

TNC Series

Small Size Screw Coupling Type Connector for Wireless Equipment



RF



Compact



Robust



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. 50Ω Impedance Matching Type, Coaxial Connector

This TNC series is ideal for antenna connection of wireless devices.

It is a medium-sized screw coupling coaxial connector with the same mating part diameter as the BNC series.

The center contact is fixed, making it robust and reliable.

2. Variation

We have TNC(R), a reverse type in which the male and female of the center contact is reversed, and conversion adapter with U.FL etc.

3. Compliant Standards

IEC 60169-17

4. RoHS2 Compliant

Product Specifications

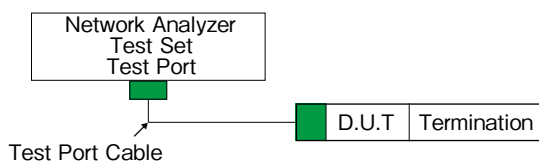
Nominal Characteristic Impedance	50 Ω	Operating Temperature	-30 to +85°C
Rated Voltage	150V AC	Operating Relative Humidity	85% Max.
Rated Frequency (Note)	0 to 6GHz		

Note : May vary by product.

Items	Specifications	Conditions
Contact Resistance	3m Ω Max.	Measured at 100mA Max.
Insulation Resistance	1000M Ω Min.	Measured at 500V DC
Withstanding Voltage	No insulation breakdown	1000V AC for 1 min.
V.S.W.R.*	1.3 Max.	6GHz
Mating Durability	Contact Resistance 10m Ω Max.	500 times
Vibration Resistance	No electrical discontinuity of 1 μ s or more No damage, cracks or part dislocation.	Frequency : 10 to 500Hz, single amplitude of 0.75mm, Acceleration of 98m/s ² , 2 hours in the direction of each of the 3 axis
Shock Resistance	No electrical discontinuity of 1 μ s or more No damage, cracks or part dislocation.	Acceleration of 490m/s ² , 11ms duration Sine halfwave : 3 times each in 3 axial both directions
Humidity Resistance	Insulation Resistance 100M Ω Min. (in a high humidity environment) Insulation Resistance 1000M Ω Min. (in a dry environment) No damage, cracks or part dislocation.	Temperature : +25°C to +65°C , Humidity : 90 to 96%, Left for 10 cycles (240 hours)
Thermal Shock	No damage, cracks or part dislocation.	(-55°C : 30 min. → +5 ~ +35°C : 5 min. → +85°C : 30 min. → +5 ~ +35°C : 5 min.) 5 cycles
Corrosion Resistance	No corrosion that impairs function.	Continuous 48 hour cycle in 5% salt water solution

Note : Ratings and standards may vary by products.

*The V.S.W.R. (Voltage Standing Wave Ratio) specification values were measured using the measurement system shown below.



Note : The cable connector is measured with the connector attached to the applicable cable.

Materials / Finish

Part	Material	Finish	Remarks
Shell	Brass	Nickel Plating	—
Male Contact	Brass	Silver or Gold Plating	—
Female Contact	Beryllium Copper or Phosphorous Bronze	Silver or Gold Plating	—
Insulator	PBT	—	UL94V-0
	PTFE	—	Noncombustible

【About Silver Plating Discoloration】
The discoloration is only on the surface and the contact area is wiped so there is no problem with electrical contact.

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.

TNC - [] - 1.5CR - []
① ② ③ ④

① Series Name	TNC	③ Applicable Cable	1.5CR : Single Shield Cable
② Connector Type	P : Straight Plug PJ : Panel Jack	④ Sequel	

Functional Diagram

Plug Side

■ Straight Plug
TNC-P-##



Jack Side

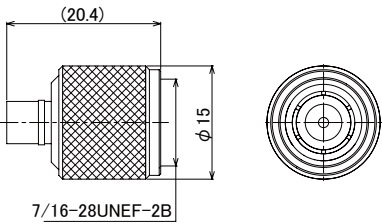
■ Straight Panel Jack
TNC-BPJ-##



■ Conversion Adapter
● Mated with SMA Plug
HRMJ-TNCJ-PA(40)

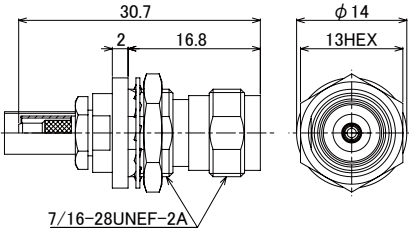


Straight Plug



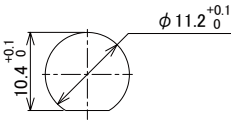
Part No.	HRS No.	Applicable Cable	Purchase Unit
TNC-P-1.5CR-1(40)	CL0313-0400-0-40	1.5D-2V	20pcs per bag

Panel Jack



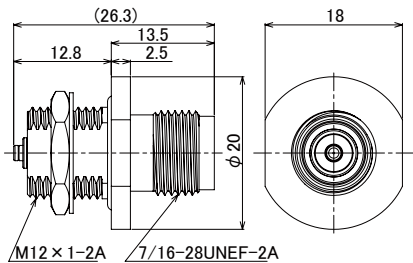
Part No.	HRS No.	Applicable Cable	Purchase Unit
TNC-BPJ-1.5CR(A)(40)	CL0313-0304-6-40	1.5D-2V	20pcs per bag

■ Mounting Hole Dimension



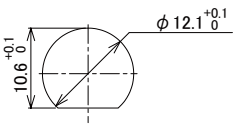
Conversion Adapter

● Panel Adapter
(Nut Type, Panel Mounting Part Waterproof)

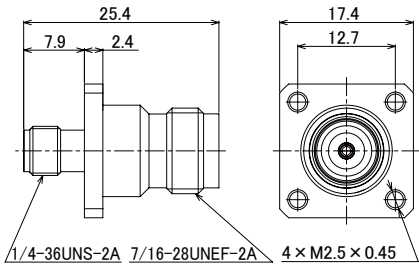


Part No.	HRS No.	TNC Side Contact	SMA Side Contact	Purchase Unit
TNC(R)J-U.FLJ-WBPA(40)	CL0311-0399-0-40	Male (Reverse Type)	Male	150pcs per tray

■ Mounting Hole Dimension

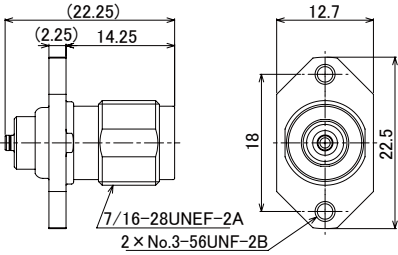


● Panel Adapter
(4-screw Type)



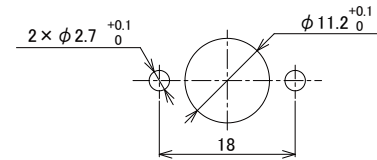
Part No.	HRS No.	TNC Side Contact	SMA Side Contact	Purchase Unit
HRMJ-TNCJ-PA(40)	CL0311-0202-3-40	Female	Female	5pcs per bag

● Panel Adapter
(2-screw Type)



Part No.	HRS No.	TNC Side Contact	U.FL Side Contact	Purchase Unit
TNC(R)J-U.FLJ-PA-2	CL0311-0416-7-00	Male (Reverse Type)	Male	50pcs per tray

■ Mounting Hole Dimension



U.FL Series

1.9mm to 2.4mm Mated Height, Light Weight SMT Micro Coaxial Connector



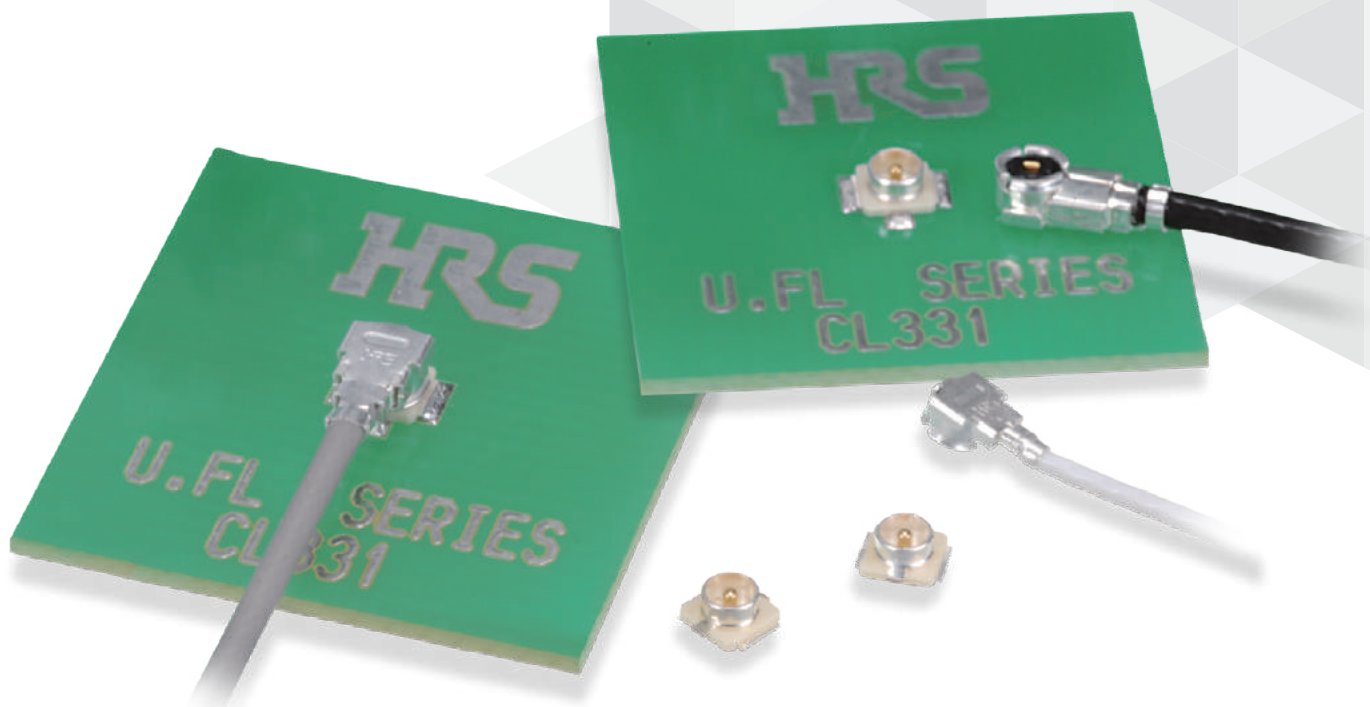
Compact



RF



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

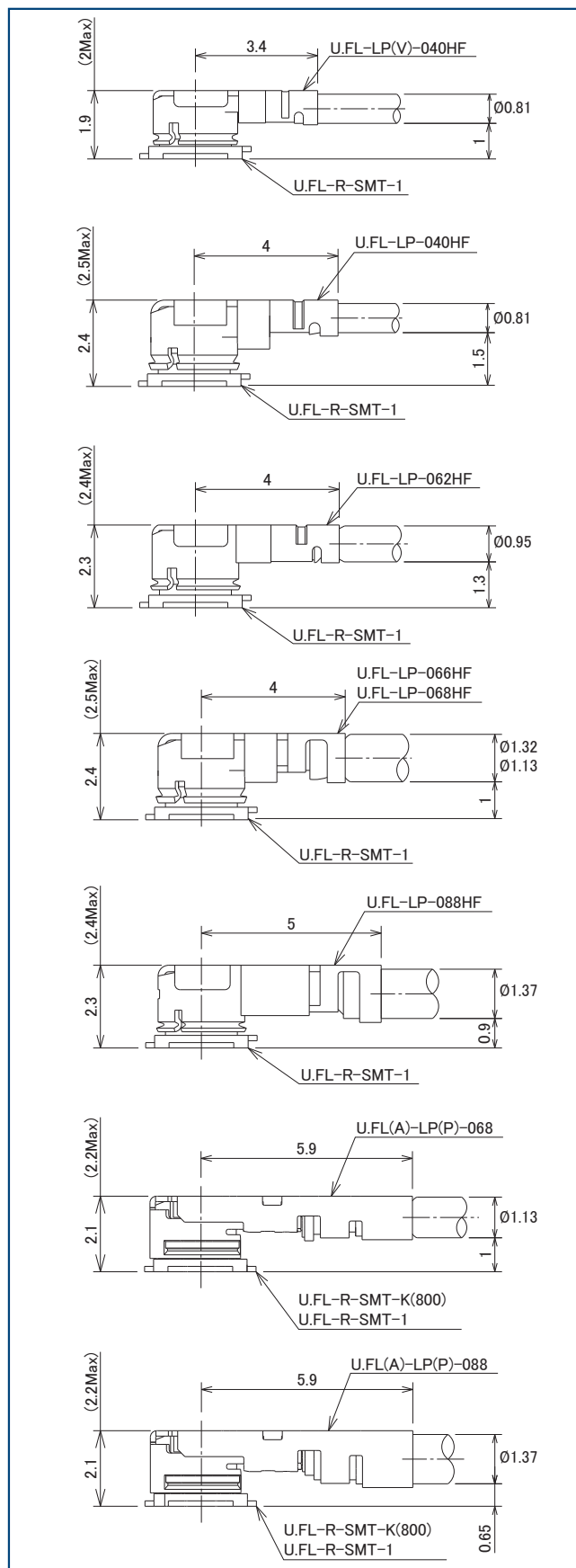
Киргизия +996(312)96-26-47

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

Features

1. Space-Saving Design

Contribute to small-size of the set.
 Mated Height 1.9mm(2.0mm Max.) to
 2.4mm(2.5mm Max.)
 Receptacle Weight 15.7mg
 Substrate Occupied Area 7.7mm²



Space-saving factor when mating connectors

2. Solderless Connection Type Available *U.FL(A)

U.FL(A) has expanded its range of frequency to 18 GHz (VSWR less than or equal to 2.0) with a new crimping system (Coa-Fit). Further improvements in workability have been achieved with a shaft displacement prevention design. Receptacle is the same as the conventional soldered product U.FL and can be mated with U.FL-R-SMT-#.

3. RF Performance (up to 18GHz)

The high-frequency characteristics vary depending on the cable, see product specifications chart.

Soldered Products U.FL : Up to 8GHz *Some of up to 12GHz

Solderless Products U.FL(A) : Up to 18GHz

4. Ultra-Fine Coaxial Fluorinated Resin Cables

A wide range of variations can be selected to match the set.

Soldered Products U.FL : ϕ 0.81, ϕ 0.95, ϕ 1.13, ϕ 1.32, ϕ 1.37

Solderless Products U.FL(A) : ϕ 1.13, ϕ 1.37

5. Supports Automatic Mounting

Tape and reel packaging allows for pick & place mounting.

6. Clear, Tactile Lock

Using a special tool allows smooth insertion and removal.

7. Halogen-Free and RoHS2 Compliant

The receptacle and plug do not contain chlorine or bromine above the standard value.

*Defined in accordance with IEC61249-2-21.

8. Harnessable with SMA, MMCX and TNC on One Side

Adapter and harnesses at both ends of this series contribute to flexible board design.

Application

Wireless LAN Equipment (Wi-Fi 6 compatible), Bluetooth Equipment, Car Navigation Systems, Drones, PDAs, GPS, Wireless Communication Devices, Electronic Measuring Instruments, etc.

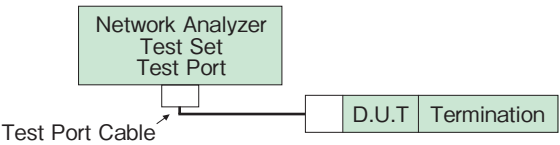
Product Specifications

Nominal Impedance	50 Ω	Operating Temperature	-40 to +105°C (90% RH Max.)
Rated Frequency	0 to 8GHz	Storage Temperature	-30 to +70°C (90% RH Max.)

Item	Standards	Condition		
Contact Resistance	Center: 20m Ω Max. (50m Ω Max.) External: 10m Ω Max. (20 Ω Max.) (U.FL(A))	Measured at 10 mA Max.		
Insulation Resistance	500M Ω Min.	Measured at 100V DC		
Withstanding Voltage	No insulation break down	200V AC for 1 minute		
V.S.W.R.*	Cable Type	0 to 3GHz	3GHz to 6GHz	6GHz or faster
	U.FL-LP-040HF ϕ 0.81	1.3 Max.	1.35 Max.	6 to 8 GHz: 1.4 Max.
	U.FL-LP(V)-040HF ϕ 0.81	1.3 Max.	1.3 Max.	8 to 12 GHz: 1.4 Max.
	U.FL-LP-068HF ϕ 1.13	1.3 Max.	1.4 Max.	6 to 8 GHz: 1.6 Max.
	U.FL-LP-066HF ϕ 1.32	1.3 Max.	1.5 Max.	6 to 8 GHz: 1.7 Max.
	U.FL-LP-062HF ϕ 0.95	1.3 Max.	1.3 Max.	6 to 8 GHz: 1.4 Max.
	U.FL-LP-088HF ϕ 1.37	1.3 Max.	1.4 Max.	6 to 8 GHz: 1.6 Max.
	U.FL(A)-LP(P)-068 ϕ 1.13	1.3 Max.	1.4 Max.	6 to 9GHz : 1.5 Max. 9 to 12GHz : 1.6 Max. 12 to 15 GHz: 1.7 Max. 15 to 18GHz : 2.0 Max.
	U.FL(A)-LP(P)-088 ϕ 1.37			
Female Contact Retention Force	0.15N Min. /0.1N Min. (062, U.FL (A))	Measured with a pin gauge of ϕ 0.475		
Mating Durability	Contact Resistance : Initial + 5 m Ω	30 times		
Vibration Resistance	No electrical discontinuity of 1 μ s or more	Frequency 10 to 100Hz, Half amplitude 1.5mm, Acceleration 59 m/ s ² for 5 cycles in each of the 3 axes direction.		
Shock Resistance	No damage, cracks or part dislocation.	Acceleration 735 m/s ² , for a duration of 11 ms, sine half-wave waveform, 3 cycles in each of the 6 axes direction.		
Humidity Resistance (Steady State)	Insulation Resistance 10M Min. (in a high humidity environment) 500M Min. (in a dry environment)	96 hours at temperature of 40℃ and humidity of 95%.		
Temperature Cycle	No damage, cracks or part dislocation.	Temperature: -40℃→ +5 to +35℃→ +105℃→ +5 to +35℃ Time: 30 minutes → within 5 minutes → 30 minutes → within 5 minutes. 5 cycles		
Salt Spray	V.S.W.R. Satisfying initial standard values	5% salt water solution for 48 consecutive hours		

Note: Information contained in this catalog represents general requirements for this Series.
Contact us for the drawings and specifications for a specific part number shown.

*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 100cm cable.
Note 2 : Board type connectors were mounted to a 50 Ω glass epoxy board and measurements were conducted with SMA conversion adapters attached.

Materials / Finish

	component	Material	Finish/Remarks
Right Angle Plug	Shell	Phosphorous Bronze	Silver Plating/Nickel Plating (Contact Part: Gold Plating) (U.FL (A))
	Insulator	PBT (Gray)	UL94HB (LP(V)-040HF)
		LCP (Milky White)	UL94V-0 (040HF, 066HF, 068HF, 062HF, 088HF)
		LCP (Black)	UL94V-0 (U.FL(A))
	Female Center Contact	Phosphorous Bronze	Gold Plating
Receptacle	Shell	Phosphorous Bronze	Silver Plating (U.FL-R-SMT - 1)/Gold Plating (U.FL-R-SMT-K)
	Insulator	LCP (Milky White)	UL94V-0 (U.FL-R-SMT-1)
		LCP (Black)	UL94V-0 (U.FL-R-SMT-K)
	Male Center Contact	Brass	Gold 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.

Plug

U.FL - 2LPHF6 - 04# 1 TV - A - 100

1

2

3

4

3

5

1 Series Name	U.FL, UFL	3 Cable Type ● is 4 Cable Color	04# ● TV : ϕ 0.81 (for Low Height) 062# ● D : ϕ 0.95 (Copper Tape Type) 068# ● T : ϕ 1.13 066# ● : ϕ 1.32 (Double Shielded Type) 088# ● T : ϕ 1.37 088 # # PD : ϕ 1.37 (Copper Tape Type)
2 Harness type	LPHF6 : Single-Ended Cable (Soldered Product) 2LPHF6: Double-Ended Cable (Soldered Product) LPVHF6 : U.FL-LP(V)-040HF for Single-Ended Cable 2LPVHF6: U.FL-LP(V)-040HF for Double-Ended Cable (LP notation may be omitted.) LPA : Single-Ended Cable (Solderless Connection Type) 2 LPA: Double-Ended Cable (Solderless Connection Type)	4 Cable Color	ϕ 0.81 : 1 (White), 2 (Black) Except ϕ 0.81: 1 (Gray), 2 (Black)
		5 Total Length L (mm)	Length Units (mm)

Receptacle

U.FL - R - SMT - 1 (01)

1

2

3

4

5

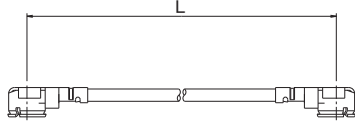
1 Series Name	U.FL	4 Plating Type	1 : Silver Plating (Shell) K : Gold Plating (Shell)
2 Connector Type	R : Straight Receptacle	5 Packing Type	(01) : Bag Packing 100pcs per bag (60) : Reel Packing 4,000pcs per reel (80) : Reel Packing 10,000pcs per reel (800) : Reel Packing 10,000pcs per reel
3 Board Mounting Method	SMT : Printed Circuit Board Surface Mounting Type		

The Procedure for Ordering Patch Cord

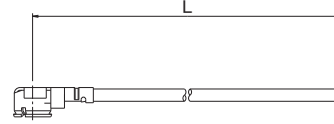
Please select the specifications in 3 steps. No need product name for ordering patch cord.

STEP1 : Specify Double- or Single-Ended

[Double-Ended Cable Assembly]



[Single-Ended Cable Assembly]



Please consult us for cable terminal finish.

STEP2 : Specify Cable and Mated Height

Cable Outer Diameter	Mated Height (Max.)	Plug
ϕ 0.81	2.0mm (1.9mm)	U.FL-LP(V)-040HF
	2.4mm (2.5mm)	U.FL-LP-040HF
ϕ 0.95	2.3mm (2.4mm)	U.FL-LP-062HF
ϕ 1.13	2.4mm (2.5mm)	U.FL-LP-068HF
ϕ 1.32	2.4mm (2.5mm)	U.FL-LP-066HF
ϕ 1.37	2.3mm (2.4mm)	U.FL-LP-088HF
ϕ 1.37 (Low Transmission Loss)		
ϕ 1.13	2.1mm (2.2mm)	U.FL(A)-LP(P)-068
ϕ 1.37		U.FL(A)-LP(P)-068

STEP3 : Specify Cable Length (mm)

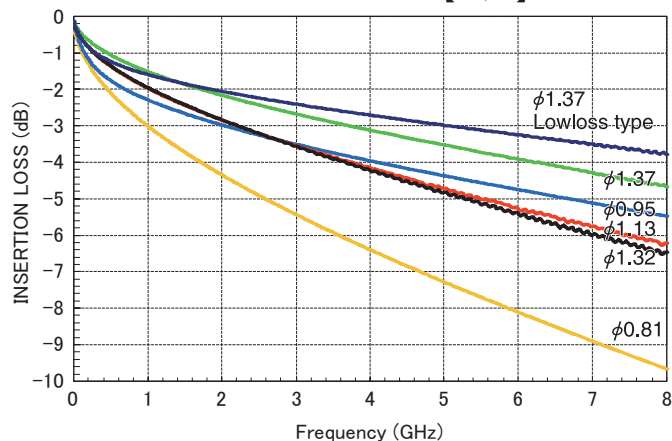
●Cable Assembly Total Length Standard Tolerance

Total Length (mm)	Standard Tolerance (mm)
$35 \leq L \leq 200$	± 4
$201 < L \leq 500$	± 8
$501 < L \leq 1000$	± 12
$1000 < L$	$\pm 1.5\%$

Note 1: The shortest length is L=35mm.

Note 2: U.FL(A) is 100 to 1000mm.

Insertion Loss comparison
between each cable size【dB/m】



Representative Products according to STEP2

e.g. Double-Ended, Black Harness and 100mm	Color	Features
UFL-2LPVHF6-04N2TV-A-100	Black/White	Low Height
U.FL-2LPHF6-04N2TV-A-100	Black/White	-
U.FL-2LPHF6-062N2D-A-100	Black/Gray	Copper Tape Type
U.FL-2LPHF6-068N2T-A-100	Black/Gray	-
U.FL-2LPHF6-066N2-A-100	Black/Gray	Duble Shielded Type
U.FL-2LPHF6-088N2T-A-100	Black/Gray	-
U.FL-2LPHF6-088N2PD-A-100	Black	Copper Tape Type
UFL-2LPA-068Y2T-A-100	Black/Gray	Solderless Connection Type
UFL-2LPA-088Y2T-A-100	Black/Gray	Solderless Connection Type

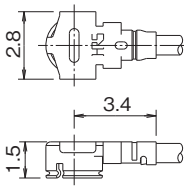
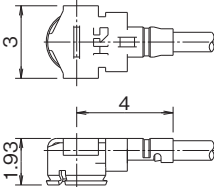
Plug

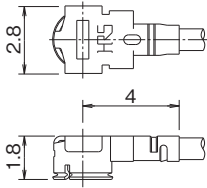
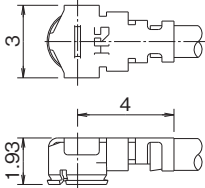
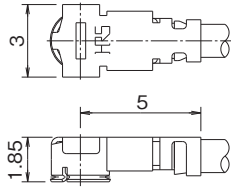
Center Soldered Type

●U.FL Plug

·The center contact is gold plated and the outer contact is silver plated.



Part No. Size	U.FL-LP(V)-040HF	U.FL-LP-040HF
		
Mated Height	2.0mm Max. (1.9mm Nom.)	2.5mm Max. (2.4mm Nom.)
Applicable Cable	φ 0.81	φ 0.81

Part No. Size	U.FL-LP-062HF	U.FL-LP-066HF U.FL-LP-068HF	U.FL-LP-088HF
			
Mated Height	2.4mm Max. (2.3mm Nom.)	2.5mm Max. (2.4mm Nom.)	2.4mm Max. (2.3mm Nom.)
Applicable Cable	φ 0.95	φ 1.13 & φ 1.32	φ 1.37

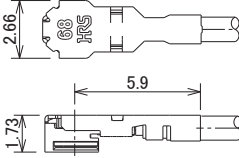
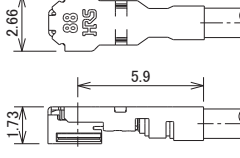
Note : For plugs, please order according to cable harness specifications.

Solderless Connection Type

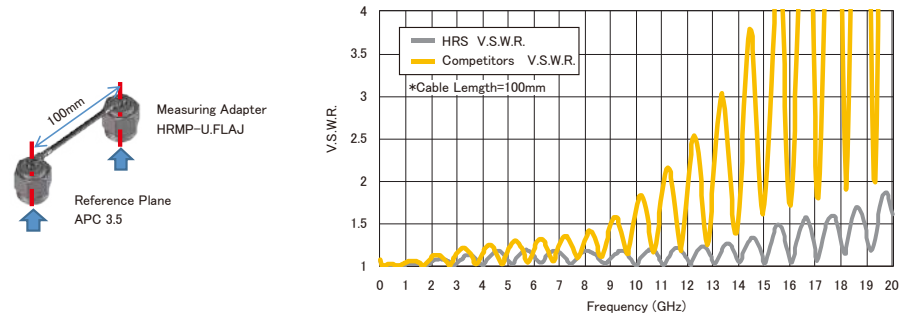
●U.FL(A) Plug

- Harness product guarantees frequency up to 18GHz and impedance matching.
- The inner and outer contact portion are gold plated.
(the main body is nickel plated)
- The receptacle can be mated with U.FL-R-SMT-1 (shell : silver plated) and U.FL-R-SMT-K (shell : gold plated).
- The SMA inspection adapter and extraction tool are only for the U.FL(A) plug.
- Controls variation and improves extraction force by 50% compared to conventional products and competing products (Approx. 30N).
It is difficult to remove the connector even when bending the cable.



Part No. Size	U.FL(A)-LP(P)-068	U.FL(A)-LP(P)-088
		
Mated Height	2.2mm Max. (2.1mm Nom.)	
Applicable Cable	φ 1.13	φ 1.37

Note : For plugs, please order according to cable harness specifications.



● Cable Guide

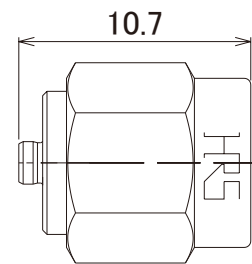
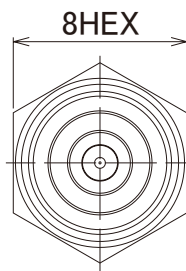
Description	Cable Type	Cable Specification							
		Inner Conductor (Note)	Dielectric Diameter	Outer Conductor (Note)	Jacket	Flame Retardant Grade	Nominal Attenuation (dB/m)		
							3GHz	6GHz	8GHz
φ 0.81mm Coaxial Cable	04	7/0.05 SA (AWG#36)	φ 0.40 Fluorine Resin	Single Shield TA	Fluorine Resin	VW-1	6.5	9.5	11.7
φ 1.13mm Coaxial Cable	068	7/0.08 SA (AWG#32)	φ 0.68 Fluorine Resin	Single Shield TA			3.7	5.4	6.5
φ 1.32mm Coaxial Cable	066	7/0.08 SA (AWG#32)	φ 0.66 Fluorine Resin	Double Shield TA			3.8	5.6	6.5
φ 0.95mm Coaxial Cable	062	7/0.071 SA (AWG#33)	φ 0.62 Fluorine Resin	Tape, Single Shield TA			3.1	4.4	5.3
φ 1.37mm Coaxial Cable	088	7/0.102 SA (AWG#30)	φ 0.88 Fluorine Resin	Single Shield TA			2.9	4.3	5
φ 1.37mm Coaxial Cable (Low Loss)	088	7/0.102 SA (AWG#30)	φ 0.88 Fluorine Resin	Tape, Single Shield TA			2.5	3.4	3.8

(Attenuation is a reference value.)

Note : SA : Silver Plating Annealed Copper Wire, TA : Tin Plating Annealed Copper Wire

U.FL(A) Inspection SMA Conversion Adapter

● Mated Portion: U.FLA Jack- SMA Plug

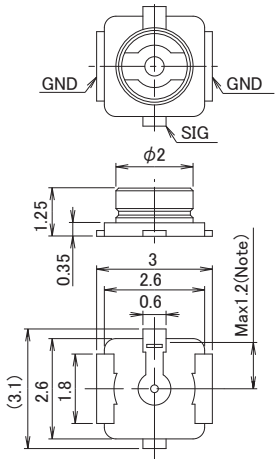
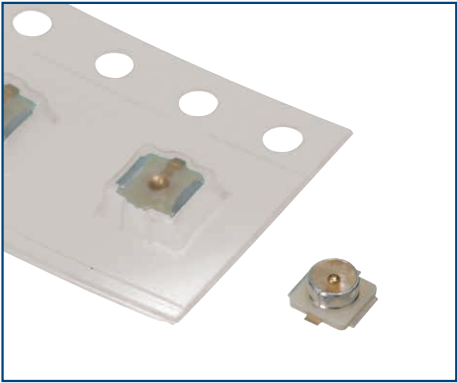


Part No.	HRS No.	Purchase Unit
HRMP-U.FLAJ	CL0311-2400-0-00	20pcs per bag

Note: Since the U.FL side mated portion has a weaker lock than standard products, it cannot be used for purposes other than performance measurement.

Receptacle

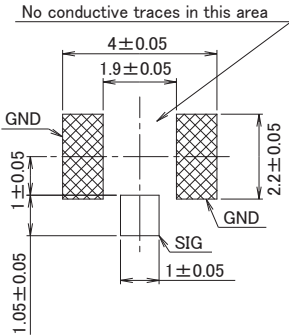
●Shell : Silver Plated



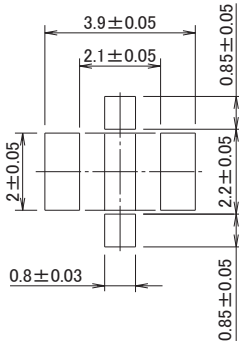
Part No	HRS No.	Purchase Unit
U.FL-R-SMT-1(01)	CL0331-0472-2-01	100pcs per bag
U.FL-R-SMT-1(60)	CL0331-0472-2-60	4,000pcs per reel
U.FL-R-SMT-1(80)	CL0331-0472-2-80	10,000pcs per reel

Note: Tolerance value of mold resin applied to center contact.

■Recommended PCB Mounting Pattern

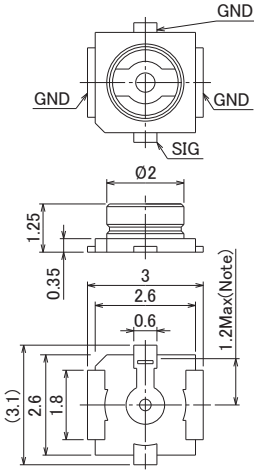
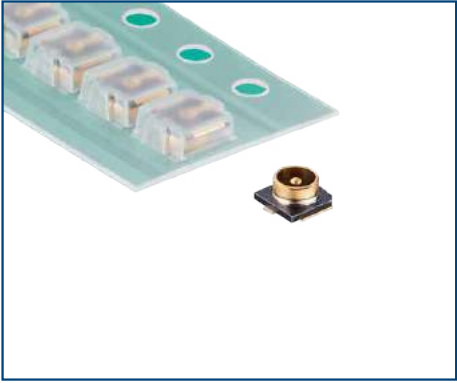


■Recommended Metal Mask Dimensions



Metal Mask Thickness : 0.1mm/0.12mm

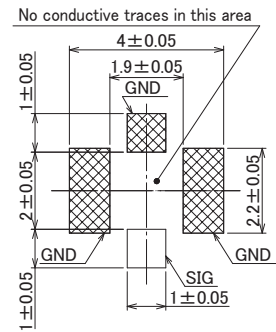
●Shell : Gold Plated



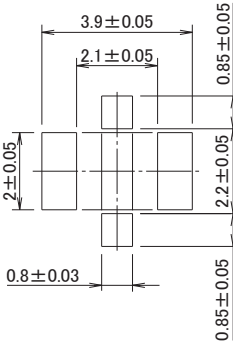
Part No.	HRS No.	Purchase Unit
U.FL-R-SMT-K(800)	CL0480-0761-0-00	10,000pcs per reel

Note: Tolerance value of mold resin applied to center contact.

■Recommended PCB Mounting Pattern



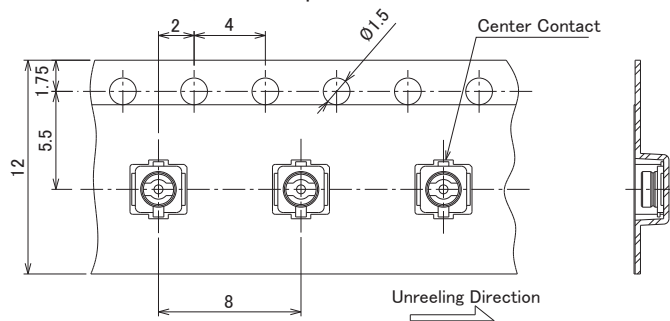
■Recommended Metal Mask Dimensions



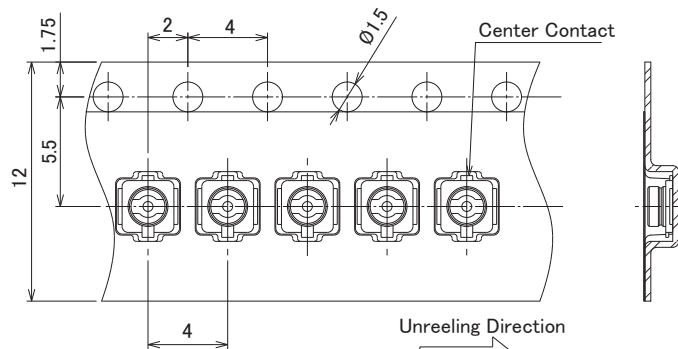
Metal Mask Thickness : 0.08mm

● Embossed Carrier Tape Dimensions(IEC60286 Compliant)

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

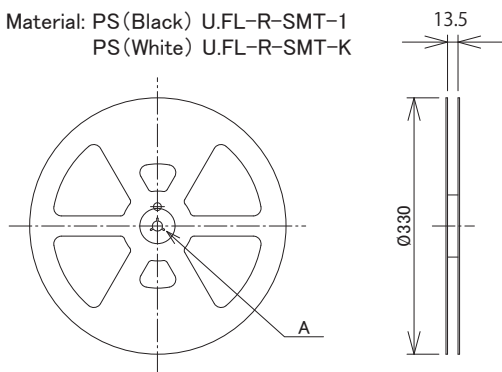


U.FL-R-SMT-1(80), U.FL-R-SMT-K(800): 4mm pitch

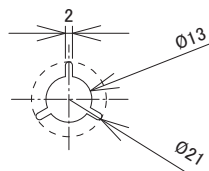


● Reel Dimensions

Material: PS(Black) U.FL-R-SMT-1
PS(White) U.FL-R-SMT-K

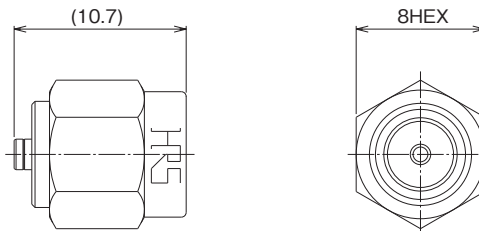


A(SCALE FREE)



Conversion Adapter

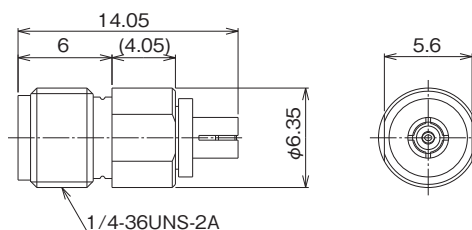
● SMA Conversion Adapter (Mated Portion : UFL Jack - SMA Plug)



Part No.	HRS No.	Purchase Unit
HRMP-U.FLJ(40)	CL0311-0300-2-40	20pcs per bag

Note: Due to the strength of the U.FL side mate portion vs. standard products, it cannot be used for purposes other than performance measurement.

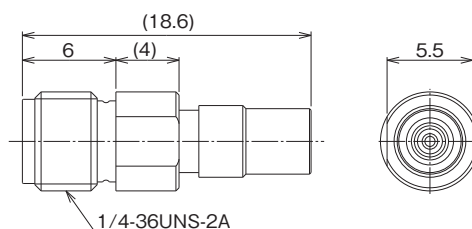
● SMA Conversion Adapter (Mated Portion : U.FL Plug - SMA Jack)



Part No.	HRS No.	Purchase Unit
HRMJ-U.FLP(40)	CL0311-0301-5-40	20pcs per bag

Note: Since the U.FL side mated portion has a weaker lock than standard products, it cannot be used for purposes other than performance measurement.

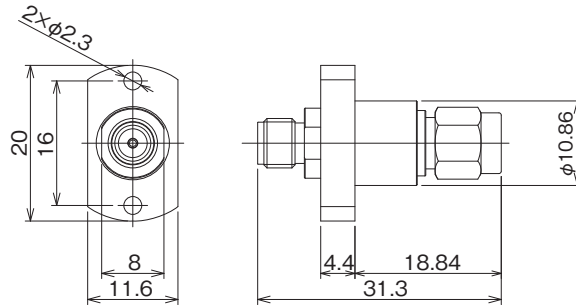
● SMA Conversion Adapter (Mated Portion : U.FL Plug (without Lock) - SMA Jack)



Part No.	HRS No.	Purchase Unit
HRMJ-U.FLP-ST1(40)	CL0311-0385-5-40	20pcs per bag

Note: This connector is used by pressing the mated portion of the U.FL side with the mated portion of U.FL-R-SMT-1.

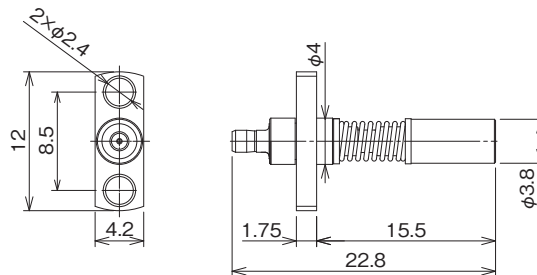
● SMA Conversion Adapter (Mated Portion: SMA Jack (Measuring Device Connection Side) -SMA Plug)



Part No.	HRS No.	Purchase Unit
HRM-PA-PJ(F)-1(40)	CL0323-0805-9-40	20pcs per bag

Note: HRMJ-U.FLP-ST1 absorbs misalignment when mated with the plug (coupling side) and connecting the jack with the measuring device.

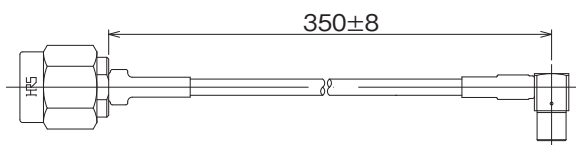
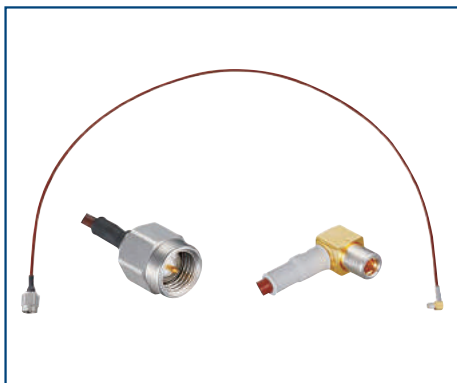
●Probe for Inspect of Multiple Narrow Pitch Receptacles (Mated Portion : U.FL Plug (without Lock) - ML51 Jack)



Part No.	HRS No.	Purchase Unit
U.FLP-ML51.J-PA(F)-ST	CL0311-0466-8-00	20pcs per bag

Note: Hirose's ML51 is used for the measuring device interface. It is ideal for simultaneous inspection of multiple narrow pitch mounted receptacles.

●Harness for Narrow Pitch Probe Connection (Mated Portion : SMA Plug (Measuring Device Connection Side) - ML51 Plug)

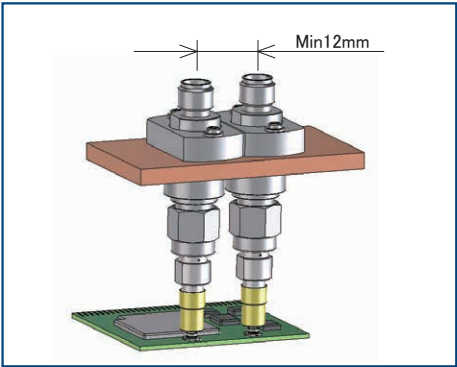


Part No.	HRS No.	Purchase Unit
HRMP-ML51LP-DTR178-350RS	CL0321-4926-2-01	10pcs per bag

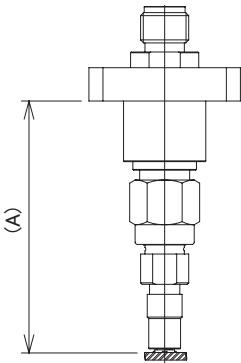
Note: Used to connect U.FLP-ML51J-PA(F)-ST and the measuring device. It is recommended to provide slack to the cable length so that it can absorb misalignment smoothly.

Inspection Probe Combination and Usage

● HRMJ-U.FLP-ST1 and HRM-PA-PJ(F)1

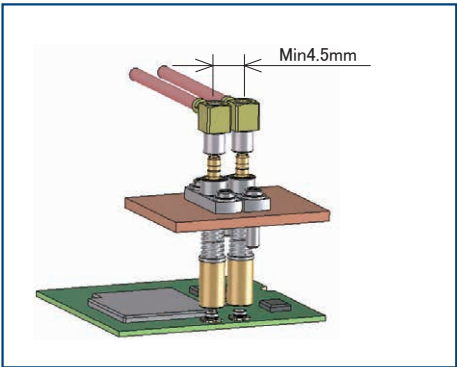


Shortest Pitch for Adjacency

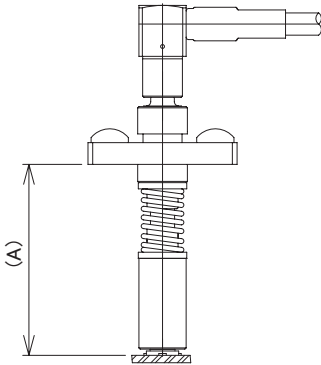


Flange to Board Surface	(A)
Recommendation for Measurement	32.5 ± 0.2
Starting Load	33.2

● U.FLP-ML51.J-PA(F)-ST and HRMP-ML51LP-DTR178-350RS



Shortest Pitch for Adjacency

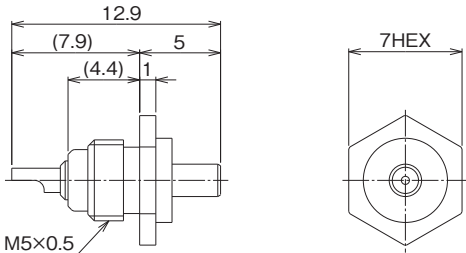


Flange to Board Surface	(A)
Recommendation for Measurement	15.1 ± 0.2
Starting Load	16

Note: For the inspection probe do not tilt the tip contact from the tensile load of the connecting cable.

Inspection Receptacle

Receptacle for inspecting the conduction and withstanding voltage of harness products.

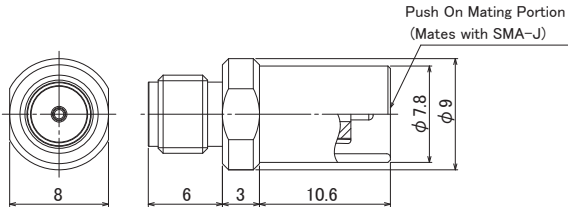


Part No.	HRS No.	Purchase Unit
U.FL-R-1	CL0331-0466-0-00	20pcs per bag

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

Inspection Assistance Tool

●SMA Mating Push On Conversion Adapter

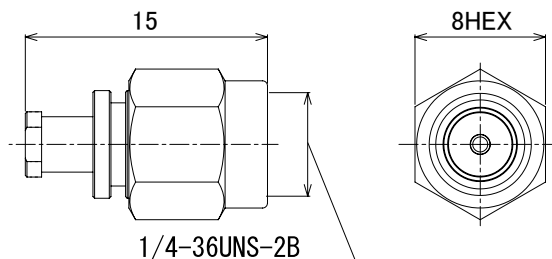


Part No.	HRS No.	Purchase Unit
HRMP(PO)-HRMJ	CL0323-0741-8-00	20pcs per bag

Note: Converts SMA plug mating portion to push on type, reducing the number of steps required for repeated SMA mating.

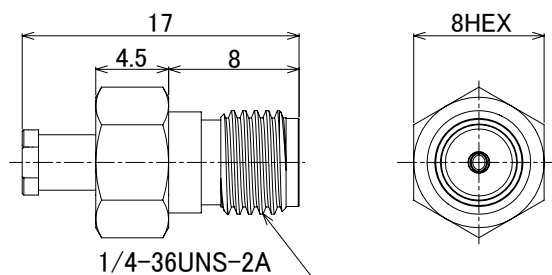
Standard Connectors that Connect with U.FL SMA Cable Type

●Straight Plug



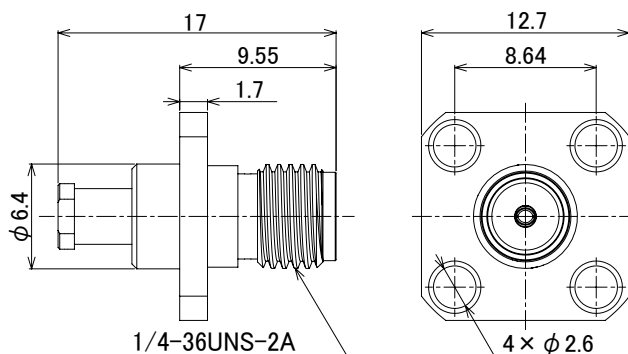
Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
HRM-200-040PBN(40)	CL0323-0790-3-40	ϕ 0.81	SMA (Male Contact)	20pcs per bag
HRM-200-066PBN(40)	CL0323-0791-6-40	ϕ 1.13, ϕ 1.32		
HRM-200-088PBN(40)	CL0323-0800-5-40	ϕ 1.37		

●Straight Jack



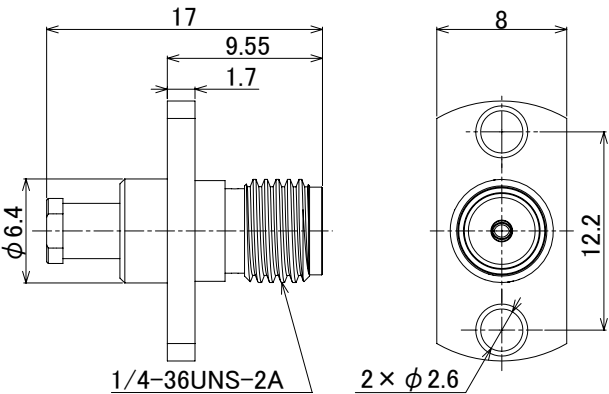
Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
HRM-200-040JBN(40)	CL0323-0792-9-40	ϕ 0.81	SMA (Female Contact)	20pcs per bag
HRM-200-066JBN(40)	CL0323-0793-1-40	ϕ 1.13, ϕ 1.32		
HRM-200-088JBN(40)	CL0323-0801-8-40	ϕ 1.37		

●Panel Jack (4 Screws Type)



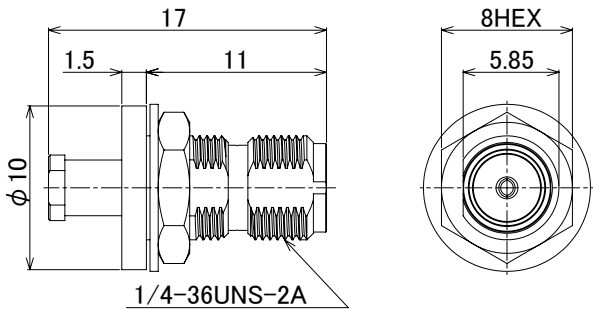
Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
HRM-200-040PJ4BN(40)	CL0323-0795-7-40	ϕ 0.81	SMA (Female Contact)	20pcs per bag
HRM-200-066PJ4BN(40)	CL0323-0796-0-40	ϕ 1.13, ϕ 1.32		
HRM-200-088PJ4BN(40)	CL0323-0803-3-40	ϕ 1.37		

●Panel Jack (2 Screws Type)



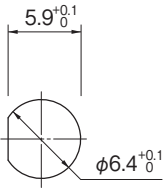
Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
HRM-200-040PJ2BN(40)	CL0323-0794-4-40	ϕ 0.81	SMA (Female Contact)	20pcs per bag
HRM-200-066PJ2BN(40)	CL0323-0788-1-40	ϕ 1.13, ϕ 1.32		
HRM-200-088PJ2BN(40)	CL0323-0802-0-40	ϕ 1.37		

●Panel Jack (Nut Type)

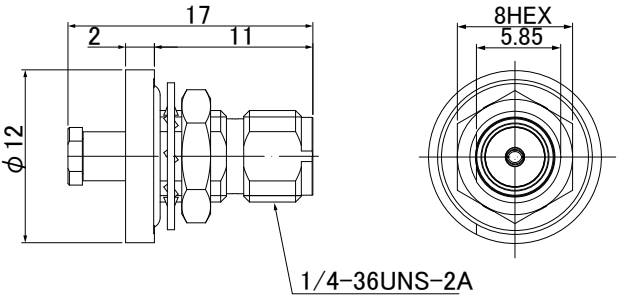


Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
HRM-200-040BPJBN(40)	CL0323-0797-2-40	ϕ 0.81	SMA (Female Contact)	20pcs per bag
HRM-200-066BPJBN(40)	CL0323-0798-5-40	ϕ 1.13, ϕ 1.32		
HRM-200-088BPJBN(40)	CL0323-0804-6-40	ϕ 1.37		

■Mounting Hole Dimension

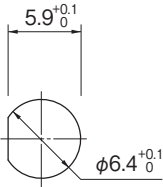


●Panel Jack (Nut Type, Flange Part Water Proofing)



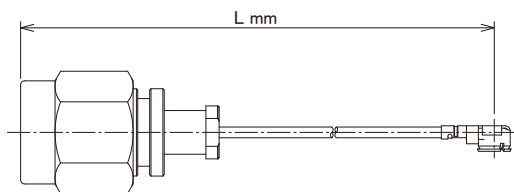
Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
HRM-200-040WBPJBN	CL0323-0945-8-00	$\phi 0.81$	SMA (Female Contact)	20pcs per bag
HRM-200-066WBPJBN	CL0323-0946-0-00	$\phi 1.13, \phi 1.32$		
HRM-200-088WBPJBN	CL0323-0920-7-00	$\phi 1.37$		

■Mounting Hole Dimension



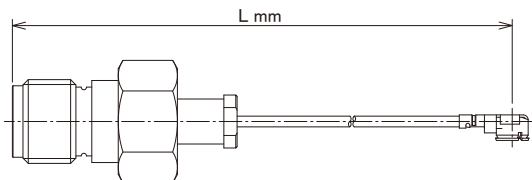
SMA-U.FL Cable Assembly Representative Product

●SMA Straight Plug - U.FL Plug



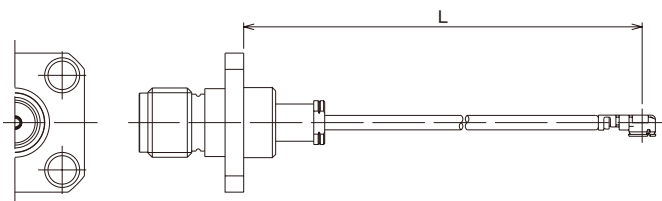
Part No.	HRS No.	Cable (Color)	L mm	Remarks
HRMP-UFLHF6-04N2TV-A200RS	CL0321-0753-0-04	φ 0.81 (Black)	200 ± 4	SMA (Male Contact)
HRMP-UFLHF6-068N2T-A200RS	CL0321-0854-0-02	φ 1.13 (Black)		
HRMP-UFLHF6-066N2-A200RS	CL0321-0862-0-05	φ 1.32 (Black)		
HRMP-UFLHF6-088N2T-A200RS	CL0321-0755-0-07	φ 1.37 (Black)		

●SMA Straight Jack - U.FL Plug



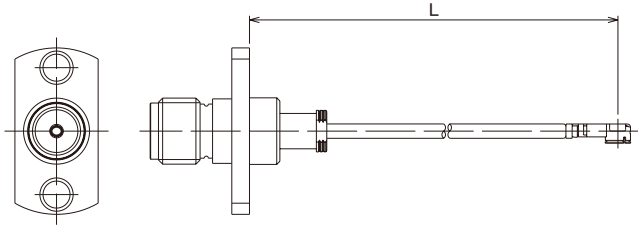
Part No.	HRS No.	Cable (Color)	L mm	Remarks
HRMJ-UFLHF6-04N2TV-A200RS	CL0321-0881-0-02	φ 0.81 (Black)	200 ± 4	SMA (Female Contact)
HRMJ-UFLHF6-068N2T-A200RS	CL0321-0869-0-03	φ 1.13 (Black)		
HRMJ-UFLHF6-066N2-A200RS	CL0321-0868-0-02	φ 1.32 (Black)		
HRMJ-UFLHF6-088N2T-A200RS	CL0321-0904-0-04	φ 1.37 (Black)		

●SMA Panel Jack (4 Screws Type) - U.FL Plug



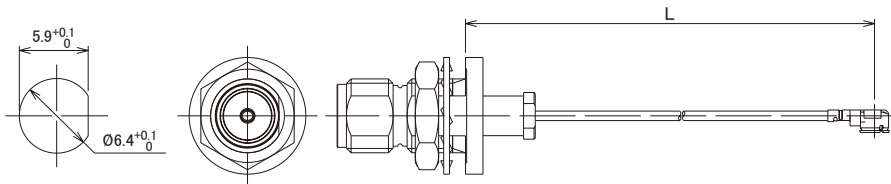
Part No.	HRS No.	Cable (Color)	L mm	Remarks
HPJ-UFLHF6-04N2TV-A200RS	CL0321-0965-0-02	φ 0.81 (Black)	200 ± 4	SMA (Female Contact)
HPJ-UFLHF6-068N2T-A200RS	CL0321-3660-0-02	φ 1.13 (Black)		
HPJ-UFLHF6-066N2-A200RS	CL0321-0905-0-01	φ 1.32 (Black)		
HPJ-UFLHF6-088N2T-A200RS	CL0321-0911-0-03	φ 1.37 (Black)		

● SMA Panel Jack (2 Screws Type) - U.FL Plug



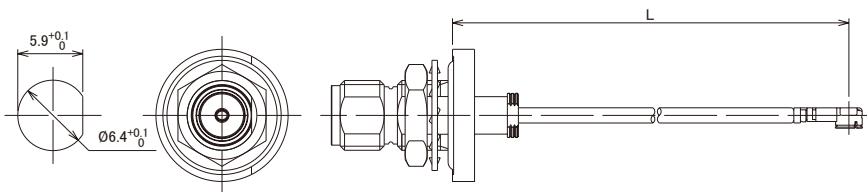
Part No.	HRS No.	Cable (Color)	L mm	Remarks
HPJ2-UFLHF6-04N2TV-A200RS	CL0321-0969-0-03	φ 0.81 (Black)	200 ± 4	SMA (Female Contact)
HPJ2-UFLHF6-068N2T-A200RS	CL0321-1083-0-03	φ 1.13 (Black)		
HPJ2-UFLHF6-066N2-A200RS	CL0321-1084-0-03	φ 1.32 (Black)		
HPJ2-UFLHF6-088N2T-A200RS	CL0321-0812-0-04	φ 1.37 (Black)		

● SMA Panel Jack (Nut Type) - U.FL Plug



Part No.	HRS No.	Cable (Color)	L mm	Remarks
HBPJ-UFLHF6-04N2TV-A200RS	CL0321-0964-0-02	φ 0.81 (Black)	200 ± 4	SMA (Female Contact)
HBPJ-UFLHF6-068N2T-A200RS	CL0321-3781-0-02	φ 1.13 (Black)		
HBPJ-UFLHF6-066N2-A200RS	CL0321-0927-0-03	φ 1.32 (Black)		
HBPJ-UFLHF6-088N2T-A200RS	CL0321-0926-0-03	φ 1.37 (Black)		

● Panel Jack (Nut Type, Flange Part Water Proofing) - U.FL Plug

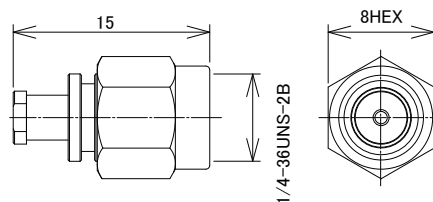


Part No.	HRS No.	Cable (Color)	L mm	Remarks
HWBPJ-UFLHF6-04N2TV-A200	CL0321-3833-0-02	φ 0.81 (Black)	200 ± 4	SMA (Female Contact)
HWBPJ-UHF6-068N2T-A-200	CL0321-1235-0-03	φ 1.13 (Black)		
HWBPJ-UFLHF6-066N2-A-200	CL0321-3790-0-02	φ 1.32 (Black)		
HWBPJ-UFLHF6-088N2T-A200	CL0321-0760-0-04	φ 1.37 (Black)		

Note : For cable lengths, cable colors, and connector combinations other than those listed above, please contact us.

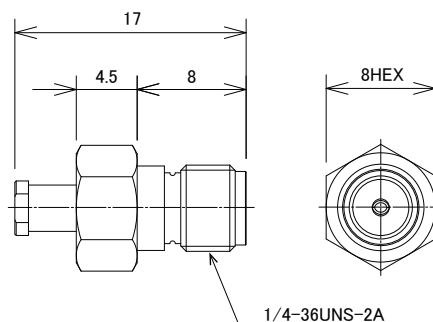
Standard Connectors that Connect with U.FL SMA(R) Cable Type

●Straight Plug



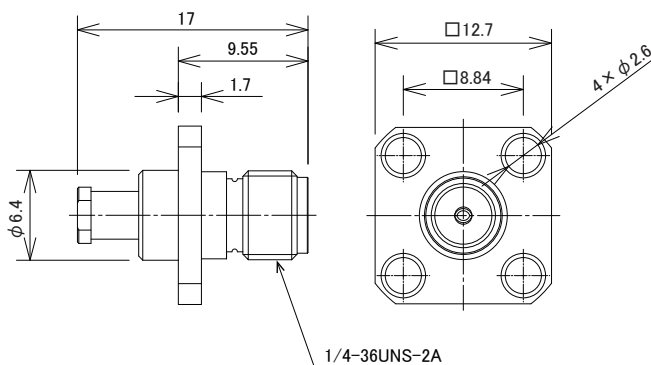
Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
SMA(R)-200-040PBN	CL0323-0925-0-00	φ 0.81	SMA Reverse (Female Contact)	20pcs per bag
SMA(R)-200-066PBN	CL0323-0930-0-00	φ 1.13, φ 1.32		
SMA(R)-200-088PBN	CL0323-0905-3-00	φ 1.37		

●Straight Jack



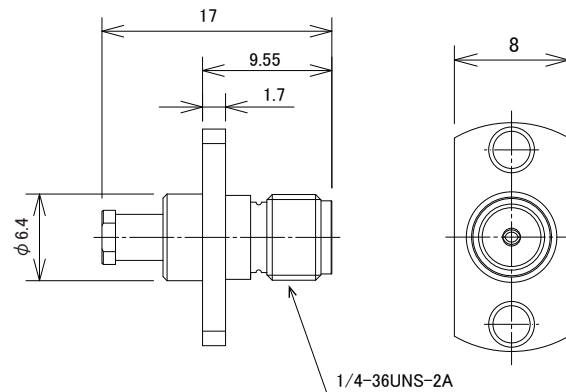
Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
SMA(R)-200-040JBN	CL0323-0926-3-00	φ 0.81	SMA Reverse (Male Contact)	20pcs per bag
SMA(R)-200-066JBN	CL0323-0931-3-00	φ 1.13, φ 1.32		
SMA(R)-200-088JBN	CL0323-0904-0-00	φ 1.37		

●Panel Jack (4 Screws Type)



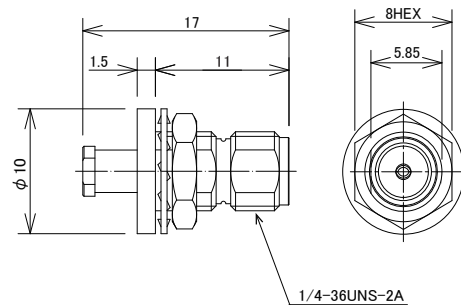
Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
SMA(R)-200-040PJ4BN	CL0323-0928-9-00	φ 0.81	SMA Reverse (Male Contact)	20pcs per bag
SMA(R)-200-066PJ4BN	CL0323-0932-6-00	φ 1.13, φ 1.32		
SMA(R)-200-088PJ4BN	CL0323-0934-1-00	φ 1.37		

●Panel Jack (2 Screws Type)



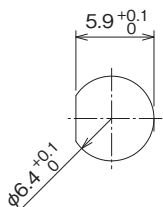
Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
SMA(R)-200-040PJ2BN	CL0323-0929-1-00	φ 0.81	SMA Reverse (Male Contact)	20pcs per bag
SMA(R)-200-066PJ2BN	CL0323-0933-9-00	φ 1.13, φ 1.32		
SMA(R)-200-088PJ2BN	CL0323-0935-4-00	φ 1.37		

●Panel Jack (Nut Type)

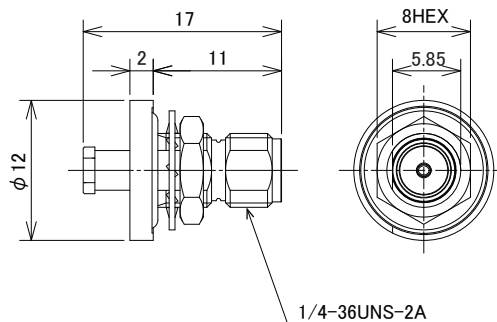


Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
SMA(R)-200-040BPJBN	CL0323-0927-6-00	φ 0.81	SMA Reverse (Male Contact)	20pcs per bag
SMA(R)-200-066BPJBN	CL0323-0902-5-00	φ 1.13, φ 1.32		
SMA(R)-200-088BPJBN	CL0323-0901-2-00	φ 1.37		

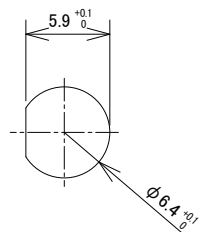
■Mounting Hole Dimension



●Panel Jack (Nut Type, Flange Part Water Proofing)

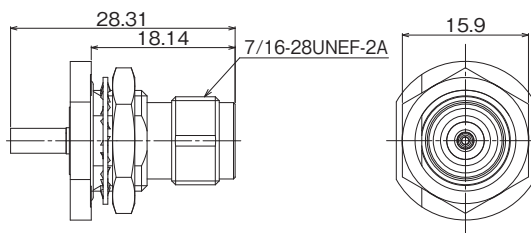


Part No.	HRS No.	Applicable Cable	Remarks	Purchase Unit
SMA(R)-200-040WBPJBN	CL0323-0947-3-00	φ 0.81	SMA Reverse (Male Contact)	20pcs per bag
SMA(R)-200-066WBPJBN	CL0323-0948-6-00	φ 1.13, φ 1.32		
SMA(R)-200-088WBPJBN	CL0323-0949-9-00	φ 1.37		



Standard Connectors that Connect with U.FL TNC Cable Type

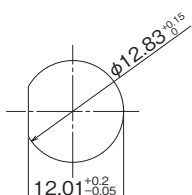
●Panel Jack (Nut, Waterproof Panel Mounting Surface Type)



Part No.	HRS No.	Applicable Cable
TNC-WBPJ-088-1	CL0313-0004-0-00	φ 1.37

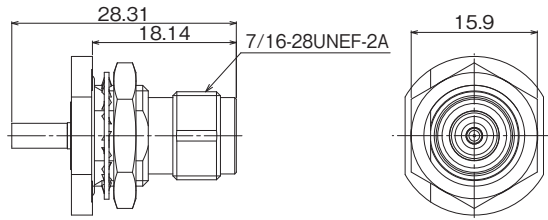
Note: Please order the product after designating the harness specifications including product length, etc.

■Mounting Hole Dimension



Standard Connectors that Connect with U.FL TNC(R) Cable Type

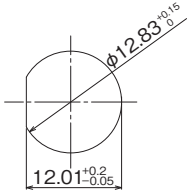
●Panel Jack (Nut, Waterproof Panel Mounting Surface Type)



Part No.	HRS No.	Applicable Cable
TNC(R)-WBPJ-088	CL0313-0003-0-00	φ 1.37

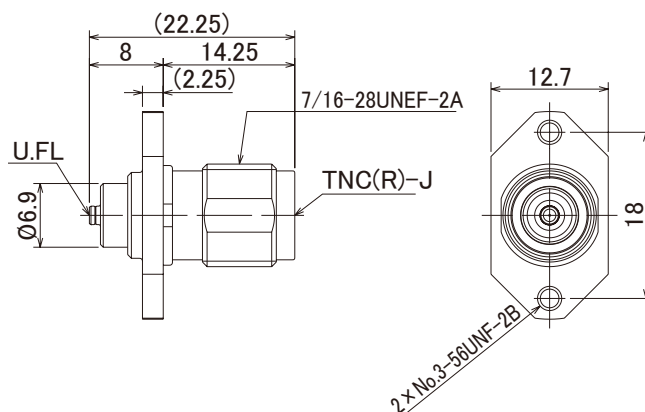
Note: Please order the product after designating the harness specifications including product length, etc.

■Mounting Hole Dimension



Standard Connectors that Connect with U.FL TNC(R) Adapter Type

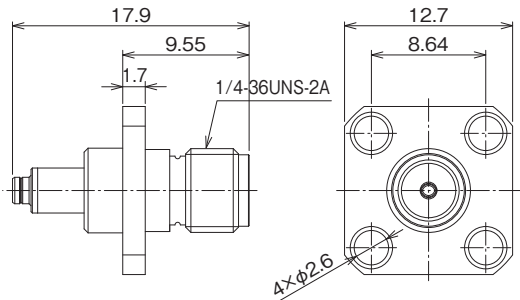
●Panel Adapter (2 Screws Type)



Part No.	HRS No.	Remarks
TNC(R)J-U.FLJ-PA-2	CL0311-0416-7-00	TNC Reverse (Male Contact)

Standard Connectors that Connect with U.FL SMA Adapter Type

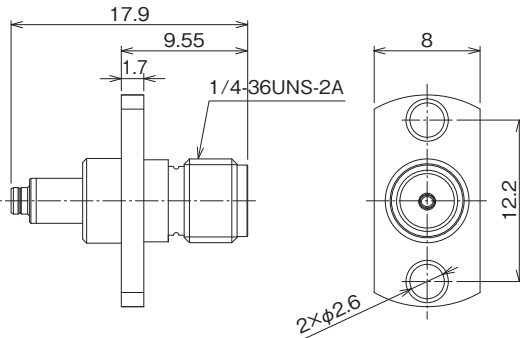
●Panel Adapter (4 Screws Type)



Part No.	HRS No.	Remarks	Purchase Unit
HRMJ-U.FLJ-PA4	CL0311-0465-2-00	SMA (Female Contact)	20pcs per bag

Note: Please avoid mating with the U.FL(A) plug.

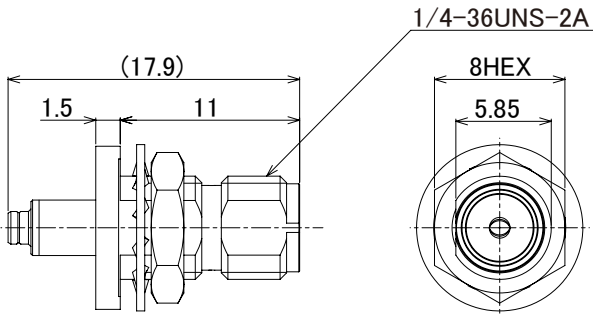
●Panel Adapter (2 Screws Type)



Part No.	HRS No.	Remarks	Purchase Unit
HRMJ-U.FLJ-PA2	CL0311-0467-8-00	SMA (Female Contact)	20pcs per bag

Note: Please avoid mating with the U.FL(A) plug.

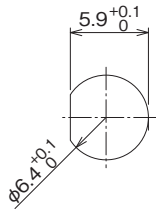
●Panel Adapter (Nut Type)



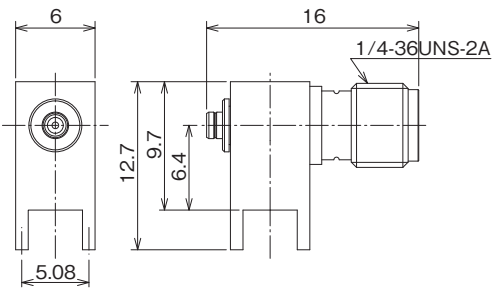
Part No.	HRS No.	Remarks	Purchase Unit
HRMJ-U.FLJ-BPA-4	CL0311-0463-7-00	SMA (Female Contact)	20pcs per bag

Note: Please avoid mating with the U.FL(A) plug.

■Mounting Hole Dimension



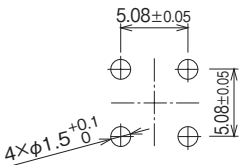
●PCB Mount Adapter



Part No.	HRS No.	Remarks	Purchase Unit
HRMJ-U.FLJ-PC	CL0311-0411-3-00	Nickel Plating	50pcs per tray

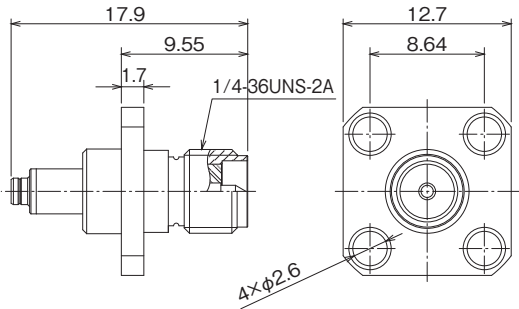
Note: Please avoid mating with the U.FL(A) plug.

■Mounting Hole Dimension



Standard Connectors that Connect with U.FL SMA(R) Adapter Type

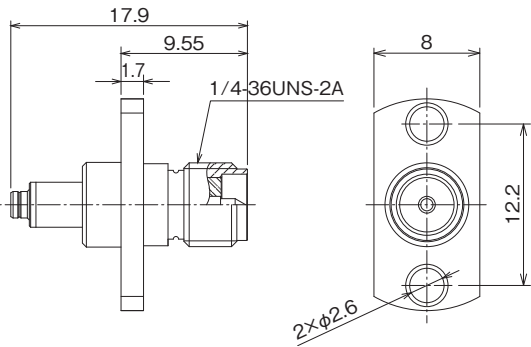
●Panel Adapter (4 Screws Type)



Part No.	HRS No.	Remarks	Purchase Unit
SMA(R)J-U.FLJ-PA4	CL0311-0466-5-00	SMA Reverse (Male Contact)	20pcs per bag

Note: Please avoid mating with the U.FL(A) plug.

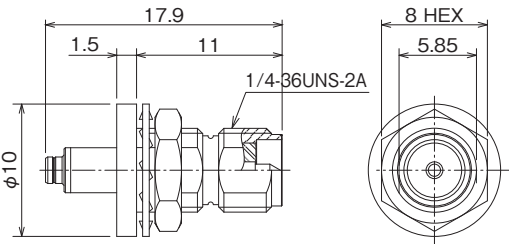
●Panel Adapter (2 Screws Type)



Part No.	HRS No.	Remarks	Purchase Unit
SMA(R)J-U.FLJ-PA2	CL0311-0468-0-00	SMA Reverse (Male Contact)	20pcs per bag

Note: Please avoid mating with the U.FL(A) plug.

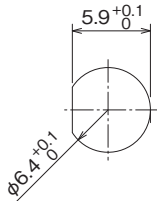
●Panel Adapter (Nut Type)



Part No.	HRS No.	Remarks	Purchase Unit
SMA(R)J-U.FLJ-BPA-4	CL0311-0464-0-00	SMA Reverse (Male Contact)	20pcs per bag

Note: Please avoid mating with the U.FL(A) plug.

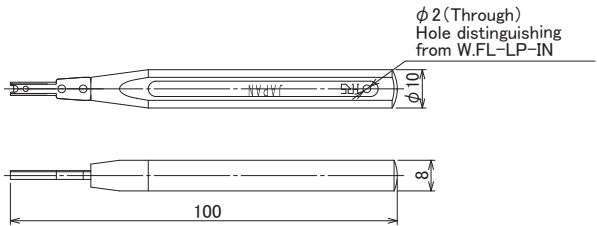
■Mounting Hole Dimension



Tools

● Insertion Tool

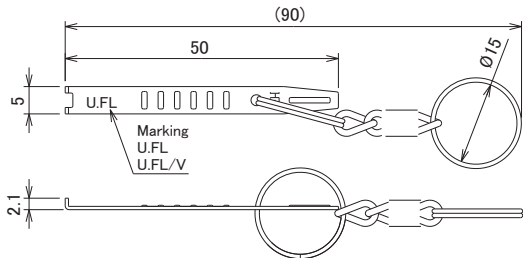
Tool for plug insertion.



Part No.	HRS No.	Purchase Unit
U.FL-LP-IN	CL0331-0334-9-00	1pc per bag

● Extraction Tool

Tool for unmating.

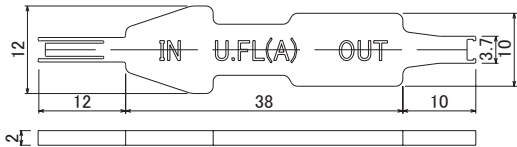


Part No.	HRS No.	Applicable Plug	Purchase Unit
U.FL-LP-N-2	CL0331-0494-5-00	U.FL-LP-040HF, 066HF, 088HF, 068HF	1pc per bag
U.FL-LP(V)-N-2	CL0331-0493-2-00	U.FL-LP-062HF, U.FL-LP(V)-040HF	20pcs per bag

Note: U.FL-LP-N-2 is shared with E.FL series.

● U.FL(A) Insertion and Extraction Tool

Tool for insertion and unmating.



Part No.	HRS No.	Purchase Unit
U.FL(A)-LP-IN.OUT	CL0331-2401-0-00	1pc per bag

Usage Precautions

1. Plugs

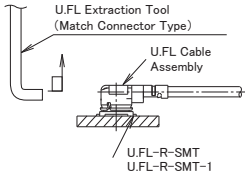
1. Mating / Unmating

(1) To disconnect connectors, insert the end portion of U.FL-LP-N-2 and U.FL-LP(V)-N-2 under the connector flanges and pull off vertically, in the direction of the connector mating axis.

However for U.FL(A) (Solderless connection type), use U.FL(A)-LP-IN.OUT and pull out vertically.

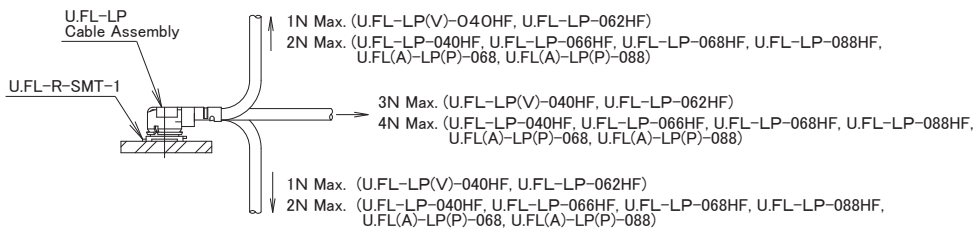
When removing the connector directly, hold the connector lid and pull out vertically in relation to the connector mating axis. (Be careful not to damage the connector with fingers or nails.)

(2) To mate the connectors, the mating axes of both connectors must be aligned and the connectors can be mated. The "click" will confirm fully mated connection. Do not attempt to insert on an extreme angle.



2. Pull forces on the cable after connectors are mated

After the connectors are mating, do not apply a load to the cable in excess of the values indicated in the diagram below.



3. Precautions

Do NOT forcefully twist or deform wire.

2. Receptacles

1. Recommended Reflow Temperature Profile	(1) The temperature represents the surface temperature of the printed circuit board at the connector leads. (2) Reflow soldering should be performed at a printed circuit surface temperature of 250°C max. (3) In 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 Manual Soldering	Manual soldering : 350°C for 5 seconds
3. Recommended Metal Mask Thickness	0.1mm to 0.12mm
4. Reflow Cycles	up to 2 cycles

3. Operating Environment and Storage Conditions

1. Operating Environment

The connectors are not designed to operate in the following environments :

- 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

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.

3. About Discoloration of Silver Plating

The discoloration is only on the surface and the contact area is wiped so there is no problem with electrical contact

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