

LF  
Series

# Shielded Small Waterproof Connector

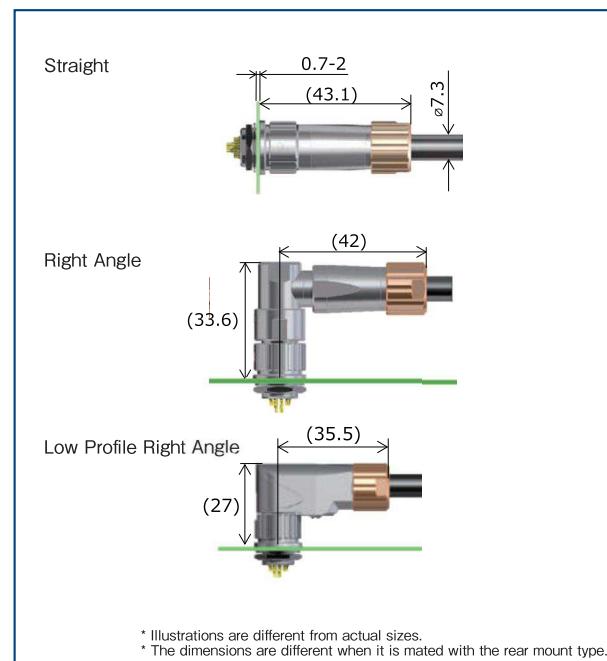
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## Features

### 1. Small, Robust Design

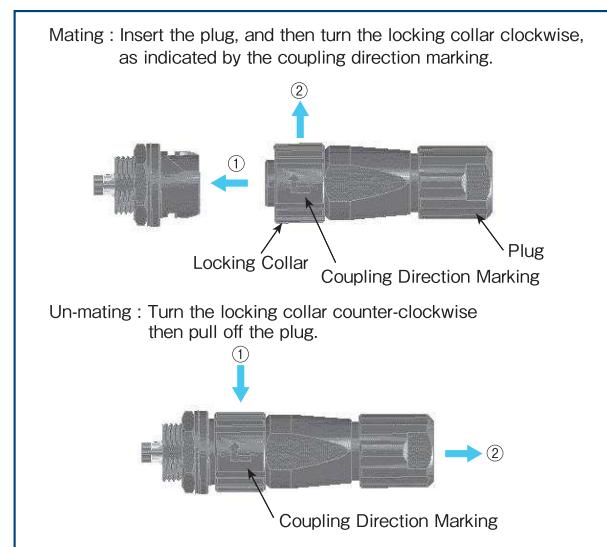
Small, robust design with metal shell



Dimensions Example  
(LF10 Plug Mated with Front Mount Receptacle)

### 2. Bayonet Lock

User-friendly lock with superior vibration resistance.



Lock Design

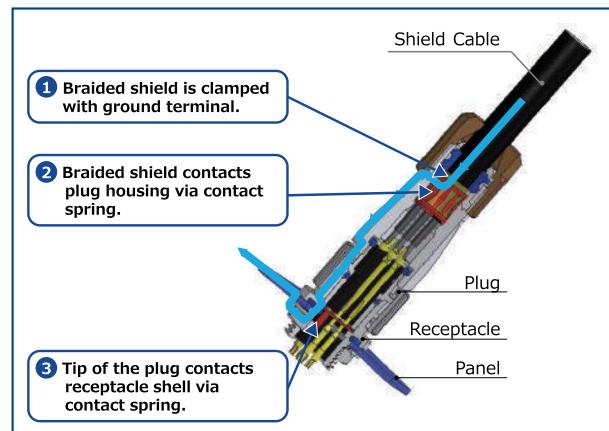
### 3. Waterproof : IP67/IP68\* Compliant

IP67/IP68 waterproof performance when mated.

- \*IP67 : Left at a water depth of 1 meters for 30 minutes in mated condition.
- IP68 : Left at a water depth of 2 meters for 14 days in mated condition.

## 4. Easy Shielding Termination

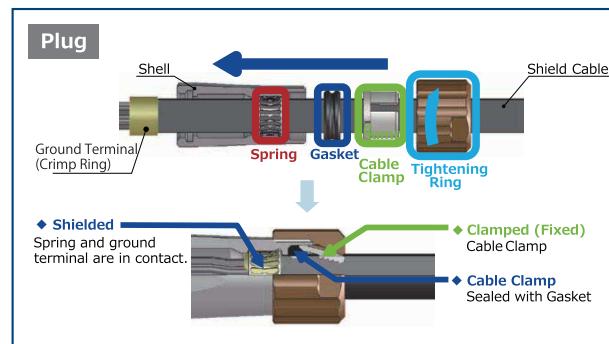
The cable shield is easily connected to the connector shell by attaching the metal clamp to the cable sheath.



Shield Connection Phase Diagram

## 5. Easy Assembly

Waterproof performance and shielding of the plug are attained just by tightening the ring. The plug design reduces component and assembly costs.



## 6. Wide Variety of Configurations

- 2 types of cable assembly: solder and crimp
- Hybrid type with power and signal contacts in a single shell for space-saving
- Plug with easy to grip sleeve that prevents slipping for enhanced operability
- 2 receptacle mounting options: front mount and rear mount

## 7. High Speed Transmission

Supports Cat.5e(1Gbps) high speed Ethernet

\*Based on EoE Standard Class D 3-Conn E3

\*Characteristics depend on pin assignment, cable specifications and cable assembly conditions. Please check prior to use.

\*Please contact a Hirose representative for questions on the recommended pin assignment.

## 8. Suited for Long-Term Outdoor Use

Sunshine weather meter test performed for 2,000 hours.

## 9. Safety Standard Certified

The 4 position variation meets TÜV safety standards at a current of 10A.

The 3 position and 4 position variations also meet UL safety standards.

## 10. RoHS2 Compliant

### Product Specifications

Rated Current	3pos. : 5A 4pos. : 10A 6, 12, 20pos. : 2A Hybrid 6pos. : Power 2pos. 4A, Signal 4pos. 1A Hybrid 11pos. : Power 4pos. 10A, Signal 7pos. 2A	Operating Temperature (Note 1)	-25 to +85°C
Rated Voltage	3pos. : 125V AC / 175V DC 4pos. : 125V AC/DC 6, 12, 20pos. : 30V AC / 42V DC Hybrid 6pos. : Power 2pos. 60V AC/DC, Signal 4pos. 60V AC/DC Hybrid 11pos. : Power 4pos. 125V AC/DC, Signal 7pos. 30V AC / 42V DC	Storage Temperature Range	-10 to +60°C

Items	Specifications	Conditions
Contact Resistance	3, 6, 12, 20, Hybrid 6pos. : 15mΩ Max. 4pos. : 5mΩ Max. Hybrid 11pos. : Power 4pos. 5mΩ Max., Signal 7pos. 15mΩ Max.	Measured at 1A DC
Insulation Resistance	1000MΩ Min.	3, 4pos. : Measured at 500V DC 3, 6, 12, 20, Hybrid 6pos. : Measured at 100V DC Hybrid 11pos. : Power 4pos. : Measured at 500V DC, Signal 7pos. : Measured at 100V DC
Withstand Voltage	No flashover and insulation breakdown	3, 4pos. : 1250V AC for 1 min. 3, 6, 12, 20, Hybrid 6pos. : 300V AC for 1 min. Hybrid 11pos. : Power 4pos. 1250V AC, Signal 7pos. : 300V AC for 1 min.
Mating Durability	3, 6, 12, 20, Hybrid 6pos. : 30mΩ Max. 4pos. : 10mΩ Max. Hybrid 11pos. : Power 4pos. 10mΩ Max., Signal 7pos. 30mΩ Max.	1000 times
Vibration Resistance	No electrical interruption of 10μs or more. No damage, cracks or parts dislocation.	Frequency : 10 to 55 to 10Hz/cycle Half amplitude 0.75mm, 5 minutes/cycle 10 cycles each in 3 axis directions
Shock Resistance	No electrical interruption of 10μs or more. No damage, cracks or parts dislocation.	Acceleration : 490m/s <sup>2</sup> , duration : 11ms, 3 times each in 3 axis directions
Humidity Resistance (Normal Condition)	Insulation resistance : 10MΩ Min. (at high humidity condition) 100MΩ Min. (at dry condition)	Temperature : 40°C, relative humidity : 90 to 95%, left for 96 hours
Temperature Cycle	Insulation resistance : 100MΩ Min. No damage, cracks or parts dislocation.	-55°C for 30 minutes → Room temperature for 2 to 3 minutes → +85°C for 30 minutes → Room temperature for 2 to 3 minutes, Repeated for 5 cycles.
Water Resistance	No water intrusion inside connector	At a water depth of 1.8 meters for 48 hours in mated condition.

Note 1 : Includes temperature rise caused by current flow.

Note 2 : Depending on the cable construction and specifications, the cable clamp force, rotational force, waterproof performance, etc. may differ. Please use after confirming in advance.

## Materials / Finish

Component	Material	Finish / Remarks	UL
Outer Shell	Zinc Alloy	Nickel Plating	-
	PPS Resin	Brown	UL94V-0
Insulator	PPS Resin	Black	UL94V-0
Contact	Copper Alloy	Partial Gold Plating Over Nickel Underplating	-
Gasket, O-ring	Chloroprene Rubber	Black	-

## Product Number Structure

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

Please select from the product numbers listed in this catalog when placing orders.

### ●Connector

**LF 07 W B P# - 6 S# - A (##)**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Series Name	LF	⑥ No. of Pos.	
② Shell Size	07, 10, 13	⑦ Contact Gender	P : Male Contact S : Female Contact (Changed specifications for products of the same category.)
③ Specialty	W : Waterproof Type	⑧ Difference in Contact Arrangement	Added when contact arrangement differs from the standard type. A : Contact Arrangement Difference
④ Lock Mechanism	B : Bayonet Lock	⑨ Other Specifications	① to ⑧ # two-digit character is added to indicate other specifications as needed.
⑤ Shell Type	P : Plug LP : Right Angle Plug R : Receptacle J : Jack (Changed specifications for products of the same category.)		

### ●Crimp Contact

**HR10 - P C - 1 1 1**

① ② ③ ④ ⑤ ⑥

**HR12 - S C - 1 1 1**

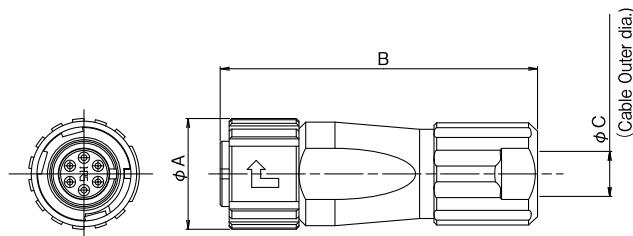
① ② ③ ④ ⑤ ⑥

① Series Name	HR10 HR12	④ Contact Shape	1 : Loose Piece Contact 2 : Reel Contact
② Contact Gender	P : Male Contact S : Female Contact	⑤ Design	1 : If the design of contacts of the same size differs, 1, 2, 3 etc. are added to distinguish them
③ Contact Assembly	C : Crimp	⑥ Contact Area Plating	1 : Gold Plated

Note : The LF Series uses the contacts from the existing HR10/HR12 Series.

## Straight Plug

## Solder Type



(Example of product appearance.)

Part No.	HRS No.	Shell Size	No. of Pos.	φ A	B	φ C	Weight	Unit : mm Purchase Unit	
LF07WBP-3S(31)	CL0136-0003-7-31	LF07	3	12.3	35.8	5.0	11g	50pcs per tray	
LF07WBP-3P(31)	CL0136-0004-0-31		6						
LF07WBP-6S(31)	CL0136-0001-1-31		Hybrid 6pos. (Note 1)	12.3	35.8	5.0	11g		
LF07WBP-6P(31)	CL0136-0002-4-31	LF07-A							
LF07WBP-6S-A(31)	CL0136-0029-0-31	4	14.8	41.8	7.3	17g			
LF07WBP-6P-A(31)	CL0136-0016-0-31								LF10
LF10WBP-4S(31)	CL0136-0005-2-31	12	17.9	51.9	8.7	29g			
LF10WBP-4P(31)	CL0136-0006-5-31								LF13
LF10WBP-12S(31)	CL0136-0007-8-31	Hybrid 11pos. (Note 2)	17.9	51.9	8.7	29g			
LF10WBP-12P(31)	CL0136-0008-0-31								
LF13WBP-11S	CL0136-0011-5-00	LF13	20	17.9	51.9	8.7	29g		
LF13WBP-11P	CL0136-0012-8-00								
LF13WBP-20S	CL0136-0009-3-00	LF13	20	17.9	51.9	8.7	29g		
LF13WBP-20P	CL0136-0010-2-00								

Note 1 : Power 2pos.+ Signal 4pos.

Note 2 : Power 4pos.+ Signal 7pos.