

KW30 Series

1mm Pitch, Single Row, Center Lock, Wire-to-Board Connector (UL/C-UL Listed)



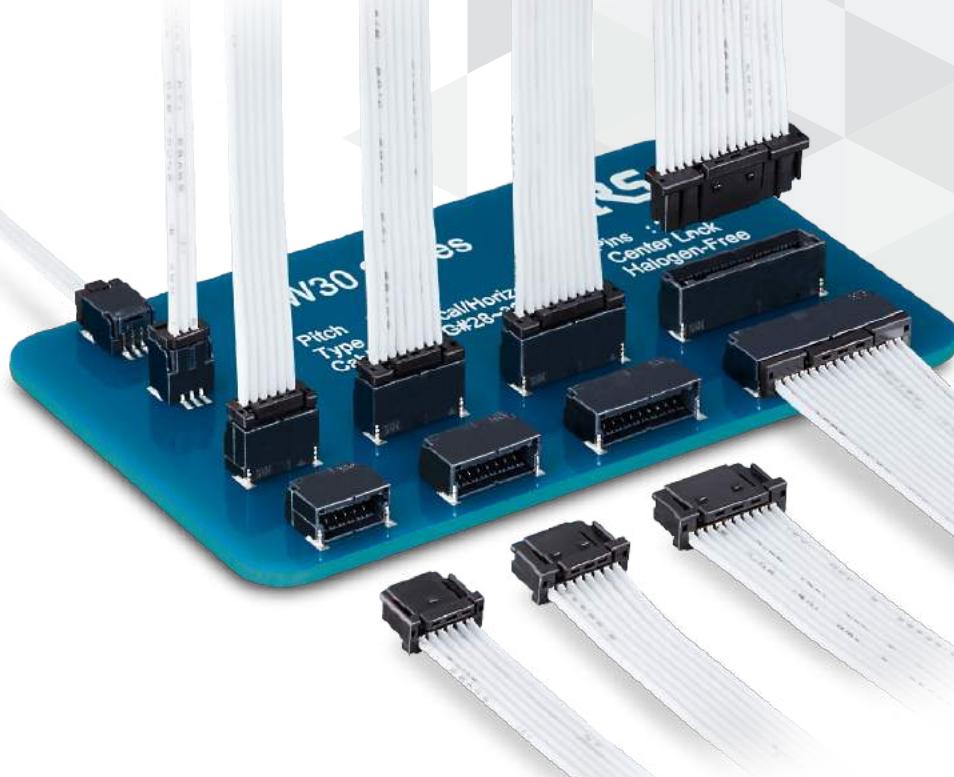
Positive-Lock



P= 1.0 mm



Wide Variation



Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
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

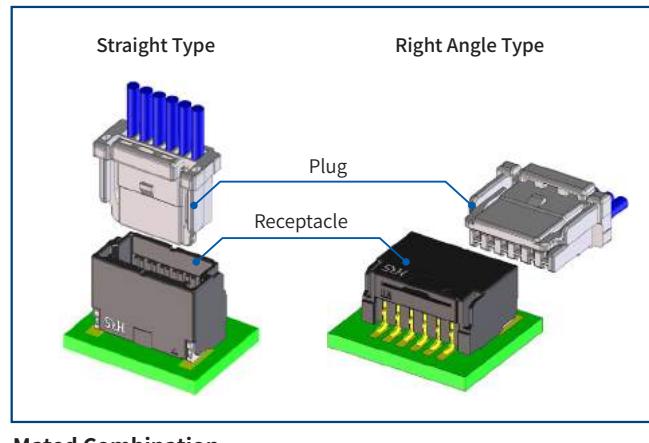
Киргизия +996(312)96-26-47

<https://hirose.nt-rt.ru/> || hes@nt-rt.ru

Features

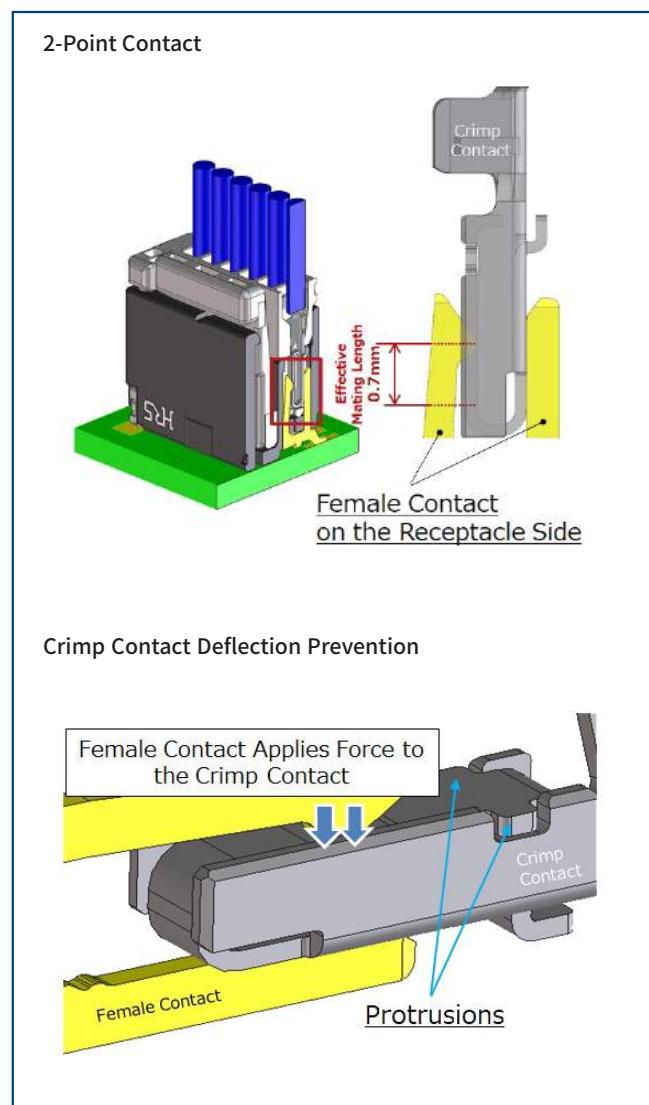
1. Wide Variations

- 1mm Pitch (2pos. is 2mm pitch)
- Single Row, 2-15pos.
- Center Lock Type
- Interface Types: Straight / Right Angle
- 28-32 AWG
- Gold plated



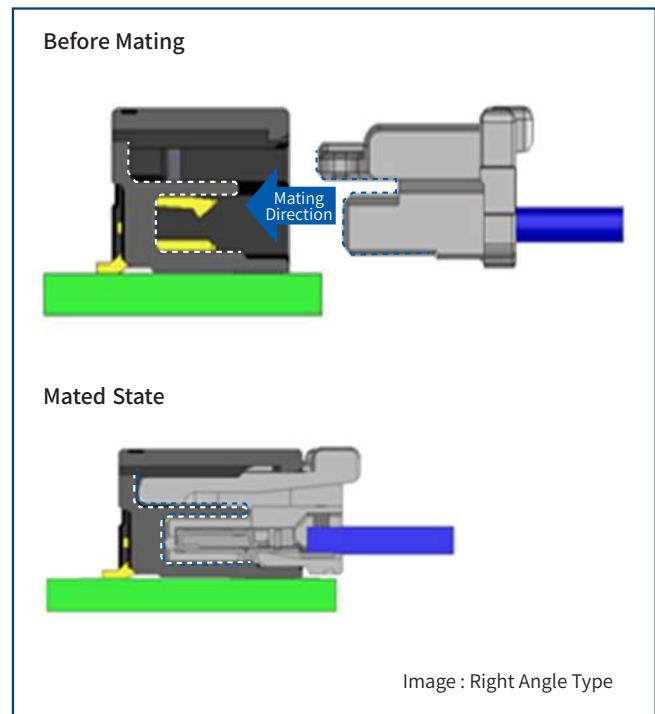
2. High Contact Reliability

The 2-point contact and clipping design of the receptacle female contact ensures contact stability. The plug crimp contact has a box shape that does not easily get caught or deformed. In addition, the deflection prevention design of the crimp contact distributes stress from the female contact and enhances contact reliability.



3. High Vibration Resistance

The rib design provides a secure fit when mating the plug and receptacle for high vibration resistance. The KW30 Series clears the 2,000Hz vibration test and is suitable for applications that require high reliability under vibration.



Prevents rattling between the plug and receptacle

4. Safety design prevents incomplete mating, mis-insertion and lock damage

5. Halogen-free

No chlorine or bromine exceeding the standard value is used in the connector.

*As defined by IEC 61249-2-21

Br : 900ppm max., Cl : 900ppm max.,

Br+Cl : 1500ppm max.

6. UL/C-UL Compliant

Product Specifications

Rated Current (Note 1)	No. of Pos.	28 AWG	30 AWG	32AWG	Operating Temperature (Note 2)	-55 to +105°C
	2 (2mm Pitch)	3A	1A	0.8A		
	3-15	1A		Operating Humidity Range (Note 3)	20 to 80%	
Rated Voltage	100V AC/DC			Storage Temperature Range (Note 4)	-10 to +60°C	
						Storage Humidity Range (Note 3) (Note 4)
UL/C-UL Safety Standard Approved Specification		Rated Current (Note 1)	28 AWG	30 AWG	32AWG	
			1A	1A	0.8A	
		Rated Voltage	100V AC/DC			

UL/C-UL File No. and Recognition No. E132750

Items	Specifications	Conditions
Insulation Resistance	100MΩ Min.	Measured at 250V DC
Withstanding Voltage	No flashover or insulation breakdown	500V AC for 1 min.
Contact Resistance	30mΩ Max.	Measured at 10mA, 20mV AC
Mating Durability	Contact Resistance : 50mΩ Max.	30 times
Vibration Resistance	No electrical discontinuity of 1μs or more Contact Resistance : 50mΩ Max.	Frequency 10 to 55Hz, single amplitude 1.52mm, at 2 hours for 3 directions
Shock Resistance	No electrical discontinuity of 1μs or more Contact Resistance : 50mΩ Max.	Accelerated velocity : 490 m/s ² for 11ms, half-sine wave in 3 directions, 3 times for each direction
Moisture Resistance (Steady State)	Contact Resistance : 50mΩ Max. Insulation Resistance : 100MΩ Min.	Left for 240 hours at temperature of 40±2°C and humidity of 90 to 95%
Temperature Cycles	Contact Resistance : 50mΩ Max. Insulation Resistance : 100MΩ Min.	Temperature : -55 → +105°C Time : 30 → 30 min. for 25 cycles
Soldering Heat Resistance	No deformation of the insulator parts affecting performance.	Reflow : See the recommended temperature profile

Note 1 : This is the maximum current rating when 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 due to current flow.

Note 3 : Use without condensation on parts.

Note 4 : Storage refers to long-term storage of unused items before they are mounted on the PCB.

Operating temperature and humidity range apply when the product is not powered after PCB mounting and when temporarily stored during transportation.

Materials / Finish

Product	Component	Material	Color / Finish	Remarks
Receptacle	Insulator	LCP	Black	UL94V-0
	Contact	Copper Alloy	Gold Plated	–
	Retention Tab	Phosphor Bronze	Tin Plated	–
Plug	Insulator	PA66	Black	UL94V-0
Crimp Contact	Contact	Copper Alloy	Gold Plated	–

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

KW30 - **6** **S** - **1** **V** **(800)**

① ② ③ ④ ⑤ ⑨

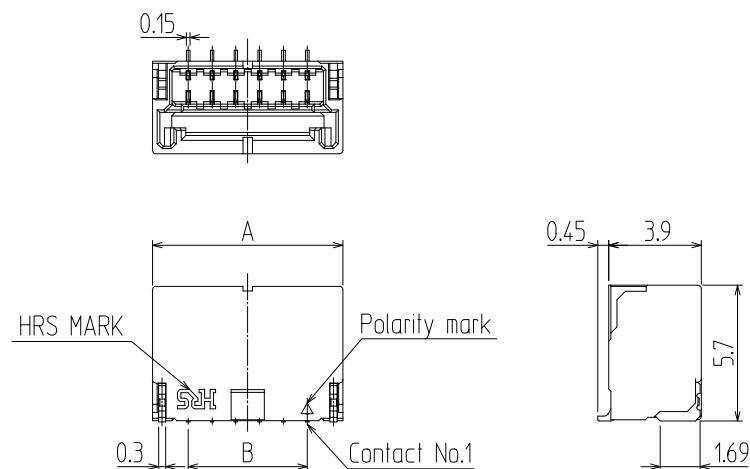
Crimp Contact

KW30 - **2830** **PCF** **A** **(800)**

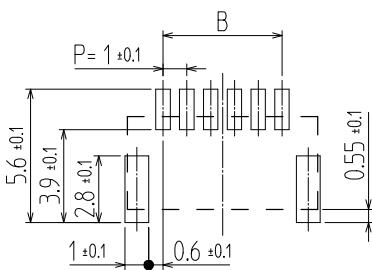
① ⑥ ⑦ ⑧ ⑨

① Series Name	KW30	⑥ Applicable Wire Size	2830 : 28-30 AWG 3032 : 30-32 AWG
② No. of Pos.	Single Row : 2-15pos.	⑦ Packaging Method/Type	PCF : Plug Contact, Reel
③ Connector Type	P : Plug S : Receptacle	⑧ Plating Specifications	A : Gold Plated
④ Contact Pitch	1 : 1mm (3-15pos.) 2 : 2mm (2pos. Only Due to Removal of Middle Pin)	⑨ Specifications	800 : Standard, 0.2 µm Gold Plating 805 : 0.76 µm Gold Plating
⑤ Terminal Type	H : Right Angle SMT V : Straight SMT C : Plug Socket		

Straight Receptacle



Recommended PCB Layout (t=1.6mm)

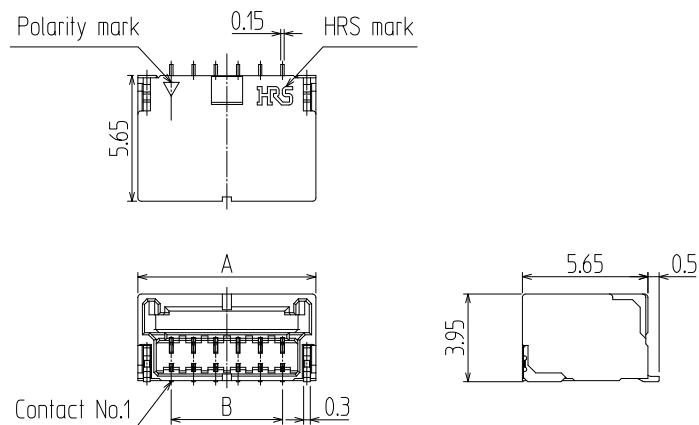


Part No.	HRS No.	No. of Pos.	A	B	Purchase Unit
KW30-2S-2V(800)	CL0480-0833-0-00	2	5.0	2.0	
KW30-3S-1V(800)	CL0480-0834-0-00	3	5.0	2.0	
KW30-4S-1V(800)	Under Planning (Note)	4	6.0	3.0	
KW30-5S-1V(800)	Under Planning (Note)	5	7.0	4.0	
KW30-6S-1V(800)	CL0480-0835-0-00	6	8.0	5.0	
KW30-7S-1V(800)	Under Planning (Note)	7	9.0	6.0	
KW30-8S-1V(800)	CL0480-0836-0-00	8	10.0	7.0	
KW30-9S-1V(800)	Under Planning (Note)	9	11.0	8.0	
KW30-10S-1V(800)	CL0480-0837-0-00	10	12.0	9.0	
KW30-11S-1V(800)	Under Planning (Note)	11	13.0	10.0	
KW30-12S-1V(800)	Under Planning (Note)	12	14.0	11.0	
KW30-13S-1V(800)	Under Planning (Note)	13	15.0	12.0	
KW30-14S-1V(800)	Under Planning (Note)	14	16.0	13.0	
KW30-15S-1V(800)	CL0480-0838-0-00	15	17.0	14.0	

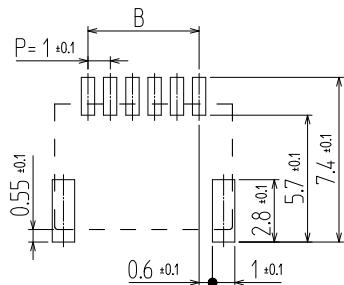
800pcs per reel

Note : Products without HRS No. are currently being planned for development. Please contact a Hirose representative regarding questions on pin count variation development.

Right Angle Receptacle



Recommended PCB Layout (t=1.6mm)



Part No.	HRS No.	No. of Pos.	A	B	Purchase Unit
KW30-2S-2H(800)	CL0480-0828-0-00	2	5.0	2.0	
KW30-3S-1H(800)	CL0480-0829-0-00	3	5.0	2.0	
KW30-4S-1H(800)	Under Planning (Note 1)	4	6.0	3.0	
KW30-5S-1H(800)	Under Planning (Note 1)	5	7.0	4.0	
KW30-6S-1H(800)	CL0480-0767-0-00	6	8.0	5.0	
KW30-6S-1H(805) (Note 2)	CL0480-0767-0-05	6	8.0	5.0	
KW30-7S-1H(800)	CL0480-0940-0-00	7	9.0	6.0	
KW30-8S-1H(800)	CL0480-0830-0-00	8	10.0	7.0	
KW30-9S-1H(800)	Under Planning (Note 1)	9	11.0	8.0	
KW30-10S-1H(800)	CL0480-0831-0-00	10	12.0	9.0	
KW30-11S-1H(800)	Under Planning (Note 1)	11	13.0	10.0	
KW30-12S-1H(800)	Under Planning (Note 1)	12	14.0	11.0	
KW30-13S-1H(800)	Under Planning (Note 1)	13	15.0	12.0	
KW30-14S-1H(800)	Under Planning (Note 1)	14	16.0	13.0	
KW30-15S-1H(800)	CL0480-0832-0-00	15	17.0	14.0	

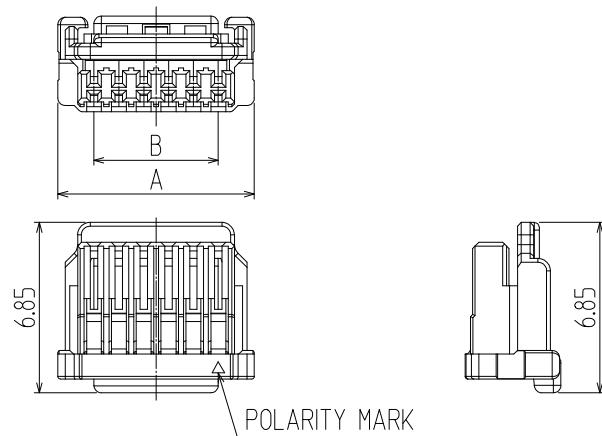
1500pcs per reel

Note 1: Products without HRS No. are currently being planned for development. Please contact a Hirose representative regarding questions on pin count variation development.
 Note 2: 0.76µm Gold Plating

Plug



Shown with crimp contact inserted.

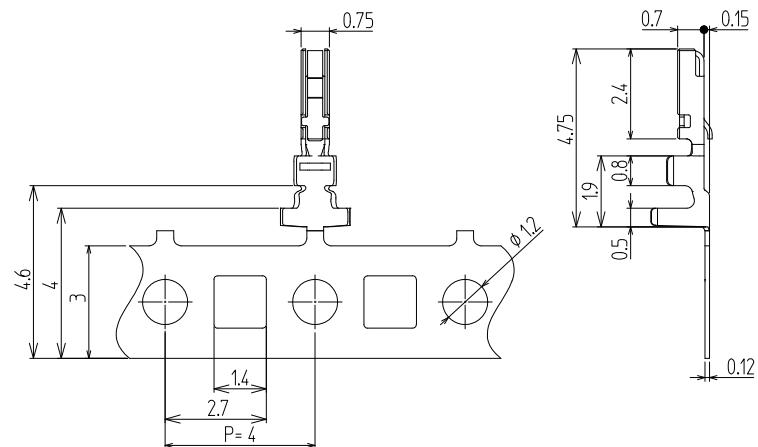


Unit : mm

Part No.	HRS No.	No. of Pos.	A	B	Purchase Unit
KW30-2P-2C(800)	CL0480-0839-0-00	2	4.9	2.0	1000pcs per bag
KW30-3P-1C(800)	CL0480-0840-0-00	3	4.9	2.0	
KW30-4P-1C(800)	Under Planning (Note)	4	5.9	3.0	
KW30-5P-1C(800)	Under Planning (Note)	5	6.9	4.0	
KW30-6P-1C(800)	CL0480-0768-0-00	6	7.9	5.0	
KW30-7P-1C(800)	CL0480-0941-0-00	7	8.9	6.0	
KW30-8P-1C(800)	CL0480-0841-0-00	8	9.9	7.0	
KW30-9P-1C(800)	Under Planning (Note)	9	10.9	8.0	
KW30-10P-1C(800)	CL0480-0842-0-00	10	11.9	9.0	
KW30-11P-1C(800)	Under Planning (Note)	11	12.9	10.0	
KW30-12P-1C(800)	Under Planning (Note)	12	13.9	11.0	
KW30-13P-1C(800)	Under Planning (Note)	13	14.9	12.0	
KW30-14P-1C(800)	Under Planning (Note)	14	15.9	13.0	
KW30-15P-1C(800)	CL0480-0843-0-00	15	16.9	14.0	

Note : Products without HRS No. are currently being planned for development. Please contact a Hirose representative regarding questions on pin count variation development.

Crimp Contact



Part No.	HRS No.	Purchase Unit
KW30-2830PCFA(800)	CL0480-0844-0-00	20,000pcs per reel
KW30A-2830PCFA(800)	CL0480-0918-0-00	
KW30A-2830PCFA(805) (Note)	CL0480-0918-0-05	
KW30-3032PCFA(800)	CL0480-0845-0-00	

Note : 0.76μ Gold Plating

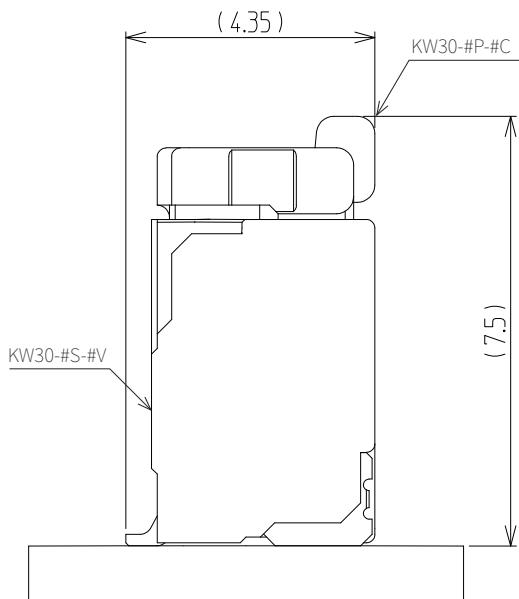
Applicable Wire (Tin Plated Annealed Copper Wire)

Part No.	UL	Wire Size	Stranded Wire Structure	Jacket Diameter
KW30-2830PCFA(800)	1061	28 AWG	7 / 0.127mm	Ø0.80 to 0.88mm
		30 AWG	7 / 0.102mm	
KW30A-2830PCFA(800) KW30A-2830PCFA(805)	1571	28 AWG	7 / 0.127mm	Ø0.56 to 0.58mm
		30 AWG	7 / 0.102mm	
KW30-3032PCFA(800)	1571	30 AWG	7 / 0.102mm	Ø0.54 to 0.56mm
		32 AWG	7 / 0.080mm	

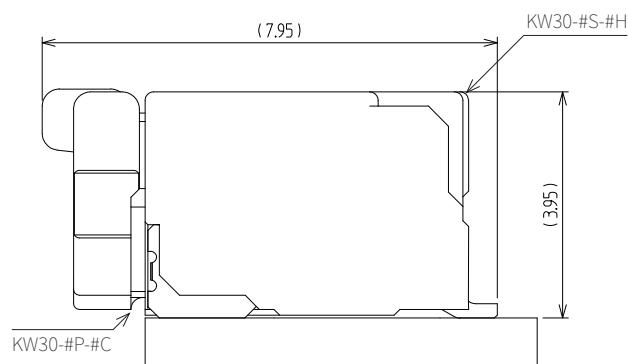
Note : When using cables not specified by Hirose, please contact a Hirose sales representative.

Mated Dimensions Diagram

Straight Receptacle to Plug Connection



Right Angle Receptacle to Plug Connection



Applicable Tools

Type	Part No.	HRS No.	Applicable Contacts
Applicator	AP105-KW30-2830P	CL0901-7002-0-00	KW30-2830PCFA(800)
	AP105-KW30A-2830P	CL0901-7003-0-00	KW30A-2830PCFA(800) KW30A-2830PCFA(805) KW30-3032PCFA(800)
Automatic Crimp Press	CM-105C	CL0901-0001-0-00	-
Hand Tool	HT307/KW30-2830PA (Note 1)	CL0902-7001-0-00	KW30-2830PCFA(800)
Contact extraction Tool	DF-C-PO(B)	CL0550-0179-2-00	KW30-2830PCFA(800) KW30A-2830PCFA(800) KW30A-2830PCFA(805) KW30-3032PCFA(800)

Note 1 : The compatible wires are limited to UL1061, 28-30 AWG.

Note 2 : Please conduct crimping work according to the Crimp Quality Standard and the Crimp Condition Table.

Note 3 : Any problems that occur from using tools other than those specified by Hirose are not covered by the warranty.

Crimping Precautions

■ Items Required Prior to Crimping

The work-related documents shown below are required before starting the cable assembly.

(The ● mark represents required documents.)

Please contact a Hirose representative if you do not have these documents.

Document Title	Description	Automatic Crimping Machine	Hand Crimping Tool	Remarks
① Main Unit of Crimping Machine Instruction Manual	Explanation for main press machine unit	●	–	Bundled with the purchase of the main press machine unit.
② Applicator Instruction Manual	Crimping work method	●	–	Bundled with the purchase of applicator.
③ Applicator Spare Parts Identification	Explanation for applicator installation	●	–	
④ Crimp Conditions	Standard values of : Crimp height Tensile strength	●	–	
⑤ Crimp Quality Standards	Various standards for crimping conditions	●	–	Bundled with the purchase of hand tool.
⑥ Hand Tool Operating Instructions	Crimping work method	–	●	
⑦ Cable Assembly Procedures	Cable assembly	●	●	Contact a Hirose 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 are available for the crimping machine and the applicator.

Be sure to carefully read the operating instructions manual before beginning work.

■ Applicable Cables

Check that the cables to be used are within the applicable range.

If you intend to use a cable other than those recommended, contact a Hirose representative.

【Precautions】

- Cables applicable to crimp connectors are tin-plated, soft copper stranded wires.
- Avoid crimping solid wire, wires with polyester threads or tin coated wires.
- Avoid crimping two cables together.
- The crimp height setting values (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.

Hirose conducts crimp testing on each wire in order to set the optimum crimp height accurately.

High Heat and Vibration Resistance, 0.5 Size, 2mm pitch Automotive Interface Connector

ZE05 Series



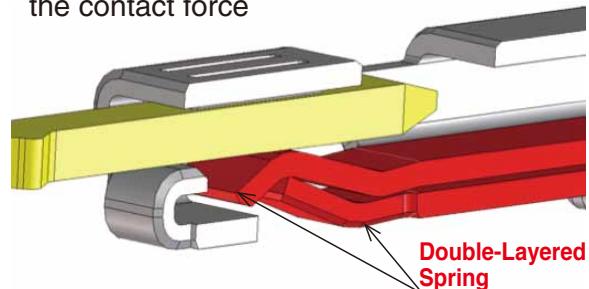
■ Features

- 1. Space-saving (0.5 size terminal, 2mm pitch)**
Space-saving design that contributes to size reduction of end product
- 2. High Heat Resistance : up to 125°C**
Suitable for use in 125°C environments.
- 3. High Vibration Resistance**
Can be used in vehicle environments in which intense vibration is applied.
- 4. Rated Current : 5A (Single Pin Power Supply) / 2A (All Pins Power Supply)**
Suitable for use in 125°C environments.
- 5. Retainer Guarantees 40N Tensile Strength**
Durable against cable routing

● High Vibration Resistance Terminal Design

① Double-Layered Spring Design

Suppresses outer vibration by increasing the contact force

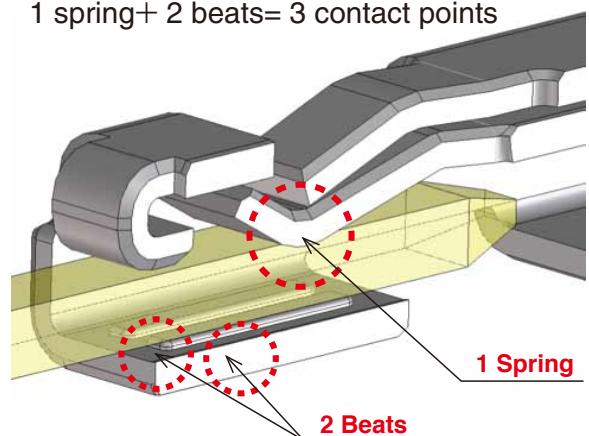


Double-Layered Spring

② 3-point contact design

Suppresses outer vibration by increasing the contact force

1 spring + 2 beats = 3 contact points

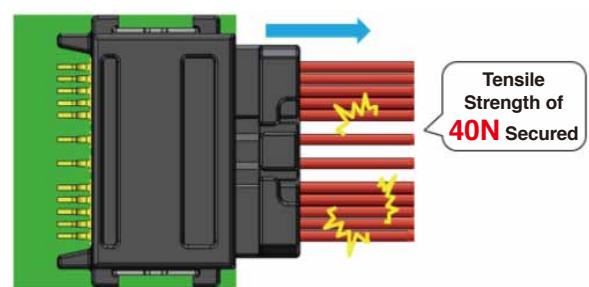


1 Spring

2 Beats

*The terminal is flipped upside down so the beat is easier to see.

● High Tensile Strength due to Retainer



■Product Specifications

Ratings	Rated Current : 2A (All pins power supply) 5A (Single pin power supply)	Operating Temperature : -40 to +125°C Storage Temperature Range : -10 to +60°C (Note 1)
	Rated Voltage : 60V AC/DC	Storage Relative Humidity Range : 85% RH or less (No condensation) (Note 1)

Items	Specifications	Conditions
1. Contact Resistance	10mΩ Max.	Measured at 1A DC
2. Insulation Resistance	100MΩ Min.	Measured at 500V DC
3. Withstanding Voltage	There shall be no dielectric breakdown.	Voltage of 1000V AC for 1 min.
4. Mating Durability	Contact Resistance : 20mΩ Max.	30 Insertion/Extraction cycles
5. Vibration Resistance	No electrical discontinuity of 1μs or more. Contact Resistance : 20mΩ Max.	Frequency : 20 to 200Hz (Constant Acceleration of 88m/s ²) 1 Cycle 3 min. (round trip), 3 hours in 3 directions
6. Lock Strength	100N Min.	Lock breaking strength measured when pulling in mating axis direction
7. Humidity Resistance	Contact Resistance : 20mΩ Max. Insulation Resistance : 100MΩ Min.	Left for 96 hours at a temperature of 60°C and a relative humidity humidity 90 to 95%
8. Thermal Shock	Contact Resistance : 20mΩ Max.	Temperature : -40°C → Room temperature → 125°C → Room temperature Time: 30 → 5 → 30 → 5 minutes for 1000 cycles
9. Heat Resistance	Contact Resistance : 20mΩ Max.	Left at 140°C for 120 hours
10. Cold Resistance	Contact Resistance : 20mΩ Max.	Left at -40°C for 120 hours
11. Sulfuric Acid Gas Resistance	Contact Resistance : 20mΩ Max.	Left in sulfuric acid gas at room temperature with a concentration of 25ppm and 75% or more RH for 96 hours while unmated

Note 1 : This storage temperature and humidity is for long-term storage of unused products.

■Materials / Finish

Component	Part	Material	Finish	UL Standard
Receptacle	Housing	PA Resin	Black	UL94V-0
	Terminal	Brass	Tin Plating	—
	Solder Tabs	Brass	Tin Plating	—
Plug	Housing	PA Resin	Black	UL94V-0
	Retainer	PA Resin	Natural	UL94V-0
Crimp Terminal	Terminal	Copper Alloy	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.

●Receptacle

ZE05 H - 12 D P - 2 H

① ② ③ ④ ⑤ ⑥ ⑦

●Plug

ZE05 - 12 D S - HU/R

① ③ ④ ⑤ ⑦

① Series Name	: ZE05
② Solder Tabs	H : SMT N/A : DIP
③ No. of Pos.	: 2, 4, 5, 8, 12, 16, 20, 24
④ Rows	D : 2 Rows N/A : 1 Row
⑤ Connector Type	P : Receptacle S : Plug
⑥ Pitch	2 : 2mm
⑦ Part Type	H : Right Angle V : Straight HU/R : Housing/Retainer

●Crimp Terminal

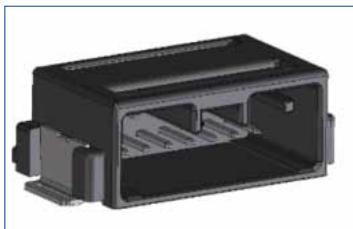
ZE05 - 2022 SCF

① ② ③

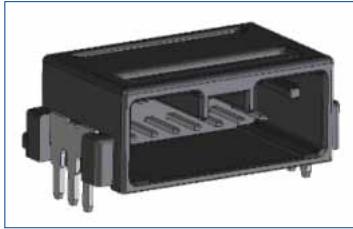
① Series Name	: ZE05
② Applicable Cable Size	2022 : 20, 22 AWG (0.3-0.5SQ)
③ Form Type/ Packaging	SCF : Female terminal, Reel

■Combination Chart

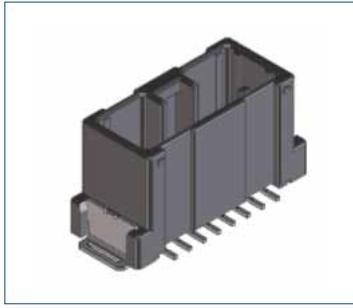
●Receptacle



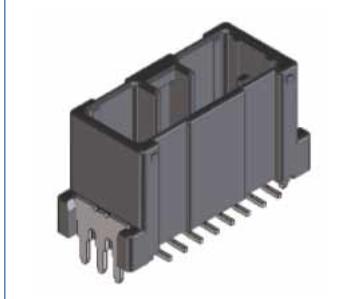
ZE05H-**P-2H



ZE05-**P-2H

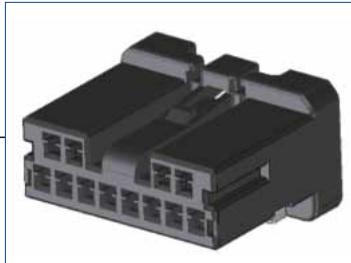


ZE05H-**P-2V



ZE05-**P-2V

●Plug



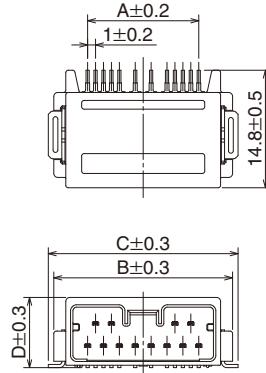
ZE05-**S-HU/R

●Crimp Contact



ZE05-2022SCF

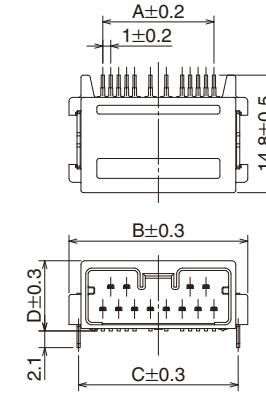
■Right Angle Receptacle, SMT Solder Tabs



Unit : mm

Part No.	HRS No.	No. of Pos.	A	B	C	D
ZE05H-2P-2H	752-2109-0	2	2	12.32	13.7	8.34
ZE05H-4P-2H	752-2110-0	4	6	16.32	17.7	
ZE05H-5P-2H	752-2120-0	5	8	18.32	19.7	
ZE05H-8DP-2H	752-2112-0	8	10	18.52	19.9	
ZE05H-12DP-2H	752-2113-0	12	14	22.52	23.9	8.84
ZE05H-16DP-2H	752-2114-0	16	20	28.52	29.9	
ZE05H-20DP-2H	752-2115-0	20	26	34.52	35.9	
ZE05H-24DP-2H	752-2116-0	24	30	38.52	39.9	

■Right Angle Receptacle, DIP Solder Tabs

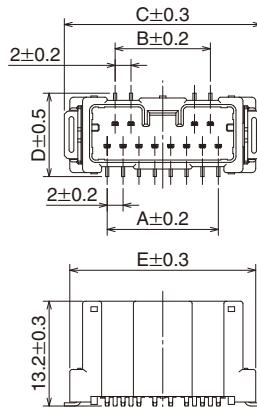


Unit : mm

Part No.	HRS No.	No. of Pos.	A	B	C	D
ZE05-2P-2H	752-2100-0	2	2	12.32	9.9	8.34
ZE05-4P-2H	752-2101-0	4	6	16.32	13.9	
ZE05-5P-2H	752-2121-0	5	8	18.32	15.9	
ZE05-8DP-2H	752-2103-0	8	10	18.52	16.1	
ZE05-12DP-2H	752-2104-0	12	14	22.52	20.1	8.84
ZE05-16DP-2H	752-2105-0	16	20	28.52	26.1	
ZE05-20DP-2H	752-2106-0	20	26	34.52	32.1	
ZE05-24DP-2H	752-2107-0	24	30	38.52	36.1	

Note 1 : The sales unit is 1 reel (300pcs/ reel). Please order by number of reels.

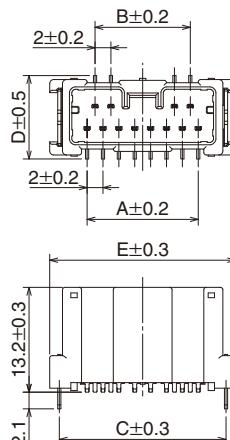
■Straight Receptacle, SMT Solder Tabs



Unit : mm

Part No.	HRS No.	No. of Pos.	A	B	C	D	E
ZE05H-2P-2V	752-2309-0	2	2	-	14.6	10	13.22
ZE05H-4P-2V	752-2310-0	4	6	-	18.6		17.22
ZE05H-8DP-2V	752-2312-0	8	10	8	20.8	10.5	19.42
ZE05H-12DP-2V	752-2313-0	12	14	12	24.8		23.42
ZE05H-16DP-2V	752-2314-0	16	18	20	30.8	10.5	29.42
ZE05H-24DP-2V	752-2316-0	24	30	28	40.8		39.42

■Straight Receptacle, DIP Solder Tabs



Unit : mm

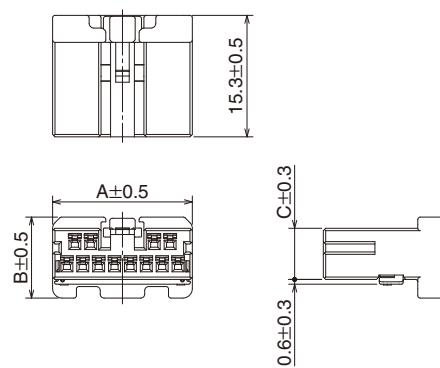
Part No.	HRS No.	No. of Pos.	A	B	C	D	E
ZE05-2P-2V	752-2300-0	2	2	-	10.8	10	13.22
ZE05-4P-2V	752-2301-0	4	6	-	14.8		17.22
ZE05-8DP-2V	752-2303-0	8	10	8	17	10.5	19.42
ZE05-12DP-2V	752-2304-0	12	14	12	21		23.42
ZE05-16DP-2V	Under Development (Note 3)	16	18	20	27	10.5	29.42
ZE05-24DP-2V	Under Development (Note 3)	24	30	28	37		39.42

Note 1 : The sales unit is 1 reel (250pcs/ reel). Please order by number of reels.

Note 2 : Suction tape is attached as a standard.

Note 3 : Pin counts with the HRS No. left blank are currently under development. For details contact a Hirose sales representative.

■Plug

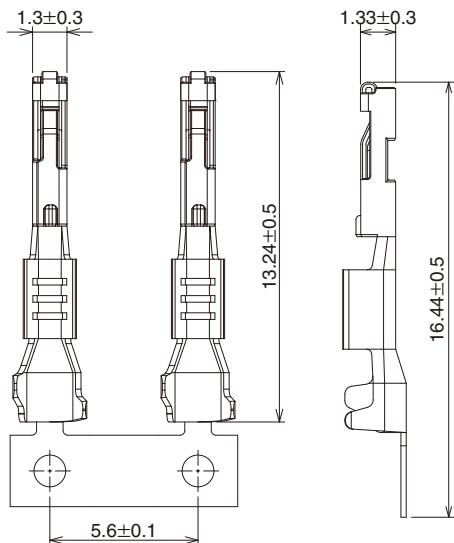


Unit : mm

Part No.	HRS No.	No. of Pos.	No. of Packages	A	B	C
ZE05-2S-HU/R	752-2200-0	2	350	8.8		
ZE05-4S-HU/R	752-2201-0	4	350	12.8	9.7	5.3
ZE05-5S-HU/R	752-2211-0	5	350	14.8		
ZE05-8DS-HU/R	752-2203-0	8	385	13.6		
ZE05-12DS-HU/R	752-2204-0	12	350	17.6		
ZE05-16DS-HU/R	752-2205-0	16	280	23.6	10.2	6.44
ZE05-20DS-HU/R	752-2206-0	20	245	29.6		
ZE05-24DS-HU/R	752-2207-0	24	210	33.6		

Note 1 : The product is sold in sets so please order based on number of sets.

■Crimp Terminal for Plug



Part No.	HRS No.	Type	Quantity	Finish
ZE05-2022SCF	752-2001-0	Reel Terminal	10,000pcs/reel	Tin Plating

Note 1 : Please consult with a Hirose sales representative when considering cables other than the applicable cables.

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

■Applicable Crimping Tool

Type	Part No.	HRS No.	Applicable Cable	Applicable Contact
Hirose Crimping Tool	CM-105C	901-0001-0	—	—
Applicator for Hirose Crimping Tool	AP105-ZE05-2022S	901-5239-0	—	ZE05-2022SCF
Japan Automatic Machine Applicator (Note 1)	CHX022700H	—	—	
Hand Tool (Note 2)	HT802/ZE05-2022S	780-0045-0	0.3sq, 0.5sq (Note 3)	ZE05-2022SCF (Note 4)
Retainer Release Tool (Note 5)	ZE05-2DC-HU/R/RE-MD	902-5144-0	—	—
	ZE05-12DC-HU/R/RE-MD	902-5143-0	—	—
Terminal Extraction Tool	ZE05/RE-MD	902-5145-0	—	ZE05-2022SCF

Note 1 : Contact Japan Automatic Machine (J.A.M) regarding crimping failure relating to applicable J.A.M. applicators or for

Applicable contacts are limited to those listed in the table.

Note 5 : Contact a Hirose representative about the retainer release tool for 20 and 24pos.

ZE05-2DC-HU/R/RE-MD …Single row products only (2, 4, 5pos.)

ZE05-12DC-HU/R/RE-MD …2 row products only (8, 12, 16pos.)

Note 6 : Conduct crimping based on the "Crimping Standards" and "Crimping Conditions Table".

Note 7 : Any problems that occur from using tools other than those specified by Hirose are not covered by warranty.

NEW

Small and Waterproof Connector for Automotive Interface

ZE064W Series



■Features

1. Small Size (0.64mm terminal, 2.2mm pitch)

Space-saving design contributes to device size reduction.

2. High Vibration Resistance

The female crimp terminal design includes a double-layer spring, 3-point contact and 3 serrations in order to surpass the intense vibration requirements for devices mounted in the engine room.

3. High Heat Resistance

Can be used at a temperature of 125°C.

4. Waterproof (IP67/IP69K)

Hirose's original waterproof design is compliant with IP67/IP69K when mated. With waterproof performance that withstands high pressure washing, ZE064W is suitable for use as an interface connector for automotive and industrial applications used in harsh environments.

5. Rated Current

5A (Single Pin Power Supply) / 2A (All Pins Power Supply)

6. Mating Keys

Prevents mis-mating when using multiple connectors.

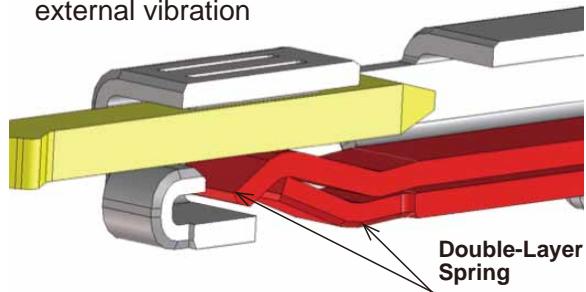
7. Retainer

The retainer prevents incomplete terminal insertion and has high contact reliability during cable routing.

●High Vibration Resistance Contact Design

1. Double-layer spring design

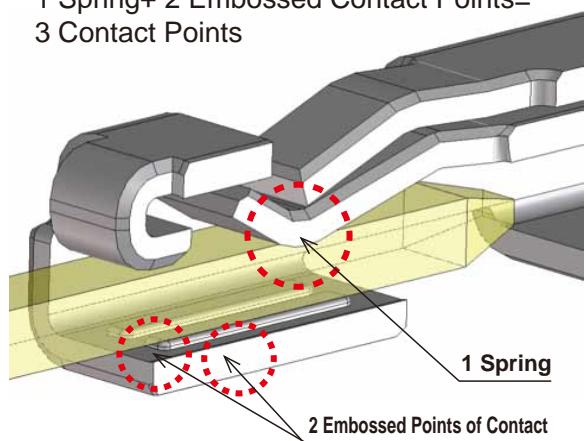
Increased contact reliability and resistance to external vibration



2. 3-Point Contact Design

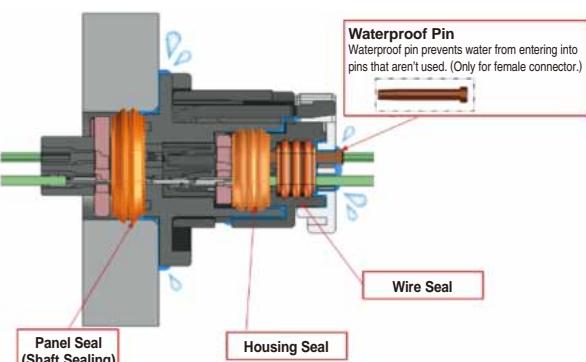
Increased contact force suppresses external vibration

1 Spring + 2 Embossed Contact Points = 3 Contact Points



*The terminal is flipped upside down so that the beat can be seen easily.

●Waterproof



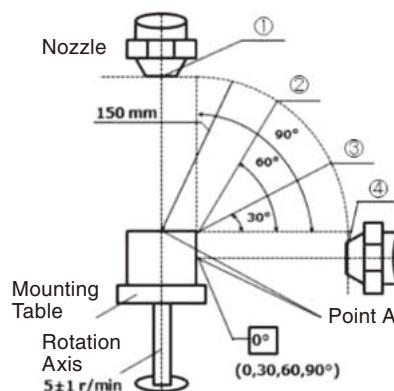
*Our original waterproof design meets IP67/IP69K standards. (Mated condition)

■Product Specifications

Ratings	Rated Current : 2A (All pins power supply) 5A (Single pin power supply)	Operating Temperature : -40 to +125°C (Includes the temperature rise by current flow) Storage Temperature : -10 to +60°C (Note 1)
	Rated Voltage 60V AC/DC	Storage Humidity Range : Relative humidity 85% or less (no condensation) (Note 1)

Items	Specifications	Conditions
1. Contact Resistance	8mΩ Max.	Measured at 1A DC
2. Insulation Resistance	100MΩ Min.	Measured at 500V DC
3. Withstanding Voltage	There shall be no dielectric breakdown.	Apply 1000V AC for 1 min.
4. Mating Durability	Contact Resistance : 16mΩ Max. No damage, cracks or component breakage.	30 mating cycles (insertion/extraction)
5. Vibration Resistance	No electrical discontinuity of 7Ω or more for 1μs or more Contact Resistance : 16mΩ Max. No damage, cracks or component breakage.	Frequency : 20 to 200Hz (acceleration : 88m/s ²) 3 minutes per cycle (Repeated) 3 directions, 3 hours each.
6. Lock Strength	100N Min.	Breaking strength of the lock is measured while pulled in the direction of the mating axis
7. Humidity Resistance	Contact Resistance : 16mΩ Max. Insulation Resistance : 100MΩ Min.	Left at a temperature of 85°C for 96 hours with a relative humidity of 90 to 95%
8. Thermal Shock	Contact Resistance : 16mΩ Max. Insulation Resistance : 100MΩ Min. No damage, cracks or component breakage.	Temperature -40°C → Room temperature → 125°C → Room temperature Time : 30 → 5 → 30 → 5 minutes for 1000 cycles
9. Heat Resistance	Contact Resistance : 16mΩ Max. No damage, cracks or component breakage.	Left at a temperature of 140°C for 120 hours
10. Heat Resistance	Contact Resistance : 16mΩ Max. No damage, cracks or component breakage.	Left at a temperature of -40°C for 120 hours
11. Sulfurous Acid Resistance	Contact Resistance : Power 16mΩ	Left unmated in sulfurous acid gas for 96 hours at a room temperature with a concentration of 25ppm and a humidity of 75% RH or higher
12. High Pressure Washing Resistance	No water infiltration into panel. Insulation Resistance : 100MΩ Min.	After heating for 120 hours at 120°C, spray for 30 sec. at a temperature of 80°C and water pressure of 10MPa at positions 1 through 4. Rotate the mounting table at a speed of 5r/min

Note 1 : Storage temperature is for long-term storage of unused products.



■Materials / Finish

Product Component	Part	Material	Finish
Female Connector	Housing	PA Resin	Black or Gray
	Retainer	PA Resin	Beige
	Seal Cover	PBT Resin	Gray
	Housing Seal	Silicone Rubber	Rouge
	Wire Seal	Silicone Rubber	Rouge
Male Connector	Housing	PA Resin	Black or Gray
	Retainer	PA Resin	Beige
	Panel Seal	Silicone Rubber	Rouge
Waterproof Cap		PBT Resin	Brown
Contacts (Female, Male)		Copper Alloy	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.

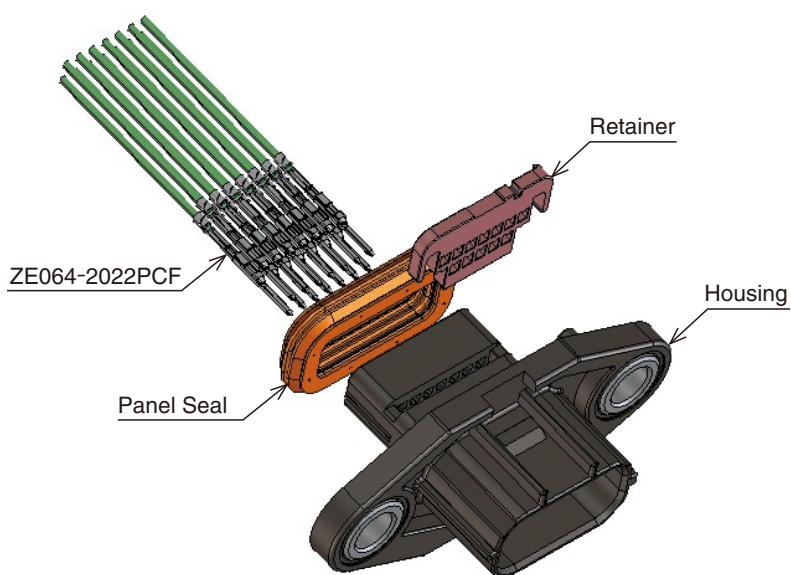
ZE064W - 24 D P - HU/R (A)

① ② ③ ④ ⑤ ⑥

① Series Name	: ZE064W
② No. of Pos.	: 8, 14, 24pos.
③ Rows	: D double-row *There is no single-row product
④ Connector Type	P : Male S : Female
⑤ Housing with Retainer	
⑥ Mating Key	(A) : A Key (B) : B Key

■Product Configuration (Diagram of 14pos.)

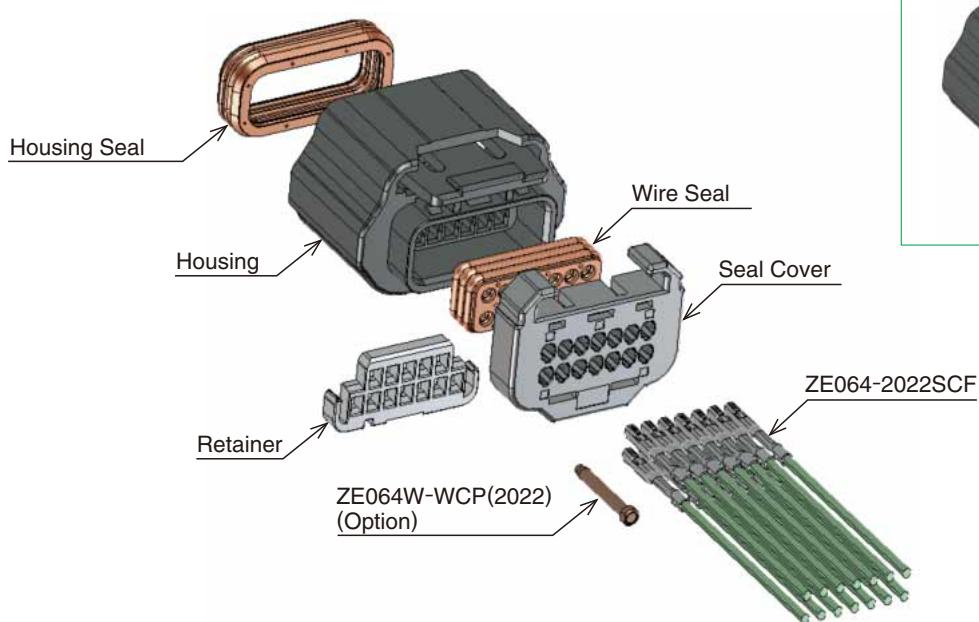
●Male Connector



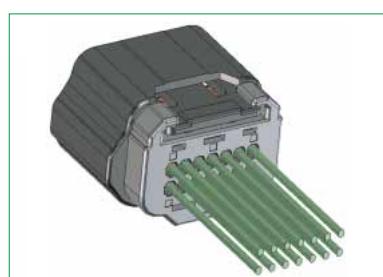
Completed Male Connector



●Female Connector



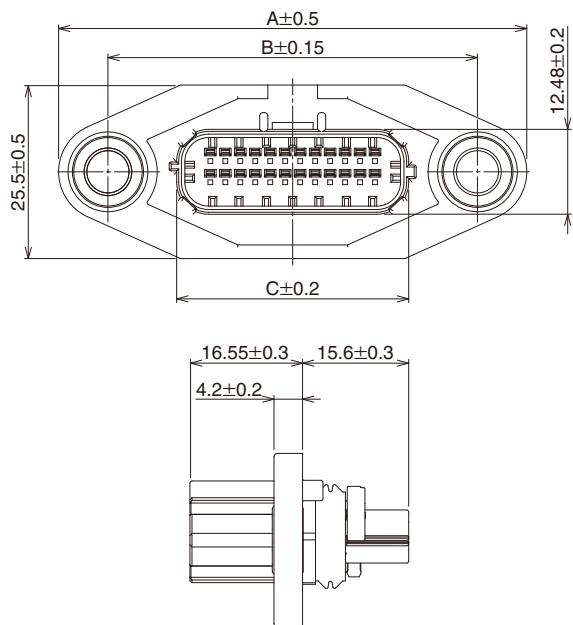
Completed Female Connector



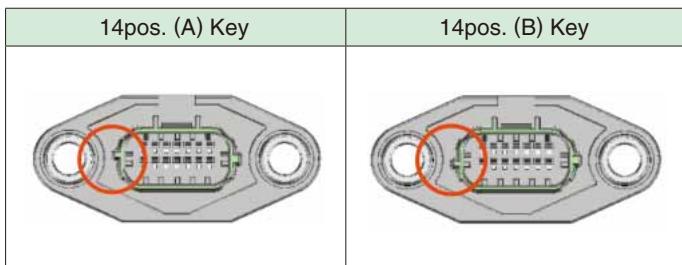
■ZE064W Series Mating Table

Male Connector		Female Connector	
Housing/Retainer	Terminal	Housing/Retainer	Terminal
ZE064W-8DP-HU/R	ZE064-2022PCF	ZE064W-8DS-HU/R	ZE064-2022SCF
ZE064W-14DP-HU/R		ZE064W-14DS-HU/R	
ZE064W-24DP-HU/R		ZE064W-24DS-HU/R	

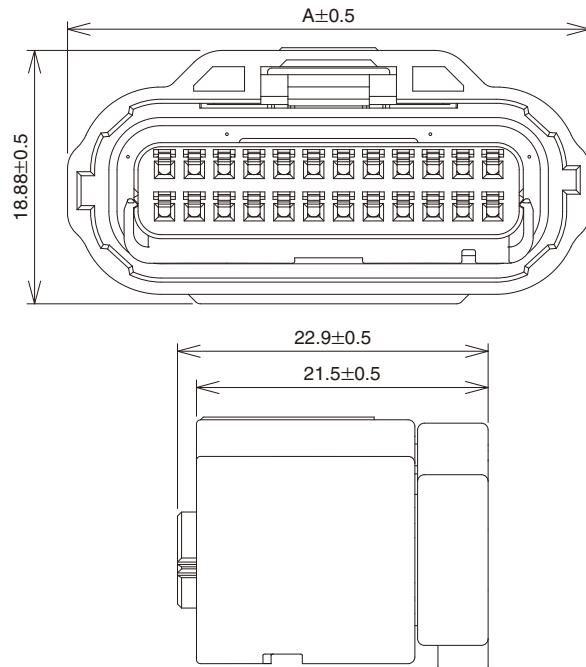
■Male Housing / Retainer



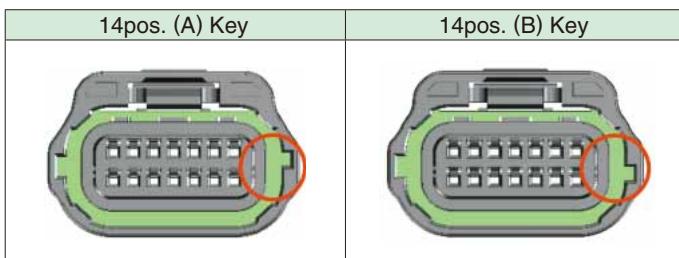
Part No.	HRS No.	Key	No. of Pos.	A	B	C	Sales Unit
ZE064W-24DP-HU/R(A)	753-2003-0	(A) Key	24	68.8	54.3	34.1	250pcs
ZE064W-24DP-HU/R(B)	753-2004-0	(B) Key					
ZE064W-14DP-HU/R(A)	753-2008-0	(A) Key	14	57.8	43.3	23.1	300pcs
ZE064W-14DP-HU/R(B)	753-2009-0	(B) Key					
ZE064W-8DP-HU/R(A)	753-2013-0	(A) Key	8	51.2	36.7	16.5	350pcs
ZE064W-8DP-HU/R(B)	753-2014-0	(B) Key					



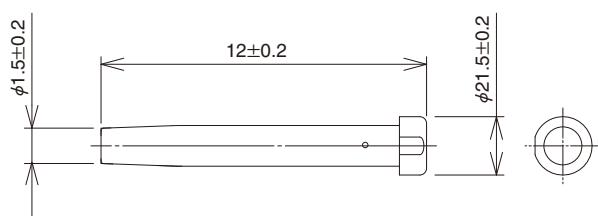
■Female Housing / Retainer



Part No.	HRS No.	Key Position	No. of Pos.	A	Sales Unit
ZE064W-24DS-HU/R(A)	753-2005-0	(A) Key	24	38.5	275pcs
ZE064W-24DS-HU/R(B)	753-2006-0	(B) Key			
ZE064W-14DS-HU/R(A)	753-2010-0	(A) Key	14	27.5	480pcs
ZE064W-14DS-HU/R(B)	753-2011-0	(B) Key			
ZE064W-8DS-HU/R(A)	753-2015-0	(A) Key	8	20.9	600pcs
ZE064W-8DS-HU/R(B)	753-2016-0	(B) Key			



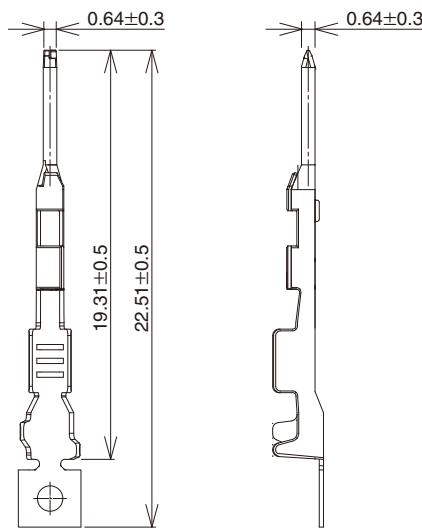
■Waterproof Pin



Part No.	HRS No.	Sales Unit
ZE064W-WCP(2022)	753-2007-0	1000pcs per bag

Note : This part is used only with the female connector.

■Male Terminal

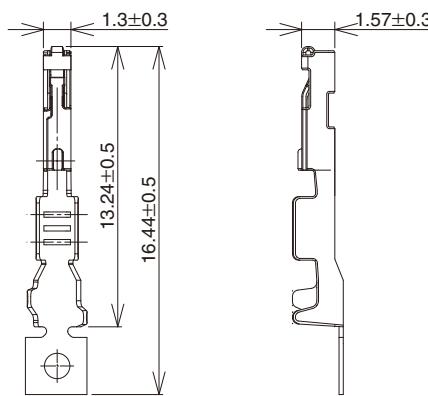


Part No.	HRS No.	Type	Finish	Sales Unit
ZE064-2022PCF	753-2002-0	Reel Terminal	Tin Plating	15,000 pcs per reel

Note 1 : The applicable cables are 0.3sq and 0.5sq.

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

■Female Terminal



Part No.	HRS No.	Type	Finish	Sales Unit
ZE064-2022SCF	753-2001-0	Reel Terminal	Tin Plating	13,000 pcs per reel

Note 1 : The applicable cables are 0.3sq and 0.5sq. To ensure waterproof performance the applicable cable diameter range is limited from $\phi 1.4$ to 1.7mm.

Note 2 : The female terminal is a waterproof design and is a clean body without a stabilizer. Therefore if inserted in the opposite direction it can be inserted at a force of more than 10N so be careful.

Note 3 : Any problems that occur from using tools other than those specified by Hirose are not covered by warranty.

■Applicable Applicator Tool

Type	Male/Female	Part No.	HRS No.	Applicable Terminal
HRS Crimp Machine	Male Terminal/ Female Terminal	CM-105C	901-0001-0	—
Applicator for HRS Crimping Machine	Female Terminal	AP105-ZE064-2022S	901-5241-0	ZE064-2022SCF
	Male Terminal	AP105-ZE064-2022P	901-5242-0	ZE064-2022PCF
Hand Tool	Female Side	HT802/ZE064-2022S	780-0046-0	ZE064-2022SCF
	Male Side	HT802/ZE064-2022P	780-0047-0	ZE064-2022PCF
Retainer Release Tool	Female Side	ZE064W-DS-HU/R/CV-MD	902-5151-0	—
	Male Side	Can release manually	—	—
Terminal Extraction Tool	Female Terminal	ZE064-S/RE-MD	902-5149-0	ZE064-2022SCF
	Male Terminal	ZE064-P/RE-MD	902-5150-0	ZE064-2022PCF

Note 1 : Any problems that occur from using tools other than those specified by Hirose are not covered by warranty.

Note 2 : Hand tools are developed as a prototype tool during product development. Use an applicator for mass production.

Note 3 : Cut the reel terminal for use with the hand tool.

Note 4 : Crimping work shall be conducted in accordance with the "Crimping Standard" and "Crimping Conditions Table".

■Contact Extraction

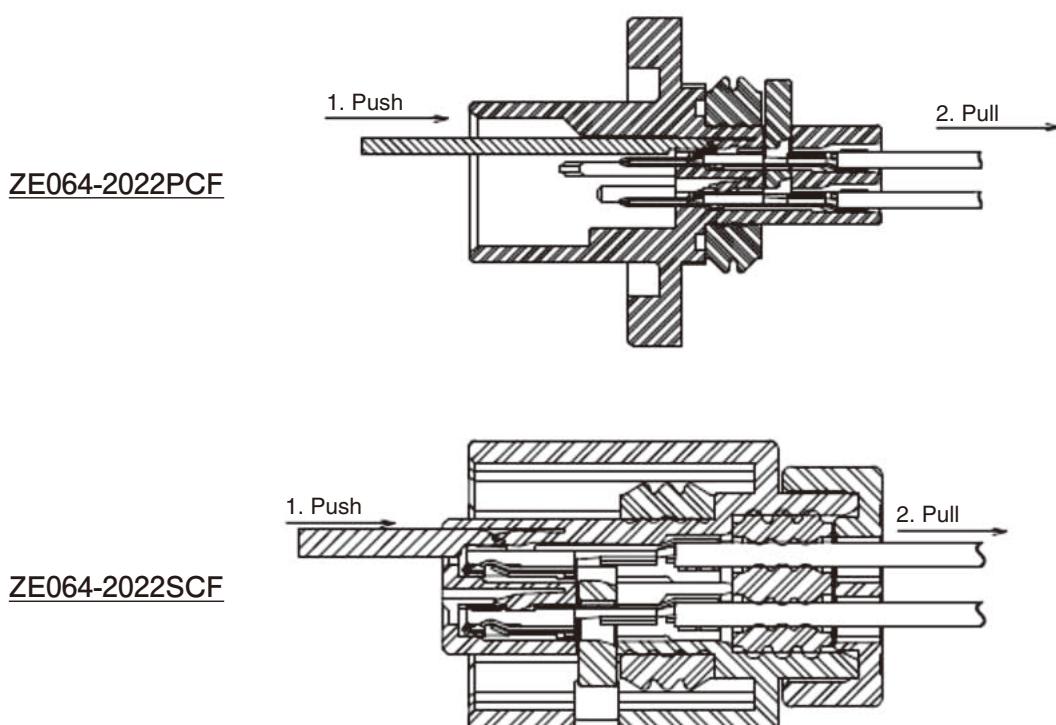
- Contact Extraction Tool : ZE064-P/RE-MD, ZE064-S/RE-MD
- Applicable Crimp Contacts : ZE064-2022PCF, ZE064-2022SCF
- Operation Method

●Repair Method

To repair, pull out the contact while pressing the extraction tool in the direction shown in the diagram below. Be careful not to deform the terminal lock or contact portion.

Caution : Do not push the terminal locking part or contact. It may lead to deformation or damage to the housing and other parts. When damaged, please replace it with a new one.

Housing Cross-Sectional Diagram



■Usage Precautions

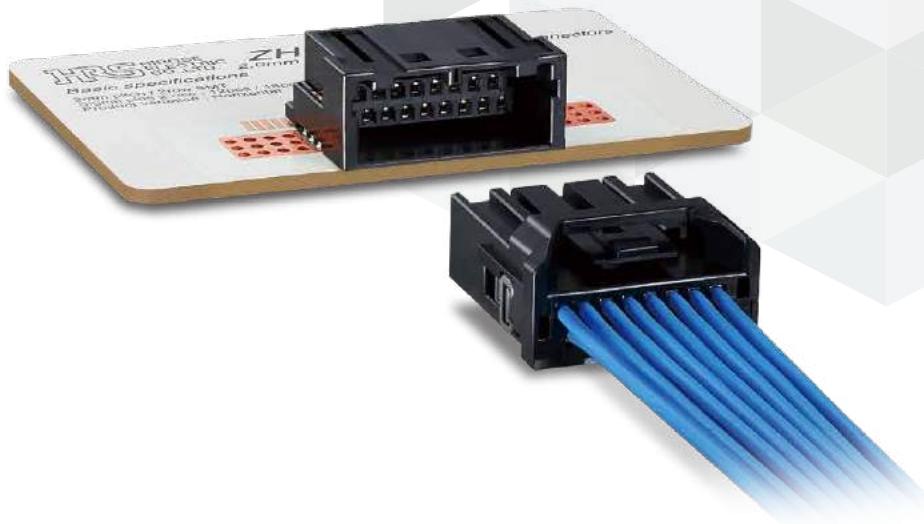
1. Unmating the connector with force may result in damage. If it is difficult to pull out, lightly push it once and then operate the lock to pull it out.
2. When inserting or extracting the terminal, always disconnect from the power source first.
3. Do not touch the terminals while the power is on since it is very dangerous.
4. Contact a sales representative for harness instructions and handling manuals.
5. Do not perform insertion or extraction with a live wire. (Live wire insertion/extraction refers to inserting/extracting while electricity is running)

■Usage Environment

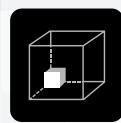
Please consult with your Hirose Electric sales representative if your system environmental conditions repeat high and low temperatures.

ZH05 Series

0.5mm Size, 2mm Pitch, Wire-to-Board Connector with Short-Circuit/Electric Shock Prevention Design



Finger Protect



Space Saving



Contact Reliability

NEW

Features

1. Compact and narrow width

0.5mm terminal tab size, 2mm pitch.
Space-saving design that contributes to size reduction of end product.

2. Short-circuit/electric shock prevention design

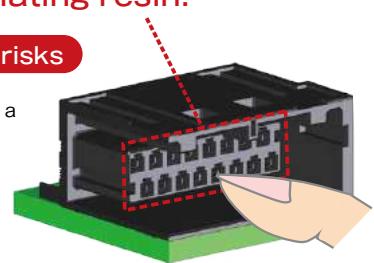
Female terminals are used on the board side receptacle, and live parts are completely covered with resin, enhancing assembly safety.

Receptacle/Cross-Section

The female terminals are enclosed in highly insulating resin.

Eliminates two risks

- Board damage due to a short circuit between adjacent terminals
- Operator electric shock from touching the contacts



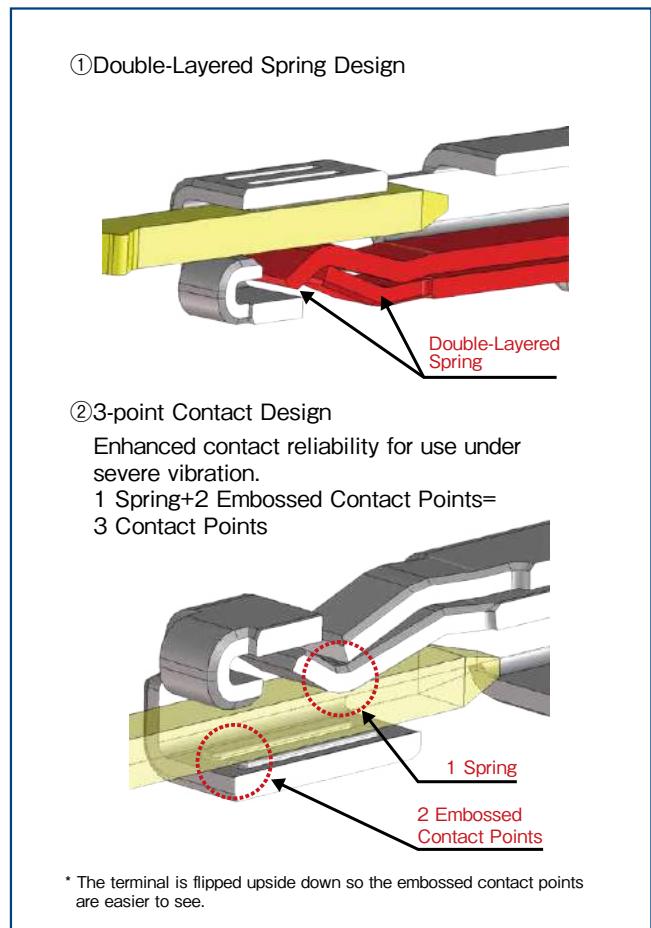
3. High Heat Resistance up to 125°C

125°C heat resistance (Note) make ZH05 ideal for applications requiring high heat resistance such as automotive.

(Note) Includes temperature rise due to current flow.

4. High Vibration Resistance

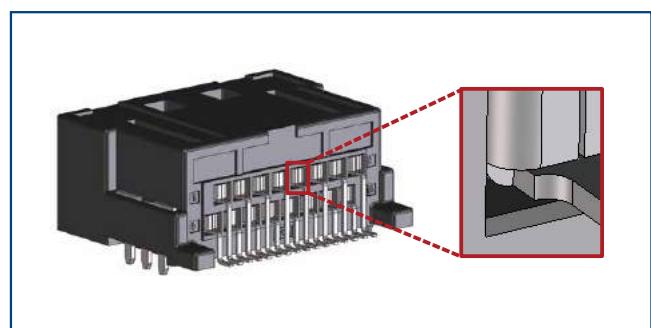
The female terminal has an original 3-point contact design and double-layered spring. ZH05 achieves stable contact even under intense vibration and contributes to enhanced reliability.



High Vibration Resistance Terminal Design

5. Suitable for Potting

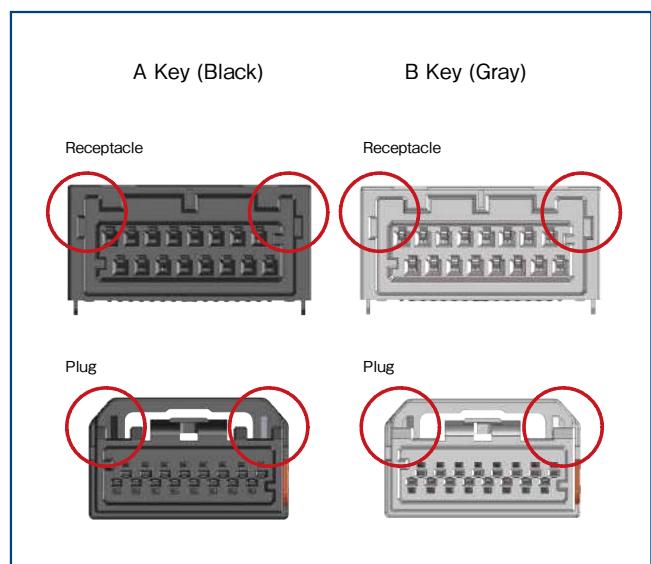
The receptacle minimizes clearance of the press-fit contact area and prevents potting from flowing to the contact point.



Potting Resin Inflow Prevention Design

6. Two types of mating keys : A and B

Prevents misfitting when using multiple devices.



Product Specifications

Rated Current	2A (All poles energized)	Operating Temperature (Note 1)	-40 to + 125°C
Rated Voltage	60V AC/DC	Storage Temperature Range (Note 2)	-10 to + 60°C
		Storage Humidity Range (Note 2)(Note 3)	Relative humidity 85% Max.

Items	Specifications	Conditions
Contact Resistance	10m Ω Max.	Measured at 1A DC
Insulation Resistance	100M Ω Min.	Measured at 500V DC
Withstanding Voltage	There shall be no dielectric breakdown.	1000V AC for 1 min.
Mating Durability	Contact Resistance : 20m Ω Max.	30 Insertion/Extraction cycles
Vibration Resistance	No electrical discontinuity of 1 μ s or more. Contact Resistance : 20m Ω Max.	Frequency : 20 to 200Hz (Constant Acceleration of 44m/s ²) 1 Cycle 3 min. (round trip), 3 hours in 3 directions
Lock Strength	100N Min.	Lock breaking strength measured when pulling in mating axis direction
Humidity Resistance	Contact Resistance : 20m Ω Max. Insulation Resistance : 100M Ω Min.	Left for 96 hours at a temperature of 60°C and a relative humidity 90 to 95%
Thermal Shock	Contact Resistance : 20m Ω Max.	Temperature : -4°C → Room temperature → +125°C → Room temperature Time : 30 → 5 → 30 → 5 minutes for 1000 cycles
Heat Resistance	Contact Resistance : 20m Ω Max.	Left at 140°C for 120 hours
Cold Resistance	Contact Resistance : 20m Ω Max.	Left at -40°C for 120 hours
Sulfuric Acid Gas Resistance	Contact Resistance : 20m Ω Max.	Left in sulfuric acid gas at room temperature with a concentration of 25ppm and 75% or more RH for 96 hours while unmated

Note 1 : Includes temperature rise caused by current flow.

Note 2 : Storage refers to long-term storage of unused items before they are mounted on the PCB.

Operating temperature and humidity range apply when the product is not powered after PCB mounting and when temporarily stored during transportation.

Note 3 : Use without condensation.

Materials / Finish

Component	Part	Material	Color / Finish	UL Standard
Receptacle	Housing	PA	Black, Gray	UL94V-0
	Female Terminal	Copper Alloy	Tin Plating	-
	Retention Tabs	Brass	Tin Plating	-
Plug	Housing	PA	Black, Gray	UL94V-0
	Retainer	PBT	Dark Gray	UL94V-0
Male Crimp Terminal		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.

● Receptacle/Plug/Retainer

ZH05 - 16 DS - 2 H (A)

① ② ③ ④ ⑤ ⑥

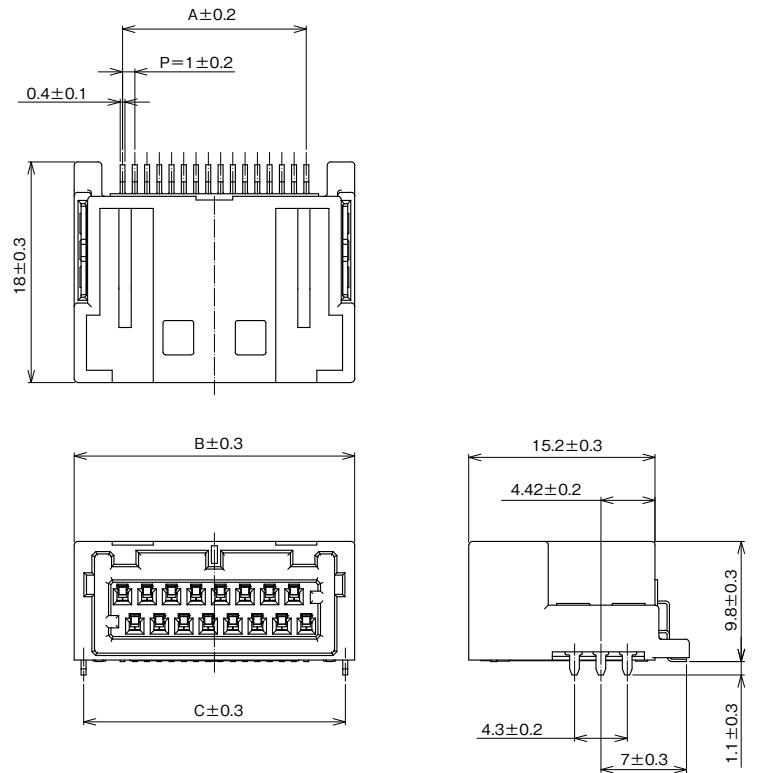
● Male Crimp Terminal

ZH05 - 2224 PCF

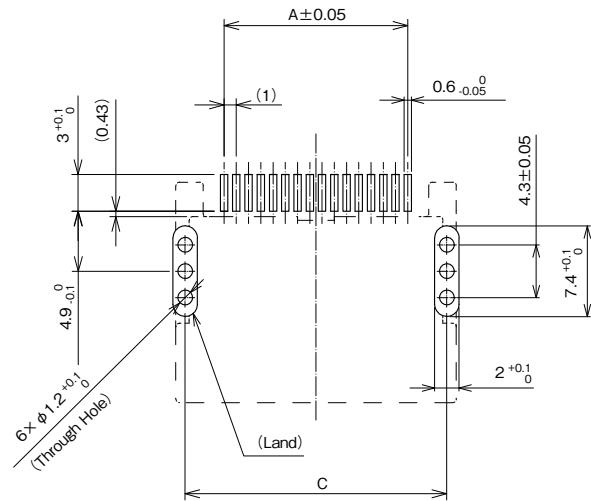
① ⑦ ⑧

① Series Name	ZH05	⑤ Product Type	H : Horizontal Mounting Type HU : Socket Housing R : Retainer
② No. of Pos.	12, 16, 20, 24	⑥ Mating Key	(A) : A Key (B) : B Key
③ Connector Type	DS : Receptacle (Female Terminal) DP : Plug	⑦ Applicable Cable	22-24 AWG
④ Pitch	2mm	⑧ Type /Packaging Type	Plug Contact / Reel

Receptacle



- Recommended PCB Layout
(Board thickness : $t=1.6\text{mm}$, Metal mask thickness : $t=0.1\text{mm}$)

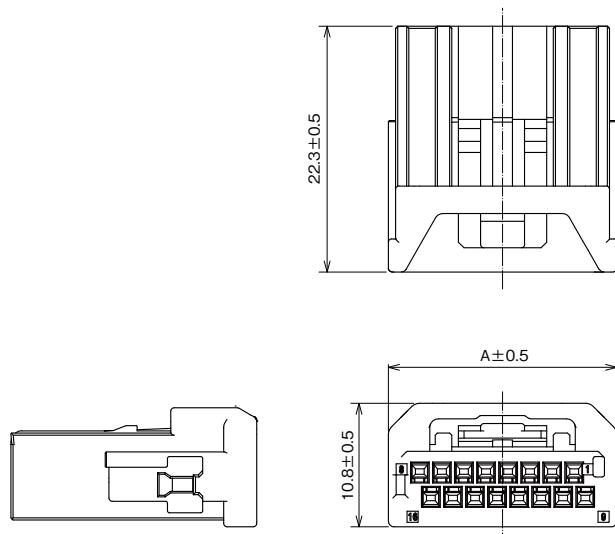


Unit : mm

Part No.	HRS No.	Mating Key	No. of Pos.	A	B	C	Purchase Unit	
ZH05-12DS-2H(A)	Under Planning (Note)	A Key	12	11.0	18.9	17.36	250pcs per reel	
ZH05-12DS-2H(B)	Under Planning (Note)	B Key						
ZH05-16DS-2H(A)	CL0756-2101-0-00	A Key	16	15.0	22.9	21.36		
ZH05-16DS-2H(B)	CL0756-2104-0-00	B Key						
ZH05-20DS-2H(A)	CL0756-2102-0-00	A Key	20	19.0	26.9	25.36		
ZH05-20DS-2H(B)	CL0756-2105-0-00	B Key						
ZH05-24DS-2H(A)	Under Planning (Note)	A Key	24	23.0	30.9	29.36		
ZH05-24DS-2H(B)	Under Planning (Note)	B Key						

Note : Products without HRS No. are currently being planned for development. Please contact a Hirose representative regarding questions on pin count variation development.

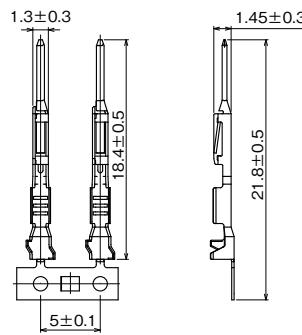
Plug



Part No.	HRS No.	Mating Key	No. of Pos.	A	Purchase Unit	
ZH05-12DP-HU(A)	Under Planning (Note)	A Key	12	16.7	500pcs per box	
ZH05-12DP-HU(B)	Under Planning (Note)	B Key				
ZH05-16DP-HU(A)	CL0756-2201-0-00	A Key	16	20.7		
ZH05-16DP-HU(B)	CL0756-2207-0-00	B Key				
ZH05-20DP-HU(A)	CL0756-2204-0-00	A Key	20	24.7		
ZH05-20DP-HU(B)	CL0756-2208-0-00	B Key				
ZH05-24DP-HU(A)	Under Planning (Note)	A Key	24	28.7		
ZH05-24DP-HU(B)	Under Planning (Note)	B Key				

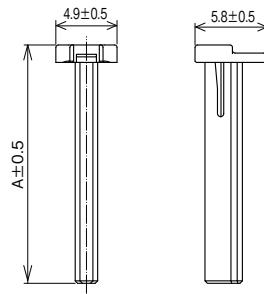
Note : Products without HRS No. are currently being planned for development. Please contact a Hirose representative regarding questions on pin count variation development.

Male Crimp Terminal



Part No.	HRS No.	Applicable Cable	Packaging Specification	Purchase Unit
ZH05-2224PCF	CL0756-2001-0-00	Applicable Cable : 22-24 AWG (0.2-0.35sq), Coated Outer Diameter ϕ 1.4mm (FLRY)	15,000pcs per reel 5 reels per box (Total of 75,000pcs per box)	75,000pcs per box

Retainer

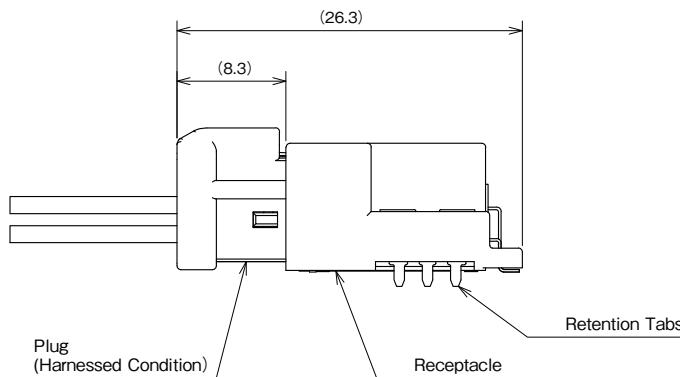


Unit : mm

Part No.	HRS No.	No. of Pos.	A	Purchase Unit
ZH05-12DP-R	Under Planning (Note)	12	15.1	10,000pcs per box
ZH05-16DP-R	CL0756-2215-0-00	16	19.1	
ZH05-20DP-R	CL0756-2216-0-00	20	23.1	
ZH05-24DP-R	Under Planning (Note)	24	27.1	

Note : Products without HRS No. are currently being planned for development. Please contact a Hirose representative regarding questions on pin count variation development.

Mated Diagram



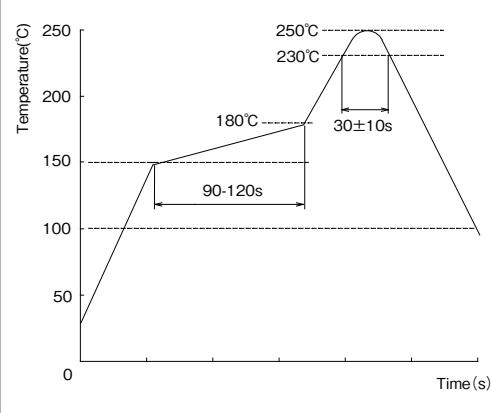
Applicable Tools

Type	Part No.	HRS No.	Compatible Crimp Terminal
Crimping Tool	CM-105C	CL0901-0001-0-00	-
Applicator	AP105-ZH05-2224P	CL0901-5253-0-00	ZH05-2224PCF
Retainer Release Tool	ZH05/R/RE-MD	CL0902-5162-0-00	-
Terminal Extraction Tool	ZH05/RE-MD	CL0902-5161-0-00	-

Note 1 : Conduct crimping based on the "Crimping Standards" and "Crimping Conditions Table".

Note 2 : Problems with tools not specified by Hirose are outside the scope of warranty.

Usage Precautions

Recommended Temperature Profile	 <p>【Conditions】</p> <ol style="list-style-type: none"> 1. Reflow Heating Method Used : Far infrared, air atmosphere or nitrogen 2. Peak Temperature 250°C Peak 3. Heated part 230°C Min. 20-40 sec. 4. Preheat Temperature 150 to 180°C 90-120 sec. 5. Cycles 2 times Max.
Recommended Manual Soldering Conditions	Soldering iron temperature : 280 to 300°C, Soldering time : within 2 seconds
Precautions	<ol style="list-style-type: none"> 1. Excessive pull force during unmating may damage the connector. If it is difficult to remove, push in lightly once and then release the lock. 2. Always make sure to turn off the power before reinserting the connector. 3. Do not directly contact the terminal when electricity is flowing since it is extremely dangerous. 4. Contact a Hirose representative for harness procedures or handling manuals.

While Taking Into Consideration

Specifications mentioned in this catalog are reference values.

When considering to order or use this product, please confirm the Drawing and Product Specifications sheets.

Use an appropriate cable when using the connector in combination with cables.

If considering usage of a non-specified cable, please contact your sales representative.

If assembly process is done by jigs & tools which are not identified by Hirose, assurance will not be given.

If considering usage for below mentioned applications, please contact your sales representative.

In cases where the application will demand a high level of reliability, such as automotive, medical instruments, public infrastructure, aerospace/ defense etc. Hirose must review before assurance of reliability can be given.

Usage Precautions

Recommended Temperature Profile		<p>[Conditions]</p> <ol style="list-style-type: none"> 1. Peak temperature : 250°C Max. for 10 sec. Max. 2. Heating : 220°C Min. for 60 sec. Max. 3. Preheating : 150 to 180°C, 90 to 120 sec. 4. Number of Reflow Cycles : 2 cycles Max.
	<p>*Measurement is conducted at the contact lead part. Soldering results may change depending on conditions such as solder paste type, manufacturer, PCB size, and other soldering materials. Please determine all mounting conditions before use.</p> <p>*This temperature profile is a recommended value.</p>	
Recommended Manual Soldering Conditions	Soldering iron temperature : 350±10°C, Soldering time : within 5 seconds	
Recommended Metal Mask Thickness and Aperture Ratio (PCB Pattern Area Ratio)	Thickness : 0.1mm, Aperture Ratio : 100%	
Warpage of the Board	A maximum of 0.02mm at the center of connector, as measured from either end of the connector	
Cleaning Conditions	IPA cleaning is allowed. (Cleaning is not recommended due to potential changes in mating action and other variables. Please contact Hirose if you use other cleaning agents.)	
Precautions	<ol style="list-style-type: none"> 1. Excessive pull force during unmating may damage the connector. If it is difficult to remove, push in lightly once and then release the lock. 2. Always make sure to turn off the power before reinserting the connector. 3. Do not directly touch the terminal when electricity is flowing since it is extremely dangerous. 4. Contact a Hirose representative for cable assembly procedures or handling manuals. 	

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