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|----------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| 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)                                                                                                                                                                               |                                                                                           |
|                                                                                                          |                             |                                                                                                       |                           | 3 A/pin (pin No.1,2,6,7)                                                                                                                                                                          |                                                                                           |
| SPECIFICATIONS                                                                                           |                             |                                                                                                       |                           |                                                                                                                                                                                                   |                                                                                           |
| ITEM                                                                                                     |                             | TEST METHOD                                                                                           |                           | REQUIREMENTS                                                                                                                                                                                      | QT AT                                                                                     |
| CONSTRUCTION                                                                                             |                             |                                                                                                       |                           |                                                                                                                                                                                                   |                                                                                           |
| General Examination                                                                                      |                             | Examined visually and with a measuring instrument.                                                    |                           | According to drawing.                                                                                                                                                                             | X X                                                                                       |
| Marking                                                                                                  |                             | Confirmed visually.                                                                                   |                           | According to drawing.                                                                                                                                                                             | X X                                                                                       |
| ELECTRIC CHARACTERISTICS                                                                                 |                             |                                                                                                       |                           |                                                                                                                                                                                                   |                                                                                           |
| 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 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 —                                                                                       |
| MECHANICAL CHARACTERISTICS                                                                               |                             |                                                                                                       |                           |                                                                                                                                                                                                   |                                                                                           |
| 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 —                                                                                       |
| Note                                                                                                     |                             |                                                                                                       |                           |                                                                                                                                                                                                   |                                                                                           |
| 1. Non-condensing. 2. The operation temperature includes the temperature rise by current carrying        |                             |                                                                                                       |                           |                                                                                                                                                                                                   |                                                                                           |
| 3. The cable conductor resistance is not considered.                                                     |                             |                                                                                                       |                           |                                                                                                                                                                                                   |                                                                                           |
| 4. Electrical characteristics are applicable to the contacts and shield except for contacts No. 3 and 8. |                             |                                                                                                       |                           |                                                                                                                                                                                                   |                                                                                           |
|                                                                                                          | COUNT                       | DESCRIPTION OF REVISIONS                                                                              | DESIGNED                  | CHECKED                                                                                                                                                                                           | DATE                                                                                      |
|                       | 7                           | DIS-E-00014713                                                                                        | MT.YASUDA                 | KI.KAGOTANI                                                                                                                                                                                       | 20240119                                                                                  |
| REMARK                                                                                                   |                             |                                                                                                       | APPROVED                  | MN.KENJO                                                                                                                                                                                          | 20191209                                                                                  |
|                                                                                                          |                             |                                                                                                       | CHECKED                   | KI.NAGANUMA                                                                                                                                                                                       | 20191209                                                                                  |
|                                                                                                          |                             |                                                                                                       | DESIGNED                  | MT.YASUDA                                                                                                                                                                                         | 20191209                                                                                  |
|                                                                                                          |                             |                                                                                                       | DRAWN                     | YK.MITSUISHI                                                                                                                                                                                      | 20191209                                                                                  |
| Unless otherwise specified, refer to IEC 60512.                                                          |                             |                                                                                                       |                           |                                                                                                                                                                                                   |                                                                                           |
| Note QT:Qualification Test AT:Assurance Test X:Applicable Test                                           |                             |                                                                                                       | DRAWING NO.               |                                                                                                                                                                                                   | ELC-129980-00-00                                                                          |
|                       | SPECIFICATION SHEET         |                                                                                                       | PART NO.                  | IX31G-B-10S-CVL1 (7. 0)                                                                                                                                                                           |                                                                                           |
|                                                                                                          | HIROSE ELECTRIC CO., LTD.   |                                                                                                       | CODE NO.                  | CL0251-0068-0-00                                                                                                                                                                                  |  1/3 |

| SPECIFICATIONS                                                                      |                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                         |                                                                                       |     |
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| 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 60 s 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 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 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 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-129980-00-00        |                                                                                       |     |
|  | SPECIFICATION SHEET                                                                                                                                                                        | PART NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | IX31G-B-10S-CVL1 (7. 0) |                                                                                       |     |
|                                                                                     | HIROSE ELECTRIC CO., LTD.                                                                                                                                                                  | CODE NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | CL0251-0068-0-00        |  | 2/3 |

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| SPECIFICATIONS                |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |    |  |
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| ITEM                          | TEST METHOD                                                                                                                                                                                                                                                                                          | REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                        | QT | AT |  |
| ENVIRONMENTAL CHARACTERISTICS |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |    |  |
| 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 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 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  | —  |  |
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