

**NEW**

# Ultra Compact Coaxial Connector with Switch, DC to 11GHz, 0.68mm high

## MS-190 Series



### Overview

MS-190 Series are ultra compact coaxial connectors with switch, developed for inspecting the RF module functionality and high-frequency circuits.

It can be used to mount on high density board of miniaturized smart phones, wearable devices and any other devices which need communication capability.

It supports high-frequency band up to 11GHz. Allows secure and easy inspection of circuits.

### Features

#### 1. Performs over a wide frequency range

Applicable frequencies range over a wide bandwidth, from DC to 11GHz.

#### 2. Low insertion loss

0.1dB Max. up to 3GHz (not mated with the probe).  
0.2dB Max. up to 6GHz (not mated with the probe).  
0.3dB Max. up to 11GHz (not mated with the probe).

#### 3. Space-saving and low profile design

0.68mm high above the board.  
1.45mm x 1.45mm board space occupation.

#### 4. High reliable contactability

Independent 2-point contact ensures a high reliable contact.

#### 5. Insert molding technology to prevent dust intrusion and flux wicking

Insert molding eliminates the side gap which could trigger dust intrusion and flux wicking.

#### 6. Automatic board placement

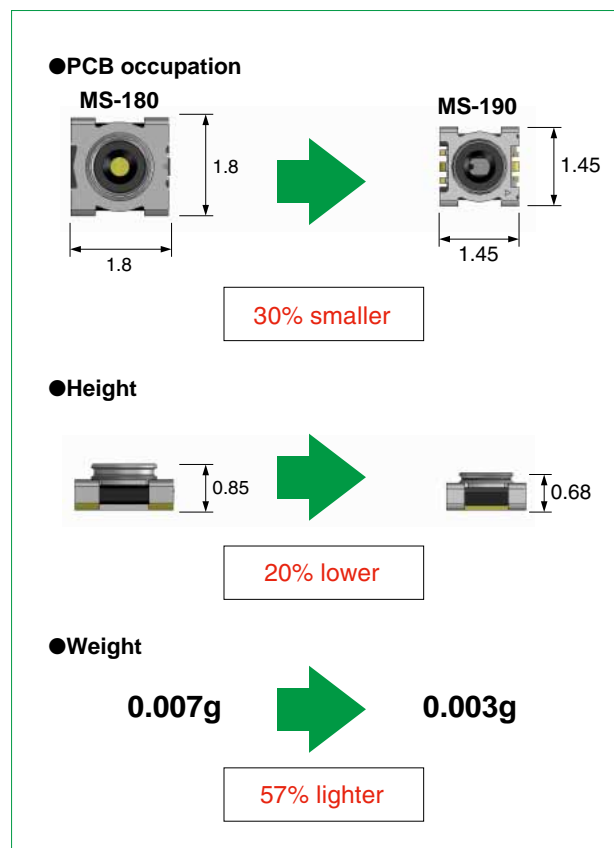
Packaged on tape-and-reel the receptacles can be placed with vacuum nozzles of the automatic placement equipment.

#### 7. Beryllium Free, Halogen Free

Chlorine, and Bromine are not used in the receptacles.

\*Definition according to IEC 61249-2-21.

Br 900 ppm max., Cl 900 ppm max., and Br + Cl 1500 ppm max.



## Product Specifications

	Not mated with the prove	Mated with the prove (MS-190-HRMJ-F6)
Frequency range	DC to 11GHz	DC to 6GHz
V.S.W.R.	1.2 max. (DC to 3.0GHz)	1.3 max. (DC to 3.0GHz)
	1.3 max. (3.0GHz to 6.0GHz)	1.7 max. (3.0 to 8.0GHz)
	1.4 max. (6.0GHz to 11.0GHz)	
Insertion loss	0.1 dB max. (DC to 3.0GHz)	0.5 dB max. (DC to 3.0GHz)
	0.2 dB max. (3.0GHz to 6.0GHz)	0.7 dB max. (3.0GHz to 6.0GHz)
	0.3 dB max. (6.0GHz to 11.0GHz)	
Isolation	25 dB min. (DC to 3.0GHz)	
	20 dB min. (3.0GHz to 6.0GHz)	
	12 dB min. (6.0GHz to 11.0GHz)	
Operating temperature range	-40°C to +85°C	
Rated power	2W	

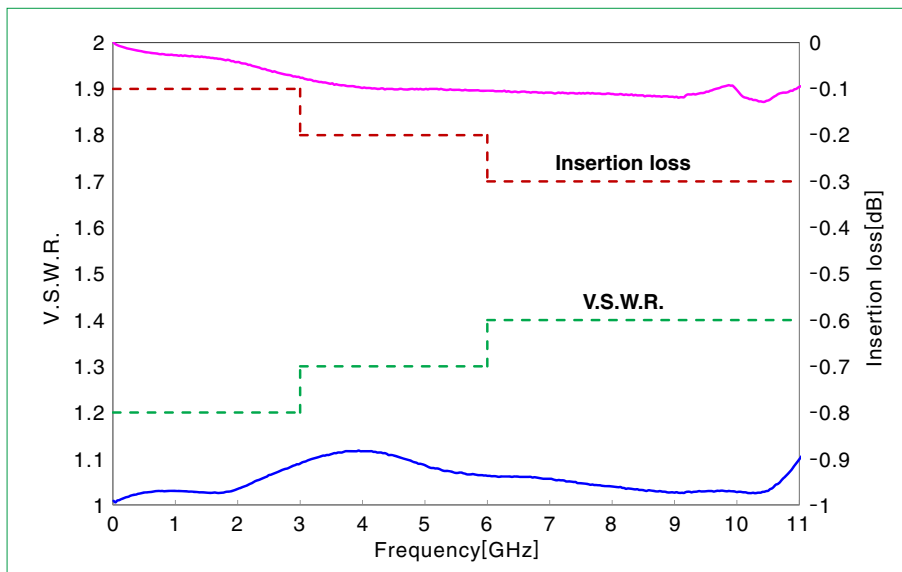
Item	Specification	Conditions
1. Contact resistance	100mΩ max.	100mA max.
2. Insulation resistance	1000MΩ min.	100V DC
3. Withstanding voltage	No flashover or insulation breakdown	100V AC / 1 minute
4. Vibration	No electrical discontinuity of 1μs or more	Frequency : 10 to 55Hz, single amplitude of 0.75mm, 10 cycles in each of the 3 axis
5. Shock	No electrical discontinuity of 1μs or more	Acceleration of 490m/s <sup>2</sup> , 11ms duration, sine halfwave, 3 cycles in each of the 3 axis, 18 times in total.
6. Temperature cycle	Contact resistance : 100mΩ max. Insulation resistance : 10MΩ min.	Temperature : -55°C → +15°C to +35°C → +85°C → +15°C to +35°C Time: 30 → 2 to 3 → 30 → 2 to 3 minutes 100 cycles
7. High temperature exposure	Contact resistance : 100mΩ max. Insulation resistance : 10MΩ min.	96 hours at 85°C
8. Low temperature exposure	Contact resistance : 100mΩ max. Insulation resistance : 10MΩ min.	96 hours at -55°C
9. Humidity (Steady state)	Contact resistance : 100mΩ max. Insulation resistance : 10MΩ min.	96 hours at 40±2°C and humidity of 90 to 95%
10. Durability	Contact resistance : 100mΩ max.	100 cycles

## Materials / Finish

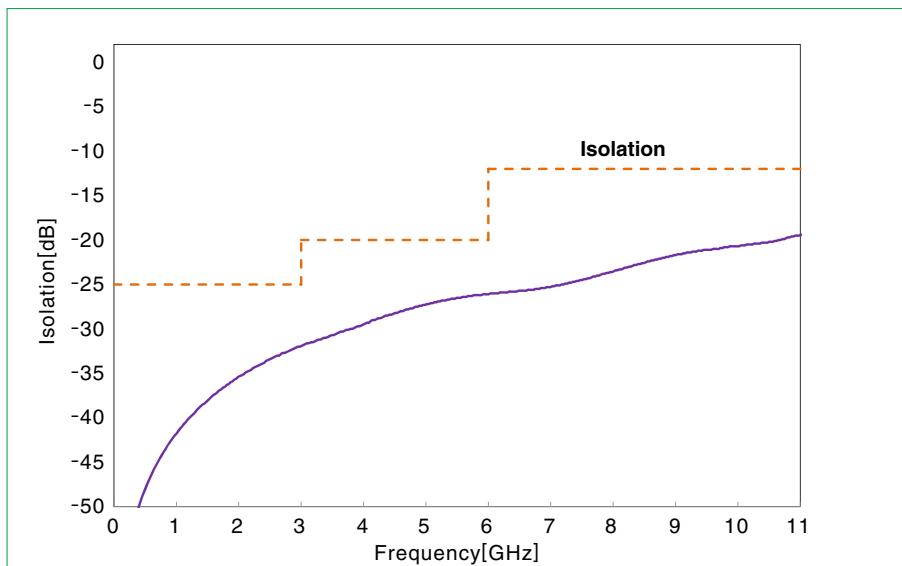
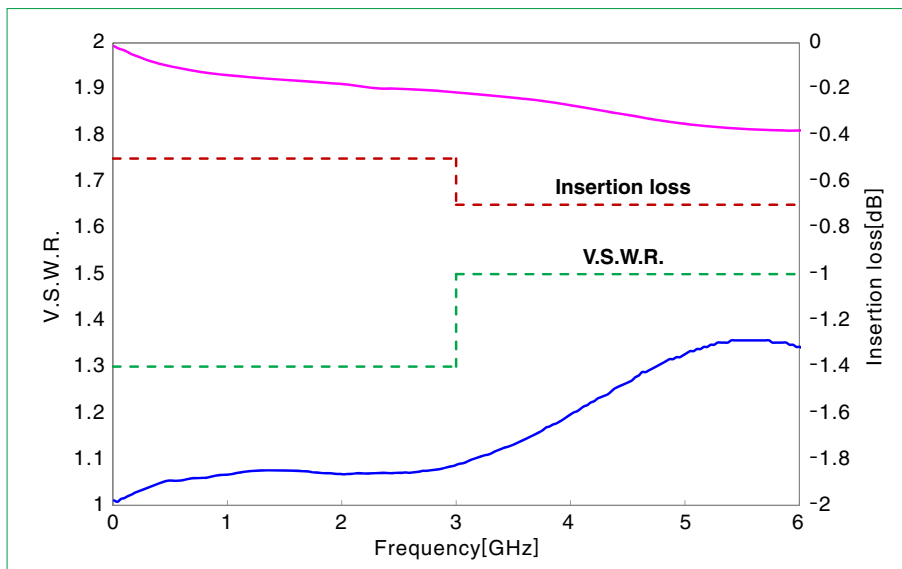
Part	Material	Finish	Remarks
Shell	Phosphor bronze	Partially gold plated	—
Insulator	LCP	—	UL94V-0
C contact	Copper alloy	Partially gold plated	—
A contact	Copper alloy	Partially gold plated	—

## Typical Data

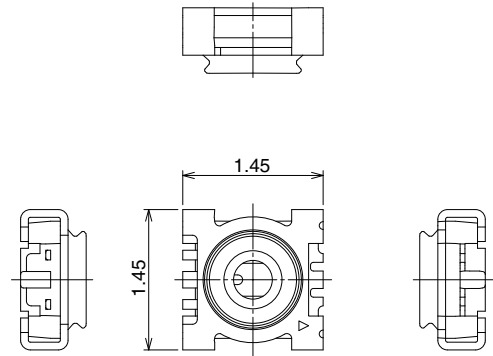
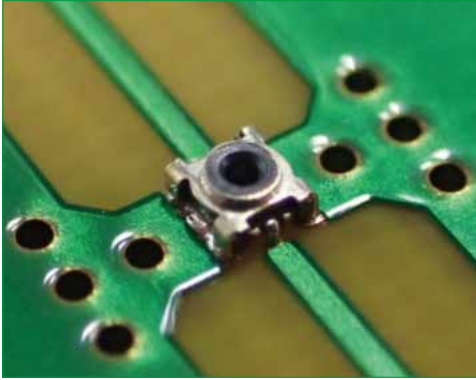
### ● NORMALLY CLOSED (Not Mated with the probe)



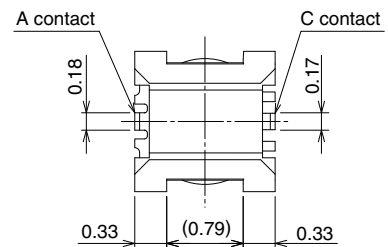
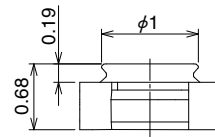
### ● NORMALLY OPEN (Mated with the probe)



## Receptacle

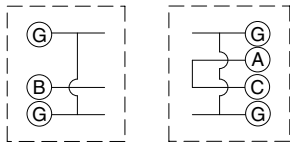


Part No.	HRS No.	Packaging
MS-190	358-0354-5	20,000 pcs/reel
MS-190 (01)	358-0354-5 01	2,000 pcs/reel



## Circuit Diagram

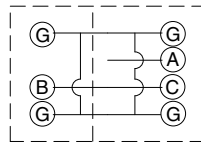
Not mated with the probe (N.C)



MS-190probe

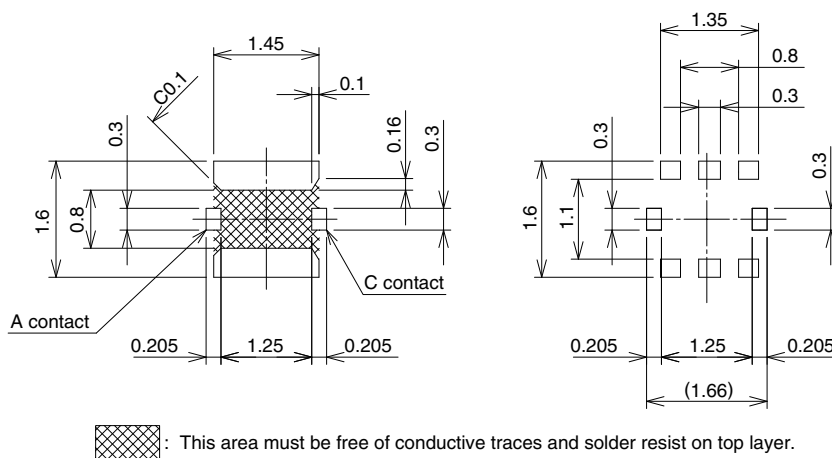
MS-190

Mated with the probe (N.O)



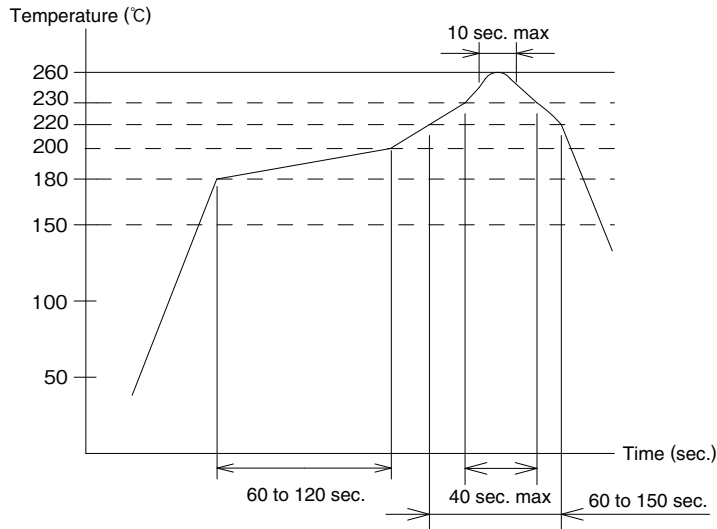
MS-190probe MS-190

## PCB Footprint and Metal Stencil mask Dimensions



- Note.
- Do not reflow the product other than using specified PCB footprint and metal stencil dimensions. Otherwise it may cause solder and/or flux wicking affecting the product performance.
  - Do not use hand soldering for mounting of MS-190, since it could result in solder and flux wicking to the contact areas.

## Recommended Temperature Profile



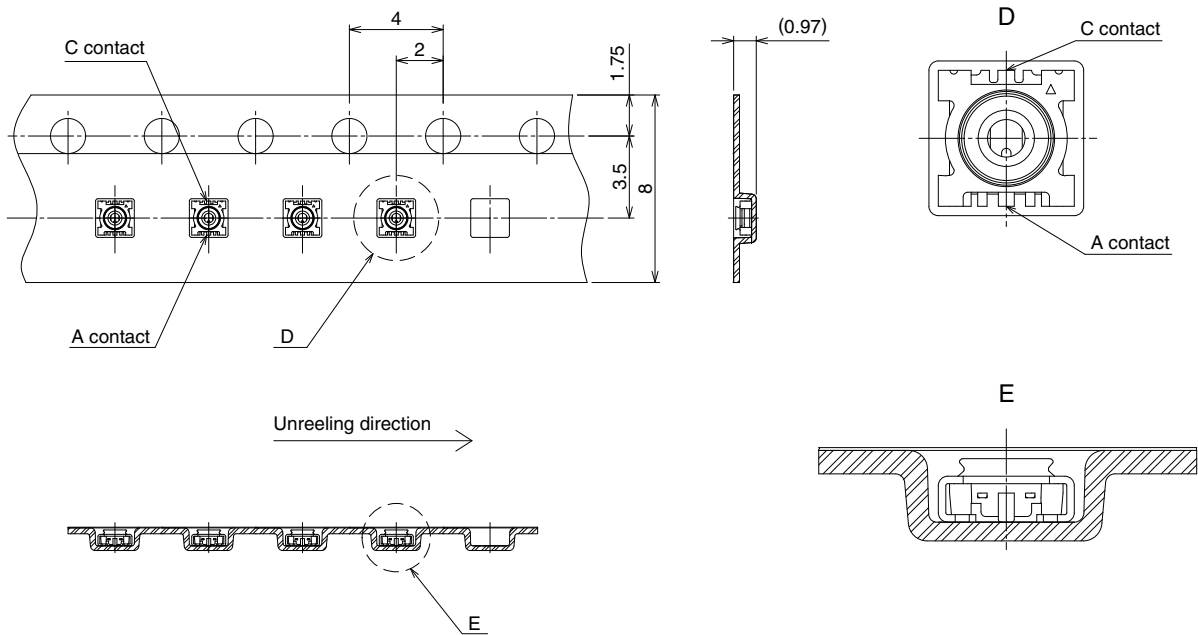
Using Lead-free Solder paste

① Maximum temperature	: 260°C
② Peak temperature time	: 10 sec. max.
③ 230°C min.	: 40 sec. max.
④ 220°C min.	: 60 sec. to 150 sec.
⑤ 180°C to 200°C	: 60 sec. to 120 sec.

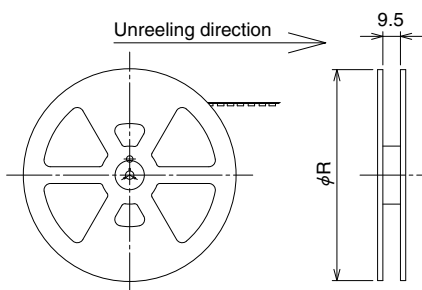
Metal mask thickness : 0.1mm

Reflow cycles : 2 cycles

## Packaging Specifications



### Reel dimensions



Part No.	Reel size	Packaging
MS-190	$\phi 380\text{mm}$	20,000 pcs/reel
MS-190 (01)	$\phi 180\text{mm}$	2,000 pcs/reel

## Measurement (or Inspection) probe

### Fixed flange with floated probing tip (for mass production lines)

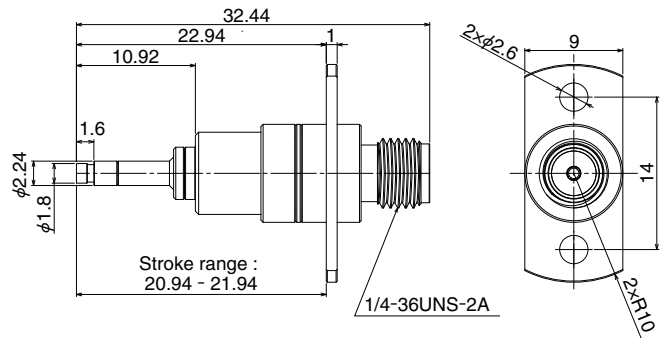
#### SMA connection (conversion)



·The probe should mate vertically with the receptacle.

Always use the probe within the specified stroke length.

·This durability only applies to this specific probe.



Part No.	HRS No.	Durability
MS-190-HRMJ-F6	358-0007-0	1 million cycles

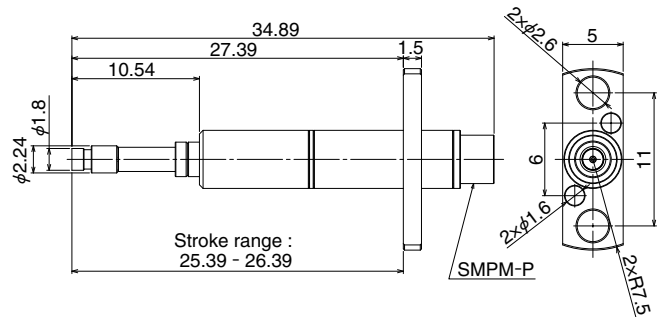
#### SMPM connection (conversion)



·The probe should mate vertically with the receptacle.

Always use the probe within the specified stroke length.

·This durability only applies to this specific probe.



Part No.	HRS No.	Durability
MS-190-SMPMP(FD)-F6	358-0360-0	1 million cycles

## ● Probe with simple lock (for lab use)

## MS-190-040LP-H1



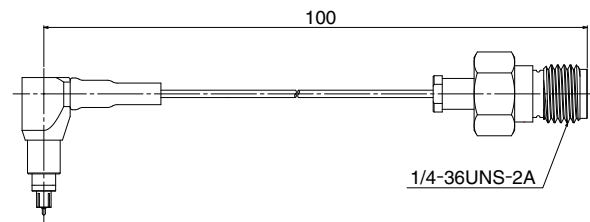
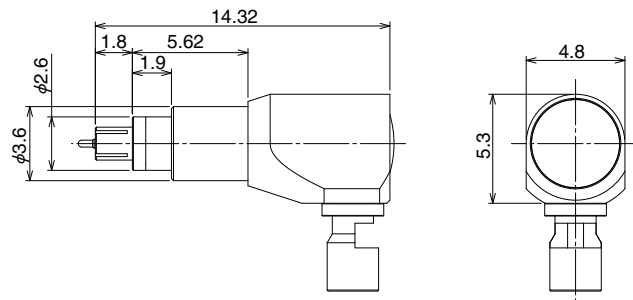
·This probe has simple lock mechanism to keep the probe connect with the receptacle without foreign assistance. However the following must be ensured : the probe must be vertical to the receptacle / the cable on the probe cannot be pulled.

·This durability only applies to this specific probe.

·This product is sold as a complete assembly (probe with cable) ; please make your selection from the product shown on the right.

Customization is available for cable lengths and the connection to the measurement equipment used.

Please contact your local Hirose Sales Representative.



Part No.	HRS No.	Durability
MS190LH1-HRMJ-040V100	358-0016-0 01	500 cycles

## ◆ Precautions

1. Do not use the washing process.
2. This product is intended to be used for circuit inspection only. Consult us if any other application is considered.
3. Do not use lab use probe for mass production line.
4. Do not use hand soldering for mounting of MS-190, since it could result in solder and flux wicking to the contact areas.
5. When using a heat gun, hot plate, or similar methods for mounting receptacle on PCB, limit the temperature to 260°C apply for 10 seconds max.
6. Do not reflow the product other than using specified PCB footprint and metal stencil dimensions. Otherwise it may cause solder and/or flux wicking affecting the product performance.
7. Avoid using the product in dusty, mixed gases and any other environment which is outside of the specified range in spec sheet.
8. Do not allow any particles to enter the board mounted receptacle when cutting PCB.

**USA:**

**HIROSE ELECTRIC (U.S.A.), INC. HEADQUARTERS CHICAGO OFFICE**  
2300 Warrenville Road, Suite 150,  
Downers Grove, IL 60515  
Phone : +1-630-282-6700  
<http://www.hirose.com/us/>

**USA:**

**HIROSE ELECTRIC (U.S.A.), INC. SAN JOSE OFFICE**  
2841 Junction Ave, Suite 200  
San Jose, CA. 95134  
Phone : +1-408-253-9640  
Fax : +1-408-253-9641  
<http://www.hirose.com/us/>

**USA:**

**HIROSE ELECTRIC (U.S.A.), INC. DETROIT OFFICE (AUTOMOTIVE)**  
17197 N. Laurel Park Drive, Suite 253,  
Livonia, MI 48152  
Phone : +1-734-542-9963  
Fax : +1-734-542-9964  
<http://www.hirose.com/us/>

**THE NETHERLANDS:**

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

**GERMANY:**

**HIROSE ELECTRIC EUROPE B.V. GERMAN BRANCH**  
Schoenbergstr. 20, 73760 ostfildern  
Phone : +49-711-456002-1  
Fax : +49-711-456002-299  
<http://www.hirose.com/eu/>

**GERMANY:**

**HIROSE ELECTRIC EUROPE B.V. NUREMBERG OFFICE**  
Neumeyerstrasse 22-26, 90411 Nurnberg  
Phone : +49-911 32 68 89 63  
Fax : +49-911 32 68 89 69  
<http://www.hirose.com/eu/>

**GERMANY:**

**HIROSE ELECTRIC EUROPE B.V. HANOVER OFFICE**  
Bayernstr. 3, Haus C 30855 Langenhagen, Germany  
Phone : +49-511 97 82 61 30  
Fax : +49-511 97 82 61 35  
<http://www.hirose.com/eu/>

**FRANCE:**

**HIROSE ELECTRIC EUROPE B.V. PARIS OFFICE**  
Regus La Garenne Colombes, Place de La Belgique,  
71 Boulevard National La Garenne Colombes, 92250, France  
Phone : +33 (0) 1 7082 3170  
Fax : +33 (1) 7082 3101  
<http://www.hirose.com/eu/>

**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  
<http://www.hirose.com/eu/>

**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.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.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.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.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.com/tw/>

**KOREA:**

**HIROSE KOREA CO.,LTD.**  
250, Huimanggongwon-ro, Siheung-si,  
Gyeonggi-do, Korea, 15083  
Phone : +82-31-496-7000 or 7124  
Fax : +82-31-496-7100  
<http://www.hirose.co.kr/>

**SINGAPORE:**

**HIROSE ELECTRIC SINGAPORE PTE. LTD.**  
10 Anson Road #26-16, International Plaza  
079903, Singapore  
Phone : +65-6324-6113  
Fax : +65-6324-6123  
<http://www.hirose.com/sg/>

**INDIA:**

**HIROSE ELECTRIC SINGAPORE PTE. LTD. DELHI LIAISON OFFICE**  
Office NO.552, 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-403, 4th Floor, No-84, Barton Centre, Mahatma  
Gandhi (MG) Road, Bangalore 560 001, Karnataka, India  
Phone : +91-80-4120 1907  
Fax : +91-80-4120 9908  
<http://www.hirose.com/sg/>

**MALAYSIA:**

**PENANG REPRESENTATIVE OFFICE**  
1-21-01, 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/>

**THAILAND:**

**BANGKOK OFFICE (REPRESENTATIVE OFFICE)**  
Unit 4703, 47th FL., 1 Empire Tower, South Sathorn  
Road, Yannawa, Sathorn, Bangkok 10120 Thailand  
Phone : +66-2-686-1255  
Fax : +66-2-686-3433  
<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>