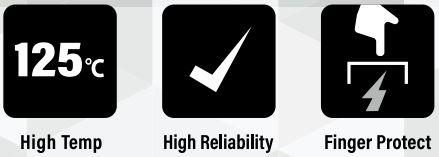
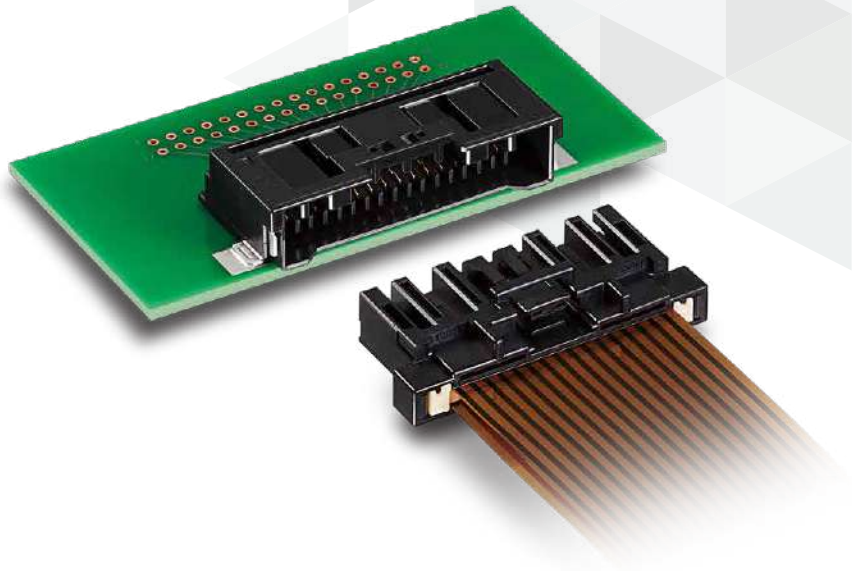
PRODUCT CATALOG

HIROSE ELECTRIC CO.,LTD.

ZK1 Series

High Heat and Vibration Resistance, 2mm Pitch, FPC-to-Board, Automotive Connector



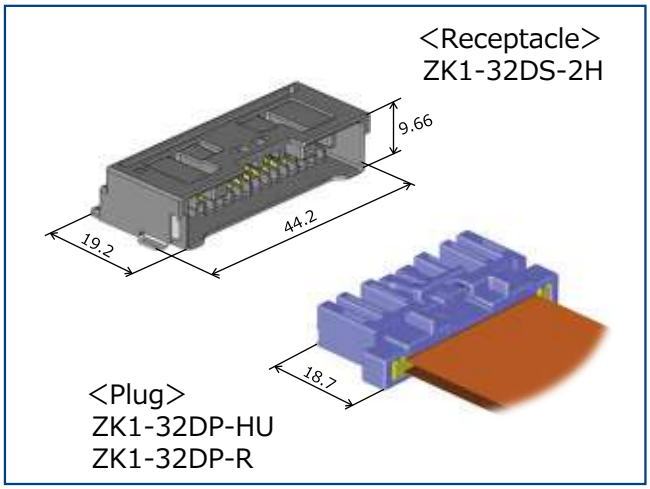


Mar. 2024

Features

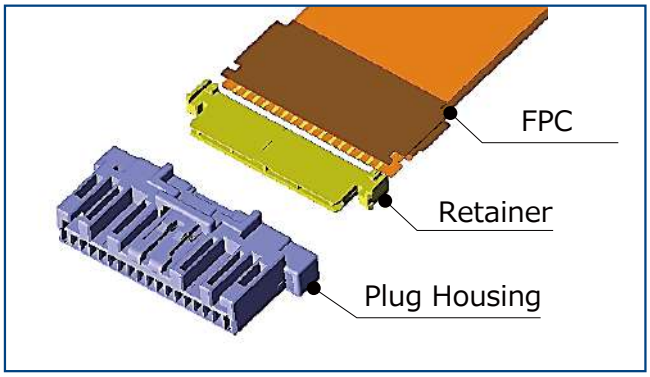
1. Compact and Light Weight

Designed with a FPC pattern pitch of 2mm and a PCB pattern pitch of 1mm, this two-piece FPC-to-board connector minimizes the size and weight of the end product.



2. Simplified Assembly for Size and Weight Reduction

Insert the FPC into the plug housing and secure with the retainer to complete the assembly, streamlining the harnessing process and enhancing work efficiency.
The plug side consists of only the FPC, plug housing and retainer in a terminal-less design, which contributes to weight reduction by switching from discrete wire to FPC and space saving in FPC routing.



3. Withstands High Heat and Vibration in a Compact Design

- High Heat Resistance : up to 125℃
- Suitable for automotive and other high-heat applications

Note : Includes the temperature rise due to current flow.

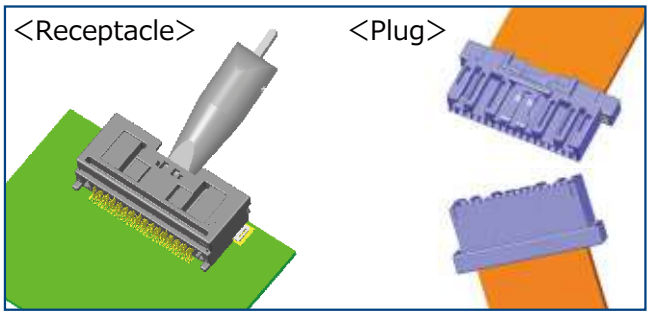
4. Robust Center Locking Design

The locking strength of over 100N ensures durability to meet stringent automotive standards.

5. Designed for Electric Shock Prevention

- Receptacle
The receptacle's design depth prevents contact with terminals, safeguarding against electric shock (equivalent to IP2X).

- Plug
The plug's design shields exposed metal and patterns, reducing the risk of electric shock upon touch.



6. Enhanced Dust Resistance with Two-Point Contact

Maintains high contact reliability and resistance to dust intrusion due to its two-point contact design.

Product Specifications

Rated Current	1A	Operating Temperature (Note1)	-40 to +125℃
Rated Voltage	50V AC/DC	Storage Temperature (Note2)	-10 to +60℃
		Storage Humidity Range (Note2)	Relative humidity 85% Max. (No condensation)

Compatible FPC Specifications	t=0.3±0.03mm Gold Plated

Items	Specifications	Conditions
Contact Resistance	10mΩ Max.	Measured at 1A DC
Insulation Resistance	100MΩ Min.	Measured at 500V DC
Withstanding Voltage	No insulation breakdown	1000V AC for 1 min
Mating Durability	Contact Resistance : 20mΩ Max.	10 Insertion/Extraction cycles
Vibration Resistance	No electrical discontinuity of 7Ω Min., 1μs Min. Contact Resistance : 20mΩ Max.	Sine Wave Vibration: Frequency 100 to 400Hz (Acceleration 100-150m/s^2), Sweep time 1 oct/min. Random Vibration: Frequency 20 to 1500Hz (Acceleration 0.51-20(m/s^2)^2), RMS Acceleration 105.5m/s^2 in 3 directions, for 3h.
Lock Strength	100N Min.	Lock breaking strength measured when pulling in mating axis direction
Humidity Resistance	Contact Resistance : 20mΩ Max. Insulation Resistance : 100MΩ Min.	Exposed at 85℃, relative humidity 95±5%, for 240h.
Thermal Shock	Contact Resistance : 20mΩ Max.	Temperature : -40℃ → Room temperature → +125℃ → Room temperature Time : 30 → 5 → 30 → 5 minutes for 1,000 cycles
Heat Resistance	Contact Resistance : 20mΩ Max.	Exposed at 125℃ for 1,000h.
Cold Resistance	Contact Resistance : 20mΩ Max.	Exposed at -40℃ for 120h.
Sulfurous Acid Gas Resistance	Contact Resistance : 20mΩ Max.	Exposed at room temperature with a concentration of 25ppm and relative humidity 75% Min., for 96h. (Unmated state)

Note 1 : Includes the temperature rise due to 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.

Materials / Finish

Component	Part	Material	Color / Finish
Receptacle	Housing	PA	Black
	Terminal	Copper Alloy	Gold Plating (Nickle Underplating)
	Retention Tab	Brass	Tin Plating (Nickle Underplating)
Plug	Housing	PA	Black
	Retainer	PA	Beige

Product Number Structure

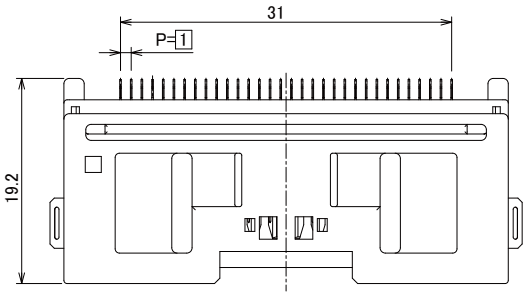
Refer to the chart below when determining the product specifications from the product number.

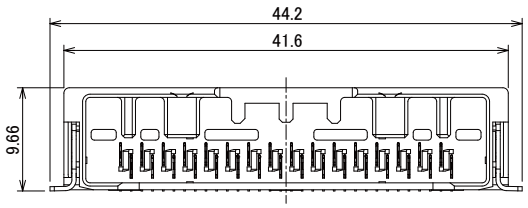
■ Receptacle / Plug / Retainer

ZK1 - 32 DS - 2 H
❶ ❷ ❸ ❹ ❺

❶ Series Name	ZK1	❹ FPC Pitch	2mm (Mounting Pitch of the Receptacle : 1mm)
❷ No. of Pos.	32		
❸ Connector Type	DS : Receptacle DP : Plug	❺ Product Type	H : Horizontal Mounting Type HU : Socket Housing R : Retainer

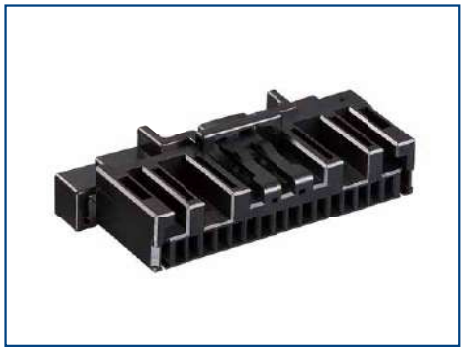
Receptacle

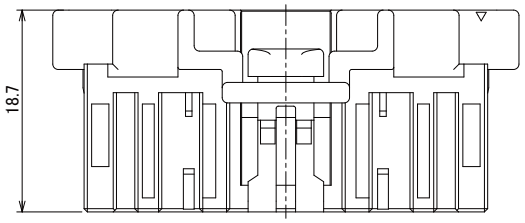


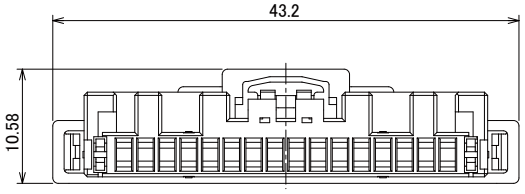


Part No.	HRS No.	No. of Pos.	Purchase Unit
ZK1-32DS-2H	CL0755-2100-0-00	32	250pcs per reel

Plug Housing



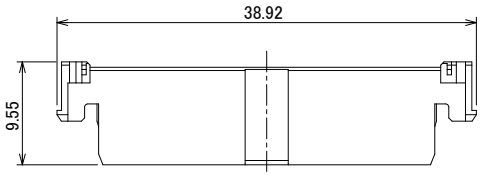


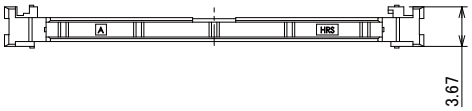


Part No.	HRS No.	No. of Pos.	Purchase Unit
ZK1-32DP-HU	CL0755-2200-0-00	32	500pcs per box

Note : Use with the retainer (ZK1-32DP-R), sold separately.

Retainer





Part No.	HRS No.	No. of Pos.	Purchase Unit
ZK1-32DP-R	CL0755-2201-0-00	32	2,500pcs per box

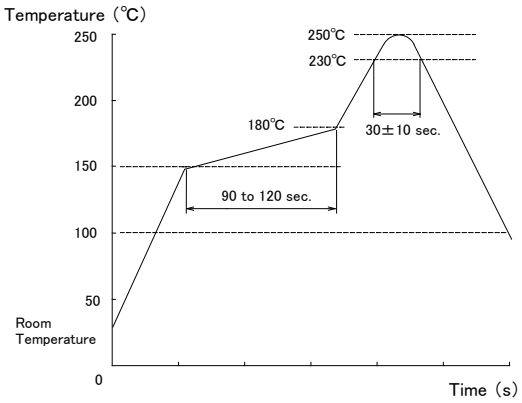
Note : Attach to the plug housing (ZK1-32DP-HU), sold separately.

Plug Exclusive Repair Tools

Type	Part No.	HRS No.	Remarks
Retainer Release Tool	ZK1-32DP-HU/R/RE-MD	CL0902-5172-0-00	For 32pos.
FPC Release Tool	ZK1-32DP-HU/RE-MD	CL0902-5171-0-00	

Note : Please refer to ZK1 series guideline: ETAD-T1037-00 for details.

Usage Precautions

Recommended Temperature Profile	 【Conditions】 1. Reflow Heating Method Used : Far infrared, air atmosphere or nitrogen 2. Peak Temperature 250℃ Peak 3. Heated part 230℃ Min. 20-40 sec. 4. Preheat Temperature 150 to 180℃ 90-120 sec. 5. Cycles 2 times Max.
Cautions	1. Forcing the connector out might cause damage. If challenging to remove, gently press down once and then release the lock. 2. Always disconnect the power before reseating the connector. 3. Avoid touching the terminal area when the power is active, as it's hazardous. 4. For harnessing guidelines, please consult a Hirose representative.

While Taking into Consideration

Specifications mentioned in this catalog are reference values.
When considering to order or use this product, please review 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, the warranty of the product may be affected.
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.

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