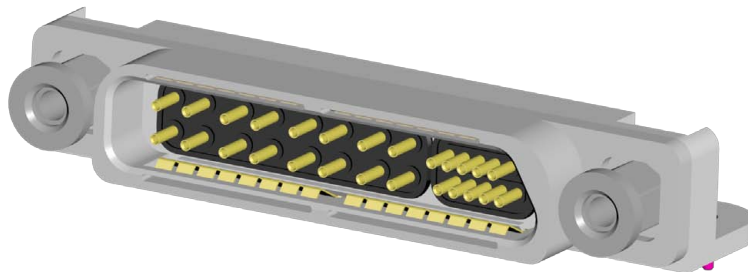


## ::microQUAD

AirBorn introduces a Micro-D, multi-gigabit, high-speed connector designed to meet the performance requirements of MIL-DTL-83513, where applicable. This rugged connector system is designed to handle LVDS serial bus signals like Ethernet, serial rapid IO, etc. This versatile product has a range from one to ten high-speed modules and up to fifty signal contacts making it ideal for most high-reliability applications.

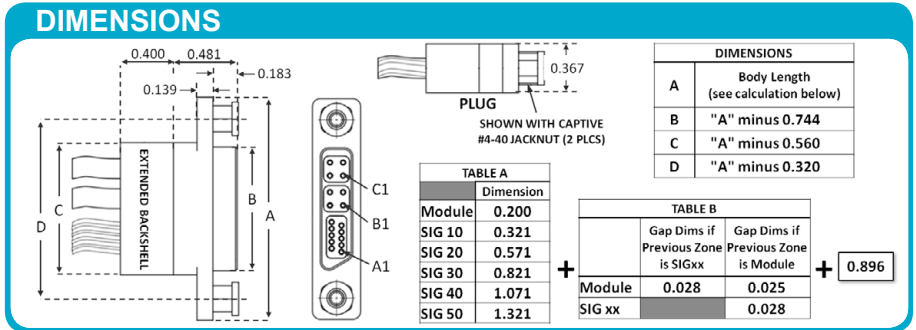


# microQUAD

## MMHS – Cable I/O (Male)

MMHS cable connectors are used in cable applications where both signal and quadrax modules are desired. These connectors come with a variety of wiring and hardware options and all cable connectors are available in custom lengths.

### DIMENSIONS



DIMENSIONS	
A	Body Length (see calculation below)
B	"A" minus 0.744
C	"A" minus 0.560
D	"A" minus 0.320

TABLE A	
Module	Dimension
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

TABLE B		
	Gap Dims if Previous Zone is SIGxx	Gap Dims if Previous Zone is Module
Module	0.028	0.025
SIG xx		0.028

PLUG SHOWN WITH CAPTIVE #4-40 JACKNUT (2 PLCS)

0.896

### ORDER FORM

Sample Part Number Format: MMHS-XXXX-XXX-XXX-XXXX

ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE
MMHS								

**SERIES**  
Cable I/O (Male)

**HIGH-SPEED MODULES**

- 01 – 1 Module
- 02 – 2 Modules
- 03 – 3 Modules
- 04 – 4 Modules
- 05 – 5 Modules (max. sig. 40)
- 06 – 6 Modules (max. sig. 30)
- 07 – 7 Modules (max. sig. 20)
- 08 – 8 Modules (max. sig. 10)
- 09 – 9 Modules (max. sig. 10)
- 0A – 10 Modules (no signals)

**BODY STYLE**  
1 – Plug

**WIRE TYPE & GAUGE, QUADRIX**  
X – See Wire Code Page for High-Speed Cable

**WIRE LENGTH**  
XXX – Wire Length in Inches (minimum 3")  
Example: 018 = 18"

**HARDWARE**

- 000 – No Hardware
- 620 – Two Fixed Jacknuts Captivated\*\*
- 810 – Turning Jackscrews Captivated\*\*
- NXX – Keying Jacknuts\*\*\*
- JXX – Keying Jackscrews\*\*\*

**SIGNAL CONTACTS**

- L0 – Left Side Key – No Signal Contacts
- L1 – Left Side Key – 10 Signal Contacts
- L2 – Left Side Key – 20 Signal Contacts
- L3 – Left Side Key – 30 Signal Contacts
- L4 – Left Side Key – 40 Signal Contacts
- L5 – Left Side Key – 50 Signal Contacts
- R0 – Right Side Key – No Signal Contacts
- R1 – Right Side Key – 10 Signal Contacts
- R2 – Right Side Key – 20 Signal Contacts
- R3 – Right Side Key – 30 Signal Contacts
- R4 – Right Side Key – 40 Signal Contacts
- R5 – Right Side Key – 50 Signal Contacts


**WIRE TYPE & GAUGE, SIGNALS**

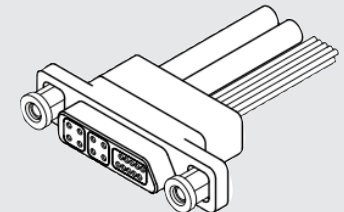
- 0 – No Signal Contacts
- X – See Wire Code Page

**BODY PLATING (LCP INSULATORS)**

- 1 – Electroless Nickel-Plated Aluminum Shell
- 2 – Electroless Nickel-Plated Aluminum Shell ☒
- 3 – Electrodeposited Cadmium-Plated Aluminum Shell ☒
- 5 – Gold-Plated Aluminum Shell
- 6 – Gold-Plated Aluminum Shell ☒

**High-Reliability Contact**  
MIL-DTL-83513





## NOTES

- ☒ Option not RoHS compliant.
- \* Left or right polarization is determined by looking at the male interface with the LONG SIDE downward. The key is the angled side of the interface.
- \*\* Captivated hardware is factory-installed and non-removable.
- \*\*\* Refer to "Hardware Polarization" catalog page for keying options.

## MATERIALS and FINISHES

Socket Contact: ..... Brass  
 Pin Contacts: ..... BeCu alloy strip  
 Contact Finish: ..... Gold plate, 50 μ" minimum  
 Shells: ..... Aluminum alloy 6061-T6  
 Shell Finishes: ..... Electroless nickel, electrodeposited cadmium, or gold-plated  
 Molded Insulators: ..... Glass-filled liquid crystal polymer (LCP)  
 Embedment: ..... Frey Eng. Co. compound CF3003-80 & L-II-49  
 Hardware: ..... Corrosion-resistant steel  
 Interfacial Seal Gaskets: ..... Fluorosilicone  
 EMI Gaskets: ..... Corrosion-resistant steel

**NOTE:** AirBorn can manufacture special configurations to your exact specifications.

## SIGNAL INTEGRITY PERFORMANCE (Connectors Only)

1	Diff. Impedance, filtered to 70 ps (20-80%)	100 ohm +/- 10
2	Diff. Insertion Loss	4.0 GHz @ -3 dB
3	Diff. Return Loss	1.8 GHz @ -20 dB
4	Intra-Pair	15 ps

## PERFORMANCE

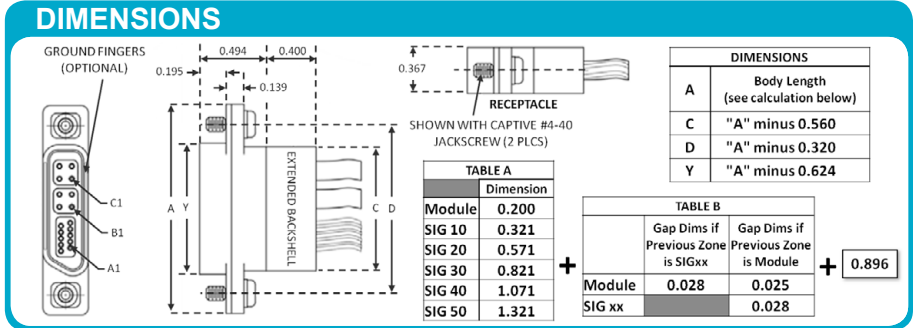
Contact Rating: ..... 3 amperes maximum  
 Operating Temperature: ..... -55° C to 125° C  
 Maximum Working Voltage: ..... 600V, RMS, 60Hz  
 Insulation Resistance: ..... 5,000 megohms minimum @ 500 VDC  
 Durability: ..... 500 connector mating cycles  
 Contact Engaging Force: ..... 6.0 ounces maximum/contact  
 Contact Separating Force: ..... 0.5 ounces minimum/contact  
 Mating and Unmating Force: ..... 10 ounces maximum/contact

# microQUAD

## MMHS – Cable I/O (Female)

MMHS cable connectors are used in cable applications where both signal and quadrax modules are desired. These connectors come with a variety of wiring and hardware options and all cable connectors are available in custom lengths.

### DIMENSIONS



DIMENSIONS	
A	Body Length (see calculation below)
C	"A" minus 0.560
D	"A" minus 0.320
Y	"A" minus 0.624

TABLE A	
Module	Dimension
Module	0.200
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

TABLE B		
Module	Gap Dims if Previous Zone is SIGxx	Gap Dims if Previous Zone is Module
Module	0.028	0.025
SIG xx		0.028

0.896

### ORDER FORM

Sample Part Number Format: MMHS-XXXX-XXX-XXX-XXXX

ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE
MMHS								

**SERIES**  
Cable I/O (Female)

**HIGH-SPEED MODULES**  
01 – 1 Module  
02 – 2 Modules  
03 – 3 Modules  
04 – 4 Modules  
05 – 5 Modules (max. sig. 40)  
06 – 6 Modules (max. sig. 30)  
07 – 7 Modules (max. sig. 20)  
08 – 8 Modules (max. sig. 10)  
09 – 9 Modules (max. sig. 10)  
0A – 10 Modules (no signals)

**BODY STYLE**  
2 – Receptacle  
4 – Receptacle with Ground Fingers (preferred)

**WIRE TYPE & GAUGE, QUADRIX**  
X – See Wire Code Page for High-Speed Cable

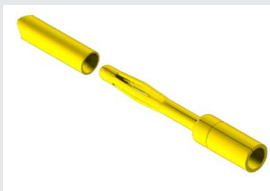
**WIRE LENGTH**  
XXX – Wire Length in Inches (minimum 3")  
Example: 018 = 18"

**HARDWARE**  
000 – No Hardware  
620 – Two Fixed Jacknuts Captivated\*\*  
810 – Turning Jackscrews Captivated\*\*  
NXX – Keying Jacknuts\*\*\*  
JXX – Keying Jackscrews\*\*\*

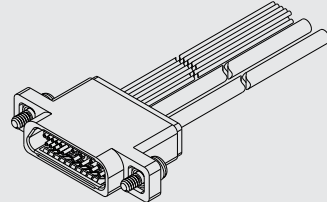
**SIGNAL CONTACTS**  
L0 – Left Side Key – No Signal Contacts  
L1 – Left Side Key – 10 Signal Contacts  
L2 – Left Side Key – 20 Signal Contacts  
L3 – Left Side Key – 30 Signal Contacts  
L4 – Left Side Key – 40 Signal Contacts  
L5 – Left Side Key – 50 Signal Contacts  
R0 – Right Side Key – No Signal Contacts  
R1 – Right Side Key – 10 Signal Contacts  
R2 – Right Side Key – 20 Signal Contacts  
R3 – Right Side Key – 30 Signal Contacts  
R4 – Right Side Key – 40 Signal Contacts  
R5 – Right Side Key – 50 Signal Contacts

**WIRE TYPE & GAUGE, SIGNALS**  
0 – No Signal Contacts  
X – See Wire Code Page

**BODY PLATING (LCP INSULATORS)**  
1 – Electroless Nickel-Plated Aluminum Shell  
2 – Electroless Nickel-Plated Aluminum Shell ☒  
3 – Electrodeposited Cadmium-Plated Aluminum Shell ☒  
5 – Gold-Plated Aluminum Shell  
6 – Gold-Plated Aluminum Shell ☒



**High-Reliability Contact**  
MIL-DTL-83513



### NOTES

- All high-speed receptacles have fluoropolymer interfacial seals.
- Option not RoHS compliant.
- \* Left or right polarization is determined by looking at the male interface with the LONG SIDE downward. The key is the angled side of the interface.
- \*\* Captivated hardware is factory-installed and non-removable.
- \*\*\* Refer to "Hardware Polarization" catalog page for keying options.

### MATERIALS and FINISHES

Socket Contact: ..... Brass  
 Pin Contacts: ..... BeCu alloy strip  
 Contact Finish: ..... Gold plate, 50 μ" minimum  
 Shells: ..... Aluminum alloy 6061-T6  
 Shell Finishes: ..... Electroless nickel, electrodeposited cadmium, or gold-plated  
 Molded Insulators: ..... Glass-filled liquid crystal polymer (LCP)  
 Embedment: ..... Frey Eng. Co. compound CF3003-80 & L-II-49  
 Hardware: ..... Corrosion-resistant steel  
 Interfacial Seal Gaskets: ..... Fluorosilicone  
 EMI Gaskets: ..... Corrosion-resistant steel

**NOTE:** AirBorn can manufacture special configurations to your exact specifications.

### SIGNAL INTEGRITY PERFORMANCE (Connectors Only)

1	Diff. Impedance, filtered to 70 ps (20-80%)	100 ohm +/- 10
2	Diff. Insertion Loss	4.0 GHz @ -3 dB
3	Diff. Return Loss	1.8 GHz @ -20 dB
4	Intra-Pair	15 ps

### PERFORMANCE

Contact Rating: ..... 3 amperes maximum  
 Operating Temperature: ..... -55° C to 125° C  
 Maximum Working Voltage: ..... 600V, RMS, 60Hz  
 Insulation Resistance: ..... 5,000 megohms minimum @ 500 VDC  
 Durability: ..... 500 connector mating cycles  
 Contact Engaging Force: ..... 6.0 ounces maximum/contact  
 Contact Separating Force: ..... 0.5 ounces minimum/contact  
 Mating and Unmating Force: ..... 10 ounces maximum/contact

# microQUAD

## MJHS – Jumper Cable

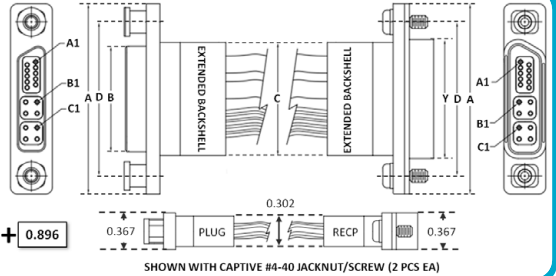
MJHS rugged metal cable assemblies are used in jumper applications where both signal and quadrx modules are desired. These connectors come with a variety of wiring and hardware options and all cable connectors are available in custom lengths.

### DIMENSIONS

DIMENSIONS	
A	Body Length (see calculation below)
B	"A" minus 0.744
C	"A" minus 0.560
D	"A" minus 0.320
Y	"A" minus 0.624

TABLE A	
Module	Dimension
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

TABLE B		
Module	Gap Dims if Previous Zone is SIGxx	Gap Dims if Previous Zone is Module
Module	0.028	0.025
SIG xx	0.028	0.028



+ 0.896

SHOWN WITH CAPTIVE #4-40 JACKNUT/SCREW (2 PCS EA)

### ORDER FORM

Sample Part Number Format: MJHS-XXXX-XXX-XXX-XXXX

**MJHS**

**SERIES**  
Jumper Cable

**HIGH-SPEED MODULES**  
01 – 1 Module  
02 – 2 Modules  
03 – 3 Modules  
04 – 4 Modules  
05 – 5 Modules (max. sig. 40)  
06 – 6 Modules (max. sig. 30)  
07 – 7 Modules (max. sig. 20)  
08 – 8 Modules (max. sig. 10)  
09 – 9 Modules (max. sig. 10)  
0A – 10 Modules (no signals)

**WIRE TYPE & GAUGE, QUADRX**  
X – See Wire Code Page for High-Speed Cable

**WIRE LENGTH**  
XXX – Wire Length in Inches (minimum 3")  
Example: 018 = 18"

**SIGNAL CONTACTS**  
L0 – Left Side Key – No Signal Contacts  
L1 – Left Side Key – 10 Signal Contacts  
L2 – Left Side Key – 20 Signal Contacts  
L3 – Left Side Key – 30 Signal Contacts  
L4 – Left Side Key – 40 Signal Contacts  
L5 – Left Side Key – 50 Signal Contacts  
R0 – Right Side Key – No Signal Contacts  
R1 – Right Side Key – 10 Signal Contacts  
R2 – Right Side Key – 20 Signal Contacts  
R3 – Right Side Key – 30 Signal Contacts  
R4 – Right Side Key – 40 Signal Contacts  
R5 – Right Side Key – 50 Signal Contacts

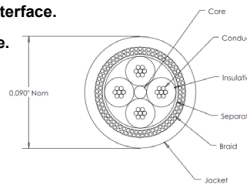
**BODY STYLE**  
1 – Male-to-Male  
2 – Male-to-Female  
3 – Male-to-Female, Ground Fingers  
4 – Female-to-Female  
5 – Female-to-Female (both with ground fingers)

**BODY PLATING (LCP INSULATORS)**  
1 – Electroless Nickel-Plated Aluminum Shell  
2 – Electroless Nickel-Plated Aluminum Shell ☒  
3 – Electrodeposited Cadmium-Plated Aluminum Shell ☒  
5 – Gold-Plated Aluminum Shell  
6 – Gold-Plated Aluminum Shell ☒

**HARDWARE**  
000 – No Hardware  
610 – Fixed Jacknuts Captivated\*\* (both connectors)  
810 – Turning Jackscrews Captivated\*\* (both connectors)  
860 – Fixed Jacknuts Captivated (female) & Turning Jackscrews (male)  
870 – Fixed Jacknuts Captivated (male) & Turning Jackscrews (female)  
NXX – Keying Jacknuts (both connectors)\*\*\*  
JXX – Keying Jackscrews (both connectors)\*\*\*  
AXX – Keying Jacknuts (female) & Keying Jackscrews (male)\*\*\*  
BXX – Keying Jacknuts (male) & Keying Jackscrews (female)\*\*\*

### NOTES

- All high-speed receptacles have fluoropolymer interfacial seals.
- Option not RoHS compliant.
- \* Left or right polarization is determined by looking at the male interface with the LONG SIDE downward. The key is the angled side of the interface.
- \*\* Captivated hardware is factory-installed and non-removable.
- \*\*\* Refer to "Hardware Polarization" catalog page for keying options.



### MATERIALS and FINISHES

- Socket Contact: Brass
- Pin Contacts: BeCu alloy strip
- Contact Finish: Gold plate, 50 μ" minimum
- Shells: Aluminum alloy 6061-T6
- Shell Finishes: Electroless nickel, electrodeposited cadmium, or gold-plated
- Molded Insulators: Glass-filled liquid crystal polymer (LCP)
- Embedment: Frey Eng. Co. compound CF3003-80 & L-II-49
- Hardware: Corrosion-resistant steel
- Interfacial Seal Gaskets: Fluorosilicone
- EMI Gaskets: Corrosion-resistant steel

**NOTE:** AirBorn can manufacture special configurations to your exact specifications.

### SIGNAL INTEGRITY PERFORMANCE

1	1 Meter Long	1.0 GHz @ -2 dB
2	2 Meters Long	1.0 GHz @ -4 dB
3	3 Meters Long	1.0 GHz @ -6 dB

### PERFORMANCE

- Contact Rating: 3 amperes maximum
- Operating Temperature: -55° C to 125° C
- Maximum Working Voltage: 600V, RMS, 60Hz
- Insulation Resistance: 5,000 megohms minimum @ 500 VDC
- Durability: 500 connector mating cycles
- Contact Engaging Force: 6.0 ounces maximum/contact
- Contact Separating Force: 0.5 ounces minimum/contact
- Mating and Unmating Force: 10 ounces maximum/contact

# microQUAD

## MKHS – Right Angle Surface Board-Mount (Male)

MKHS are rugged metal connectors used in applications where a right angle orientation and a surface board-mount termination style are desired.

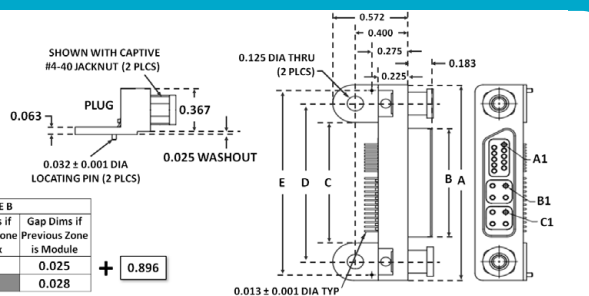
### DIMENSIONS

DIMENSIONS	
A	Body Length (see calculation below)
B	"A" minus 0.744
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.096

TABLE A	
Module	Dimension
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

TABLE B		
Module	Gap Dims if Previous Zone is SIGxx	Gap Dims if Previous Zone is Module
SIG xx	0.028	0.025

+ 0.896



### ORDER FORM

Sample Part Number Format: MKHS-XXXX-XXX-XXX-XXXX

**ENTER CODE**

MKHS

**SERIES**  
Right Angle Surface Mount (Male)

**ENTER CODE**

**HIGH-SPEED MODULES**  
01 – 1 Module  
02 – 2 Modules  
03 – 3 Modules  
04 – 4 Modules  
05 – 5 Modules (max. sig. 40)  
06 – 6 Modules (max. sig. 30)  
07 – 7 Modules (max. sig. 20)  
08 – 8 Modules (max. sig. 10)  
09 – 9 Modules (max. sig. 10)  
0A – 10 Modules (no signals)

**ENTER CODE**

**BODY STYLE**  
100 – Plug

**ENTER CODE**

**CONTACT TERMINATION**  
17 – Pin, Horizontal Surface-Mount (SMT)

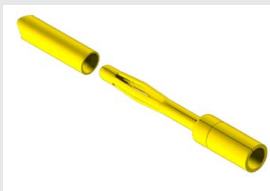
**ENTER CODE**

**TERMINATION PLATING**  
5 – 50 μ" Gold Contact, Sn/Pb Alloy Termination   
7 – 50 μ" Gold Contact, SAC305-Plated Termination

**ENTER CODE**

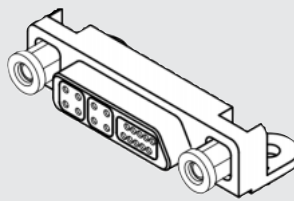
**HARDWARE**  
000 – No Hardware  
620 – Two Fixed Jacknuts Captivated\*\*  
810 – Turning Jackscrews Captivated\*\*  
NXX – Keying Jacknuts\*\*\*  
JXX – Keying Jackscrews\*\*\*

**High-Reliability Contact**  
MIL-DTL-83513



**SIGNAL CONTACTS**  
L0 – Left Side Key – No Signal Contacts  
L1 – Left Side Key – 10 Signal Contacts  
L2 – Left Side Key – 20 Signal Contacts  
L3 – Left Side Key – 30 Signal Contacts  
L4 – Left Side Key – 40 Signal Contacts  
L5 – Left Side Key – 50 Signal Contacts  
R0 – Right Side Key – No Signal Contacts  
R1 – Right Side Key – 10 Signal Contacts  
R2 – Right Side Key – 20 Signal Contacts  
R3 – Right Side Key – 30 Signal Contacts  
R4 – Right Side Key – 40 Signal Contacts  
R5 – Right Side Key – 50 Signal Contacts

**BODY PLATING (LCP INSULATORS)**  
2 – Electroless Nickel-Plated Aluminum Shell  
3 – Electrodeposited Cadmium-Plated Aluminum Shell   
6 – Gold-Plated Aluminum Shell



### NOTES

- Option not RoHS compliant.
- \* Left or right polarization is determined by looking at the male interface with the LONG SIDE downward. The key is the angled side of the interface.
- \*\* Captivated hardware is factory-installed and non-removable.
- \*\*\* Refer to "Hardware Polarization" catalog page for keying options.

### MATERIALS and FINISHES

Socket Contact: ..... Brass  
 Pin Contacts: ..... BeCu alloy strip  
 Contact Finish: ..... Gold plate, 50 μ" minimum  
 Shells: ..... Aluminum alloy 6061-T6  
 Shell Finishes: ..... Electroless nickel, electrodeposited cadmium, or gold-plated  
 Molded Insulators: ..... Glass-filled liquid crystal polymer (LCP)  
 Embedment: ..... Frey Eng. Co. compound CF3003-80 & L-II-49  
 Hardware: ..... Corrosion-resistant steel  
 Interfacial Seal Gaskets: ..... Fluorosilicone  
 EMI Gaskets: ..... Corrosion-resistant steel

**NOTE:** AirBorn can manufacture special configurations to your exact specifications.

SIGNAL INTEGRITY PERFORMANCE (Connectors Only)		
1	Diff. Impedance, filtered to 70 ps (20-80%)	100 ohm +/- 10
2	Diff. Insertion Loss	4.0 GHz @ -3 dB
3	Diff. Return Loss	1.8 GHz @ -20 dB
4	Intra-Pair	15 ps

### PERFORMANCE

Contact Rating: ..... 3 amperes maximum  
 Operating Temperature: ..... -55° C to 125° C  
 Maximum Working Voltage: ..... 600V, RMS, 60Hz  
 Insulation Resistance ..... 5,000 megohms minimum @ 500 VDC  
 Durability: ..... 500 connector mating cycles  
 Contact Engaging Force: ..... 6.0 ounces maximum/contact  
 Contact Separating Force: ..... 0.5 ounces minimum/contact  
 Mating and Unmating Force: ..... 10 ounces maximum/contact



# microQUAD

## MKHS – Right Angle Surface Board-Mount (Female)

MKHS are rugged metal connectors used in applications where a right angle orientation and a surface board-mount termination style are desired.

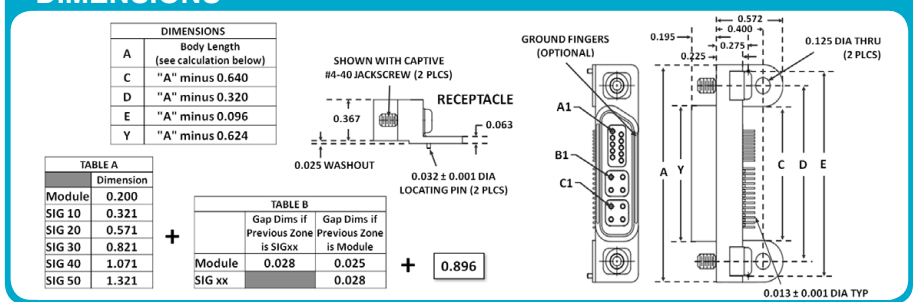
### DIMENSIONS

DIMENSIONS	
A	Body Length (see calculation below)
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.096
Y	"A" minus 0.624

Module	Dimension
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

Module	Gap Dims if Previous Zone is SIGxx	Gap Dims if Previous Zone is Module
Module	0.028	0.025
SIG xx		0.028

0.896



### ORDER FORM

Sample Part Number Format: MKHS-XXXX-XXX-XXX-XXXX

**ENTER CODE**

**ENTER CODE**

**ENTER CODE**

**ENTER CODE**

**ENTER CODE**

**ENTER CODE**

**ENTER CODE**

**SERIES**  
Right Angle Surface Mount (Female)

**HIGH-SPEED MODULES**  
01 – 1 Module  
02 – 2 Modules  
03 – 3 Modules  
04 – 4 Modules  
05 – 5 Modules (max. sig. 40)  
06 – 6 Modules (max. sig. 30)  
07 – 7 Modules (max. sig. 20)  
08 – 8 Modules (max. sig. 10)  
09 – 9 Modules (max. sig. 10)  
0A – 10 Modules (no signals)

**BODY STYLE**  
200 – Female  
400 – Female with Ground Fingers (preferred)

**TERMINATION PLATING**  
5 – 50 μ" Gold Contact, Sn/Pb Alloy Termination ☒  
7 – 50 μ" Gold Contact, SAC305-Plated Termination


**HARDWARE**  
000 – No Hardware  
620 – Two Fixed Jacknuts Captivated\*\*  
810 – Turning Jackscrews Captivated\*\*  
NXX – Keying Jacknuts\*\*\*  
JXX – Keying Jackscrews\*\*\*

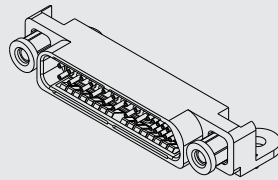
**CONTACT TERMINATION**  
27 – Socket, Horizontal Surface-Mount (SMT)

**SIGNAL CONTACTS**  
L0 – Left Side Key – No Signal Contacts  
L1 – Left Side Key – 10 Signal Contacts  
L2 – Left Side Key – 20 Signal Contacts  
L3 – Left Side Key – 30 Signal Contacts  
L4 – Left Side Key – 40 Signal Contacts  
L5 – Left Side Key – 50 Signal Contacts  
R0 – Right Side Key – No Signal Contacts  
R1 – Right Side Key – 10 Signal Contacts  
R2 – Right Side Key – 20 Signal Contacts  
R3 – Right Side Key – 30 Signal Contacts  
R4 – Right Side Key – 40 Signal Contacts  
R5 – Right Side Key – 50 Signal Contacts

**BODY PLATING (LCP INSULATORS)**  
2 – Electroless Nickel-Plated Aluminum Shell  
3 – Electrodeposited Cadmium-Plated Aluminum Shell ☒  
6 – Gold-Plated Aluminum Shell

**High-Reliability Contact**  
MIL-DTL-83513





### NOTES

1. All high-speed receptacles have fluoropolymer interfacial seals.
- ☒ Option not RoHS compliant.
- \* Left or right polarization is determined by looking at the male interface with the LONG SIDE downward. The key is the angled side of the interface.
- \*\* Captivated hardware is factory-installed and non-removable.
- \*\*\* Refer to "Hardware Polarization" catalog page for keying options.

### MATERIALS and FINISHES

Socket Contact:	Brass
Pin Contacts:	BeCu alloy strip
Contact Finish:	Gold plate, 50 μ" minimum
Shells:	Aluminum alloy 6061-T6
Shell Finishes:	Electroless nickel, electrodeposited cadmium, or gold-plated
Molded Insulators:	Glass-filled liquid crystal polymer (LCP)
Embedment:	Frey Eng. Co. compound CF3003-80 & L-II-49
Hardware:	Corrosion-resistant steel
Interfacial Seal Gaskets:	Fluorosilicone
EMI Gaskets:	Corrosion-resistant steel

**NOTE:** AirBorn can manufacture special configurations to your exact specifications.

SIGNAL INTEGRITY PERFORMANCE (Connectors Only)		
1	Diff. Impedance, filtered to 70 ps (20-80%)	100 ohm +/- 10
2	Diff. Insertion Loss	4.0 GHz @ -3 dB
3	Diff. Return Loss	1.8 GHz @ -20 dB
4	Intra-Pair	15 ps

### PERFORMANCE

Contact Rating:	3 amperes maximum
Operating Temperature:	-55° C to 125° C
Maximum Working Voltage:	600V, RMS, 60Hz
Insulation Resistance:	5,000 megohms minimum @ 500 VDC
Durability:	500 connector mating cycles
Contact Engaging Force:	6.0 ounces maximum/contact
Contact Separating Force:	0.5 ounces minimum/contact
Mating and Unmating Force:	10 ounces maximum/contact

# microQUAD

## MLHS – Vertical Surface Board-Mount w/Fixed Hardware (Male)

MLHS are rugged metal connectors used in applications where a vertical orientation and a surface board-mount termination style are desired. These connectors have fixed hardware.

### DIMENSIONS

DIMENSIONS	
A	Body Length (w/o feet) for V-SMT Turning Hardware (see calculation below)
B	"A" minus 0.744
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.570

TABLE A	
Module	0.200
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

TABLE B					
Module	0.028	Gap Dims if Previous Zone is SIGxx	0.025	Gap Dims if Previous Zone is Module	0.028
SIG xx					0.028

0.013 ± 0.001 DIA TYP

0.134

0.052 ± 0.001 DIA LOCATING PIN (2 PLCS)

PLUG

0.367

0.304

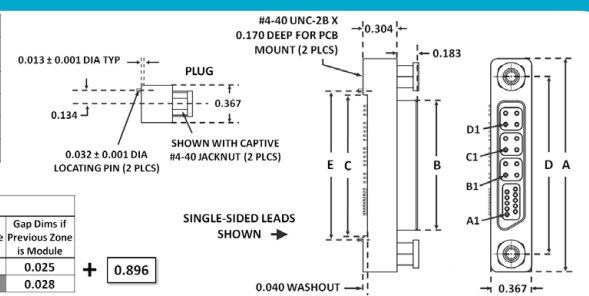
0.183

#4-40 UNC-2B X 0.170 DEEP FOR PCB MOUNT (2 PLCS)

SHOWN WITH CAPTIVE #4-40 JACKNUT (2 PLCS)

SINGLE-SIDED LEADS SHOWN →

0.040 WASHOUT




## ORDER FORM

Sample Part Number Format: **MLHS-XXXX-XXX-XXX-XXXX**

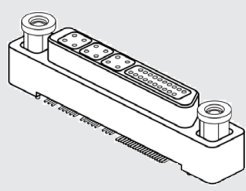
ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE
<b>MLHS</b>						
<b>SERIES</b> Vertical Surface Mount (Male)	<b>HIGH-SPEED MODULES</b> 01 – 1 Module 02 – 2 Modules 03 – 3 Modules 04 – 4 Modules 05 – 5 Modules (max. sig. 40) 06 – 6 Modules (max. sig. 30) 07 – 7 Modules (max. sig. 20) 08 – 8 Modules (max. sig. 10) 09 – 9 Modules (max. sig. 10) 0A – 10 Modules (no signals)	<b>BODY STYLE</b> 100 – Plug	<b>CONTACT TERMINATION</b> 37 – Pin, Vertical SMT, Staggered Leads – All 57 – Pin, Vertical SMT, Staggered Leads – High-Speed, Single-Sided Leads – Signals 77 – Pin, Vertical SMT, Single-Sided Leads – High-Speed, Staggered Leads, Signals A7 – Pin, Vertical SMT, Single-Sided Leads – All	<b>TERMINATION PLATING</b> 5 – 50 μ" Gold Contact, Sn/Pb Alloy Termination <input checked="" type="checkbox"/> 7 – 50 μ" Gold Contact, SAC305-Plated Termination	<b>BODY PLATING (LCP INSULATORS)</b> 2 – Electroless Nickel-Plated Aluminum Shell 3 – Electrodeposited Cadmium-Plated Aluminum Shell <input checked="" type="checkbox"/> 6 – Gold-Plated Aluminum Shell	<b>HARDWARE</b> 000 – No Hardware 620 – Two Fixed Jacknuts Captivated** NXX – Keying Jacknuts***

**High-Reliability Contact**  
MIL-DTL-83513



**SIGNAL CONTACTS**  
L0 – Left Side Key – No Signal Contacts  
L1 – Left Side Key – 10 Signal Contacts  
L2 – Left Side Key – 20 Signal Contacts  
L3 – Left Side Key – 30 Signal Contacts  
L4 – Left Side Key – 40 Signal Contacts  
L5 – Left Side Key – 50 Signal Contacts  
R0 – Right Side Key – No Signal Contacts  
R1 – Right Side Key – 10 Signal Contacts  
R2 – Right Side Key – 20 Signal Contacts  
R3 – Right Side Key – 30 Signal Contacts  
R4 – Right Side Key – 40 Signal Contacts  
R5 – Right Side Key – 50 Signal Contacts



## NOTES

- Option not RoHS compliant.
- \* Left or right polarization is determined by looking at the male interface with the LONG SIDE downward. The key is the angled side of the interface.
- \*\* Captivated hardware is factory-installed and non-removable.
- \*\*\* Refer to "Hardware Polarization" catalog page for keying options.

## MATERIALS and FINISHES

Socket Contact: ..... Brass  
Pin Contacts: ..... BeCu alloy strip  
Contact Finish: ..... Gold plate, 50 μ" minimum  
Shells: ..... Aluminum alloy 6061-T6  
Shell Finishes: ..... Electroless nickel, electrodeposited cadmium, or gold-plated  
Molded Insulators: ..... Glass-filled liquid crystal polymer (LCP)  
Embedment: ..... Frey Eng. Co. compound CF3003-80 & L-II-49  
Hardware: ..... Corrosion-resistant steel  
Interfacial Seal Gaskets: ..... Fluorosilicone  
EMI Gaskets: ..... Corrosion-resistant steel

**NOTE:** AirBorn can manufacture special configurations to your exact specifications.

## SIGNAL INTEGRITY PERFORMANCE (Connectors Only)

1	Diff. Impedance, filtered to 70 ps (20-80%)	100 ohm +/- 10
2	Diff. Insertion Loss	4.0 GHz @ -3 dB
3	Diff. Return Loss	1.8 GHz @ -20 dB
4	Intra-Pair	15 ps

## PERFORMANCE

Contact Rating: ..... 3 amperes maximum  
Operating Temperature: ..... -55° C to 125° C  
Maximum Working Voltage: ..... 600V, RMS, 60Hz  
Insulation Resistance: ..... 5,000 megohms minimum @ 500 VDC  
Durability: ..... 500 connector mating cycles  
Contact Engaging Force: ..... 6.0 ounces maximum/contact  
Contact Separating Force: ..... 0.5 ounces minimum/contact  
Mating and Unmating Force: ..... 10 ounces maximum/contact

# microQUAD

## MLHS – Vertical Surface Board-Mount w/Fixed Hardware (Female)

MLHS are rugged metal connectors used in applications where a vertical orientation and a surface board-mount termination style are desired. These connectors have captivated fixed hardware.

### DIMENSIONS

DIMENSIONS	
A	Body Length (see calculation below)
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.570
Y	"A" minus 0.624

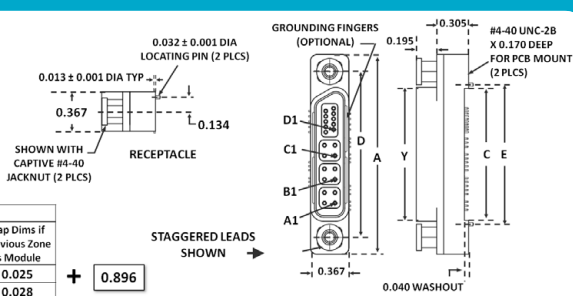
TABLE A	
Module	0.200
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

TABLE B		
Module	Gap Dims if Previous Zone is SIGxx	Gap Dims if Previous Zone is Module
SIG xx	0.028	0.025

0.013 ± 0.001 DIA TYP  
0.367  
0.032 ± 0.001 DIA LOCATING PIN (2 PLCS)  
0.134  
RECEPTACLE  
SHOWN WITH CAPTIVE #4-40 JACKNUT (2 PLCS)  
STAGGERED LEADS SHOWN →  
0.040 WASHOUT



### ORDER FORM

Sample Part Number Format: **MLHS-XXXX-XXX-XXX-XXXX**

ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE
<b>MLHS</b>							


SERIES	HIGH-SPEED MODULES	BODY STYLE	TERMINATION PLATING	HARDWARE
Vertical Surface-Mount (Female)	01 – 1 Module 02 – 2 Modules 03 – 3 Modules 04 – 4 Modules 05 – 5 Modules (max. sig. 40) 06 – 6 Modules (max. sig. 30) 07 – 7 Modules (max. sig. 20) 08 – 8 Modules (max. sig. 10) 09 – 9 Modules (max. sig. 10) 0A – 10 Modules (no signals)	200 – Female 400 – Female with Ground Fingers (preferred)	5 – 50 μ" Gold Contact, Sn/Pb Alloy Termination ☒ 7 – 50 μ" Gold Contact, SAC305-Plated Termination	000 – No Hardware 620 – Two Fixed Jacknuts Captivated** NXX – Keying Jacknuts***

SIGNAL CONTACTS	CONTACT TERMINATION	BODY PLATING (LCP INSULATORS)
L0 – Left Side Key – No Signal Contacts L1 – Left Side Key – 10 Signal Contacts L2 – Left Side Key – 20 Signal Contacts L3 – Left Side Key – 30 Signal Contacts L4 – Left Side Key – 40 Signal Contacts L5 – Left Side Key – 50 Signal Contacts R0 – Right Side Key – No Signal Contacts R1 – Right Side Key – 10 Signal Contacts R2 – Right Side Key – 20 Signal Contacts R3 – Right Side Key – 30 Signal Contacts R4 – Right Side Key – 40 Signal Contacts R5 – Right Side Key – 50 Signal Contacts	47 – Socket, Vertical SMT, Staggered Leads – All 67 – Socket, Vertical SMT, Staggered Leads – High-Speed, Single-Sided Leads – Signals 87 – Socket, Vertical SMT, Single-Sided Leads – High-Speed, Staggered Leads, Signals B7 – Socket, Vertical SMT, Single-Sided Leads – All	2 – Electroless Nickel-Plated Aluminum Shell 3 – Electrodeposited Cadmium-Plated Aluminum Shell ☒ 6 – Gold-Plated Aluminum Shell

**High-Reliability Contact**  
ML-DTL-83513



### NOTES

- ☒ Option not RoHS compliant.
- 1. All high-speed receptacles have fluoropolymer interfacial seals.
- \* Left or right polarization is determined by looking at the male interface with the LONG SIDE downward. The key is the angled side of the interface.
- \*\* Captivated hardware is factory-installed and non-removable.
- \*\*\* Refer to "Hardware Polarization" catalog page for keying options.

### MATERIALS and FINISHES

- Socket Contact: ..... Brass
- Pin Contacts: ..... BeCu alloy strip
- Contact Finish: ..... Gold plate, 50 μ" minimum
- Shells: ..... Aluminum alloy 6061-T6
- Shell Finishes: ..... Electroless nickel, electrodeposited cadmium, or Gold-plated
- Molded Insulators: ..... Glass-filled liquid crystal polymer (LCP)
- Embedment: ..... Frey Eng. Co. compound CF3003-80 & L-II-49
- Hardware: ..... Corrosion-resistant steel
- Interfacial Seal Gaskets: ..... Fluorosilicone
- EMI Gaskets: ..... Corrosion-resistant steel

NOTE: AirBorn can manufacture special configurations to your exact specifications.

### SIGNAL INTEGRITY PERFORMANCE (Connectors Only)

1	Diff. Impedance, filtered to 70 ps (20-80%)	100 ohm +/- 10
2	Diff. Insertion Loss	4.0 GHz @ -3 dB
3	Diff. Return Loss	1.8 GHz @ -20 dB
4	Intra-Pair	15 ps

### PERFORMANCE

- Contact Rating: ..... 3 amperes maximum
- Operating Temperature: ..... -55° C to 125° C
- Maximum Working Voltage: ..... 600V, RMS, 60Hz
- Insulation Resistance: ..... 5,000 megohms minimum @ 500 VDC
- Durability: ..... 500 connector mating cycles
- Contact Engaging Force: ..... 6.0 ounces maximum/contact
- Contact Separating Force: ..... 0.5 ounces minimum/contact
- Mating and Unmating Force: ..... 10 ounces maximum/contact



# microQUAD

## MLHS – Vertical Surface Board-Mount w/Turning Hardware (Male)

MLHS are rugged metal connectors used in applications where a vertical orientation and a surface board-mount termination style are desired. These connectors have captivated turning hardware.

### DIMENSIONS

DIMENSIONS	
A	Body Length (w/o feet) for V-SMT Turning Hardware (see calculation below)
B	"A" minus 0.744
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.570
F	"A" PLUS 0.430
G	"F" minus 0.250

TABLE A	
Module	0.200
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

TABLE B	
Module	0.028
SIG xx	0.028

0.013 ± 0.001 DIA TYP  
0.134  
0.032 ± 0.001 DIA LOCATING PIN (2 PLCS)  
PLUG  
0.367  
0.130  
0.220 MAX  
0.188 DIA  
0.306  
POLARIZED #4-40 JACKSCREW SHOWN (2 PLCS)  
0.183  
D1  
C1  
B1  
A1  
D  
A  
G  
F  
E  
C  
B  
A  
SINGLE-SIDED LEADS SHOWN →  
0.040 WASHOUT  
4-40 LOCKING HELICAL THREAD (2 PLCS)  
0.367

### ORDER FORM

Sample Part Number Format: MLHS-XXXX-XXX-XXX-XXXX

**MLHS**

**SERIES**  
Vertical Surface-Mount (Male)

**HIGH-SPEED MODULES**  
01 – 1 Module  
02 – 2 Modules  
03 – 3 Modules  
04 – 4 Modules  
05 – 5 Modules (max. sig. 40)  
06 – 6 Modules (max. sig. 30)  
07 – 7 Modules (max. sig. 20)  
08 – 8 Modules (max. sig. 10)  
09 – 9 Modules (max. sig. 10)  
0A – 10 Modules (no signals)

**BODY STYLE**  
300 – Plug


**CONTACT TERMINATION**  
37 – Pin, Vertical SMT, Staggered Leads – All  
57 – Pin, Vertical SMT, Staggered Leads – High-Speed, Single-Sided Leads – Signals  
77 – Pin, Vertical SMT, Single-Sided Leads – High-Speed, Staggered Leads, Signals  
A7 – Pin, Vertical SMT, Single-Sided Leads – All

**TERMINATION PLATING**  
5 – 50 μ" Gold Contact, Sn/Pb Alloy Termination   
7 – 50 μ" Gold Contact, SAC305-Plated Termination

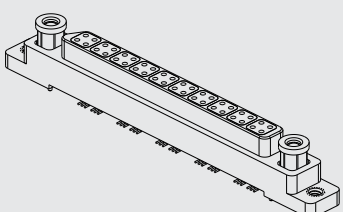
**BODY PLATING (LCP INSULATORS)**  
2 – Electroless Nickel-Plated Aluminum Shell  
3 – Electrodeposited Cadmium-Plated Aluminum Shell   
6 – Gold-Plated Aluminum Shell

**HARDWARE**  
000 – No Hardware  
810 – Two Turning Jackscrews Captivated\*\*  
JXX – Keying Jackscrews\*\*\*

**High-Reliability Contact**  
MIL-DTL-83513



**SIGNAL CONTACTS**  
L0 – Left Side Key – No Signal Contacts  
L1 – Left Side Key – 10 Signal Contacts  
L2 – Left Side Key – 20 Signal Contacts  
L3 – Left Side Key – 30 Signal Contacts  
L4 – Left Side Key – 40 Signal Contacts  
L5 – Left Side Key – 50 Signal Contacts  
R0 – Right Side Key – No Signal Contacts  
R1 – Right Side Key – 10 Signal Contacts  
R2 – Right Side Key – 20 Signal Contacts  
R3 – Right Side Key – 30 Signal Contacts  
R4 – Right Side Key – 40 Signal Contacts  
R5 – Right Side Key – 50 Signal Contacts



### NOTES

- Option not RoHS compliant.
- \* Left or right polarization is determined by looking at the male interface with the LONG SIDE downward. The key is the angled side of the interface.
- \*\* Captivated hardware is factory-installed and non-removable.
- \*\*\* Refer to "Hardware Polarization" catalog page for keying options.

### MATERIALS and FINISHES

Socket Contact: ..... Brass  
Pin Contacts: ..... BeCu alloy strip  
Contact Finish: ..... Gold plate, 50 μ" minimum  
Shells: ..... Aluminum alloy 6061-T6  
Shell Finishes: ..... Electroless nickel, electrodeposited cadmium, or gold-plated  
Molded Insulators: ..... Glass-filled liquid crystal polymer (LCP)  
Embedment: ..... Frey Eng. Co. compound CF3003-80 & L-II-49  
Hardware: ..... Corrosion-resistant steel  
Interfacial Seal Gaskets: ..... Fluorosilicone  
EMI Gaskets: ..... Corrosion-resistant steel

**NOTE:** AirBorn can manufacture special configurations to your exact specifications.

SIGNAL INTEGRITY PERFORMANCE (Connectors Only)		
1	Diff. Impedance, filtered to 70 ps (20-80%)	100 ohm +/- 10
2	Diff. Insertion Loss	4.0 GHz @ -3 dB
3	Diff. Return Loss	1.8 GHz @ -20 dB
4	Intra-Pair	15 ps

### PERFORMANCE

Contact Rating: ..... 3 amperes maximum  
Operating Temperature: ..... -55° C to 125° C  
Maximum Working Voltage: ..... 600V, RMS, 60Hz  
Insulation Resistance: ..... 5,000 megohms minimum @ 500 VDC  
Durability: ..... 500 connector mating cycles  
Contact Engaging Force: ..... 6.0 ounces maximum/contact  
Contact Separating Force: ..... 0.5 ounces minimum/contact  
Mating and Unmating Force: ..... 10 ounces maximum/contact

# microQUAD

## MLHS – Vertical Surface Board-Mount w/Turning Hardware (Female)

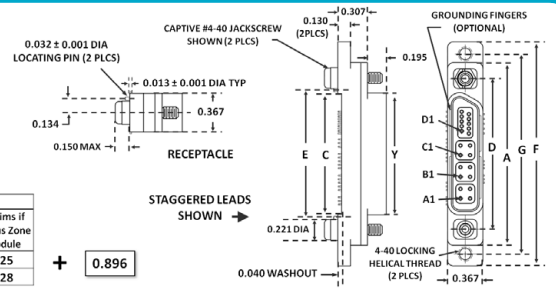
MLHS are rugged metal connectors used in applications where a vertical orientation and a surface board-mount termination style are desired. These connectors have turning hardware.

### DIMENSIONS

DIMENSIONS	
A	Body Length (w/o feet) for V-SMT Turning Hardware (see calculation below)
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.570
F	"A" PLUS 0.430
G	"F" minus 0.250
Y	"A" minus 0.624

TABLE A	
Module	0.200
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

TABLE B		
Module	Gap Dims if Previous Zone is SIGxx	Gap Dims if Previous Zone is Module
Module	0.028	0.025
SIG xx	0.028	0.028



### ORDER FORM

Sample Part Number Format: MLHS-XXXX-XXX-XXX-XXXX

ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE	ENTER CODE
<b>MLHS</b>							
<b>SERIES</b> Vertical Surface-Mount (Female)	<b>HIGH-SPEED MODULES</b> 01 – 1 Module 02 – 2 Modules 03 – 3 Modules 04 – 4 Modules 05 – 5 Modules (max. sig. 40) 06 – 6 Modules (max. sig. 30) 07 – 7 Modules (max. sig. 20) 08 – 8 Modules (max. sig. 10) 09 – 9 Modules (max. sig. 10) 0A – 10 Modules (no signals)	<b>BODY STYLE</b> 600 – Female w/Mounting Ears 800 – Female with Ground Fingers & Mounting Ears (preferred)	<b>TERMINATION PLATING</b> 5 – 50 μ" Gold Contact, Sn/Pb Alloy Termination <input type="checkbox"/> 7 – 50 μ" Gold Contact, SAC305-Plated Termination	<b>HARDWARE</b> 000 – No Hardware 810 – Two Turning Jackscrews Captivated** JXX – Keying Jackscrews***	<b>BODY PLATING (LCP INSULATORS)</b> 2 – Electroless Nickel-Plated Aluminum Shell 3 – Electrodeposited Cadmium-Plated Aluminum Shell <input type="checkbox"/> 6 – Gold-Plated Aluminum Shell		

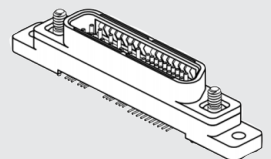
### High-Reliability Contact

MIL-DTL-83513



- SIGNAL CONTACTS**
- L0 – Left Side Key – No Signal Contacts
  - L1 – Left Side Key – 10 Signal Contacts
  - L2 – Left Side Key – 20 Signal Contacts
  - L3 – Left Side Key – 30 Signal Contacts
  - L4 – Left Side Key – 40 Signal Contacts
  - L5 – Left Side Key – 50 Signal Contacts
  - R0 – Right Side Key – No Signal Contacts
  - R1 – Right Side Key – 10 Signal Contacts
  - R2 – Right Side Key – 20 Signal Contacts
  - R3 – Right Side Key – 30 Signal Contacts
  - R4 – Right Side Key – 40 Signal Contacts
  - R5 – Right Side Key – 50 Signal Contacts

- CONTACT TERMINATION**
- 47 – Socket, Vertical SMT, Staggered Leads – All
  - 67 – Socket, Vertical SMT, Staggered Leads – High-Speed, Single-Sided Leads – Signals
  - 87 – Socket, Vertical SMT, Single-Sided Leads – High-Speed, Staggered Leads, Signals
  - B7 – Socket, Vertical SMT, Single-Sided Leads – All



### NOTES

- Option not RoHS compliant.
- 1. All high-speed receptacles have fluoropolymer interfacial seals.
- \* Left or right polarization is determined by looking at the male interface with the LONG SIDE downward. The key is the angled side of the interface.
- \*\* Captivated hardware is factory-installed and non-removable.
- \*\*\* Refer to "Hardware Polarization" catalog page for keying options.

### MATERIALS and FINISHES

Socket Contact:	.....	Brass
Pin Contacts:	.....	BeCu alloy strip
Contact Finish:	.....	Gold plate, 50 μ" minimum
Shells:	.....	Aluminum alloy 6061-T6
Shell Finishes:	.....	Electroless nickel, electrodeposited cadmium, or gold-plated
Molded Insulators:	.....	Glass-filled liquid crystal polymer (LCP)
Embedment:	.....	Frey Eng. Co. compound CF3003-80 & L-II-49
Hardware:	.....	Corrosion-resistant steel
Interfacial Seal Gaskets:	.....	Fluorosilicone
EMI Gaskets:	.....	Corrosion-resistant steel

NOTE: AirBorn can manufacture special configurations to your exact specifications.

### SIGNAL INTEGRITY PERFORMANCE (Connectors Only)

1	Diff. Impedance, filtered to 70 ps (20-80%)	100 ohm +/- 10
2	Diff. Insertion Loss	4.0 GHz @ -3 dB
3	Diff. Return Loss	1.8 GHz @ -20 dB
4	Intra-Pair	15 ps

### PERFORMANCE

Contact Rating:	.....	3 amperes maximum
Operating Temperature:	.....	-55° C to 125° C
Maximum Working Voltage:	.....	600V, RMS, 60Hz
Insulation Resistance:	.....	5,000 megohms minimum @ 500 VDC
Durability:	.....	500 connector mating cycles
Contact Engaging Force:	.....	6.0 ounces maximum/contact
Contact Separating Force:	.....	0.5 ounces minimum/contact
Mating and Unmating Force:	.....	10 ounces maximum/contact