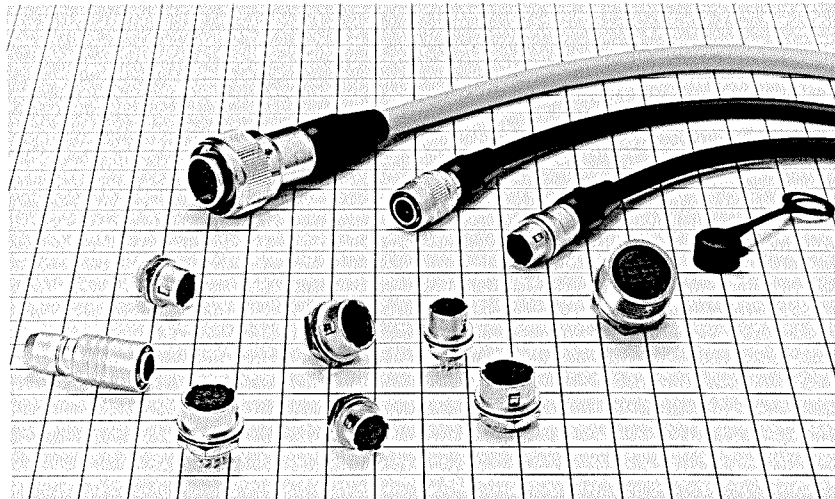
Introduction

The HR10 series connectors are push-pull coupling type micro-connectors. They have been developed in response to customers' needs for miniaturization, high density, and easy handling.

The HR10 series connectors offer light weight and assure high reliability and durability as well as easy "push-pull" operation.

You may apply the HR10 series connectors to all kinds of

small-sized electronic equipment requiring high reliability. However, these simple but refined connectors are most suitable for portable electronic equipment which requires good appearance. Typical applications are: Computers and peripherals, medical equipment, audio equipment, video equipment, portable radio (wireless) apparatus, measuring equipment, etc.



Features

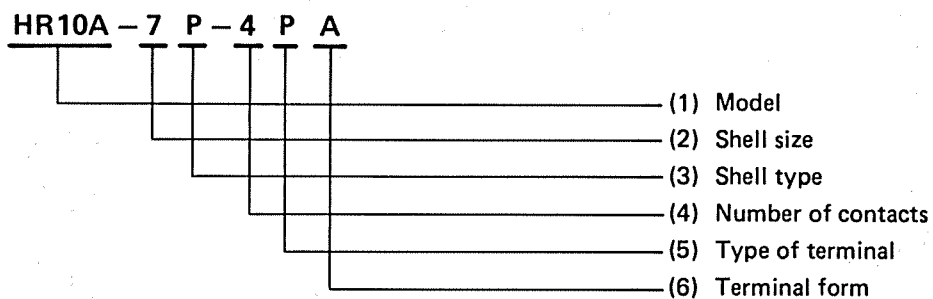
- 1. "A LITTLE GIANT"**
The most compact HR10 series is as slender as a cigarette but it fits every application with well-balanced, simplified layout in limited space.
- 2. EASY "PUSH-PULL" OPERATION**
One touch "push-pull" coupling mechanism assures easy and quick connecting and disconnecting. You can couple it accurately just by pushing any part of the connector housing.
- 3. POLARIZATION**
Five-key system permits only one way of coupling so that you can find right position to connect even when blind mating.
- 4. PROTECTION OF CONNECTION PIN**
A connector pin is located to avoid any damage which may be caused when blind mating.
- 5. HIGH DENSITY**
The space-saving "push-pull" mechanism facilitates multi-installation of connectors.
- 6. EASY WIRING AND MOUNTING**
No use of screws makes wiring and mounting easier.
- 7. SIMPLE AND REFINED APPEARANCE**
Simple and well designed connectors with matte finish enhance the appearance of the equipment.

Material & Finish

Main materials

Part	Material	Finish
Shell	Zinc-alloy and brass	Satin-finished nickel plate
Insulation	Polyamide resin or PBT resin	(Blue or black)
Male terminal	Brass or bronze	Silver- or gold-plated
Female terminal	Beryllium or phosphor bronze	Silver- or gold-plated

Ordering Information

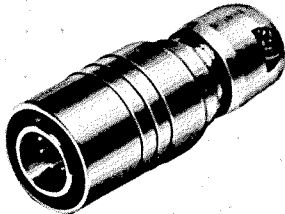


- (1) Model: Denotes HR10 series as follows:
 HR10A: Low-cost model
 HR10G: Shielded
 HR10E: Built-in capacitor
 HR10B: Coaxial terminal
 HR10D: Connector sleeve rotation inhibited
- (2) Shell size: Plug mating part outside diameter in mm.
- (3) Shell type: Indicates the type of shell as follows:
 P: Plug R: Receptacle J: Jack
- (4) Number of contacts: Indicates the number of contacts.
- (5) Type of terminal: Indicates the type of terminal as follows:
 P: Male terminal S: Female terminal
- (6) Terminal form: Indicates terminal connection system in terminal form in alphabetic characters.
 C: Crimp connection system

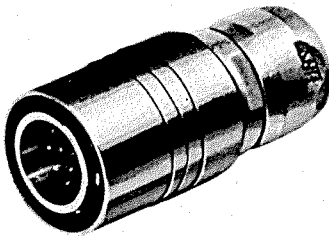
HR10 type

Gold plating is the standard for the HR10 connector terminals and silver plating is used for the terminals of other types of connectors. When using HR10 connectors combination with other types of connectors, be sure to check the plating specification.

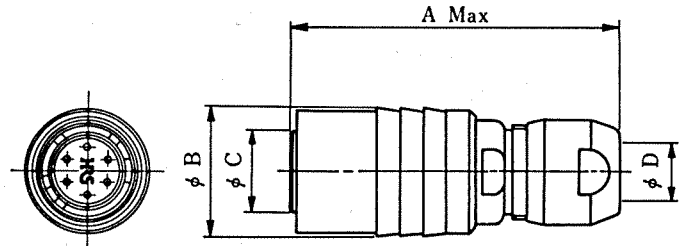
Plug



HR10-7P-6P



HR10-10P-12P



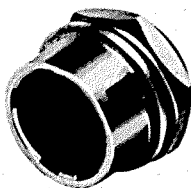
(An example in shape)

HRS No.	Part No.	No. of pins	A	φB	φC	φD	Weight
110-0021-6	HR10- 7P- 4P	4	28.5	11	7	5.2	8g
110-0022-9	HR10- 7P- 4S	4	28.5	11	7	5.2	8g
110-0023-1	HR10- 7P- 6P	6	28.5	11	7	5.2	8g
110-0024-4	HR10- 7P- 6S	6	28.5	11	7	5.2	8g
110-0025-7	HR10-10P-12P	12	32.5	14	9.5	7.2	15g
110-0026-0	HR10-10P-12S	12	32.5	14	9.5	7.2	15g

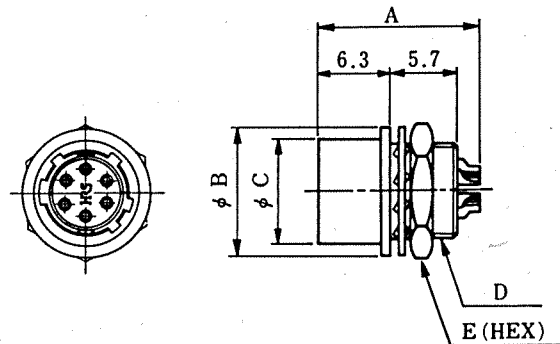
Receptacle



HR10-7R-6S



HR10-10R-12S

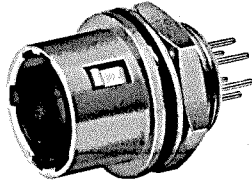


(An example in shape)

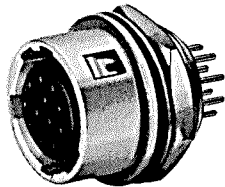
HRS No.	Part No.	No. of pins	A	φB	φC	D	E	Weight
110-0031-0	HR10- 7R- 4S	4	14	11	8.85	M8x0.5	10	3.5g
110-0032-2	HR10- 7R- 4P	4	14	11	8.85	M8x0.5	10	3.5g
110-0033-5	HR10- 7R- 6S	6	14	11	8.85	M8x0.5	10	3.5g
110-0034-8	HR10- 7R- 6P	6	14	11	8.85	M8x0.5	10	3.5g
110-0035-0	HR10-10R-12S	12	16	14	11.9	M11x0.75	13	6g
110-0036-3	HR10-10R-12P	12	16	14	11.9	M11x0.75	13	6g

Remark: For mounting holes, see page 85.

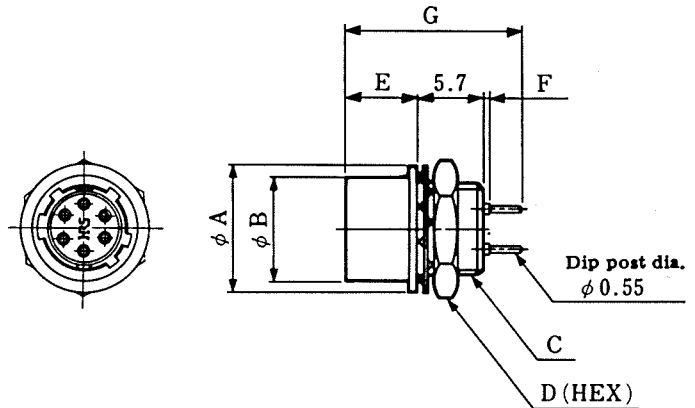
Receptacle (PCB Dip Type)



HR10-7R-6SA



HR10-10R-12SA

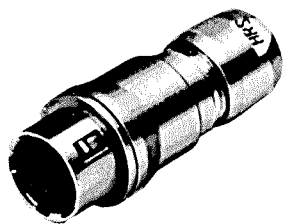


(An example in shape)

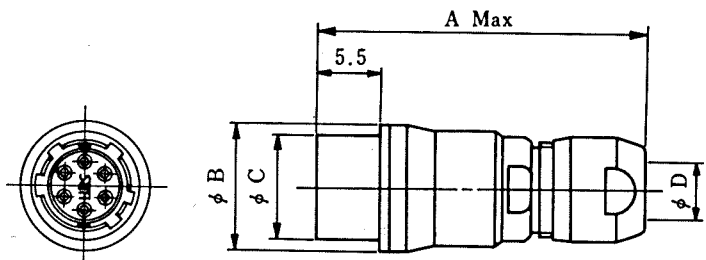
HRS No.	Part No.	No. of pins	φA	φB	C	D	E	F	G	Weight
110-0059-9	HR10-7R-4SA	4	11	8.85	M8x0.5	10	6.3	0.5	15.5	3g
110-0050-4	HR10-7R-6SA	6	11	8.85	M8x0.5	10	6.3	0.5	15.5	3g
110-0061-0	HR10-7R-6PA	6	11	8.85	M8x0.5	10	6.3	0.5	15.5	3g
110-0049-5	HR10-10R-12SA	12	14	11.9	M11x0.75	13	6.3	0.5	15.5	5g
110-0055-8	HR10-10R-12PA	12	14	11.9	M11x0.75	13	6.3	0.5	15.5	5g

Remarks: 1. For mounting holes, see page 85.
2. For Dip post arrangement, see page 80.

Jack



HR10-7J-6S



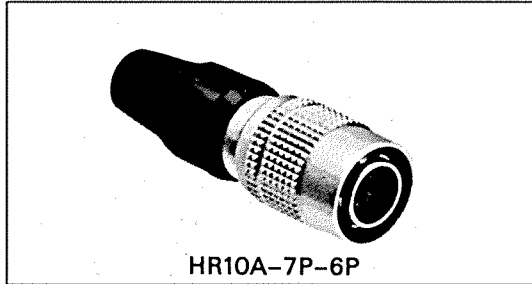
HRS No.	Part No.	No. of pins	A	φB	φC	D	Weight
110-0027-2	HR10-7J-4S	4	28.5	11	8.85	5.2	7g
110-0028-5	HR10-7J-4P	4	28.5	11	8.85	5.2	7g
110-0029-8	HR10-7J-6S	6	28.5	11	8.85	5.2	7g
110-0030-7	HR10-7J-6P	6	28.5	11	8.85	5.2	7g
110-0037-6	HR10-10J-12S	12	32.5	14	11.9	7.2	14g
110-0038-9	HR10-10J-12P	12	32.5	14	11.9	7.2	14g

HR10A·10G Type

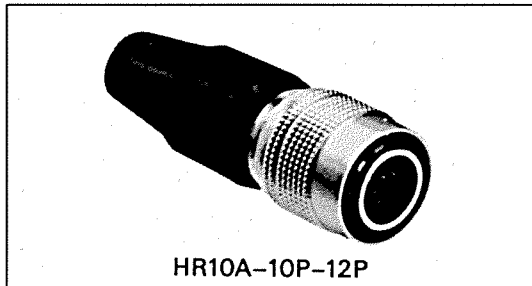
The model HR10A is a lowcost connector maintaining the excellent characteristics of the HR10 connector while meeting VA requirements. To ensure increased cable-clamping force, the cables are crimped with a special crimping tool, and to increase cable resistance to bending, the shell is covered with a rubber bushing.

The model HR10G is a shielding connector having a built-in contact mechanism with the plug shell inside the receptacle. The standard HR10A and HR10G connector contacts are silver-plated.

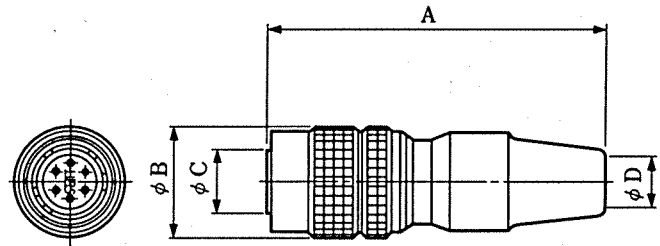
Plug (Solder Type)



HR10A-7P-6P



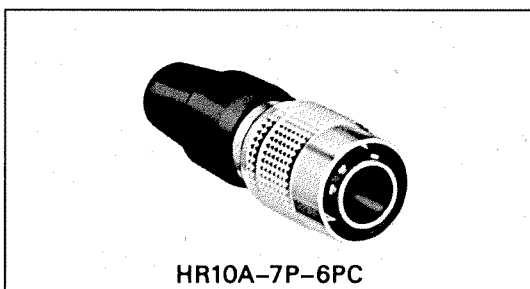
HR10A-10P-12P



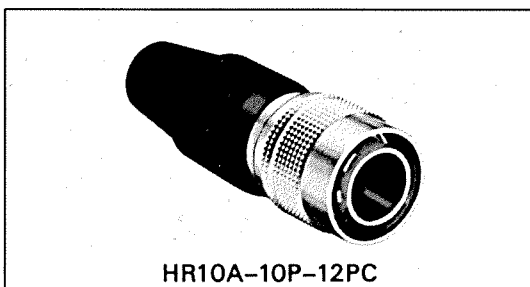
(An example in shape)

HRS No.	Part No.	No. of pins	A	ϕB	ϕC	ϕD	Weight
110-0301-2	HR10A-7P-4P	4	35	11.5	7	5	9g
110-0302-5	HR10A-7P-4S	4	35	11.5	7	5	9g
110-0318-5	HR10A-7P-5P	5	35	11.5	7	5	9g
110-0319-8	HR10A-7P-5S	5	35	11.5	7	5	9g
110-0303-8	HR10A-7P-6P	6	35	11.5	7	5	9g
110-0304-0	HR10A-7P-6S	6	35	11.5	7	5	9g
110-0407-3	HR10A-10P-10P	10	43	14.7	9.5	7	16g
110-0408-6	HR10A-10P-10S	10	43	14.7	9.5	7	16g
110-0401-7	HR10A-10P-12P	12	43	14.7	9.5	7	16g
110-0402-0	HR10A-10P-12S	12	43	14.7	9.5	7	16g
110-0713-0	HR10A-13P-20P	20	58.8	19	13	7	37g
110-0716-8	HR10A-13P-20S	20	58.8	19	13	7	37g

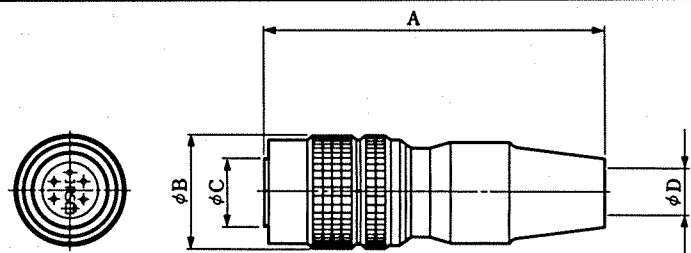
Plug (Crimp Type)



HR10A-7P-6PC



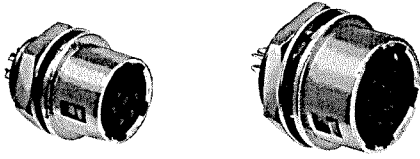
HR10A-10P-12PC



(An example in shape)

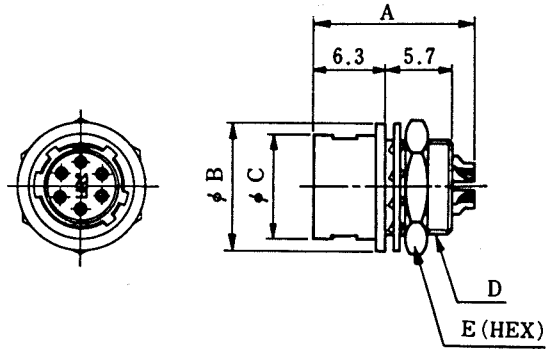
HRS No.	Part No.	No. of pins	A	ϕB	ϕC	ϕD	Weight
110-0501-1	HR10A-7P-4PC	4	35	11.5	7	5	9g
110-0502-4	HR10A-7P-4SC	4	35	11.5	7	5	9g
110-0503-7	HR10A-7P-6PC	6	35	11.5	7	5	9g
110-0504-0	HR10A-7P-6SC	6	35	11.5	7	5	9g
110-0601-6	HR10A-10P-10PC	10	43	14.7	9.5	7	16g
110-0602-9	HR10A-10P-10SC	10	43	14.7	9.5	7	16g
110-0603-1	HR10A-10P-12PC	12	43	14.7	9.5	7	16g
110-0604-4	HR10A-10P-12SC	12	43	14.7	9.5	7	16g
110-0701-0	HR10A-13P-20PC	20	58.8	19	13	7	37g
110-0702-3	HR10A-13P-20SC	20	58.8	19	13	7	37g

Receptacle (Solder Type)



HR10A-7R-6S

HR10G-10R-12S



(An example in shape)

HRS No.	Part No.	No. of pins	A	ϕB	ϕC	D	E	Weight
110-0305-3	HR10A-7R-4S	4	14	11	8.85	M8x0.5	10	3g
110-0306-6	HR10A-7R-4P	4	14	11	8.85	M8x0.5	10	3g
110-0320-7	HR10A-7R-5S	5	14	11	8.85	M8x0.5	10	3g
110-0321-0	HR10A-7R-5P	5	14	11	8.85	M8x0.5	10	3g
110-0307-9	HR10A-7R-6S	6	14	11	8.85	M8x0.5	10	3g
110-0308-1	HR10A-7R-6P	6	14	11	8.85	M8x0.5	10	3g
110-0409-9	HR10A-10R-10S	10	16	14	11.9	M11x0.75	13	5g
110-0410-8	HR10A-10R-10P	10	16	14	11.9	M11x0.75	13	5g
110-0403-2	HR10A-10R-12S	12	16	14	11.9	M11x0.75	13	5g
110-0404-5	HR10A-10R-12P	12	16	14	11.9	M11x0.75	13	5g
110-0714-2	HR10A-13R-20S	20	19.2	18	15.4	M14x0.75	17	8g
110-0715-5	HR10A-13R-20P	20	20.2	18	15.4	M14x0.75	17	8g

HRS No.	Part No.	No. of pins	A	ϕB	ϕC	D	E	Weight	Remarks
110-1601-1	HR10G-7R-4S	4	14	11	8.85	M8x0.5	10	3g	Shield type
110-1602-4	HR10G-7R-4P	4	14	11	8.85	M8x0.5	10	3g	
110-1605-2	HR10G-7R-6S	6	14	11	8.85	M8x0.5	10	3g	
110-1606-5	HR10G-7R-6P	6	14	11	8.85	M8x0.5	10	3g	
110-1607-8	HR10G-10R-10S	10	16	14	11.9	M11x0.75	13	5g	
110-1608-0	HR10G-10R-10P	10	16	14	11.9	M11x0.75	13	5g	
110-1609-3	HR10G-10R-12S	12	16	14	11.9	M11x0.75	13	5g	
110-1610-2	HR10G-10R-12P	12	16	14	11.9	M11x0.75	13	5g	

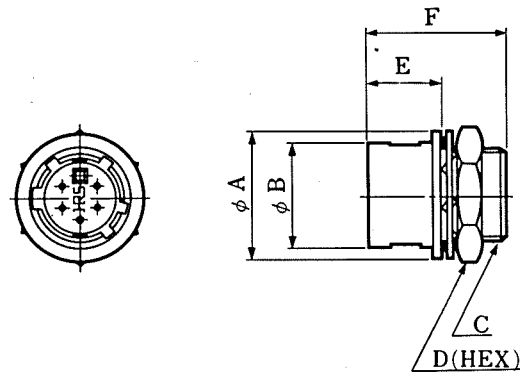
Remark: For mounting holes, see page 85.

Receptacle (Crimp Type)



HR10A-7R-6SC

HR10G-10R-12SC



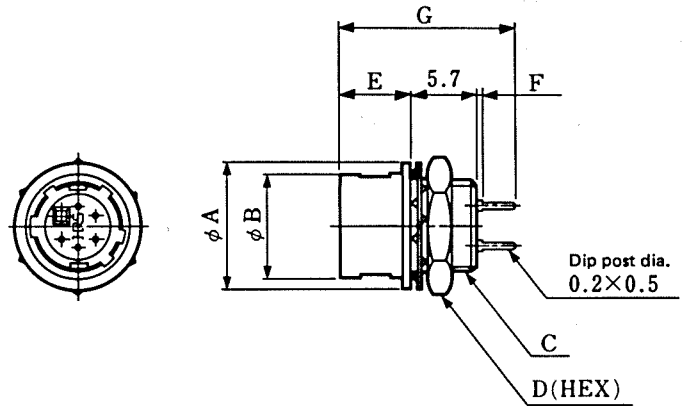
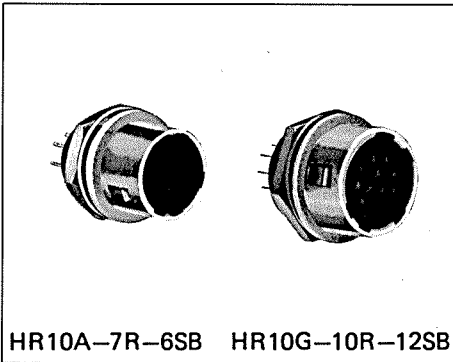
(An example in shape)

HRS No.	Part No.	No. of pins	ϕA	ϕB	C	D	E	F	Weight
110-0606-5	HR10A-7R-4SC	4	11	8.85	M8x0.5	10	6.3	12	3g
110-0605-2	HR10A-7R-4PC	4	11	8.85	M8x0.5	10	6.3	12.2	3g
110-0608-0	HR10A-7R-6SC	6	11	8.85	M8x0.5	10	6.3	12	3g
110-0607-8	HR10A-7R-6PC	6	11	8.85	M8x0.5	10	6.3	12.2	3g
110-0606-0	HR10A-10R-10SC	10	14	11.9	M11x0.75	13	6.3	12	5g
110-0605-7	HR10A-10R-10PC	10	14	11.9	M11x0.75	13	6.3	12.2	5g
110-0608-5	HR10A-10R-12SC	12	14	11.9	M11x0.75	13	6.3	12	5g
110-0607-2	HR10A-10R-12PC	12	14	11.9	M11x0.75	13	6.3	12.2	5g
110-0703-6	HR10A-10R-20SC	20	18	15.4	M14x0.75	17	9.3	15	8g
110-0704-9	HR10A-10R-20PC	20	18	15.4	M14x0.75	17	9.3	15	8g

HRS No.	Part No.	No. of pins	ϕA	ϕB	C	D	E	F	Weight	Remarks
110-1701-6	HR10G-7R-4SC	4	11	8.85	M8x0.5	10	6.3	12	3g	Shield type
110-1702-9	HR10G-7R-4PC	4	11	8.85	M8x0.5	10	6.3	12.2	3g	
110-1705-7	HR10G-7R-6SC	6	11	8.85	M8x0.5	10	6.3	12	3g	
110-1706-0	HR10G-7R-6PC	6	11	8.85	M8x0.5	10	6.3	12.2	3g	
110-1707-2	HR10G-10R-10SC	10	14	11.9	M11x0.75	13	6.3	12	5g	
110-1708-5	HR10G-10R-10PC	10	14	11.9	M11x0.75	13	6.3	12.2	5g	
110-1709-8	HR10G-10R-12SC	12	14	11.9	M11x0.75	13	6.3	12	5g	
110-1710-7	HR10G-10R-12PC	12	14	11.9	M11x0.75	13	6.3	12.2	5g	
110-1711-0	HR10G-13R-20SC	20	18	15.4	M14x0.75	17	9.3	15	8g	
110-1712-2	HR10G-13R-20PC	20	18	15.4	M14x0.75	17	9.3	15	8g	

Remark: For mounting holes, see page 85.

Receptacle (Dip Type)

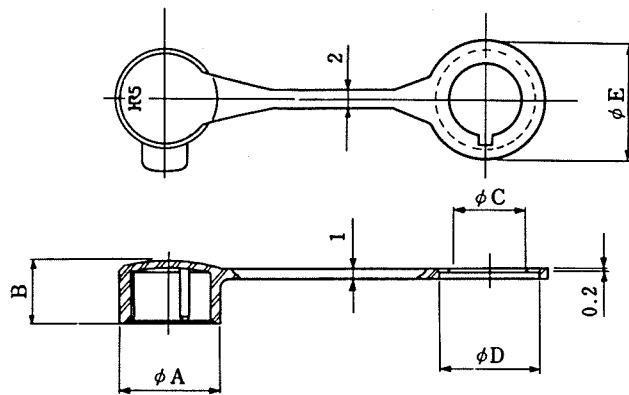
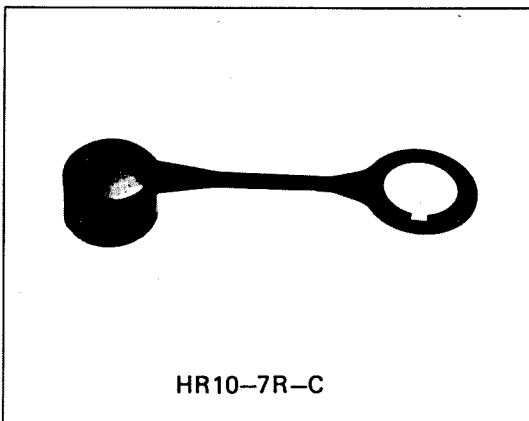


(An example in shape)

HRS No.	Part No.	No. of pins	φA	φB	C	D	E	F	G	Weight	Remarks	
110-0314-4	HR10A-7R-4SB	4	11	8.85	M8x0.5	10	6.3	0.5	15.6	3g		
110-0315-7	HR10A-7R-4PB	4	11	8.85	M8x0.5	10	6.3	0.5	15.6	3g		
110-0322-2	HR10A-7R-5SB	5	11	8.85	M8x0.5	10	6.3	0.5	15.6	3g		
110-0316-0	HR10A-7R-6SB	6	11	8.85	M8x0.5	10	6.3	0.5	15.6	3g		
110-0317-2	HR10A-7R-6PB	6	11	8.85	M8x0.5	10	6.3	0.5	15.6	3g		
110-0413-6	HR10A-10R-10SB	10	14	11.9	M11x0.75	13	6.3	0.5	15.6	5g		
110-0414-9	HR10A-10R-10PB	10	14	11.9	M11x0.75	13	6.3	0.5	15.6	5g		
110-0415-1	HR10A-10R-12SB	12	14	11.9	M11x0.75	13	6.3	0.5	15.6	5g		
110-0416-4	HR10A-10R-12PB	12	14	11.9	M11x0.75	13	6.3	0.5	15.6	5g		
110-0707-7	HR10A-13R-20SB	20	18	15.4	M14x0.75	17	9.3	0	17.8	8g		
110-0708-0	HR10A-13R-20PB	20	18	15.4	M14x0.75	17	9.3	0	17.8	8g		
110-1801-0	HR10G-7R-4SB	4	11	8.85	M8x0.5	10	6.3	0.5	15.6	3g		Shield type
110-1802-3	HR10G-7R-4PB	4	11	8.85	M8x0.5	10	6.3	0.5	15.6	3g		
110-1805-1	HR10G-7R-6SB	6	11	8.85	M8x0.5	10	6.3	0.5	15.6	3g		
110-1806-4	HR10G-7R-6PB	6	11	8.85	M8x0.5	10	6.3	0.5	15.6	3g		
110-1807-7	HR10G-10R-10SB	10	14	11.9	M11x0.75	13	6.3	0.5	15.6	5g		
110-1808-0	HR10G-10R-10PB	10	14	11.9	M11x0.75	13	6.3	0.5	15.6	5g		
110-1809-2	HR10G-10R-12SB	12	14	11.9	M11x0.75	13	6.3	0.5	15.6	5g		
110-1810-1	HR10G-10R-12PB	12	14	11.9	M11x0.75	13	6.3	0.5	15.6	5g		
110-1811-4	HR10G-13R-20SB	20	18	15.4	M14x0.75	17	9.3	0	17.8	8g		
110-1812-7	HR10G-13R-20PB	20	18	15.4	M14x0.75	17	9.3	0	17.8	8g		

Remarks: 1. For mounting holes, see page 85.
2. For dip post arrangement, see page 80.

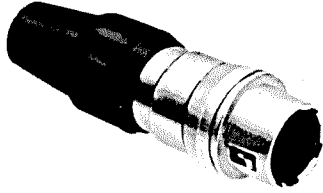
Dust Cap



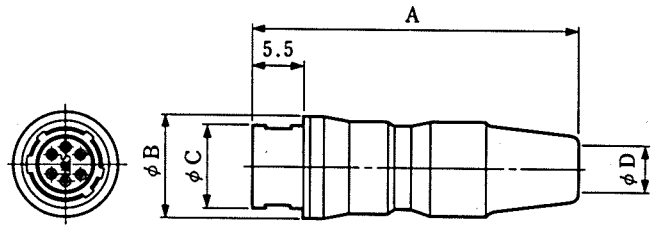
(An example in shape)

HRS No.	Part No.	φA	B	φC	φD	φE
110-0058-6	HR10-7R-C	11	7	8	11.2	13
110-0052-0	HR10-10R-C	14	8.5	10.8	14	15
110-0452-8	HR10A-13R-C	17.5	11.5	14	18.1	19

Jack (Solder Type)

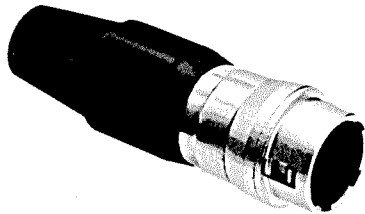


HR10A-7J-6S



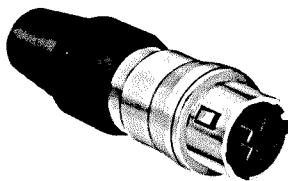
(An example in shape)

HRS No.	Part No.	No. of pins	A	φB	φC	φD	Weight
110-0309-4	HR10A-7J-4S	4	35.3	11	8.85	5	9g
110-0310-3	HR10A-7J-4P	4	35.3	11	8.85	5	9g
110-0311-6	HR10A-7J-6S	6	35.3	11	8.85	5	9g
110-0312-9	HR10A-7J-6P	6	35.3	11	8.85	5	9g
110-0411-0	HR10A-10J-10S	10	43	14	11.9	7	16g
110-0412-3	HR10A-10J-10P	10	43	14	11.9	7	16g
110-0405-8	HR10A-10J-12S	12	43	14	11.9	7	16g
110-0406-0	HR10A-10J-12P	12	43	14	11.9	7	16g

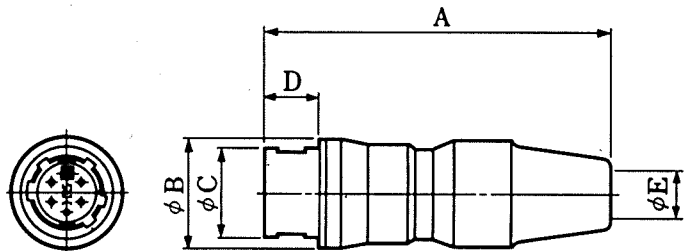


HR10A-10J-12S

Jack (Crimp Type)



HR10A-7J-6SC



(An example in shape)

HRS No.	Part No.	No. of pins	A	φB	φC	D	φE	Weight
110-0510-2	HR10A-7J-4SC	4	35.3	11	8.85	5.5	5	9g
110-0512-8	HR10A-7J-6SC	6	35.3	11	8.85	5.5	5	9g
110-0610-7	HR10A-10J-10SC	10	43	14	11.9	5.5	7	16g
110-0612-2	HR10A-10J-12SC	12	43	14	11.9	5.5	7	16g
110-0705-1	HR10A-13J-20SC	20	58.5	18	15.4	8.5	7	37g
110-0706-4	HR10A-13J-20PC	20	58.5	18	15.4	8.5	7	37g

◆ Connection work procedure(plug side)

- This applies also to the jack side connection work.
- No special connection work procedure is given here for the receptacle side because no special procedure is necessary.

HR10 Type

HR10A Type

Size	HR10	HR10A
Size 7	8	7.5
Size 10	11	9.5
Size 13	—	13

Size	Dimension C for HR10	Dimension D for HR10A	
		Solder type	Crimp type
Size 7	5.5 or less	10	15 – 20
Size 10	7 or less	16	15 – 20
Size 13	—	26	26

Size	Tightening force
Size 7	1.5N·m (15kg-cm)
Size 10	2N·m (20kg-cm)
Size 13	2N·m (20kg-cm)

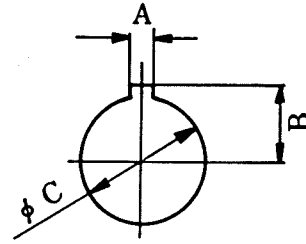
	HR10 Type	HR10A Type
1	Use cables with a nominal sectional area of 0.129 mm ² (AWG#26) at the finish outside diameters applicable for each size.	
2	After processing the cable ends according to the dimensions in the above drawings, fit the parts to the cable as shown in the drawings. Fit the parts to the cable in the following order: tightener, clamp washer, and plug body.	Fit the parts to the cable in the following order: Cord bushing, and plug body.
3	(Solder type) Insert the P shell unit into the assembly jig stand and solder it. (Solder type) After crimping the appropriate crimp terminal to the cable core, insert the crimp terminal into the terminal hole in the P shell unit.	
4	Assemble the connector in the following steps. ① Screw the plug body into the thread in the P shell unit with the tightening force shown in Table 1 using a torque wrench with a fixed torque. Before tightening the plug body, slacken part C so that no load is applied to the soldered wires. ② Apply the clamp washer to the bifurcated part of the plug body, and then tighten the tightener until surface B touches the plug body surface A.	① Fix by caulking the clamp accompanying the cable with the cable crimping tool (HR10A-TC-02). ② Screw the plug body into the thread in the P shell until with a tightening force shown in Table 1 using a torque wrench with a fixed torque. Before tightening the plug body, slacken the part D so so that no load is applied to the soldered wires. ③ Tighten the set screw so that the tip of the screw presses one of the two bosses on the clamp. Fix the set screw with a tightening torque of 0.3N (3kg-cm). ④ Attach the cord bushing to the plug body.
5	This completes the work.	

For any question on using the plugs, contact our sales or engineering department.

Recommended Mounting Hole

Mounting hole dimension shown here is tight by hexagon nut from back side.

Map mark \ Shell size	7 size	10 size	13 size
A	$1.6^{+0.1}_0$	$2.6^{+0.1}_0$	$2.6^{+0.1}_0$
B	$5.1^{+0.1}_0$	$6.6^{+0.1}_0$	$8.6^{+0.1}_0$
ϕC	$8.1^{+0.1}_0$	$11.1^{+0.1}_0$	$14.1^{+0.1}_0$
Panel thickness	0.7 ~ 2	0.7 ~ 2	0.8 ~ 1.5



Contact Arrangement

Shell size	7 size			10 size	
Contact arrangement					
No. of pins	4	5	6	10	12
Withstanding voltage	AC500V for a minute	AC300V for a minute		AC300V for a minute	
Current rating	2A	2A		2A	
Insulation resistance	MIN 1,000 M Ω	MIN 1,000 M Ω		MIN 1,000 M Ω	
Contact resistance	MAX 10 m Ω	MAX 10 m Ω		MAX 10 m Ω	
Solder pot inside dia.	$\phi 0.8$	$\phi 0.8$		$\phi 0.8$	

Shell size	10 size	13 size
Contact arrangement		
No. of pins	10 + Coaxial contact	20
Withstanding voltage	AC300V for a minute	AC300V for a minute
Current rating	2A	2A
Insulation resistance	MIN 1,000 M Ω	MIN 1,000 M Ω
Contact resistance	MAX 10 m Ω	MAX 10 m Ω
Solder pot inside dia.	-	$\phi 0.8$

- Note
1. The contact arrangement shown here is the mating surface of socket insert assembled in a receptacle.
 2. The withstanding voltage shown here is test voltage value.
 3. The insulation resistance value is measured at DC100V.
 4. The contact resistance value is measured at DC1A.