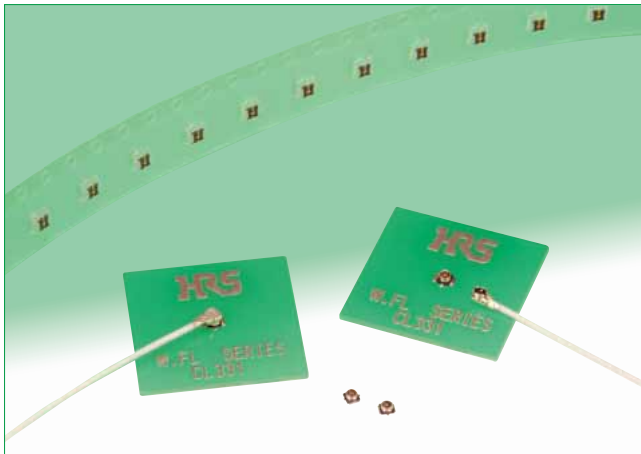


Ultra Small Surface Mount Coaxial Connectors 1.4mm or 1.65mm Mated Height

W.FL Series



Occupied Mounting Area



W.FL Series

U.FL Series

Fig.1

■ Features

1. Nominal mated height of 1.4mm or 1.65mm (Max. 1.55 or 1.85mm)(Fig.2)

2. Small board footprint

The W.FL Series is about 55% smaller than our U.FL Series connector and only uses 3.4mm² of PCB space. The PCB layout for the W.FL Series is the same as for W.FL2 and X.FL Series.

Note: This product is not compatible with W.FL2 Series and X.FL Series. (Fig.1)

3. Extremely light weight

Receptacle: 5.6 mg

Right-angle plug: 18.6 mg(040), 28.2mg(062)

4. Frequency range up to 6 GHz

DC to 3 GHz : V.S.W.R. of 1.3 max.

3 GHz to 6 GHz: V.S.W.R. of 1.4 max.

5. Automatic board placement

Packaged on tape-and-reel the receptacles can be placed with vacuum nozzles of the automatic placement equipment.

6. Plugs are terminated with ultra-fine coaxial (fluorinated resin insulated) cable

The use of ultra-fine coaxial (fluorinated resin insulated) cables on these connectors offer the ability to complete connections in small, confined spaces with a smooth, easy operation.

7. Simple connector mating / unmating

Use of the available mating/un-mating tools assures correct connection/disconnection of the plug and receptacle.

8. Halogen-free*(Receptacle, Plug(HF type))

*As defined by IEC61249-2-21

Br-900ppm maximum, Cl-900 ppm maximum,
Cl+Br combined-1,500 ppm maximum

Mated height comparison

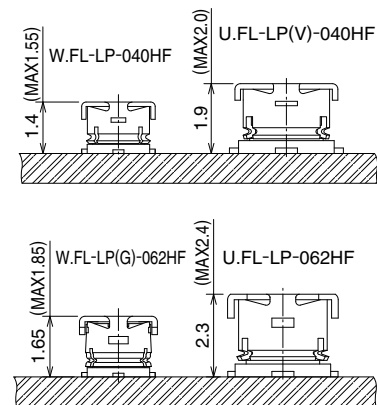


Fig.2

W. FL Plug and Receptacle

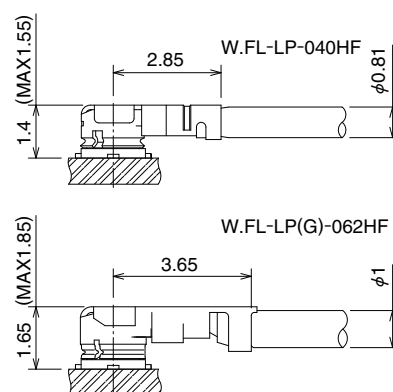
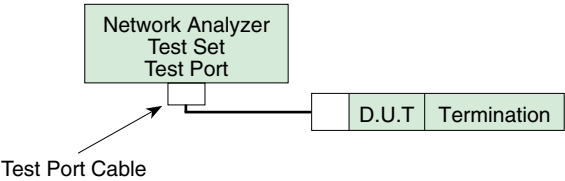


Fig.3

■Specifications

Rating	Nominal characteristic impedance	50Ω	Operating temperature range	-40°C to +90°C (90% RH max.)
	Frequency range	DC to 6 GHz	Storage temperature range	-30°C to +70°C (90% RH max.)
Item	Specification		Conditions	
1. Contact resistance	Center contact : 20mΩ max. Outer contact : 10mΩ max.		10mA max.	
2. Insulation resistance	500MΩ min.		100V DC	
3. Withstanding voltage	No flashover or insulation breakdown		200V AC / 1 minute	
4. V.S.W.R.*	1.3 Max. 1.4 Max.		Up to 3 GHz 3 to 6 GHz	

*V.S.W.R. Measurement System
Measured as shown on the block diagram below.



Note1 : Measurement way of a W.FL Cable assembly (plug)
W.FL Cable assembly (plug) is measured with SMA conversion adapters mated with W.FL plugs at both ends of a 100cm coaxial cable harness

Note2 : Measurement way of a W.FL receptacle
W.FL receptacle, which is mounted on a 50Ω glass epoxy board, is measured with a SMA conversion adapter.

■Materials / Finish

●Plug – right angle

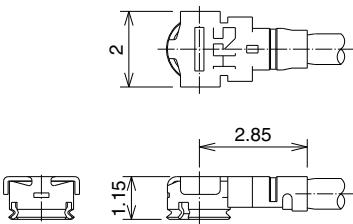
Part	Material	Finish / Remarks
Shell	Phosphor bronze	Silver plated
Female center contact	Phosphor bronze	Gold plated
Insulator	PBT	Color : Gray, UL94V HB(040HF, 062HF)

●Receptacle

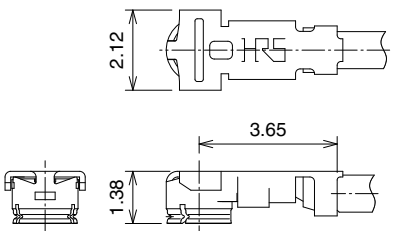
Part	Material	Finish / Remarks
Shell	Phosphor bronze	Silver plated
Insulator	LCP	Color : Black, UL94V-0
Male center contact	Brass	Gold plated

■Cable Assembly(Plug)

W.FL-LP-040HF(06) (Applicable cable : outer diameter 0.81)

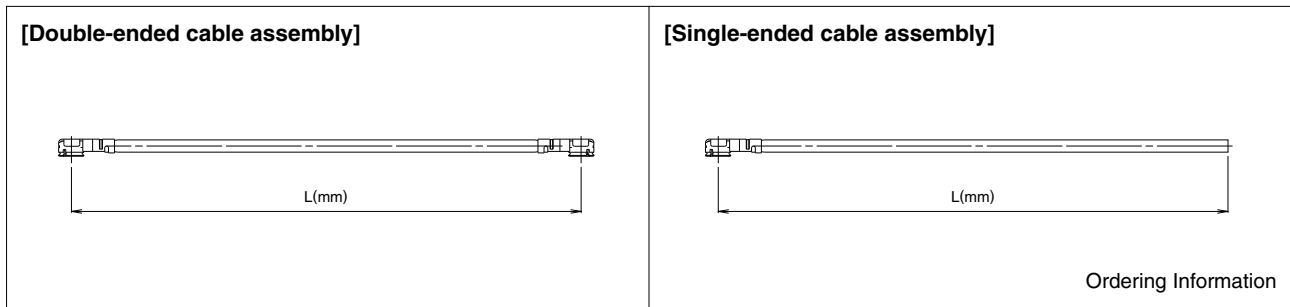


W.FL-LP-062HF(06) (Applicable cable : outer diameter 0.95)



[Plugs can be ordered only as terminated cable assemblies.]

◆How to Specify Cable Assembly



●Ordering Information

Used plug : W.FL-LP-040HF(06) (Dia. 0.81)

Double-Ended

W.FL – 2LP HF6 – 04N [] TV – A – L

① ② ③ ④ ⑤ ⑥ ⑦

Single-Ended

W.FL – LP HF6 – 04N [] TV – A – L

① ② ③ ④ ⑤ ⑥ ⑦

① Series name	W.FL
② Assembly type	LP : Single ended 2LP : Double ended
③ Environmental compliant	HF6 : Halogen-free
④ Cable type	04N : 0.81mm dia. ultra-fine coaxial cable
⑤ Cable Color	1 : White 2 : Black
⑥ Cable outer conductor	TV : Tin plated braided wire
⑦ Total length(mm)	Length(L)

●Standard tolerances for (L)

(L)mm	Standard tolerance(mm)
*L=35 to 200	±4
L=200 to 500	±8
L=500 to 1000	±12
L=Longer than 1000	±1.5% of (L)

Note : Minimum available length(L) is 35mm.

Used plug:W.FL-LP(G)-062HF(06) (Dia. 0.95)

Double-Ended

W.FL – 2LPG HF6 – 062N [] D – A – L

① ② ③ ④ ⑤ ⑥ ⑦

Single-Ended

W.FL – LPG HF6 – 062N [] D – A – L

① ② ③ ④ ⑤ ⑥ ⑦

① Series name	W.FL
② Assembly type	LPG : Single ended 2LPG : Double ended
③ Environmental compliant	HF6 : Halogen-free
④ Cable type	062N : 0.95mm dia. ultra-fine coaxial cable
⑤ Cable Color	1 : Gray 2 : Black 3 : White
⑥ Cable outer conductor	D : Copper tape + Outer tin plated braided wire
⑦ Total length(mm)	Length(L)

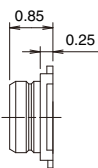


Figure 1: Dimensions of the test structure. The diagram shows a cross-section of a test structure with various dimensions. The total width is 2.6, with a central gap of 1.4. The total height is 1.5, with a central gap of 1.3. The gap width is 0.5, and the gap height is 0.65. The structure is labeled 'SIG' and 'GND'.

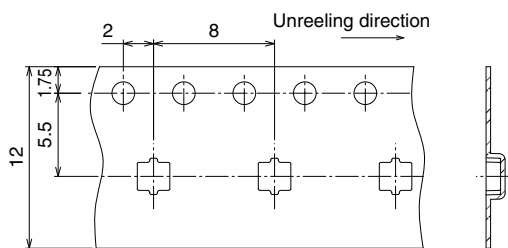
All dimensions : mm

Part No.	HRS No.	Packaging
W.FL-R-SMT-1(60)	331-0482-6 60	Reel (5,000 pcs/reel)
W.FL-R-SMT-1(80)	331-0482-6 80	Reel (10,000 pcs/reel)

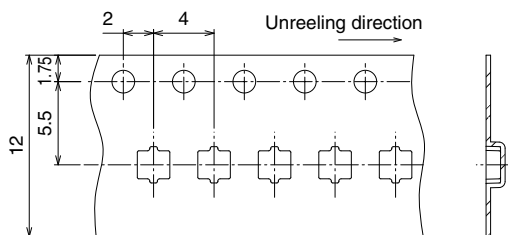
●Embossed Carrier Tape Dimensions(IEC 60286-3 compliant)

Embossed Carrier Tape Dimensions

(W.FL-R-SMT-1(60) 8mm pitch)

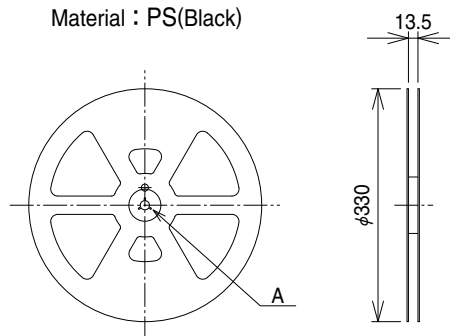


(W.FL-R-SMT-1(80) 4mm pitch)

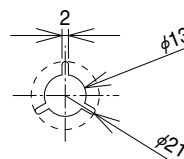


Reel Dimensions

Material : PS(Black)



A(SCALE FREE)



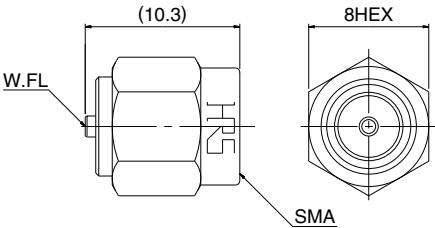
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■Conversion Adapters

●SMA Conversion Adapter (W.FL side jack – SMA side plug)



Note : Used for performance measurements only.
The W.FL mating side has lower retention force than the regular product when mated to the corresponding part.

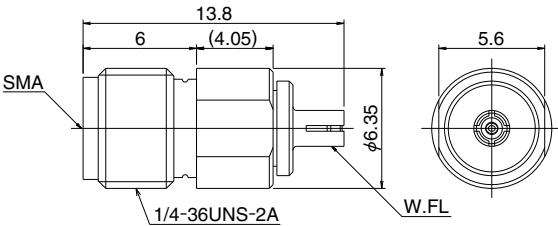


Part No.	HRS No.	Packaging
HRMP-W.FLJ(40)	311-0367-3 40	1

●SMA Conversion Adapter (W.FL side plug – SMA side jack)



Note : Used for performance measurements only.
The W.FL mating side has lower retention force than the regular product when mated to the corresponding part.

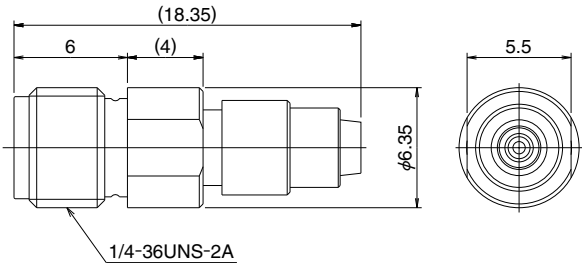


Part No.	HRS No.	Packaging
HRMJ-W.FLP(40)	311-0368-6 40	1

●SMA Conversion Adapter



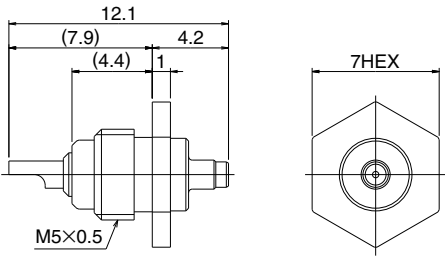
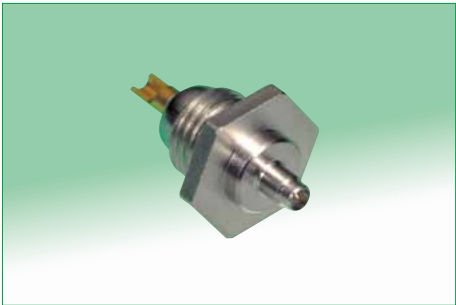
Note : When mating with corresponding part (W.FL-R-SMT-1) it must be pressed down and held to make complete connection.



Part No.	HRS No.	Packaging
HRMJ-W.FLP-ST1(40)	311-0386-8 40	1

■Receptacle Inspection Adapter

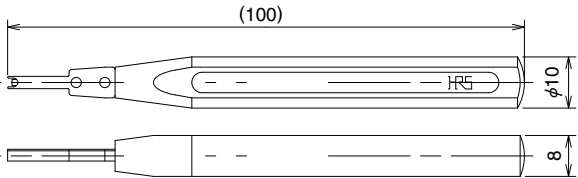
Used for inspecting the performance parameters of the cable assembly.



Part No.	HRS No.	Packaging
W.FL-R-1	331-0483-9	1

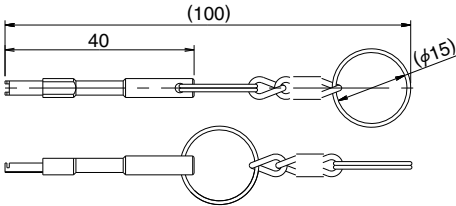
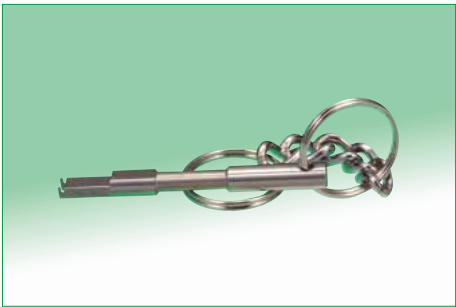
◆Plug-Mating Tool

This tool is used for mating a plug.



Part No.	HRS No.	Packaging
W.FL-LP-IN	331-0323-2	1

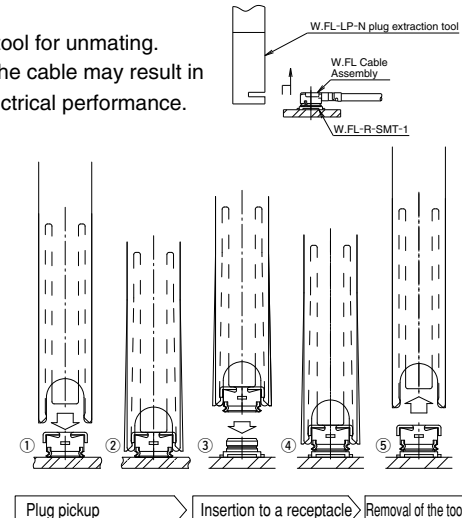
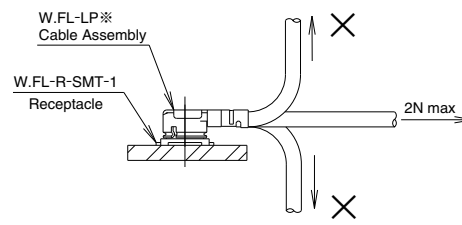
◆Plug-Extraction Tool



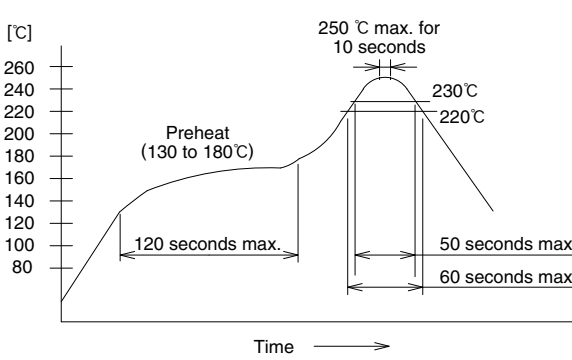
Part No.	HRS No.	Packaging
W.FL-LP-N	331-0492-0	1

◆Precautions

1. Plug

(1) Mating / unmating	<p>• Unmating Insert both ends of the extraction tool under the plug (from the direction opposite to the Cable termination), as shown and pull-up in the direction perpendicular to the mounting surface of the receptacle.</p> <p>●Recommended the use of the extraction tool for unmating. Any attempt of unmating by pulling on the cable may result in damage and affect the mechanical / electrical performance.</p> <p>• Mating</p> <ol style="list-style-type: none"> ①Align the mating tool W.FL-LP-IN or the mating end of the tool over the plug end of the cable assembly. ②Firmly place the tool over the plug until it is secured in the tool. ③Place the plug cable assembly (held in the tool) over the corresponding receptacle. ④Assuring that the plug and receptacle are aligned press-down perpendicular to the mounting surface until both connectors are fully mated. ⑤Remove the mating tool by carefully pulling it up. Removal of the tool. 
(2) Pull forces on the cable after connectors are mated	<p>After the connectors are mating, do not apply a load to the cable in excess of the values indicated in the diagram.</p> 
(3) Precautions	Do not twist connectors excessively during mating / unmating.

2. Receptacle

(1) Recommended reflow temperature profile	 <ol style="list-style-type: none"> ①The temperature of the printed circuit board surface temperature at the points of contact with the terminals. ②Reflow soldering should be performed at a printed circuit surface temperature of 250°C max. ③In individual applications the actual temperature may vary, depending on the solder paste type, volume / thickness and board size / thickness. Consult your solder paste and equipment manufacturer for specific recommendations.
(2) Recommended metal mask thickness	0.1mm to 0.12mm
(3) Reflow cycles	2 times

3. Operating environment and storage conditions

(1) Operating environment	<p>The connectors are not designed to operate in the following environments:</p> <ul style="list-style-type: none"> • Exposed to a excessive amounts of fine particles and dust • Regions and places having a high density of sulfur dioxide, hydrogen sulfide, nitrogen dioxide or other corrosive gasses. • Environments having large rapid variations in temperature.
(2) Storage conditions - Receptacle	<p>Store in the Hirose Electric packaging. Temperature : -10 to +40°C, Humidity : 85% max. Use within 6 months of delivery. Receptacles for which the storage period has elapsed must be tested for solderability to the PC board mounting surface.</p>

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