Utilizing the efficient high-current design of the PowerBud® contact technology, the MDual power connectors carry high power in a small package and features self-aligning contacts enabling blind-mating in hidden engagement applications. Contact terminations can be crimp wire, wired lugs, or bus bar attached.

**Overview**

**Key Specifications**

- High current capacity - up to 365 A per contact when bus terminated
- Low insertion force
- Low voltage drop
- Low contact resistance
- Low contact wear
- High cycle life
- Available in 3 sizes - 6.4, 9.1 and 12.7mm
- Multiple points of contact - low loss
- UL Standard 1977 Compliant
- CSA Standard C22.2 No. 182.3-16 Compliant
- RoHS compliant
- Halogen Free
The PowerBud® Contact System

Methode's PowerBud® power contacts use an innovative, multiple contact point design that creates lower insertion force, lower temperature rise, lower power loss and higher cycle life than conventional power connectors. This unique design uses two rows of performance-engineered copper-alloy conductors arranged one over the other, which creates highly redundant contact points. This feature lowers both contact resistance and normal contact force. The PowerBud's insertion force is three to five times lower than equivalently rated electrical connectors. Less metal-on-metal wear during mating and unmating translates to a typical 10,000 cycle life. Additionally, PowerBud's power connector contact resistance is two to three times lower than equivalently-rated power connectors.

How Does It Work?

The PowerBud uses two rows of conductors arranged one over the other. The material of the beams is a proprietary performance-engineered copper alloy which is substantially better than the more commonly used beryllium copper alloy.

Each copper alloy beam includes a slight indentation in the finger tip to create dual contact points, adding to the massively parallel contact points.
TEST CONDITION:
• Applied Current: 50A to 300A through each contact in series
• Current at 30°C Temp Rise: 175A
• Calculated Resistance at 30°C Temp Rise: 60 µΩ
• Contact Configuration: M5 Internal Threads
• Termination: 25.4 mm x 3.2 mm Copper Bus Bar

TEST CONDITION:
• Applied Current: 50A to 160A through each contact in series
• Current at 30°C Temp Rise: 100A
• Calculated Resistance at 30°C Temp Rise: 70 µΩ
• Contact Configuration: 4 AWG Crimp Barrels
• Termination: PowerFlex 1000 4 AWG Stranded Cable

TEST CONDITION:
• Applied Current: 30A to 100A through each contact in series
• Current at 30°C Temp Rise: 60A
• Calculated Resistance at 30°C Temp Rise: 70 µΩ
• Contact Configuration: 8 AWG Crimp Barrels
• Termination: PowerFlex 1000 8 AWG Stranded Cable

Normalized Graphs for 6.4 mm MDual Connector Mated Pairs
**TEST CONDITION:**

1. Applied Current: 100A to 300A through each contact in series
2. Current at 30°C Temp Rise: 180A
3. Calculated Resistance at 30°C Temp Rise: 55 µΩ
4. Contact Configuration: 2/0 AWG Crimp Barrels
5. Termination: PowerFlex 1000 2/0 AWG Stranded Cable

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**TEST CONDITION:**

1. Applied Current: 225A to 475A through each contact in series
2. Current at 30°C Temp Rise: 265A
3. Calculated Resistance at 30°C Temp Rise: 45 µΩ
4. Contact Configuration: M6 Internal Threads
5. Termination: 38.1 mm x 4.8 mm Copper Bus Bar
**Normalized Graphs for 12.7 mm MDual Connector Mated Pairs**

**TEST CONDITION:**
- Applied Current: 250A to 550A through each contact in series
- Current at 30°C Temp Rise: 365A
- Calculated Resistance at 30°C Temp Rise: 31 µΩ
- Contact Configuration: M8 Internal Threads
- Termination: 38.1 mm x 6.4 mm Copper Bus Bar

**TEST CONDITION:**
- Applied Current: 175A to 450A through each contact in series
- Current at 30°C Temp Rise: 250A
- Calculated Resistance at 30°C Temp Rise: 38 µΩ
- Contact Configuration: 4/0 AWG Crimp Barrels
- Termination: PowerFlex 1000 4/0 AWG Stranded Cable
## Identification

<table>
<thead>
<tr>
<th>MDUAL Pin Diameter</th>
<th>Termination Type</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.4 mm</td>
<td>Bus Bar, M5 Thread</td>
<td>6316-07660-01100</td>
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<tr>
<td></td>
<td>Crimp, 4 AWG</td>
<td>9104-06655-02104</td>
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<td></td>
<td>Crimp, 8 AWG</td>
<td>9104-06454-02104</td>
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<tr>
<td>9.1 mm</td>
<td>Bus Bar, M6 Thread</td>
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<td>9104-06933-02104</td>
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<td>12.7 mm</td>
<td>Bus Bar, M8 Thread</td>
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## Electrical & Mechanical Specifications

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<tr>
<th>MDUAL Pin Diameter</th>
<th>Termination Type</th>
<th>Operating Current Per Contact @ 30°C T-Rise</th>
<th>Typical Contact Resistance</th>
<th>Voltage Rating</th>
<th>Dielectric Withstand Voltage</th>
<th>Typical Connector Mating Force</th>
<th>Blind Mate Gatherability</th>
<th>Temperature Rating</th>
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</thead>
<tbody>
<tr>
<td>6.4 mm</td>
<td>Bus Bar, M5 Thread</td>
<td>175 A</td>
<td>60 µΩ</td>
<td>600 VAC &amp; 600 VDC</td>
<td>15 N (3.4 lbf)</td>
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<td>2200 VAC &amp; 2200 VDC</td>
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<td>Crimp, 8 AWG</td>
<td>60 A</td>
<td>70 µΩ</td>
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</tr>
<tr>
<td>9.1 mm</td>
<td>Bus Bar, M6 Thread</td>
<td>265 A</td>
<td>45 µΩ</td>
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<td>23 N (5.2 lbf)</td>
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<td></td>
<td>Crimp, 2/0 AWG</td>
<td>180 A</td>
<td>55 µΩ</td>
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<tr>
<td>12.7 mm</td>
<td>Bus Bar, M8 Thread</td>
<td>365 A</td>
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<td>28 (6.3 lbf)</td>
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## Materials & Finishes

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<tr>
<td>Socket Contacts</td>
<td>Copper Alloy and Stainless Steel</td>
<td>Silver over Nickel</td>
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<tr>
<td>Pin Contacts</td>
<td>Copper Alloy</td>
<td>Silver over Nickel</td>
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## Regulatory Specifications

SAFETY: UL Standard 1977, CSA Standard C22.2 No. 182.3-16
UL file Number E303434