STINGRAY
Magnetic Connector Series

This series offers low profile, compact, sealed connectors that withstand exposure to rain, dust, dirt and chemicals. Stingray connectors are intended for First Responders, Security and Military personnel.

Stingray features a magnetic, non-keyed mating system which allows the connector to be easily mated without the need for pre-alignment and eliminates the need to operate any coupling mechanisms.

Stingray has been optimised for USB 2.0 & Ethernet protocols, and is an excellent solution for audio, power or data signals.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic mating mechanism</td>
<td>Aids blind-mate performance and prevents inadvertent damage if the user forgets to unmate</td>
</tr>
<tr>
<td>Non-keyed rotatable mating</td>
<td>Does not require pre-alignment when mating. Cable exit angle is infinitely variable and can be set and adjusted by the user</td>
</tr>
<tr>
<td>Wipe clean interface featuring sprung-loaded contacts</td>
<td>Easy cleaning and decontamination</td>
</tr>
<tr>
<td>5000+ mating cycles</td>
<td>Increased connector life before replacement</td>
</tr>
<tr>
<td>Compatible with USB 2.0, Ethernet and Audio signal requirements</td>
<td>Allows interconnection of various equipment including computers, radios and headsets</td>
</tr>
<tr>
<td>Last mate contact</td>
<td>Allows hot-swapping of equipment and signals (i.e. interface is passive until the connector is fully mated)</td>
</tr>
<tr>
<td>90° Cable exit within the height of the connector</td>
<td>Cable runs parallel to the body eliminating loops and preventing snagging</td>
</tr>
<tr>
<td>IP68 sealed</td>
<td>High degree of sealing prevents ingress of dust and moisture</td>
</tr>
</tbody>
</table>

The low profile Stingray connector sits flat against the body to prevent snagging & damage. It is self-aligning due to the strong magnetic connection, and allows customisation and flexibility of cable routing as the cable can be rotated through 360° when the connector is mated.
Stingray features and terminology

Sprung contacts
Interfacial seal
Flexible overmould
Non-keyed, rotatable interface
‘Last-mate, first-break’ contact

Views of the mated pair

22 mm

Stingray performance information

<table>
<thead>
<tr>
<th>Test parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical</strong></td>
<td></td>
</tr>
<tr>
<td>Current rating</td>
<td>3A per contact continuous, 5A per contact peak</td>
</tr>
<tr>
<td>Data rate</td>
<td>USB 2.0 compliant</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>5000 MΩ at 500 VDC</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt;20 mΩ</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
</tr>
<tr>
<td>Sealing</td>
<td>IP68, 1hr at 2 meters immersion</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-55°C/+85°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-55°C/+125°C</td>
</tr>
<tr>
<td>Salt spray</td>
<td>500 hours, 5% NaCl (mated)</td>
</tr>
<tr>
<td>RoHS compliant</td>
<td>Yes (dependent on solder used)</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td></td>
</tr>
<tr>
<td>Mating durability</td>
<td>5000 minimum</td>
</tr>
<tr>
<td>Shock and vibration</td>
<td>In accordance with DEF-STAN 00-35 Iss 4 Ch2 01 test M1 appendix A figs A22-High Level and A23-Low Level</td>
</tr>
<tr>
<td>Separation force, peel</td>
<td>4.0N typical</td>
</tr>
<tr>
<td>Rotations</td>
<td>1000 minimum</td>
</tr>
<tr>
<td>Rotational torque</td>
<td>0.7Nm typical</td>
</tr>
</tbody>
</table>
### Stingray connector part numbering

<table>
<thead>
<tr>
<th>WM-</th>
<th>XX</th>
<th>XX-</th>
<th>XXX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Series identifier</strong></td>
<td><strong>Style:</strong></td>
<td><strong>Material and finish</strong></td>
<td><strong>Shell size</strong></td>
</tr>
<tr>
<td>00 = Wall mount receptacle</td>
<td>AU - unplated black thermoplastic</td>
<td>03</td>
<td>09</td>
</tr>
<tr>
<td>01 = In-line receptacle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 = PCB mount receptacle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 = Plug</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please note:
The unplated wall mount receptacle in shell size 3 with 9 contacts is currently available. The plug connector is only currently available as an overmoulded cable harness. Further variants are available to order from December 2018.

### Stingray part number example

**WM- 00 AU 03- 09**

- **Stingray Series**: Wall mount receptacle
- **Wall mount receptacle**: Unplated black thermoplastic
- **No. of contacts**: 9 contacts
- **Shell size**: 03

### Stingray cable harness part numbering

<table>
<thead>
<tr>
<th>20GB-WM-</th>
<th>XX</th>
<th>XX-</th>
<th>XXX-</th>
<th>XXXX-</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Series identifier</strong></td>
<td><strong>Style:</strong></td>
<td><strong>Material and finish</strong></td>
<td><strong>Shell size</strong></td>
<td><strong>No. of contacts</strong></td>
</tr>
<tr>
<td>00 = Wall mount receptacle</td>
<td>AU - Unplated Black Thermoplastic</td>
<td>03</td>
<td>09</td>
<td></td>
</tr>
<tr>
<td>02 = In-line receptacle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 = Plug</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please note:
Both the -0001 and -0002 variants use USB 3.0 SuperSpeed cable with high quality improved shielding. The cable is UL20276, OD:5.5mm with black PVC jacket.

### Stingray cable harness part number example

**20GB-WM- 06 AU 03- 09- 1000- 0001**

- **Stingray Series**: Plug
- **Plug**: Unplated black thermoplastic
- **No. of contacts**: 9 contacts
- **Shell size**: 03
- **Length**: 1m
- **Variant**: Pig-tail assembly
Stingray plug assembly

Please note:
The plug is currently only available as an overmoulded cable harness.
A customer terminated plug is available to order from December 2018.

<table>
<thead>
<tr>
<th>Shell size</th>
<th>A Nom</th>
<th>B Nom</th>
<th>øC Nom</th>
<th>D Nom</th>
<th>E Nom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm</td>
<td>inch</td>
<td>mm</td>
<td>inch</td>
<td>mm</td>
</tr>
<tr>
<td>3</td>
<td>11.99</td>
<td>0.472</td>
<td>59.82</td>
<td>2.355</td>
<td>38.35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact number</th>
<th>USB identification</th>
<th>USB 2.0 connection</th>
<th>Cable colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power</td>
<td>Yes</td>
<td>Red</td>
</tr>
<tr>
<td>2</td>
<td>D-</td>
<td>Yes</td>
<td>White</td>
</tr>
<tr>
<td>3</td>
<td>D+</td>
<td>Yes</td>
<td>Green</td>
</tr>
<tr>
<td>4</td>
<td>SDP1-</td>
<td>No</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>SDP1+</td>
<td>No</td>
<td>Yellow</td>
</tr>
<tr>
<td>6</td>
<td>SDP2-</td>
<td>No</td>
<td>Purple</td>
</tr>
<tr>
<td>7</td>
<td>SDP2+</td>
<td>No</td>
<td>Orange</td>
</tr>
<tr>
<td>8</td>
<td>Power GND</td>
<td>Yes</td>
<td>Black</td>
</tr>
<tr>
<td>9</td>
<td>GND drain</td>
<td>Yes</td>
<td>Drain</td>
</tr>
</tbody>
</table>
Stingray receptacle

<table>
<thead>
<tr>
<th>Shell size</th>
<th>A Nom</th>
<th>B Nom</th>
<th>øC Nom</th>
<th>D Nom</th>
<th>E Nom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm</td>
<td>inch</td>
<td>mm</td>
<td>inch</td>
<td>mm</td>
</tr>
<tr>
<td>3</td>
<td>12.52</td>
<td>0.493</td>
<td>52.96</td>
<td>2.085</td>
<td>39.88</td>
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<tr>
<td></td>
<td>3.18</td>
<td>0.125</td>
<td>6.32</td>
<td>0.249</td>
<td>14.99</td>
</tr>
</tbody>
</table>

Please note:
An alternative PCB mount receptacle (WM-02) is available to order from December 2018

Stingray receptacle wiring schematic

<table>
<thead>
<tr>
<th>Contact number</th>
<th>USB identification</th>
<th>USB 2.0 connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>D-</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>D+</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>SDP1-</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>SDP1+</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>SDP2-</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>SDP2+</td>
<td>No</td>
</tr>
<tr>
<td>8</td>
<td>Power GND</td>
<td>Yes</td>
</tr>
<tr>
<td>9</td>
<td>GND drain</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Stingray receptacle assembly instructions

General assembly instructions are shown below for the Stingray receptacle connector. The receptacle is supplied as three components ready for termination as shown below:

1. Terminate the cable to the PCB sub-assembly in accordance with Amphenol document 123GB-0879.
2. Lightly press the terminated PCB sub-assembly into the top housing.
3. Locate the back plate into the top housing (trapping the terminated PCB sub-assembly) and evenly apply pressure from the rear so that the clips fully engage and ‘snap’ into position.

Please note that ancillary components have been deleted from the above image for clarity.
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May 2018