High Current Single Pos. Cable Connector

PS3C, PS3CS Series

PS3C Series

PS3CS Series

Please note that PS3C Series and PS3CS Series do not mate with each other.

■Overview

High current single pos. cable connector
Space-saving design with right angle plugs
Highly flexible cable wiring
Incorrect insertion prevention shape
Supports IP2X finger protection requirements
Harness operation is possible with multi-purpose tools.

■Features

1. Allows a high current flow

Rated current is supported up to 150 Amps.
(Derating curve, ambient temp 25℃)

2. Space-saving and highly flexible wiring

As the plug can be mated by rotating 180 degrees, cable wiring is highly flexible, and supports various placement of the housing.
In addition, right angle plug reduces the housing protrusion, and contributes to minimizing the size of the housing.

3. Incorrect insertion prevention shape

Guide key and color coding prevents mis-mating between plus and minus electrode.

4. Supports IP2X finger protection.

Safety ensured by finger protection design for both the plug and receptacle.

5. UL, C-UL and TÜV-certified

PS3C Series meets safety standards (UL, C-UL, TÜV standards). PS3CS will also be certified.

6. Two variations are available.

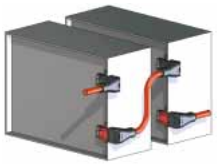
As PS3C Series connectors use commercially available crimp contacts, to accommodate a wide variety of cable sizes.
PS3CS Series connectors are limited to a cable size of 28 to 42sq, these are smaller than PS3C connectors.

7. Harness operation is possible with multi-purpose tools.

Harness operations include screwing the receptacle with a torque wrench etc. and screwing or crimping of the plug. All of these operations can be carried out with multi-purpose tools.
(Torque wrench : JIS B 4652, crimp : JIS C 9711)

Space-saving and highly flexible wiring

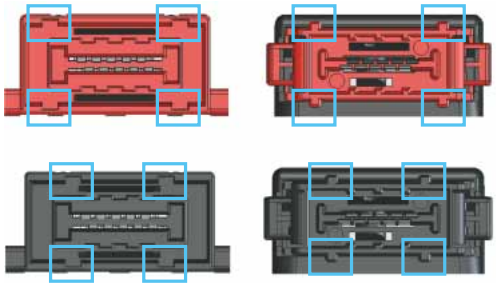
The plug can be mated rotating 180 degrees.



Battery : Vertical placement

Battery : Flat placement

Incorrect insertion prevention shape



Two variations are available.

PS3C Series
Supports various cable sizes
(Applicable cable : 14 to 50sq)
5 to 1/0 AWG

PS3CS Series
Similar to PS3C connectors except for the smaller size
(Applicable cable : 28 to 42sq)
2 to 1 AWG

Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Сараск (8342)22-96-24
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Улан-Удэ (3012)59-97-51
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
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Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
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■Product Specifications

PS3C Series

Ratings	Rated Current	150A/1pin（Note 1）, 210A/1pin (Note 2)	Rated Voltage	AC/DC 1000V (Note 1)
	Applicable Cable	14 to 50sq（WL1,WL2） （Note 1） 5 to 1/0 AWG	Op. Temp. Range	-40 to +105℃ (including temperature rise due to electric current)
			Stor. Temp. Range	–40 to +60℃

PS3CS Series

Ratings	Rated Current	125A/1pin（38sq）（Note 1）	Rated Voltage	AC/DC 1000V (Note 1)
	Applicable Cable	28 to 42sq（WL1,WL2） （Note 1） 2 to 1 AWG	Op. Temp. Range	-40 to +105℃ (including temperature rise due to electric current)
			Stor. Temp. Range	–40 to +60℃

Note 1 : UL, C-UL and TÜV certifications have been obtained while changing conditions such as rated current and voltage multiple times. For details, see the "Conditions on Safety Standards (UL, C-UL, TÜV)" on page 8.

Note 2 : The value of the current is from the readings of derating curve at ambient temperature of 25℃.

■Materials / Finish

PS3C Series

●Receptacle

Parts	Materials	Color/Finish	Remarks
Insulator	PBT	Black or Red	UL94V-0
Power female contact	Copper alloy	Silver plating	————
Contact Retention plate C	PBT	Black	UL94V-0

●Plug

Parts	Materials	Color/Finish	Remarks
Insulator	PBT	Black or Red	UL94V-0
Power male contact	Copper alloy	Silver plating	————
Contact Retention plate A	PBT	Black	UL94V-0

●Plug cover

Parts	Materials	Color/Finish	Remarks
Cover A	PBT	Black or Red	UL94V-0
Cover B	PBT	Black or Red	UL94V-0
Tapping screw	Steel	Nickel	————

●Tapping screw

Parts	Materials	Color/Finish	Remarks
Tapping screw	Steel	Nickel	————

Note : It is meant for use in repair operation when the same tapping screw attached to the plug cover is lost.

PS3CS Series

●Receptacle

Parts	Materials	Color/Finish	Remarks
Insulator	PBT	Black or Red	UL94V-0
Power female contact	Copper alloy	Silver plating	————
Contact Retention plate C	PBT	Black	UL94V-0
Metal color	Steel	————	————

●Plug

Parts	Materials	Color/Finish	Remarks
Insulator	PBT	Black or Red	UL94V-0
Power male contact	Copper alloy	Silver plating	————
Contact Retention plate A	PBT	Black	UL94V-0

●Plug cover

Parts	Materials	Color/Finish	Remarks
Cover A	PBT	Black or Red	UL94V-0
Cover B	PBT	Black or Red	UL94V-0
P-tight screw	Steel	Nickel	————

●P-tight screw

Parts	Materials	Color/Finish	Remarks
Tapping screw	Steel	Nickel	————

Note : It is meant for use in repair operation when the same P-tight screw attached to the plug cover is lost.

■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.

1. Connector product name

PS3C S – A – 1 U S
❶ ❷ ❸ ❹ ❺ ❻

2. Plug cover

PS3C – 1 U P – CV L
❶ ❹ ❺ ❻ ❼ ❽

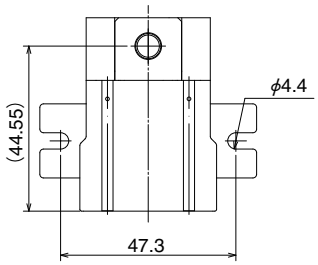
3. Screw

PS3C – 1 U P – TS
❶ ❹ ❺ ❻ ❾

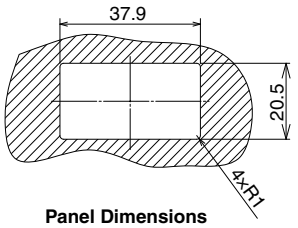
❶ Series name : PS3C	❻ Power contact shapes : Male contact Female contact
❷ Shape of PS3C Series : S : Small size type	
❸ Shape of mating key : A : A key B : B key	❼ Shape of case : CV : Cover
	❽ Shape of cover : L : L-shape type
❹ No. of power contacts	❾ Shape of screw : TS : Tapping screw PS : P-tight screw
❺ Current capacity of power contact : U : 150A	

■PS3C Series

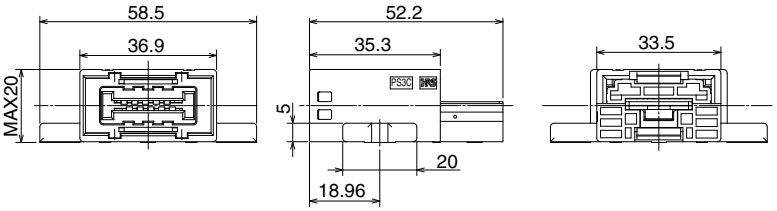
●Receptacle

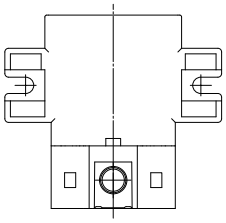


Panel thickness : 3mm max.



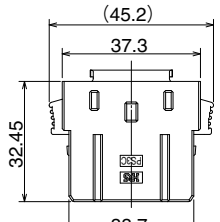
Panel Dimensions

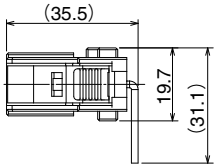


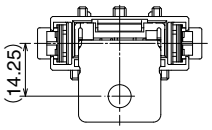


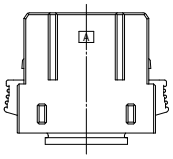
Part No.	HRS No.	RoHS	Insulator color	Packaging
PS3C-A-1US	236-1062-0 00	○	Black	1pcs.
PS3C-B-1US	236-1063-2 00		Red	1pcs.

●Plug



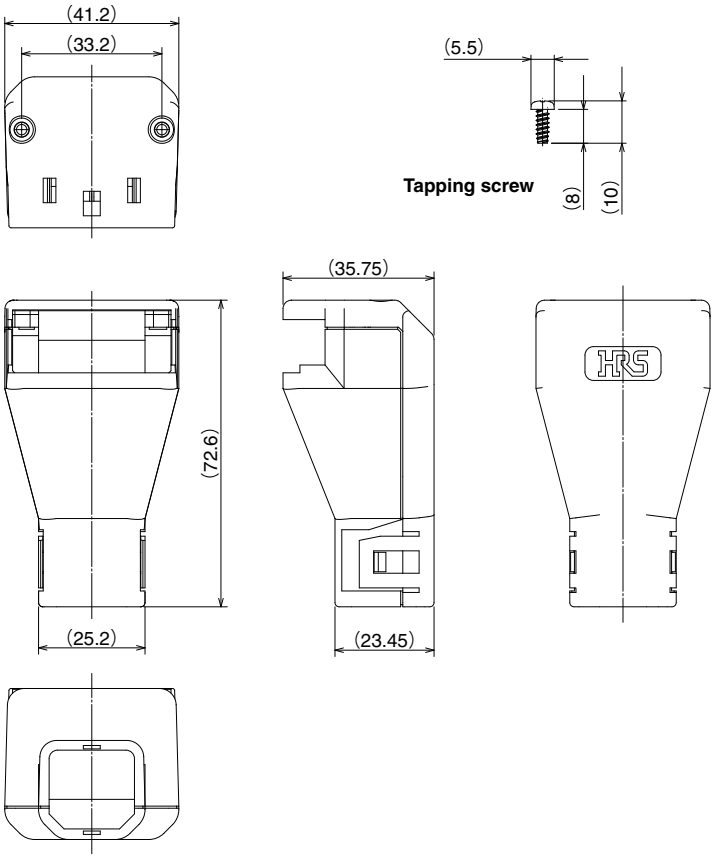






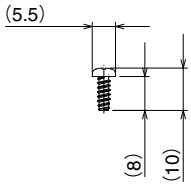
Part No.	HRS No.	RoHS	Insulator color	Packaging
PS3C-A-1UP	236-1064-5 00	○	Black	1pcs.
PS3C-B-1UP	236-1065-8 00		Red	1pcs.

●Plug cover



Part No.	HRS No.	RoHS	Insulator color	Packaging
PS3C-1UP-CVL	236-1066-0 00	○	Black	1pcs.
PS3C-1UP-CVL(01)	236-1066-0 01		Red	1pcs.

●Tapping screw

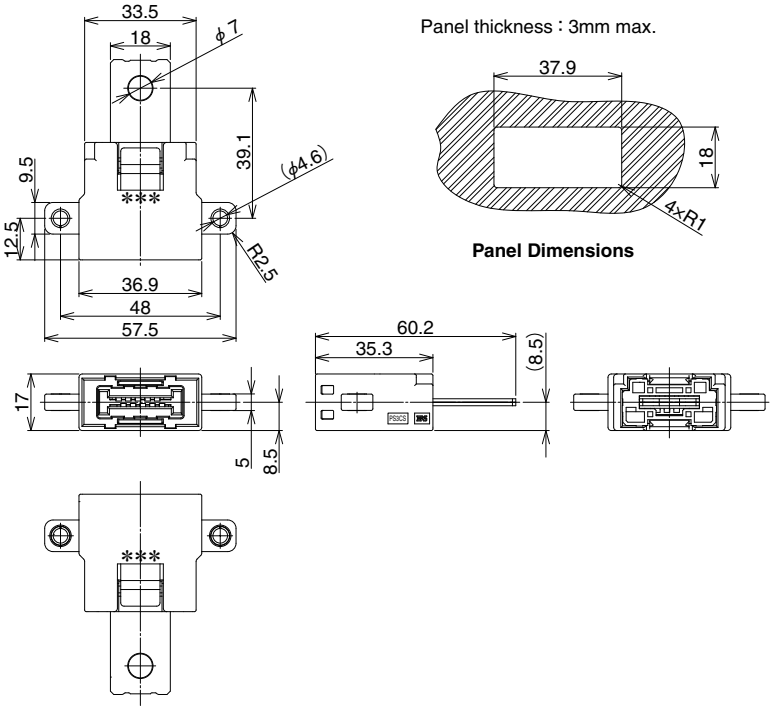


Part No.	HRS No.	RoHS
PS3C-1UP-TS	236-1068-0 00	○

It is meant for use in repair operation when the same tapping screw attached to the plug cover is lost.
Sold by the box (60 pieces in one box)

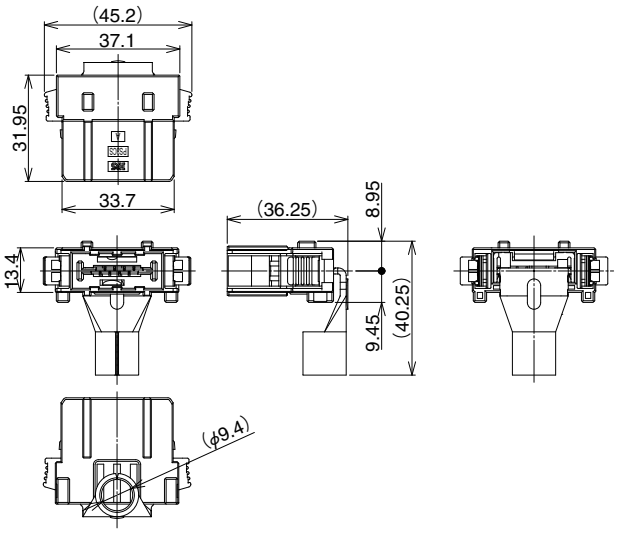
■PS3CS Series

●Receptacle



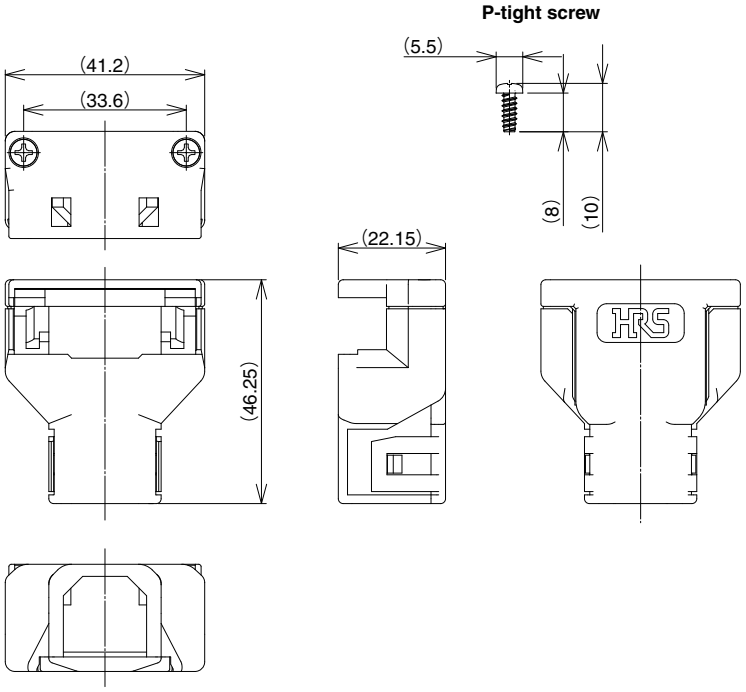
Part No.	HRS No.	RoHS	Insulator color	Packaging
PS3CS-A-1US (10)	236-1074-0 10	○	Black	1pcs.
PS3CS-B-1US (10)	236-1075-0 10		Red	1pcs.

●Plug



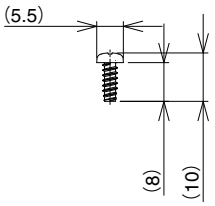
Part No.	HRS No.	RoHS	Insulator color	Packaging
PS3CS-A-1UP	236-1076-0 00	○	Black	1pcs.
PS3CS-B-1UP	236-1077-0 00		Red	1pcs.

●Plug cover



Part No.	HRS No.	RoHS	Insulator color	Packaging
PS3CS-1UP-CVL	236-1078-0 00	○	Black	1pcs.
PS3CS-1UP-CVL (01)	236-1078-0 01		Red	1pcs.

●P-tight screw



Part No.	HRS No.	RoHS
PS3CS-1UP-PS	236-1081-0 00	○

It is meant for use in repair operation when the same P-tight screw attached to the plug cover is lost.
Sold by the box (48 pieces in one box)

◆Usage Precautions

・M4 screw is used to assemble the receptacle with the housing.
・The recommended amount of torque used to tighten the screws should be 1.2 to 2.1 N·m.
PS3CS Plug
・The recommended fastening torque of the screw attached the power female contact on the Receptacle side is 2.5 to 5.2 N·m.
Please use multi-purpose tools including torque wrench etc. (JIS B 4652) for screw-fastening.
In addition, please use multi-purpose tools (JIS C 9711) for crimping the power male contact on the PS3CS Plug side.
・Power contacts are silver plated and may react with the sulfide in the atmosphere.
This might cause the color to change to a dark brown.
The power contacts do not support hot-pluggable, so it cannot be used to shut off the power.
・As PS3C Series and PS3CS Series do not mate with each other, please use them only with the products of the same Series.

◆Safety Standards Certifications (UL, C-UL, TÜV) (PS3C only)

The PS3C, PS3CS series has received safety certifications from the UL, C-UL, and TÜV under the conditions provided in Table 1 and Table 2.
Conditions for safety standards vary depending on submitted applications of current and voltage ratings. See Table 1 and Table 2.
(Conditions for PS3CS Series are now being adjusted.)

Table 1. Conditions for UL and C-UL

	Condition ①	Condition ②
Rated Voltage (AC/DC)	600V	
Rated Current	100A	150A
Cable	14 to 22sq (Note 1), 5 to 3 AWG	38 to 50sq (Note 1), 1 to 1/0 AWG
Creepage Distance (Note 2)	MIN : 3.2mm	
Clearance (Note 2)	MIN : 3.2mm	

Table 2. Conditions for TÜV

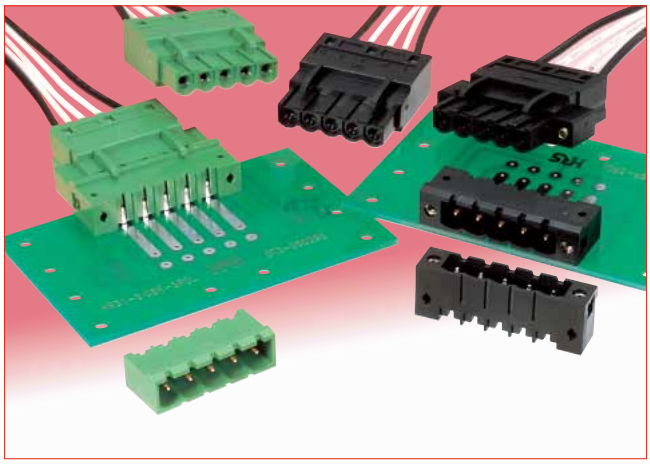
	Condition I	Condition II	Condition III
Rated Voltage (AC/DC)	800V	600V	1000V
Rated Current	100A (cable 14 to 22sq) (Note 1), 5 to 3 AWG 125A (cable 38sq) (Note 1), 1 AWG 150A (cable 50sq) (Note 1), 1/0 AWG		
Overvoltage Category	II	III	
Contamination Level	3		
Creepage Distance (Note 2)	MIN : 12.6mm	MIN : 12.6mm	MIN : 16mm
Clearance (Note 2)	MIN : 6mm	MIN : 6mm	MIN : 8mm
Insulation System	Basic insulation (Panel should be grounded)		

Note 1 : Use the screw and crimp contact combination recommended below. The use of other screws and crimp contacts can affect clearance and creepage distance.
If you choose to use a different screw/contact combination, be sure to check the measurements for clearance and creepage. Make sure that these conditions will meet the UL, C-UL and TÜV.
・Recommended screw : JIS B 1188 spring lock washer + cross recessed head screw with captive flat washer M6×12
・Recommended crimp contacts
Cable 14sq : JIS C 2805 R14-6
Cable 22sq : JIS C 2805 R22-6
Cable 38sq : NICHIFU R38-6S
Cable 50sq : NICHIFU R60-6S
Note 2 : Subjects of clearance and creepage distance are as follows.
・Between the power contacts of plus and minus electrodes.
・Between the crimp contacts of plus and minus electrodes.
・Between power contact and panel
・Between screw (attached to power contact) and panel

Interface Connectors for Factory Automation Network

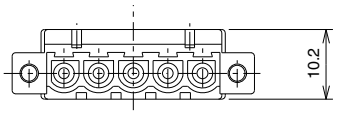
HR31 Series

Complies with DeviceNet requirements

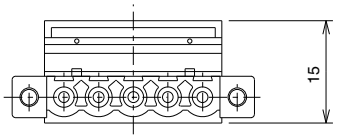


Comparison of plug heights

●Hirose HR31



●Other manufacturer's product



■ Features

1. DeviceNet Compliant

Conforms to requirements of Factory Automation Network DeviceNet standards.
Hirose products are distinct from products of made others, as described below.

Feature	Made by others	Hirose HR31
Reduced number of termination operations	Crimped to commercially available cap connectors, inserted into housing and fastened by screw. (*)	Crimped and connected to terminal then fastened simply by inserting into housing.
High density mounting	Plug height : 15mm	Plug height is 10.2mm, allowing use of less space when mounting several connectors
Prevention of connection errors	Contact positions not identified.	Permanently identified contact positions
Number of required operations to secure receptacle assembly to the board	Connectors are attached by screws from the opposite side.	No need for screws, built-in locking pin secures connector to the board

*Although it is possible to terminate discrete cables with screws and not use a pin contact, however, there is the potential issue and concern for long-term reliability and problems. Therefore, most users prefer to use crimp contacts.

2. Screw-lock style

The screw lock style connector features secure mating and a higher locking force retention.

3. Snap-lock Style

The snap lock plug features a structure that creates a tactile click during mating.

4. Commercially available tools may be used

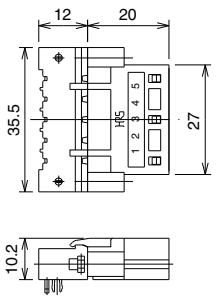
Use crimp tools conforming to JIS C 9711 standards.
Terminated contacts can be removed using 1 mm dia. steel pin. and re-inserted.

5. Protected contacts

When installed, the crimped contacts are protected completely by the plug housing. This design eliminates the risk of damaging the contacts.

Total space occupied by mated assemblies

With screw lock



■ Product Specification

Rating	Current rating	12A (2.5mm² wire) 10A (1.5mm² wire)	Operating temperature range	-40℃ to +100℃
	Voltage rating	250V AC, 350V DC	Storage temperature range	-40℃ to +85℃

Item	Specification	Conditions
1. Contact resistance	5mΩ max.	1A DC
2. Insulation resistance	1000MΩ min.	500V DC
3. Withstanding voltage	No flashover or insulation breakdown	2000V AC/one minute
4. Impulse withstanding voltage	No flashover or insulation breakdown	Standard waveform of 4KV, positive/negative, 3 times each
5. Vibration	No electrical discontinuity of 10μs or more	Frequency : 10 to 55 Hz, single amplitude of 0.75mm, 5 min. in each of the 3 directions, 10 cycles each
6. Durability (insertion/ withdrawal)	Contact resistance : 10mΩ max.	1000 cycles
7. Temperature cycle	Insulation resistance : 1000MΩ min.	Temperature : -40℃ / Room temperature to +100℃ / Room temperature Time : 30 / 10 to 15 / 30 / 10 to 15 (Minutes) 5 cycles
8. Humidity	Insulation resistance : 10MΩ min. (Humidity state) 100MΩ min. (Dry state)	96 hours at temperature of 40℃ and humidity of 90% to 95%

■ Materials

Part		Material	Finish	Remarks
Plug	Insulator	PBT	Color : Green	UL94V-0
	Screw	Steel	Nickel plating	———
Crimp contact	Socket contact	Contact area : phosphor bronze Termination area: copper	Contact area : gold plating Termination area : tin plating	———
Receptacle	Insulator	PBT	Color : Black or Green	UL94V-0
	Male contact	Brass	Contact area : gold plating Termination are : gold plating	———
	Nut	Steel	Nickel plating	———
	Board retention pin	Phosphor bronze	Tin plating	Board retention pin

■ Ordering information

●Connector

HR31 - 5.08 P A - 5 S C (01)
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

❶ Model name HR31	❼ Terminal type C : Crimping DL : Right angle through hole type D : Straight through hole type
❷ Contact pitch 5.08mm	
❸ Connector type P : Plug R : Receptacle	
❹ Screw lock type Blank : With screw A : Without screw	❽ Other specifications : A two-digit number such as (01) or (02) is added to indicate other specifications.
❺ Number of contacts 5	
❻ Contact type S : Female contact P : Male contact	

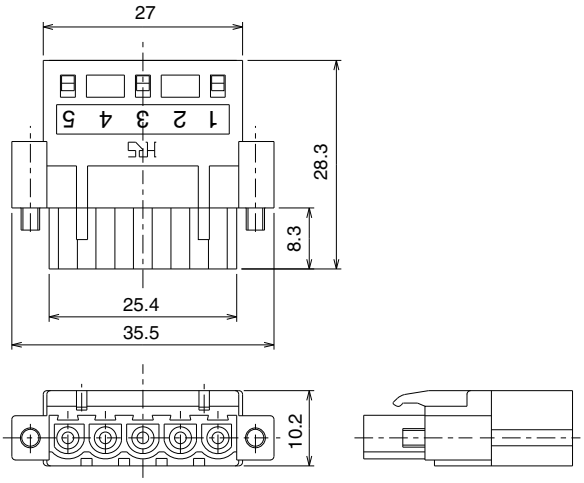
●Crimp contact

HR31 - SC - 1 1 1 (01)
❾ ❿ ⓫ ⓬ ⓭ ⓮

❾ Model name HR31	⓭ Plating type 1 : Gold plating
❿ Contact type SC : female contact	
⓫ Contact packaging type 1 : loose contact	⓮ Other specifications : A two-digit number such as (01) or (02) is added to indicate other specifications.
⓬ Conductor cross area 1 : 1.04 to 2.63mm² 2 : 0.2 to 1.65mm²	

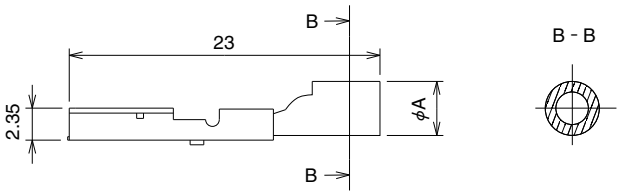
■ Plug (with screw lock)

HR31-5.08P-5SC



Part No.	HRS No.	Weight	Color
HR31-5.08P-5SC(72)	131-0002-2 72	8g	Green

◆ Crimp contact

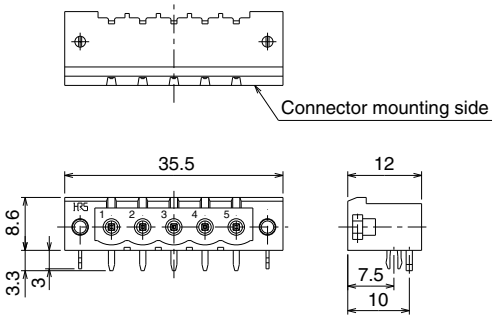


Part No.	HRS No.	ϕA	Weight	Contact plating	Applicable conductor cross area (Note 2)
HR31-SC-111(71)	131-0004-8 71	4	1g	Gold	1.04 to 2.63mm^2
HR31-SC-121(71)	131-0005-0 71	3.3			0.2 to 1.65mm^2

Note 1 : Packaging (100 pcs/pack)
Note 2 : For a multi-strand conductors

■ Receptacle (Right angle through hole type with screw lock)

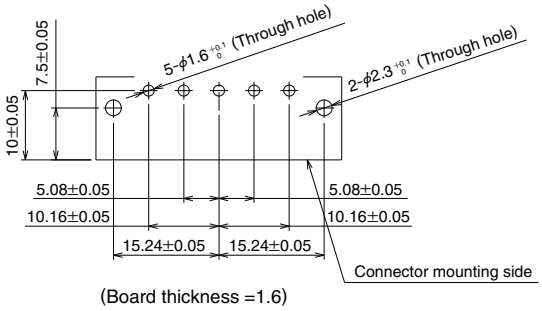
HR31-5.08R-5PDL



Part No.	HRS No.	Weight	Color	Contact plating	Board retention pin
HR31-5.08R-5PDL(72)	131-0001-0 72	4g	Black	Gold	With

◆ PCB mounting pattern

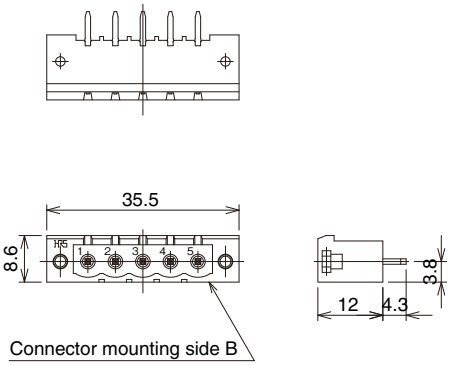
● With screw lock



(Board thickness =1.6)

■ Receptacle (Straight through hole type with screw lock)

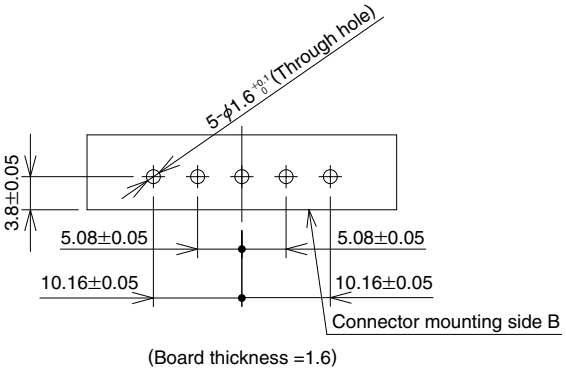
HR31-5.08R-5PD



Part No.	HRS No.	Weight	Color	Contact plating	Board retention pin
HR31-5.08R-5PD(76)	131-0003-5 76	4g	Green	Gold	Without

◆ PCB mounting pattern

● With screw lock

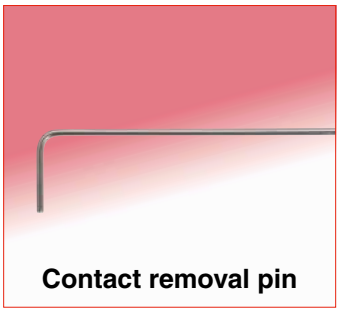


(Board thickness =1.6)

Tools

Type	Part No.	HRS No.
Manual crimp tool	HR31-TC-01	902-1512-4
Contact removal pin	HR31-SC-TP	150-0215-1

Manual crimp tool



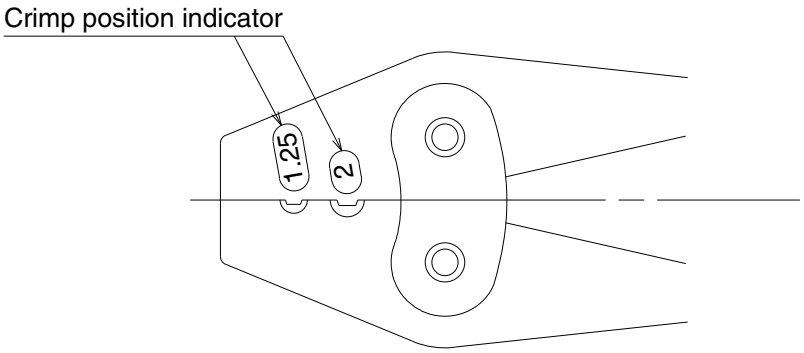
Contact removal pin

● Tools application procedures

1. Manual contact crimp tool

The tool will terminate all specified crimp contacts. Placement of correct contact in corresponding crimp position on the tool is critical. The positions are clearly indicated on the tool as (2) and (1.25). The exposed conductor strip length is 5mm.

Crimp position indicator	Applicable crimp contact
2	HR31-SC-111
1.25	HR31-SC-121



2. Contact removal/extraction

Wiring errors can be corrected by removing the crimp contacts using the extraction tool and the following procedure.

1) Insert the extraction tool from the underside of connector and apply pressure onto the mold lance. (Fig.1)
2) While pressing on the mold lance, angle the extraction tool and release the disconnection prevention mechanism on the crimping contact. (Fig.2)
3) Remove the extraction tool.
4) Pull the wire rearward to disconnect and remove the contact.

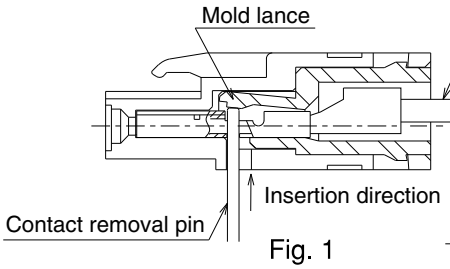


Fig. 1

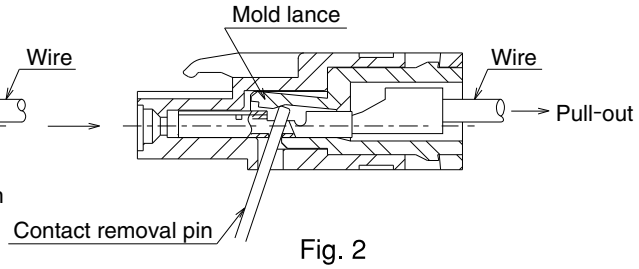
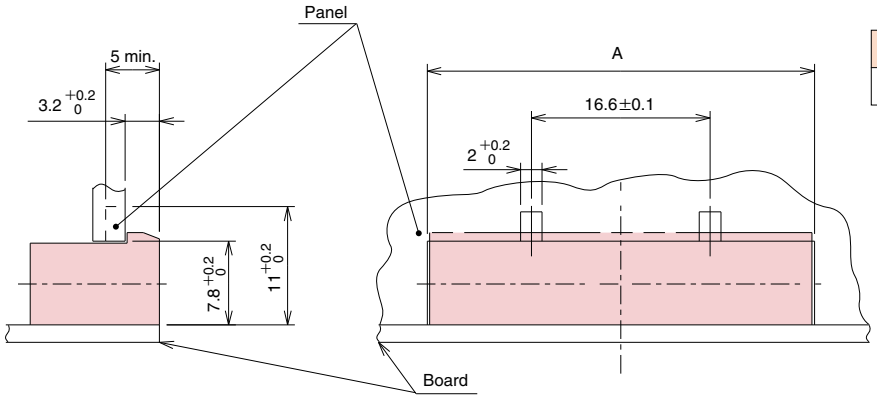


Fig. 2

Usage Precautions

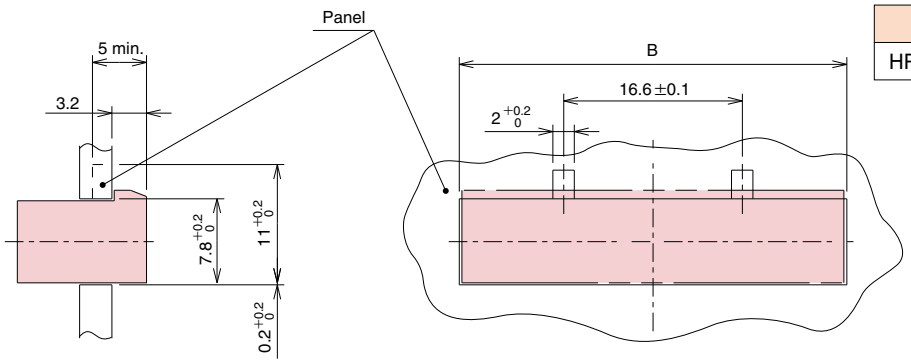
1. To prevent damage, align receptacle with the panel and board in such a way that it is not subject to excess loads.

1.1 Recommended mounting panel dimensions (right angle through hole type)



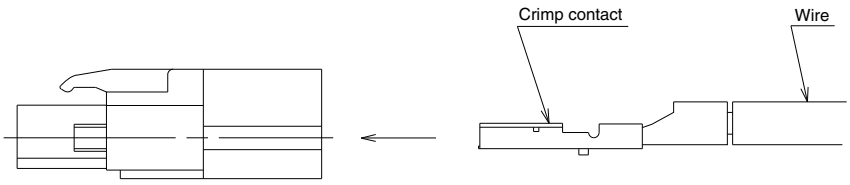
Part No.	A
HR31-5.08R-5PDL(**)	36 +0.2 0

1.2 Recommended mounting panel dimensions (straight through hole type)



Part No.	B
HR31-5.08R-5PD(**)	36 +0.2 0

2. Insert the crimp contact into the plug in the direction shown below.



3. Use a number 0 cross drive bit to tighten the screw lock's screw.

4. Assure that the circuit's power is off when mating and un-mating connectors.