PRODUCT CATALOG

HIROSE ELECTRIC CO.,LTD.

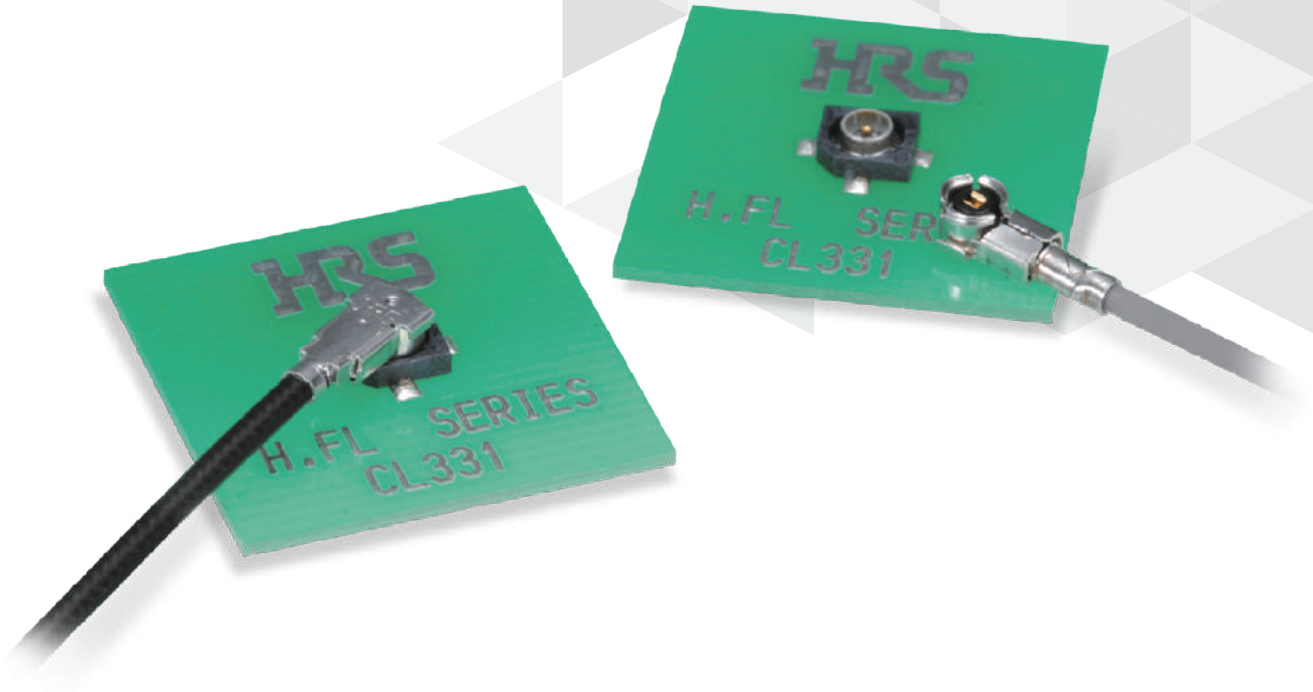
H.FL Series

SMT Low Profile Small Coaxial Connector

RF

Compact

Wide Variation



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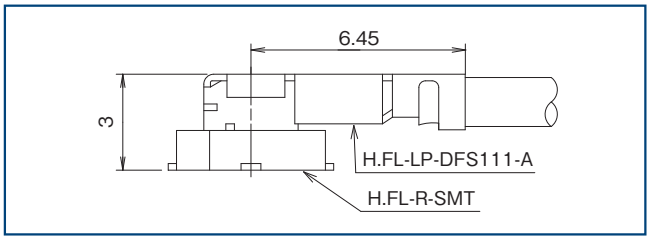
Product Page
https://www.hirose.com/en/product/series/H.FL

Jan. 2023

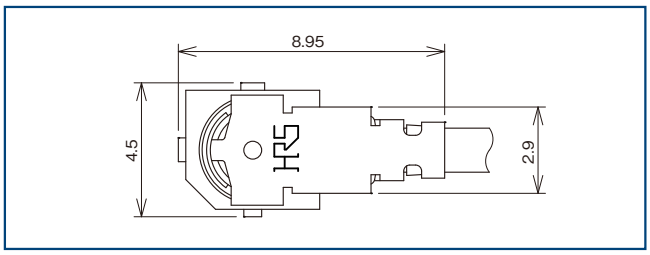
Features

1. Compact 50Ω Coaxial Connector

Mated height of the receptacle and right angle plug is only 3mm.



Mated Connector Dimensions
H.FL-LP-DFS111-A and H.FL-LP-A32-A differ only in cable diameter.



PCB Mounting Space During Mated

2. Ultra-fine Coaxial (Fluorinated Resin Insulated) Cables

A choice of two cable types with excellent ease of installation.
Plug for φ1.48mm (Single Shield):
H.FL-LP-DFS111-A

Plug for φ1.32mm (Double Shield):
H.FL-LP-A32-A

3. RF Performance (up to 3GHz)

V.S.W.R. 0 to 3GHz : 1.3 Max.

4. Supports Automatic Mounting

Tape and Reel packaging allows for pick & place mounting.

5. Clear, Tactile Lock

Compact connector with clear tactile lock enables reliable mating.

6. RoHS2 Compliant

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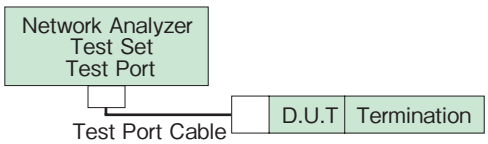
Product Specifications

Nominal Characteristic Impedance	50 Ω	Operating Temperature	-40 to +90℃ (90% RH Max.)
Rated Voltage	60V AC	StorageTemperature Range	-30 to +70℃ (90% RH Max.)
Frequency Range	0 to 3GHz		

Item	Specification	Conditions
Contact Resistance	Center : 20m Ω Max. Outer : 10m Ω Max.	10mA Max.
Insulation Resistance	500M Ω Min	250V DC
Withstanding Voltage	No insulation breakdown.	300V AC for 1 min.
V.S.W.R.*	1.3 Max.	0 to 3GHz
Female Contact Retention Force	0.2N Min.	Measured with ϕ 0.475 pin gauge
Mating Durability (With Corresponding Plug)	Contact Resistance : 25m Ω Max. (Center) 15m Ω Max. (Outer)	50 cycles
Vibration	No electrical discontinuity of 1 μ s min. No damage, cracks or parts dislocation.	Frequency : 10 to 100Hz, single amplitude of 1.5mm, acceleration of 59m/s^2, for 5 cycles in the direction of each of the 3 axis.
Shock	No electrical discontinuity of 1 μ s min. No damage, cracks or parts dislocation.	Acceleration of 735m/s^2, 11ms duration, sine half-wave waveform, 3 cycles in each of 6 axis.
Humidity (Steady State)	No damage, cracks or parts dislocation. Insulation Resistance : 10M Ω Min. (High Temperature) 500M Ω Min. (When Dry)	96 hours at temperature of 40℃ and humidity of 95%.
Thermal Shock	No damage, cracks or parts dislocation. Contact Resistance : 25m Ω Max. (Center) 15m Ω Max. (Outer)	Temperature : -40℃ → +5 to +35℃ → +90℃ → +5 to +35℃ Time : 30min. → 5min. → 30min. → 5min. 5 cycles
Salt Spray	No corrosion that impairs function.	5% salt water solution, 48 hours

*V.S.W.R. Measurement System

The above V.S.W.R. standard values were measured using the measurement system shown below.



Note 1 : Cable type connectors were measured with SMA conversion adapters attached to both ends of the harness product of a suitable 10cm cable.
Note 2 : Board type connectors were mounted to a 50 Ω glass epoxy board and measurements were conducted with SMA conversion adapters attached.

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Materials / Finish

Part	Material		Finish	Flame Retardance
Shell	Phosphor Bronze		Silver Plated	–
Male Contact	Brass		Gold Plated	–
Female Contact	Phosphor Bronze			–
Insulator	Plug	PBT	Black	UL94V-0
	Receptacle	LCP		

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.

●Plug

H.FL ❶ - LP ❷ - DFS111 ❸ - A (01) ❺

●Female Terminal

H.FL ❶ - CONTACT ❸

●Receptacle

H.FL ❶ - R ❷ - SMT ❸ (C) ❹ (10) ❺

❶ Series Name	H.FL	❹ Receptacle	(C) : With Suction Cap None : Without Suction Cap
❷ Connecter Type	LP :Right Angle Plug R : Receptacle	❺ Packing Types (Note 2)	(01) : Packing (100pcs per pack) (10) : Reel Packing (2,500pcs per Reel)
❸ Compatible Cable or Board Mounting Method	Plug DFS111 : ϕ 1.48 Cable A32 : ϕ 1.32 Cable CONTACT : Female Terminal for Plug Receptacle SMT : Printed Circuit Board Surface Mount Type		

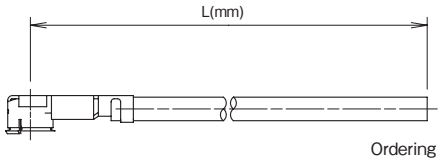
Note 1 : Refer to the "Right Angle Plug" section for plug specifications.
Note 2 : Specification (10) is only available for the receptacle.

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●How to Designate Plug Cable Assembly Dimensions

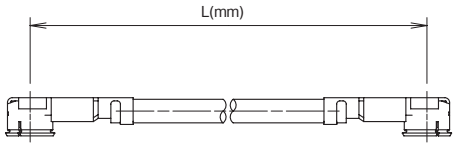
The dimension specifications of the H.FL Series harness are as follows.

[Single-ended Cable Assembly]



Ordering information

[Double-ended Cable Assembly]



Note : Designate the dimensions from the center of the connector for both single-ended and double-ended cable assemblies. (Please write length L in mm.)

●Cable Assembly Product Number Structure

H.FL - 2LP(A) - # - A - (L)

❶ ❷ ❸ ❹

❶ Series Name	H.FL	❸ Cable Type	111, 084* : ϕ 1.48 Cable 066N* : ϕ 1.32 Cable
❷ Assembly Type	LP(A) : Single Ended 2LP(A) : Double Ended	❹ Total Length (mm)	L length (mm)

Note : Refer to the "Right Angle Plug" section for plug specifications.

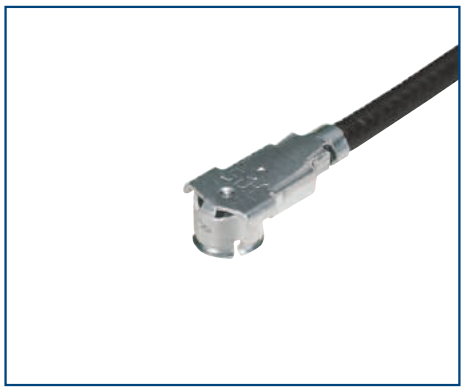
●Standard Tolerances for (L)

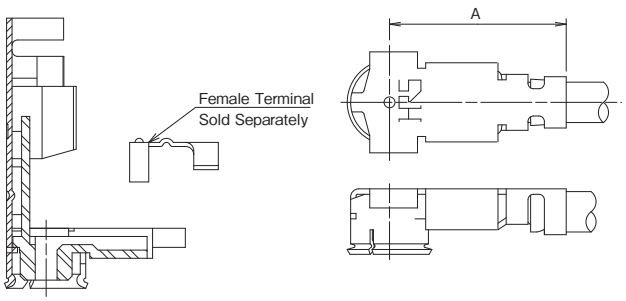
Total Length (mm)	Standard Tolerance (mm)
35 ≦ L ≦ 200	± 4
200 < L ≦ 500	± 8
500 < L ≦ 1000	± 12
1000 < L	± 1.5%

Note : The shortest length is L = 35mm.

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Right Angle Plug



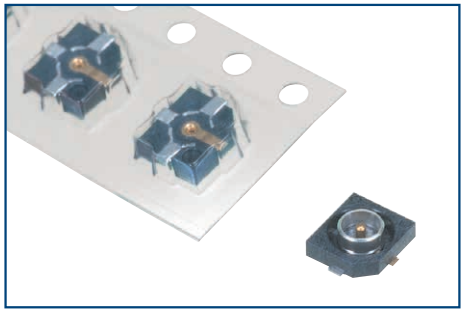


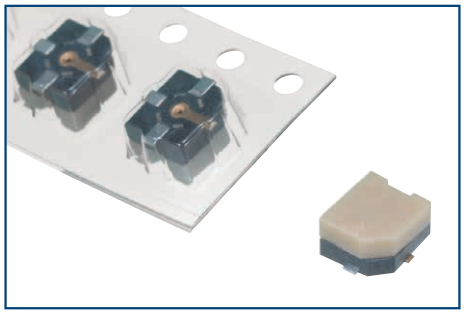
H.FL-LP-DFS111-A(01)ϕ1.48 Cable

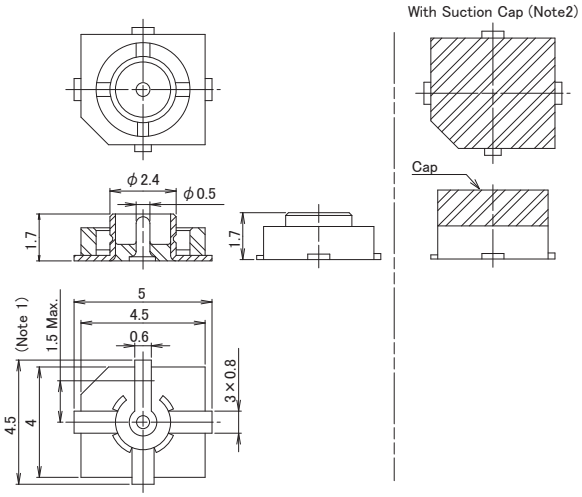
Item	Part No.	HRS No.	Dimension A	Purchase Unit
Right Angle Plug Shell (ϕ 1.48 Cable)	H.FL-LP-DFS111-A(01)	CL0331-0507-5-01	6.45	100pcs per pack
Right Angle Plug Shell (ϕ 1.32 Cable)	H.FL-LP-A32-A(01)	CL0331-0508-8-01		
Female Terminal	H.FL-CONTACT	CL0331-0511-2-00	–	10,000pcs per reel

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Receptacle





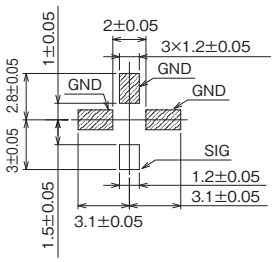


With Suction Cap (Note2)

Part No.	HRS No.	Purchase Unit
H.FL-R-SMT(01)	CL0331-0521-6-01	100pcs per pack
H.FL-R-SMT(10)	CL0331-0521-6-10	2,500pcs per reel
H.FL-R-SMT(C)(10)　(Note 2)	CL0331-0522-9-10	2,500pcs per reel

Note 1 : Tolerance value of mold resin applied to center contact.
Note 2 : This product comes with a suction cap compatible with any automated mouting machine.
The receptacle cannot be mated with the cap on, so please remove before use.

●Recommended PCB Mounting Pattern (Common)

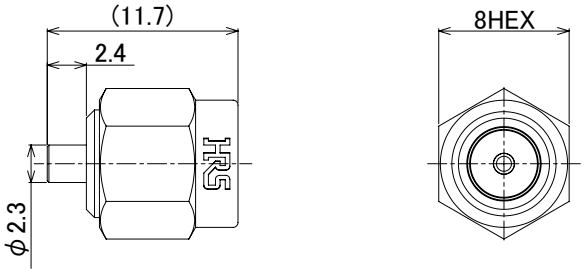


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Conversion Adapter

SMA Conversion Adapter (Mated Portion- H.FL Side : Jack, SMA Side : Plug)

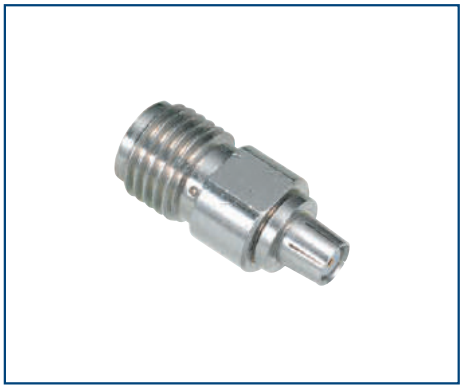


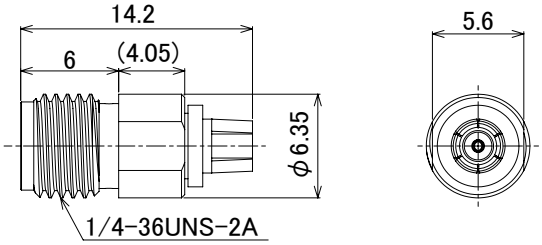


Part No.	HRS No.	Purchase Unit
HRMP-H.FLJ(40)	CL0311-0232-4-40	20pcs per pack

Note : The mating portion on the H.FL side does not have a locking mechanism, so it cannot be used for anything other than performance measurement.

SMA Conversion Adapter (Mated Portion - H.FL Side : Plug, SMA Side : Jack)





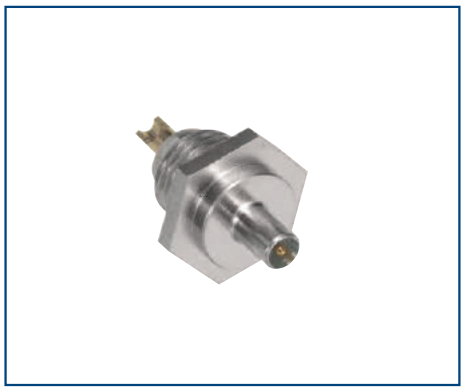
Part No.	HRS No.	Purchase Unit
HRMJ-H.FLP-3(40)	CL0311-0264-0-40	20pcs per pack

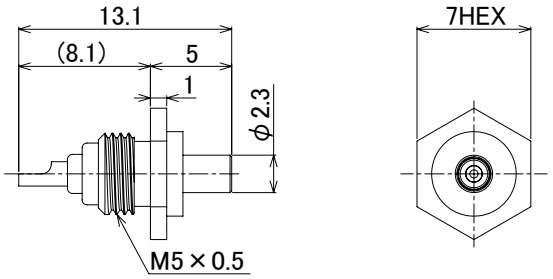
Note : The mating portion on the H.FL side does not have a locking mechanism, so it cannot be used for anything other than performance measurement.

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Inspection Receptacle

Receptacle for testing the conduction, withstanding voltage, etc. of the cable assembly.





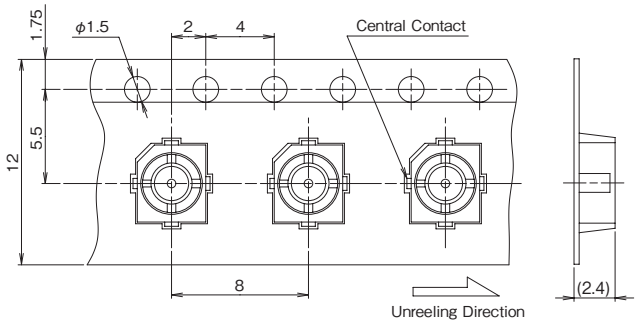
Part No.	HRS No.	Purchase Unit
H.FL-R-1	CL0331-0516-6-00	20pcs per pack

Note : Product cannot be used for purposes other than conduction or withstanding voltage inspection because there is no lock on the mating portion.

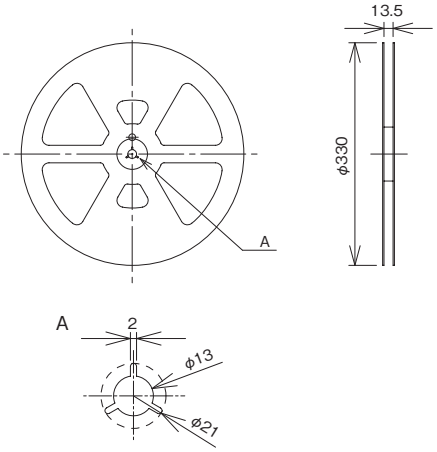
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Embossed Carrier Tape Dimensions

Dimensions of the Embossed Carrier Tape for H.FL-R-SMT(10) are shown below.



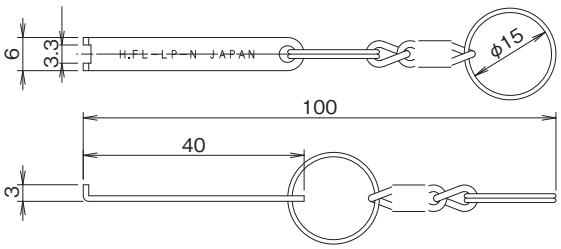
Reel Dimensions



Contact Extraction Tool

Tool for Unmating.





Part No.	HRS No.	Purchase Unit
H.FL-LP-N	CL0331-0551-7-00	1pc per pack

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Usage Precautions

1. Plugs

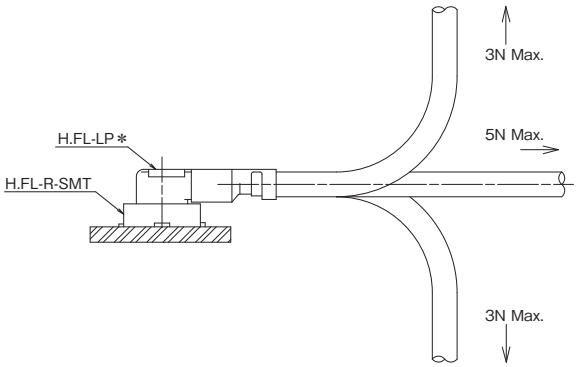
1. Mating/Unmating

(1) To disconnect the connector, insert the extraction tool (H.FL-LP-N) under the connector flange. Pull in a perpendicular direction in line with the connector's mating axis. Do not unmate the plug by pulling on the cable, this can damage the connector performance.

(2) When mating, align the mating axes between the receptacle and cable assembly, and insert the cable assembly downward and perpendicular into the receptacle. Do not insert the cable assembly at a slanted angle.

2. Tolerable load to a cable after mating

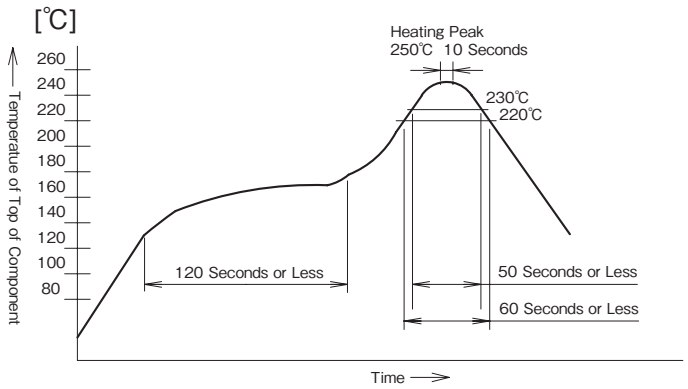
Once the connector has been mated do not apply forces exceeding the values in the diagram below.



3. Precautions

Do not use excessive prying to mate or un-mate the connectors as it may lead to damage.

2. Receptacles

(1) Recommended Reflow Temperature Profile	 1. Temperature refers to the temperature of the PCB surface at the terminal leads. 2. Reflow soldering should be performed at a printed circuit surface temperature of 250℃ Max. 3. The temperature profile may vary depending on board size, solder used and solder thickness.
(2) Recommended Manual Soldering Conditions	Manual soldering : 350℃ for 5 seconds
(3) Recommended Metal Mask Thickness	0.1mm to 0.15mm
(4) Reflow Cycles	2 times

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3. Operating Environment and Storage Conditions

1. Operation Environment

This product was designed for use in a normal environment.

Please be advised that using this product in the environments described below may result in discoloration and other types of degradation.

・Exposure to excessive amounts of fine particles and dust.

・Regions/areas with a high concentration of gases like sulfur dioxide, hydrogen sulfide and nitrogen dioxide.

・Areas with drastic temperature changes, such as locations near a heater.

2. Storage conditions

Store this product in Hirose's packaging or similar conditions.

Temperature : -10 to +40℃ Humidity : 85% or less (recommended storage conditions)

We recommend the product be used within six months from delivery.

Products that have been stored beyond the recommended storage period need to be tested for mounting and solderability before use.

3. Silver Plating Discoloration

Discoloration occurs only on the plating surface. Since the contact portion is wiped, there is no effect on the electrical contact.

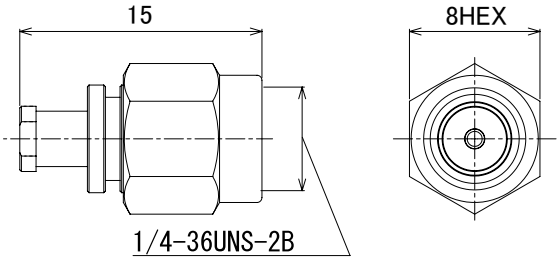
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Standard Connectors the Connect with H.FL

SMA Cable Type (HRM Series)

● Straight Plug

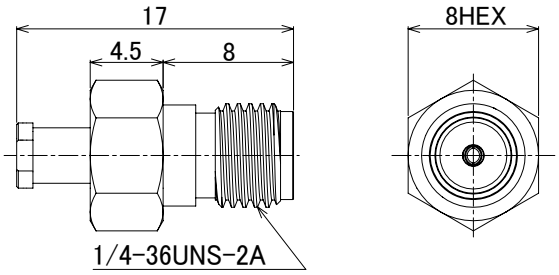




Part No.	HRS No.	Applicable Cable	Remarks
HRM-200-066PBN(40)	CL0323-0791-6-40	ϕ 1.32	SMA (Male Contact)
HRM-200-088PBN(40)	CL0323-0800-5-40	ϕ 1.48	

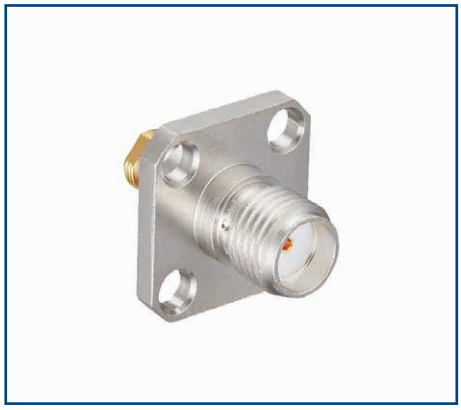
● Straight Jack

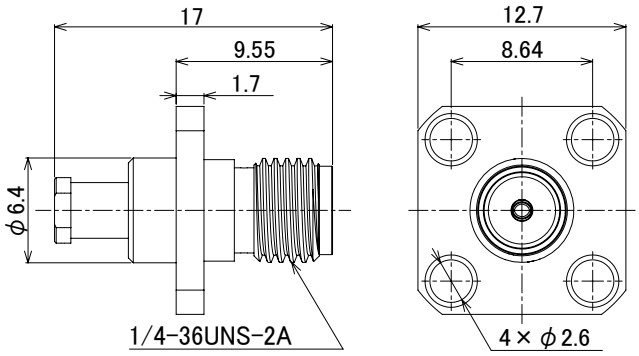




Part No.	HRS No.	Applicable Cable	Remarks
HRM-200-066JBN(40)	CL0323-0793-1-40	ϕ 1.32	SMA (Female Contact)
HRM-200-088JBN(40)	CL0323-0801-8-40	ϕ 1.48	

● Panel Jack (4 Screw Type)



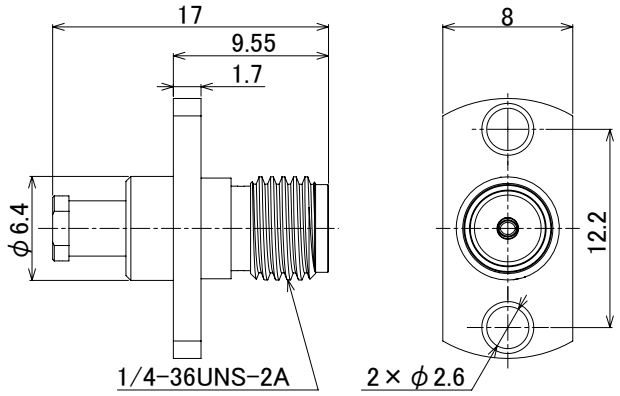


Part No.	HRS No.	Applicable Cable	Remarks
HRM-200-066PJ4BN(40)	CL0323-0796-0-40	ϕ 1.32	SMA (Female Contact)
HRM-200-088PJ4BN(40)	CL0323-0803-3-40	ϕ 1.48	

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● Panel Jack (2 Screw Type)

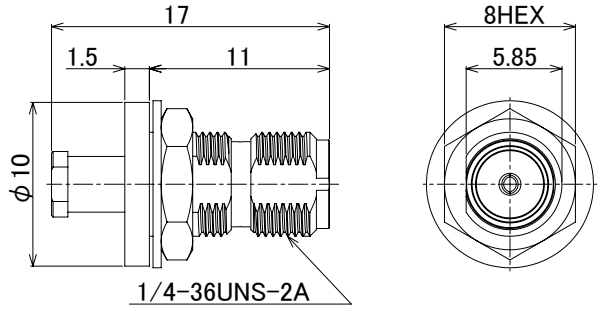




Part No.	HRS No.	Applicable Cable	Remarks
HRM-200-066PJ2BN(40)	CL0323-0788-1-40	ϕ 1.32	SMA (Female Contact)
HRM-200-088PJ2BN(40)	CL0323-0802-0-40	ϕ 1.48	

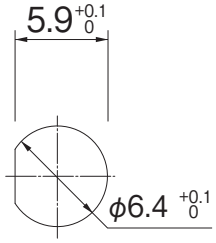
● Panel Jack (Nut Type)





Part No.	HRS No.	Applicable Cable	Remarks
HRM-200-066BPJBN(40)	CL0323-0798-5-40	ϕ 1.32	SMA (Female Contact)
HRM-200-088BPJBN(40)	CL0323-0804-6-40	ϕ 1.48	

Mounting Hole Dimensions

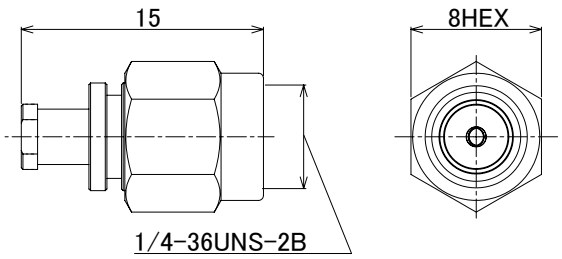


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RP-SMA Cable Type (SAM(R) Seires)

● Straight Plug

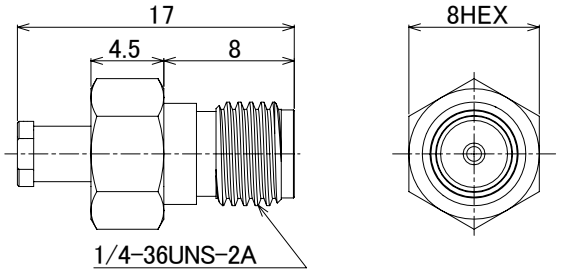




Part No.	HRS No.	Applicable Cable	Remarks
SMA(R)-200-066PBN	CL0323-0930-0-00	φ 1.32	SMA Reverse (Female Contact)
SMA(R)-200-088PBN	CL0323-0905-3-00	φ 1.48	

● Straight Jack

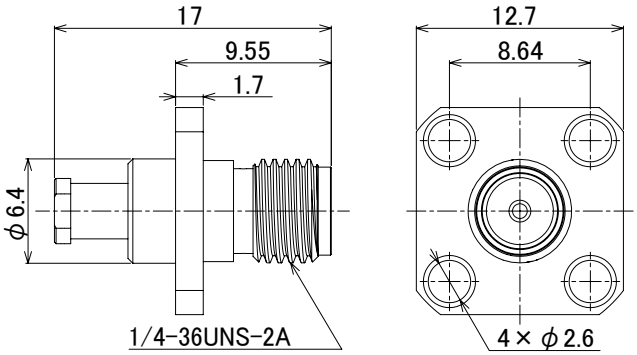




Part No.	HRS No.	Applicable Cable	Remarks
SMA(R)-200-066JBN	CL0323-0931-3-00	φ 1.32	SMA Reverse (Male Contact)
SMA(R)-200-088JBN	CL0323-0904-0-00	φ 1.48	

● Panel Jack (4 Screw Type)



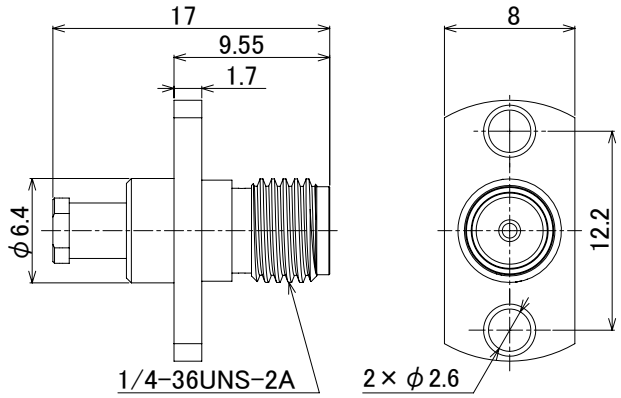


Part No.	HRS No.	Applicable Cable	Remarks
SMA(R)-200-066PJ4BN	CL0323-0932-6-00	φ 1.32	SMA Reverse (Male Contact)
SMA(R)-200-088PJ4BN	CL0323-0934-1-00	φ 1.48	

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● Panel Jack (2 Screw Type)

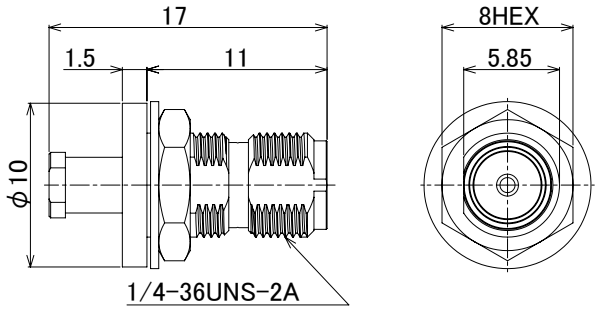




Part No.	HRS No.	Applicable Cable	Remarks
SMA(R)-200-066PJ2BN	CL0323-0933-9-00	ϕ 1.32	SMA Reverse (Male Contact)
SMA(R)-200-088PJ2BN	CL0323-0935-4-00	ϕ 1.48	

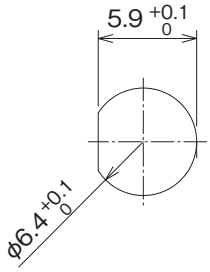
● Panel Jack (Nut Type)





Part No.	HRS No.	Applicable Cable	Remarks
SMA(R)-200-066BPJBN	CL0323-0902-5-00	ϕ 1.32	SMA Reverse (Male Contact)
SMA(R)-200-088BPJBN	CL0323-0901-2-00	ϕ 1.48	

Mounting Hole Dimensions



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■Applicable Tools for SMA and RP-SMA Cable Type Connectors

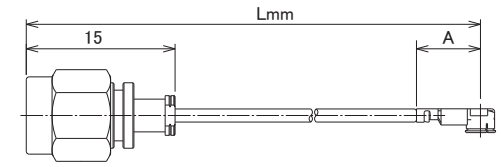
Part No.	Wiring Tool	HRS No.	Overview
HRM-200-066PBN(40) HRM-200-088PBN(40)	HRM-200/SO-MD	CL0902-3192-6-00	Cord Soldering Cradle
	HRM-200/SO-MD2	CL0902-3199-5-00	Terminal Soldering Cradle
	HRM-200-PBN/CV-MD	CL0902-3198-2-00	Cord Press-fit Tool
HRM-200-066JBN(40) HRM-200-088JBN(40)	HRM-200/SO-MD	CL0902-3192-6-00	Cord Soldering Cradle
	HRM-200/SO-MD2	CL0902-3199-5-00	Terminal Soldering Cradle
	HRM-200-JBN/CV-MD	CL0902-3195-4-00	Cord Press-fit Tool
HRM-200-066PJ4BN(40) HRM-200-088PJ4BN(40)	HRM-200/SO-MD	CL0902-3192-6-00	Cord Soldering Cradle
	HRM-200/SO-MD2	CL0902-3199-5-00	Terminal Soldering Cradle
	HRM-200-PJ4BN/CV-MD	CL0902-3197-0-00	Cord Press-fit Tool
HRM-200-066PJ2BN(40) HRM-200-088PJ2BN(40)	HRM-200/SO-MD	CL0902-3192-6-00	Cord Soldering Cradle
	HRM-200/SO-MD2	CL0902-3199-5-00	Terminal Soldering Cradle
	HRM-200-PJ2BN/CV-MD	CL0902-3196-7-00	Cord Press-fit Tool
HRM-200-066BPJBN(40) HRM-200-088BPJBN(40)	HRM-200/SO-MD	CL0902-3192-6-00	Cord Soldering Cradle
	HRM-200/SO-MD2	CL0902-3199-5-00	Terminal Soldering Cradle
	HRM-200-BPJBN/CV-MD	CL0902-3194-1-00	Cord Press-fit Tool
SMA(R)-200-066JBN SMA(R)-200-088JBN	HRM-200/SO-MD	CL0902-3192-6-00	Cord Soldering Cradle
	HRM-200/SO-MD2	CL0902-3199-5-00	Terminal Soldering Cradle
	HRM-200-JBN/CV-MD	CL0902-3195-4-00	Cord Press-fit Tool
SMA(R)-200-066J4BN SMA(R)-200-088J4BN	HRM-200/SO-MD	CL0902-3192-6-00	Cord Soldering Cradle
	HRM-200/SO-MD2	CL0902-3199-5-00	Terminal Soldering Cradle
	HRM-200-PJ4BN/CV-MD	CL0902-3197-0-00	Cord Press-fit Tool
SMA(R)-200-066PJ2BN SMA(R)-200-088PJ2BN	HRM-200/SO-MD	CL0902-3192-6-00	Cord Soldering Cradle
	HRM-200/SO-MD2	CL0902-3199-5-00	Terminal Soldering Cradle
	HRM-200-PJ2BN/CV-MD	CL0902-3196-7-00	Cord Press-fit Tool
SMA(R)-200-066BPJBN SMA(R)-200-088BPJBN	HRM-200/SO-MD	CL0902-3192-6-00	Cord Soldering Cradle
	HRM-200/SO-MD2	CL0902-3199-5-00	Terminal Soldering Cradle
	HRM-200-BPJBN/CV-MD	CL0902-3194-1-00	Cord Press-fit Tool

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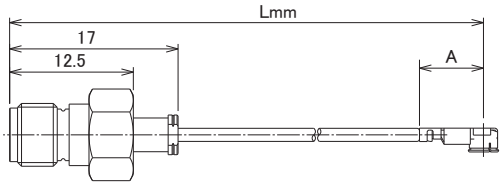
■ Cable Assembly Specifications

Designate and order the length specification of the H.FL Series and SMA or RP-SMA double-ended assembly based on the below length specification diagram.

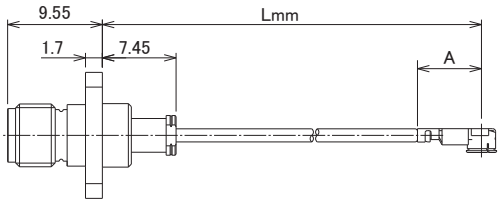
●Straight Plug



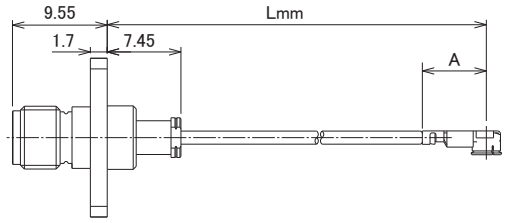
●Straight Jack



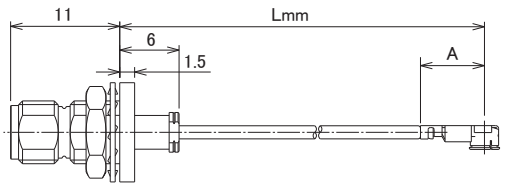
●Panel Jack (4 Screw Type)



●Panel Jack (2 Screw Type)



●Panel Jack (Nut Type)



Note : The shortest length is L = 50mm

Cable	Plug	A
ϕ 1.48	H.FL-LP-DFS111-A(01)	6.45
ϕ 1.32	H.FL-LP-A32-A(01)	

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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.

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