

May.1.2023 Copyright 2023 HIROSE ELECTRIC CO., LTD. All Rights Reserved.  
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

|   |   |  |   |   |          |
|---|---|--|---|---|----------|
| APPLICABLE STANDARD   |   | IEC 61076-3-124                        |   |   |          |
| RATING  | Operating Temperature Range   | -40°C to +85°C(95%RH max)<br>(note1,2) | Storage Temperature Range   | -30°C to +60°C(95%RH max)<br>(note1)            |          |
|   | Voltage   | 50 V AC / 60 V DC                      | Current   | 1.5 A/pin (all pin)<br>3 A/pin (pin No.1,2,6,7) |          |
| <b>SPECIFICATIONS</b>   |   |  |   |   |          |
| ITEM  | TEST METHOD   |  | REQUIREMENTS  | QT  | AT       |
| <b>CONSTRUCTION</b>   |   |  |   |   |          |
| General Examination   | Examined visually and with a measuring instrument.  |  | According to drawing.   | X   | X        |
| Marking   | Confirmed visually.   |  | According to drawing.   | X   | X        |
| <b>ELECTRIC CHARACTERISTICS</b>   |   |  |   |   |          |
| Contact Resistance  | Measured at 100 mA max (DC or 1000 Hz).   |  | Contact : 30 mΩ max. (note3)<br>Shield : 100 mΩ max. (note3)  | X   | —        |
| Insulation Resistance   | Measured at 500 V DC.   |  | 500 MΩ min.   | X   | —        |
| Voltage Proof   | 500 V DC applied for 1 min. Current leakage 2mA max.  |  | No flashover or breakdown.  | X   | —        |
| Insertion Loss  | Measured in the range of 1 to 500 MHz.  |  | 0.02 √(f) dB max.<br>(Whenever the formula results in a value less than 0.1 dB, the requirement shall revert to 0.1 dB.)  | X   | —        |
| Return Loss   | Measured in the range of 1 to 500 MHz.  |  | 68 - 20log(f) dB min.<br>(Whenever the formula results in a value greater than 30 dB, the requirement shall revert to 30 dB.)   | X   | —        |
| Near end Crosstalk  | Measured in the range of 1 to 500 MHz.  |  | 94 - 20log(f) dB min. (1MHz to 250MHz)<br>46.04 - 30log(f/250) dB min. (250MHz to 500MHz)<br>(Whenever the formula results in a value greater than 75 dB, the requirement shall revert to 75 dB.) | X   | —        |
| Far end crosstalk   | Measured in the range of 1 to 500 MHz.  |  | 83.1 - 20log(f) dB min.<br>(Whenever the formula results in a value greater than 75 dB, the requirement shall revert to 75 dB.)   | X   | —        |
| Transverse Conversion Loss  | Measured in the range of 1 to 500 MHz.  |  | 68 - 20log(f) dB min.<br>(Whenever the formula results in a value greater than 50 dB, the requirement shall revert to 50 dB.)   | X   | —        |
| Transverse Conversion Transfer Loss   | Measured in the range of 1 to 500 MHz.  |  | 68 - 20log(f) dB min.<br>(Whenever the formula results in a value greater than 50 dB, the requirement shall revert to 50 dB.)   | X   | —        |
| <b>MECHANICAL CHARACTERISTICS</b>   |   |  |   |   |          |
| Insertion and Withdrawal Forces   | A maximum rate of 50 mm/min.<br>Measured by applicable connector.                                     |  | Insertion force 25 N max.<br>Withdrawal force 25 N max.   | X   | —        |
| Mechanical Operation  | 5000 times insertions and extractions.<br><br>Mating speed : 10 mm/s max.<br>Rest : 5s, min.(unmated) |  | 1) Resistance:<br>Contact : 80 mΩ max. (note3)<br>Shield : 100 mΩ max. (note3)<br>2) No damage, cracks or looseness of parts.   | X   | —        |
| <b>Note</b>   |   |  |   |   |          |
| 1. Non-condensing. 2. The operation temperature includes the temperature rise by current carrying<br>3. The cable conductor resistance is not considered.<br>4. Electrical characteristics are applicable to the contacts and shield except for contacts No. 3 and 8. |   |  |   |   |          |
|   | COUNT   | DESCRIPTION OF REVISIONS               | DESIGNED  | CHECKED   | DATE     |
|   | 18  | DIS-E-00003730                         | MT.YASUDA   | KI.KAGOTANI                                     | 20210317 |
| REMARK  |   |  | APPROVED  | MN.KENJO  | 20191209 |
|   |   |  | CHECKED   | KI.NAGANUMA                                     | 20191209 |
|   |   |  | DESIGNED  | MT.YASUDA                                       | 20191209 |
| Unless otherwise specified, refer to IEC 60512.   |   |  | DRAWN   | YK.MITSUISHI                                    | 20191209 |
| Note  | QT:Qualification Test AT:Assurance Test X:Applicable Test   |  | DRAWING NO.   | ELC-129979-01-00                                |          |
|   | SPECIFICATION SHEET   |  | PART NO.  | IX31G-A-10S-CVL1(7.0)(01)                       |          |
|   | HIROSE ELECTRIC CO., LTD.   |  | CODE NO.  | CL0251-0067-0-01                                | 1/3      |

May.1.2023 Copyright 2023 HIROSE ELECTRIC CO., LTD. All Rights Reserved.  
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

| SPECIFICATIONS   |  |  |             |  |                  |
|--|--|--|-------------|--|------------------|
| ITEM   | TEST METHOD                                    | REQUIREMENTS   | QT          | AT   |                  |
| ⚠  | Vibration ,sinusoidal                          | Frequency 10 to 500 Hz<br>0.35 mm, 50 m/s <sup>2</sup><br>2hrs in each of 3 mutually perpendicular axis.   | ⚠           | 1) No electrical discontinuity of 1μs. (note4)<br>2) No damage, cracks or looseness of parts.  | X —              |
|  | Fretting Corrosion                             | 490 m/s <sup>2</sup> , 30 times/min at 1000 times.   | ⚠           | 1) No electrical discontinuity of 1μs. (note4)<br>2) No damage, cracks or looseness of parts.  | X —              |
| ⚠  | Mechanical Shock                               | Subject mated specimens to 300 m/s <sup>2</sup> half-sine shock pulses of 11 milliseconds duration, 3 shocks in both directions of 3 mutually perpendicular directions (totally 18 shocks) | ⚠           | 1) No electrical discontinuity of 1μs. (note4)<br>2) Resistance:<br>Contact : 80 mΩ max. (note4)<br>Shield : 100 mΩ max. (note4)<br>3) No damage, cracks or looseness of parts.  | X —              |
| ⚠  | Effectiveness of the connector coupling device | Applying 80 N force for the mating axis direction in state in fitted with applicable connector.  |             | No unlocking, damage, cracks or looseness of parts.  | X —              |
| ⚠  | Locking device mechanical operations           | 10000 cycles<br>20 cycles/min max  |             | 1) Insertion and Withdrawal Forces<br>Insertion force 25 N max.<br>Withdrawal force 25 N max.<br>2) No damage, cracks or looseness of parts.   | X —              |
|  | Wrenching Strength                             | Applying 25times of 30 N 1s for 2 axis direction on tip of plug case in state in fitted with applicable connector.   |             | No damage, cracks or looseness of parts.   | X —              |
| ENVIRONMENTAL CHARACTERISTICS                                  |  |  |             |  |                  |
|  | Rapid Change of Temperature                    | Subject mated specimens to 10 cycles between -55°C and 85°C with 30 minutes dwell at temp. extremes and 2 to 3 minutes transition between temperatures.                                    | ⚠           | 1) Voltage proof : 500 V DC applied for 1 min.<br>Current leakage 2mA max.<br>No flashover or breakdown.<br>2) Resistance:<br>Contact : 80 mΩ max. (note3)<br>Shield : 100 mΩ max. (note3)<br>3) Insulation resistance: 500 MΩ min. (at dry)<br>4) No damage, cracks or looseness of parts.  | X —              |
|  | Humidity / Temperature Cycling                 | Low temperature 25 °C;<br>High temperature 65 °C;<br>Cold sub-cycle - 10 °C;<br>Relative humidity 93 %<br>Duration 10 / each 24 h<br>(IEC 60068-2-38,test Z / AD)                          | ⚠           | 1) Voltage proof : 500 V DC applied for 1 min.<br>Current leakage 2mA max.<br>No flashover or breakdown.<br>2) Resistance:<br>Contact : 80 mΩ max. (note3)<br>Shield : 100 mΩ max. (note3)<br>3) Insulation resistance: 500 MΩ min. (at dry)<br>4) Insertion and Withdrawal Forces<br>Insertion force 25 N max.<br>Withdrawal force 25 N max.<br>5) No damage, cracks or looseness of parts. | X —              |
|  | Damp Heat, Steady State                        | Subject mated specimens to a relative humidity of 93 % at a temperature of 40°C during 21 days.  | ⚠           | 1) Voltage proof : 500 V DC applied for 1 min.<br>Current leakage 2mA max.<br>No flashover or breakdown.<br>2) Resistance:<br>Contact : 80 mΩ max. (note3)<br>Shield : 100 mΩ max. (note3)<br>3) Insulation resistance: 500 MΩ min. (at dry)<br>4) Insertion and Withdrawal Forces<br>Insertion force 25 N max.<br>Withdrawal force 25 N max.<br>5) No damage, cracks or looseness of parts. | X —              |
| Note QT:Qualification Test AT:Assurance Test X:Applicable Test |  |  | DRAWING NO. |  | ELC-129979-01-00 |
| <b>HRS</b>   | SPECIFICATION SHEET                            |  | PART NO.    | IX31G-A-10S-CVL1(7.0)(01)  |                  |
|  | HIROSE ELECTRIC CO., LTD.                      |  | CODE NO     | CL0251-0067-0-01   | ⚠ 2/3            |

May.1.2023 Copyright 2023 HIROSE ELECTRIC CO., LTD. All Rights Reserved.  
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

| SPECIFICATIONS   |  |   |  |                           |       |
|--|--|---|--|---------------------------|-------|
| ITEM   | TEST METHOD  |   | REQUIREMENTS   | QT                        | AT    |
| <b>ENVIRONMENTAL CHARACTERISTICS</b>                           |  |   |  |                           |       |
| Dry Heat   | Subject to +85 ± 2 °C, 21 days.<br>(mating applicable connector)   | ⚠ | 1) Voltage proof : 500 V DC applied for 1 min.<br>Current leakage 2mA max.<br>No flashover or breakdown.<br>2) Resistance:<br>Contact : 80 mΩ max. (note3)<br>Shield : 100 mΩ max. (note3)<br>3) Insulation resistance: 500 MΩ min. (at dry)<br>4) Insertion and Withdrawal Forces<br>Insertion force 25 N max.<br>Withdrawal force 25 N max.<br>5) No damage, cracks or looseness of parts. | X                         | —     |
| Cold   | Subject to -55 ± 3 °C, 10 days.<br>(mating applicable connector)   | ⚠ | 1) Voltage proof : 500 V DC applied for 1 min.<br>Current leakage 2mA max.<br>No flashover or breakdown.<br>2) Resistance:<br>Contact : 80 mΩ max. (note3)<br>Shield : 100 mΩ max. (note3)<br>3) Insulation resistance: 500 MΩ min. (at dry)<br>4) Insertion and Withdrawal Forces<br>Insertion force 25 N max.<br>Withdrawal force 25 N max.<br>5) No damage, cracks or looseness of parts. | X                         | —     |
| Corrosion Salt Mist  | Subject to 5 % salt water, 35 ± 2 °C, 48h.<br>(leave under unmated condition.)   |   | No heavy corrosion of contacts.  | X                         | —     |
| Mixed Flowing Gas Corrosion                                    | Test temperature : +25±1 °C, Relative humidity : 75±3 %<br>H <sub>2</sub> S : 10±5 ppb, NO <sub>2</sub> : 200±50 ppb<br>Cl <sub>2</sub> : 10±5 ppb, SO <sub>2</sub> : 200±20 ppb<br>Leave the samples for 4 days with mated.<br>The same is performed with unmated samples.<br>(IEC 60512, method 4) | ⚠ | 1) Resistance:<br>Contact : 80 mΩ max. (note3)<br>Shield : 100 mΩ max. (note3)<br>2) No damage, cracks or looseness of parts.  | X                         | —     |
|  |  |   |  |                           |       |
| Note QT:Qualification Test AT:Assurance Test X:Applicable Test |  |   | DRAWING NO.  | ELC-129979-01-00          |       |
| <b>HRS</b>   | SPECIFICATION SHEET  |   | PART NO.   | IX31G-A-10S-CVL1(7.0)(01) |       |
|  | HIROSE ELECTRIC CO., LTD.  |   | CODE NO  | CL0251-0067-0-01          | ⚠ 3/3 |