Following first 10 pages are English version and last 9 pages are Japanese version. This top sheet is not part of the specification but explains both of English and Japanese versions are available.

このトップシートに続く最初の10ページは英語版で、その後の9ページは日本語版です。このトップシートは、規格には含まれませんが、英語、日本語両方があることを説明しています。
1. Scope:
This specification covers requirements for product performance and test methods of Mini-Universal MATE-N-LOK® Connectors, conforming to UL 94V-0 Grade.

2. Product Descriptions:
This connector consists of contacts and single or multi-pole housing, having contact positions in lattice dispositions. Three connector types are available --- wire-to-wire termination, panel hanging and free hanging.

3. Material and Finish:
3.1 Contact:
Contact shall be made of brass, or phosphor bronze, and tin-plated, having thickness of 0.8microns minimum, and gold-plated in the thickness of 0.75 microns minimum.

3.2 Housing:
Housing shall be made of molded Nylon resin, conforming to UL94V-0.

4. Rating:
4.1 Voltage Rating: 300 V AC or DC (conforming to Japanese Electrical Appliance and Material Control Law)
600 V AC or DC (per UL and CSA Approval)

4.2 Current Rating: 7A (Refer to Fig. 1.)

4.3 Temperature Rating:
-20°C -- 105°C (Upper limit of temperature rating must be held including temperature rising, resulted from energized loading in addition to the environmental affection.

5. Performance Requirements:
5.1 Electrical Performance:

<table>
<thead>
<tr>
<th>No.</th>
<th>Test Item</th>
<th>Parameter</th>
<th>Specified Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Termination Resistance, $\left(\frac{\Omega}{\text{level}}\right)$</td>
<td>8.1</td>
<td>10 mΩ maximum</td>
</tr>
<tr>
<td>2</td>
<td>Temperature Rising</td>
<td>8.2</td>
<td>30°C maximum (Refer to Fig. 1.)</td>
</tr>
<tr>
<td>3</td>
<td>Dielectric Strength</td>
<td>8.3</td>
<td>No abnormalities, such as corona and flashover, shall not take place.</td>
</tr>
<tr>
<td>4</td>
<td>Insulation Resistance</td>
<td>8.4</td>
<td>1,000MΩ minimum (Initial) 100MΩ minimum (Final)</td>
</tr>
</tbody>
</table>

Table 1
## 5.2 Mechanical Performance:

<table>
<thead>
<tr>
<th>No.</th>
<th>Test Item</th>
<th>Para</th>
<th>Specified Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vibration, Low Frequency</td>
<td>8.5</td>
<td>No electrical discontinuity greater than 10 milliseconds shall occur during the test. Low level termination resistance after conditioning must not exceed 20 mΩ.</td>
</tr>
<tr>
<td>2</td>
<td>Physical Shock</td>
<td>8.6</td>
<td>No electrical discontinuity greater than 10 milliseconds shall occur during the test. Low level termination resistance after conditioning must not exceed 20 mΩ.</td>
</tr>
<tr>
<td>3</td>
<td>Contact Insertion/Extraction Force</td>
<td>8.7</td>
<td>Insertion Force</td>
</tr>
<tr>
<td></td>
<td>Initial</td>
<td>450g max.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25th. Insertion</td>
<td>450g max.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extraction Force</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Initial</td>
<td>70g min.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25th. Extraction</td>
<td>50g min.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Connector Insertion/Extraction Force</td>
<td>8.8</td>
<td>No. of Pos.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>3</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>Contact Mounting Force</td>
<td>8.9</td>
<td>700g max.</td>
</tr>
<tr>
<td>6</td>
<td>Contact Retention Force</td>
<td>8.10</td>
<td>4.0 kg min.</td>
</tr>
<tr>
<td>7</td>
<td>Crimp Tensile Strength</td>
<td>8.11</td>
<td>Wire Size mm² (AWG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.14 (#26)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.22 (#24)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.31 (#22)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.51 (#20)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.87 (#18)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.27 (#16)</td>
</tr>
<tr>
<td>8</td>
<td>Durability (Repeated Insertion and Extraction)</td>
<td>8.12</td>
<td>After insertion/extraction conditioning, sample shall meet the requirements of insertion/extraction force, and termination resistance shall be 20 mΩ max.</td>
</tr>
<tr>
<td>9</td>
<td>Panel Retention Force of Housing</td>
<td>8.13</td>
<td>12 kg min.</td>
</tr>
<tr>
<td>10</td>
<td>Housing Retention Force</td>
<td>8.14</td>
<td>4.5 kg min.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.5 kg min. for 1-position conn.</td>
</tr>
</tbody>
</table>

Table 2 (End)
5.3 Environmental Performance:

<table>
<thead>
<tr>
<th>No.</th>
<th>Test Items</th>
<th>Para.</th>
<th>Specified Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Thermal Shock</td>
<td>8.15</td>
<td>After thermal shock conditioning, samples must meet the requirements for dielectric strength. Termination resistance shall be 20 mΩ max.</td>
</tr>
<tr>
<td>2.</td>
<td>Temperature-Humidity Cycling</td>
<td>8.16</td>
<td>After temperature-humidity conditioning, sample must meet the requirements for dielectric strength and insulation resistance. Termination resistance shall be 20 mΩ max.</td>
</tr>
<tr>
<td>3.</td>
<td>Salt Spray</td>
<td>8.17</td>
<td>After salt spray conditioning, sample must meet the requirements for low level termination resistance of 20 mΩ max.</td>
</tr>
<tr>
<td>4.</td>
<td>Arc Tracking</td>
<td>8.18</td>
<td>After the test conditioning, the tested samples shall be free from the abnormalities such as smoke generating, flaming up or insulation breakdown etc. This test is applied only for hermaphrodite connectors (2-Pos. thru 4-Pos.).</td>
</tr>
</tbody>
</table>

Table 3

6. Quality Assurance Provisions:

6.1 Test Conditions:

Unless otherwise specified, all the tests shall be performed under any combinations of the following test conditions.

- Temperature: 15 - 35°C
- Relative Humidity: 45 - 75°C
- Atmospheric Pressure: 650 - 800 mmHg

6.2 Test Specimens:

6.2.1 Sample Preparation:

Test samples to be employed for the tests shall be prepared in accordance with AMP Application Specification 114-5050, Crimping Mini-Universal MATE-N-LOK* Connector Contacts, by using the wires of the applicable sizes specified in Table 4.

Unless otherwise specified, no sample shall be reused.
6.2.2 Applicable Wires:

Wires of applicable sizes specified in Table 4 shall be used for sample preparation.

<table>
<thead>
<tr>
<th>Calculated Cross-sectional Area (mm²)</th>
<th>Wire Size (#)</th>
<th>Strand Diameter (mm)</th>
<th>Number of Strands</th>
<th>Insulation Diameter (mm)</th>
<th>Applicable Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.14</td>
<td>(#26)</td>
<td>0.16</td>
<td>7</td>
<td>1.28</td>
<td>UL 1007</td>
</tr>
<tr>
<td>0.22</td>
<td>(#24)</td>
<td>0.16</td>
<td>11</td>
<td>1.57</td>
<td>UL 1007</td>
</tr>
<tr>
<td>0.31</td>
<td>(#22)</td>
<td>0.18</td>
<td>12</td>
<td>1.5</td>
<td>JCS 246</td>
</tr>
<tr>
<td>0.51</td>
<td>(#20)</td>
<td>0.18</td>
<td>20</td>
<td>2.0</td>
<td>JCS 246</td>
</tr>
<tr>
<td>0.87</td>
<td>(#18)</td>
<td>0.18</td>
<td>34</td>
<td>2.13</td>
<td>UL 1007</td>
</tr>
<tr>
<td>1.27</td>
<td>(#16)</td>
<td>0.25</td>
<td>26</td>
<td>2.5</td>
<td>UL 1007</td>
</tr>
</tbody>
</table>

Table 4

Test Current at 30°C Temperature Rising Over Room Temperature

Fig. 1

Loaded Current (A)

Ambient Temperature (°C)

Loaded Current

0 1 2 3 4 5 6 7

0 10 20 30 40 50 60 70 80 90 100
7. Test Items and Test Sequence:

<table>
<thead>
<tr>
<th>Test Items</th>
<th>Paragraph Number</th>
<th>Sample</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmation of Product</td>
<td>1, 3, 1, 3, 1, 4</td>
<td>1, 3, 1, 4, 1, 4</td>
<td>1, 4, 1, 4, 1, 3</td>
</tr>
<tr>
<td>Low Level, Termination Resistance</td>
<td>8.1</td>
<td>2, 5, 2, 6, 2, 5</td>
<td>2, 5, 2, 5</td>
</tr>
<tr>
<td>Temperature Rising</td>
<td>8.2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>8.3</td>
<td>3</td>
<td>6, 7</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>8.4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Vibration, Low Frequency</td>
<td>8.5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Physical Shock</td>
<td>8.6</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Contact Insertion/Extraction Force</td>
<td>8.7</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Connector Insertion Extraction Force</td>
<td>8.8</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Contact Mounting Force</td>
<td>8.9</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Contact Retention Force</td>
<td>8.10</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Crimp Tensile Strength</td>
<td>8.11</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Durability</td>
<td>8.12</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Housing, PanelRetention Force</td>
<td>8.13</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Housing Retention Force</td>
<td>8.14</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Thermal Shock</td>
<td>8.15</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Temperature-Humidity Cycling</td>
<td>8.16</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Salt Spray</td>
<td>8.17</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Arc Tracking</td>
<td>8.18</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3
8. Test Methods:

8.1 Low Level Termination Resistance:

Low level termination resistance is obtained by measuring millivolt drop of the test circuits formed by mated connectors by probing across the test points between Y - Y' including wire crimps and frictional contact area. Measurement shall be done on test current of 50mA DC maximum at open circuit voltage of 50 mV maximum. From the measured value, the resistance of a 150 mm long wire used for termination must be deducted before calculation. The points Y and Y' are determined at 75mm apart from end of wire crimps where insulation must be removed and soldered for obtaining stable reading of contact at probing.

![Diagram of test setup for low level termination resistance]

8.2 Temperature Rising:

Contact-loaded, mated pair of connectors shall be tested by applying test current of specified intensity as shown in Fig. 1 to the mated contacts. Temperature rising by energized current shall be measured by using thermocouple probing at the points shown in Fig. 2. From the measured reading, room temperature must be deducted to obtain risen temperature.

8.3 Dielectric Strength:

Connector assemblies must be tested by applying test potential of 1.5 KV AC increasing at a rate of 500V a second between the adjacent contacts and between the contacts and the ground. After the specified voltage is reached, the potential must be held for 1 minute.

8.4 Insulation Resistance:

Mated pair of connector assemblies must be tested by applying test potential of 500 V DC between the adjacent contacts and between the contacts and the ground.
8.5 Vibration, Low Frequency:
Contact-loaded and mated pair of connectors shall be vibrated on the vibrating plate of testing machine in three axial directions for 2 hours each plain, -- totally 6 hours, where a sweeping vibration is applied to reciprocate between 10-55-10 Hz. changing a cycle a minute. During the vibration, series wired contact/circuit shall be monitored for occurrence of electrical discontinuity greater than 10 microseconds. After vibra-tile conditioning, sample shall be visually inspected for evidence of abnormalities, and measured for low level termination resistance.

8.6 Physical Shock:
Contact-loaded and mated pair of connectors shall be tested by applying physical impact in three axial directions with 6 drops each plain, -- 3 drops in normal and 3 drops in reversed direction. Magnitude of impact shall be 50G minimum to shape a half sine wave within 10 milliseconds. After impact conditioning, inspect visually for evidence of abnormalities taking place in the sample, and measure for low level termination resistance. During impact test, test current shall be applied to the test circuit, and monitored for occurrence of electrical discontinuity greater than 10 milliseconds.

8.7 Contact Insertion/Extraction Force:
Fasten socket contact on the head of tensile testing machine, and apply an axial insertion/extraction force to mate and unmate the gauge pin shown in Fig. 3; by operating the head to travel with the speed at a rate of 100 mm a minute. The force required to mate and unmate the gauge pin shall be measured and recorded.

8.8 Connector Insertion/Extraction Force:
Contact-loaded and mating pair of connectors shall be tested by securing them on tensile testing machine in the manner that they mate and unmate as the head is operated to insert and extract in axial direction with the speed at a rate of 100mm a minute. The force required to mate and unmate the connector shall be measured and recorded.

8.9 Contact Mounting Force:
Insert contact into connector cavity, and the force required to mount the contact in correct position, shall be measured and recorded.

8.10 Contact Retention Force:
Insert a wire-crimped contact into housing cavity and confirm that the contact is locked in position. Then fasten the housing on tensile testing machine, and apply an axial pull-off load to the crimped wire by operating the head to travel with the speed at a rate of 100mm a minute. Contact retention force is determined when the contact is dislodged from the housing cavity.
8.11 Crimp Tensile Strength:

Fasten a wire-crimped contact on the head of tensile testing machine, and apply an axial pull-off load to the end of crimped wire, by operating the head to travel with the speed at a rate of 100mm a minute. The force required to pull off the wire from the wire crimp or to break the wire, shall be measured and recorded.

8.12 Durability:

Repeat insertion and extraction of connectors for 24 cycles. Then, measure for connector insertion force and extraction force respectively, and for low level termination resistance.

8.13 Panel Retention Force:

Insert housing into panel cut-out mounting hole prepared with the specified dimensions, along the punch piercing direction of the panel. Then, apply an axial pull-off load from the connector mating side. The force required to dislodge housing from the cut-out hole shall be measured and recorded.

8.14 Housing Retention Force:

Secure one of the mated pair of connectors which are locked with locking device, on the tensile testing machine and apply an axial pull-off load to separate the housings by operating the head to travel with the speed at a rate of 100 mm a minute. The force required to separate with or without damage of locking device, shall be measured and recorded.

8.15 Thermal Shock:

Mated pair of connectors shall be exposed under 25 cycles of heat-cold temperature changes, each cycle consisting of the sequence as shown in Table 6. After the test duration, the samples shall be reconditioned in the room temperature for 3 hours. Then measure for dielectric strength and low level termination resistance.

<table>
<thead>
<tr>
<th>Step</th>
<th>Temperature</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-20,-5</td>
<td>30 minutes</td>
</tr>
<tr>
<td>2</td>
<td>25,-10,-5</td>
<td>5 minutes (max.)</td>
</tr>
<tr>
<td>3</td>
<td>95,-5,-0</td>
<td>30 minutes</td>
</tr>
<tr>
<td>4</td>
<td>25,+10,-5</td>
<td>5 minutes (max.)</td>
</tr>
</tbody>
</table>

Table 6
8.16 Temperature-Humidity Cycling:
Mated pair of connectors shall be exposed under temperature-humidity cycling in the test chamber in accordance with Test Method 1060 of MIL-STD-202, where temperature changes between 25 and 65°C are made for 10 cycles with relative humidity of 80-98% including 10 cycles of low temperature shocks during the test. After conditioning, recondition in the room temperature, and measure for dielectric strength, insulation resistance and termination resistance.

8.17 Salt Spray
Mated pair of connectors shall be exposed under salt spray conditioning, in the test chamber for 48 hours where 5% salt solution spray is filled for test purposes. After duration of test conditioning, sample connector shall be taken out from the test chamber, and rinsed with tap water, and dried in the room temperatures without use of powered ventilation. Low level termination resistance shall be measured and recorded.

8.18 Arc Tracking
Arc tracking of the connector shall be tested in accordance with the test method specified in IEC Publication 112, by dripping the drops of the below described solution onto the pair of mated connectors that are loaded with the contacts in full positions, being hung perpendicularly with the current of the below described intensity. The dripping of the solution shall be done from the place 30mm - 40mm over the connectors in the manner that the dripping solution would permeate into inside the connector by way of the terminated wires.

Test Potential Applied between the Adjacent Contacts: 300V AC 50/60 Hz
Short Circuit Current: 1 A
Solution: 0.1% Ammonium Chloride(NH₄Cl)
Dripping Conditions: Quantity of a Drop = 20 ± 5 mm³
Number of Drops 50
Frequency (Intervals) = 30 ± 5 seconds
Fig. 3 Pin Gage for Measurement of Contact Insertion/Extraction Force
社内標準
(技術標準)

設計目標書

本製品は下記要件を満足するか否か確認致します。従って、本製品がこれら要件を
満足することを保証するものではありません。また、これら要件は適宜により変更
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本製品に「本規格書」と引用している箇所はすべて「本設計目標書」と読み替え
て適用致します。

Design Objectives

Mini-Universal MATE-N-LOK Connector (UL 94V-0 Grade)

1. 概要

本コネクタは単体及び多極各数よりなり、多極は構子状配置で構成されている。タイプは電源
対電設備をパネル取付け型及び扉吊り型がある。

2. 適用範囲

本仕様書は、ミニ・ユニバーサル・メイトロック・コネクタ（UL 94V-0材）の
全ての製品について適用される。

3. 材料及び表面処理

3.1 コンタクト

(1) 材 質：黄銅 輸導線
(2) 表面処理：銅めっき 0.8ミクロン以上
金めつき 0.76ミクロン以上

3.2 ハウソング

(1) 材 質：66ナイロン樹脂
(2) 難燃性：UL 94V-0

4. 定格

300V AC/DC（電気用品取扱法に準拠）
4.1 電圧：600V AC/DC （UL, CSA認定）
4.2 電流：最大7A（図1参照）
4.3 使用温度範囲：-20℃～105℃（但し温度の上限には、負荷電流によって生ずる温
度上昇分を含む）

作成：560.7.26  分類：

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<th>設計目標書</th>
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<th>作成</th>
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配布

昭和 年 月 日 制定  表中文字

設計目標書

コード：108-5138  J2
5. 性能

5.1 電気的性能

<table>
<thead>
<tr>
<th>項目</th>
<th>試験方法</th>
<th>規格値</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ローレベル総合抵抗</td>
<td>10 mΩ以下であること。</td>
</tr>
<tr>
<td>2</td>
<td>温度上昇</td>
<td>30 °C以下であること。(図1参照)</td>
</tr>
<tr>
<td>3</td>
<td>耐電圧</td>
<td>コロナ放電、フラッシュオーバー等の異状がないこと。</td>
</tr>
<tr>
<td>4</td>
<td>絶縁抵抗</td>
<td>1000 MΩ以上（初期） 100 MΩ以上（試験後）</td>
</tr>
</tbody>
</table>

表 1

5.2 機械的性能

<table>
<thead>
<tr>
<th>項目</th>
<th>試験方法</th>
<th>規格値</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>低周波振動</td>
<td>振動試験中10マイクロ秒をこえる不連続構造を生じないこと。ローレベル総合抵抗は20 mΩ以下。</td>
</tr>
<tr>
<td>2</td>
<td>機械的衝撃</td>
<td>衝撃試験によって10マイクロ秒をこえる不連続構造を生じないこと。ローレベル総合抵抗は20 mΩ以下。</td>
</tr>
<tr>
<td>3</td>
<td>コンタクト挿入引抜力</td>
<td>初期挿入力：450 g以下 25回目： 25回目：</td>
</tr>
<tr>
<td></td>
<td></td>
<td>初期引抜力：70 g以上 50 g以上</td>
</tr>
<tr>
<td>4</td>
<td>コネクタ挿入引抜力</td>
<td>極数</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

表 2（続く）
表 2（続き）

5.3 耐環境性能

<table>
<thead>
<tr>
<th>項目</th>
<th>試験方法</th>
<th>規格値</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 熱衝撃</td>
<td>8.15</td>
<td>試験後耐電圧の规格値を満足し、ローレベル総合抵抗は20mΩ以下。</td>
</tr>
<tr>
<td>2 湿度サイクル（耐湿性）</td>
<td>8.16</td>
<td>試験後耐電圧及び絶縁抵抗の规格値を満足し、ローレベル総合抵抗は20mΩ以下。</td>
</tr>
<tr>
<td>3 塩水噴霧</td>
<td>8.17</td>
<td>ローレベル総合抵抗は20mΩ以下。</td>
</tr>
<tr>
<td>4 ＊アークトラッキング</td>
<td>8.18</td>
<td>発磁、発火又は経路破壊のないこと。</td>
</tr>
</tbody>
</table>

表 3 ＊特価同形型コネクタ（2〜4P）のみに適用する。

6. 品質保証条項

6.1 試験条件

特に指定のない場合は、下記に示す環境条件のもとで性能試験を行うものとする。

<table>
<thead>
<tr>
<th>湿度</th>
<th>15～35℃</th>
</tr>
</thead>
<tbody>
<tr>
<td>相対湿度</td>
<td>45～75%</td>
</tr>
<tr>
<td>気圧</td>
<td>650～800 mm Hg</td>
</tr>
</tbody>
</table>
6.2 試 験

(1) 試 料
性能試験に用いる試料は「ミニ・ユニバーサル・メイテンロック・コネクタの圧着条件 114-5050」に基づいて第 4 表に示す電線に圧着した正規の試料であると。
いずれの試料も規定された順序以外の他の試験に用いてはならない。

(2) 使用電線
性能試験に用いる電線は第 4 表に示す電線にて行うものとする。

<table>
<thead>
<tr>
<th>計算断面積 (㎟)</th>
<th>AWG</th>
<th>素線径 (㎜)</th>
<th>素線数</th>
<th>絶縁被覆外径 (㎜)</th>
<th>電線規格</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.14</td>
<td>26</td>
<td>0.16</td>
<td>7</td>
<td>1.28</td>
<td>UL 1007</td>
</tr>
<tr>
<td>0.22</td>
<td>24</td>
<td>0.16</td>
<td>11</td>
<td>1.57</td>
<td>UL 1007</td>
</tr>
<tr>
<td>0.31</td>
<td>22</td>
<td>0.18</td>
<td>12</td>
<td>1.5</td>
<td>JCS 246</td>
</tr>
<tr>
<td>0.51</td>
<td>20</td>
<td>0.18</td>
<td>20</td>
<td>2.0</td>
<td>JCS 246</td>
</tr>
<tr>
<td>0.87</td>
<td>18</td>
<td>0.18</td>
<td>34</td>
<td>2.13</td>
<td>UL 1007</td>
</tr>
<tr>
<td>1.27</td>
<td>16</td>
<td>0.25</td>
<td>26</td>
<td>2.5</td>
<td>UL 1007</td>
</tr>
</tbody>
</table>

表 4

図 1 周囲温度—通電電流特性

温度上昇 30 ℃の試験電流

① 15 極の場合
② 12 極の場合
③ 9 極の場合
④ 6 極以下の場合
電線は AWG #18
7. 試験項目及び試験手順

<table>
<thead>
<tr>
<th>試験項目</th>
<th>試験グループ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>外観</td>
<td>1.3, 1.3, 1.4</td>
</tr>
<tr>
<td>ローレル総合抵抗</td>
<td>8.1</td>
</tr>
<tr>
<td>温度上昇</td>
<td>8.2</td>
</tr>
<tr>
<td>耐電圧</td>
<td>8.3</td>
</tr>
<tr>
<td>耐絶縁抵抗</td>
<td>8.4</td>
</tr>
<tr>
<td>低周波振動</td>
<td>8.5</td>
</tr>
<tr>
<td>機械的衝撃</td>
<td>8.6</td>
</tr>
<tr>
<td>コンタクト挿入引抜力</td>
<td>8.7</td>
</tr>
<tr>
<td>コネクタ挿入引抜力</td>
<td>8.8</td>
</tr>
<tr>
<td>コンタクト装着力</td>
<td>8.9</td>
</tr>
<tr>
<td>コンタクト保持力</td>
<td>8.10</td>
</tr>
<tr>
<td>压着部引張強度</td>
<td>8.11</td>
</tr>
<tr>
<td>耐久性</td>
<td>8.12</td>
</tr>
<tr>
<td>ハウジングのパンネル保持力</td>
<td>8.13</td>
</tr>
<tr>
<td>ハウジング保持力</td>
<td>8.14</td>
</tr>
<tr>
<td>熱衝撃</td>
<td>8.15</td>
</tr>
<tr>
<td>湿度サイクル</td>
<td>8.16</td>
</tr>
<tr>
<td>塩水噴霧</td>
<td>8.17</td>
</tr>
<tr>
<td>アークラッキング</td>
<td>8.18</td>
</tr>
</tbody>
</table>

表5

[注] グループ10, 11, 12は機械的試験は行わない。
グループ13（アークラッキングテスト）は縦柱同形扇コネクタ（2〜4P）のみに適用する。
8. 試験方法

8.1 ローレルベル総合抵抗
コネクタを嵌合した状態で開放電圧50mV DC以下、閉路電流50mA DC以下で行なう。温度の上昇が安定してから、Y - Y'間を直流電圧計で測定する。コンタクトの圧着部及び嵌合部の総合抵抗は、この測定値から150 mmの電線の抵抗値を差引いて算出する。
Y点は圧着部後端から測定して位置を決めるが、その場合に被覆を余分にむきとって電流密度を一様にするためプローブをあてる電線部分に半田をもる。

第2図

8.2 温度上昇
ハウジングとコンタクトを組み、図1に示す試験電流を流す。図2に示すように圧着部に熱電対を取り付け温度を測定し、室温を引いた値が温度上昇値である。

8.3 耐電圧
コネクタの絶縁回路間に耐電圧試験機を用いて每秒500V の割合で電圧上昇させ、1.5KV AC を1分間印加する。

8.4 絶縁抵抗
コネクタを嵌合した状態で絶縁しているコンタクト相互間およびコントラクトとアース間を測定する。なお、測定電圧はDC 500Vとする。
8.5 低周波振動
10～55～10 Hz／1 分間の振動周波数、全振幅 1.52 mm をコネクタの 90 度直交する 3 軸方向に各 2 時間振動を与える。この振動観察し、ローレベル総合抵抗を測定する。
また振動試験中に不連続導通の有無を確認する。

8.6 機械的衝撃
10 サイクル秒間に 50 G の半波正弦波形の衝撃をコネクタの 90 度直交する 3 軸方向正負に3 回合成合計 18 回衝撃を行なう。この振動観察し、ローレベル総合抵抗を測定する。また振動試験中に不連続導通の有無を確認する。

8.7 コンタクト挿入引抜力
ソケット・コンタクトを引張試験機に取り付けて、図 3 に規定するゲージを軸方向に
100 mm／1 分間の速度で挿入と引抜を行ない測定する。

8.8 コネクタ挿入引抜力
ハウジングにコンタクトを組込み、一方のハウジングを固定し、他のハウジングを
100 mm／1 分間の速度で挿入と引抜を行なう測定する。同ハウジングのロックギン機
構は取り除いておくこと。

8.9 コンタクト着着力
コンタクトをハウジングに着着するのは要する力を測定する。

8.10 コンタクト保持力
電線を圧着したコンタクトをハウジングに組込み、引張試験機にかけて電線の軸方向
に 100 mm／1 分間の速度で引張り、コンタクトがハウジングから引抜ける時の値を測
定する。

8.11 压着部引張強度
コンタクトと電線との間に垂直方向に荷重を 100 mm／1 分間の速さで加え測定する。
電線の破断又は圧着部から電線が引抜けるときの値が引張強度である。

8.12 耐久性
コネクタの挿入引抜きを 24 回繰り返えす。この後コネクタ挿入引抜力とローレベル
総合抵抗を測定する。
8.13 パネル保持力
正規寸法のパネル穴にハングインを挿入し、正規に取付けた後、挿入方向と反対側からハングインに力加える。パネルからハングインが抜ける時の値を測定する。

8.14 ハングイン保持力
ロック機構が作用し正規に嵌合したコネクタの片方を固定し、他方を軸方向に100mm/1分間の速度で引張り、ロック機構の外力は破損して嵌合の外れた時の荷重を測定する。

8.15 熱衝撃
コネクタを嵌合した状態で第6表に示す試験を1サイクルとし、これを25サイクル行った後室温に3時間以上放置する。試験後耐電圧とローレベル総合抵抗を測定する。

<table>
<thead>
<tr>
<th>段階</th>
<th>温度（℃）</th>
<th>時間</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-20±5℃</td>
<td>30分</td>
</tr>
<tr>
<td>2</td>
<td>25±5℃</td>
<td>最大5分</td>
</tr>
<tr>
<td>3</td>
<td>95±5℃</td>
<td>30分</td>
</tr>
<tr>
<td>4</td>
<td>25±5℃</td>
<td>最大5分</td>
</tr>
</tbody>
</table>

表 6

8.16 温湿度サイクル
MIL-STD-202、試験法106Dにより、コネクタを嵌合した状態で相対湿度80～98％で、25～65℃の温度変化と-10℃の低温衝撃を10サイクル行う。測定は室内放置3時間後行う。

8.17 塩水噴霧
コネクタを嵌合した状態で5％の塩水を48時間噴霧後、塩の堆積物を水洗した後、常温で自然乾燥後、ローレベル総合抵抗を測定する。

8.18 アークトラッキング（準拠規格 IEC Pub.112）
嵌合し電圧印加したコネクタを軸方向を垂直にしてした状態でコネクタ上端面から30～40mmの高さから下記に規定する水溶液を接続された電極で伝わせてコネクタ内に滴下して試験する。

| 電極間印加電圧：AC300V 50／60 Hz |
| 正極電流：1A |
| 水溶液：0.1％塩化アンモニウム（NH4Cl）水溶液 |
| 滴下条件：滴下量 20±3mL/滴 |
| 滴下数：50滴 |
| 間隔：30±5秒 |
図3 コンタクト挿入引抜力測定用ダージ