OVERVIEW

Amphenol Commercial Products

The Company

Amphenol Commercial Products are dedicated to the design, development and manufacturing of connector products which are used in Commercial, Industrial, Communications, Military and Aerospace applications worldwide. Our expertise in understanding and supporting our customers’ interconnect needs has earned Amphenol a reputation of quality and excellence among the world’s leading users of electronic components.

Harsh Environment Connectors

A Rugged Connector is the ideal solution for data transfers in harsh or demanding environments. These connectors offer environmental sealing on the widely used connector standards for RJs, USBs, D-Subs and HDMs all within standard package sizes.

These Harsh Connectors are designed to provide outstanding corrosion resistance and rugged performance. They can be used in a wide range of applications like in factory automation, outdoor communications, portable vehicle-mounted instrumentation or navigation system and security/surveillance equipment.

All Rugged Connectors provide excellent strength and durability in the most demanding applications with a high-temperature-resistant plastic housing and contacts made of a copper alloy with gold and nickel plating.

Generation 1:
- Epoxy seal
- Provides sealing requirements per IP67

Generation 2:
- Epoxy free
- Utilizes gaskets and seals internal to the connector
- Provides sealing requirements per IP68
- Improved thermal cycling performance

Mission Statement

To Our Customers: We will provide services and quality products on time at the lowest cost, engineered with maximum innovation.

To Our Employees: We will provide a safe working environment in which to work, opportunities for training and advancement and equitable compensation for their efforts.

To Our Suppliers: We will provide opportunities to participate in our business successes and will work with them on our goal of continuous improvement.
<table>
<thead>
<tr>
<th>CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rugged RJ11/RJ45</strong></td>
</tr>
<tr>
<td>MRJR Generation 2 Specifications</td>
</tr>
<tr>
<td>MRJR Generation 2 Ordering Code</td>
</tr>
<tr>
<td>MRJR Generation 2 Series</td>
</tr>
<tr>
<td>MRJ Generation 1 Specifications</td>
</tr>
<tr>
<td>MRJ Generation 1 Ordering Code</td>
</tr>
<tr>
<td>MRJ Generation 1 Series</td>
</tr>
<tr>
<td><strong>Rugged USB</strong></td>
</tr>
<tr>
<td>MUSBR Generation 2 Specifications</td>
</tr>
<tr>
<td>MUSBR Generation 2 Ordering Code</td>
</tr>
<tr>
<td>MUSBR Generation 2 Series</td>
</tr>
<tr>
<td>MUSB Generation 1 Specifications</td>
</tr>
<tr>
<td>MUSB Generation 1 Ordering Code</td>
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<tr>
<td>MUSB Generation 1 Series</td>
</tr>
<tr>
<td><strong>Rugged D-Sub</strong></td>
</tr>
<tr>
<td>MDBR Generation 2 Specifications</td>
</tr>
<tr>
<td>MDBR Generation 2 Ordering Code</td>
</tr>
<tr>
<td>MDBR Generation 2 Series</td>
</tr>
<tr>
<td>MDB Generation 1 Specifications &amp; Panel Cutouts</td>
</tr>
<tr>
<td>MDB Generation 1 Ordering Code &amp; PCB Layouts</td>
</tr>
<tr>
<td>MDB Generation 1 Series</td>
</tr>
<tr>
<td><strong>Rugged HDMI</strong></td>
</tr>
<tr>
<td>MHDR Specifications</td>
</tr>
<tr>
<td>MHDR Ordering Code, Panel &amp; PCB Layouts</td>
</tr>
<tr>
<td>MHDR Series</td>
</tr>
<tr>
<td><strong>Locking USB</strong></td>
</tr>
<tr>
<td>LUSB Specifications</td>
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<tr>
<td>LUSB Ordering Code</td>
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<tr>
<td>LUSB 2.0 Series</td>
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<tr>
<td>LUSB 3.0 Series</td>
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<tr>
<td><strong>Rugged Bulkhead Adaptor</strong></td>
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<td>ID Specifications</td>
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<td>ID Ordering Code</td>
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<tr>
<td>ID Series</td>
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<tr>
<td><strong>Additional Products</strong></td>
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<tr>
<td>Additional Products</td>
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<tr>
<td>Notes</td>
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MRJR SERIES
GENERATION 2 RUGGED RJ11/RJ45

Specifications
Connectors are designed to conform to the requirements of TIA-1096-A and IEC 60603-7.

Material
All Materials are RoHS Compliant per EU Directive 2011/65/EU

- External Shell: Die Cast Zinc, Nickel Plated
- Front Insert: Clear Polycarbonate, UL94V-0
- Rear Inserts: High Temperature Resistant Nylon, Glass Reinforced, UL94-0, Black
- Contacts: Phosphor Bronze Alloy Plated with 1.27μm (50μ") min Gold over 1.27μm (50μ") min Nickel on the Mating Area and 2.54μm (100μ") min Matte Tin over Nickel on the Contact Tails
- Panel Gasket: Conductive Silicone Rubber, Black
- LED's: Epoxy Lens, Tin Plated Steels Tails
- Rear Screws: Nickel Plated Steel
- Internal O-rings: Silicone Rubber, Beige
- PCB: FR4 Fibreglass, Lead Free
- Ferrite: Nickel Zinc Soft Ferrite Ceramic

Electrical
- Current Rating: 1.5A max per Contact (ΔT ≤ 30°C)
- Contact Resistance: 20 mΩ max
- Insulation Resistance: 500 MO min
- DWV: 1000 VAC rms (between adjacent contacts), 1500 VAC rms (contacts to ground)

- LED Characteristics: Forward DC Current 25mA max, Forward Voltage 2.5V max @2mA
- Ferrite Characteristics: 38 Ω at 25 MHz min Impedance, Common Mode Rejection -30dB min up to 250 MHz

Mechanical, Environmental, Regulatory
- UL Recognition: Level DUXR2, File Number E135615
- Protection Level: Code IP67 per IEC 60529
- Operating Temperature: -55°C to +105°C
- Durability: Per EIA 364-09, 2500 Mating Cycles
- Vibration: Per EIA 364-28 Condition II (10g, 10-500Hz, 6 hours), No Discontinuity ≥ 1μs
- Shock: Per EIA 364-27 Test Condition A (11ms, 50g, ½ Sine), No Discontinuity ≥ 1μs
- Temperature Life w/o Load: Per EIA-364-17, 1.5 A, 70°C, 500 Hours
- Temperature Life w/o Load: Per EIA-364-17, 105°C, 1000 Hours
- Humidity: Per EIA-364-31, Steady State, 21 Days, 50°C, 90-95%RH
- Mixed Flowing Gas: Per EIA 364-65 Class IIA (Cl₂, NO₂, H₂S, & SO₂), 14 Day Exposure
- Salt Spray: Per EIA 364-26, 250 Hours, 5% Salt, 35°C
- Solvent Resistance: Isopropyl Alcohol & 5% Sodium Hydroxide Solution, 24 Hrs Each
- LED Luminous Intensity: 0.5mCd min at 2mA Forward Current
- Solderability: Per EIA-364-52, 95% Coverage after Category 2 Steam Aging
- Insertion & Withdrawal Force: Per EIA-364-13, 20N (4.5lbf) max (Latch Disengaged)
- Effectiveness of Plug: Per EIA-364-13, 50N (11.2lb) min

Application Recommendations
- Recommended Mounting Screw Torque: 0.45 to 0.65 N-m (4 to 5.75 In-lbs) for steel screws with 3mm (.118") thread engagement
- Recommended Soldering Methods: Manual or wave soldering (solder temperature 260°C max, time 10s max, preheat 100-140°C)

Customer cleaning processes to be polycarbonate compatible to avoid front insertion degradation.

LED Options for MRJR Series

For all MRJR Connectors:

<table>
<thead>
<tr>
<th>LED Code</th>
<th>LED Left</th>
<th>LED Right</th>
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<tbody>
<tr>
<td>0</td>
<td>No LED</td>
<td>No LED</td>
</tr>
<tr>
<td>1</td>
<td>Green</td>
<td>Yellow</td>
</tr>
<tr>
<td>4</td>
<td>Yellow</td>
<td>Green</td>
</tr>
<tr>
<td>5</td>
<td>Green</td>
<td>Green</td>
</tr>
<tr>
<td>A</td>
<td>Bi-color</td>
<td>Bi-color</td>
</tr>
</tbody>
</table>

Example Part Number: MRJR-538X-01 X = LED designation code
## MRJR SERIES

### Rugged RJ Series, Generation 2

<table>
<thead>
<tr>
<th>Modular Jack Type</th>
<th>Termination Style</th>
<th>Number of Contacts</th>
<th>LED Options</th>
<th>Tail Length &amp; Thread Options</th>
<th>Other Options</th>
<th>Unique Special Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 - RJ11, 6 Position</td>
<td>3 - Right Angle</td>
<td>4 - 4 Contacts</td>
<td>0 - No LEDs</td>
<td>0 - 2.54mm [.100&quot;] Tail Length, #4-40 UNC Thread</td>
<td>1 - Single Port, Right Angle with Threaded Holes</td>
<td>No Digit - Part Defined by Previous Digits of Part Number</td>
</tr>
<tr>
<td>4 - RJ11, 6 Position with EMI Ferrite Filtering</td>
<td>4 - Vertical</td>
<td>6 - 6 Contacts</td>
<td>1 - Green Left, Yellow Right</td>
<td>B - 3.81mm [.150&quot;] Tail Length, #4-40 UNC Thread</td>
<td></td>
<td>1 to 9 - Identifies Unique Special Feature</td>
</tr>
<tr>
<td>5 - RJ45, 8 or 10 Position</td>
<td>5 - Right Angle on PCB with Right Angle RJ45 Modular Jack</td>
<td>8 - 8 Contacts</td>
<td>4 - Yellow Left, Green Right</td>
<td>M - 2.54mm [.100&quot;] Tail Length, M3 x 0.5 Thread</td>
<td>F - Single Port, Vertical with Threaded Holes (Use this code with termination style 4 above)</td>
<td>Many unique features are readily available to suit customer requirements. Consult with Amphenol Canada for details.</td>
</tr>
<tr>
<td>6 - RJ45, 8 or 10 Position with EMI Ferrite Filtering</td>
<td>7 - Right Angle on PCB with Vertical RJ45 Modular Jack</td>
<td>A - 10 Contacts</td>
<td>5 - Green Left, Green Right</td>
<td>P - 3.81mm [.150&quot;] Tail Length, M3 x 0.5 Thread</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 - RJ45, 8 or 10 Position with Transient Voltage Suppression</td>
<td>9 - Right Angle on PCB with Terminal Blocks</td>
<td></td>
<td>A - Bi-colour Green/Yellow Left &amp; Right</td>
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<tr>
<td>8 - RJ45, 8 Position with Cat5e Performance Level</td>
<td>A - Right Angle on PCB with Holes for Wiring (Style 5 PCB)</td>
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<tr>
<td>9 - Right Angle on PCB with Vertical Cable Header</td>
<td>B - Right Angle on PCB with Vertical Cable Header</td>
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<tr>
<td>10 - Right Angle on PCB with Vertical Cable Header</td>
<td>C - Right Angle on PCB with Holes for Wiring (Style 7 PCB)</td>
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<tr>
<td></td>
<td>D - Right Angle on PCB with Vertical Cable Header</td>
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</tr>
</tbody>
</table>

**Notes:**

1) Term RJ11 refers to jack for 6P2C, 6P4C or 6P6C (RJ11, RJ12, RJ13, RJ14, RJ18 or RJ22).
2) Ferrite option currently available for right angle connectors only.
3) Term RJ45 refers to non-keyed jack for 8P8C or 10P10C (RJ31, RJ38, RJ48C, RJ49, RJ50, RJ61).
4) Transient voltage suppression and Cat5e performance level for connectors on a PCB only. Consult with Amphenol for availability.
5) Termination style 5 suitable for both RJ11 and RJ45 jacks. Consult with Amphenol regarding applications where a smaller 14 pin cable header would be preferred.
6) Termination style 7 currently available for RJ11 (6P4C & 6P6C) and RJ45 (8P8C) only.
7) Termination style 8 currently available for RJ45 (8P8C) only.
8) Termination style A uses the PCB from termination style 5. Termination style C uses the PCB from termination style 7.
9) Termination styles B & D currently available for RJ11 (6P4C & 6P6C) without LEDs and RJ45 (8P8C) without LEDs only.
10) Consult with Amphenol for additional termination styles, solder cup contacts, LED colours, contact tail lengths, mounting styles, conductive gaskets or other requirements of interest. See catalogue Accessories pages for dust cover and plug boot options.
MRJR SERIES
GENERATION 2 RUGGED RJ11/RJ45

MRJR-33XX-X1  MRJR-53XX-X1
FRONT VIEW

MRJR POSITION #1
(8 POSITION SHOWN)
30.30 [.119]
24.00 [.945]
9.00 [.354]
4.50 [.177]
0.46 [.018] x 0.36 [.014]
CONTACT TAILS

RIGHT LED
SEE ORDERING CODE

LEFT LED
0.46 [.018] x 0.36 [.014]
CONTACT TAILS

BOTTOM VIEW
30.30 [.119]
16.00 [.630]
28.32 [.111]
13.67 [.538]
18.05 [.711]
2.08 [.082]
MAJOR DIAGONAL
SOLDERABLE PEGS

#4-40 UNC OR M3 x 0.5
x 5.50 [.217] DEEP THREAD
SEE ORDERING CODE

SIDE VIEW

8.90 [.350]
2.50 [.098]
18.00 [.709]
14.00 [.551]
6.50 [.256]
0.51 [.020] SQUARE
LED TAILS

TAIL LENGTH
2.54 [.100] OR 3.81 [.150]
SEE ORDERING CODE

ISOMETRIC VIEW

DIECAST
SHELL

4, 6, 8 OR 10
CONTACT RECEPACLE

FRONT INSERT

CONDUCTIVE
PANEL GASKET

MRJR-34XX-X1  MRJR-54XX-X1
FRONT VIEW

MRJR POSITION #1
(8 POSITION SHOWN)
30.30 [.119]
24.00 [.945]
9.00 [.354]
4.50 [.177]

LEFT LED

BOTTOM VIEW
16.00 [.630]
2.57 [.081]
18.05 [.711]
0.46 [.018] x
0.36 [.014]
CONTACT TAILS

RIGHT LED
SEE ORDERING CODE

#4-40 UNC OR M3 x 0.5
x 5.50 [.217] DEEP THREAD
SEE ORDERING CODE

SIDE VIEW

8.90 [.350]
16.94 [.663]
18.00 [.709]
14.00 [.551]
2.50 [.098]

TAIL LENGTH
2.54 [.100] OR 3.81 [.150]
SEE ORDERING CODE

ISOMETRIC VIEW

DIECAST
SHELL

4, 6, 8 OR 10
CONTACT RECEPACLE

FRONT INSERT

CONDUCTIVE
PANEL GASKET

For recommended panel cutout
& PCB layout see catalogue page 9
### MRJR SERIES

#### GENERATION 2 RUGGED RJ11/RJ45

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>MRJR Connector Type</th>
<th>Cable Header Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Position</td>
<td>8 Position</td>
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<td>6</td>
<td>7</td>
</tr>
<tr>
<td>-</td>
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</tr>
<tr>
<td>Shell/GND</td>
<td>Shell/GND</td>
</tr>
</tbody>
</table>

**MRJR CONNECTOR SPECIFICATIONS**

- **MRJR-35XX-X1**
  - Top View: 49.47 [1.948]
  - Side View: 16.00 [0.630]
  - Front View: 4.50 [0.177]

- **MRJR-55XX-X1**
  - Top View: 44.70 [1.760]
  - Side View: 27.29 [1.075]
  - Front View: 9.00 [0.354]

**MRJR POSITION #1**

*For recommended panel cutout see catalogue page 9*

**MRJR CONNECTOR TYPES**

- **MRJR-37XX-X1**
  - Top View: 48.79 [1.921]
  - Side View: 16.70 [0.657]
  - Front View: 9.00 [0.354]

- **MRJR-578XX-X1**
  - Top View: 59.89 [2.356]
  - Side View: 16.70 [0.657]
  - Front View: 9.00 [0.354]
MRJR SERIES

GENERATION 2 RUGGED RJ11/RJ45

**MRJR-588X-X1**

<table>
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<th>CONNECTIONS CHART</th>
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<tr>
<td><strong>MRJ Contact</strong></td>
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<table>
<thead>
<tr>
<th>Shell/GND</th>
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<th>Shell/GND</th>
<th>A1 &amp; B1</th>
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<td>LED 1</td>
<td>LED 1</td>
<td>A7</td>
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<td>LED 2</td>
<td>LED 2</td>
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<td>LED 4</td>
<td>LED 4</td>
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<td>LED 3</td>
<td>LED 3</td>
<td>B8</td>
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</tbody>
</table>

For 6 position with LEDs, the terminal block will be 20.71 [0.818] with 8 positions per row.

**MRJR-39XX-X1**

<table>
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<th>CONNECTIONS CHART</th>
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<tbody>
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<td><strong>MRJ Contact Type</strong></td>
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<td>6 Position</td>
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<td>Shell/GND</td>
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</table>

For 6 position with LEDs, the terminal block will be 20.71 [0.818] with 8 positions per row.

**MRJR Position #1**

<table>
<thead>
<tr>
<th>ISOMETRIC VIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRJR POSITION #1</td>
</tr>
<tr>
<td>30.30 [1.190]</td>
</tr>
<tr>
<td>24.00 [0.945]</td>
</tr>
<tr>
<td>4.50 [0.177]</td>
</tr>
<tr>
<td>9.00 [0.354]</td>
</tr>
</tbody>
</table>

For recommended panel cutout see catalogue page 9.
**MRJR SERIES**

**GENERATION 2 RUGGED RJ11/RJ45**

### CONNECTIONS CHART

<table>
<thead>
<tr>
<th>MRJR Connector Type</th>
<th>PCB Hole Numbers</th>
</tr>
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<tbody>
<tr>
<td>6 Position</td>
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</tbody>
</table>

**Shell/GND**

**LED 1**

**LED 2**

**LED 3**

**LED 4**

**TOP VIEW**

**SIDE VIEW**

**ISOMETRIC VIEW**

For recommended panel cutout see catalogue page 9

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**MRJR-3AXX-X1**

**MRJR-5AXX-X1**

**MRJR-3BXX-X1**

**MRJR-5BXX-X1**
MRJR SERIES
GENEARTION 2 RUGGED RJ11/RJ45

MRJR-3CXX-X1  MRJR-5CXX-X1

CONNECTIONS CHART

<table>
<thead>
<tr>
<th>MRJR Connector Type</th>
<th>PCB Hole Numbers</th>
</tr>
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<tbody>
<tr>
<td>6 Position</td>
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<td>Shell/GND</td>
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</tr>
<tr>
<td>LED 1</td>
<td>LED 1</td>
</tr>
<tr>
<td>LED 2</td>
<td>LED 2</td>
</tr>
<tr>
<td>LED 3</td>
<td>LED 3</td>
</tr>
<tr>
<td>LED 4</td>
<td>LED 4</td>
</tr>
</tbody>
</table>

ISOMETRIC VIEW

4, 6, 8, OR 10 CONTACT RECEPTACLE

TOP VIEW

PCB HOLE NUMBERS

SIDE VIEW

MRJR POSITION #1  (8 POSITION SHOWN)

#4-40 UNC OR M3 x 0.5 x 5.50 [217] DEEP THREAD
SEE ORDERING CODE

MRJR-3DX0-X1  MRJR-5D8X-X1

CONNECTIONS CHART

<table>
<thead>
<tr>
<th>MRJR Connector Type</th>
<th>Header Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Position</td>
<td>8 Position</td>
</tr>
<tr>
<td>Shell/GND</td>
<td>Shell/GND</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>1</td>
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<tr>
<td>1</td>
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<tr>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>-</td>
<td>8</td>
</tr>
</tbody>
</table>

ISOMETRIC VIEW

4, 6, OR 8 CONTACT RECEPTACLE

TOP VIEW

HEADER POSN 5

SIDE VIEW

MRJR POSITION #1  (8 POSITION SHOWN)

#4-40 UNC OR M3 x 0.5 x 5.50 [217] DEEP THREAD
SEE ORDERING CODE

For recommended panel cutout see catalogue page 9.
**MRJR SERIES**

**GENERATION 2 RUGGED RJ11/RJ45**

**Recommended PCB & Panel Layout**

**MRJR-54XX PCB Layout**

**MRJR SERIES**

Dust Covers

Material: Silicone Rubber

- MRJ-2586-10BP (Grey)
- MRJ-2586-20BP (Black)
- MRJ-2586-01BP (Grey)
- MRJ-2586-02BP (Black)
- MRJ-2586-12BP (Grey)
- MRJ-2586-22BP (Black)
- MRJ-2586-42BP (Black, Conductive)

**Notes:**
1) Boot to be assembled over RJ cable prior to termination of RJ plug. Slide boot towards cable end to cover plug and mating interface.  
2) Square end of boot fits over mating end of Amphenol MRJ or MRJR series modular jacks.

**Boot**

- MRJ-258E-11BP (Transparent)
- MRJ-258E-12BP (Black)

**Dust Covers**

**Application Views**

**Material:** Silicone Rubber

**MRJ & MRJR Accessories**
MRJ SERIES

GENERATION 1 RUGGED RJ45

Specifications
Connectors are designed to conform to the requirements of TIA-1096-A and IEC 60603-7.

Material
All Materials are RoHS Compliant per EU Directive 2011/65/EU

- External Shell: Die Cast Zinc, Nickel Plated
- Front Insert: Clear Polycarbonate, UL94V-0
- Rear Inserts: High Temperature Resistant Nylon, Glass Reinforced, UL94-0, Black
- Contacts: Phosphor Bronze Alloy Plated with 1.7μm (50μ”) min Gold over 1.27μm (50μ”) min Nickel on the Mating Area and 2.54μm (100μ”) min Matte Tin over Nickel on the Contact Tails
- Panel Gasket: Conductive Silicone Rubber, Black
- Mating Area Ground Tab: Nickel Plated Copper Alloy
- LED’s: Epoxy Lens, Tin Plated Steel Tails
- Rear Screws: Nickel Plated Steel
- Internal O-rings: Silicone Rubber, Beige
- PCB: FR4 Fibreglass, Lead Free
- Admittance Connector: UL Recognized Component
- Ferrite: Nickel Zinc Soft Ferrite Ceramic

Electrical

- Current Rating: 1.5A max per Contact (ΔT ≤ 30°C)
- Contact Resistance: 20 mΩ max
- Insulation Resistance: 500 MO min
- DWV: 1000 VAC rms (between adjacent contacts), 1500 VAC rms (contacts to ground)
- LED Characteristics: Forward DC Current 25mA max, Forward Voltage 2.5V max @2mA
- Ferrite Characteristics: 38 Ω at 25 MHz min Impedance, Common Mode Rejection -30dB min up to 250 MHz

Mechanical, Environmental, Regulatory

- UL Recognition: Level DUXR2, File Number E135615
- Water & Dust Protection Level: Code IP67 per IEC 60529
- Operating Temperature: -55°C to +105°C
- Durability: Per EIA 364-09, 2500 Mating Cycles
- Vibration: Per EIA 364-28 Condition II (10g, 10-500 Hz, 6 hours), No Discontinuity ≥ 1μs
- Shock: Per EIA 364-27 Test Condition H (11ms, 30g, ½ Sine), No Discontinuity ≥ 1μs
- Per EIA 364-17, 1.5 A, 70°C, 500 Hours
- Temperature Life w/ Load: Per EIA 364-17, 105°C, 1000 Hours
- Temperature Life w/o Load: Per EIA 364-32, -55°C to +105°C, 25 Cycles
- Thermal Shock: Per EIA 364-31, 21 Cycles, 504 Hrs, 25°C to 65°C, 90-95%RH, with -10°C Cold Shock
- Humidity: Per EIA-364-31, Steady State, 21 Days, 50°C, 90-95%RH
- Mixed Flowing Gas: Per EIA 364-65 Class IIA (Cl2, NO2, H2S, & SO2), 14 Day Exposure
- Salt Spray: Per EIA 364-26, 250 Hours, 5% Salt, 35°C
- Solvent Resistance: Isopropyl Alcohol & 5% Sodium Hydroxide Solution, 24 Hrs Each
- LED Luminous Intensity: 0.5mCd min at 2mA Forward Current
- Solderability: Per EIA-364-52, 95% Coverage after Category 2 Steam Aging
- Insertion & Withdrawal: Per EIA-364-13, 20N (4.5lbf) (Latch Disengaged)
- Effectiveness of Plug: Per EIA-364-13, 50N (11.2lbf) min
- Latch (Coupling Device): Per EIA-364-13, 50N (11.2lb) min

Application Recommendations

- Recommended Mounting Screw Torque: 0.45 to 0.65 N-m (4 to 5.75 in-lbs) for steel screws with 3mm (.118”) thread engagement
- Recommended Soldering Methods: Manual or wave soldering (solder temperature 260°C max, time 10s max, preheat 100-140°C)

Customer cleaning processes to be polycarbonate compatible to avoid front insertion degradation.

LED Options for MRJ Series

For all MRJ Connectors:

Example Part Number: MRJ-538X-01  X = LED designation code

<table>
<thead>
<tr>
<th>LED Code</th>
<th>LED Left</th>
<th>LED Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No LED</td>
<td>No LED</td>
</tr>
<tr>
<td>1</td>
<td>Green</td>
<td>Yellow</td>
</tr>
<tr>
<td>4</td>
<td>Yellow</td>
<td>Green</td>
</tr>
<tr>
<td>5</td>
<td>Green</td>
<td>Green</td>
</tr>
<tr>
<td>A</td>
<td>Bi - color</td>
<td>Bi - color</td>
</tr>
<tr>
<td></td>
<td>Green &amp; Yellow</td>
<td>Green &amp; Yellow</td>
</tr>
</tbody>
</table>
### MRJ SERIES

#### Rugged RJ Series, Generation 1

**Modular Jack Type**
- 3 - RJ11, 6 Position
- 5 - RJ45, 8 or 10 Position
- 6 - RJ45, 8 or 10 Position with EMI Ferrite Filtering
- 7 - RJ45, 8 or 10 Position with Transient Voltage Suppression

**Termination Style**
1. Vertical, supplied with dust cover
2. Right Angle
3. Vertical
4. Right Angle on PCB with Right Angle Cable Header
5. Right Angle on PCB with Right Angle RJ45 Modular Jack
6. Right Angle on PCB with Vertical RJ45 Modular Jack
7. Right Angle on PCB with Terminal Blocks
8. Right Angle on PCB with Holes for Wiring (Style 5 PCB)
9. Right Angle on PCB with Vertical Cable Header

**Number of Contacts**
- 8 - 8 Contacts
- A - 10 Contacts

**LED Options**
- 0 - No LEDs
- 1 - Green Left, Yellow Right
- 4 - Yellow Left, Green Right
- 5 - Green Left, Green Right
- A - Bi-colour Green/Yellow Left & Right

**Tail Length & Thread Options**
- 0 - 2.54mm [.100"] Tail Length, #4-40 UNC (or Through Hole for Vertical with Other Option 1 or B)
- B - 3.81mm [.150"] Tail Length, #4-40 UNC (or Through Hole for Vertical with Other Option 1 or B)
- M - 2.54mm [.100"] Tail Length, M3 x 0.5 Thread
- P - 3.81mm [.150"] Tail Length, M3 x 0.5 Thread

**Other Options**
- 1 - Single Port, Right Angle with Threaded Holes or Vertical with Through Hole & Gasket on Back of Flange
- B - Single Port, Vertical with Through Hole & Gasket on Front of Flange
- F - Single Port, Vertical with Threaded Holes

**Unique Special Code**
- No Digit - Part Defined by Previous Digits of Part Number
- 1 to 9 - Identifies Unique Special Feature
- Many unique features are readily available to suit customer requirements. Consult with Amphenol Canada for details.

### Notes:
1. Term RJ11 refers to jack for 6P2C, 6P4C or 6P6C (RJ11, RJ12, RJ13, RJ14, RJ18 or RJ25).
2. RJ11 jacks currently available in MRJ series only. See MRJ catalogue pages.
3. Term RJ45 refers to non-keyed jack for 8P8C or 10P10C (RJ31, RJ38, RJ48C, RJ49, RJ50, RJ56).
4. 10 position jack currently available for right angle connectors only.
5. Ferrite option currently available for right angle connectors only.
6. Transient voltage suppression for connectors on a PCB only. Consult with Amphenol for availability.
7. Termination styles 7 & 8 currently available for RJ45 (8P8C) only.
8. Termination style A uses the PCB from termination style 5. Termination style C uses the PCB from termination style 7.
9. Termination styles B & D currently available for RJ45 (8P8C) without LEDs only.
10. Consult with Amphenol for additional termination styles, solder cup contacts, LED colours, contact tail lengths, mounting styles, conductive gaskets or other requirements of interest. See catalogue Accessories pages for dust cover and plug boot options.
MRJ SERIES

MRJ-518X-X1
MRJ-518X-XB

MRJ-548X-X1
MRJ-548X-XB

ISOMETRIC VIEWS

BOTTOM VIEW

FRONT VIEW

SIDE VIEW

TAIL LENGTH

2.54 [.100] OR 3.81 [.150]
SEE ORDERING CODE

GASKET ON THIS FACE OF FLANGE
FOR FRONT PANEL MOUNT
P/N MRJ-518X-XB & MRJ-548X-XB

DUST COVER IS
SUPPLIED BULK PACKED

GASKET ON BACK OF FLANGE FOR FRONT
PANEL MOUNT P/N MRJ-518X-X1 & MRJ-548X-X1

For recommended panel cutout
& PCB layout see catalogue page 17

MRJ SERIES

GENERATION 1 RUGGED RJ45

MRJ-518X-XF
MRJ-548X-XF

ISOMETRIC VIEWS

DUST COVER IS SUPPLIED BULK PACKED FOR
P/N MRJ-518X-XF ONLY

For recommended panel cutout
& PCB layout see catalogue page 17

All specifications are subject to change without notice. Catalogue is updated regularly. Please refer to www.amphenolcanada.com for the most recent edition.
MRJ SERIES

MRJ-578X-X1

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>MRJ Contact</th>
<th>RJ Contact</th>
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<tbody>
<tr>
<td>1</td>
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<td>7</td>
<td>7</td>
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<tr>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Shell/GND/Shell/GND

MRJ LED/PCB Hole

LED 1: 1

LED 2: 2

LED 3: 3

LED 4: 4

MRJ POSITION #1

FRONT VIEW

4.50 [.177]

9.00 [.354]

MRJ LED: LED 1

LED 1: LEFT LED

LED 4: RIGHT LED

RIGHT LED SEE ORDERING CODE

#4-40 UNC or M3 x 0.5 x 5.50 [.217] DEEP THREAD SEE ORDERING CODE

ISOMETRIC VIEWS

RIGHT ANGLE MRJ

TOP VIEW

SIDE VIEW

MRJ-588X-X1

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>MRJ Contact</th>
<th>RJ Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>2</td>
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<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Shell/GND/Shell/GND

MRJ LED/PCB Hole

LED 1: 1

LED 2: 2

LED 3: 3

LED 4: 4

MRJ POSITION #1

FRONT VIEW

4.50 [.177]

9.00 [.354]

MRJ LED: LED 1

LED 1: LEFT LED

LED 4: RIGHT LED

RIGHT LED SEE ORDERING CODE

#4-40 UNC or M3 x 0.5 x 5.50 [.217] DEEP THREAD SEE ORDERING CODE

ISOMETRIC VIEW

RIGHT ANGLE MRJ

TOP VIEW

SIDE VIEW

For recommended panel cutout see catalogue page 17
**MRJ SERIES**

---

**MRJ-59XX-X1**

**.connections chart**

- **MRJ Connector Type**
  - 8 Position
  - 10 Position
- **Terminal Block Position**
  - Shell/GND
  - Shell/GND
- **Technical Specifications**
  - 7.5 x 2.4 x 2.4 (Dimensions: 191.0 x 60.0 x 60.0 mm)
  - Number of Positions: 10
  - Weight: 21.0 g

---

**MRJ-5AXX-X1**

**connections chart**

- **MRJ Connector Type**
  - 8 Position
  - 10 Position
- **PCB Hole Number**
  - Shell/GND
  - Shell/GND
- **Technical Specifications**
  - 7.5 x 2.4 x 2.4 (Dimensions: 191.0 x 60.0 x 60.0 mm)
  - Number of Positions: 10
  - Weight: 21.0 g

---

**Amphenol Commercial Products**

- **Amphenol Canada Corp.**
  - Telephone: (416) 291-4401
  - Fax: (416) 292-0647
  - Email: sales@amphenolcanada.com

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**All specifications are subject to change without notice. Catalogue is updated regularly. Please refer to www.amphenolcanada.com for the most recent edition.**
MRJ SERIES

MRJ-5B80-X1

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>MRJ 8 Position</th>
<th>Header Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>2 &amp; 9</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
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<tr>
<td>2</td>
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<td>3</td>
</tr>
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<td>7</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
</tr>
</tbody>
</table>

**ISOMETRIC VIEW**

**FRONT VIEW**

MRJ POSITION #1

30.30\[1.193\] 24.00\[0.945\] 4.50\[0.177\] 9.00\[0.354\] 20.00\[0.787\]

**SIDE VIEW**

38.96\[1.534\] 19.05\[0.750\] 8.90\[0.350\] 2.50\[0.098\] 2.92\[0.115\]

For recommended panel cutout see catalogue page 17

**MRJ-5CXX-X1**

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>MRJ Connector Type</th>
<th>PCB Hole Number</th>
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</thead>
<tbody>
<tr>
<td>8 Position</td>
<td>10 Position</td>
</tr>
<tr>
<td>Shell/GND</td>
<td>Shell/GND</td>
</tr>
<tr>
<td>1</td>
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<tr>
<td>LED 1</td>
<td>LED 1</td>
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<tr>
<td>LED 2</td>
<td>LED 2</td>
</tr>
<tr>
<td>LED 3</td>
<td>LED 3</td>
</tr>
<tr>
<td>LED 4</td>
<td>LED 4</td>
</tr>
</tbody>
</table>

**ISOMETRIC VIEW**

**FRONT VIEW**

MRJ POSITION #1

30.30\[1.193\] 24.00\[0.945\] 4.50\[0.177\] 9.00\[0.354\] 20.00\[0.787\]

**SIDE VIEW**

38.31\[1.508\] 19.05\[0.750\] 8.50\[0.335\] 2.54\[0.100\] 16.70\[0.657\]

For recommended panel cutout see catalogue page 17

**TOP VIEW**

PCB HOLE NUMBERS

16.00\[0.630\] 19.05\[0.750\] 47.21\[1.859\] 2.50\[0.098\] 2.54\[0.100\]
MUSBR SERIES GENERATION 2 RUGGED USB

Specifications
Connectors are designed to conform to the requirements of the USB 2.0 specification.

Material
All Materials are RoHS Compliant per EU Directive 2011/65/EU

External Shell: Die Cast Zinc, Nickel Plated
Insulator Housing: High Temperature Resistant Engineering Thermoplastic, Glass Reinforced, UL94V-0, Black
Contacts: Phosphor Bronze, Plated with 0.76μm (30μ") min Gold over 1.27μm (50μ") min Nickel on the Mating Area and 2.54μm (100μ") min Matte Tin over Nickel on the Contact Tails
Internal Shield & Rear Shield: Stainless Steel, Passivated
Panel Gasket: Conductive Silicone Rubber, Black
Internal O-ring: Silicone Rubber, Beige
PCB: FR4 Fibreglass, Lead Free
Additional Connector: UL Recognized Component

Electrical

Current Rating: Standard A - 30 mA max per Contact (ΔT ≤ 30°C)
Mini - 1A max per Contact (ΔT ≤ 30°C)

Contact Resistance: Standard A - 30 mΩ max
Mini - 50 mΩ max

Insulation Resistance: Standard A - 1000 MΩ min
Mini - 100 MΩ min

DWV: Standard A - 500 VAC rms
Mini - 100 VAC rms

Mechanical, Environmental, Regulatory

UL Recognition: Level DUXR2, File Number E135615, see Listing

Water & Dust
Protection Level: Code IP67 per IEC 60529

Operating Temperature: -40°C to +105°C

Insertion Force: Per EIA-364-13, 35N (7.9lb.) max
Extraction Force: Per EIA-364-13, Standard A - 10N (2.2lb.) min
Mini - 7N (1.6lb.) min Initial, 3N (0.7lb.) min after Durability

Durability: Standard A - 1500 Mating Cycles
Mini - 5000 Mating Cycles

Vibration: Per EIA 364-28 Random Condition V, Letter A
No Discontinuity ≥ 1μs

Shock: Per EIA 364-27 Test Condition H (11 ms, 30, ½ Sine), No Discontinuity ≥ 1μs

Temperature Life w/o Load: Per EIA-364-17, 105°C, 1000 Hours

Thermal Shock: Per EIA-364-32, -40°C to +125°C, 5 Cycles

Humidity: Per EIA 364-31, 10 Cycles, 240 Hrs, 25°C to 65°C 90-95%RH, with -10C Cold Shock

Mixed Flowing Gas: Per EIA 364-65 Class IIA (CI₂, NO₂, H₂S & SO₂), 14 Day Exposure

Solvent Resistance: Isopropyl Alcohol & 5% Sodium Hydroxide Solution, 24 Hrs Each

Solderability: Per EIA-364-52, 95% Coverage after Category 2 Steam Aging

Application Recommendations

Recommended Mounting Screw Torque: Standard A - 0.45 to 0.65N-m (4 to 5.75 In-lbs) for steel screws with 3mm (.118") thread engagement,
Micro – 0.23 to 0.34N-m (2 to 3 In-lbs) for steel screws with 2.5mm (.098") thread engagement

Recommended Soldering Methods: Manual or wave (solder temperature 260°C max, time 10s max, preheat 100-140°C)
## MUSBR SERIES

**ORDERING CODE**

### Rugged USB Receptacle Series, Generation 2

**Receptacle Type Per USB 2.0**
- A - Standard A Series
- B - Mini B Series
- E - Mini AB Series

### Termination Style
1. Right Angle
2. Right Angle on PCB with Right Angle Cable Header
3. Right Angle on PCB with Right Angle Matching USB Type Connector
4. Right Angle on PCB with Terminal Blocks
5. Vertical
8. Right Angle on PCB with Vertical Cable Header
A. Right Angle on PCB with Holes for Wiring (Style 3 PCB)
B. Right Angle on PCB with Vertical Single Row Isolated Header
E. Right Angle on PCB with Vertical Matching USB Type Connector

### Number of Contacts
1. Standard 4 Contacts per Port for Types A
2. Standard 5 Contacts per Port for Types B & E

### Insulator Housing Colour
1. Black for Types A, B & E

### Shell & Thread Options
- 3. Standard Shell, Unified Thread
- 4. Low Profile Shell for Type A, Unified Thread
- 5. Rear Flange Shell for Types B & E, Unified Thread
- M. Standard Shell, Metric Thread
- R. Low Profile Shell for Type A, Metric Thread
- T. Rear Flange Shell for Types B & E, Metric Thread

### Dust Cover Options
- 0. With No Dust Cover
- 1. With Grey Dust Cover
- 5. With Black Dust Cover

### Unique Special Code
- No Digit - Part Defined by Previous Digits of Part Number
- 1 to 9 - Identifies Unique Special Features

Many unique features are readily available to suit customer requirements. Consult with Amphenol Canada for details.

### Notes:
1. For a Micro AB receptacle with epoxy free design, refer to MUSB series receptacle type K.
2. Termination styles B, & E are currently available for receptacle type A only.
3. Termination style A uses the PCB from termination style 3.
4. For receptacle type A (Standard A Series), the term standard shell relates to the shell profile. For receptacle types B & E (Mini B & Mini AB), the term standard shell relates to the position of the flange. It is not an indication of connector availability.
5. For receptacle type A (Standard A Series), the unified thread is #4-40UNC and the metric thread is M3 x 0.5. For receptacle types B & E (Mini B & Mini AB), the unified thread is #2-56UNC and the metric thread is M2.5 x 0.45.
6. When dust covers are supplied with the connector, they are not installed. They are supplied in bulk inside each package of connectors.
7. Consult with Amphenol for additional termination styles, solder cup contacts, contact tail lengths, mounting styles, non-conductive gaskets or other requirements of interest. See catalogue Accessories page for dust cover options.
**MUSBR SERIES**

**GENERATION 2 RUGGED USB**

**MUSBR-A111-XX**

**FRONT VIEW**

STANDARD PROFILE SHOWN

30.00 [1.181]
24.00 [.945]
20.00 [.787]

#4-40 UNC OR M3 x 0.5 x 5.50 [217] DEEP THREAD
SEE ORDERING CODE

**SIDE VIEW**

STANDARD PROFILE SHOWN

4.00 [.157]

**ISOMETRIC VIEWS**

STANDARD PROFILE SHELL

LOW PROFILE SHELL

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Standard Profile</th>
<th>Low Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>18.00</td>
<td>15.00</td>
</tr>
<tr>
<td>B</td>
<td>14.00</td>
<td>11.00</td>
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<tr>
<td>C</td>
<td>9.00</td>
<td>6.35</td>
</tr>
<tr>
<td>D</td>
<td>4.50</td>
<td>3.00</td>
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</tbody>
</table>

For recommended panel cutout & PCB layout see catalogue page 26

**MUSBR-A211-XX**

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>Rugged USB Receptacle</th>
<th>Cable Header</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
</tr>
</tbody>
</table>

**ISOMETRIC VIEW**

STANDARD PROFILE SHELL SHOWN

**SIDE VIEW**

STANDARD PROFILE SHOWN

4.00 [.157]

For recommended panel cutout see catalogue page 26
**MUSBR SERIES**

**GENERATION 2 RUGGED USB**

**MUSBR-A311-XX**

**MUSBR-AE11-XX**

**MUSBR-A411-XX**

**CONNECTIONS CHART**

**MUSBR Contact** | **USB Position**
---|---
Shell/GND | Shell/GND
1 | 1
4 | 4
3 | 3
2 | 2

**Dimension** | **Standard Profile** | **Low Profile**
---|---|---
A | 18.00 | 15.00
B | 14.00 | 11.00
C | 9.00 | 6.35
D | 4.50 | 3.00
E | 13.62 | 12.12

**ISOMETRIC VIEWS**

**ISOMETRIC VIEW**

**LOW PROFILE**

**MUSBR**

**SIDE VIEW**

**LOW PROFILE VERTICAL USB**

**STANDARD PROFILE VERTICAL USB**

**RIGHT ANGLE**

**VERICAL USB**

**TERMINAL BLOCK**

**POSN 1**

**POSN 5**

**TOP VIEW**

**FOR RECOMMENDED PANEL CUTOUT**

**See catalogue page 26**

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MUSBR-A511-XX

**Connections Chart**

<table>
<thead>
<tr>
<th>Rugged USB Receptacle</th>
<th>Cable Header</th>
<th>Dimension</th>
<th>Standard Profile</th>
<th>Low Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>2 &amp; 9</td>
<td>A</td>
<td>18.00</td>
<td>15.00</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>B</td>
<td>14.00</td>
<td>11.00</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>C</td>
<td>9.00</td>
<td>6.35</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>D</td>
<td>4.50</td>
<td>3.00</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>E</td>
<td>13.62</td>
<td>12.12</td>
</tr>
</tbody>
</table>

**Front View**

- Standard Profile Shown
- MUSBR Position #1
- #4-40 UNC or M3 x 0.5 x 5.00 (0.20) Deep Thread
- See Ordering Code
- 20.00 [0.787]
- 24.00 [0.945]
- 30.00 [1.181]
- 2.80 [0.110]
- 1.15 [0.045]
- 4.00 [0.157]
- 2.00 [0.079]

**Isometric View**

- Standard Profile Shell
- Low Profile Shell
- Diecast Shell
- Conductive Panel Gasket
- 18.00 [0.709] REF
- 15.00 [0.590] REF
- 16.00 [0.630]
- 8.00 [0.315]
- 4.04 [0.159]
- 2.00 [0.079]
- 0.58 [0.023] x 0.25 [0.010] Contact Tails

**Side View**

- Standard Profile Shown
- USB Series A Receptacle
- 2.00 [0.079]
- 3.30 [0.130]
- 2.80 [0.110]
- 1.15 [0.045]
- 4.00 [0.157]
- 2.00 [0.079]

**Bottom View**

- Standard Profile Shown
- MUSBR Position #1
- #4-40 UNC or M3 x 0.5 x 5.00 (0.20) Deep Thread
- See Ordering Code
- 8.00 [0.315]
- 22.01 [0.867]
- 2.00 [0.079]
- 4.00 [0.159]

**MUSBR-A811-XX**

**Connections Chart**

<table>
<thead>
<tr>
<th>Rugged USB Receptacle</th>
<th>Cable Header</th>
<th>Dimension</th>
<th>Standard Profile</th>
<th>Low Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>11</td>
<td>A</td>
<td>18.00</td>
<td>15.00</td>
</tr>
<tr>
<td>Shell/GND</td>
<td>10</td>
<td>B</td>
<td>14.00</td>
<td>11.00</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>C</td>
<td>9.00</td>
<td>6.35</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>D</td>
<td>4.50</td>
<td>3.00</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>E</td>
<td>13.62</td>
<td>12.12</td>
</tr>
</tbody>
</table>

**Front View**

- Standard Profile Shown
- MUSBR Position #1
- #4-40 UNC or M3 x 0.5 x 5.00 (0.20) Deep Thread
- See Ordering Code
- 20.00 [0.787]
- 24.00 [0.945]
- 30.00 [1.181]
- 15.00 [0.591]
- 4.00 [0.157]

**Isometric View**

- Standard Profile Shell
- Low Profile Shell
- Diecast Shell
- Conductive Panel Gasket
- 15.00 [0.590] REF
- 16.00 [0.630]
- 8.00 [0.315]
- 2.00 [0.079]

**Side View**

- Standard Profile Shown
- USB Series A Receptacle
- 2.00 [0.079]
- 3.30 [0.130]
- 2.80 [0.110]
- 1.15 [0.045]
- 4.00 [0.157]
- 2.00 [0.079]

**Top View**

- Standard Profile Shown
- Header Posn 2
- Header Posn 1
- Header Posn 9
- 30.11 [1.185]
- 16.00 [0.630]
### MUSBR SERIES

#### MUSBR-B151-XX  MUSBR-E151-XX

**Front View**

<table>
<thead>
<tr>
<th>Mini-B USB Receptacle</th>
<th>Cable Header</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

**Bottom View**

- MUSB POSITION #1
- #2-56 UNC OR M2.5 x 6.45 x 5.00 [197] DEEP THREAD
- SEE ORDERING CODE

**Side Views**

- FRONT FLANGE POSITION
- REAR FLANGE POSITION

**Isometric Views**

- FRONT FLANGE POSITION
- REAR FLANGE POSITION

**Top View**

- CONTACT 1 FOR CABLE HEADER
- CONTACT 6 FOR CABLE HEADER

---

#### MUSBR-B251-XX  MUSBR-E251-XX

**Connections Chart**

For recommended panel cutout & PCB layout see catalogue page 26

---

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**MUSBR SERIES**

**GENERATION 2 RUGGED USB**

**MUSBR-B511-XX**

**MUSBR-E511-XX**

---

**Recommended PCB & Panel Layouts**

---

**Part No.**  | **Dimension "A"**  
--- | ---  
MUSBR-B151-XX  | 4.53 [0.178] max  
MUSBR-B151-XX  | 3.18 [0.125] max  

---

**STANDARD PROFILE**

- Ø0.35 [0.014] 2 HOLES
- 16.55 [0.650] TYP
- 0.80 [0.031] 2 PLCS
- 3.0 [0.120] 5 PLCS
- Ø0.70 [0.028] EDGE OF PCB
- 0.60 [0.024] 5 PLCS
- 2.20 [0.087] TYP

**LOW PROFILE**

- Ø0.35 [0.014] 2 HOLES
- 16.55 [0.650] TYP
- 0.80 [0.031] 2 PLCS
- 3.0 [0.120] 5 PLCS
- Ø0.70 [0.028] EDGE OF PCB
- 0.60 [0.024] 5 PLCS
- 2.20 [0.087] TYP

---

**ISOMETRIC VIEWS**

**FRONT FLANGE POSITION**

**REAR FLANGE POSITION**

**SIDE VIEWS**

---

For recommended panel cutout & PCB layout see below.

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**NOTE:** All specifications are subject to change without notice. Catalogue is updated regularly. Please refer to www.amphenolcanada.com for the most recent edition.
## MUSB/MUSBR Accessories

### Generation 2 Rugged USB

<table>
<thead>
<tr>
<th>MUSB-2A111-014BP (Grey)</th>
<th>MUSB-2A111-024BP (Black)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.00 [0.630]</td>
<td>16.00 [0.630]</td>
</tr>
<tr>
<td>8.50 [0.335]</td>
<td>9.20 [0.362]</td>
</tr>
<tr>
<td>9.00 [0.354]</td>
<td>13.00 [0.512]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MUSB-2E151-005BP (Grey)</th>
<th>MUSB-2E151-015BP (Black)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.24 [0.714]</td>
<td>21.50 [0.846]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MUSB-2K15-005BP (Grey)</th>
<th>MUSB-2K15-015BP (Black)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9 [0.15]</td>
<td>3.9 [0.15]</td>
</tr>
</tbody>
</table>

Note: All dust covers are made from silicone rubber with nickel plated brass mounting bushings.
## Specifications

Connectors are designed to conform to the requirements of the USB 2.0 specification.

### Material

All Materials are RoHS Compliant per EU Directive 2011/65/EU

<table>
<thead>
<tr>
<th>Component</th>
<th>Material Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Shell</td>
<td>Die Cast Zinc, Nickel Plated</td>
</tr>
<tr>
<td>Insulator Housing</td>
<td>High Temperature Resistant Engineering, Thermoplastic, Glass Reinforced, UL94V-0,</td>
</tr>
<tr>
<td></td>
<td>See Ordering Code for Colour</td>
</tr>
<tr>
<td>Contacts</td>
<td>Phosphor Bronze or Bronze Alloy Plated with 0.76μm (30μ&quot;) min Gold over 1.27μm (50μ&quot;) min Nickel on the Mating Area and 2.54μm (100μ&quot;) min Matte Tine on Nickel on the Contact Tails</td>
</tr>
<tr>
<td>Internal Shield &amp;</td>
<td>Copper or Steel Alloy, Nickel Plated or Stainless Steel, Passivated</td>
</tr>
<tr>
<td>Rear Shield</td>
<td>Standard A &amp; B - Silicone Rubber, Black</td>
</tr>
<tr>
<td>Panel Gasket</td>
<td>Mini &amp; Micro - Cellular Arethane Foam, Black</td>
</tr>
<tr>
<td>Internal O-ring</td>
<td>Micro - Silicone Rubber, Beige</td>
</tr>
<tr>
<td>PCB</td>
<td>FR4 Fibreglass, Lead Free</td>
</tr>
<tr>
<td>Additional Connector</td>
<td>UL Recognized Component</td>
</tr>
</tbody>
</table>

### Electrical

<table>
<thead>
<tr>
<th>Type</th>
<th>Current Rating</th>
<th>Contact Resistance</th>
<th>Insulation Resistance</th>
<th>DWV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard A &amp; B</td>
<td>1.5A max. per contact (ΔT ≤ 30°C)</td>
<td>30 mΩ max.</td>
<td>1000 MΩ min.</td>
<td>500V AC rms</td>
</tr>
<tr>
<td>Mini</td>
<td>1.0A max. per contact (ΔT ≤ 30°C)</td>
<td>50 mΩ max.</td>
<td>100 MΩ min.</td>
<td>100V AC rms</td>
</tr>
<tr>
<td>Micro</td>
<td>1.5A max for signal contacts 3 &amp; 4 or 1.8A max. for power contacts 1 &amp; 5 with 0.5A max. for signal contacts 2, 3 &amp; 4 (ΔT ≤ 30°C)</td>
<td>30 mΩ max.</td>
<td>100 MΩ min.</td>
<td>100V AC rms</td>
</tr>
</tbody>
</table>

### Mechanical, Environmental, Regulatory

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL Recognition</td>
<td>Level DUXR2, File Number E135615, see Listing</td>
</tr>
<tr>
<td>Water &amp; Dust Protection Level</td>
<td>Code IP67 per IEC 60529</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +105°C</td>
</tr>
<tr>
<td>Insertion Force</td>
<td>Per EIA-364-13: 35N (7.9lb) max</td>
</tr>
<tr>
<td>Extraction Force</td>
<td>Per EIA-364-13: Standard A &amp; B - 10N (2.2lb) min</td>
</tr>
<tr>
<td></td>
<td>Mini - 7N (1.6lb) min Initial, 3N (0.7lb) min after Durability</td>
</tr>
<tr>
<td></td>
<td>Micro - 8N (1.8lb) min after Durability</td>
</tr>
<tr>
<td>Durability</td>
<td>Per EIA 364-09: Standard A &amp; B - 1500 Mating Cycles</td>
</tr>
<tr>
<td></td>
<td>Mini - 5000 Mating Cycles</td>
</tr>
<tr>
<td></td>
<td>Micro - 10 000 Mating Cycles</td>
</tr>
<tr>
<td>Vibration</td>
<td>Per EIA 364-28 Random Condition V, Letter A No Discontinuity ≥ 1μs</td>
</tr>
<tr>
<td>Shock</td>
<td>Per EIA 364-27 Test Condition H (11 ms, 30, ½ Sine), No Discontinuity ≥ 1μs</td>
</tr>
<tr>
<td>Temperature Life w/o Load</td>
<td>Per EIA-364-17, 105°C, 1000 Hours</td>
</tr>
<tr>
<td>Thermal Shock</td>
<td>Per EIA-364-32, -40°C to +125°C, 5 Cycles</td>
</tr>
<tr>
<td>Humidity</td>
<td>Per EIA 364-31, 10 Cycles, 240 Hrs, 25°C to 65°C 90-95%RH, with -10C Cold Shock</td>
</tr>
<tr>
<td>Mixed Flowing Gas</td>
<td>Per EIA 364-65 Class IIA (Cl₂, NO₂, H₂S &amp; SO₂), 14 Day Exposure</td>
</tr>
<tr>
<td>Salt Spray</td>
<td>Per EIA 364-26, 250 Hours, 5% Salt, 35°C</td>
</tr>
<tr>
<td>Solvent Resistance</td>
<td>Isopropyl Alcohol &amp; 5% Sodium Hydroxide Solution, 24 Hrs Each</td>
</tr>
<tr>
<td>Solderability</td>
<td>Per EIA-364-52, 95% Coverage after Category 2 Steam Aging</td>
</tr>
</tbody>
</table>

### Application Recommendations

<table>
<thead>
<tr>
<th>Recommended Mounting Screw Torque</th>
<th>Standard A &amp; B - 0.45 to 0.65N·m (4 to 7.5in-lbs) for steel crews with 3mm (.118&quot;) thread engagement, Mini &amp; Micro - 0.23 to 0.34N·m (2 to 3in-lbs) for steel crews with 2.5mm (.098&quot;) thread engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended Soldering Methods</td>
<td>Manual or wave (solder temperature 260°C max, time 10s max, preheat 100-140°C)</td>
</tr>
</tbody>
</table>
## MUSB SERIES

### Receptacle Type Per USB 2.0
- A - Standard A Series
- B - Mini B Series
- C - Standard A Series Stacked
- D - Standard B Series
- E - Mini AB Series
- K - Micro AB Series

### Number of Contacts
1. Standard 4 Contacts per Port for Types A, C & D
2. Standard 5 Contacts per Port for Types B, E & K

### Insulator Housing Colour
1. Black for Types A, B, C & E, White for Type D
2. Grey for Type K

### Rear Shield and Thread Options
1. 0 - No Rear Shield, Unified Thread
2. 3 - With Rear Shield, Unified Thread
3. M - With Rear Shield, Metric Thread
4. N - No Rear Shield, Metric Thread

### Dust Cover Options
1. 0 - With No Dust Cover
2. 1 - With Grey Dust Cover
3. 5 - With Black Dust Cover

### Unique Special Code
No Digit - Part Defined by Previous Digits of Part Number
1 to 9 - Identifies Unique Special Features

### Notes:
1. Receptacle type K (Micro AB) is a generation 2 epoxy-free design. It is currently available in right angle only. Consult with Amphenol for the availability of the vertical version.
2. Termination style 2, 3, 4, 5 & A are currently available for receptacle types A, B, C & E only.
3. Termination style 8 is currently available for receptacle types A, C & D only.
4. Termination style A uses the PCB from termination style 3.
5. Termination style B is currently available for receptacle types A & D only.
6. Termination style D is currently available for receptacle type C only.
7. Termination style E is currently available for receptacle types A & C only.
8. Rear shields are optional for receptacle types B & E (Mini B & Mini AB) with right angle termination style. Rear shields are required for all other types with right angle terminations. Rear shields are not available for vertical termination style.
9. For receptacle types A, C & D (Standard A & B Series), the unified thread is #4-40 UNC and the metric thread is M3x0.5. For receptacle types B, E & K (Mini B, Mini AB & Micro AB), the unified thread is #2-56 UNC and the metric thread is M2.5x0.45.
10. When dust covers are supplied with the connector, they are not installed. They are supplied in bulk inside each package of connectors. For receptacle type C (Standard A Series Stacked), two dust covers are supplied per connector.
11. For receptacle types B & E (Mini B & Mini AB), dust cover code 4 is frequently used. Code 4 connectors are identical to code 0. For example, part number MUSB-B151-34 is identical to MUSB-B151-30.
12. Consult with Amphenol for additional termination styles, solder cup contacts, mounting styles, conductive gaskets or other requirements of interest. See catalogue Accessories pages for dust cover options.
MUSB SERIES

MUSB-A111-XX

FRONT VIEW

SIDE VIEW

BOTTOM VIEW

ISOMETRIC VIEW

MUSB-A211-XX

CONNECTIONS CHART

Rugged USB Receptacle | Cable Header
---|---
Shell/GND | 1
1 | 14
2 | 13
3 | 12
4 | 11

MUSB POSITION #1

#4-40 UNC OR M3 x 0.5 x 5.50 [.217] DEEP THREAD
SEE ORDERING CODE

4.50 [.177]

24.00 [.945]

4.00 [.157]

18.00 [.709]

14.00 [.551]

2.00 [.079]

16.20 [.638]

2.38 [.094] MAX DIAGONAL DIAMOND PEG

USB SERIES 'A' RECEPTACLE

DIECAST SHELL

DUST COVER

USB SERIES 'A' RECEPTACLE

PANEL GASKET

MUSB POSITION #1

#4-40 UNC OR M3 x 0.5 x 5.50 [.217] DEEP THREAD
SEE ORDERING CODE

4.50 [.177]

24.00 [.945]

4.00 [.157]

18.00 [.709]

14.00 [.551]

2.00 [.079]

16.20 [.638]

2.38 [.094] MAX DIAGONAL DIAMOND PEG

USB SERIES 'A' RECEPTACLE

PANEL GASKET

RIGHT ANGLE MUSB

RIGHT ANGLE MUSB

HEADER POSN 1 - TOP ROW 7 - BOTTOM
HEADER POSN 8 - TOP ROW 14 - BOTTOM

27.50 [.1083]

27.50 [.1083]

27.84 [.1100]

27.84 [.1100]

10.20 [.402]

10.20 [.402]

13.64 [.537]

13.64 [.537]

For recommended panel cutout & PCB layout see catalogue page 44-45

For recommended panel cutout & PCB layout see catalogue page 44-45
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MUSB SERIES

GENERATION 1 RUGGED USB

MUSB-A511-XX

**FOR Recommended panel cutout & PCB layout see catalogue page 44-45**

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>MUSB Position</th>
<th>Terminal Position</th>
<th>Shell/GND</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>2 &amp; 9</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**FRONT VIEW**

MUSB POSITION #1

30.00 [1.181]

4.50 [.177]

9.00 [.354]

20.00 [.787]

**SIDE VIEW**

2.80 [.110]

18.00 [.709]

14.00 [.551]

4.00 [.157]

**BOTTOM VIEW**

16.00 [.630]

8.00 [.315]

19.50 [.768]

3.30 [.130]

0.25 [.010] x

0.6 [.024] CONTACT TAILS

**ISOMETRIC VIEW**

**MUSB-A811-XX**

**CONNECTIONS CHART**

**FOR Recommended panel cutout & PCB layout see catalogue page 44**

<table>
<thead>
<tr>
<th>MUSB Position</th>
<th>Terminal Position</th>
<th>Shell/GND</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>2 &amp; 9</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**FRONT VIEW**

MUSB POSITION #1

30.00 [1.181]

4.50 [.177]

9.00 [.354]

20.00 [.787]

**SIDE VIEW**

2.00 [.079]

3.30 [.130] REF

13.64 [.537]

31.50 [1.240]

CABLE HEADER POSITION 2

CABLE HEADER POSITION 10

CABLE HEADER POSITION 9

**ISOMETRIC VIEW**

**CABLE HEADER POSITION 2**

CABLE HEADER POSITION 10

CABLE HEADER POSITION 9

For recommended panel cutout & PCB layout see catalogue page 44

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**MUSB SERIES**

**GENERATION 1 RUGGED USB**

**MUSB- AA11-XX**

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>Rugged USB Receptable</th>
<th>PCB Hole Pattern A</th>
<th>PCB Hole Pattern B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>1</td>
<td>15, 20, 25 or 26</td>
</tr>
</tbody>
</table>

**ISOMETRIC VIEW**

**TOP VIEW**

HOLE PATTERN A

HOLE PATTERN B

HOLE PATTERN FOR UP TO 22 AWG WIRE (22 PLACES)

PCB HOLE NUMBERS

Ø2.31 [0.91] HOLES SUITABLE FOR UP TO 12 AWG WIRE OR TIE WRAP USE

**SIDE VIEW**

**FRONT VIEW**

**FOR RECOMMENDED PANEL CUTOUT**

SEE CATALOGUE PAGE 44

**MUSB-AB11-XX**

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>MUSB Contact</th>
<th>Header Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

**ISOMETRIC VIEW**

**TOP VIEW**

HEADER POSITION 5

HEADER POSITION 1

**SIDE VIEW**

**FRONT VIEW**

**FOR RECOMMENDED PANEL CUTOUT**

SEE CATALOGUE PAGE 44
MUSB SERIES

MUSB-B151-XX  MUSB-E151-XX

**FRONT VIEW**
- MUSB POSITION #1
- Dimensions:
  - 20.00 [0.787]
  - 15.00 [0.591]
  - 10.00 [0.394]
- Note: #2-56 UNC OR M2.5 x 0.45 x 5.00 [0.197] DEEP THREAD SEE ORDERING CODE

**BOTTOM VIEW**
- Dimensions:
  - 10.70 [0.421] REF.
  - 0.40 x 0.25 [0.16 x 0.10] CONTACT TAIL

**SIDE VIEW**
- Dimensions:
  - 5.50 [0.220] WITH REAR SHIELD OPTION SEE ORDERING CODE
  - 2.50 [0.098]
  - 2.20 [0.087]
  - 2.50 x 0.070 [0.098 x 0.028] SHELL TAIL

**ISOMETRIC VIEWS**
- MINI B USB RECEPTACLE

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>Mini-B USB Receptacle</th>
<th>Cable Header</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

MUSB-B251-XX  MUSB-E251-XX

**FRONT VIEW**
- MUSB POSITION #1
- Dimensions:
  - 20.00 [0.787]
  - 15.00 [0.591]
  - 10.00 [0.394]
- Note: #2-56 UNC OR M2.5 x 0.45 x 5.00 [0.197] DEEP THREAD SEE ORDERING CODE

**ISOMETRIC VIEWS**
- MINI B USB RECEPTACLE
- MINI AB USB RECEPTACLE

**TOP VIEW**
- Dimensions:
  - 17.80 [0.701]
  - 19.06 [0.751]

**SIDE VIEW**
- Dimensions:
  - 3.29 [0.130]
  - 2.50 [0.098]
  - 2.20 [0.087]
  - 6.20 [0.244]

For recommended panel cutout see catalogue page 44.
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---

**MUSB SERIES**

**GENERATION 1 RUGGED USB**

---

**MUSB-B351-XX**

**MUSB-E351-XX**

**ISOMETRIC VIEWS**

RIGHT ANGLE MINI-B USB

RIGHT ANGLE MINI-AB USB

**TOP VIEW**

POSITION 5 FOR MINI-B USB RECEPTACLE

**SIDE VIEW**

POSITION 1 FOR MINI-B USB RECEPTACLE

---

**MUSB-B451-XX**

**MUSB-E451-XX**

**ISOMETRIC VIEWS**

RIGHT ANGLE MINI-B USB

RIGHT ANGLE MINI-AB USB

**TOP VIEW**

**SIDE VIEW**

---

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>Mini-B USB Receptacle</th>
<th>Terminal Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
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<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

---

**ISOMETRIC VIEWS**

RIGHT ANGLE MINI-B USB

RIGHT ANGLE MINI-AB USB

---

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>Mini-B USB Receptacle</th>
<th>Terminal Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
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<tr>
<td>3</td>
<td>3</td>
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<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

---

For recommended panel cutout see catalogue page 44.
MUSB SERIES
GENERATION 1 RUGGED USB

MUSB-B551-XX  MUSB-E551-XX

**FRONT VIEW**

MUSB POSITION #1

<table>
<thead>
<tr>
<th>Shell/GND</th>
<th>6</th>
<th>12 or 13</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>7</td>
<td>14</td>
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<tr>
<td>2</td>
<td>2</td>
<td>8</td>
<td>15</td>
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<tr>
<td>3</td>
<td>3</td>
<td>9</td>
<td>16</td>
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<tr>
<td>4</td>
<td>4</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>11</td>
<td>18</td>
</tr>
</tbody>
</table>

**SIDE VIEW**

#2-56 UNC OR M2.5 x 0.45 x 5.00 [.197] DEEP THREAD SEE ORDERING CODE

5.28 [.208] 2.25 [.089] 3.00 [.118]

6.20 [.244] 2.20 [.087] 5.70 [.224]

**BOTTOM VIEW**

2.00 [.079] x 0.4 [.016] GROUND TAILS

0.25 [.010] x 0.4 [.016] CONTACT TAILS

9.20 [.362]

12.23 [.481] REF.

2.00 [.079] x 0.4 [.016] GROUND TAILS

**ISOMETRIC VIEWS**

MINI AB USB receptacle

For recommended panel cutout & PCB layout see catalogue page 44-45

MUSB-BA51-XX  MUSB-EA51-XX

**CONNECTIONS CHART**

<table>
<thead>
<tr>
<th>Rugged USB Receptacle</th>
<th>PCB Hole Pattern A</th>
<th>PCB Hole Pattern B</th>
<th>PCB Hole Pattern C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>6</td>
<td>12 or 13</td>
<td>19</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>7</td>
<td>14</td>
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<td>2</td>
<td>2</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>11</td>
<td>18</td>
</tr>
</tbody>
</table>

**TOP VIEW**

Ø1.10 [.043] (12 PLCS) HOLE ACCEPTS UP TO 20 GAUGE WIRE

Ø0.65 [.026] (5 PLCS) HOLE DIAMETRE ACCEPTS UP TO 24 AWG SIZE WIRE

0.90 [.035] WIDE X 1.80 [.064] LONG SLOT (2 PLCS) ACCEPTS UP TO 22 AWG SIZE WIRE

**FRONT VIEW**

MUSB POSITION #1

<table>
<thead>
<tr>
<th>Shell/GND</th>
<th>6</th>
<th>12 or 13</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
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<td>16</td>
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<td>4</td>
<td>4</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>11</td>
<td>18</td>
</tr>
</tbody>
</table>

**SIDE VIEW**

For recommended panel cutout see catalogue page 44
MUSB SERIES

GENERATION 1 RUGGED USB

MUSB-C111-XX

MUSB-C211-XX

For recommended panel cutout & PCB layout see catalogue page 44-45

For recommended panel cutout see catalogue page 44

CONNECTIONS CHART

<table>
<thead>
<tr>
<th>Rugged USB Receptacle</th>
<th>Cable Header</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
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<td>12</td>
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<td>7</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>
MUSB SERIES
GENERATION 1 RUGGED USB

MUSB-C511-XX

FOR RECOMMENDED PANEL CUTOUT & PCB LAYOUT SEE CATALOGUE PAGE 44-45

MUSB-C811-XX

FOR RECOMMENDED PANEL CUTOUT SEE CATALOGUE PAGE 44
MUSB SERIES

MUSB-CA11-XX

CONNECTIONS CHART

<table>
<thead>
<tr>
<th>Rugged USB</th>
<th>PCB Hole</th>
<th>PCB Hole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptable</td>
<td>Pattern A</td>
<td>Pattern B</td>
</tr>
<tr>
<td>Shell/GND</td>
<td>1</td>
<td>15, 20, 25 or 26</td>
</tr>
<tr>
<td>1</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>22</td>
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<td>12</td>
<td>23</td>
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<td>7</td>
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<td>6</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>19</td>
</tr>
</tbody>
</table>

MUSB POSITION #1

TOP PORT

BOTTOM PORT

ISOMETRIC VIEW

#4-40 UNC OR M3 x 0.5 x 5.50 [217] DEEP THREAD SEE ORDERING CODE

MUSB-CD11-XX

CONNECTIONS CHART

<table>
<thead>
<tr>
<th>MUSB Contact</th>
<th>Header Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>1 &amp; 10</td>
</tr>
<tr>
<td>Top 1</td>
<td>9</td>
</tr>
<tr>
<td>Top 2</td>
<td>8</td>
</tr>
<tr>
<td>Top 3</td>
<td>7</td>
</tr>
<tr>
<td>Top 4</td>
<td>6</td>
</tr>
<tr>
<td>Bottom 1</td>
<td>5</td>
</tr>
<tr>
<td>Bottom 2</td>
<td>4</td>
</tr>
<tr>
<td>Bottom 3</td>
<td>3</td>
</tr>
<tr>
<td>Bottom 4</td>
<td>2</td>
</tr>
</tbody>
</table>

MUSB POSITION #1

TOP PORT

BOTTOM PORT

ISOMETRIC VIEW

For recommended panel cutout see catalogue page 44
**MUSB SERIES**

**MUSB-D111-XX**

- **Front View**
  - MUSB Contact Position #1
  - #4-40 UNC OR M3 x 0.5 x 5.00 [.197] Deep Thread See Ordering Code

- **Bottom View**
  - 2.38 [.094] Major Diagonal Diamond Peg

- **Isometric View**
  - Diecast Shell
  - Contact Receptacle
  - Panel Gasket

For recommended panel cutout & PCB layout see catalogue page 44-45

**MUSB-D211-XX**

- **Front View**
  - #4-40 UNC OR M3 x 0.5 x 5.00 [.197] Deep Thread See Ordering Code

- **Isometric View**
  - Silicone RTV Must Not Flow Over Or Into Threaded Holes
  - Apply Silicone RTV Underneath Front, Gasket To Secure It To The Shell

- **Top View**
  - 40.25 [.159]

- **Side View**
  - 36.30 [.1429]

For recommended panel cutout see catalogue page 44

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MUSB SERIES

MUSB-D511-XX

MUSB-DA11-XX

CONNECTIONS CHART

<table>
<thead>
<tr>
<th>Rugged USB Receptacle</th>
<th>PCB Hole Pattern A</th>
<th>PCB Hole Pattern B</th>
<th>PCB Hole Pattern C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell/GND</td>
<td>11</td>
<td>22 or 21</td>
<td>27</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>18</td>
<td>24</td>
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<td>3</td>
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<td>19</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>20</td>
<td>26</td>
</tr>
</tbody>
</table>

For recommended panel cutout & PCB layout see catalogue page 44-45

For recommended panel cutout see catalogue page 44
**MUSB SERIES**

**GENERATION 1 RUGGED USB**

**MUSB-K152-XX**

**MUSB-K552-XX**

**Recommended Panel Cutouts**

**MUSB-A511-XX**

**MUSB-B151-XX**

**MUSB-C511-XX**

**MUSB-D111-XX**

**For recommended panel cutout see below & for PCB layout see catalogue page 45**
Recommended PCB Layouts

MUSB-A111-XX
MUSB-A511-XX
MUSB-B151-XX
MUSB-C111-XX
MUSB-D111-XX
MUSB-K152-XX

MUSB-B551-XX
MUSB-E151-XX
MUSB-C511-XX
MUSB-D511-XX

NOTES:
1) GENERAL TOLERANCE
   FOR HOLE AND SLOT SIZES
   ± 0.05 [0.002].
2) LOCATION DIMENSIONS
   ARE BASIC. LOCATE FEATURE
   WITHIN 0.13 [0.005] DIAMETER
   OF TRUE POSITION.
**Specifications**

The D-Subminiature connectors are designed to conform to the requirements of MIL-DTL-24308 specification. Part numbers MDBR-E09XX-XN0 have size 20 contacts for standard density. All other part numbers have size 22D contacts for high density configurations.

**Material**

All Materials are RoHS Compliant per EU Directive 2011/65/EU

<table>
<thead>
<tr>
<th>External Shell:</th>
<th>Die Cast Zinc, Nickel Plated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulator Housing:</td>
<td>High Temperature Resistant Nylon, Glass Reinforced, UL94V-0, Black</td>
</tr>
<tr>
<td>Contacts:</td>
<td>Machined Phosphor Bronze or Brass Alloy Plated with 0.76μm (30μ&quot;) min Gold over 1.27μm (50μ&quot;) min Nickel</td>
</tr>
<tr>
<td>Gaskets &amp; O-rings:</td>
<td>Silicone Rubber, Black or Red</td>
</tr>
</tbody>
</table>

**Electrical**

<table>
<thead>
<tr>
<th>Current Rating:</th>
<th>Standard Density - 5A max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Resistance:</td>
<td>20 mΩ max</td>
</tr>
<tr>
<td>Insulation Resistance:</td>
<td>5000 MΩ min</td>
</tr>
<tr>
<td>DWV:</td>
<td>Standard Density - 1500 VDC</td>
</tr>
<tr>
<td></td>
<td>High Density - 1200 VDC</td>
</tr>
</tbody>
</table>

**Mechanical, Environmental, Regulatory**

| Water & Dust Protection Level: | Code IP67 per IEC 60529 |
| Operating Temperature:        | -44°C to +105°C |
| Contact Insertion Force:      | Standard Density - 5.0N (18oz.) max, 3.3N (12oz.) max Average Initial |
|                               | High Density - 5.0N (18oz.) max, 2.6N (9.5oz.) max Average Initial |
| Durability:                   | Per EIA 364-09, 500 Mating Cycles |
| Vibration:                    | Per EIA 364-28 Condition V, Letter D, 4.5 Hrs, No Discontinuity ≥ 1μs |
| Shock:                        | Per EIA 364-27 Test Condition A (11ms, 50g, ½ Sine), No Discontinuity ≥ 1μs |
| Temperature Life w/o Load:    | Per EIA-364-17, 105°C, 1000 Hours |
| Thermal Shock:                | Per EIA-364-32, -55°C to +105°C, 25 Cycles |
| Humidity:                     | Per EIA-364-31, 10 Cycles, 240 Hrs, 25°C to 65°C, 90-95%RH, with -10°C Cold Shock |
| Thermal Cycling:              | Per EIA-364-110, 500 Cycles, 15°C to 85°C |
| Mixed Flowing Gas:            | Per EIA 364-65 Class IIa (Cl₂, NO₂, H₂S, & SO₂), 14 Day Exposure |
| Solvent Resistance:           | Isopropyl Alcohol & 5% Sodium Hydroxide Solution, 24 Hrs Each |
| Solderability:                | Per EIA-364-S2, 95% Coverage after Category 2 Steam Aging |

**Application Recommendations**

- **Recommended Mounting Screw Torque:** 0.45 to 0.65N-m (4 to 5.75 In-lbs) for steel screws with 3mm (.118") thread engagement
- **Recommended Soldering Methods:** Manual or wave (solder temperature 260°C max, time 10s max, preheat 100-140°C)
MDBR SERIES

ORDERING CODE

Rugged D-Sub, Generation 2

Shell Size & Number of Contacts
- E09 - E Size Shell, 9 Contacts, Size 20, Standard Density
- E15 - E Size Shell, 15 Contacts, Size 22, High Density
- A26 - A Size Shell, 26 Contacts, Size 22, High Density

Gender Type
- P - Pin
- S - Socket

Termination Style
- E - Vertical PCB Tail
- M - Solder Cup Tail

Mounting Hole Thread Options
- AN - #4-40 UNC Unified Thread
- JN - M3 x 0.5 Metric Thread

Options and Unique Special Code
- 0 - Standard Part
- 1 to 9 - Identifies Unique Special Features

Notes:
1) The MDBR series with 26 contacts is currently available in the pin contact version only.
2) Consult with Amphenol for additional terminations, contact tail lengths, mounting styles or other special requirements

Many unique features are readily available to suit customer requirements. Consult with Amphenol Canada for details.
MDBR SERIES
GENERATION 2 RUGGED D-SUB

MDBR-A26PE-XN0

FRONT VIEW

SIDES VIEW

BOTTOM VIEW

ISOMETRIC VIEW

For recommended panel cutout & PCB layout see catalogue page 53

MDBR-A26PM-XN0

FRONT VIEW

SIDES VIEW

BOTTOM VIEW

ISOMETRIC VIEW

For recommended panel cutout & PCB layout see catalogue page 53
**MDBR SERIES**

**MDBR-E09PE-XN0**

- **Front View**
  - MOUNTING STYLES A OR J
  - 6.20 [244] DEEP BLIND HOLE
  - 5.00 [197] MIN FULL THREAD DEPTH WITH BOARDLOCK AND STANDOFF
  - SEE ORDERING CODE FOR THREAD OPTIONS

- **Bottom View**
  - O-RING
  - GASKET AT BASE OF MATING AREA

- **Side View**
  - 3.10 [.122]
  - 9.90 [.390]
  - 5.92 [.233]

**MDBR-E09PM-XN0**

- **Front View**
  - MOUNTING STYLES A OR J
  - 6.20 [244] DEEP BLIND HOLE
  - 5.00 [197] MIN FULL THREAD DEPTH WITH BOARDLOCK AND STANDOFF
  - SEE ORDERING CODE FOR THREAD OPTIONS

- **Bottom View**
  - O-RING
  - GASKET AT BASE OF MATING AREA

- **Side View**
  - SOLDER CUP OPENINGS FOR POSITIONS 1 TO 5
  - SOLDER CUP OPENINGS FOR POSITIONS 6 TO 9

**For recommended panel cutout & PCB layout see catalogue page 53**

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MDBR SERIES

GENEATION 2 RUGGED D-SUB

MDBR-E09SE-XN0

FRONT VIEW

SIDE VIEW

BOTTOM VIEW

ISOMETRIC VIEW

MDBR-E09SM-XN0

FRONT VIEW

SIDE VIEW

BOTTOM VIEW

ISOMETRIC VIEW

For recommended panel cutout & PCB layout see catalogue page 53
MDBR SERIES
GENERATION 2 RUGGED D-SUB

MDBR-E15SE-XN0

FRONT VIEW

MOUNTING STYLES A OR J
6.20 [0.244] DEEP BLIND HOLE,
5.00 [0.197] MIN FULL THREAD
DEPTH WITH BOARDLOCK
AND STANDOFF
SEE ORDERING CODE FOR
THREADED OPTIONS

O-RING

SIDE VIEW

3.10 [0.122]

7.90 [0.311]

6.17 [0.243]

ISOMETRIC VIEW

For recommended panel cutout
& PCB layout see catalogue page 53

MDBR-E15SM-XN0

FRONT VIEW

MOUNTING STYLES A OR J
6.20 [0.244] DEEP BLIND HOLE,
5.00 [0.197] MIN FULL THREAD
DEPTH WITH BOARDLOCK
AND STANDOFF
SEE ORDERING CODE FOR
THREADED OPTIONS

O-RING

SIDE VIEW

SOLDER CUP OPENINGS FOR
POSITIONS 1 TO 10

SOLDER CUP OPENINGS FOR
POSITIONS 11 TO 15

ISOMETRIC VIEW

For recommended panel cutout
see catalogue page 53
**Specifications**

**Material**

- **External Shell:** Die Cast Zinc, Nickel Plated
- **Insulator Housing:** High Temperature Resistant Nylon, Glass Reinforced, UL94V-0, Black
- **Contacts:** Machined Phosphor Bronze or Brass Alloy Plated with 0.76μm (30μ”) min Gold over 1.27μm (50μ”) min Nickel
- **Gaskets & O-rings:** Silicone Rubber, Black or Red
- **Jack Sockets:** Stainless Steel
- **Dust Covers:** Silicone Rubber, Grey, with Nickel Plated Brass Bushing
- **Threaded Inserts:** Nickel Plated Steel

**Mechanical, Environmental, Regulatory**

- **Water & Dust Protection Level:** Code IP67 per IEC 60529
- **Operating Temperature:** -44°C to +105°C
- **Contact Insertion Force:**
  - **Standard Density:** 5.0N (18oz) max, 3.3N (12oz) max Average Initial
  - **High Density:** 5.0N (18oz) max, 2.6N (9.5oz) max Average Initial
- **Durability:** Per EIA 364-09, 500 Mating Cycles
- **Vibration:** Per EIA 364-28 Condition V, Letter D, 4.5 Hrs, No Discontinuity ≥ 1μs
- **Shock:** Per EIA 364-27 Test Condition A (11ms, 50g, ½ Sine), No Discontinuity ≥ 1μs
- **Temperature Life w/o Load:** Per EIA-364-17, 105°C, 1000 Hours

**Application Recommendations**

- **Recommended Mounting Screw Torque:** 0.45 to 0.65N-m (4 to 5.75 In-lbs) for steel screws with 3mm (.118”) thread engagement
- **Recommended Soldering Methods:** Manual or wave (solder temperature 260°C max, time 10s max, preheat 100-140°C)

**Electrical**

- **Current Rating:**
  - **Standard Density:** 5A max
  - **High Density:** 3A max
- **Contact Resistance:** 20 mΩ max
- **Insulation Resistance:** 5000 MΩ min
- **DVV:** 1000 VDC
- **Thermal Shock:** Per EIA-364-32, -55°C to +105°C, 25 Cycles
- **Humidity:** Per EIA-364-31, 10 Cycles, 240 Hrs, 25°C to 65°C, 90-95%RH, with -10°C Cold Shock
- **Thermal Cycling:** Per EIA-364-110, 500 Cycles, 15°C to 85°C
- **Mixed Flowing Gas:** Per EIA 364-65 Class IIA (Cl₂, NO₂, H₂S, & SO₂), 14 Day Exposure
- **Solvent Resistance:** Isopropyl Alcohol & 5% Sodium Hydroxide Solution, 24 Hrs Each
- **Solderability:** Per EIA-364-52, 95% Coverage after Category 2 Steam Aging

**Available Standard Part Numbers**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDB-E09SA-700</td>
<td>9 size standard density, socket, right angle tails, all plastic shell, rear mount with jack sockets installed</td>
<td>1) Not Applicable for MDB-E09SA-700</td>
</tr>
<tr>
<td>MDB-E09PE-760</td>
<td>9 size standard density, pin, vertical PCB tails, high profile die cast shell, front mount with jacket sockets &amp; dust cover</td>
<td>2) For MDB-E09SA-700, 0.51μm (20μ&quot;) min Gold over Nickel</td>
</tr>
<tr>
<td>MDB-E09PE-765</td>
<td>9 size standard density, pin, vertical PCB tails, high profile die cast shell, front mount</td>
<td>3) For MDB-E09SA-700, Nickel Plated</td>
</tr>
<tr>
<td>MDB-E09SE-760</td>
<td>9 size standard density, socket, vertical PCB tails, high profile die cast shell, front mount</td>
<td>4) For MDB-E09SA-700</td>
</tr>
<tr>
<td>MDB-E09SE-765</td>
<td>9 size standard density, socket, vertical PCB tails, high profile die cast shell, front mount</td>
<td></td>
</tr>
<tr>
<td>MDB-B25SE-765</td>
<td>25 size standard density, socket, vertical PCB tails, high profile die cast shell, front mount</td>
<td></td>
</tr>
<tr>
<td>MDB-E15PE-766</td>
<td>15 size high density, pin, vertical PCB tails, high profile die cast</td>
<td></td>
</tr>
<tr>
<td>MDB-E09PE-860</td>
<td>9 size standard density, pin, vertical PCB tails, low profile die cast shell, rear mount</td>
<td></td>
</tr>
<tr>
<td>MDB-E09SE-860</td>
<td>9 size standard density, socket, vertical PCB tails, low profile die cast shell, rear mount</td>
<td></td>
</tr>
<tr>
<td>MDB-A26PE-866</td>
<td>26 size high density, pin, vertical PCB tails, low profile die cast shell, rear mount</td>
<td></td>
</tr>
</tbody>
</table>
**Rugged D-Sub, Generation 1**

**Shell Size & Number of Contacts**

**Gender Type - Pin or Socket**

**Termination Style - Right Angle or Vertical**

**Options Code**

See Available Standard Part Numbers List on Page 54

### Recommended PCB Layouts

**MDB-E09SA-700**

**MDB-B25SE-76X**

**MDB-A26PE-860**

**MDB-E09SE/E09PE-760/765**

**MDB-E09SE/E09PE-860**

**MDB-E15PE-766**
### MDB SERIES
#### GENERATION 1 RUGGED D-SUB

**MDB-E09SA-700**

**FRONT VIEW**

- 30.81 [1.213]
- 24.99 [.984]
- 12.55 [.494]

**SIDE VIEW**

- 18.65 [.734]
- 0.51 [.020]

**BOTTOM VIEW**

- 16.33 [.643]
- 6.17 [.243]

**ISOMETRIC VIEW**

- SEALING GASKET
- PLASTIC BODY
- MOUNTING SCREW

For recommended panel cutout & PCB layout see catalogue page 54-55 respectively.

#### MDB-E09PE-760*  MDB-E09PE-765

**FRONT VIEW**

- 30.81 [1.213]
- Ø 3.05 [.120]
- 12.55 [.494]

**SIDE VIEW**

- 10.25 [.403]
- 8.50 [.335]

**BOTTOM VIEW**

- 18.73 [.737]

**ISOMETRIC VIEWS**

- DIE CAST SHELL
- PANEL GASKET

For recommended panel cutout & PCB layout see catalogue page 54-55 respectively.

*MDB-E09PE-760 comes with jack sockets and dust cover.*
For recommended panel cutout & PCB layout see catalogue page 54-55
**MDB SERIES**

**MDB-E15PE-766**

**FRONT VIEW**

- Dimensions:
  - Width: 30.81 [1.213]
  - Height: 24.99 [0.984]
  - Depth: 12.55 [0.494]

**SIDE VIEW**

- Dimensions:
  - Width: 3.00 [0.118]
  - Height: 10.25 [0.403]

**BOTTOM VIEW**

- Dimensions:
  - Width: 26.40 [1.039]
  - Height: 5.38 [0.213]
  - Depth: 3.09 [0.122]

- Notes:
  - O-RING Ø 2.0MM X I.D. 27MM
  - SILICONE SEALING GASKET

**ISOMETRIC VIEW**

- 15 PIN HIGH DENSITY MATING AREA

For recommended panel cutout & PCB layout see catalogue page 54-55

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**MDB-E09PE-860**

**FRONT VIEW**

- Dimensions:
  - Width: 39.40 [1.551]
  - Height: 25.00 [0.984]
  - Depth: 21.10 [0.831]

**SIDE VIEW**

- Dimensions:
  - Width: 16.95 [0.667]
  - Height: 5.62 [0.229]

**BOTTOM VIEW**

- Dimensions:
  - Width: 18.26 [0.719]

**ISOMETRIC VIEW**

- O-RING Ø 2.0MM X I.D. 27MM

For recommended panel cutout & PCB layout see catalogue page 53 & 55 respectively

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All specifications are subject to change without notice. Catalogue is updated regularly. Please refer to www.amphenolcanada.com for the most recent edition.
MDB SERIES

MDB-E09SE-860

SIDE VIEW

5.82 [0.229] REF.
7.53 [0.297] MAX
7.53 [0.297] REF.
8.50 [0.335]
3.60 [0.142]
0.50 [0.020]
11.13 [0.438] REF.

ISOMETRIC VIEW

O-RING Ø 2.0MM X I.D. 27MM

For recommended panel cutout & PCB layout see catalogue page 53 & 55 respectively

MDB-A26PE-860

SIDE VIEW

5.82 [0.229] REF.
7.53 [0.297] MAX
7.53 [0.297] REF.
8.50 [0.335]
3.60 [0.142]
0.55 [0.022]
11.13 [0.438] REF.

ISOMETRIC VIEW

O-RING Ø 2.0MM X I.D. 32MM

For recommended panel cutout & PCB layout see catalogue page 53 & 55 respectively
MDB SERIES
GENERATION 1 RUGGED D-SUB

MDB-E09SM-860

FRONT VIEW

SIDE VIEW

BOTTOM VIEW

ISOMETRIC VIEW

For recommended panel cutout & PCB layout see catalogue page 53 & 55 respectively

MDB-E09PM-860

FRONT VIEW

SIDE VIEW

BOTTOM VIEW

ISOMETRIC VIEW

For recommended panel cutout & PCB layout see catalogue page 53 & 55 respectively
### Specifications

Connectors are designed to conform to the requirements of High-Definition Multimedia Interface (HDMI) specification, Rev 1.4.

#### Material

All Materials are RoHS Compliant per EU Directive 2011/65/EU

- **External Shell:** Die Cast Zinc, Matte Tin over Nickel Plated
- **Housing Inserts:** High Temperature Resistant LCP, Glass Reinforced, UL94V-0, Black
- **Contacts:** Copper Alloy Plated with 0.76μm (30μ") min Gold over 1.27μm (50μ") min Nickel on the Mating Area and 2.54μm (100μ") min Matte Tin over Nickel on the Contact Tails
- **Internal Shields & Rear Shields:** Stainless Steel, Passivated
- **Panel Gasket:** Conductive Silicone Rubber, Black
- **Internal O-rings:** Silicone Rubber, Beige

#### Electrical

- **Current Rating:** 0.5A max per Contact (ΔT ≤ 30°C)
- **Contact Resistance:** 10 mΩ max, Initial
- **Insulation Resistance:** 1000 MΩ min
- **DWV:** 500 VAC rms (between adjacent contacts or contacts to ground)
- **Differential Impedance:** 100 Ω ± 15%

#### Mechanical, Environmental, Regulatory

- **Water & Dust Protection Level:** Code IP67 per IEC 60529
- **Operating Temperature:** -55°C to +105°C
- **Insertion Force:** Per EIA-364-13, 44.1N (4.5 kg, 9.1lb) max
- **Withdrawal Force:** Per EIA-364-13, 9.8N (1.0 kg, 2.2lb) to 39.2N (4.0 kg, 8.8lb)
- **Durability:** Per EIA 364-09, 10 000 Mating Cycles
- **Vibration:** Per EIA 364-28 Condition III (15g, 10-2000Hz, 12 Hrs), No Discontinuity ≥ 1 μs
- **Shock:** Per EIA 364-27 Test Condition A (11ms, 50g, ½ Sine), No Discontinuity ≥ 1 μs
- **Temperature Life w/o Load:** Per EIA-364-17, 105°C, 1000 Hours
- **Thermal Shock:** Per EIA-364-32, -55°C to +125°C, 10 Cycles

- **Humidity:** Per EIA 364-31, 10 Cycles, 240 Hrs, 25°C to 65°C, 90-95%RH, with -10 Cold Shock
- **Mixed Flowing Gas:** Per EIA 364-65 Class IIA (Cl₂, NO₂, H₂S, & SO₂), 14 Day Exposure
- **Solvent Resistance:** Isopropyl Alcohol & 5% Sodium Hydroxide Solution, 24 Hrs Each
- **Solderability:** Per EIA-364-52, 95% Coverage after Category 2 Steam Aging

#### Application Recommendations

- **Recommended Mounting Screw Torque:** 0.45 to 0.65N-m (4 to 5.75 In-lbs) for steel screws with 3mm (.118") thread engagement
- **Recommended Soldering Methods:** Manual or wave (solder temperature 260°C max, time 10s max, preheat 100-140°C)
MHDR SERIES

ORDERING CODE

MHDR - A X 1 1 - X 0 X

Rugged HDMI Receptacle Series

Receptacle Type
A - Standard A Series

Termination Style
1 - Right Angle
5 - Vertical

Number of Contacts
1 - Standard 19 Contacts

Insulator Housing Colour
1 - Black

Mounting Thread Options
3 - #4-40 UNC Unified Thread
M - M3 x 0.5 Metric Thread

Other Options
0 - Standard

Unique Special Code
No Digit - Part Defined by Previous Digits of Part Number
1 to 9 - Identifies Unique Special Features

Notes:
1) Consult with Amphenol for additional termination styles, contact tail lengths, mounting styles, non-conductive gaskets or other special requirements.

Many unique features are readily available to suit customer requirements. Consult with Amphenol Canada for details.

Recommended Panel Cutout

MHDR-A111-X0
Recommended PCB Layout

MHDR-A511-X0
Recommended PCB Layout

COMPONENT SIDE OF BOARD
LOCATE HOLES
0.13 [0.005] DIA
POSITION DIMENSIONS ARE BASIC

All specifications are subject to change without notice. Catalogue is updated regularly. Please refer to www.amphenolcanada.com for the most recent edition.
MHDR-A111-X0

MHDR-A511-X0

For recommended panel cutout & PCB layout see catalogue page 62
LUSB SERIES
LOCKABLE USB

Specifications
Connectors are designed to conform to the requirements of the USB 2.0 or 3.0 specifications as applicable.

Material
All Materials are RoHS Compliant per EU Directive 2011/65/EU

| Insulator Housing: | High Temperature Resistant Engineering Thermoplastic, Glass Reinforced, UL94V-0 Flammability Rating, Halogen Free, Colour per Ordering Code |
| Contacts: | Phosphor Bronze, Plated with 0.76µm (30µ") min Gold over 1.27µm (50µ") min Nickel on the Mating Area and 2.54µm (100µ") min Matte Tin over Nickel on the Contact Tails |
| Shield: | Copper Alloy, Solderable Nickel Plated |
| Latch: | Stainless Steel |

Electrical

| Current Rating: | Standard A USB 2.0 - 1.5A max Contact (ΔT ≤ 30°C) |
| Contacts Resistance: | 30 mΩ max |
| Insulation Resistance: | 1000 MΩ min |
| DWV: | 500 VAC rms |
| Differential Impedance: | 90 ± 15 Ω |

Mechanical, Environmental, Regulatory

| Operating Temperature: | -45°C to +105°C |
| Insertion Force: | Per EIA-364-13, 35N (7.9lb.) max |
| Extraction Force: | Per EIA-364-13, 8N (1.8lb.) min with Latch Disengaged |
| Plug Retention Force: | 50N (11.2 lb.) min with Latch Engaged |
| Durability: | Per EIA 364-09, 1500 Mating Cycles (with Latch Activation for each Cycle) |
| Vibration: | Per EIA 364-28 Random Condition V, Letter A, No Discontinuity ≥ 1µs |
| Shock: | Per EIA 364-27 Test Condition H (11ms, 30g, ½ Sine), No Discontinuity ≥ 1µs |
| Temperature Life w/o Load: | Per EIA-364-17, 105°C, 1000 Hours |
| Thermal Shock: | Per EIA-364-32, -65°C to +105°C, 10 Cycles |

| Humidity: | Per EIA-364-31, 10 Cycles, 240 Hrs, 25°C to 65°C, 90-95%RH, with -10°C Cold Shock |
| Mixed Flowing Gas: | Per EIA 364-65 Class IIA (Cl₂, NO₂, H₂S, & SO₂), 14 Day Exposure |
| Solvent Resistance: | Isopropyl Alcohol & 5% Sodium Hydroxide Solution, 24 Hrs Each |
| Solderability: | Per EIA-364-52, 95% Coverage after Category 2 Steam Aging |

Application Recommendations

Recommended Soldering Methods: Manual, wave (solder temperature 260°C max, time 10s max, preheat 100-140°C) or pin-in-paste reflow (260°C peak per IPC/JEDEC J-STD-020D)
### LUSB Series

#### Receptacle Type
- **A** - Standard A Series per USB 2.0
- **3** - Standard A Series per USB 3.0

#### Termination Style
- **1** - Right Angle
- **5** - Vertical

#### Number of Contacts
- **1** - 4 Contacts. Use with USB 2.0 A Series
- **9** - 9 Contacts. Use with USB 3.0 A Series

#### Insulator Housing Colour
- **1** - Black, Standard for USB 2.0 A Series
- **3** - Blue, Standard for USB 3.0 A Series

#### Other Options
- **00** - Standard

#### Unique Special Code
- **No Digit** - Part Defined by Previous Digits of Part Number
- **1 to 9** - Identifies Unique Special Features

Many unique features are readily available to suit customer requirements. Consult with Amphenol Canada for details.

### Notes:
1. Consult with Amphenol for additional connectors such as vertical or upright (flag) termination styles, contact tail lengths, latch styles or other special requirements.
LUSB SERIES
LOCKABLE USB 2.0

LUSB-A111-00

TOP VIEW

ISOMETRIC VIEW

SIDE VIEW

LUSB-A511-00
CONSULT FACTORY

TOP VIEW

ISOMETRIC VIEW

SIDE VIEW

For recommended panel cutout & PCB layout see catalogue page 67

For recommended panel cutout & PCB layout see catalogue page 67
LUSB SERIES

LOCKABLE USB 3.0

TOP VIEW

ISOMETRIC VIEW

SIDE VIEW

SECTION VIEW

FOR RECOMMENDED PANEL CUTOUT & PCB LAYOUT SEE BELOW

Contact positions:
- Position #1
- Position #4
- Position #5
- Position #9

Gasket for Front Panel Mount

Contact positions:
- Position #1
- Position #4
- Position #5
- Position #9

Contact positions:
- Position #1
- Position #4
- Position #5
- Position #9

Contact positions:
- Position #1
- Position #4
- Position #5
- Position #9

CONTACTS

PCB BOARD

LOCKING LATCH

TYPE A USB 3.0 RECEPTACLE

For recommended panel cutout & PCB layout see below

Gasket for Front Panel Mount
Specifications

The ID series is designed to provide a sealed adapter at the panel or bulkhead of equipment. The interface is sealed in both the mated and un-mated conditions. The adapter interface is available in modular jack or USB type A in a receptacle to receptacle configuration. The external plug kit can be assembled over most standard plug terminated cables after the cable is complete. The spring loaded external cover of the receptacle provides a positive lock for the mated plug, yet closes the mating area tightly when not in use. This connector system allows for a close 35.4mm (1.394”) port to port spacing when multiple adapters are placed side by side.

Material

All Materials are RoHS Compliant per EU Directive 2011/65/EU

External Shell: Die Cast Zinc, Nickel Plated
Internal Shield: Modular Jack - Stainless Steel
USB Type A - Copper Alloy, Nickel Plated
Inserts: Engineering Thermoplastic, Glass Reinforced, UL94V-0, Black
Contacts: Copper Alloy Plated with 0.76μm (30μ") min Gold over 1.27μm (50μ") min Nickel on the Mating Area
Internal Over-moulding: USB Type A Only - Thermoplastic over UL1007 Wiring
Gaskets, O-rings, Split Washers: Silicone Rubber
Mounting Screws: Stainless Steel

Electrical

Current Rating: 1.5A max per Contact (ΔT ≤ 30°C)
Contact Resistance: Modular Jack - 20 mΩ max
USB Type A - 30 mΩ max
Insulation Resistance: Modular Jack - 500 MΩ min
USB Type A - 1000 MΩ min
DWV: Modular Jack -1000 VAC rms (between adjacent contacts), 1500 VAC rms (contacts to ground)
USB Type A - 500 VAC rms

Mechanical, Environmental, Regulatory

Operating Temperature: -40°C to +85°C
Insertion Force: Modular Jack - 20N (4.5lb) max
USB Type A - 30N (7.9lb) max
Extraction Force: Modular Jack - 20N (4.5lb) max with Latch Disengaged
USB Type A - 10N (2.2lb) min
Durability: Per EIA 364-09, 1500 Cycles
Vibration: Per EIA 364-28 Condition II (10g, 10-500Hz),
No Discontinuity ≥ 1μs
Shock: Per EIA 364-27 Test Condition A (11ms, 50g, ½ Sine),
No Discontinuity ≥ 1μs
Temperature Life: Per EIA-364-17, Without Load, 85°C, 1000 Hours
Thermal Shock: Per EIA-364-32, -55°C to +85°C, 10 Cycles
Humidity: Per EIA-364-31, 10 Cycles, 240 Hrs, 25°C to 65°C,
90-95%RH, with -10°C Cold Shock

Application Recommendations

Recommended Mounting Screw Torque: 0.45 to 0.65N-m (4 to 5.75 in-lbs) for steel screws with 3mm (.118") thread engagement, dependent upon customer panel threaded hole material
### Bulkhead Adaptor Series

#### Connector Type
- 4 - Receptacle Only
- 5 - Plug Kit for RJ
- 6 - Plug Kit for USB
- 7 - Receptacle with Plug Kit

#### Interface Style
- 50 - RJ45 Modular Jack 8P8C
- 51 - USB 2.0, A Series

#### Options and Unique Special Code
- 000 - Standard Part
- 9XX - Identifies Unique Special Features. Many unique features are readily available to suit customer requirements. Consult with Amphenol Canada for details.

### Notes
1) Consult with Amphenol for additional interfaces styles such as RF, power or fibre optic, mounting styles or other special requirements.

### Recommended Panel Cutout

- **ID-750-000**
  - RJ45 Modular Jack 8P8C
  - Exploded View

- **ID-751-000**
  - USB 2.0, A Series
  - Exploded View
ID SERIES

RUGGED BULKHEAD ADAPTOR

ID-750-000
RJ45

ID-751-000
USB Type A

ID-751-000

For recommended panel cutout see catalogue page 69
ADDITIONAL PRODUCTS

MRJ Right Angle 2 Port

MUSBR Type C

MUSBR Plug Boot

MUSBR Latching Dust Cover

Rugged Connector on Flex

MRJR Plug Hood
Amphenol Commercial Products

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Email: sales@amphenolcanada.com

CATALOGUE NBR: ADT 0002/06-15 REV A