

# High Performance, Miniature Circular Connectors

## HR22 Series



### ■ Features

- Both waterproof and non-waterproof types are available. (Waterproof and non-waterproof connectors can be mated with each other if needed, but will no longer result in a waterproof connection)
- Waterproof performance  
The HR22 waterproof type is IP67 and IP68 rated when mated.  
IP67 : Left at a water depth of 1 m for 30 minutes  
IP68 : Left at a water depth of 2 m for 14 days
- Both crimp and solder type termination are available. Termination style can be chosen as required by your specific application.
- The receptacle features a jam nut configuration at the front, which allows for easy panel mounting.
- The jack connector can also be used as a panel jack.

### ■ Product specifications

Ratings	Rated current	2A	Operating temperature range	-25°C to +85°C
	Rated voltage	100V AC, 140V DC	Storage temperature range	-10°C to +60°C

Item	Specifications	Conditions
1. Contact resistance	20mΩ max.	Measured at DC 1A
2. Insulation resistance	1,000MΩ min.	Measured at DC 100V
3. Withstanding voltage	No flashover or dielectric breakdown.	Measured at AC 300V for 1 minute
4. Vibration resistance	There shall be no electrical No electrical discontinuity for 10μs or greater.	10 to 500Hz/cycle, amplitude : 0.75mm, acceleration- 98m/s <sup>2</sup> 3 axis directions, 2 hours each
5. Shock resistance	No electrical discontinuity for 10μs or greater.	Acceleration : 490m/s <sup>2</sup> , duration : 11ms, 3 axis directions, 3 times each
6. Mating cycles	Contact resistance : 20mΩ max.	100 times
7. Resistance to water pressure	No water penetration into the connector.	Mated connectors left in Water at a depth of 1.8m for 48 hours.

### ■ Materials / Finish

Items	Material	Finish	Remarks
Plated shell	Brass	Nickel plating	_____
	Zinc alloy		_____
Insulator	PBT resin	Black	UL94V-0
Male contact	Brass (Soldering)	Silver plating	_____
	Phosphor bronze (Crimping)		_____
Female contact	Beryllium copper (Soldering)		_____
	Phosphor bronze (Crimping)		_____
Hood and bushing	Acrylonitrile-butadiene rubber	Black	

## ■ 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.

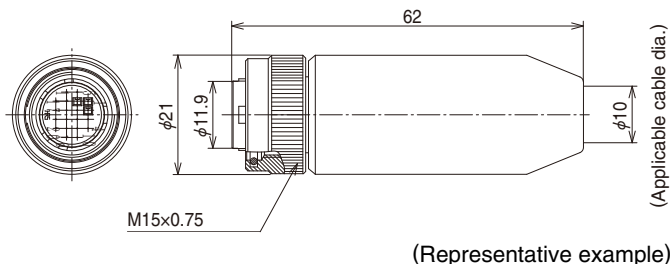
### HR22 - 12 W T P A - 20 SC (\*\*)

①      ②      ③      ④      ⑤      ⑥      ⑦      ⑧      ⑨

①	Model name : HR22
②	Shell size : The shell size is the outer diameter of the mating end of the plug.
③	W : Waterproof Blank : Non-waterproof
④	Locking mechanism T : Threaded coupling type
⑤	Shell type      P : Plug J : Jack R : Receptacle
⑥	Shell variation : Variation of the same connector configuration is shown by A, B, C, D....
⑦	Number of contacts
⑧	Contact form P : Male pin      PC : Crimp type male pin S : Female pin    SC : Crimp type female pin
⑨	Other specifications : A two-digit character is added to indicate other specifications as needed.

■ Plug

● Waterproof type



**Crimp type**

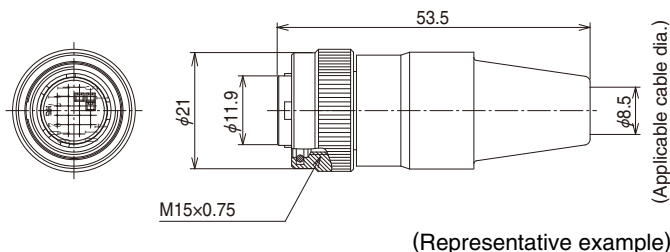
Part No.	HRS No.	RoHS
HR22-12WTPA-20SC(73)	122-0004-7 73	Yes
HR22-12WTPA-20PC(73)	122-0024-4 73	

**Solder type**

Part No.	HRS No.	RoHS
HR22-12WTPA-20S(73)	122-0015-3 73	Yes
HR22-12WTPA-20P(73)	122-0027-2 73	

Cable clamping force, rotation force, waterproof performance, and other types of performance may differ depending on the cable type used. Please make sure to verify the suitability of the cable assembly before use or production.

● Non-waterproof type



**Crimp type**

Part No.	HRS No.	RoHS
HR22-12TPD-20SC(73)	122-0010-0 73	Yes
HR22-12TPD-20PC(73)	122-0018-1 73	

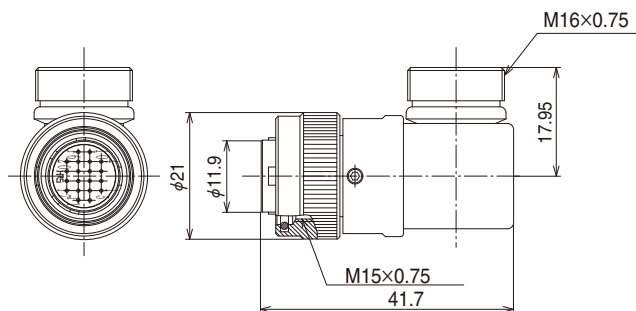
**Solder type**

Part No.	HRS No.	RoHS
HR22-12TPD-20S(73)	122-0011-2 73	Yes
HR22-12TPD-20P(73)	122-0012-5 73	

Cable clamping force, rotation force, waterproof performance, and other types of performance may differ depending on the cable type used. Please make sure to verify the suitability of the cable assembly before use or production.

■ Right angle plug

● Waterproof type



(Representative example)

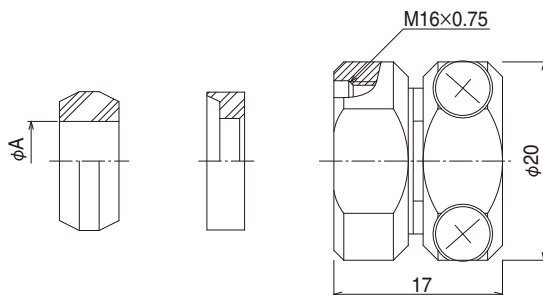
Crimp type

Part No.	HRS No.	RoHS
HR22-12WTLP-20PC(31)	122-0064-9 31	Yes

Solder type

Part No.	HRS No.	RoHS
HR22-12WTLP-20P(31)	122-0054-5 31	Yes

■ Cord clamp for use on right-angled plugs



(Representative example)

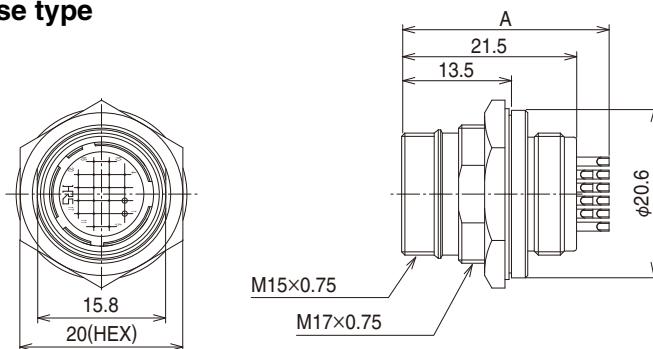
Part No.	HRS No.	A	RoHS
JR13WCC-4(72)	114-2045-0 72	4	Yes
JR13WCC-5(72)	114-2046-3 72	5	
JR13WCC-6(72)	114-2047-6 72	6	

Part No.	HRS No.	A	RoHS
JR13WCC-7(72)	114-2048-9 72	7	Yes
JR13WCC-8(72)	114-2049-1 72	8	
JR13WCC-9(72)	114-2050-0 72	9	
JR13WCC-10(72)	114-2051-3 72	10	

Cable clamping force, rotation force, waterproof performance, and other types of performance may differ depending on the cable type used. Please make sure to verify the suitability of the cable assembly before use or production.

■ Receptacle

● Waterproof / Non-waterproof combined use type



(Representative example)

Crimp type

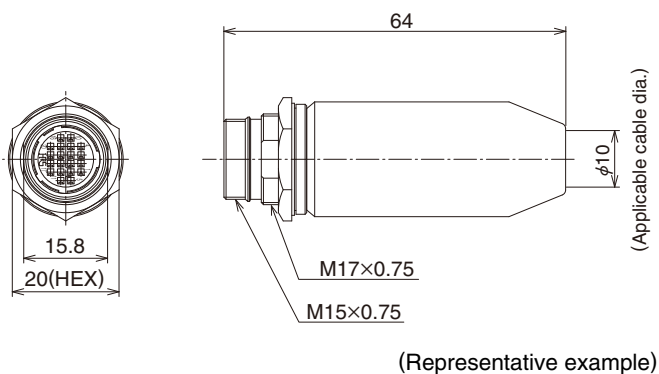
Part No.	HRS No.	RoHS
HR22-12WTRA-20SC(73)	122-0021-6 73	Yes
HR22-12WTRA-20PC(73)	122-0005-0 73	

Solder type

Part No.	HRS No.	A	RoHS
HR22-12WTRA-20S(73)	122-0014-0 73	24	Yes
HR22-12WTRA-20P(73)	122-0013-8 73	25.5	

## ■ Jack

### ● Waterproof type

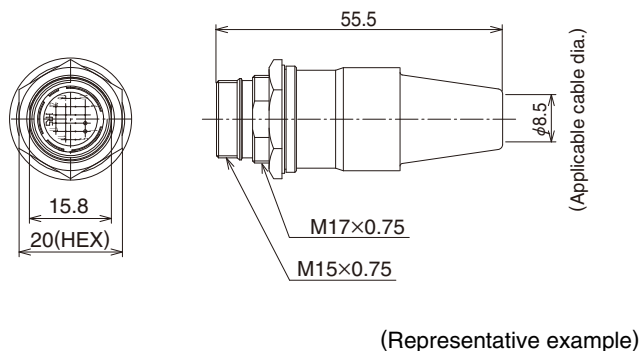


### Crimp type

Part No.	HRS No.	RoHS
HR22-12WTJA-20SC(73)	122-0025-7 73	Yes
HR22-12WTJA-20PC(73)	122-0006-2 73	

Cable clamping force, rotation force, waterproof performance, and other types of performance may differ depending on the cable type used. Please make sure to verify the suitability of the cable assembly before use or production.

### ● Non-waterproof type



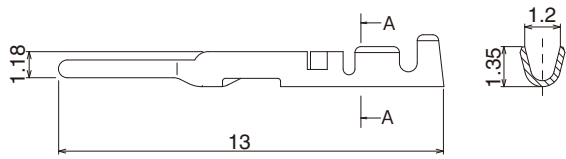
### Solder type

Part No.	HRS No.	RoHS
HR22-12TJD-20S(73)	122-0023-1 73	Yes
HR22-12TJD-20P(73)	122-0022-9 73	

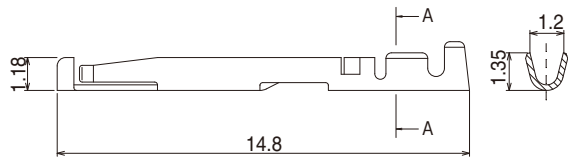
Cable clamping force, rotation force, waterproof performance, and other types of performance may differ depending on the cable type used. Please make sure to verify the suitability of the cable assembly before use or production.

◆ Contact

● Male contact



● Female contact



Male contact

Item	Part No.	HRS No.	Applicable cable	Packaging	RoHS
Loose contact	HR22-PC-122	122-0017-9	24 to 28 AWG Insulation diameter φ1.15MAX	100 pcs/pack	Yes
Reel contact	HR22-PC-222	122-0009-0		10,000 pcs/reel	

Female contact

Item	Part No.	HRS No.	Applicable cable	Packaging	RoHS
Loose contact	HR22-SC-122	122-0016-6	24 to 28 AWG Insulation diameter φ1.15MAX	100 pcs/pack	Yes
Reel contact	HR22-SC-222	122-0008-8		10,000 pcs/reel	

◆ Applicable tools

Item	Part No.	HRS No.	Applicable terminal	Applicable wire
Manual crimping tool	HR22-TA2428HC	150-0200-4	HR22-PC-122 HR22-SC-122	24 to 28 AWG Insulation diameter φ1.15MAX
Automatic crimping tool	Machine body	CM-105C	————	————
	Applicator	AP105-HR22-2	HR22-PC-222 HR22-SC-222	24 to 28 AWG Insulation diameter φ1.15MAX
Cable crimping tool	HR10A-TC-04	150-0058-5	————	φ8.5
Extractor	RP6-SC-TP	150-0039-0	————	————
Cable termination tool	HR22-12P-T01	150-0075-4	————	Plug connector use



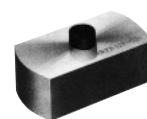
Manual crimping tool



Extractor



Cable crimping tool

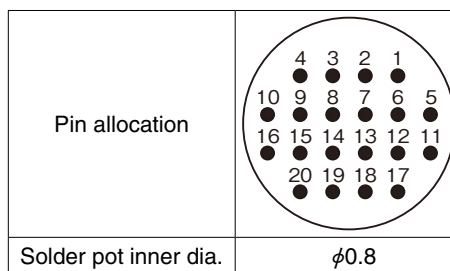
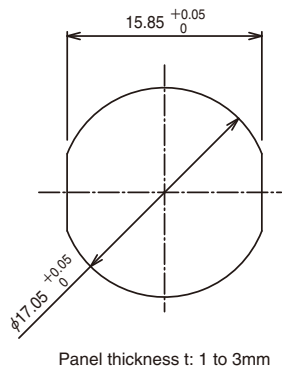


HR22-12P-T01



Automatic crimping machine  
CM-105C

## ◆ Panel mounting dimensions



Notes: The above figure shows the pin allocation viewed from the engagement side.

## ◆ Precautions

1. Switch off the power of the circuit before disconnecting or plugging-in the connectors.
2. Use connectors with socket contacts at the power side of the circuit.
3. Make sure that the coupling is in completely cocked position.
4. The cable pull and twisting strength and other characteristics may differ, depending on the cable structure. Please confirm before the use.
5. This product uses silver plated contacts. Please be aware that silver easily reacts to sulfur gases, causing discoloration or degradation when exposed to certain environmental conditions as shown below. These conditions include areas with:
  - Dusty site
  - Area or location with a high density of sulfur dioxide gas, hydrogen sulfide gas, nitrogen dioxide gas, or other gas (Emission gases from vehicles and factories, etc.)
  - Highly fluctuating temperatures, such as close to a heating apparatus.

In addition, it is recommended to store the products in their original packaging or similar state in order to prevent discoloration.

- Temperature : -10 to +60°C, relative humidity : 80% or lower (An environment where temperature and relative humidity are constant and there is little temperature variation.)

Please use the products within six months after delivery. (If the storage period has expired, please examine the connectors and solder cups for corrosion and/or tarnish.)

**USA:**

**HIROSE ELECTRIC (U.S.A.), INC. HEADQUARTERS CHICAGO OFFICE**  
2300 Warrenville Road, Suite 150,  
Downers Grove, IL 60515  
Phone : +1-630-282-6700  
<http://www.hirose.com/us/>

**USA:**

**HIROSE ELECTRIC (U.S.A.), INC. SAN JOSE OFFICE**  
2841 Junction Ave, Suite 200  
San Jose, CA. 95134  
Phone : +1-408-253-9640  
Fax : +1-408-253-9641  
<http://www.hirose.com/us/>

**USA:**

**HIROSE ELECTRIC (U.S.A.), INC. DETROIT OFFICE (AUTOMOTIVE)**  
17197 N. Laurel Park Drive, Suite 253,  
Livonia, MI 48152  
Phone : +1-734-542-9963  
Fax : +1-734-542-9964  
<http://www.hirose.com/us/>

**USA:**

**HIROSE ELECTRIC (U.S.A.), INC. BOSTON OFFICE**  
300 Brickstone Square Suite 201,  
Andover, MA 01810  
Phone : +1-978-662-5255

**THE NETHERLANDS:**

**HIROSE ELECTRIC EUROPE B.V.**  
Hogehillweg #8 1101 CC Amsterdam Z-0  
Phone : +31-20-6557460  
Fax : +31-20-6557469  
<http://www.hirose.com/eu/>

**GERMANY:**

**HIROSE ELECTRIC EUROPE B.V. GERMAN BRANCH**  
Schoenbergstr. 20, 73760 ostfildern  
Phone : +49-711-456002-1  
Fax : +49-711-456002-299  
<http://www.hirose.com/eu/>

**GERMANY:**

**HIROSE ELECTRIC EUROPE B.V. NUREMBERG OFFICE**  
Neumeyerstrasse 22-26, 90411 Nurnberg  
Phone : +49-911 32 68 89 63  
Fax : +49-911 32 68 89 69  
<http://www.hirose.com/eu/>

**GERMANY:**

**HIROSE ELECTRIC EUROPE B.V. HANOVER OFFICE**  
Bayernstr. 3, Haus C 30855 Langenhagen, Germany  
Phone : +49-511 97 82 61 30  
Fax : +49-511 97 82 61 35  
<http://www.hirose.com/eu/>

**FRANCE:**

**HIROSE ELECTRIC EUROPE B.V. PARIS OFFICE**  
130 Avenue Joseph Kessel, Bat E, 78960  
Voisins le Bretonneux, France  
Phone : +33-1-85764886  
Fax : +33-1-85764823  
<http://www.hirose.com/eu/>

**UNITED KINGDOM:**

**HIROSE ELECTRIC EUROPE BV (UK BRANCH)**  
4 Newton Court, Kelvin Drive, Knowlhill,  
Milton Keynes, MK5 8NH  
Phone : +44-1908 202050  
Fax : +44-1908 202058  
<http://www.hirose.com/eu/>

**CHINA:**

**HIROSE ELECTRIC (CHINA) CO., LTD. (SHANGHAI, HEADQUARTERS)**  
18, Enterprise Center Tower 2, 209# Gong He  
Road, Jing'an District, Shanghai, CHINA 200070  
Phone : +86-21-6391-3355  
Fax : +86-21-6391-3335  
<http://www.hirose.com/cn/>

**CHINA:**

**HIROSE ELECTRIC (CHINA) CO.,LTD. BEIJING BRANCH**  
A1001, Ocean International Center, Building 56# East 4th  
Ring Middle Road, ChaoYang District, Beijing, 100025  
Phone : +86-10-5165-9332  
Fax : +86-10-5908-1381  
<http://www.hirose.com/cn/>

**CHINA:**

**HIROSE ELECTRIC (CHINA) CO., LTD. SHENZHEN BRANCH**  
Room 09-13, 19/F, Office Tower Shun Hing Square, Di Wang Commercial Centre,  
5002 Shen Nan Dong Road, Shenzhen City, Guangdong Province, 518008  
Phone : +86-755-8207-0851  
Fax : +86-755-8207-0873  
<http://www.hirose.com/cn/>

**HONG KONG:**

**HIROSE ELECTRIC HONGKONG TRADING CO., LTD.**  
Room 1001, West Wing, Tsim Sha Tsui Centre, 66  
Mody Road, Tsim Sha Tsui East, Kowloon, Hong Kong  
Phone : +852-2803-5338  
Fax : +852-2591-6560  
<http://www.hirose.com/hk/>

**TAIWAN:**

**HIROSE ELECTRIC TAIWAN CO., LTD.**  
103 8F, No.87, Zhengzhou Rd., Taipei  
Phone : +886-2-2555-7377  
Fax : +886-2-2555-7355  
<http://www.hirose.com/tw/>

**KOREA:**

**HIROSE KOREA CO.,LTD.**  
143, Gongdan 1-daero, Siheung-si,  
Gyeonggi-do, 15084, Korea  
Phone : +82-31-496-7000  
Fax : +82-31-496-7100  
<http://www.hirose.co.kr/>

**SINGAPORE:**

**HIROSE ELECTRIC SINGAPORE PTE. LTD.**  
03, Anson Road, #20-01, Springleaf Tower,  
Singapore 079909  
Phone : +65-6324-6113  
Fax : +65-6324-6123  
<http://www.hirose.com/sg/>

**INDIA:**

**HIROSE ELECTRIC SINGAPORE PTE. LTD. DELHI LIAISON OFFICE**  
Office NO.552, Regus-Green Boulevard, Level5, Tower C,  
Sec62, Plot B-9A, Block B, Noida, 201301, Uttar Pradesh, India  
Phone : +91-12-660-8018  
Fax : +91-120-4804949  
<http://www.hirose.com/sg/>

**INDIA:**

**HIROSE ELECTRIC SINGAPORE PTE. LTD. BANGALORE LIAISON OFFICE**  
Unit No-403, 4th Floor, No-84, Barton Centre, Mahatma  
Gandhi (MG) Road, Bangalore 560 001, Karnataka, India  
Phone : +91-80-4120 1907  
Fax : +91-80-4120 9908  
<http://www.hirose.com/sg/>

**MALAYSIA:**

**PENANG REPRESENTATIVE OFFICE**  
73-3-1, Ideal@The One, Jalan Mahsuri, Bayan  
Lepas Penang, 11950, Malaysia  
Phone : +604-648-5536  
<http://www.hirose.com/sg/>

**THAILAND:**

**BANGKOK OFFICE (REPRESENTATIVE OFFICE)**  
Unit 4703, 47th FL., 1 Empire Tower, South Sathorn  
Road, Yannawa, Sathorn, Bangkok 10120 Thailand  
Phone : +66-2-686-1255  
Fax : +66-2-686-3433  
<http://www.hirose.com/sg/>



**HIROSE ELECTRIC CO.,LTD.**

2-6-3,Nakagawa Chuoh,Tsuzuki-Ku,Yokohama-Shi 224-8540,JAPAN  
TEL: +81-45-620-3526 Fax: +81-45-591-3726  
<http://www.hirose.com>  
<http://www.hirose-connectors.com>