
HR10 SERIES SHELL SIZE 7mm PUSH-PULL CONNECTORS

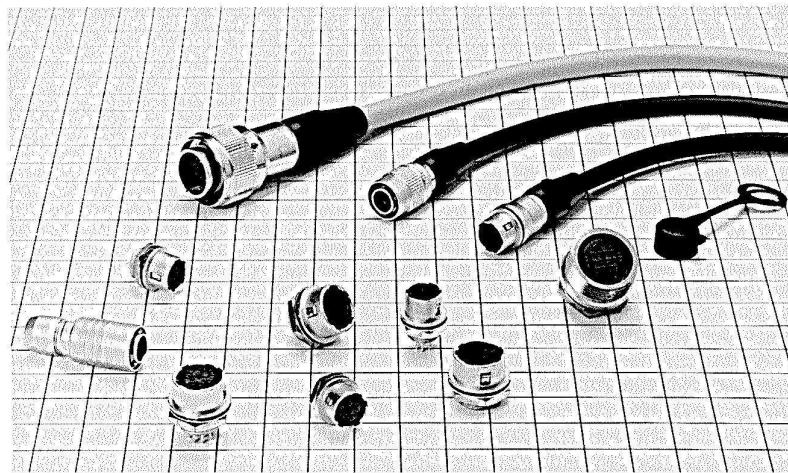
Introduction

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

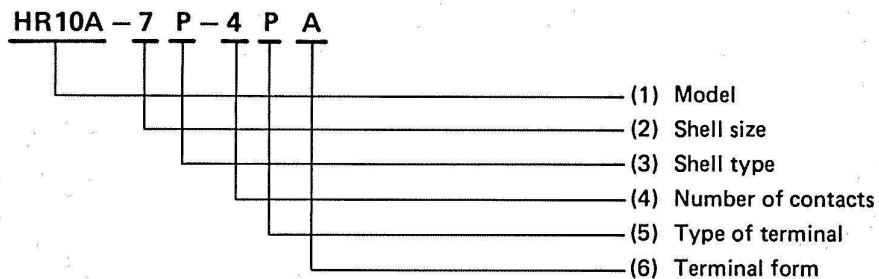
- 1. "A LITTLE GIANT"**
The most compact HR10 series is as slender as a cigarette but it fits every application with well-balanced, simplified layout in limited space.
- 2. EASY "PUSH-PULL" OPERATION**
One touch "push-pull" coupling mechanism assures easy and quick connecting and disconnecting. You can 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



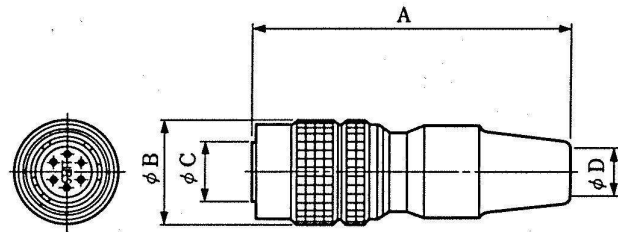
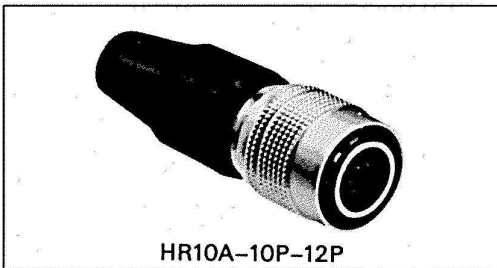
- (1) Model: Denotes HR10 series as follows:
 HR10A: Low-cost model
 HR10G: Shielded
 HR10E: Built-in capacitor
 HR10B: Coaxial terminal
 HR10D: Connector sleeve rotation inhibited
- (2) Shell size: Plug mating part outside diameter in mm.
- (3) Shell type: Indicates the type of shell as follows:
 P: 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

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.

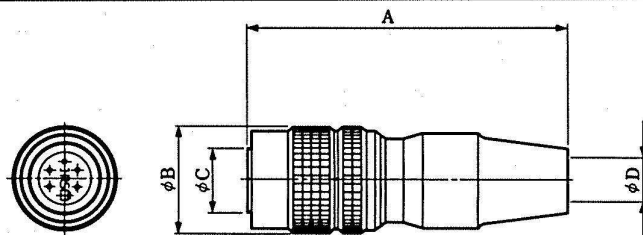
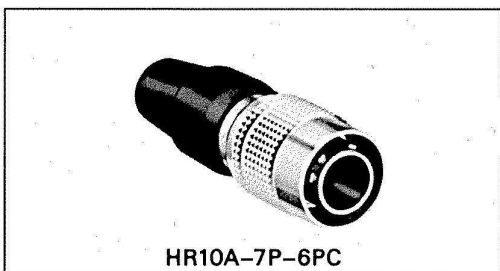
Plug (Solder Type)



(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)



(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

◆ 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

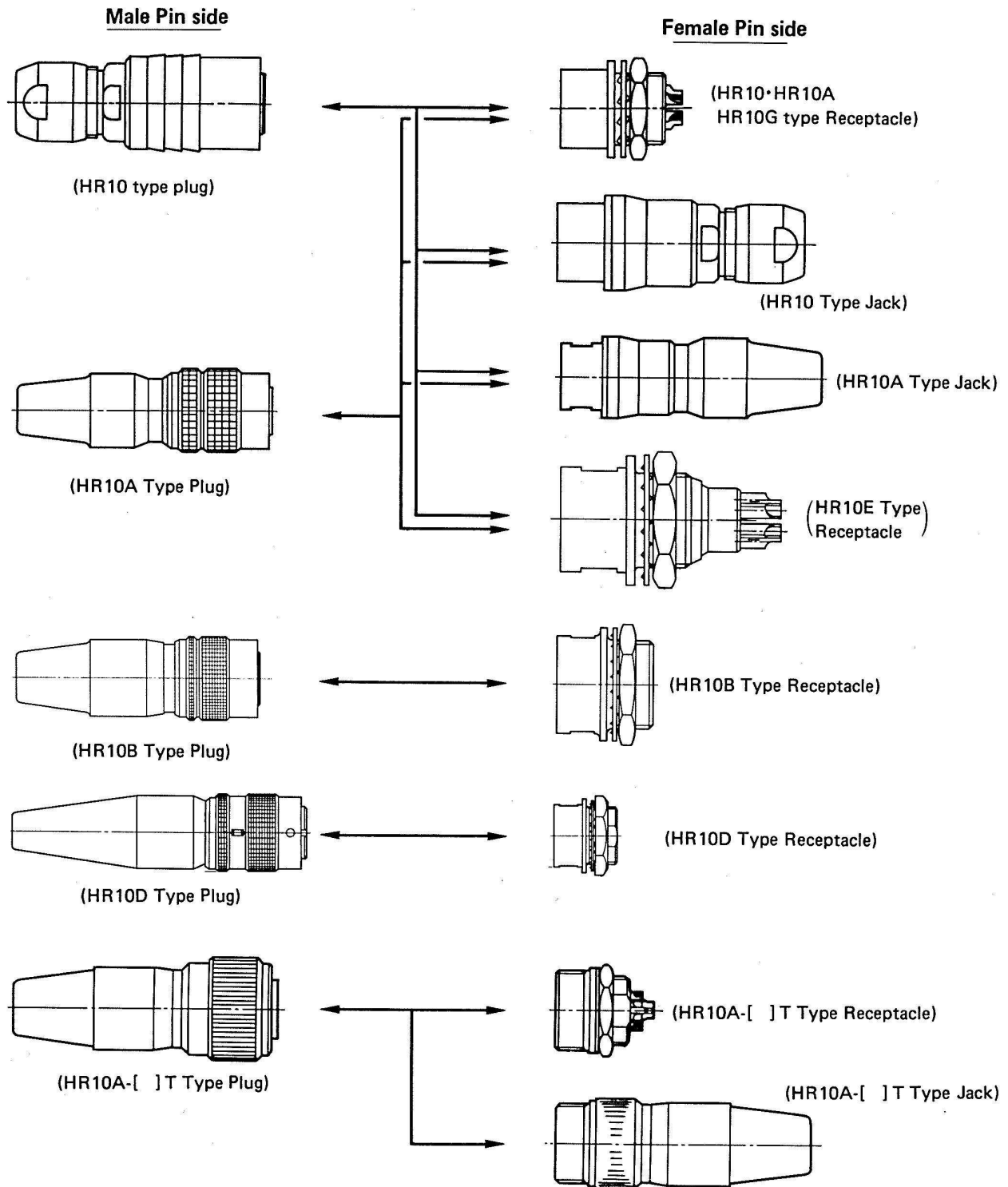
Size	Dimension C for HR10	Dimension D for HR10A	
		Solder type	Crimp type
Size 7	5.5 or less	10	15 – 20
Size 10	7 or less	16	15 – 20
Size 13	—	26	26

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 unit 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 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.

◆ Connector



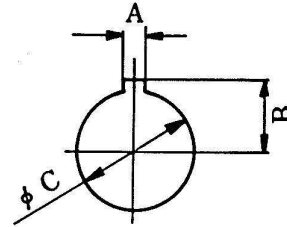
Notes

- 1: When using a plug with male terminal, be sure to use a receptacle or jack fitted with female terminal.
- 2: Standard finish of the terminal is gold plating for the HR10, and silver plating for the HR10A and HR10G.
Be sure to use male and female connectors of the same plating.

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 MΩ	MIN 1,000 MΩ		MIN 1,000 MΩ	
Contact resistance	MAX 10 mΩ	MAX 10 mΩ		MAX 10 mΩ	
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 MΩ	MIN 1,000 MΩ
Contact resistance	MAX 10 mΩ	MAX 10 mΩ
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.