

## DF62 Series

## Slim In-Line/THT Connectors



Positive-Lock



Wide Variation



Slim In-Line



**Алматы** (7272)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)227-86-13  
**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  
**Саранск** (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  
**Чебоксары** (8352)28-53-07  
**Челябинск** (351)202-03-61  
**Череповец** (8202)49-02-64  
**Чита** (3022)38-34-83  
**Якутск** (4112)23-90-97  
**Ярославль** (4852)69-52-93

Россия +7(495)268-04-70

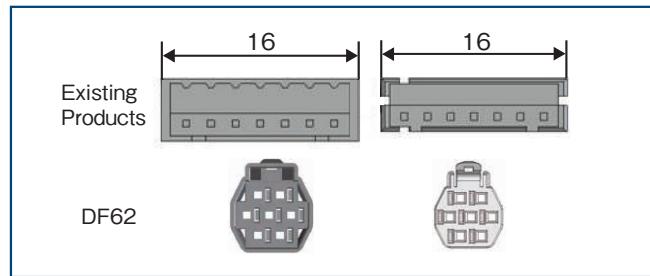
Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

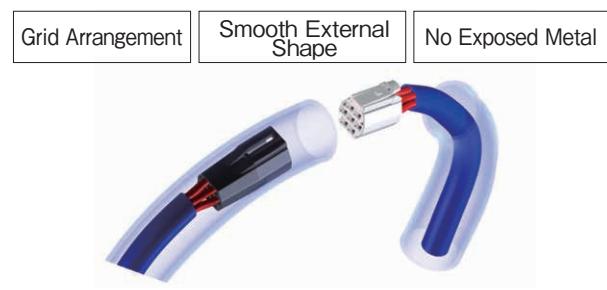
## Features

### 1. The slim, sleek design and smooth contour combine to complete connections in tight spaces.

These connectors were designed to take full advantage of small/ narrow spaces. The contacts are arranged in a grid pattern which shortens the diagonal distances and the body was slimmed down by creating smooth outer surfaces. This design helps to save precious space and makes these connectors virtually tangle free. There is no visible or exposed metal which eliminates the possibility of electrical arcing between the connector and the inside of a metal conduit.

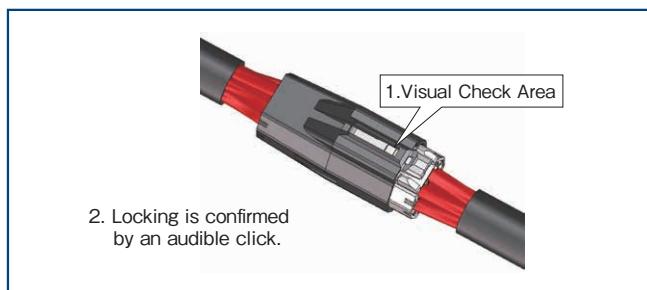


Compact shape due to  $2 \times 2.2$  grid layout of pins  
(Both are 7 contacts with 3A current rating)



### 2. Secure Lock Mechanism

The friction lock emits a clear tactile click upon lock completion. The design prevents incomplete mating and connector disconnection. The socket lock can be visually checked through the plug window after mating. These indicators function together to prevent incomplete mating.

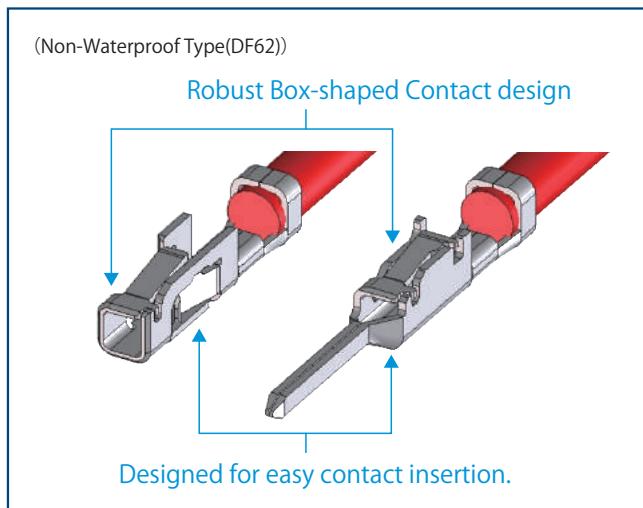


### 3. Reliable Contact Design

Two-point contact design that maintains contact reliability.

## 4. Robust Contact Design

The unique design provides protection to the contacts and lance areas and it prevents any bending or deformity that might occur during mating, assembly or transportation.



## 5. Multiple Variations Available

There are several different wire counts available, giving the designer a wide variety to choose from for the application.

Protected lock type, panel mount type and pin header type are also available.

## 6. Applicator Sharing

The applicators for the DF11 and DF59 Series (existing products) can be adapted to accommodate the DF62 Series applicators.

Note 1 : The DF11 Series applicators require part replacement in order to handle the difference in contact length.

However once replaced the applicator can be used with DF11, DF59 and DF62.

Note 2 : The die and hand tool are used only for the in designated purposes.

Note 3 : Please contact Hirose for additional details.

## Product Specifications

Rated Current (Note 1)	No of Pos.	22 AWG	24 AWG	26-30 AWG	Operating Temperature (Note 2)	-35 to +105°C
	2	4A/pin	2A/pin	1A/pin	Storage Temperature Range (Note 4)	-10 to +60°C
	3	3A/pin	2A/pin	1A/pin	Operating Humidity Range (Note 3)	20 to 80%
	4	3A/pin	2A/pin	1A/pin	Storage Humidity Range (Note 4)	40 to 70%
	5	3A/pin	2A/pin	1A/pin		
	6	3A/pin	2A/pin	1A/pin		
	7	3A/pin	2A/pin	1A/pin		
	13	3A/pin	2A/pin	1A/pin		
	24	2.5A/pin	2A/pin	1A/pin		
	Rated Voltage	250V AC/DC				

UL, C-UL	Rated Voltage	29.9V AC/DC	Operating Temperature (Note 2)	-35 to +75°C
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UL, C-UL File Name  
 UL : E52653  
 C-UL : E52653

Items	Specifications	Conditions
Insulation Resistance	1000MΩ Min.	500V DC
Withstanding Voltage	No flashover or insulation breakdown	650V AC for 1 min.
Contact Resistance	30mΩ Max.	20mV Max., 1mA (DC or 1000Hz)
Vibration Resistance	No electrical discontinuity of 1μs.	10 cycles in each of three directions at frequency 10 to 55Hz, half amplitude 0.75mm
Shock Resistance	No electrical discontinuity of 1μs.	Accelerated velocity : 490 m/s <sup>2</sup> for 11ms, half-sine wave in 3 directions, 3 times for each direction
Humidity Resistance	Contact Resistance : 30mΩ Max. Insulation Resistance : 1000MΩ Min.	96 hours at temperature of +40±2°C and humidity of 90 to 95%
Temperature Cycles	Contact Resistance : 30mΩ Max. Insulation Resistance : 1000MΩ Min.	-55°C : 30 minutes → 5 to 35°C : 2 to 3 minutes → 85°C : 30 minutes → 5 to 35°C : 2 to 3 minutes, 5 cycles
Mating Durability	Contact Resistance : 30mΩ Max.	30 times
Solder Heat Resistance	No deformation in appearance or significant damage to contacts.	Flow : 260°C, 10sec. Hand soldering : temperature of soldering iron at 300°C for 3sec.

Note 1 : This is the maximum current rating while all pins are powered or used as all power lines.

When isolating power lines into multiple circuits, current ratings may go above the stated current ratings. Please consult Hirose for details before doing this.

Note 2 : Includes temperature rise caused by current flow.

Note 3 : The connector should be completely dry (no condensation present)

Note 4 : Applicable to unused items in packed condition.

Note 5 : Information contained in this catalog represents general requirements for this Series.

Contact us for the drawings and specifications for a specific part number shown.

## Materials / Finish

Item	Component	Material	Finish	UL Flame Retardant Grade	RoHS2
Socket Crimping Contact	Contact	Phosphorous Bronze	Gold Plating or Tin Plating	-	Yes
Plug Crimping Contact				-	
Crimping Socket	Insulator	PBT	White or Black	UL94V-0	Yes
Crimping Plug				-	
Header	Insulator	Straight : Polyamide	Black	UL94V-0	Yes
		Right Angle : PBT			
	Contact	Copper Alloy	Gold Plating or Tin Plating	-	
	Retention Tab	Brass	Tin Plating	-	

## 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.

Note : The waterproof type (DF62W Series) and non-waterproof type (DF62 Series) are not intermateable.

### ● Connector

#### DF62B - # S - 2.2 C (##)

① ② ③ ④ ⑤ ⑥

① Series Name	DF62B (Regular Type) DF62C (Protected Lock Type) DF62P (Panel Mount Type)	④ Contact Pitch	2.2mm
② No. of Pos.	2, 3, 4, 5, 6, 7, 13, 24	⑤ Connection Part	C : Crimping Housing
③ Connector Type	S : Socket EP : In-line Plug	⑥ Color	Socket (None : White, 11 : Black) In-line Plug (None : Black, 10 : White)

### ● Contact

#### DF62 - EP 2428 PCF A

① ② ③ ④ ⑤

① Series Name	DF62	④ Contact Type / Packaging Type	SCF : Socket crimping contact, reel SC : Socket crimping contact, pieces PCF : Plug crimping contact, reel PC : Plug crimping contact, pieces
② Terminal Type	EP : In-line Plug	⑤ Plating Type	A : Gold plating None : Tin plating
③ Applicable Wire Size	22 : 22 AWG 2428 : 24 to 28 AWG 30 : 30 AWG		

### ● Connector

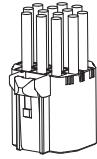
#### DF62 - # P - 2.2 DSA (##)

① ② ③ ④ ⑤ ⑥

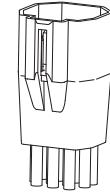
① Series Name	DF62	④ Contact Pitch	2.2mm
② No. of Pos.	13, 24	⑤ Connection Part Shape	DSA : Straight Pin Header DS : Right Angle Pin Header
③ Connector Type	P : Pin Header	⑥ Plating Type	None : Tin Plating 01 : Gold Plating

## Diagram of Connector Mating Combinations

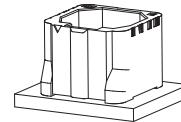
Crimping Socket (Note)	Socket Crimping Contact
DF62B-#S-2.2C	DF62-22SC(F)(A)
DF62C-#S-2.2C	DF62-2428SC(F)(A) DF62-30SC(F)(A)



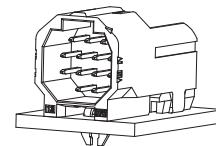
Crimping Plug (Note)	Plug Crimping Contact
DF62B-#EP-2.2C	DF62-EP22PC(F)(A)
DF62P-#EP-2.2C	DF62-EP2428PC(F)(A) DF62-EP30PC(F)(A)



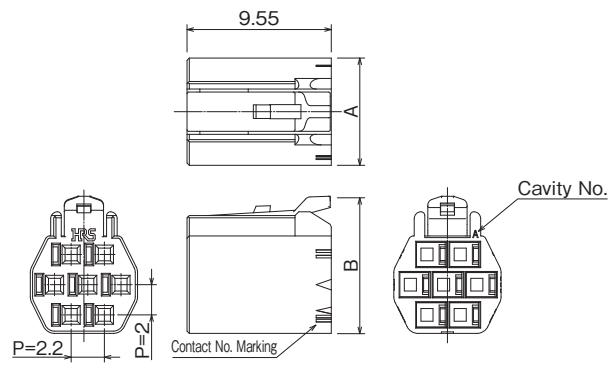
Straight Pin Header
DF62-#P-2.2DSA



Right Angle Pin Header
DF62-#P-2.2DS



## Socket (Standard Type)

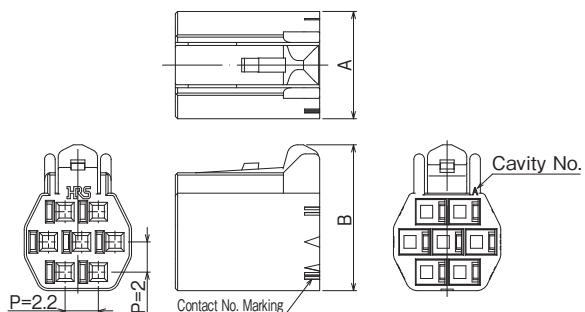


Part No.	HRS No.	No. of Pos.	A	B	Unit : mm Purchase Unit	
DF62B-2S-2.2C(##)	CL0544-0551-0-##	2	4.9	5.08	100pcs per bag	
DF62B-3S-2.2C(##)	CL0544-0552-2-##	3		7.08		
DF62B-4S-2.2C(##)	CL0544-0553-5-##	4				
DF62B-5S-2.2C(##)	CL0544-0554-8-##	5		9.08		
DF62B-6S-2.2C(##)	CL0544-0555-0-##	6				
DF62B-7S-2.2C(##)	CL0544-0556-3-##	7	7.1	11.08		
DF62B-13S-2.2C(##)	CL0544-0557-6-##	13				
DF62B-24S-2.2C(##)	CL0544-0539-4-##	24		12.3		

[Specification No.] -##,(##)

None : White

## Socket (Protected Lock Type)



7pos. shown as an example.

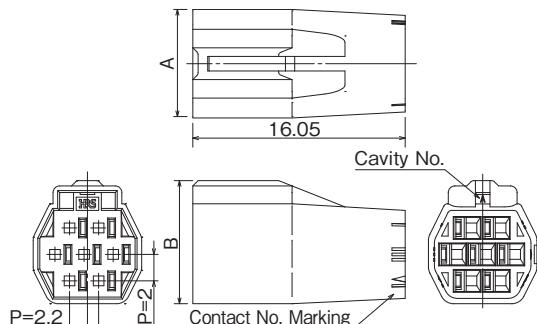
Part No.	HRS No.	No. of Pos.	A	B	Unit : mm Purchase Unit	
DF62C-2S-2.2C(##)	CL0544-0565-4-##	2	4.9	5.65	100pcs per bag	
DF62C-3S-2.2C(##)	CL0544-0566-7-##	3		7.65		
DF62C-4S-2.2C(##)	CL0544-0567-0-##	4				
DF62C-5S-2.2C(##)	CL0544-0568-2-##	5				
DF62C-6S-2.2C(##)	CL0544-0569-5-##	6	7.1	9.65		
DF62C-7S-2.2C(##)	CL0544-0570-4-##	7		11.65		
DF62C-13S-2.2C(##)	CL0544-0571-7-##	13	9.3	13.65		
DF62C-24S-2.2C(##)	CL0544-0541-6-##	24	12.3			

[Specification No.] -##,(##)

None : White

(11) : Black

## Plug (Standard Type)



7pos. shown as an example.

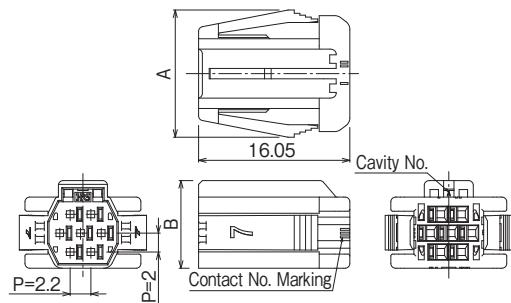
Part No.	HRS No.	No. of Pos.	A	B	Unit : mm Purchase Unit
DF62B-2EP-2.2C(##)	CL0544-0558-9-##	2		5.3	
DF62B-3EP-2.2C(##)	CL0544-0559-1-##	3	6.0		
DF62B-4EP-2.2C(##)	CL0544-0560-0-##	4		7.3	
DF62B-5EP-2.2C(##)	CL0544-0561-3-##	5			
DF62B-6EP-2.2C(##)	CL0544-0562-6-##	6	8.2		
DF62B-7EP-2.2C(##)	CL0544-0563-9-##	7		9.3	
DF62B-13EP-2.2C(##)	CL0544-0564-1-##	13	10.4	11.3	
DF62B-24EP-2.2C(##)	CL0544-0540-3-##	24	13.4	13.3	

[Specification No.] -##,(##)

None : Black

(10) : White

## Plug (Panel Mount Type)

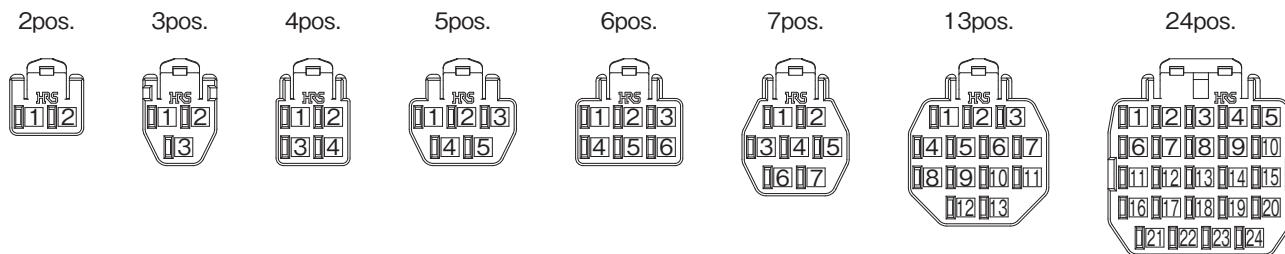


Part No.	HRS No.	No. of Pos.	A	B	Unit : mm Purchase Unit	
DF62P-2EP-2.2C(##)	CL0544-0543-1-##	2	11.3	5.3	100pcs per bag	
DF62P-3EP-2.2C(##)	CL0544-0544-4-##	3		7.3		
DF62P-4EP-2.2C(##)	CL0544-0545-7-##	4				
DF62P-5EP-2.2C(##)	CL0544-0546-0-##	5				
DF62P-6EP-2.2C(##)	CL0544-0547-2-##	6		13.5		
DF62P-7EP-2.2C(##)	CL0544-0548-5-##	7		9.3		
DF62P-13EP-2.2C(##)	CL0544-0549-8-##	13		15.7		
DF62P-24EP-2.2C(##)	CL0544-0550-7-##	24		18.7		

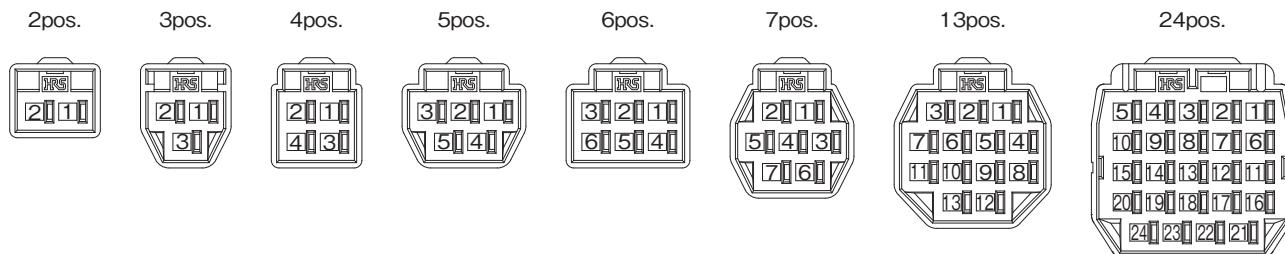
[Specification No.] -##,(##)

None : Black

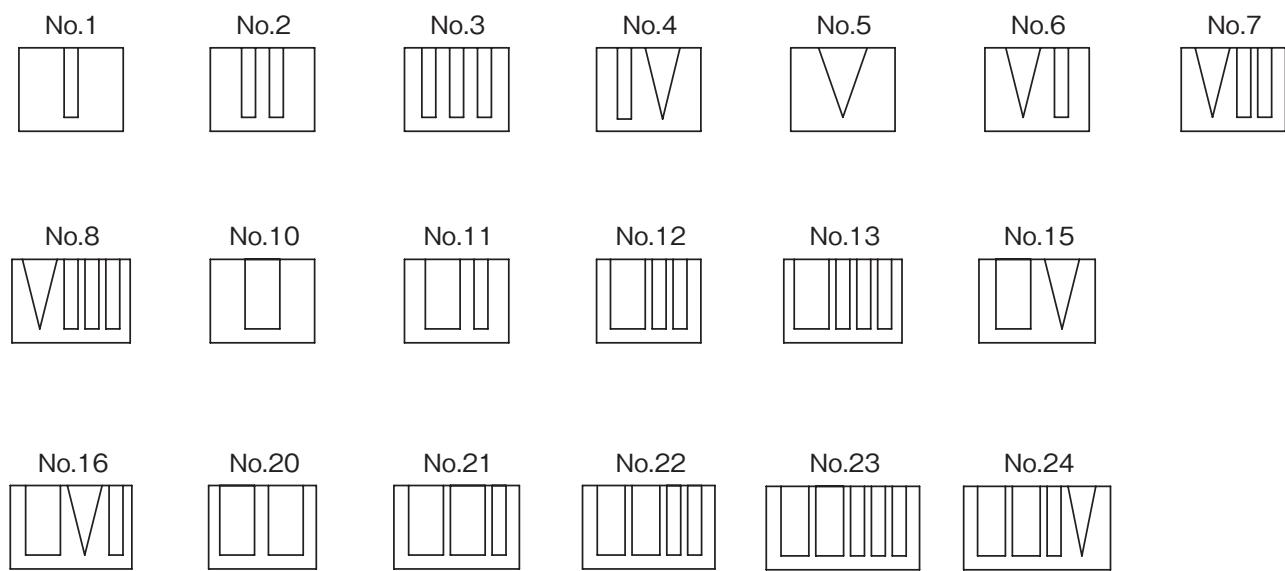
### ■ Socket Position Number Pin Configuration (Shown from the Mating Side)



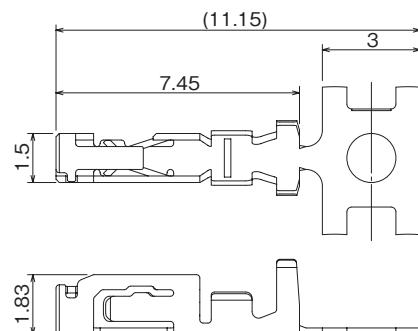
### ■ Plug Position Number Pin Configuration (Shown from the Mating Side)



### ■ Position No. Diagram



## Socket Crimping Contact



### ● Reel Contact, Applicable Tool : Applicator

Part No.	HRS No.	Finish	Applicable Wire (Tin Plated Annealed Copper) (Note)					Purchase Unit
			UL	AWG	Stranded Wire Structure	Calculated Cross-section	Jacket Diameter	
DF62-22SCF DF62-22SCFA	CL0544-0520-6-00 CL0544-0506-5-00	Tin Plated Gold Plated	1061	22	17/0.16mm	0.342mm <sup>2</sup>	φ 1.2 to φ 1.45mm	15,000pcs per reel
DF62-2428SCF DF62-2428SCFA	CL0544-0521-9-00 CL0544-0500-9-00	Tin Plated Gold Plated		24 26 28	11/0.16mm 7/0.16mm 7/0.127mm	0.221mm <sup>2</sup> 0.141mm <sup>2</sup> 0.089mm <sup>2</sup>	φ 0.9 to φ 1.45mm	
DF62-30SCF DF62-30SCFA	CL0544-0522-1-00 CL0544-0508-0-00	Tin Plated Gold Plated	1007	30	7/0.1mm	0.055mm <sup>2</sup>	φ 0.75 to φ 1.2mm	15,000pcs per reel

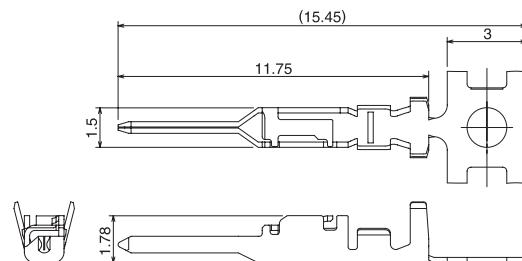
Note: When using cables not specified by Hirose, please contact a Hirose sales representative.

### ● Loose Piece, Applicable Tool : Hand Crimping Tool

Part No.	HRS No.	Finish	Applicable Wire (Tin Plated Annealed Copper) (Note)					Purchase Unit
			UL	AWG	Stranded Wire Structure	Calculated Cross-section	Jacket Diameter	
DF62-22SC DF62-22SCA	CL0544-0572-0-00 CL0544-0526-2-00	Tin Plated Gold Plated	1061	22	17/0.16mm	0.342mm <sup>2</sup>	φ 1.26mm	100pcs per bag
DF62-2428SC DF62-2428SCA	CL0544-0573-2-00 CL0544-0527-5-00	Tin Plated Gold Plated		24 26 28	11/0.16mm 7/0.16mm 7/0.127mm	0.221mm <sup>2</sup> 0.141mm <sup>2</sup> 0.089mm <sup>2</sup>	φ 1.42mm φ 1.28mm φ 1.18mm	
DF62-30SC DF62-30SCA	CL0544-0574-5-00 CL0544-0528-8-00	Tin Plated Gold Plated	1007	30	7/0.1mm	0.055mm <sup>2</sup>	φ 0.82mm	100pcs per bag

Note: The applicable cables include only those listed above.

## Plug Crimping Contact



### ● Reel Contact, Applicable Tool : Applicator

Part No.	HRS No.	Finish	Applicable Wire (Tin Plated Annealed Copper) (Note)					Purchase Unit
			UL	AWG	Stranded Wire Structure	Calculated Cross-section	Jacket Diameter	
DF62-EP22PCF DF62-EP22PCFA	CL0544-0523-4-00 CL0544-0507-8-00	Tin Plated Gold Plated	1061	22	17/0.16mm	0.342mm <sup>2</sup>	φ 1.2 to φ 1.45mm	15,000pcs per reel
DF62-EP2428PCF DF62-EP2428PCFA	CL0544-0524-7-00 CL0544-0501-1-00	Tin Plated Gold Plated		24 26 28	11/0.16mm 7/0.16mm 7/0.127mm	0.221mm <sup>2</sup> 0.141mm <sup>2</sup> 0.089mm <sup>2</sup>	φ 0.9 to φ 1.45mm	
DF62-EP30PCF DF62-EP30PCFA	CL0544-0525-0-00 CL0544-0509-3-00	Tin Plated Gold Plated		30	7/0.1mm	0.055mm <sup>2</sup>	φ 0.75 to φ 1.2mm	

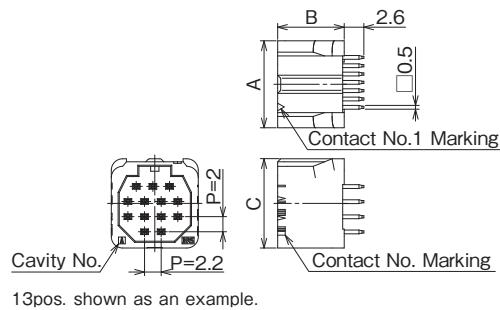
Note: When using cables not specified by Hirose, please contact a Hirose sales representative.

### ● Loose Piece, Applicable Tool : Hand Crimping Tool

Part No.	HRS No.	Finish	Applicable Wire (Tin Plated Annealed Copper) (Note)					Purchase Unit
			UL	AWG	Stranded Wire Structure	Calculated Cross-section	Jacket Diameter	
DF62-EP22PC DF62-EP22PCA	CL0544-0575-8-00 CL0544-0529-0-00	Tin Plated Gold Plated	1061	22	17/0.16mm	0.342mm <sup>2</sup>	φ 1.26mm	100pcs per bag
DF62-EP2428PC DF62-EP2428PCA	CL0544-0576-0-00 CL0544-0530-0-00	Tin Plated Gold Plated		24 26 28	11/0.16mm 7/0.16mm 7/0.127mm	0.221mm <sup>2</sup> 0.141mm <sup>2</sup> 0.089mm <sup>2</sup>	φ 1.42mm φ 1.28mm φ 1.18mm	
DF62-EP30PC DF62-EP30PCA	CL0544-0577-3-00 CL0544-0529-0-00	Tin Plated Gold Plated		30	7/0.1mm	0.055mm <sup>2</sup>	φ 0.82mm	

Note : The applicable cables include only those listed above.

## Straight Pin Header



Part No.	HRS No.	No. of Pos.	A	B	C	Tin Plating	Gold Plating	Purchase Unit
DF62-13P-2.2DSA(##)	CL0544-0582-0-##	13	11.5	8.8	11.8	Yes	—	100pcs per tray
DF62-24P-2.2DSA(##)	CL0544-0584-0-##	24	14.5	10.8	13.8	Yes	Yes	80pcs per tray

[Specification No. ] -##,(##)

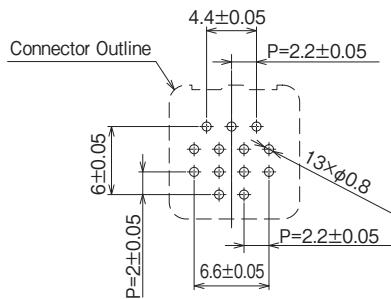
None : Tin Plating

(01) : Gold Plating

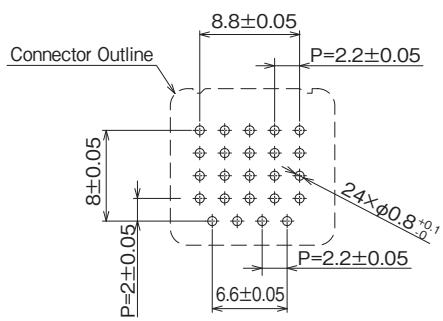
Note : Please contact a Hirose representative for requests on gold plating pin count variations that have not been released.

### ■ Recommended thickness of PCB: $t=1.6\pm0.1\text{mm}$

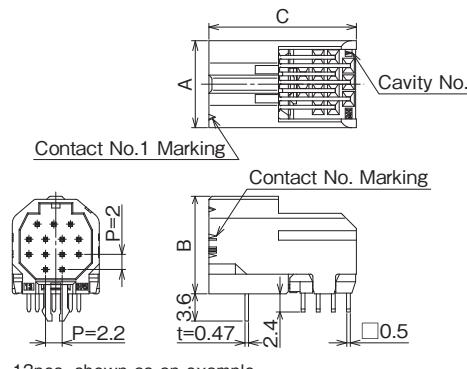
#### [13pos.]



#### [24pos.]



## Right Angle Pin Header



Part No.	HRS No.	No. of Pos.	A	B	C	Tin Plating	Gold Plating	Unit : mm	Purchase Unit
DF62-13P-2.2DS(##)	CL0544-0581-0-##	13	11.5	12.9	19.5	Yes	—		
DF62-24P-2.2DS(##)	CL0544-0583-0-##	24	15.4	14.9	23.5	Yes	Yes		100pcs per tray

[Specification No. ] -##,(##)

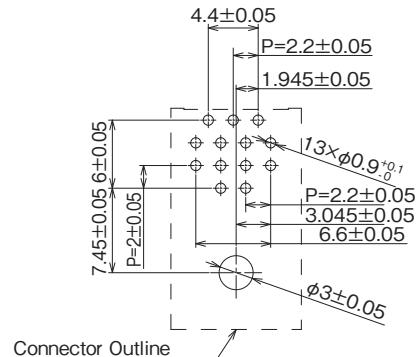
None : Tin Plating

(01) : Gold Plating

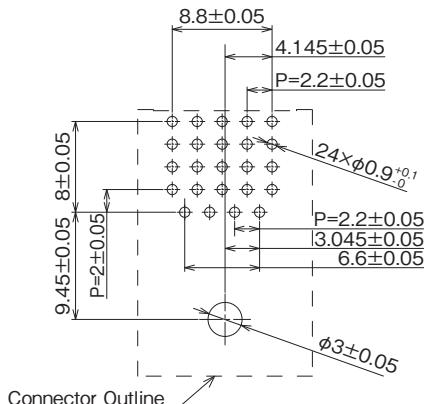
Note : Please contact a Hirose representative for requests on gold plating pin count variations that have not been released.

### ■ Recommended thickness of PCB: $t=1.6\pm0.1\text{mm}$

#### [13pos.]

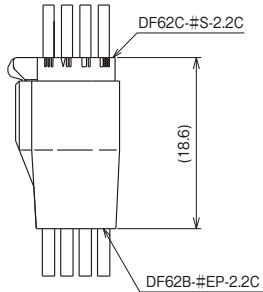


#### [24pos.]

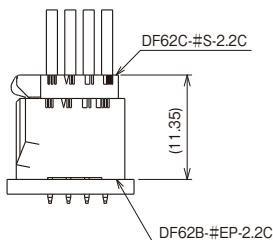


## Mated Dimensions

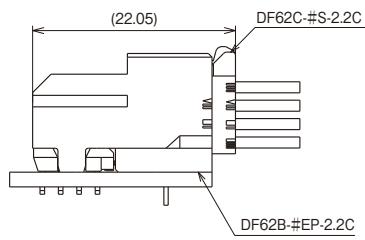
### ● Wire-to-Wire Connection



### ● Wire-to-Board Connection (Straight Pin Header)



### ● Wire-to-Board Connection (Right Angle Pin Header)



## Applicable Crimping Tool

Tool	Part No.	HRS No.	Applicable Contact
Applicator	AP105-DF62-22	CL0901-4626-3-00	DF62-22SCFA/SCF DF62-EP22PCFA/PCF
	AP105-DF62-2428	CL0901-4625-0-00	DF62-2428SCFA/SCF DF62-EP2428PCFA/PCF
	AP105-DF62-30	CL0901-4627-6-00	DF62-30SCFA/SCF DF62-EP30PCFA/PCF
Press Body	CM-105C	CL0901-0001-0-00	-
Hand Tool	HT801/DF62-22(10) (Note 3)	CL0550-0401-9-10	DF62-22SCA/SC DF62-EP22PCA/PC
	HT801/DF62-2428(10) (Note 4)	CL0550-0400-6-10	DF62-2428SCA/SC DF62-EP2428PCA/PC
	HT801/DF62-30(10) (Note5)	CL0550-0402-1-10	DF62-30SCA/SC DF62-EP30PCA/PC
Extraction Tool	DF62/RE-MD	CL0902-4645-4-00	DF62##SCFA/SCF/SCA/SC DF62##PCFA/PCF/PCA/PC

Note 1 : Issues with non-Hirose specified tools are outside the scope of warranty.

Note 2 : Please conduct crimping work according to the "Crimping Quality Standard" (ETAD-H0642,ETAD-H0643) and "Crimping Condition Table".

Note 3 : The compatible wire is limited to UL1061 (22 AWG).

Note 4 : The compatible wire is limited to UL1007 (24 to 28 AWG).

Note 5 : The compatible wire is limited to UL1061 (30 AWG).

Note 6 : If you do not use tools specified by our company,  
please contact your our company sales representative if you would like to request  
dies drawing.

## Crimping

### ■ Items Required Prior to Starting

The work-related documents listed below are required before starting harness assembly.

(The ● mark indicates a required document.)

When the documents shown below are not available, ask a Hirose sales personnel to provide them.

Document Title	Description	Automatic Crimping Machine	Hand Crimping Tool	Remarks
(1) Main unit of crimping machine instruction manual	Explanation of main press machine unit	●	-	Bundled with the purchase of the main press machine unit.
(2) Applicator Spare Parts Identification	Explanation for Applicator installation	●	-	Bundled with the purchase of applicator.
(3) Crimp Conditions	Standard values of : Crimp height Tensile strength	●	-	
(4) Crimp Quality Standards	Various standards for crimping conditions	●	-	Bundled with the purchase of hand tool.
(5) Operating Instructions for Hand Tool	Inspection items of : Crimp height Tensile strength and others	-	●	
(6) Harness Procedure Manual DF62 Series : ETAD-H0593	Harness procedure	●	●	Ask a HRS sales representative.

### ■ Tools

The tools specified by Hirose should be used for crimping work.

- Crimping work by tools other than those specified must not be done because it may result in contact failure, disconnection of cable, etc.
- The operating instructions manual is available for the crimping machine and the applicator. Be sure to carefully read the operating instructions manual before implementing the work.

### ■ Applicable Electric Wires

When using a wire other than the applicable wires please contact a Hirose representative.

#### [Precautions]

- Electric wires that are suitable for crimping connectors are tin-plated stranded soft copper wire.
- Avoid crimping solid wires, wires with polyester threads or tin-coated wires.
- Avoid crimping two electric wires together.
- The crimp height setting value (Note) may vary between tin-plated and gold-plated contacts even if the same electric wires are used.
- The crimp height setting value (Note) may vary depending on the difference in the core wire configuration even if the computed cross-sectional area is the same.

DF62W Series

# Water Resistant, Slim In-line Connector for Internal Wiring



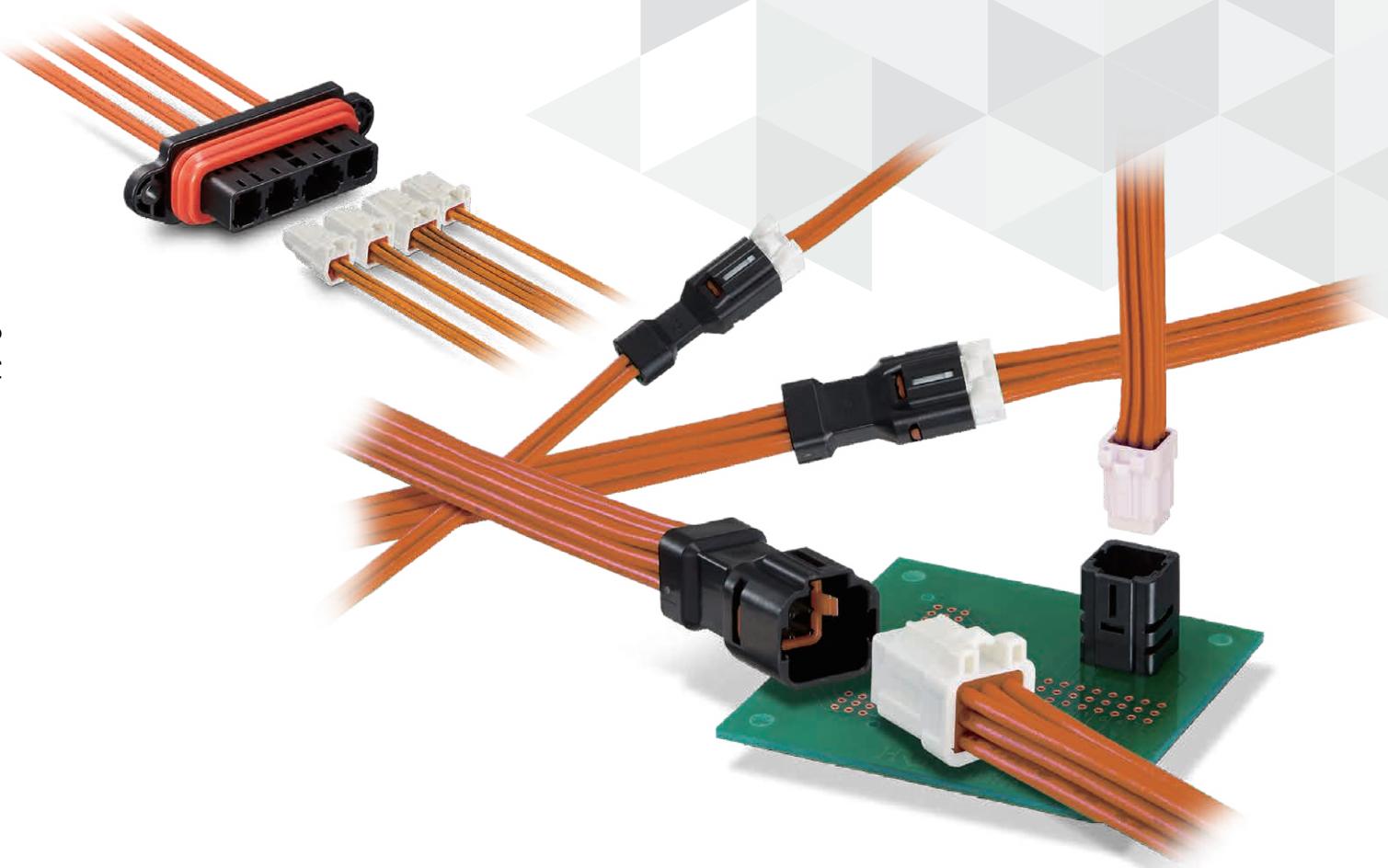
Positive-Lock



Waterproof



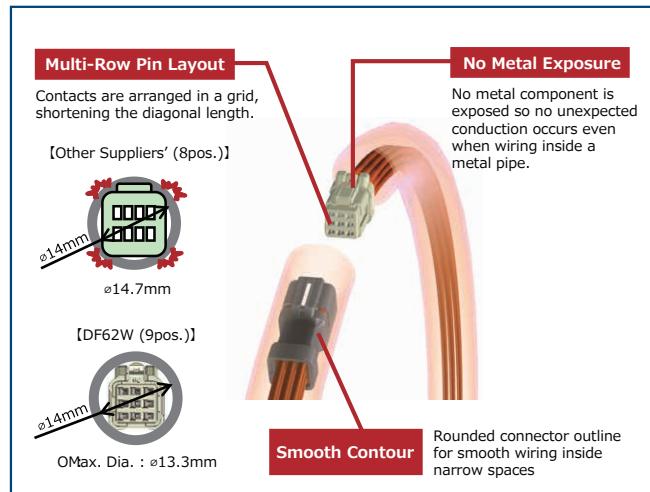
Slim In-Line



## Features

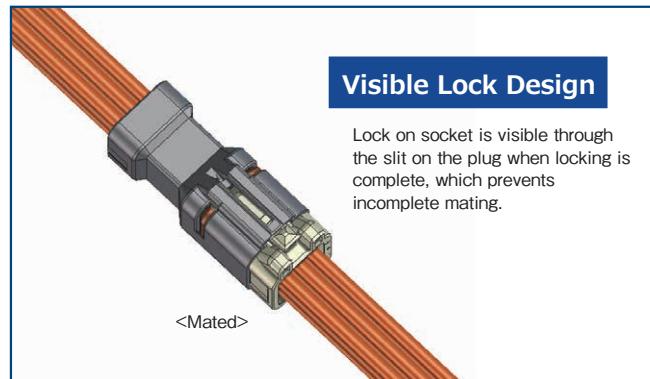
### 1. The slim, sleek design and smooth contour combine to complete connections in tight spaces.

These connectors were designed to take full advantage of small/ narrow spaces. The contacts are arranged in a grid pattern which shortens the diagonal distances and the body was slimmed down by creating smooth outer surfaces. This design helps to save precious space and makes these connectors virtually tangle free. There is no visible or exposed metal which eliminates the possibility of electrical arcing between the connector and the inside of a metal conduit.



### 2. Secure Lock Mechanism

The friction lock emits a clear tactile click upon lock completion. The design prevents incomplete mating and connector disconnection. The socket lock can be visually checked through the plug window after mating.

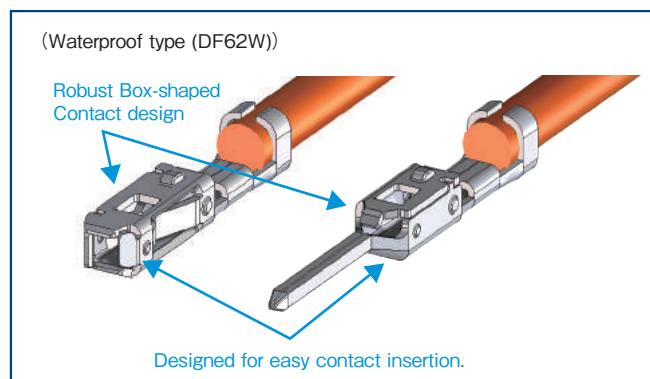


### 3. Reliable Contact Design

Two-point contact design that maintains contact reliability.

### 4. Robust Contact Design

The unique design protects the contacts and lance areas. It prevents any bending or deformity that might occur during mating, assembly or transportation.



## 5. Multiple Variations Available

Several product variation are available so designers can choose the one most suited to their application. Compatible with a wide range of cable sizes and available in in-line and pin header types.

## 6. Applicator Sharing

DF62W is compatible with the DF11, DF59 and DF62 Series applicators by exchanging the parts.

Note 1 : DF62W requires a dedicated die and hand tool.

Note 2 : Some products are not compatible.

Please contact Hirose for additional details.

## 7. Condensation Prevention

IP67 level water-resistance in mated condition.

IP67 waterproof equivalent under specific conditions.

Please contact a Hirose representative for detailed specifications and conditions.

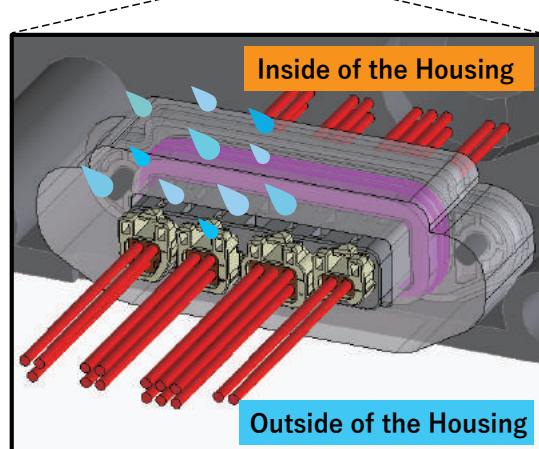
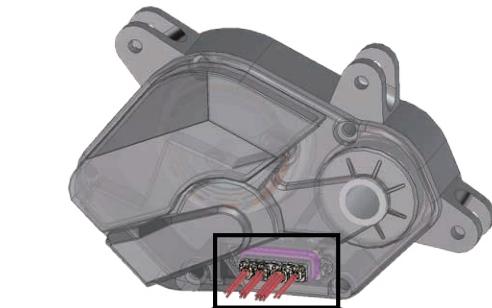


## 8. Panel Waterproof Type

A panel waterproof type combining 2, 3, 4, and 6pos. is also available. IP67 level waterproofing prevents water immersion from outside the housing.

Note : The inside of the housing is not waterproof.

[Example] E-Bike Drive Unit



## Product Specifications

Rated Current (Note1)	No of Pos.	20 AWG	22 AWG	24 AWG	26 AWG	Operating Temperature (Note 2)	-40 to +105°C
	2	5A/pin	4A/pin	3.5A/pin	3A/pin	Storage Temperature Range (Note 4)	-10 to +60°C
	3	3.5A/pin	3A/pin	2A/pin	1A/pin	Operating Humidity Range (Note 3)	20 to 80%
	4	3.5A/pin	3A/pin	2A/pin	1A/pin	Storage Humidity Range (Note 4)	40 to 70%
	6	3.5A/pin	3A/pin	2A/pin	1A/pin		
	9	3.5A/pin	3A/pin	2A/pin	1A/pin		
	Rated Voltage	250V AC/DC					

UL	Rated Voltage	29.9V AC/DC	Operating Temperature (Note 2)	-40 to +75°C
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C-UL	Rated Voltage	29.9V AC/DC	Operating Temperature (Note 2)	-40 to +75°C
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UL, C-UL File Name  
UL : E52653  
C-UL : E52653

Items	Specifications	Conditions
Insulation Resistance	1000M Ω Min.	500V DC
Withstanding Voltage	No flashover or insulation breakdown	650V AC for 1 min.
Contact Resistance	30m Ω Max.	20mV Max., 1mA (DC or 1000Hz)
Vibration Resistance	No electrical discontinuity of 1 μ s.	10 cycles in each of three directions at frequency 10 to 55Hz, half amplitude 0.75mm
Shock Resistance	No electrical discontinuity of 1 μ s.	Accelerated velocity : 490 m/s <sup>2</sup> for 11ms, half-sine wave in 3 directions, 3 times for each direction
Humidity Resistance	Contact Resistance : 30m Ω Max. Insulation Resistance : 1000M Ω Min.	96 hours at temperature of +40 ± 2°C and humidity of 90 to 95%
Temperature Cycles	Contact Resistance : 30m Ω Max. Insulation Resistance : 1000M Ω Min.	-55°C : 30 minutes → 5 to 35°C : 2 to 3 minutes → 85°C : 30 minutes → 5 to 35°C : 2 to 3 minutes, 5 cycles
Mating Durability	Contact Resistance : 30m Ω Max.	Tin plating : 30 times Gold plating : 50 times
Solder Heat Resistance	No deformation in appearance or significant damage to contacts.	Flow : 260°C, 10sec. Hand soldering : temperature of soldering iron at 300°C for 3sec.

Note 1 : This is the maximum current rating while all pins are powered or used as all power lines.  
When isolating power lines into multiple circuits, current ratings may go above the stated current ratings. Please consult Hirose for details before doing this.

Note 2 : The connector should be completely dry (no condensation present)

Note 3 : Information contained in this catalog represents general requirements for this Series.

Contact us for the drawings and specifications for a specific part number shown.

Note 4 : Applicable to unused items in packed condition.

Note 5 : The panel waterproof type is not UL/C-UL certified.

## Materials / Finish

Item	Component	Material	Finish	UL Flame Retardant Grade	RoHS2
Socket Crimp Contact	Contact	Phosphorous Bronze	Gold Plating or Tin Plating	-	
Plug Crimp Contact				-	
Crimp Socket	Insulator	PBT	White	UL94V-0	Yes
Crimp Plug			Black		
Crimp Socket	Seal	Silicone Rubber	Bengala or Gray	-	Yes
Crimp Plug					
Header	Insulator	PBT	Black	UL94V-0	
	Contact	Copper Alloy	Gold Plating or Tin Plating	-	
	Retention Tab	Brass	Tin Plating	-	
	Seal	Silicone Rubber	Bengala	-	

## 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.

Note : The waterproof type (DF62W Series) and non-waterproof type (DF62 Series) are not intermateable.

### ● Connector (In-line)

**DF62W # - # S - 2.2 C**

1 2 3 4 5 6

1 Series Name	DF62W	4 Connector Type	S : Socket EP : In-line Plug
2 Shape Type	None : Regular Type C : Thin Cable Type P : Panel Waterproof Type	5 Contact Pitch	2.2mm
3 No. of Pos.	2, 3, 4, 6, 9		

### ● Connector (DIP)

**DF62WZ - # P - 2.2 DSA (##)**

1 2 3 4 5 6

1 Series Name	DF62W or DF62WZ	4 Contact Pitch	2.2mm
2 No. of Pos.	3, 6, 9	5 Termination Type	DSA : Straight Pin Header
3 Connector Type	P : Pin Header	6 Plating Type	20 : Tin Plating 50 : Gold Plating

### ● Waterproof Pin

**DF62W - WP**

1 2

1 Series Name	DF62W	2 Usage	WP : Waterproof Pin
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### ● Contact

**DF62W - EP 2226 PCF A**

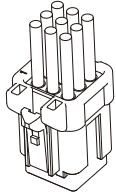
1 2 3 4 5

1 Series Name	DF62W	4 Contact Type / Packaging Type	SCF : Socket Crimp Contact, Reel SC : Socket Crimp Contact, Pieces PCF : Plug Crimp Contact, Reel PC : Plug Crimp Contact, Pieces
2 Terminal Type	EP : In-line Plug		
3 Applicable Wire Size	2022 : 20 - 22 AWG 2226 : 22 - 26 AWG	5 Plating Type	A : Gold Plating None : Tin Plating

## Connector Mating Combinations Diagram

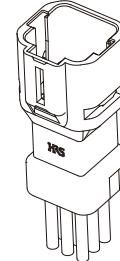
Crimp Socket (Note)	Socket Crimp Contact
DF62W-#S-2.2C (Standard type)	DF62W-2022SC(F)(A)
DF62WC-#S-2.2C (Thin cable type)	DF62W-2226SC(F)(A)

Note) When using without the crimp contact inserted, fill the contact hole of socket and plug with the DF62W-WP waterproof pin.



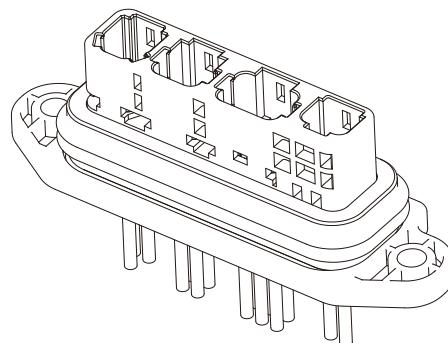
Crimp Plug (Note)	Plug Crimp Contact
DF62W-#EP-2.2C (Standard type)	DF62W-EP2022PC(F)(A)
DF62WC-#EP-2.2C (Thin cable type)	DF62W-EP2226PC(F)(A)

Note) When using without the crimp contact inserted, fill the contact hole of socket and plug with the DF62W-WP waterproof pin.

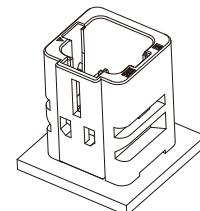


Crimp Plug (Panel Waterproof Type)	Plug Crimp Contact
DF62WP-3/4/6/2EP-2.2C	DF62W-EP2022PC(F)(A)
	DF62W-EP2226PC(F)(A)

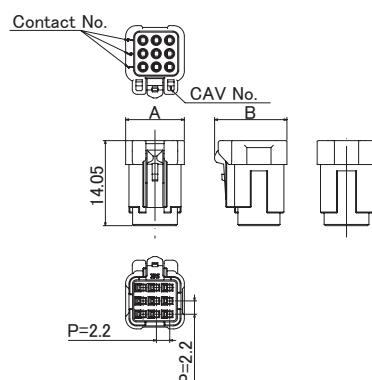
Note : The compatible sockets are 2,3,4, and 6pos.



Straight Pin Header
DF62W(Z)-#P-2.2DSA(##)



## Crimp Socket

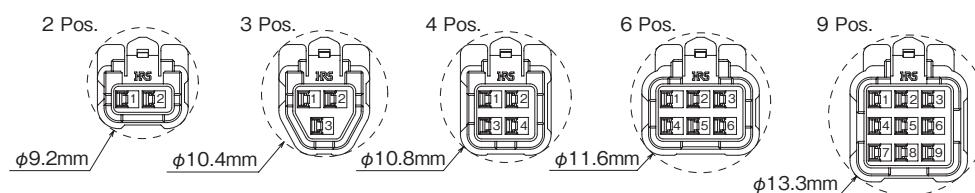


9pos. shown as an example.

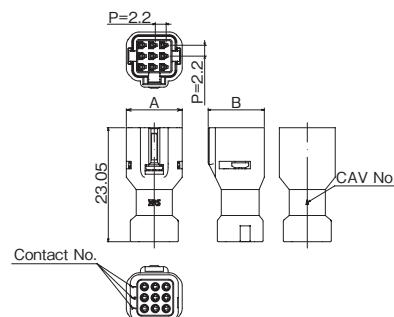
Unit : mm

Part No.	HRS No.	No. of Pos.	A	B	Applicable Jacket Outer Diameter	Purchase Unit
DF62W-2S-2.2C	CL0544-1002-7-00	2		7.55		
DF62W-3S-2.2C	CL0544-1004-2-00	3		9.75	$\phi$ 1.4 to 1.6mm	100pcs per bag
DF62W-4S-2.2C	CL0544-1006-8-00	4		11.95		
DF62W-6S-2.2C	CL0544-1008-3-00	6		7.55		
DF62W-9S-2.2C	CL0544-1010-5-00	9		9.75	$\phi$ 0.98 to 1.2mm	100pcs per bag
DF62WC-2S-2.2C	CL0544-1046-0-00	2		11.95		
DF62WC-3S-2.2C	CL0544-1054-0-00	3		7.5		
DF62WC-4S-2.2C	CL0544-1051-0-00	4		9.75		
DF62WC-6S-2.2C	CL0544-1057-0-00	6		11.95		
DF62WC-9S-2.2C	CL0544-1032-0-00	9		7.55		

### ■ Position Number Pin Configuration (Shown from the Mating Side)



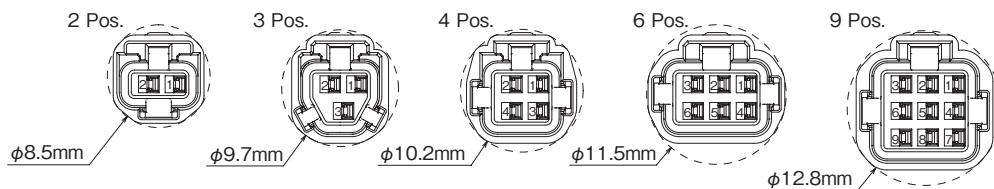
## Crimp Plug



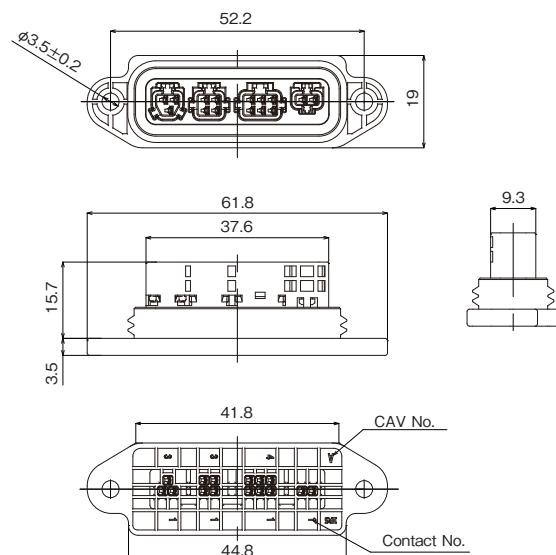
9pos. shown as an example.

Part No.	HRS No.	No. of Pos.	A	B	Applicable Jacket Outer Diameter	Unit : mm	Purchase Unit
DF62W-2EP-2.2C	CL0544-1003-0-00	2	7.5	6.7	$\phi$ 1.4 to 1.6mm	100pcs per bag	
DF62W-3EP-2.2C	CL0544-1005-5-00	3	8.0				
DF62W-4EP-2.2C	CL0544-1007-0-00	4	9.1				
DF62W-6EP-2.2C	CL0544-1009-6-00	6					
DF62W-9EP-2.2C	CL0544-1011-8-00	9		11.35			
DF62WC-2EP-2.2C	CL0544-1047-0-00	2	7.5	6.7			
DF62WC-3EP-2.2C	CL0544-1053-0-00	3	8.0				
DF62WC-4EP-2.2C	CL0544-1052-0-00	4	9.1				
DF62WC-6EP-2.2C	CL0544-1058-0-00	6					
DF62WC-9EP-2.2C	CL0544-1037-0-00	9	11.3	11.35			

### ■ Position Number Pin Configuration (Shown from the Mating Side)

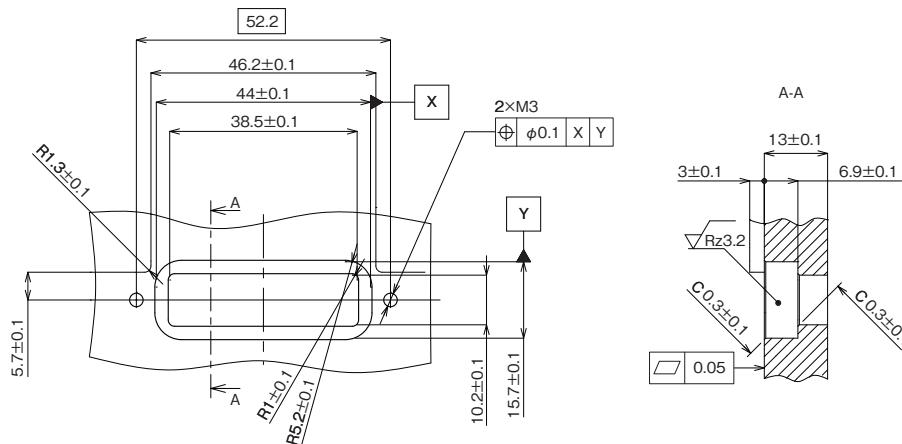


## Crimp Plug (Panel Waterproof Type)



Based on the above diagram,  
the number of positions for each mating port is as follows  
from left to right : 3, 4, 6 and 2pos.

### Panel Cut-Out Dimensions

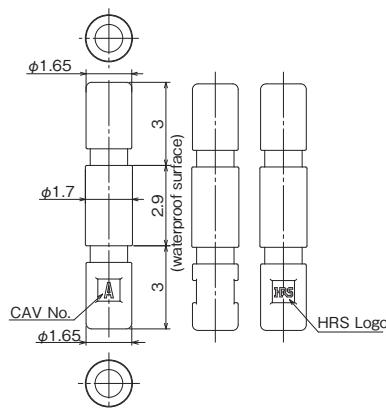


Unit : mm

Part No.	HRS No.	No. of Pos.	Applicable Jacket Outer Diameter	Purchase Unit
DF62WP-3/4/6/2EP-2.2C	CL0544-1056-0-00	2/3/4/6	Ø 0.98 to 1.2mm Ø 1.4 to 1.6mm	24pcs per tray

Note: The panel waterproof type is not UL/C-UL certified.

## Waterproof Pin

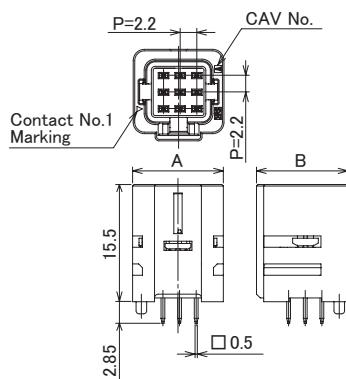


Part No.	HRS No.	Purchase Unit
DF62W-WP	CL0544-1014-6-00	100pcs per bag

Unit : mm

Note 1 : When using without the crimp contact inserted, fill the contact hole of socket and plug with a waterproof pin.  
 Note 2 : Not compatible with the panel waterproof type.

## Straight Pin Header



9pos. shown as an example.

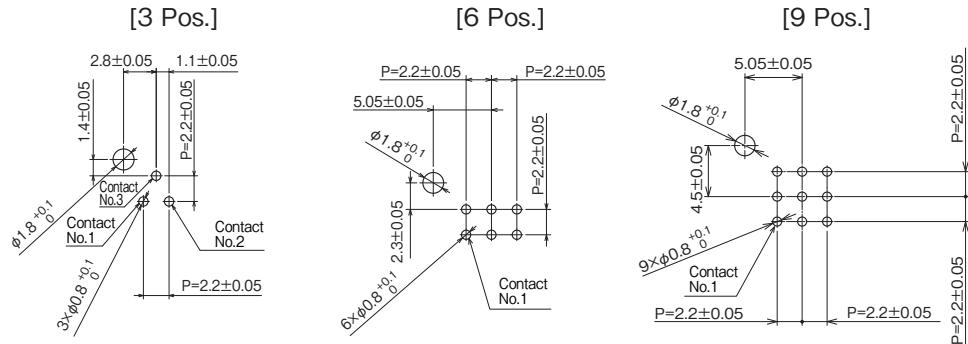
Part No.	HRS No.	No. of Pos.	A	B	Tin Plating	Gold Plating	Purchase Unit
DF62W-3P-2.2DSA(##)	CL0544-1021-0-##	3	12	9.9	Yes	-	256pcs per tray
DF62WZ-6P-2.2DSA(##)	CL0544-1059-0-##	6	8.7	9.5	Yes	-	240pcs per tray
DF62WZ-9P-2.2DSA(##)	CL0544-1050-0-##	9	12	12.1	Yes	Yes	200pcs per tray

[Specification No. (##),-##]

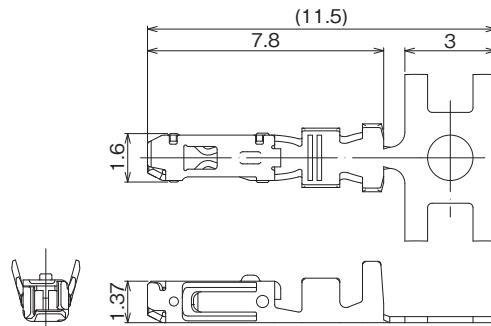
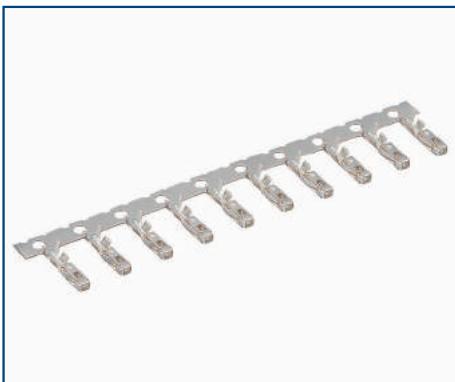
(20) : Tin plating

(50) : Gold plating

### ■ Recommended PCB Layout (Recommended Thickness t=1.6mm)



## Socket Crimp Contact



### ● Reel Contact, Applicable Tool : Applicator

Part No.	HRS No.	Finish	Applicable Wire (Tin Plated Annealed Copper) (Note)					Compatible Connector	Purchase Unit
			UL	AWG	Stranded Wire Structure	Calculated Cross-section	Jacket Diameter		
DF62W-2022SCF DF62W-2022SCFA	CL0544-1015-9-00 CL0544-1027-0-00	Tin Plated Gold Plated	3443	20	7/0.32mm	0.563mm <sup>2</sup>	$\phi$ 1.4 to $\phi$ 1.6mm	DF62W-#S-2.2C	15,000pcs per reel
			1007	22	17/0.16mm	0.342mm <sup>2</sup>			
DF62W-2226SCF DF62W-2226SCFA	CL0544-1000-1-00 CL0544-1025-0-00	Tin Plated Gold Plated	1007	22 24	17/0.16mm 11/0.16mm	0.342mm <sup>2</sup> 0.221mm <sup>2</sup>	$\phi$ 0.98 to $\phi$ 1.2mm	DF62WC-#S-2.2C	
			1430	24 26	11/0.16mm 7/0.16mm	0.221mm <sup>2</sup> 0.141mm <sup>2</sup>			
			1061	24 26	11/0.16mm 7/0.16mm	0.221mm <sup>2</sup> 0.141mm <sup>2</sup>			

Note 1 : When using cables not specified by Hirose, please contact a Hirose sales representative.

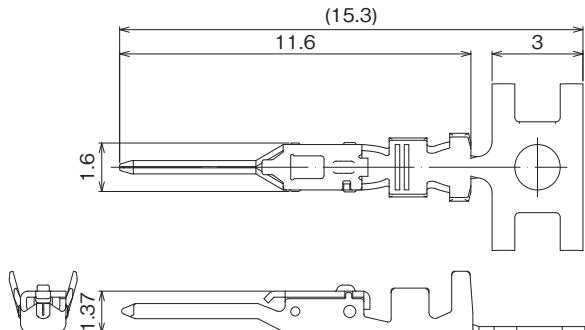
Note 2 : There are cases in which use of a flexible wire (thin, stranded conductor or soft jacket material) may make insertion to socket difficult. Please contact a Hirose representative for more information.

### ● Loose Piece, Applicable Tool : Hand Crimping Tool

Part No.	HRS No.	Finish	Applicable Wire (Tin Plated Annealed Copper) (Note)					Compatible Connector	Purchase Unit
			UL	AWG	Stranded Wire Structure	Calculated Cross-section	Jacket Diameter		
DF62W-2022SC DF62W-2022SCA	CL0544-1017-4-00 CL0544-1045-0-00	Tin Plated Gold Plated	3443	20	7/0.32mm	0.563mm <sup>2</sup>	$\phi$ 1.53mm	DF62W-#S-2.2C	100pcs per pac
			1007	22	17/0.16mm	0.342mm <sup>2</sup>	$\phi$ 1.58mm		
DF62W-2226SC DF62W-2226SCA	CL0544-1012-0-00 CL0544-1044-0-00	Tin Plated Gold Plated	1007	22 24	17/0.16mm 11/0.16mm	0.342mm <sup>2</sup> 0.221mm <sup>2</sup>	$\phi$ 1.58mm $\phi$ 1.42mm		
			1430	26	7/0.16mm	0.141mm <sup>2</sup>	$\phi$ 1.48mm		

Note : The applicable cables include only those listed above.

## Plug Crimp Contact



### ● Reel Contact, Applicable Tool : Applicator

Part No.	HRS No.	Finish	Applicable Wire (Tin Plated Annealed Copper) (Note 1)					Compatible Connector	Purchase Unit	
			UL	AWG	Stranded Wire Structure	Calculated Cross-section	Jacket Diameter			
DF62W-EP2022PCF	CL0544-1016-1-00	Tin Plated Gold Plated	3443	20	7/0.32mm	0.563mm <sup>2</sup>	∅ 1.4 to ∅ 1.6mm	DF62W-#EP-2.2C DF62WP-3/4/6/2EP-2.2C	15,000pcs per reel	
			1007	22	17/0.16mm	0.342mm <sup>2</sup>				
DF62W-EP2226PCF	CL0544-1001-4-00	Tin Plated Gold Plated	1007	22	17/0.16mm	0.342mm <sup>2</sup>	∅ 1.4 to ∅ 1.6mm	DF62W-#EP-2.2C DF62WP-3/4/6/2EP-2.2C		
			24		11/0.16mm	0.221mm <sup>2</sup>				
			1430	24	11/0.16mm	0.221mm <sup>2</sup>	∅ 0.98 to ∅ 1.2mm	DF62WC-#EP-2.2C DF62WP-3/4/6/2EP-2.2C		
			26		7/0.16mm	0.141mm <sup>2</sup>				
			1061	24	11/0.16mm	0.221mm <sup>2</sup>				
				26	7/0.16mm	0.141mm <sup>2</sup>				

Note 1 : When using cables not specified by Hirose, please contact a Hirose sales representative.

Note 2 : There are cases in which use of a flexible wire (thin, stranded conductor or soft jacket material) may make insertion to socket difficult. Please contact a Hirose representative for more information.

### ● Loose Piece, Applicable Tool : Hand Crimping Tool

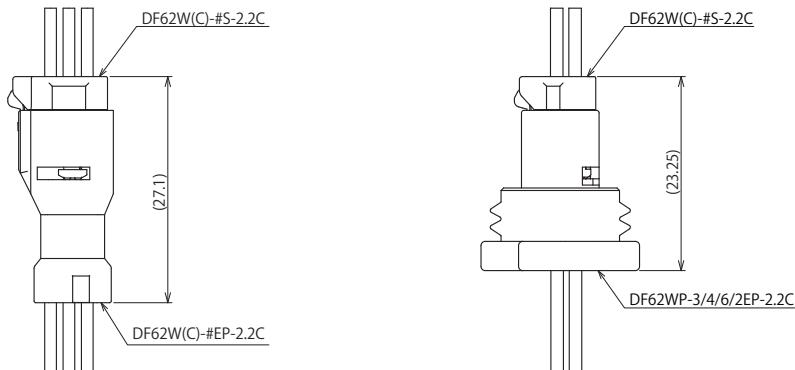
Part No.	HRS No.	Finish	Applicable Wire (Tin Plated Annealed Copper) (Note)					Compatible Connector	Purchase Unit	
			UL	AWG	Stranded Wire Structure	Calculated Cross-section	Jacket Diameter			
DF62W-EP2022PC	CL0544-1018-7-00	Tin Plated Gold Plated	3443	20	7/0.32mm	0.563mm <sup>2</sup>	∅ 1.53mm ∅ 1.58mm	DF62W-#EP-2.2C DF62WP-3/4/6/2EP-2.2C	100pcs per pack	
			1007	22	17/0.16mm	0.342mm <sup>2</sup>				
DF62W-EP2226PC	CL0544-1013-3-00	Tin Plated Gold Plated	1007	22	17/0.16mm	0.342mm <sup>2</sup>	∅ 1.58mm ∅ 1.42mm	DF62W-#EP-2.2C DF62WP-3/4/6/2EP-2.2C		
			24		11/0.16mm	0.221mm <sup>2</sup>				
			1430	26	7/0.16mm	0.141mm <sup>2</sup>				
							∅ 1.48mm			

Note : The applicable cables include only those listed above.

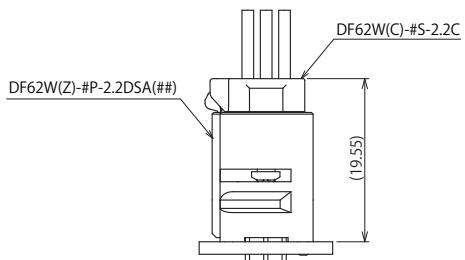
## Mated Dimensions

### ● Wire-to-Wire Connection

【Panel Waterproof Type】



### ● Wire-to-Board Connection (Straight Pin Header)



## Applicable Crimping Tools

Tool	Part No.	HRS No.	Applicable Contact
Applicator	AP105-DF62W-2022	CL0901-4500-0-00	DF62W-2022SCF(A) DF62W-EP2022PCF(A)
	EHS899800H-UP (Note 2)	-	
	AP105-DF62W-2226	CL0901-4637-0-00	DF62W-2226SCF(A) DF62W-EP2226PCF(A)
	EHS888400H-UP (Note 2)	-	
Press Body	CM-105C	CL0901-0001-0-00	-
Hand Tool	HT802/DF62W-2022 (Note 4)	CL0550-0431-0-00	DF62W-2022SC(A) DF62W-EP2022PC(A)
	HT802/DF62W-2226 (Note 5)	CL0550-0416-6-00	DF62W-2226SC(A) DF62W-EP2226PC(A)
Extraction Tool	DF62W/RE-MD	CL0902-4666-4-00	DF62W-2022SC(F)(A) DF62W-EP2022PC(F)(A) DF62W-2226SC(F)(A) DF62W-EP2226PC(F)(A)

Note 1 : Issues with non-Hirose specified tools are outside the scope of warranty.

Note 2 : Applicator manufactured by JAPAN AUTOMATIC MACHINE(J.A.M.).

Please contact J.A.M. via the URL below regarding inquiries on the applicator or crimp defects.

## Crimping

### ■ Items Required Prior to Starting

The work-related documents listed below are required before starting harness assembly.

(The ● mark indicates a required document.)

When the documents shown below are not available, ask a Hirose sales personnel to provide them.

Document Title	Description	Automatic Crimping Machine	Hand Crimping Tool	Remarks
(1) Main Unit of Crimping Machine Instruction Manual	Explanation of main press machine unit	●	-	Bundled with the purchase of the main press machine unit.
(2) Applicator Spare Parts Identification	Explanation for Applicator installation	●	-	
(3) Crimp Conditions	Standard values of : Crimp height, tensile strength	●	-	Bundled with the purchase of applicator.
(4) Crimp Quality Standards	Various standards for crimping conditions	●	-	
(5) Operating Instructions for Hand Tool	Inspection items of : Crimp height, tensile strength, other	-	●	Bundled with the purchase of hand tool.
(6) DF62W Series Cable Assembly Procedure : ETAD-H0760-00	Cable assembly procedure	●	●	Ask a HRS sales representative.

### ■ Tools

Use tools designated by Hirose when crimping.

- Crimping performed using tools other than those specified is outside the scope of warranty.
- The operating instructions manual is available for the crimping machine and the applicator. Be sure to carefully read the operating instructions manual before implementing the work.

### ■ Applicable Electric Wires

When using a wire other than the applicable wires please contact a Hirose representative.

#### [Precautions]

- Electric wires that are suitable for crimping connectors are tin-plated stranded soft copper wire.
- Avoid crimping solid wires, wires with polyester threads or tin-coated wires.
- Avoid crimping two electric wires together.
- The crimp height setting value (Note) may vary between tin-plated and gold-plated contacts even if the same electric wires are used.
- The crimp height setting value (Note) may vary depending on the difference in the core wire configuration even if the computed cross-sectional area is the same.

Note : The crimp height is an important item that determines crimping quality. We execute crimping tests for each electric wire to ensure the optimal value for the crimp height with high precision, thereby ensuring optimal setup values.

## Precautions

1.Cleaning Conditions	<p>Please refer to the "Wire-to-Board Connector Guide (ETAD-H1023-00)". Cleaning with IPA is allowed. (Other cleaning agents are not recommended due to the fact that it may change the push/pull feeling. Please contact us when you use other cleaning agents.)</p>
2.Important Notes	<ol style="list-style-type: none"><li>1. Caution is required for mating and un-mating the connector without it being mounting on a PCB. Doing so can damage or deform the contacts.</li><li>2. During hand soldering, do not apply excess amounts of flux which can migrate onto the connector.</li><li>3. This product may have a slight differences in color depending on the production lot. This difference does not have any influence on the performance.</li><li>4. Black spots may appear on the mold resin but this does not affect the product quality.</li></ol>
3.Handling Instructions	<p>Please refer to the materials listed below when handling this product.</p> <ul style="list-style-type: none"><li>■ Crimping quality control statement of standards : ETAD-H0642-00, ETAD-H0643-00</li><li>■ Harness procedure manual : ETAD-H0593-00</li><li>■ Insertion/extraction manual : ETAD-H0599-00</li><li>■ User Guide for Wire-to-Board Connector : ETAD-H1023-00</li></ul>

# 3.96mm pitch compact waterproof connectors for internal power supplies

## DF63W Series



The slim, smooth, rounded shape is optimized for wiring inside conduits and small spaces.

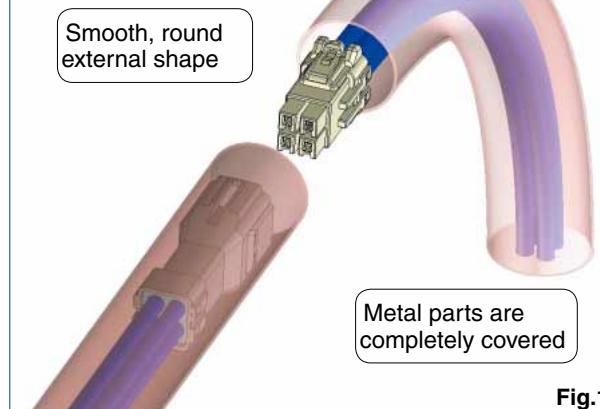


Fig.1

### ■Features

#### 1. Max current of 14A

This compact connector is rated up to 14A in the 2 positions version, using 16 AWG wire.

#### 2. Compact shape designed for wiring through narrow areas

The design is optimized for wiring inside conduits and small structures, with a smooth, rounded contour that reduces the chance of snagging or catching inside the conduit or other objects.

A plastic housing covers the connector, so no metal is exposed to the conduit, preventing accidental shorting. (Fig.1)

#### 3. IP67 Rated

IP67 water resistant when mated. (Fig.2)

#### 4. Simplified wire insertion

Wire and housing seals are pre-installed to provide water proofing. A simple insertion of the crimped contact into the housing completes the assembly. Contacts and housing are designed to prevent damaging the seals when inserting the contacts.

#### 5. Positive lock structure

A robust locking structure provides a tactile click when mating to prevent incomplete mating and disconnection during wiring.

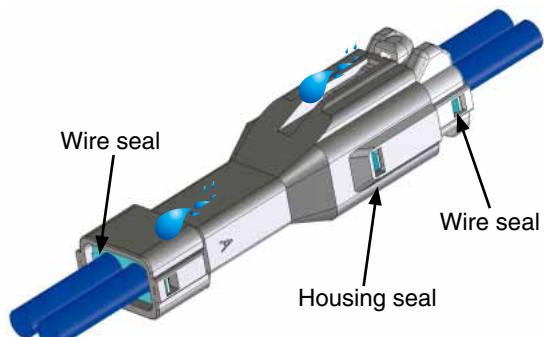
#### 6. Compatible with a wide variety of cables

Two versions are available with different waterproof wire seal diameters. This variation helps to support the use of a wide array of cable sizes.

#### 7. Mis-mating prevention with color and guide key options

Two housings are available each with different colors and guide keys. This helps to prevent incorrect mating when multiple connectors are used on the same design with the same pin count.

### IP67 Waterproof

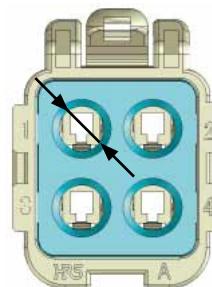


IP67 waterproof when mated

Fig.2

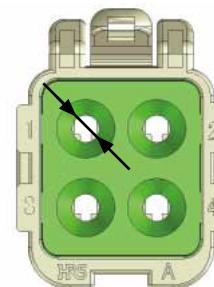
### Compatible with a wide variety of cables

<DF63W>



Recommended insulation outer diameter  
 $\phi$ 2.8 to 3.2

<DF63WA>



Recommended insulation outer diameter  
 $\phi$ 1.7 to 2.4

Fig.3

## ■Product Specifications

Ratings	Current rating (Note 1)	No. of contacts	16 AWG	18 AWG	20 AWG	22 AWG	Operating temperature range -40°C to 105°C (Note 2) Operating humidity range 20% to 80%
		2	14A	11A	9A	8A	
		3	13A	10A	8A	7A	
	Voltage rating	AC/DC 630V					Storage temperature range-10°C to 60°C (Note 3) Storage humidity range 40% to 70% (Note 3)

Items	Specifications	Conditions
1.Insulation resistance	1,000MΩ min.	Measured at DC 500V
2.Withstanding voltage	No flashover or dielectric breakdown.	1,500V AC applied for 1 minute.
3.Contact resistance	10mΩ max.	Measured at a maximum of 20mΩ, 100mA (DC or 1,000Hz)
4.Vibration resistance	No electrical discontinuity for more than 1μs	10 cycles in each of three axis directions at 10-55Hz, half amplitude 0.75mm
5.Shock resistance	No electrical discontinuity for more than 1μs	Acceleration of 490m/s², 11ms, both directions in 3 axes (semi-sinusoidal), 3cycle each direction
6.Moisture resistance	Contact resistance : 20mΩ max. Insulation resistance : 500MΩ max.	Temperature : 40±2°C, relative humidity : 90 to 95%, left for 96hours
7.Temperature cycle	Contact resistance : 20mΩ max. Insulation resistance : 1,000MΩ max.	-55°C for 30 minutes→5 to 35°C for 2 to 3 minutes→105°C for 30 minutes→5 to 35°C for 2 to 3 minutes, in 5 cycles
8.Mating cycles	Contact resistance : 20mΩ max.	Mating/unmating : 30 times

Note 1 : Indicates the allowable current when the maximum current is applied to all pins.

Please note that a current could exceed the rated value when a higher current is applied through multiple circuits in a branched configuration.

Note 2 : Includes temperature rise caused by current flow.

Note 3 : The term "storage" refers to the long-term storage condition of unused products before PCB mounting. Operating temperature/humidity range refers to the non powered state after PCB mounting, and temporary storage during transportation.

## ■Materials / Finish

Product	Parts	Materials	Finish	UL flame retardant grade
In-line plug crimp contact	Contacts	Copper alloy	Tin plated	—
Socket crimp contact	Contacts	Copper alloy	Tin plated	—
In-line plug	Housing	PBT	Black	UL94V-0
	Seal	Silicone rubber	Blue or green	—
Crimp socket	Housing	PBT	Black	UL94V-0
	Seal	Silicone rubber	Blue or green	—

## ■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.

### ●Connector

**DF 63W - \* S - 3.96 C**

① ② ③ ④ ⑤ ⑥ ⑦

① Series name : DF	⑤ Connector type
② Series No. : 63W	S : Socket EP : In-line plug
③ Outer diameter of wire insulation None : 2.8 to 3.2 A : 1.7 to 2.4	⑥ Contact pitch : 3.96mm
④ Number of contacts : 2, 3, 4	⑦ Termination style C : Crimp socket

### ●Contact

**DF 63W - 1618 PCF**

① ② ③ ④

① Series name : DF	④ Contact type/Packaging type
② Series No. : 63 (W)	SCF : Socket crimp contact, reel
③ Applicable wire size 1618 : 16 to 18 AWG 2022 : 20 to 22 AWG	SC : Socket crimp contact, pieces PCF : In-line plug crimp contact, reel PC : In-line plug crimp contact, pieces

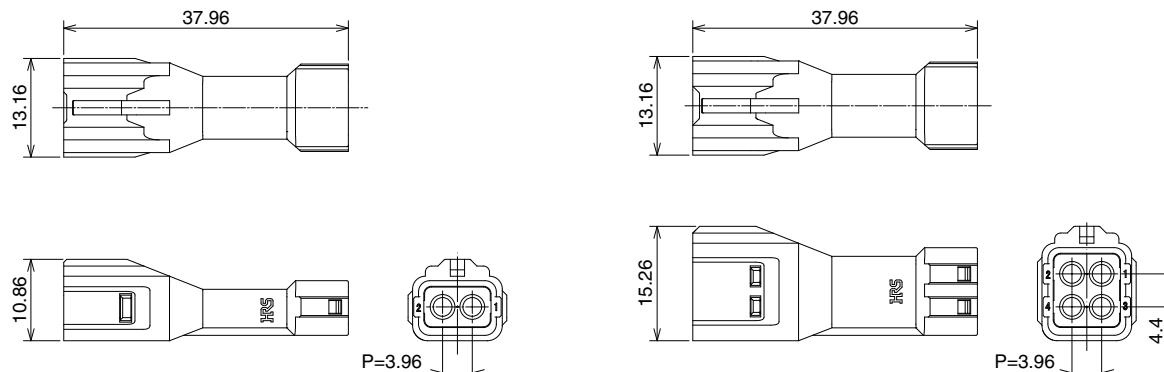
## ■In-line plug



Part No.	HRS No.	No. of contacts	Outer diameter of wire insulation
DF63W-2EP-3.96C	680-0605-9	2	2.8 to 3.2
DF63W-3EP-3.96C	680-0606-1	3	
DF63W-4EP-3.96C	680-0607-4	4	
DF63WA-2EP-3.96C	680-0609-0	2	1.7 to 2.4
DF63WA-3EP-3.96C	680-0610-9	3	
DF63WA-4EP-3.96C	680-0611-1	4	

Note 1 : Standard packaging is 100 pcs/pack. Please place orders in full package quantities.

[Dimensions for 2 contact position connector] [Dimensions for 3 and 4 contact position connector]



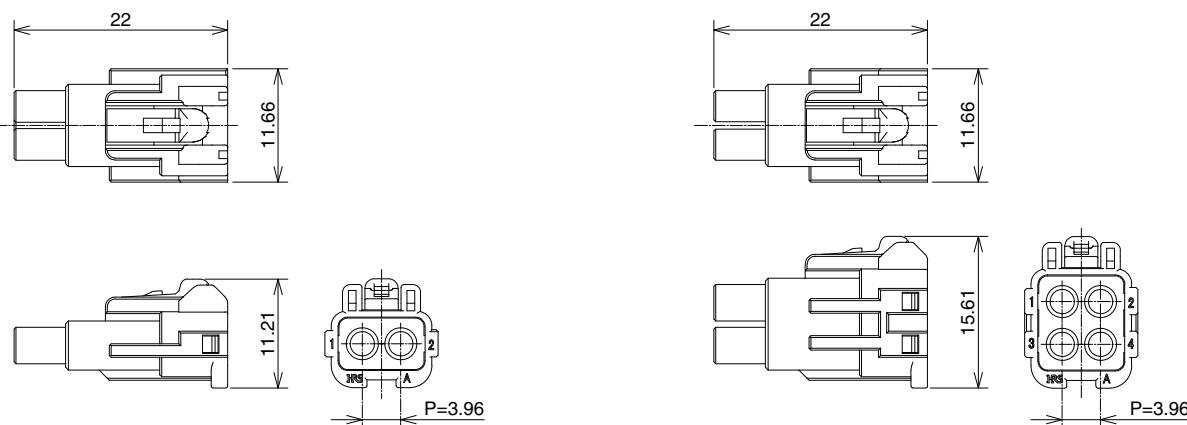
## ■Crimp socket



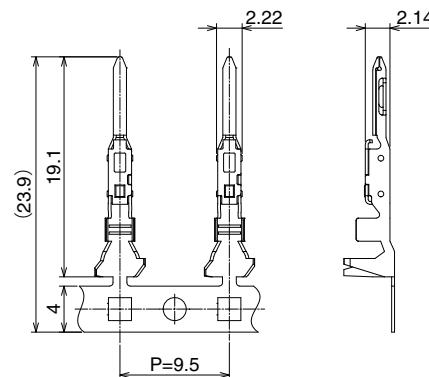
Part No.	HRS No.	No. of contacts	Outer diameter of wire insulation
DF63W-2S-3.96C	680-0613-7	2	2.8 to 3.2
DF63W-3S-3.96C	680-0614-0	3	
DF63W-4S-3.96C	680-0615-2	4	
DF63WA-2S-3.96C	680-0617-8	2	1.7 to 2.4
DF63WA-3S-3.96C	680-0618-0	3	
DF63WA-4S-3.96C	680-0619-3	4	

Note 1 : Standard packaging is 100 pcs/pack.  
Please place orders in full package quantities.

[Dimensions for 2 contact position connector] [Dimensions for 3 and 4 contact position connector]



## ■In-line plug crimp contact



Part No.	HRS No.	Type	Quantity	Finish
DF63-1618PCF	680-0529-2	Reel contacts (Note 1)	4,000 pcs/reel	Tin plated
DF63-1618PC	680-0536-8	Loose piece contacts (Note 2)	100 pcs/pack	
DF63-2022PCF	680-0538-3	Reel contacts (Note 1)	4,000 pcs/reel	
DF63-2022PC	680-0539-6	Loose piece contacts (Note 2)	100 pcs/pack	

Note 1 : Please place orders in full reel quantities.

Note 2 : Please place orders in full pack quantities.

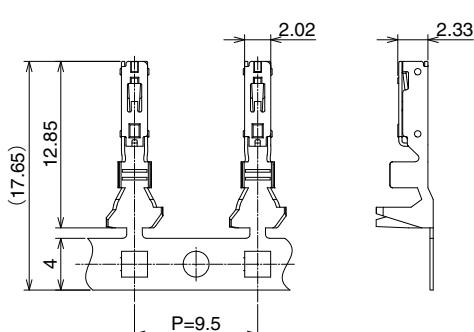
### ●Applicable wire (Tinned Annealed Copper Wire)

Conductor size (Core structure)	Wire type and outer diameter of insulation
16AWG (26/0.254mm)	UL1007 (2.4mm) UL1015 (3.2mm)
18AWG (34/0.18mm)	UL1007 (2.1mm) UL1015 (2.9mm)
20AWG (21/0.18mm)	UL1007 (1.9mm)
22AWG (17/0.16mm)	UL1430 (1.7mm)

Note 1 : Please contact our Sales Dept. when using wires other than those recommended above.

Note 2 : In case of hard to insert crimped contact to plug socket as like using low stiffness wire which consists of thinner stranded conductor or insulation with soft material, please contact to Hirose representative.

## ■Socket crimp contact



Part No.	HRS No.	Type	Quantity	Finish
DF63W-1618SCF	680-0600-5	Reel contacts (Note 1)	4,000 pcs/reel	Tin plated
DF63W-1618SC	680-0601-8	Loose piece contacts (Note 2)	100 pcs/pack	
DF63W-2022SCF	680-0602-0	Reel contacts (Note 1)	4,000 pcs/reel	
DF63W-2022SC	680-0603-3	Loose piece contacts (Note 2)	100 pcs/pack	

Note 1 : Please place orders in full reel quantities.

Note 2 : Please place orders in full pack quantities.

### ●Applicable wire (Tinned Annealed Copper Wire)

Conductor size (Core structure)	Wire type and outer diameter of insulation
16AWG (26/0.254mm)	UL1007 (2.4mm) UL1015 (3.2mm)
18AWG (34/0.18mm)	UL1007 (2.1mm) UL1015 (2.9mm)
20AWG (21/0.18mm)	UL1007 (1.9mm)
22AWG (17/0.16mm)	UL1430 (1.7mm)

Note 1 : Please contact our Sales Dept. when using wires other than those recommended above.

Note 2 : In case of hard to insert crimped contact to socket as like using low stiffness wire which consists of thinner stranded conductor or insulation with soft material, please contact to Hirose representative.

## ◆Applicable crimping tools

Type	Part No.	HRS No.	Applicable wire size	Applicable contact
Applicator	AP105-DF63-1618-3	901-4642-0	UL1007 (Note 3)	DF63-1618PCF
	AP105-DF63-1618-4	901-4643-2	UL1015 (Note 3)	DF63W-1618SCF
	CHS893500H-UP (Note 6)	—	UL1015	
	AP105-DF63-2022-3	901-4646-0	UL1007 20 AWG : UL1007 22 AWG : UL1430	DF63-2022PCF DF63W-2022SCF
Type	Part No.	HRS No.	Recommended wire size (Note 5)	Applicable contact
Hand tool (Note 4)	HT802/DF63-1618P-1	550-0423-1	16, 18 AWG : UL1007	DF63-1618PC
	HT802/DF63-1618P-2	550-0424-4	16, 18 AWG : UL1015	
	HT802/DF63-2022P-1	550-0433-0	20, 22 AWG : UL1007	DF63-2022PC
	HT802/DF63W-1618S-1	550-0425-7	16, 18 AWG : UL1007	
	HT802/DF63W-1618S-2	550-0426-0	16, 18 AWG : UL1015	DF63W-1618SC
	HT802/DF63W-2022S-1A	550-0441-0	20 AWG : UL1007 22 AWG : UL1430	DF63W-2022SC

Note 1 : Please follow the "Crimping quality standards (ETAD-H0810, ETAD-H0811)" and "Table of crimping conditions" when crimping contacts.

Note 2 : Any problems that occur from using tools other than those specified by Hirose, are not covered by warranty.

Note 3 : Applicator components (sold separately) can be changed out to accommodate different wire sizes.

Note 4 : Hand tool dies cannot be changed out for different wire sizes.

Note 5 : Please only use the recommended wires shown in the table.

Note 6 : Applicator manufactured by JAPAN AUTOMATIC MACHINE(J.A.M.). Please access to HP of J.A.M., if you make

## ◆Crimping

### ■ Items required prior to start crimping

The work-related documents shown below are required before starting the harness connections.  
(The ● mark shows the document required.)

When the documents shown below are not available, ask our sales personnel to provide them.

Document Title	Description	Automatic Crimping Machine	Hand Crimping Tool	Remarks
(1) Main unit of crimping machine instruction manual	Explanation of main press machine unit	●	—	When purchasing main press machine unit, it is bundled.
(2) Applicator Spare Parts Identification	Explanation for Applicator installation	●	—	
(3) Crimp Conditions	Standard values of : Crimp height ; Tensile strength	●	—	
(4) Crimp Quality Standards	Various standards for crimping conditions	●	—	
(5) Operating Instructions for Hand Tool	Inspection items of : Crimp height ; Tensile strength ; and others	—	●	When purchasing Hand Tool, it is bundled.
(6) Harness Procedure Manual ETAD-H0814-00	Harness procedure	●	●	Ask our sales personnel to provide them.

### ■ Tools

When crimping work is applied to our contacts, the tool designated by Hirose should be used.  
Crimping work by using tools other than as designated must not be done because it may result in contact failure, disconnection of cable, etc.

\*The operating instructions manual is available for the crimping machine and the applicator. Be sure to carefully read the operating instructions manual before implementing the work.

### ■ Applicable electric wires

Check that the electric wire to be used is in the range of application.

If you intend to use an electric wire other than the recommended one, ask our sales personnel.

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  
Волгоград (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  
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