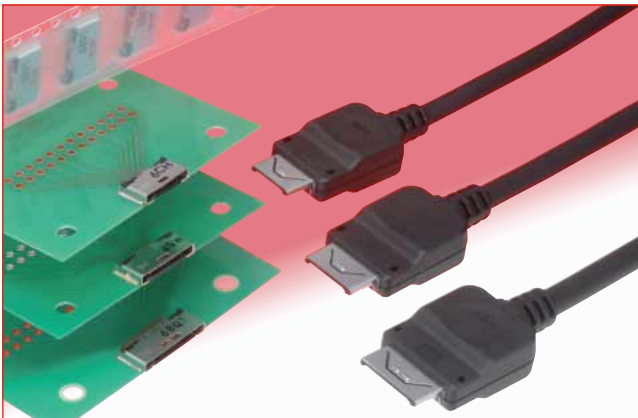


# Ultra Low-profile Interface Connectors with 2.0 mm Mounting Height

## LX Series



### Overview

LX Series is a super low profile interface connector with sequential mating design and friction lock, which has been developed for low profile mobile terminals.

This connector features ESD problem prevention in 0.5 mm terminal pitch and 2.0 mm small and low profile design, which makes it suitable to small mobile devices.

### Features

#### 1. Low profile on the PCB

When mounted on the PCB surface the receptacle height is 2.0 mm.(Fig.1)

#### 2. Strong Construction

Use of metal shell guarantees that fully mated connectors will withstand 30 N max. force applied on the plug in any direction.(Fig.2)

#### 3. High contact reliability

Bellows contact with long mating stroke provides highly reliable mating as well as soft insertion feeling.

Mating durability is up to 5,000 times long.

#### 4. Sequenced contact mating

The protection of the circuit is assured by having the 2 contact at each end of the receptacle are longer by 0.5 mm, with electrical wipe of 1.45 mm. Location of the circuit protection contacts can be changed as required.

Remaining contacts electrical wipe is 0.95 mm.

#### 5. Incorrect Insertion Prevention

Connectors will not be damaged when angled or reverse plug insertion is attempted.(Fig.3)

#### 6. Safety plug release

Plug will release when an excessive pull force is applied to the cable.

#### 7. RoHS Compliant

All materials and substances used to produce this product comply with RoHS standards.

### Applications

DSC, PDA, thin electronic equipment, mobile phones and other portable devices requiring high durability interface connectors.

#### Lower Profile

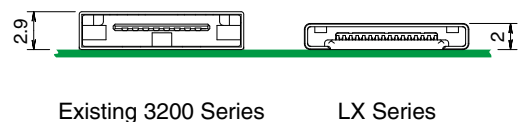


Fig.1

#### Strong Construction

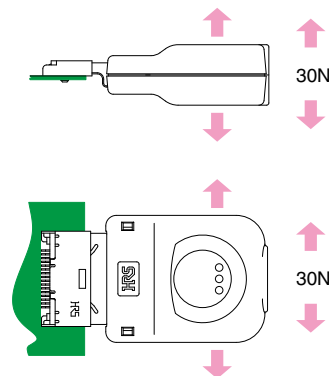


Fig.2

#### Incorrect insertion prevention

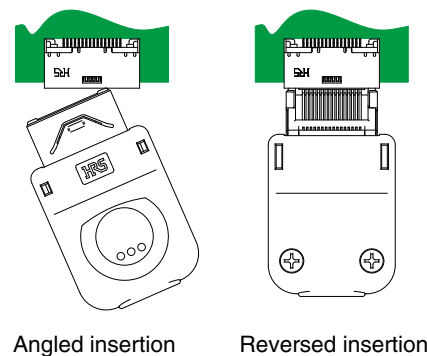


Fig.3

## ■ Product specifications

Ratings	Current rating	0.5A (1A max. can be carried via 2 random contacts)	Operating temperature range : -40°C to +70°C
	Voltage rating	50V AC	Storage temperature range : -55°C to +85°C

Characteristic	Specification	Conditions
1. Contact resistance	70mΩ max.	100mA DC
2. Insulation resistance	1000 MΩ min. (dry) 10 MΩ min. (high humidity)	100V DC
3. Withstanding voltage	No flashover or insulation breakdown.	250V AC / one minute
4. Mating/un-mating forces	Mating: 10N max., un-mating: 4N min.	With corresponding connector.
5. Durability (mating/n-mating)	Amount of change of contact resistance: 20mΩ max.	5,000 times
6. Shock	No electrical discontinuity of 1μ sec. Max. Contact resistance: 20mΩ max.	Acceleration of 490 m/s <sup>2</sup> , 11 ms duration, sine half-wave waveform, 3 cycles, 3 axis.
7. Vibration	Contact resistance: 20mΩ max. Insulation resistance: 10MΩ min.	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, acceleration of 98 m/s <sup>2</sup> , 2 hours, 3 axis.
8. Temperature cycle	Contact resistance: 20mΩ max. Insulation resistance: 10MΩ min.	Temperature: -55°C → +5°C → +35°C → +85°C → +5°C → +35°C Time : 30 → 2 to 3 → 30 → 2 to 3 min
9. Salt spray	No heavy corrosions	5% water solution at 35°C for 48 hours

## ■ Materials / Finish

### ● Receptacles

Component	Material	Finish/Color	Remarks
Insulator	Synthetic resin	Black	UL94V-0
Contacts	Copper alloy	Contact area: Gold plated Mounting area: Gold flash plated	——
Shell	Stainless steel	Soldering area: Gold flash plated	——

### ● Plugs

Component	Material	Finish/Color	Remarks
Insulator	Synthetic resin	Black	UL94V-0
Contacts	Copper alloy	Contact area: Gold plated Termination area: Gold flash plated	——
Metal shield	Stainless steel	——	——
Covers	Synthetic resin	Black	UL94V-0
Strain relief clamp	Copper alloy	——	——
Self tapping screws	Steel	Trivalent black chromate	Screw size: M2

## ■ Ordering information

### ● Receptacles

**LX 60 - 16 S**

①    ②    ③    ④

### ● Plugs

**LX 40 - 16 P**

①    ②    ③    ④

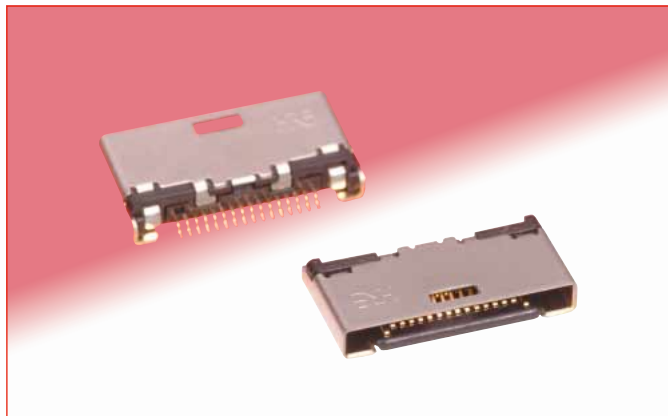
### ● Bushing

**LX 40 - 16 BS(4.5)**

①    ②    ③    ⑤

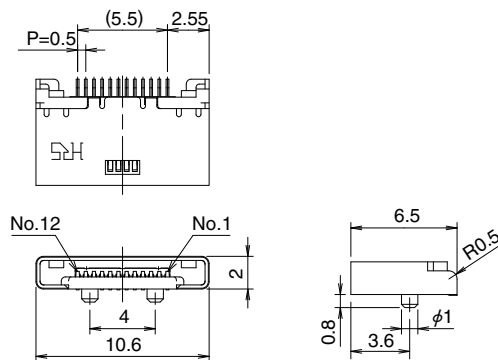
①	Series number : LX
②	Termination type 40 : Solder type 60 : Right angle SMT
③	Number of contacts : 12, 16, 20
④	Contact type P : Male contact (Plug) S : Female contact (Receptacle)
⑤	Bushing BS(4.0) : Dia. 4.0mm cable BS(4.5) : Dia. 4.5mm cable BS(5.0) : Dia. 5.0mm cable

## ■ Receptacles

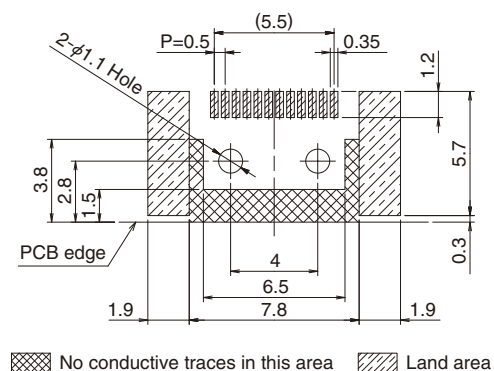


Part No.	HRS No.	Packaging	RoHS
LX60-12S	245-0018-3	2,000 pcs/reel	○
LX60-16S	245-0001-0		
LX60-20S	245-0016-8		

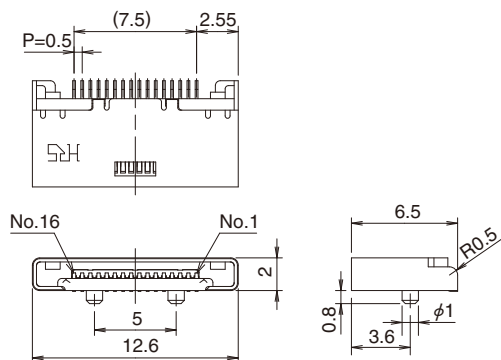
### ● 12 pos.



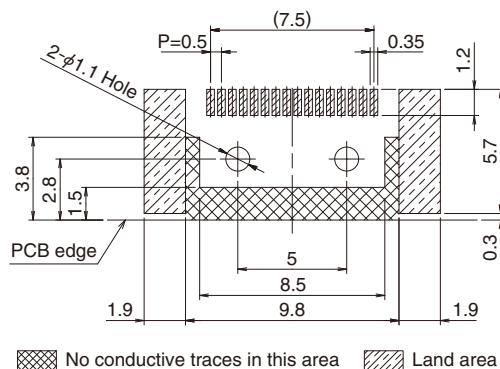
### ◆ Recommended PCB mounting pattern



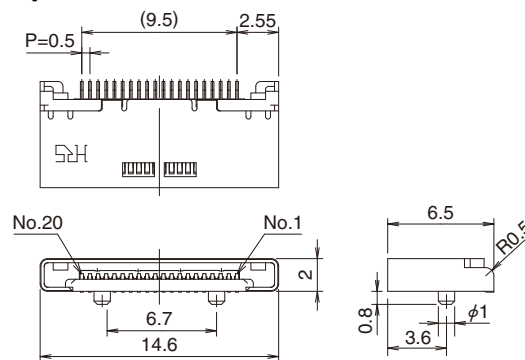
### ● 16 pos.



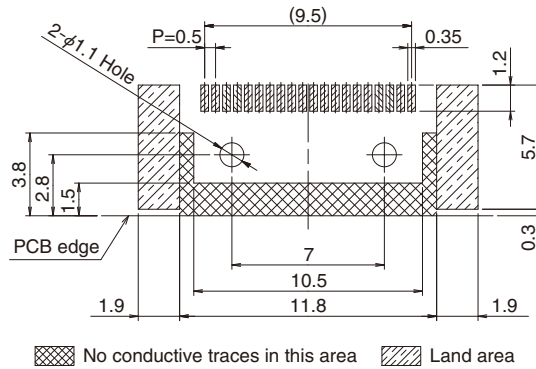
### ◆ Recommended PCB mounting pattern



### ● 20 pos.



### ◆ Recommended PCB mounting pattern

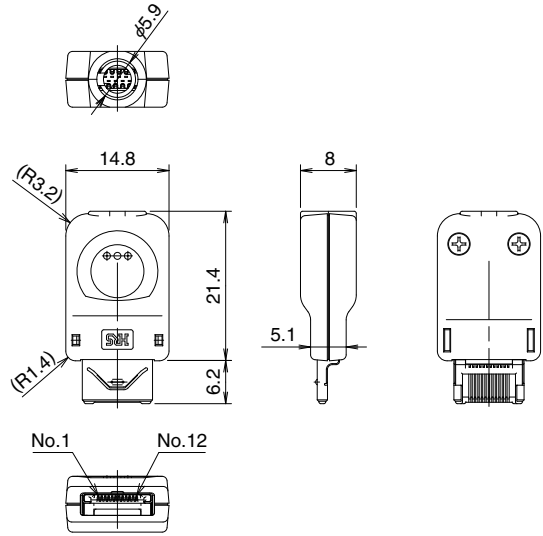


■ Plugs

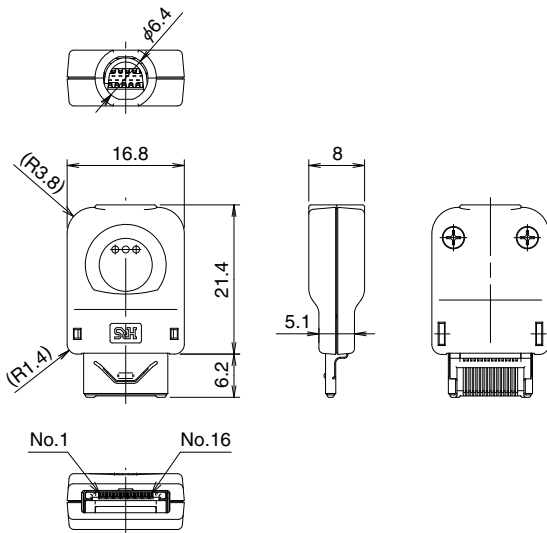


Part No.	HRS No.	Packaging	RoHS
LX40-12P	245-0019-6	1	○
LX40-16P	245-0002-3		
LX40-20P	245-0017-0		

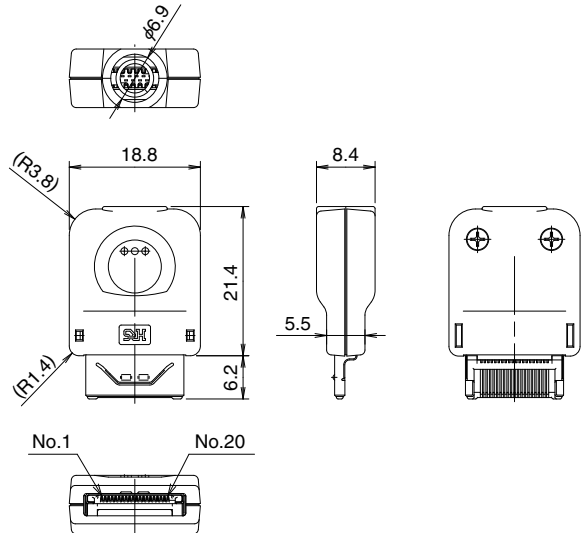
● 12 pos.



● 16 pos.



● 20 pos.



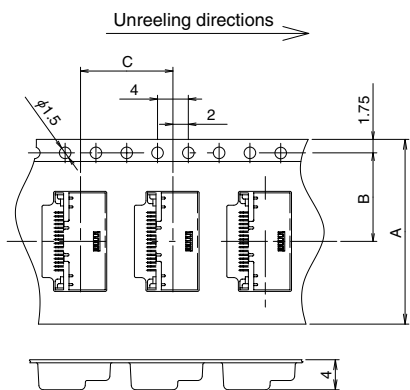
■ Bushing



Part No.	HRS No.	Packaging	RoHS
LX40-12BS(4.0)	245-0020-5	100 pcs/pack	○
LX40-16BS(4.5)	245-0021-8		
LX40-20BS(5.0)	245-0022-0		

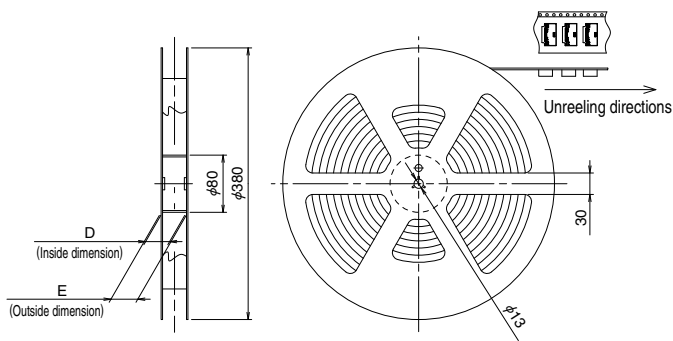
## ◆ Receptacle Packaging Specifications

### ● Embossed carrier tape dimensions



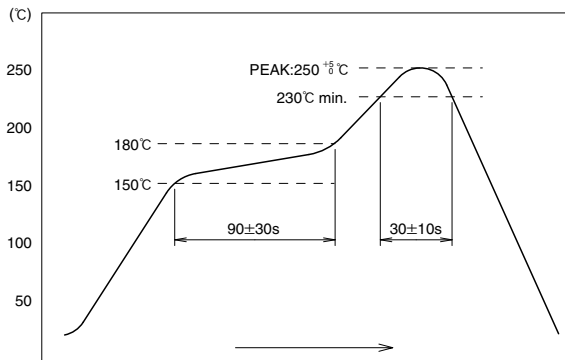
Part No.	A	B	C
LX60-12S	24	11.5	12
LX60-16S			
LX60-20S			

### ● Reel dimensions



Part No.	D	E
LX60-12S	25.5	29.5
LX60-16S		
LX60-20S		

## ◆ Receptacles Recommended Temperature Profile



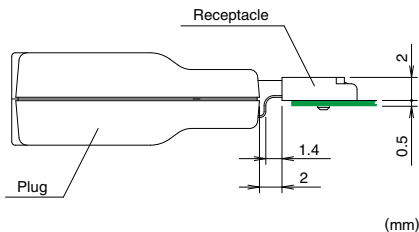
This measurement is performed on the contact lead section. The temperature profile may vary due to external conditions such as the type of cream solder, manufacturer, and board size. Please contact the solder manufacturer for their specifications.

## ◆ Applicable Plug Cable

Part No.	Cable diameter	Wire size
LX40-12P	φ4 max.	φ0.6 mm max. (AWG#30 to 32 or equivalent)
LX40-16P	φ4.5 max.	
LX40-20P	φ5 max.	

- Note 1: Applicable cable sizes are guidelines. (There may be slight differences depending on the cable outer insulation)
- Note 2: Cables must be attached using single piece overmolded bushings on the cable.
- Note 3: Please refer to applicable Cable Termination Procedures Manual for correct plug assembly and cable termination.
- Note 4: Contact HRS for cable assemblies.

## ◆ Mated Condition Dimensions



**USA:**

**HIROSE ELECTRIC (U.S.A.), INC. Headquarters**  
 2688 Westhills Court, Simi Valley, CA 93065-6235  
 Phone : +1-805-522-7958  
 Fax : +1-805-522-3217  
<http://www.hiroseusa.com>

**USA:**

**HIROSE ELECTRIC (U.S.A.), INC. San Jose Office**  
 3255 Scott Boulevard, Building 7, Suite 101  
 Santa Clara, CA 95054  
 Phone : +1-408-253-9640  
 Fax : +1-408-253-9641  
<http://www.hiroseusa.com>

**USA:**

**HIROSE ELECTRIC (U.S.A.), INC. Detroit Office (Automotive)**  
 37677 Professional Center Drive, Suite #100C  
 Livonia, MI 48154  
 Phone : +1-734-542-9963  
 Fax : +1-734-542-9964  
<http://www.hiroseusa.com>

**THE NETHERLANDS:**

**HIROSE ELECTRIC EUROPE B.V.**  
 Hogehillweg #8 1101 CC Amsterdam Z-O  
 Phone : +31-20-6557460  
 Fax : +31-20-6557469  
<http://www.hiroseeurope.com>

**GERMANY:**

**HIROSE ELECTRIC EUROPE B.V. German Branch**  
 Herzog-Carl-Strasse 4 D-73760 Ostfildern  
 (Scharnhauser Park)  
 Phone : +49-711-4560-02-1  
 Fax : +49-711-4560-02-299  
<http://www.hirose.de>

**GERMANY:**

**HIROSE ELECTRIC EUROPE B.V. Nuernberg Office**  
 Muggenhofer Str. 136 90429 Nuernberg  
 Phone : +49-911 32 68 89 63  
 Fax : +49-911 32 68 89 69  
<http://www.hirose.de>

**UNITED KINGDOM:**

**Hirose Electric Europe BV (UK Branch)**  
 4 Newton Court, Kelvin Drive, Knowlhill,  
 Milton Keynes, MK5 8NH  
 Phone : +44-1908 202050  
 Fax : +44-1908 202058

**CHINA:**

**HIROSE ELECTRIC (SHANGHAI) CO., LTD.**  
 1601, Henderson Metropolitan, NO.300, East Nanjing  
 Road, Huangpu District, Shanghai, China 200001  
 Phone : +86-21-6391-3355  
 Fax : +86-21-6391-3335  
<http://www.hirose-china.com.cn>

**CHINA:**

**HIROSE ELECTRIC (SHANGHAI) CO.,LTD. BEIJING BRANCH**  
 A1001, Ocean International Center, Building 56# East 4th  
 Ring Middle Road, ChaoYang District, Beijing, 100025  
 Phone : +86-10-5165-9332  
 Fax : +86-10-5908-1381  
<http://www.hirose-china.com.cn>

**CHINA:**

**HIROSE ELECTRIC TECHNOLOGIES (SHENZHEN) CO., LTD.**  
 Room 09-13, 19/F, Office Tower Shun Hing Square, Di Wang Commercial Centre,  
 5002 Shen Nan Dong Road, Shenzhen City, Guangdong Province, 518008  
 Phone : +86-755-8207-0851  
 Fax : +86-755-8207-0873  
<http://www.hirose-china.com.cn>

**HONG KONG:**

**HIROSE ELECTRIC HONGKONG TRADING CO., LTD.**  
 Room 1001, West Wing, Tsim Sha Tsui Centre, 66  
 Mody Road, Tsim Sha Tsui East, Kowloon, Hong Kong  
 Phone : +852-2803-5338  
 Fax : +852-2591-6560  
<http://www.hirose-hongkong.com.hk>

**TAIWAN:**

**HIROSE ELECTRIC TAIWAN CO., LTD.**  
 103 8F, No.87, Zhengzhou Rd., Taipei  
 Phone : +886-2-2555-7377  
 Fax : +886-2-2555-7350  
<http://www.hirose-taiwan.com.tw>

**KOREA:**

**HIROSE KOREA CO., LTD.**  
 1261-10, Jeoungwhang-Dong, Shihung-City,  
 Kyunggi-Do 429-450  
 Phone : +82-31-496-7000,7124  
 Fax : +82-31-496-7100  
<http://www.hirose.co.kr>

**SINGAPORE:**

**HIROSE ELECTRIC SINGAPORE PTE. LTD.**  
 10 Anson Road #26-1, International Plaza  
 079903, Singapore  
 Phone : +65-6324-6113  
 Fax : +65-6324-6123  
<http://www.hirose-singapore.com.sg>

**INDIA:**

**HIROSE ELECTRIC SINGAPORE PTE. LTD Delhi Liaison Office**  
 Office NO.519, Regus-Green Boulevard, Level5, Tower C,  
 Sec62, Plot B-9A, Block B, Noida, 201301, Uttar Pradesh, India  
 Phone : +91-12-660-8018  
 Fax : +91-120-4804949  
<http://www.hirose.com/sg/>

**INDIA:**

**HIROSE ELECTRIC SINGAPORE PTE. LTD. Bangalore Liaison office**  
 Unit No.03, Ground Floor, Explorer Building International Tech  
 Park Whitefield Road, Bangalore 560066 Karnataka, India  
 Phone : +91-80-4120 1907  
 Fax : +91-80-4120 9908  
<http://www.hirose-singapore.com.sg>

**MALAYSIA:**

**HIROSE ELECTRIC SINGAPORE PTE. LTD (Representative office)**  
 1-10-07, Suntech @ Penang Cybercity (1164),Lintang  
 Mayang Pasir 3,11950, Bayan Baru, Penang, Malaysia.  
 Phone : +604-619-2564  
 Fax : +604-619-2574  
<http://www.hirose.com/sg/>



**HIROSE ELECTRIC CO.,LTD.**

2-6-3,Nakagawa Chuoh,Tsuzuki-Ku,Yokohama-Shi 224-8540,JAPAN  
 TEL: +81-45-620-3526 Fax: +81-45-591-3726  
<http://www.hirose.com>  
<http://www.hirose-connectors.com>