

# MUSB Rugged USB

## Product Specification S6046C Rev 1.2

Amphenol

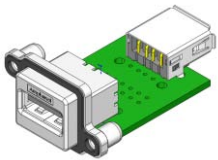
*Now you're connected!*

### About Amphenol Commercial Products

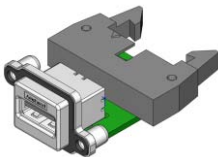
Amphenol's commercial connector products are used in a variety of end user applications including networking, telecom, server & computer, storage & HDD, consumer electronics and entertainment, professional audio & Industrial & Military/Aerospace.

### Related Products

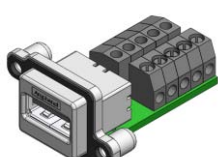
#### With matching USB



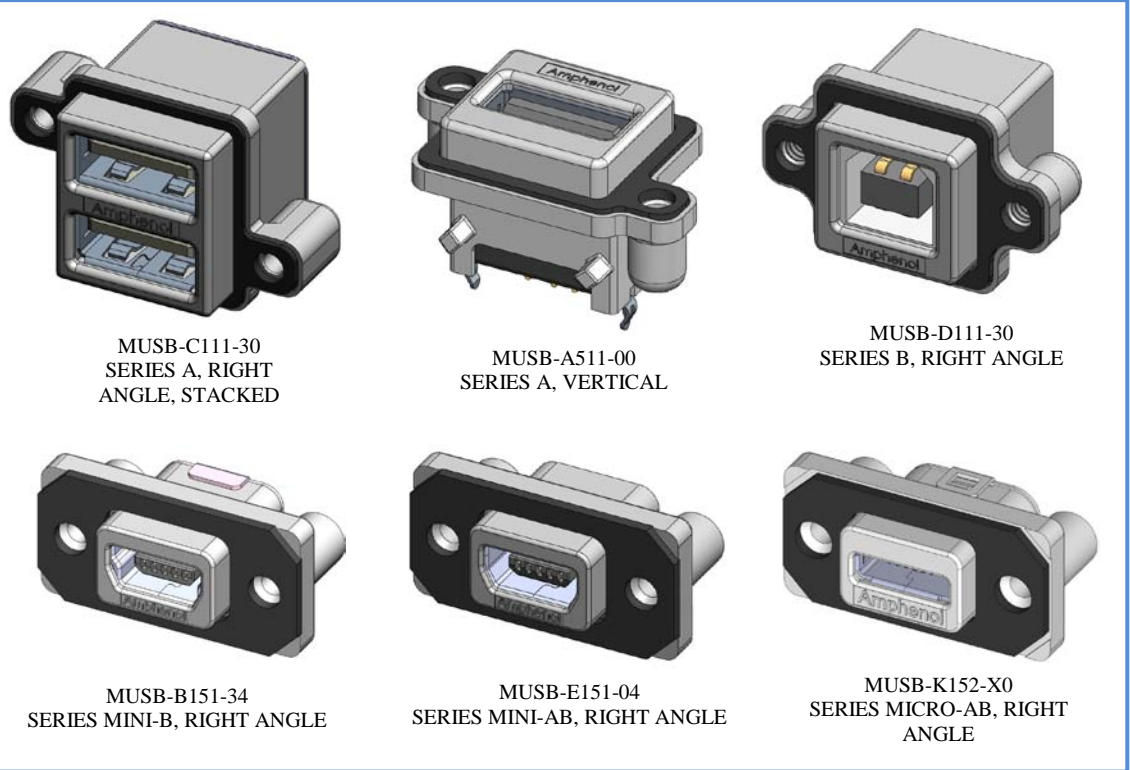
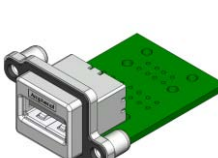
#### With Cable Header



#### With Terminal Block



#### With PCB for wiring



### Overview

This Product Specification defines the general use and performance parameters for Amphenol's MUSB series of connector.

Availability: Series A (single & stacked), series B, series Mini-B, series Mini-AB, series Micro-AB with right angle and vertical PCB tails. Right angle connectors mounted on a PCB with matching USB, cable headers or terminal blocks are available for all series. Dust covers for enhanced mating area protection are also available.

### Usage

These connectors meet Military shock & vibration levels and IP67 per IEC 60529 in mated and unmated conditions. The connector system is designed to provide a standard USB interface for enclosures exposed to harsh environments. Connectors mate with any standard USB 2.0 plug. Achieves data rates up to 480 Mb/s (USB 2.0).

### Applications

Intended for use in applications such as:

- Medical equipment
- Microwave transmitters
- GPS, positioning equipment
- Military vehicles, radios, computers
- Test equipment
- Mobile entertainment systems
- Traffic control & monitoring systems

# Now you're connected!

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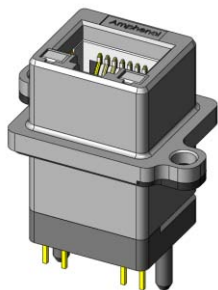
## Related Products

### MDB

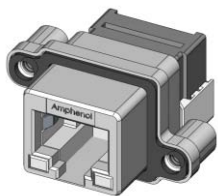


9 POSITION CONNECTOR SHOWN

### MRJ



MRJ-5480-01 SHOWN VERTICAL, PCB TAIL, 8 POSITION RJ45



MRJ-5380-01 SHOWN RIGHT ANGLE, PCB TAIL, 8 POSITION RJ45

## Connector Electrical Characteristics

Parameter	Series A & B	Series Mini-B & Mini-AB	Series Micro-AB
Current rating:	1.5A per contact	1.0A per contact	Up to 1.8A per contact (see dwg)
Contact resistance:	30 mΩ max	50 mΩ max	30 mΩ max
Insulation resistance:	1000 MΩ min	100 MΩ min	100 MΩ min
DWV:	500V AC @ sea level	100V AC @ sea level	100V AC @ sea level

## Connector Mechanical Characteristics

Thermal Shock: 5 cycles @ -40° to +125° C  
 Physical Shock: Per EIA364-27 Condition H (11ms 30G)  
 Humidity: Per EIA364-31 Condition C, method III  
 Vibration: Per EIA364-28 per Condition V, Letter A  
 Salt spray: Per EIA364-26, 250 Hrs

## Process Characteristics

Recommended soldering process: Hand or wave soldering peaked at 260°C for 8 seconds max.  
 Recommended Torque for #4-40 or M3 Panel Mount Screws: 0.45 to 0.65 Nm (4 – 5.75 in-lbs).  
 Recommended Torque for #2-56 or M2.5 Panel Mount Screws: 0.23 to 0.34 Nm (2 - 3 in-lbs).  
 Solder tails suitable for PCB thickness of 1.52mm (.062")  
 Mating Cycles: 1500 (Series A & B)  
                   5000 (Series Mini-B & Mini-AB)  
                   10000 (Series Micro-AB)

## Material Requirements

MUSB connectors are RoHS compliant.

Unless otherwise specified, the materials for each component shall be:

- Contacts: Phosphor Bronze with 30μ" (0.76μm) min Gold over 50μ" (1.27μm) min Nickel
- Housing: Engineering thermoplastic, UL94V-0 rated, Black. White for series B.
- Shell: Die cast Zinc alloy, Nickel plating

Temperature rise: Meets the requirement of 30° C ΔT

Operating temperature -40° to +105° C

## Available Documents

### Drawing Numbers:

P-MUSB-A211-XX	MUSB rugged Series A, Right Angle, on PCB with R/A cable header. Thread & Dust cover option
P-MUSB-A511-XX	MUSB rugged Series A, Vertical PCB mount
P-MUSB-B151-XX	MUSB rugged Series Mini-B, right angle PCB tail
P-MUSB-CA11-XX	MUSB rugged Series A, stacked, Right angle, on PCB. Thread & Dust cover options
P-MUSB-D411-3X	MUSB rugged Series B, Right Angle, on PCB with terminal block
P-MUSB-E151-XX	MUSB rugged Series Mini-AB, Right Angle PCB tail, Thread & Dust Cover options
P-MUSB-K152-X0	MUSB rugged Series Micro-AB, Right Angle PCB tail, Thread options

Contact factory, authorized Amphenol representative or website [www.amphenolcanada.com](http://www.amphenolcanada.com) for additional configurations

## Quality Test Reports

QTR9300377	Series Mini-B & Mini-AB
QTR9300378	Series A & B
QTR9300482	Series Micro-AB

# Now you're connected!

## Product Numbering System

MUSB	Rugged USB Receptacle, Generation 1	MUSB	-	X	X	X	X	-	X	X	X
	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 <sup>1</sup>										
	Termination Style										
	1 – Right Angle										
	2 – Right Angle on PCB with Right Angle Cable Header <sup>2</sup>										
	3 – Right Angle on PCB with Right Angle Matching USB Type Connector <sup>2</sup>										
	4 – Right Angle on PCB with Terminal Blocks <sup>2</sup>										
	5 – Vertical <sup>2</sup>										
	8 – Right Angle on PCB with Vertical Cable Header <sup>3</sup>										
	A – Right Angle on PCB with Holes for Wiring (Style 3 PCB) <sup>2,4</sup>										
	B – Right Angle on PCB with Vertical Single Row Isolated Header <sup>5</sup>										
	D – Right Angle on PCB with Vertical Dual Row Isolated Header <sup>6</sup>										
	E – Right Angle on PCB with Vertical Matching USB Type Connector <sup>7</sup>										
	Number of Contacts										
	1 - Standard 4 per Port for Types A, C & D										
	5 - Standard 5 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 <sup>8,9</sup>										
	0 – No Rear Shield, Unified Thread										
	3 – With Rear Shield, Unified Thread										
	M – With Rear Shield, Metric Thread										
	N – No Rear Shield, Metric Thread										
	Dust Cover Options <sup>10</sup>										
	0 – With No Dust Cover <sup>11</sup>										
	1 – With Grey Dust Cover										
	5 – With Black Dust Cover										
	Unique Special Code <sup>12</sup>										
	No Digit – Standard part defined by previous 10 digits										
	1 to 9 – Unique special feature										

### 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 styles 2, 3, 4, 5 & A are currently available for receptacle types A, B, C, D & 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 #4-40UNC and the metric thread is M3x0.5. For receptacle types B, E & K (Mini B, Mini AB & Micro AB), the unified thread is #2-56UNC 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.

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