SUMICON 1600 SERIES RECTANGULAR CONNECTORS

The SUMICON 1600 series are multi-contact connectors designed by Hirose. 8, 12, 16, 20, 24, 28, 34, 45 and 60-contact models available (same as the 1300 series). The connector units are available in three types: soldering, wrapping, and crimping. Accessories

are C case, CA case, CBA case, ST stopper, STA stopper, and STB stopper, By combining the many options noted above, the SUMICON 1600 series connectors meet a wide variety applications.

Standard Type

General

In the SUMICON 1600 series, the connector unit is completely separated from the accessories such as the cases and stoppers to diversify the specificaions and facilitate wiring connection. The SUMICON 1600 series are specified in the NTT specifications No.1931.

Electrical Characteristics

Item	Standard
Contact Resistance	7mΩ max. at DC 1A
Insulation Resistance	1000MΩ min. at DC 500V
Withstand Voltage	AC 1000V for 1 minute
Current Rating	3A
Voltage Rating	300V AC

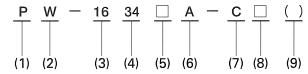
Material and Finish

Part	Material	Finish
Insulator	Glass filled diallylphthalate resin	Blue
Male Terminal	Brass	Type A: Silver-plated
Female Terminal	Phosphor bronze	Type G: Gold-plated
Plug Case	ABS resin (black)	NTT spec: ABS resin, 2.5PB 6.0/2.0 (color)
Stopper Bracket Steel		Nickel plating

Wire Wrapping Specifications

	AWG	26	28	30
Applicable wire	Applicable wire(mm)	0.41	0.32	0.26
	Max. coating O.D. (mm)	0.95	0.75	0.6
Wrapping method		Ordinary wrapping	Coating one wrap	Coating one wrap
Effective number of wrappings		about 8 about 9		about 9
Number of wrappings per terminal			2 wrap	

Ordering Information



- (1) Shape of terminal opening P: Male terminal
 - S: Female terminal
- Terminal connection method No sign: Soldering W: Wrapping C: Crimp
- (3) Series No.
 - 16: 1600 series
- Number of contacts 34: 34 contacts
- Provided with a sequence of upper-case alphabetic charac-
 - No sign or sign other than W: Soldering Sequence: No sign, B, C, D, E ...
- (6) Plating
 - A: Silver-plated
- Serial sign for connctor units
- G: Gold-plated (7) Signs for accessories

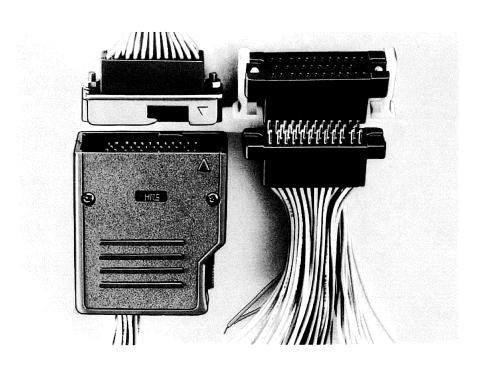
- C: Plug case
- ST: Stopper bracket with horizontal cable inlet opening
- J: Jack Case
- H: Handle
- DB: Deep bracket
- Serial signs for accessories
- Each accessory (C, ST, J, H, DB) is provided with sequence of upper-case. alphabetic characters.
- Sequence: No sign, A, B, C... Accessories, C, ST, or J followed by Ano sign E: Side lock
- Accessories, C and ST followed By A: Top touch lock type
- Note: The space for no sign is filled sequentially.

 Special specification, () is filled with a serial number, except for the case and bracket, for which the following ap
 - ply. (51): Bracket only
 - (50): Case only

Cross Reference to NTT No.

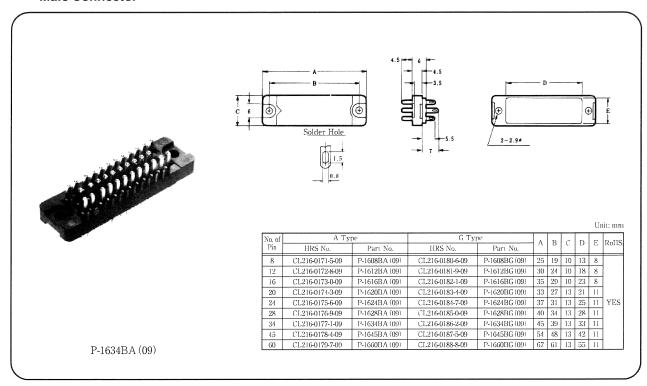
Type	NTT No.	Short Form	HRS No.	Part No.	Туре	NTT No.	Short Form	HRS No.	Part No.
	CN-3320GLWPMSA	20GLWPMSA	CL216-0247-5-51	P-1620BA-CA (51)		CN-5445GJMSA	45GJMSA	CL216-0257-9-51	P-1645BA-STA (51)
	CN-4028GLWPMSA	28GLWPMSA	CL216-0249-0-51	P-1628BA-CA (51)		CN-6760GJMSA	60GJMSA	CL216-0258-1-51	P-1660BA-STA (51)
	CN-4534GLWPMSA	34GLWPMSA	CL216-0250-0-51	P-1634BA-CA (51)	(51)	CN-3320G2JMSA	20G2JMSA	CL216-0292-0-51	PW-1620BA-STA (51)
	CN-5445GLWPMSA	45GLWPMSA	CL216-0251-2-51	P-1645BA-CA (51)		CN-3724G2JMSA	24G2JMSA	CL216-0293-2-51	PW-1624BA-STA (51)
	CN-6760GLWPMSA	60GLWPMSA	CL216-0252-5-51	P-1660BA-CA (51)		CN-4028G2JMSA	28G2JMSA	CL216-0294-5-51	PW-1628BA-STA (51)
Plug	CN-3320GLWPFSA	20GLWPFSA	CL216-0153-3-51	P-1620A-CA (51)		CN-4534G2JMSA	34G2JMSA	CL216-0296-0-51	PW-1634BA-STA (51)
	CN-3724GLWPFSA	24GLWPFSA	CL216-0154-6-51	P-1624A-CA (51)	D	CN-6760G2JMSA	60G2JMSA	CL216-0298-6-51	PW-1660BA-STA (51)
	CN-4028GLWPFSA	28GLWPFSA	CL216-0155-9-51	P-1628A-CA (51)	Receptacle	CN-3320GJFSA	20GJFSA	CL216-0151-8-51	S-1620A-STA (51)
	CN-4534GLWPFSA	34GLWPFSA	CL216-0126-0-51	P-1634A-CA (51)		CN-3724GJFSA	24GJFSA	CL216-0148-3-51	S-1624 A-ST A (51)
	CN-5445GLWPFSA	45GLWPFSA	CL216-0127-3-51	P-1645A-CA (51)		CN-4028GJFSA	28GJFSA	CL216-0152-0-51	S-1628A-STA (51)
	CN-6760GLWPFSA	60GLWPFSA	CL216-0128-6-51	P-1660A-CA (51)		CN-4028G2JFSA	28G2JFSA	CL216-0313-8-51	SW-1628A-STA (51)
	CN-3724GJMSA	24GJMSA	CL216-0254-0-51	P-1624BA-STA (51)		CN-4534G2JFSA	34G2JFSA	CL216-0299-9-51	SW-1634 A-STA (51)
Receptacle	CN-4028GJMSA	28GJMSA	CL216-0255-3-51	P-1628BA-STA (51)		CN-5445G2JFSA	45G2JFSA	CL216-0300-6-51	SW-1645A-STA (51)
	CN-4534GJMSA	34GJMSA	CL216-0256-6-51	P-1634BA-STA (51)		CN-6760G2JFSA	60G2JFSA	CL216-0301-9-51	SW-1660A-STA (51)

Note: NTT Types are all assembled with connector inserts and plug shells or stopper brackets.

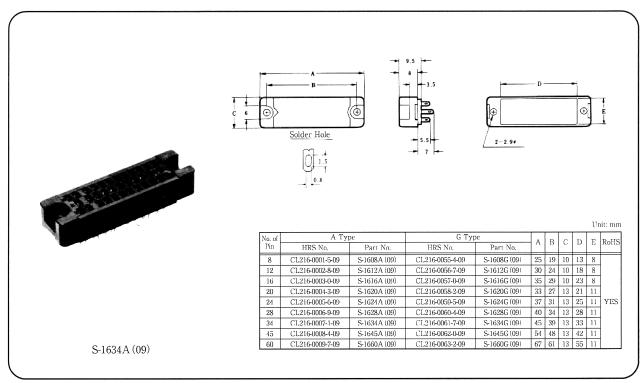


Soldering Eyelet Pin Connector

Male Connector

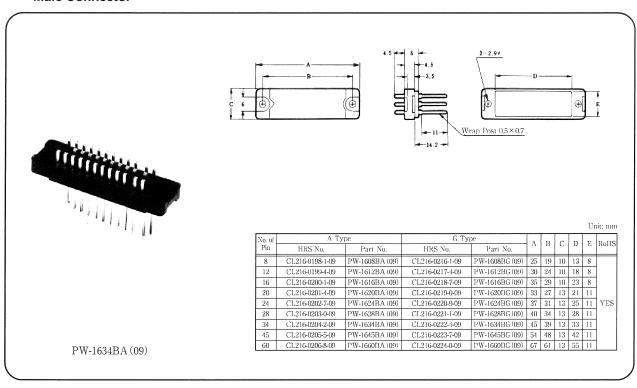


Female Connector

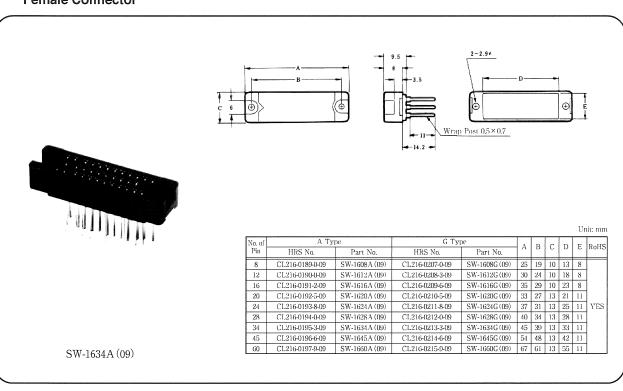


Wire Wrapping Pin Connector

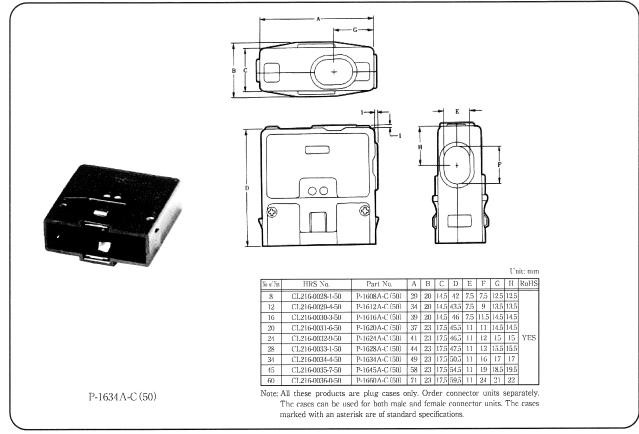
Male Connector



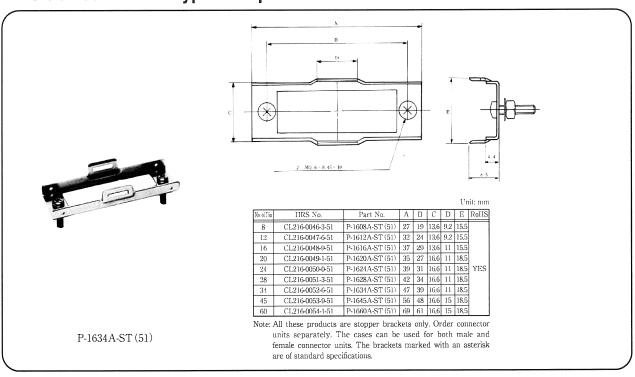
Female Connector



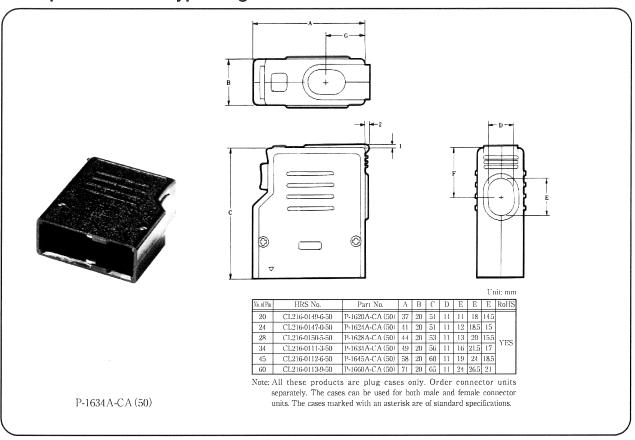
Side Touch Lock Type Plug Shell



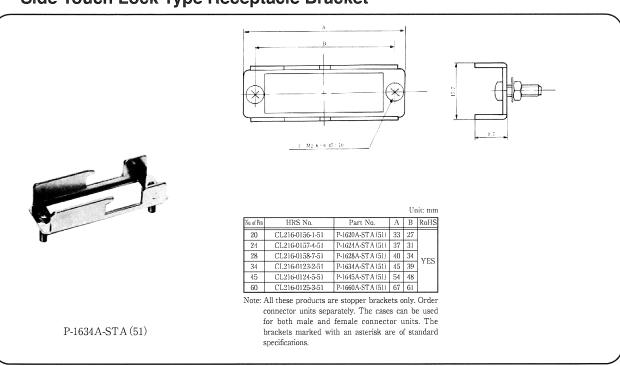
Side Touch Lock Type Receptacle Bracket



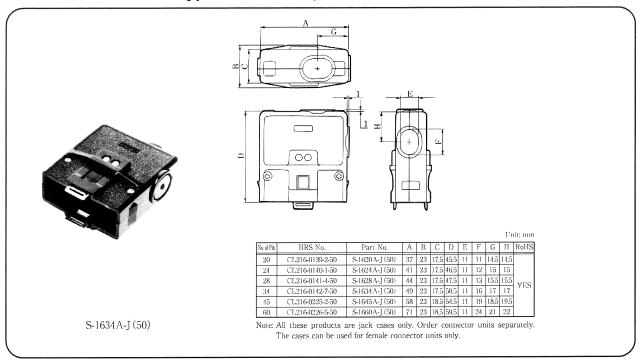
Top Touch Lock Type Plug Shell



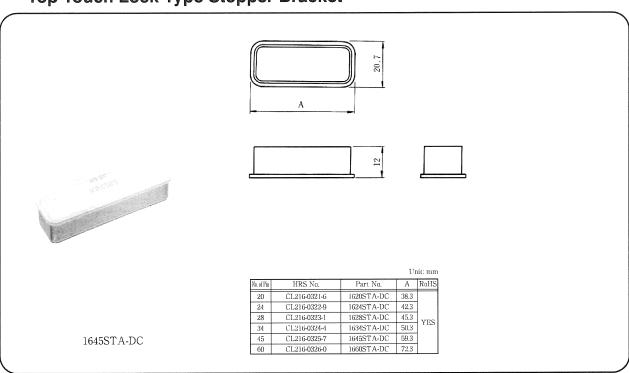
Side Touch Lock Type Receptacle Bracket



Side Touch Lock Type Jack Shell (For Extension Cable)



Top Touch Lock Type Stopper Bracket



SHOULDER-TOUCH LOCK TYPE

General

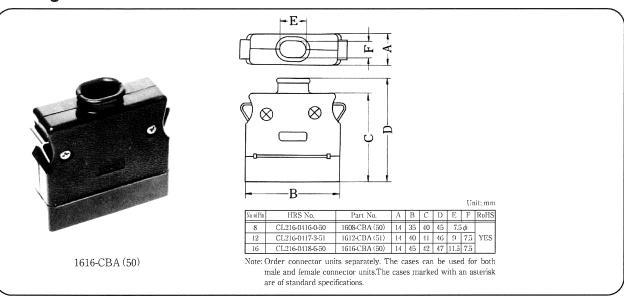
The shoulder-touch lock type plug cases are highly reliable, lightweight, sturdy, and operable. 8, 12, and 16-contact models are available. Hirose high-density

packging plug cases, including the top-touch lock type, are available in 8 to 60-contact models.

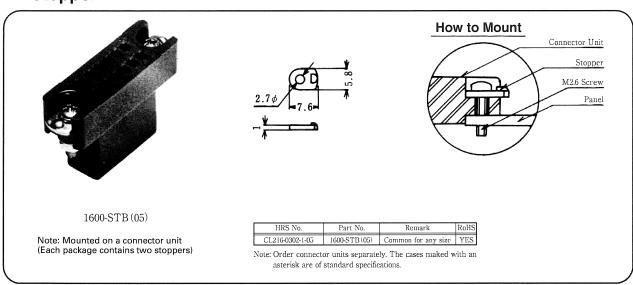
Material and Finish

Description	Material	Finish
Plug case	Polypropylene resin	Black
Stopper	Steel	Nickel plating

Plug Case



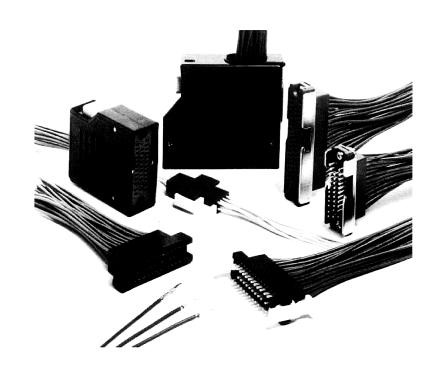
Stopper



1600 SUMICON CRIMP TYPE CONNECTORS

General

The SUMICON 1600 series are high-performance compact crimp type connectors developed for labor saving in connection work. 8, 12, 16, 20, 24, 34, 45 and 60-contact models are available. All models are compatible with our previous top-lock type plig cases. For using the connectors separately, easy-to-mount plastic locks are available to expand their functions.



Orderig Information

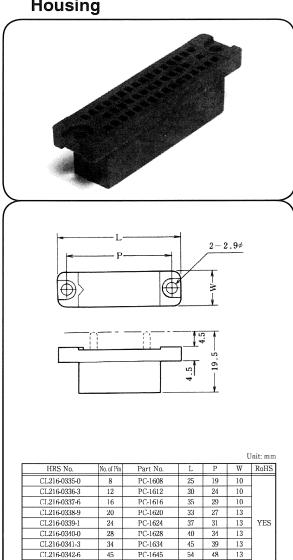
Item	Standard			
Contact Resistance	7mΩ or less at DC 1A (contact only)			
Insulation Resistance	5,000M Ω or more at DC 500V			
Withstand Voltage	AC 1,000V for 1minute			
Rating Current	3A			
Applicable Cable	AWG#24-28 (Coating O.D. 1.6 φ-0.9 φ)			
Caire aire a stress ath	Cable	AWG#24	AWG#26	AWG#28
Crimping strength (Unit: kg or more)	Crimping force	3.6	2.4	1.6

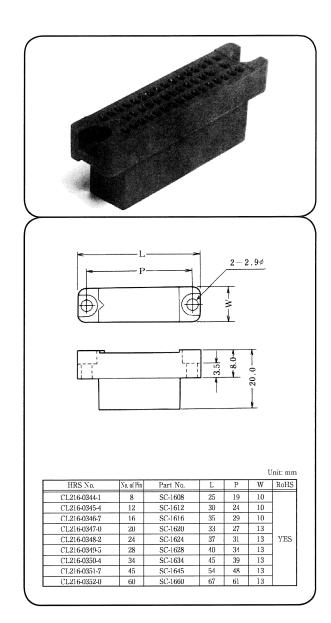
Part	Material	Finish
Insulator	Glass-containing polycarbonate resin UL94V-0	Blue
Male Terminal	Brass	Gold-plated Silver-Plated
Female Terminal	Phosphor bronze	Gold-plated Silver-Plated

Features

- 1. Since this is a press-fit type connector, anyone can performe wiring securely with high reliability.
- For contact, a two-point contact system is employed for outstanding reliability, It asiso offers superior mechanical strength.
- The Sumicon 1600 Series Press-Fit Type Connectors are interchangeable with the conventional solder, DIP and lapping type connectors. They are applicable, therfore, to a wider range of applications.
- 4 To use connector unit separately, jointly employing an easily installable plastic lock will prevent vibrations and/or cable dead weight from unplugging the connector. The plastic lock, moreover, can be used with either center-suspension or panel-mount system.
- 5 All wiring spliced with the connector is hidden completely inside the housing, allowing for perfect insulation.

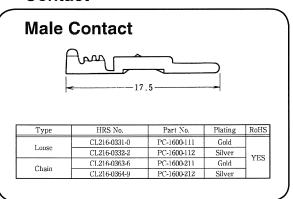
Housing



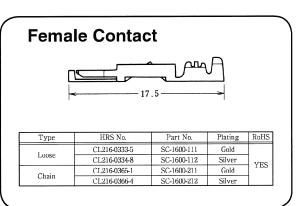


Contact

CL216-0343-9



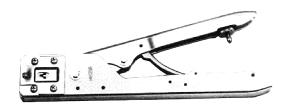
PC-1660



Note: Loose-piece terminals are available in packs. Each pack contains 100 terminals. Strip terminals are available in reels. Each reel contains 10,000 terminals.

Tools

Туре	HRS No.	Part No.
Manual crimping tool	CL250-0003-1	TC-1600-111
Contact extractor	CL250-0004-4	TC-1600-21



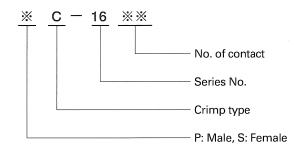
Hand Crimp Tool TC-1600-111



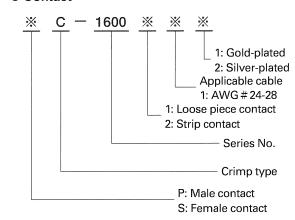
Contact Extractor TC-1600-21

Ordering Informations

Housing



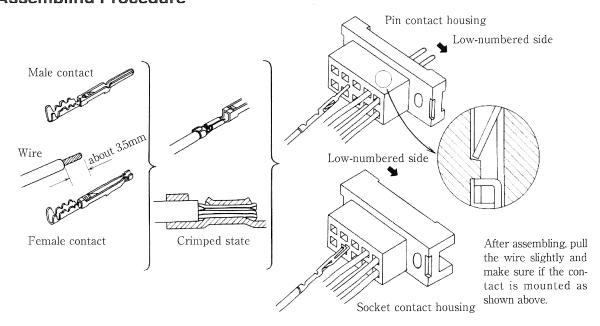
Contact



Using the Connectors

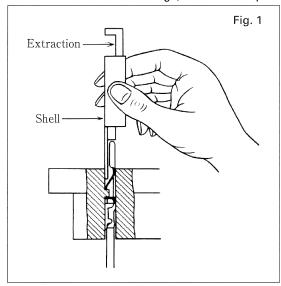
- (1) Take care when removing the connectors to pull out by the housing and not tug on the wires.
- (2) The male terminals of the connectors will be bent if the connectors are twisted when being removed. Take care to pull the characters out straight.
- (3) The plastic locks are sufficiently strong to ensure that the connector engagement will not be loosened by vibration or the weight of the wires. Their strength is not sufficient for other loads. When strngth for some other load is required, use the top-touch lock type plug case (common for both solder and wrapping types).
- (4) Both gold-plated and silver-plated terminals are available. Use the gold-plated type in adverse environments. In other environments, we recommend the economical silver-plated type.
- (5) For crimping, use a manual crimping device for low-volume crimping and maintenance. For highvolume crimping. we recommend the automatic crimping machine shown on page 124.
- (6) For plug-in uses, we recommend Sumicon 1600 series solder or wrapping types for improved functionality.

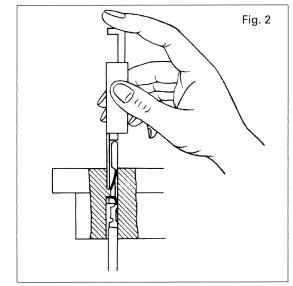
Assembling Procedure



Procedure for Contact Extraction

In case of extracting a contact from the housing due to insertion error or circuit change, follow the steps as shown below.





- 1 Hold the Contact Extractor as shown in Fig. 1, placing the tip of the Extractor on the tip of a contact, then insert it between the contact and the housing.
- When the tip of the Extractor comes into contact with a stepped part in the housing, the spring will come off from the stepped part with a snap which can be felt. Then, extract the contact by pulling the wire.
- (Caution: Pushing the tip of the extractor forcibly before the spring has come off from the stepped part may damage the contact).
- Above Fig. 1 and Fig. 2 show how to extract a contact from socket housing. The same procedure
 can be employed to extract a contact from pin
 housing.

Use of Connectors with Respect to Polarity

(to prevent mis-insertion of connectors)

Polarization of SUMICON 1600 series can be achieved by contact arrangement. The crimp type contacts are designed to float a little, so that the use of a Polarizing Key is recommended in order to ensure positive polarizatiom.

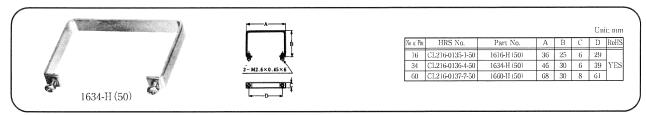
In Case of 8, 12 and 16 contact

- When crimp types are used in both the male and female, do not fill all cavities with contacts. Use Polarizing Key at minimum 2 cavities of Socket housing as shown below and do not fill pin contacts at the corresponding cavities of male housing.
- When male crimp type is used in combination with solder or wire wrap female type, the connector coupling shall be done corefully not to couple in reverse position. Coupling shall be made by matching of traiangle marks on connector inserts.

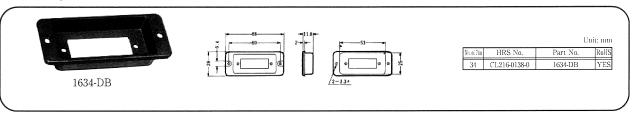
In case of Multi Pin Type more than 20 contact

- SUMICON 1600 series are naturally polarized in all cavities filled with contacts. When all cavities are not filled, Polarizing Keys shall be inserted in vacant cavities to the minimum for preventing reverse coupling. But when Top Touch Lock Plug Shell is used, Polarizing Keys are not necessary
- because Plug Shell has polarized mechanism.
- When male crimp type is used with some vacant cavities in combination with solder or wire wrap female type, Top Touch Lock Plug Shell is recommended.

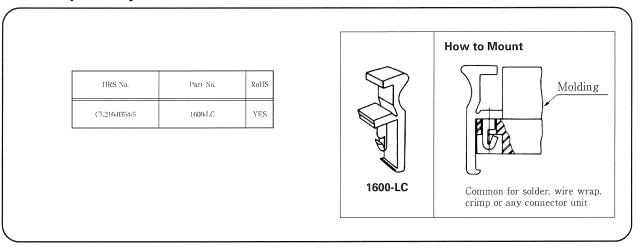
Handle



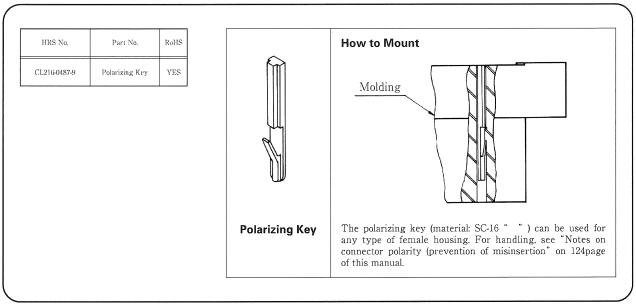
Deep Bracket



Crimp or any Connector Unit



Polarizing Key



Terminal Arrangment and Numbers

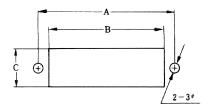
The figure shows a male connector as viewed from the termination side

45 pin

10 0.00
20 0.01 0.01
30 0.05 0.03
40 0.05 0.03
60 0.05 0.05
60 0.02 0.05
60 0.03 0.05
60 0.03 0.05
10 0.05 0.05
10 0.05 0.05
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60 pin

Connector Mounting Hole Dimensions



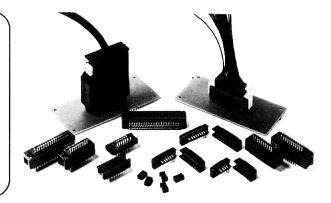
No, of Contact	А	В	С	screw
8	19	13.5	8.5	
12	24	18.5	8.5	
16	29	23.5	11.5	
20	27	21.5	11.5	
24	31	25.5	11.5	M2.6
28	34	28.5	11.5	
34	39	33.5	11.5	
45	48	42.5	11.5	
60	61	55.5	11.5	

Unit: mm

SUMICON 1600 SERIES DIP SOLDERING CONNECTORS

General

The SUMICON 1600 series are original Hirose rectangular dip soldering connectors 8, 12, 16, 20, 24, 34, 45 and 60-contact models are available. All models are compatible with the previous 1600 series in mounting and accessories.



Features

- Allows straight dip soldering onto a PCB, and is effective in PCB-to-PCB and PCB-to-cable connection.
- 2. Suitable for use in interface, being compact and lightweight and meeting high-density packaging requirements.
- Further cuts interconnection costs when simple locks are used.
- A wide variety of combinations of connection methods available, e.g., dip soldering, wrapping, and crimping, to meet your requirements.

Main Applications

Computers, peripherals and terminals, data communications equipment, measuring instruments,

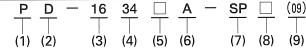
signal equipment, mobile radio equipment, copier, and FAX machine.

Electrical and Environmental

Performance		
Contact Resistance	$7m\Omega$ or less at DC 1A	
Insulation Resistance	1,000MΩ or higher at DC 500V	
Withstand Voltage	AC 1,000V for 1 minute	
Current capacity	3A	

Material and finish				
Insulator Glass-Filled diallylphtalate resin				
Male Terminal	Bress	Type A: Silver-plated		
Female Terminal	Phosphor bronze	Type B: Gold-plated		

Orderig Information



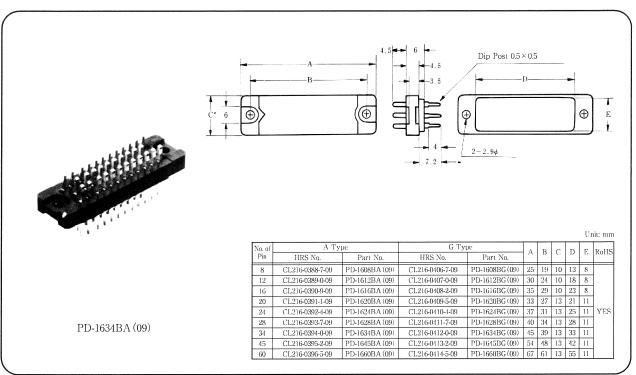
- (1) Shape of terminal opening P: Male terminal
- S: Female terminal
 (2) Terminal connection method
 D: Dip soldering
- (3) Series No. 16: 1600 series
- (4) Number of contacts
- (5) Serial sign for connctor units Provided with a sequence of upper-case alphabetic characters.
 - Sequence: No sign, B, C, D, E ...

(6) Plating
A: Silver plated
B: Gold plated

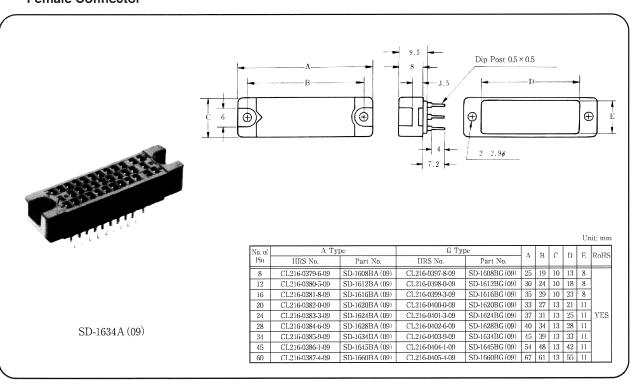
- (7) Signs for accessoriesSP: Spacer for dip soldering
- (8) Serial signs for accessories Each accessory is provided with a sequence A of upper-case alphabetic characters. Sequence: No sign, A, B ...
- (9) Specification(09) : Standard

Dip Soldering Type Connector

Male Connector



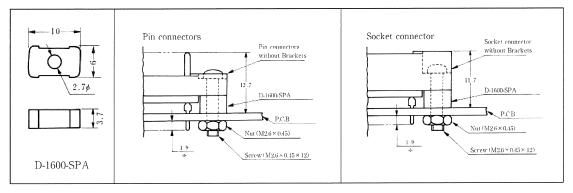
Female Connector

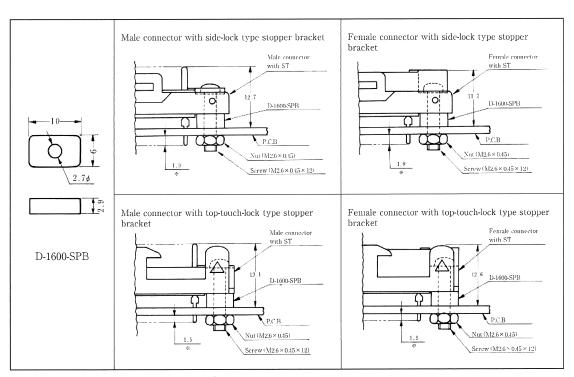


Dip Spacer

HRS No.	Part No.	Application
CL216-0419-9	D-1600-SPA	Connector unit packing (applicable for models with any number of contacts)
CL216-0420-8	D-1600-SPB	For packing with Connector unit stopper (applicable for models with any number of contacts)

Mounting screws must be supplied by the customer





Note 1: The connector unit packaging spacer (SPA) cannot be used for packing with the connector unit stopper bracket. The packaging spacer with connector unit stopper bracket (SPB) cannot be used for packaging the connector unit Note 2: Provide two spacers (SPA and SPB) for each connector unit.

* The dimensions marked with an asterisk (*) are for PCBs of 1.6mm in thickness.

How to use connectors

- 1. When disconnecting, pull it as straight as possible, because the male pins might be damaged if it is twisted.
- 2. Connctors are available with gold to be used in adverse environmental conditions and silverplated pins be used in ordinary conditions.

Recommended Dip Soldering Pattern of Connector

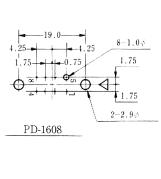
(mm)

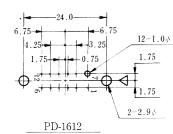
When dip soldering the connectors to a PCB, drill holes as shown below. The figures indicate the number of contacts.

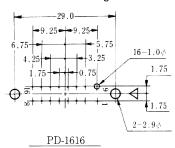
connector unit) on the mating face of the connector unit.

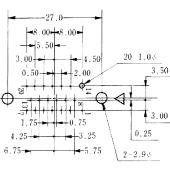
Signs △ indicate the V-shaped mark (direction of the

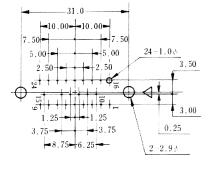
Recommended Dip Soldering Pattern of Pin Connector (View of the connector-mounting surface of substrate)

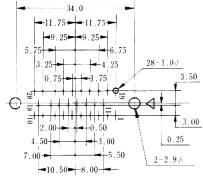








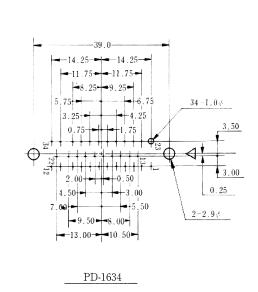


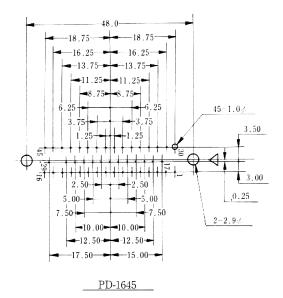


PD-1620

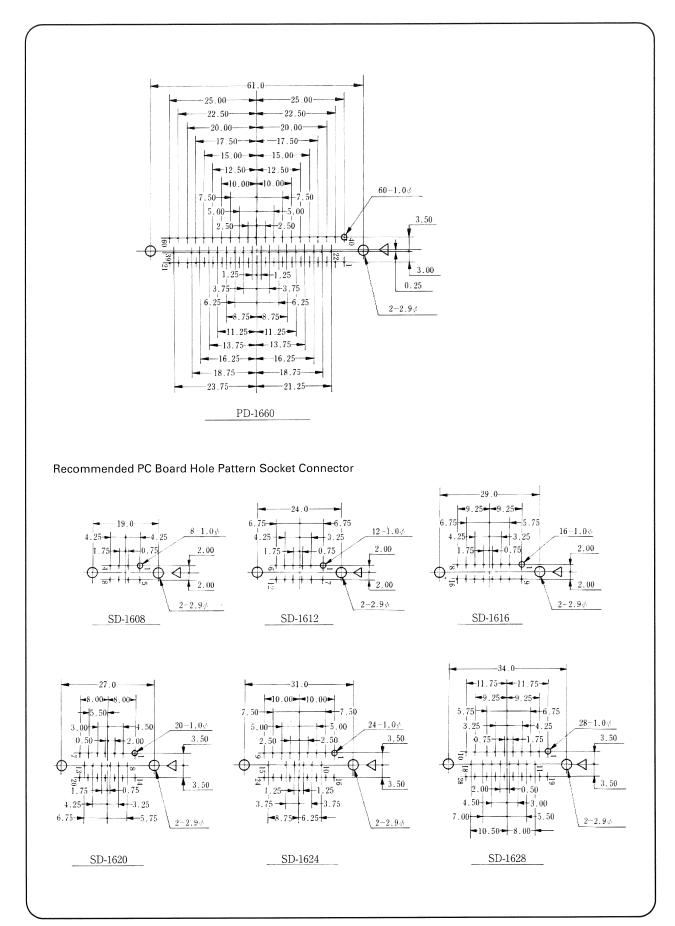
PD-1624

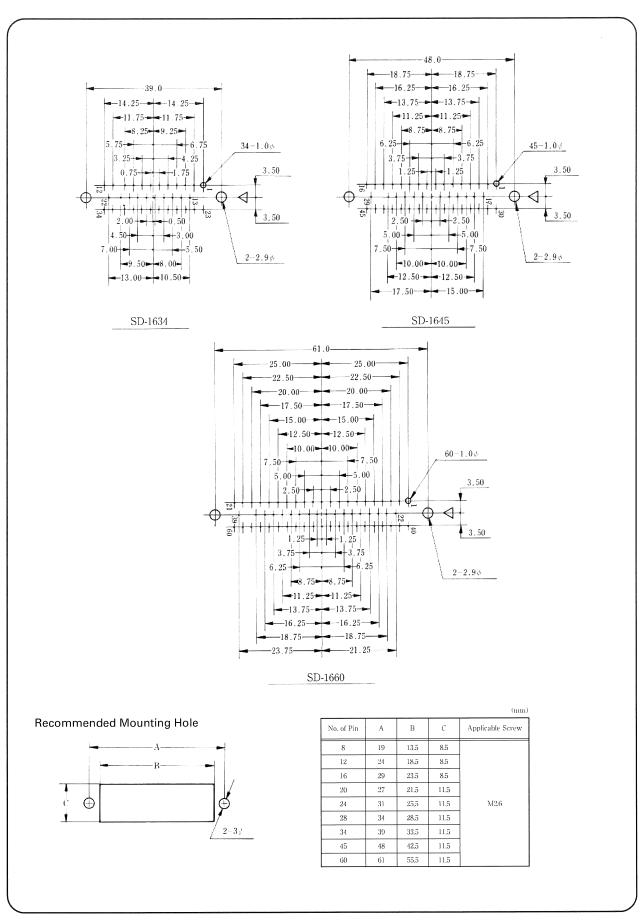
____PD-1628__



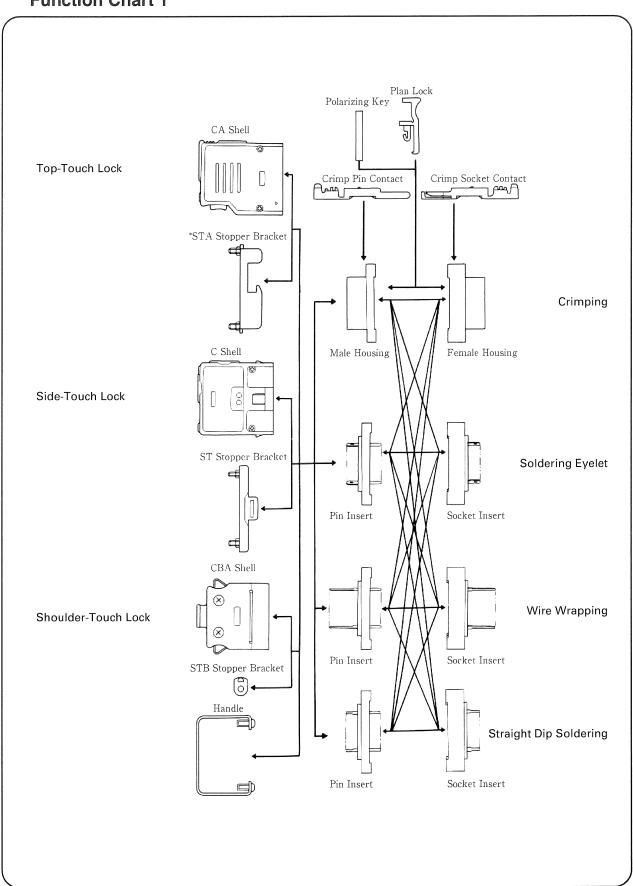


124





Function Chart 1



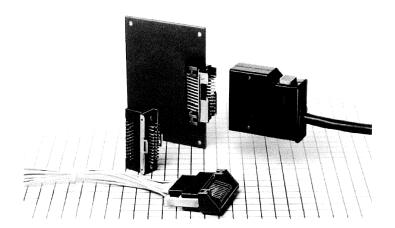
SUMICON 1600 SERIES RIGHT-ANGLE DIP SOLDERING CONNECTORS (MALE)

General

The SUMICON 1600 series are Hirose right-angle dip soldering connectors (male).

All models are compatible with the existing soldering

type, wrapping type, crimping tpe, and straight dip soldering type connectors including their accessories. 20, 28, 34 and 60-contact models are available.



Features

- Direct dip soldering on a PCB enables convenient parallel connection with cable plugs.
- Suitable as an interface, being lightweight and capable of high-density packaging.
- 3. Further cuts interconnection costs by using crimping type plugs with plastic locks for simple cable connection, so no cases are needed.
- 4. A wide variety of connection methods available,
- e.g., dip soldering, wrapping, and crimping, to meet your requirements.
- Available with or without a top-touch lock type bracket and side-lock type bracket, offering you many choices for your applications.
- Highly solvent-resistant, using insulating materials with high heat resistance and chemical-resistance.

Main Applications

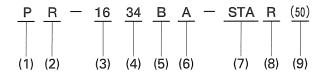
Electronic equipment such as computers, peripherals and terminals, control equipment, and measuring instruments.

Electrical and Environmental

Electrical Characteristics		
Contact Resistance	3A	
Contact Resistance	AC 300V	
Contact Resistance	$10\mathrm{m}\Omega$ or less at DC 1A	
Contact Resistance	100MΩ or higher at DC 500V	
Contact Resistance	1,000Vr.m.s. for 1 minute	

Material and Finish			
Insulation	Glass-Filled diallylphthalate resin	Blue	
Contact	Brass	Type A: Silver-plated Type B: Gold-plated	
Right Angle	Polybutylenephthalate resin	Blue (UL94V-0)	
Stopper Bracket	Steel	Nickal plating	

Ordering Information



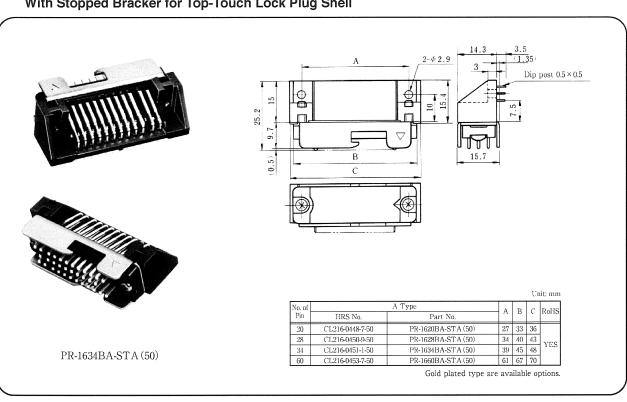
- (1) Shape of terminal openingP: Male terminal
- (2) Terminal connection method R: Right-angle dip soldering
- (3) Series No.
 - 16: 1600 series
- (4) Number of contacts
- (5) Serial sign for connctor units Provided with a sequence of upper-case alphabetic characters.
- (6) Plating
 - A: Silver-plated
 - B: Gold-plated
- (7) Accessories
 - ST: Side-lock type stopper bracket STA: Top-touch type stopper bracket

nector unit are in the direction).

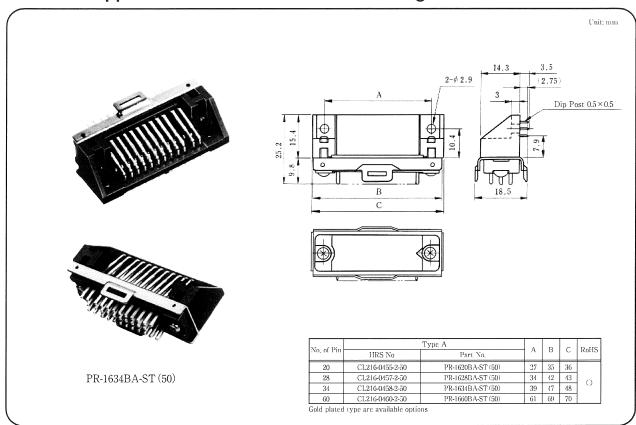
- (8) R: Indicates a connector on which the STA bracket is mounted in the reverse direction against the standard. (the standard refers to the direction in which both \triangle marks on the STA bracket and con-
- (9) Specification

(50): RoHS compliant

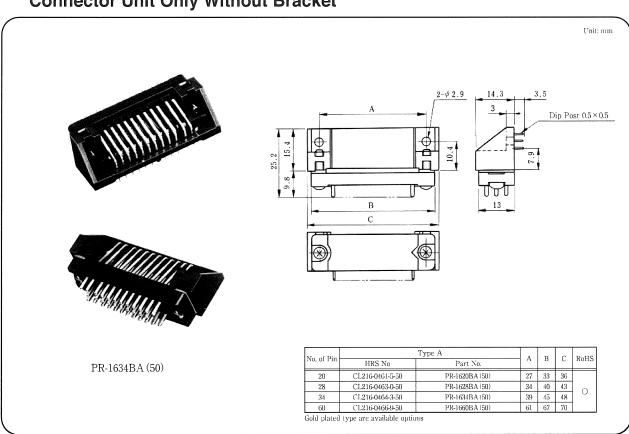
Right Angle Dip Soldering Pin Connectors With Stopped Bracker for Top-Touch Lock Plug Shell



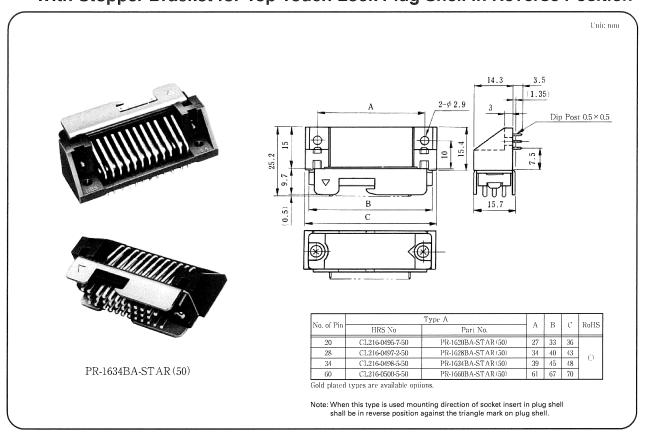
With Stopper Bracket for Side-Touch Lock Plug Shell



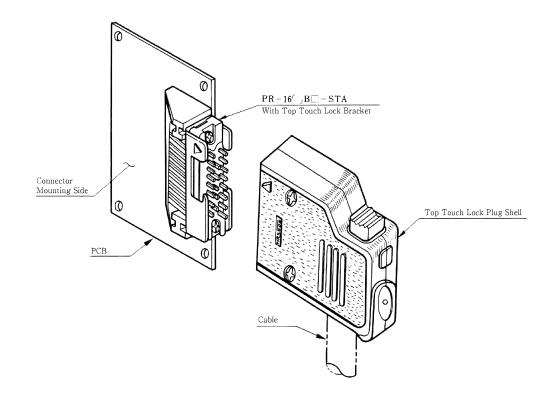
Connector Unit Only Without Bracket



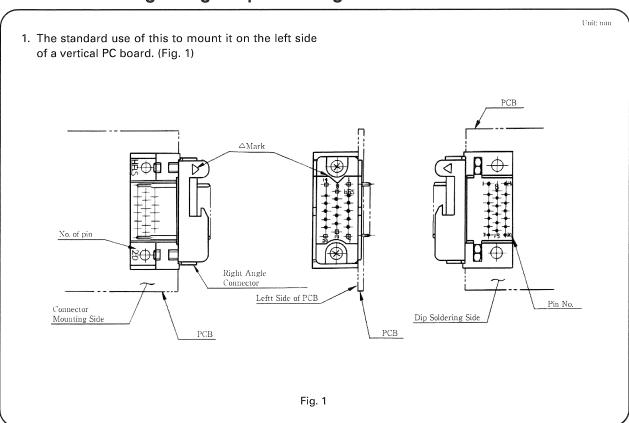
With Stopper Bracket for Top Touch Lock Plug Shell in Reverse Position

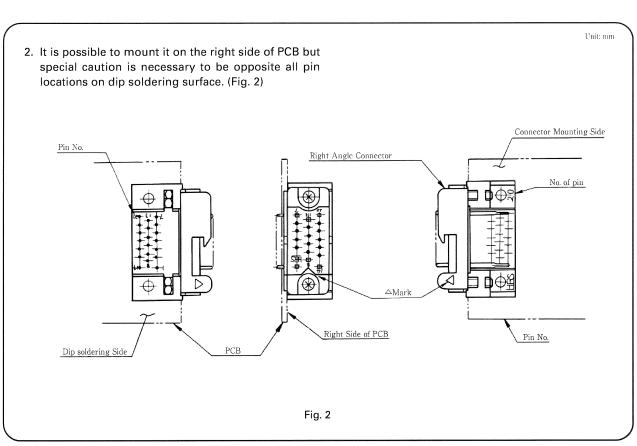


How to Use (Example)



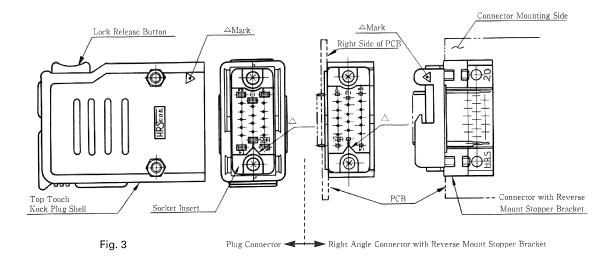
How to Use Right Angle Dip Soldering Connectors





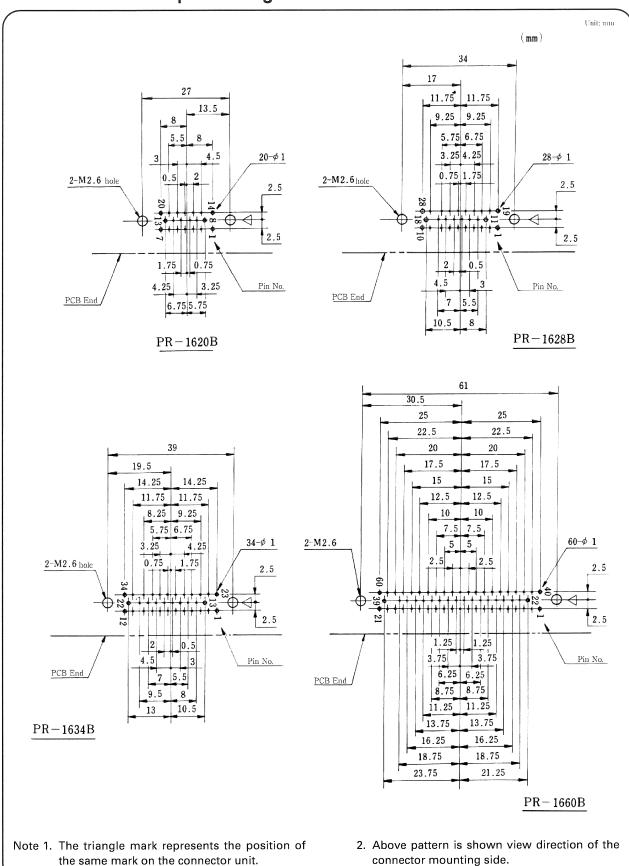
3. When Top Touch Lock Type Plug Shell and Stopper Bracket are used with mounts on the right side of a PCB, not only the pin locations become opposite, but also the Lock Release Button and Cable Exit are

upside down. So, the Reverse Mount Stopper Bracket is conveniet in such case. (Fig. 3)



- 4. M2.6 screws are recommended to mount Right Angle Dip Soldering Pin Connectors.
- 5. Please choose PC board thinner than 2.4mm.
- 6. In extracting plug connector, please pull it up straight out to prevent male pin from bending.
- 7. The standard plating is silver but gold is also an available option.
- 8. Note: The dip soldering pattern on PCB of Right Angle Type and Straight Type are different from each other.
- Before using a solvent other than trichloroethylene, chlorosene, methanol, isopropanol, or ethyalchol to wash soldered connectors, contact out engineering department.

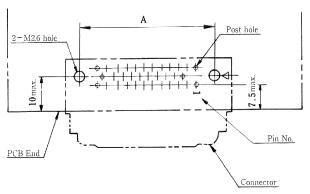
Recommended Dip Soldering Pattern



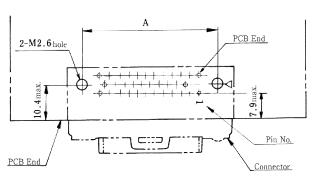
Recommended Mounting Pattern

Unit: mm

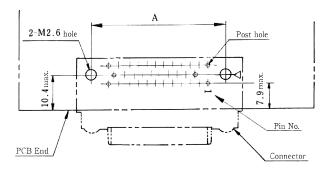
For insertion-soldering in the PCB, drill mounting holes as shown in the figure below.



With top-touch-lock type stopper bracket



With side-lock type stopper bracket



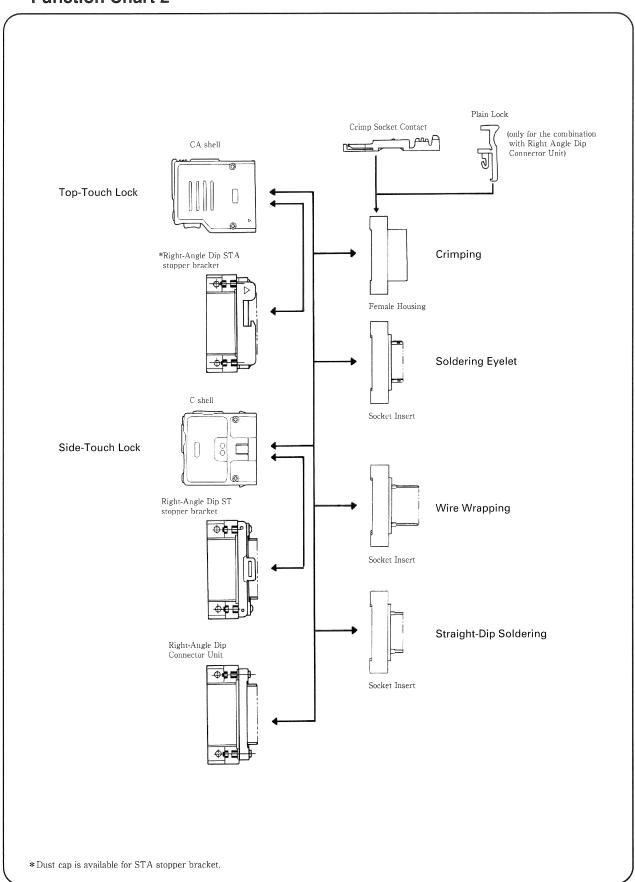
Connector Unit Type

No. of pin	А
20	27
28	34
34	39
60	61

The triangle mark represents the position of the same mark on the connector unit.

Above pattern is shown from view direction of the conector mounting side.

Function Chart 2



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Hirose Electric:

P-1608A-C(50) P-1612A-C(50) P-1616A-C(50) P-1624A-C(50) P-1628A-C(50) P-1634A-C(50) P-1645A-C(50) P-1660A-C(50) P-1608A-ST(51) P-1612A-ST(51) P-1616A-ST(51) P-1620A-ST(51) P-1624A-ST(51) P-1628A-ST(51) P-1628A-ST(51) P-1620A-ST(51) P-1620A-STA(51) P-1645A-STA(51) P-1645A-STA(51) P-1645A-STA(51) P-1645A-STA(51) P-1645A-STA(51) P-1645BA(09) P-1620BA(09) P-1628BA(09) P-1628BA(09) P-1634BA(09) P-1645BA(09) P-1645BA(09) P-1620BA(09) P-1620BA-CA(50) P-1634BA-CA(51) P-1660BA-CA(50) P-1634BA-STA(51) PC-1600-111 PC-1600-112 PC-1620 PC-1660(10) PC-1634(10) PC-1624(10) PC-1628(10)