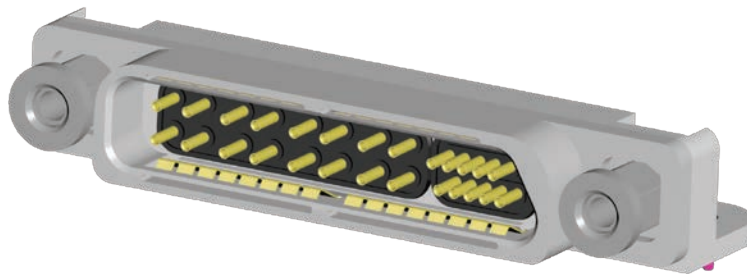


microQUAD™

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	0.200
SIG 20	0.321
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

+ 0.896

Sample Part Number Format: MMHS-02L4-11D-018-5000

MMHS	HIGH-SPEED MODULES	BODY STYLE	WIRE TYPE & GAUGE, QUADRIX	WIRE TYPE & GAUGE, SIGNALS	WIRE LENGTH	HARDWARE
Cable I/O (Male)	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)	1 – Plug	X – See Quadrax Wire Codes on page 13	0 – No signal contacts X – See Wire Codes on page 14	XXX – Wire length in inches (minimum 3") Example: 018 = 18"	000 – No hardware 620 – Two fixed jacknuts, captivated** 810 – Turning jackscrews, captivated** NXX – Keying jackscrews*** 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				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

PLEASE CONSULT THE AIRBORN WEBSITE FOR THE LATEST REVISION OF THIS DOCUMENT PRIOR TO BEGINNING ANY DESIGN WORK.

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 Keying Options" on page 15.

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

Sample Part Number Format: MMHS-01R1-410-006-1810

MMHS								
<p>SERIES Cable I/O (Female)</p>	<p>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)</p>	<p>BODY STYLE 2 – Receptacle 4 – Receptacle with ground fingers (preferred)</p>	<p>WIRE TYPE & GAUGE, QUADRAX X – See Quadrax Wire Codes on page 13</p>	<p>WIRE TYPE & GAUGE, SIGNALS 0 – No signal contacts X – See Wire Codes on page 14</p>	<p>WIRE LENGTH XXX – Wire length in inches (minimum 3") Example: 018 = 18"</p>	<p>HARDWARE 000 – No hardware 620 – Two fixed jacknuts, captivated** 810 – Turning jack screws, captivated** NXX – Keying jacknuts*** JXX – Keying jack screws***</p>	<p>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</p>	<p>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 ☑</p>

High-Reliability Contact
MIL-DTL-83513

PLEASE CONSULT THE AIRBORN WEBSITE FOR THE LATEST REVISION OF THIS DOCUMENT PRIOR TO BEGINNING ANY DESIGN WORK.

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 Keying Options" on page 15.

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

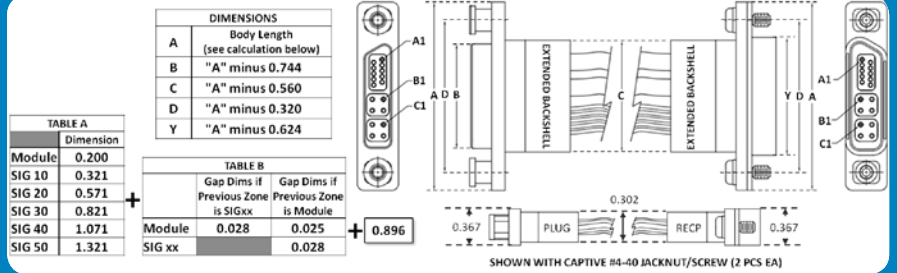


microQUAD™

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



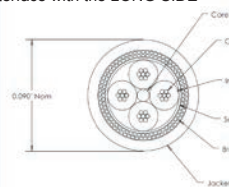
Sample Part Number Format: MJHS-04R1-33D-022-5N41

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)	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)	WIRE TYPE & GAUGE, QUADRX X – See Quadrx Wire Codes on page 13	WIRE TYPE & GAUGE, SIGNALS 0 – No signal contacts X – See Wire Codes on page 14	WIRE LENGTH XXX – Wire length in inches (minimum 3") Example: 018 = 18"	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) 810 – Turning jackscrows, captivated** (both) 860 – Fixed jacknuts, captivated (female) & turning jackscrows (male) 870 – Fixed jacknuts, captivated (male) & turning jackscrows (female) NXX – Keying jacknuts (both)*** JXX – Keying jackscrows (both)*** AXX – Keying jacknuts (female) & keying jackscrows (male)*** BXX – Keying jacknuts (male) & keying jackscrows (female)***

PLEASE CONSULT THE AIRBORN WEBSITE FOR THE LATEST REVISION OF THIS DOCUMENT PRIOR TO BEGINNING ANY DESIGN WORK.

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 Keying Options" on page 15.



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)

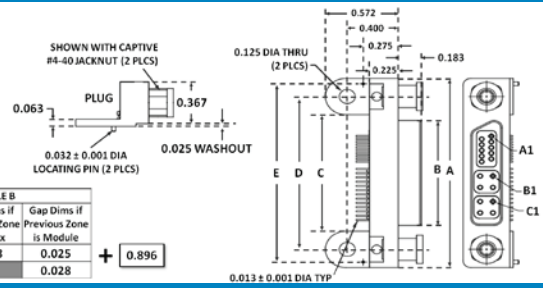
MKHS are rugged metal connectors used in applications where a right angle orientation and a surface board-mount termination style are desired.

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	
Module	0.028	0.025	+ 0.896
SIG xx		0.028	

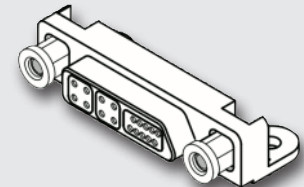
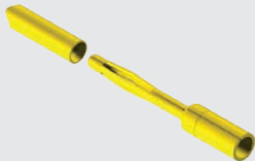


Sample Part Number Format: MKHS-06L3-100-175-3J45

MKHS	-	-	-	-	-	-	-	-
SERIES Right Angle 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 100 – Plug	CONTACT TERMINATION 17 – Pin, horizontal surface-mount (SMT)	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 jacksnuts, captivated** 810 – Turning jackscrews, captivated** NXX – Keying jacksnuts*** 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	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



PLEASE CONSULT THE AIRBORN WEBSITE FOR THE LATEST REVISION OF THIS DOCUMENT PRIOR TO BEGINNING ANY DESIGN WORK.

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 Keying Options on page 15.

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

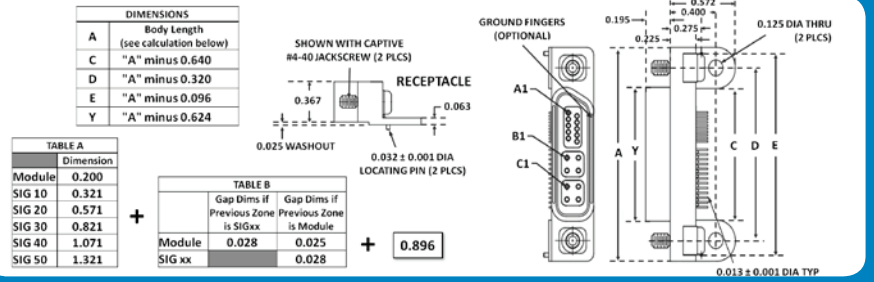


microQUAD™

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



Sample Part Number Format: MKHS-04R1-400-275-2620



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)

CONTACT TERMINATION
 27 – Socket, horizontal surface-mount (SMT)



TERMINATION PLATING
 5 – 50 μ" Gold contact, Sn/Pb alloy termination ☒
 7 – 50 μ" Gold contact, SAC305-plated termination



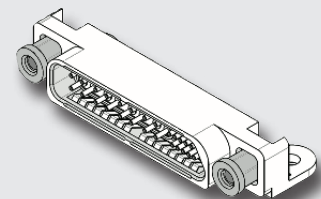
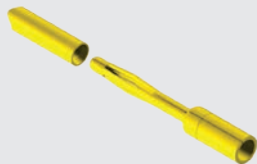
HARDWARE
 000 – No hardware
 620 – Two fixed jacksnuts, captivated**
 810 – Turning jackscrews, captivated**
 NXX – Keying jacksnuts***
 JXX – Keying jackscrews***

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

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



PLEASE CONSULT THE AIRBORN WEBSITE FOR THE LATEST REVISION OF THIS DOCUMENT PRIOR TO BEGINNING ANY DESIGN WORK.

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 Keying Options on page 15.

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)

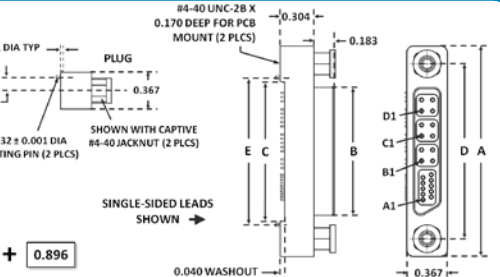
MLHS are rugged metal connectors used in applications where a vertical orientation and a surface board-mount termination style are desired. These connectors have fixed hardware.

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



Sample Part Number Format: MLHS-04L2-100-A77-3N35



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
 100 – Plug



TERMINATION PLATING
 5 – 50 μ" Gold contact, Sn/Pb alloy termination ☒
 7 – 50 μ" Gold contact, SAC305-plated termination



CONTACT TERMINATION
 37 – Pin: vertical SMT, staggered leads
 57 – Pin: vertical SMT, staggered leads; Signals: high-speed, single-sided leads
 77 – Pin: vertical SMT, single-sided leads; Signals: high-speed, staggered leads
 A7 – Pin: vertical SMT, single-sided leads

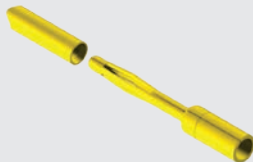


HARDWARE
 000 – No hardware
 620 – Two fixed jacknuts, captivated***
 NXX – Keying jacknuts***

BODY PLATING (LCP INSULATORS)
 2 – Electroless nickel-plated aluminum shell
 3 – Electrodeposited cadmium-plated aluminum shell ☒
 6 – Gold-plated aluminum shell

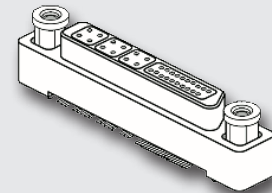
High-Reliability Contact

MIL-DTL-83513



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



PLEASE CONSULT THE AIRBORN WEBSITE FOR THE LATEST REVISION OF THIS DOCUMENT PRIOR TO BEGINNING ANY DESIGN WORK.

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 Keying Options on page 15.

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



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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
Module	0.028	0.025
SIG xx		0.028

+ 0.896

0.032 ± 0.001 DIA LOCATING PIN (2 PLCS)
 0.013 ± 0.001 DIA TYP RECEPTACLE
 0.367
 0.134
 SHOWN WITH CAPTIVE #4-40 JACKNUT (2 PLCS)
 STAGGERED LEADS SHOWN →
 0.040 WASHOUT
 #4-40 UNC-2B X 0.170 DEEP FOR PCB MOUNT (2 PLCS)
 GROUNDING FINGERS (OPTIONAL) 0.195
 0.305
 0.367

Sample Part Number Format: MLHS-03R2-400-B77-3620

MLHS							
SERIES Vertical 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** NXX – Keying jacknuts***	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 67 – Socket: vertical SMT, staggered leads; Signals: high-speed, single-sided leads 87 – Socket: vertical SMT, single-sided leads; Signals: high-speed, staggered leads B7 – Socket: vertical SMT, single-sided leads	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

PLEASE CONSULT THE AIRBORN WEBSITE FOR THE LATEST REVISION OF THIS DOCUMENT PRIOR TO BEGINNING ANY DESIGN WORK.

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 Keying Options on page 15.

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



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

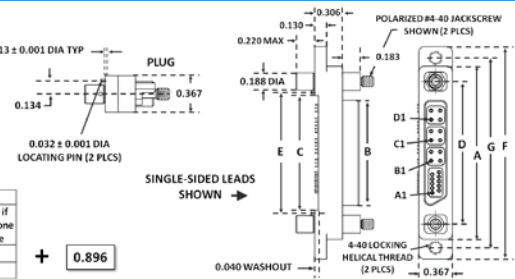
MLHS are rugged metal connectors used in applications where a vertical orientation and a surface board-mount termination style are desired. These connectors have captivated turning hardware.

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

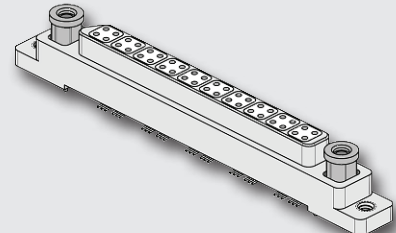
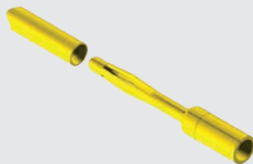
TABLE B		
Module	Gap Dims if Previous Zone is SIGxx	Gap Dims if Previous Zone is Module
Module	0.028	0.025
SIG xx	0.028	0.028



Sample Part Number Format: MLHS-05R2-300-775-2810

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 57 – Pin: vertical SMT, staggered leads; Signals: high-speed, single-sided leads 77 – Pin: vertical SMT, single-sided leads; Signals: high-speed, staggered leads A7 – Pin: vertical SMT, single-sided leads	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***	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

High-Reliability Contact
MIL-DTL-83513



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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 Keying Options on page 15.

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



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

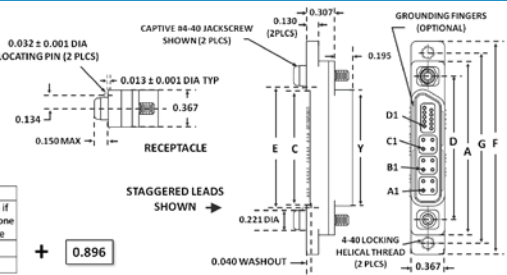
MLHS are rugged metal connectors used in applications where a vertical orientation and a surface board-mount termination style are desired. These connectors have turning hardware.

DIMENSIONS

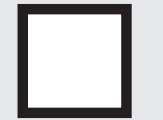
DIMENSIONS	
A	Body Length (w/o feet) for V-SMT Turning Hardware (see calculation below)
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.570
F	"A" PLUS 0.430
G	"F" minus 0.250
Y	"A" minus 0.624

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	0.028
SIG xx	0.028



Sample Part Number Format: MLHS-03L3-800-477-2J21



SERIES
 Vertical 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
 600 – Female with mounting ears
 800 – Female with ground fingers & mounting ears (preferred)

TERMINATION PLATING
 5 – 50 μ" Gold contact, Sn/Pb alloy termination ☒
 7 – 50 μ" Gold contact, SAC305-plated termination

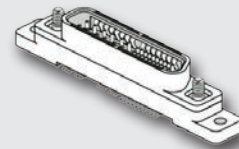
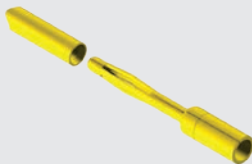
HARDWARE
 000 – No hardware
 810 – Two Turning jackscrews, captivated**
 JXX – Keying jackscrews***

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

CONTACT TERMINATION
 47 – Socket: vertical SMT, staggered leads
 67 – Socket: vertical SMT, staggered leads; Signals: high-speed, single-sided leads
 87 – Socket: vertical SMT, single-sided leads; Signals: high-speed, staggered leads
 B7 – Socket: vertical SMT, single-sided leads

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



PLEASE CONSULT THE AIRBORN WEBSITE FOR THE LATEST REVISION OF THIS DOCUMENT PRIOR TO BEGINNING ANY DESIGN WORK.

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 Keying Options on page 15.

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



WIRE CODES

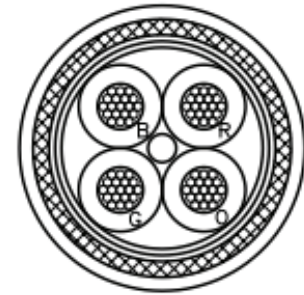
microQUAD

QUADRAX CABLE CONSTRUCTION

Conductors:	Silver-plated copper alloy
Insulation:	FEP
Cable:	Planetary twist with filler in core
Binder:	PTFE tape
Inner Shield:	Aluminized mylar facing out
Outer Shield:	Braided silver-plated copper (95% min. coverage)
Marker Tape:	Polyimide tape
Jacket:	Translucent FEP
Differential Pairs:	Pair 1 - blue (position M1), orange (position M3) Pair 2 - green (position M2), red (position M4)
Temperature:	-55°C to +125°C
Differential Impedance:	100 Ω ±10 Ω; 110 Ω ±6 Ω
Delay Skew within Pair:	4.0 ps/ft max.

QUADRAX WIRE CODES

1	100 Ω 24 AWG
2	100 Ω 26 AWG
3	100 Ω 28 AWG
4	100 Ω 30 AWG
5	110 Ω 24 AWG
6	110 Ω 26 AWG
7	110 Ω 28 AWG
8	110 Ω 30 AWG



NOTES

1. Additional high-speed cable types are available as standard options (i.e., drain wire, TwinAx, shielded pairs, shielded pair quad, twisted pair quad, etc.). Contact AirBorn for construction specifications of alternate cable.
2. Additional wire types are available as standard options (i.e., twisted pair, shielded, braid, etc.).



WIRE CODES

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SIGNAL WIRE CODES

A	SAE AS22759/11-24	Ten repeating colors per M83513
B	SAE AS22759/11-24	Non-repeating colors per MIL-STD-681
C	SAE AS22759/11-24	White
D	SAE AS22759/11-26	Ten repeating colors per M83513
E	SAE AS22759/11-26	Non-repeating colors per MIL-STD-681
F	SAE AS22759/11-26	White
G	SAE AS22759/11-28	Ten repeating colors per M83513
H	SAE AS22759/11-28	White
J	SAE AS22759/33-24* <input type="checkbox"/>	Ten repeating colors per M83513
K	SAE AS22759/33-24* <input type="checkbox"/>	White
L	SAE AS22759/33-26* <input type="checkbox"/>	Ten repeating colors per M83513
M	SAE AS22759/33-26* <input type="checkbox"/>	White
N	SAE AS22759/33-28* <input type="checkbox"/>	Ten repeating colors per M83513
P	SAE AS22759/33-28* <input type="checkbox"/>	White
Q	SAE AS22759/33-30* <input type="checkbox"/>	Ten repeating colors per M83513
R	SAE AS22759/33-30* <input type="checkbox"/>	White
S	NEMA HP3-EXBEB	24 AWG non-repeating colors per MIL-STD-681
T	NEMA HP3-EXBEB	24 AWG white
U	NEMA HP3-EXBDB	26 AWG non-repeating colors per MIL-STD-681
V	NEMA HP3-EXBDB	26 AWG white
W	NEMA HP3-EXBCB	28 AWG non-repeating colors per MIL-STD-681
X	NEMA HP3-EXBCB	28 AWG white
Y	NEMA HP3-EXBBB	30 AWG non-repeating colors per M83513
Z	NEMA HP3-EXBBB	30 AWG white

NOTES

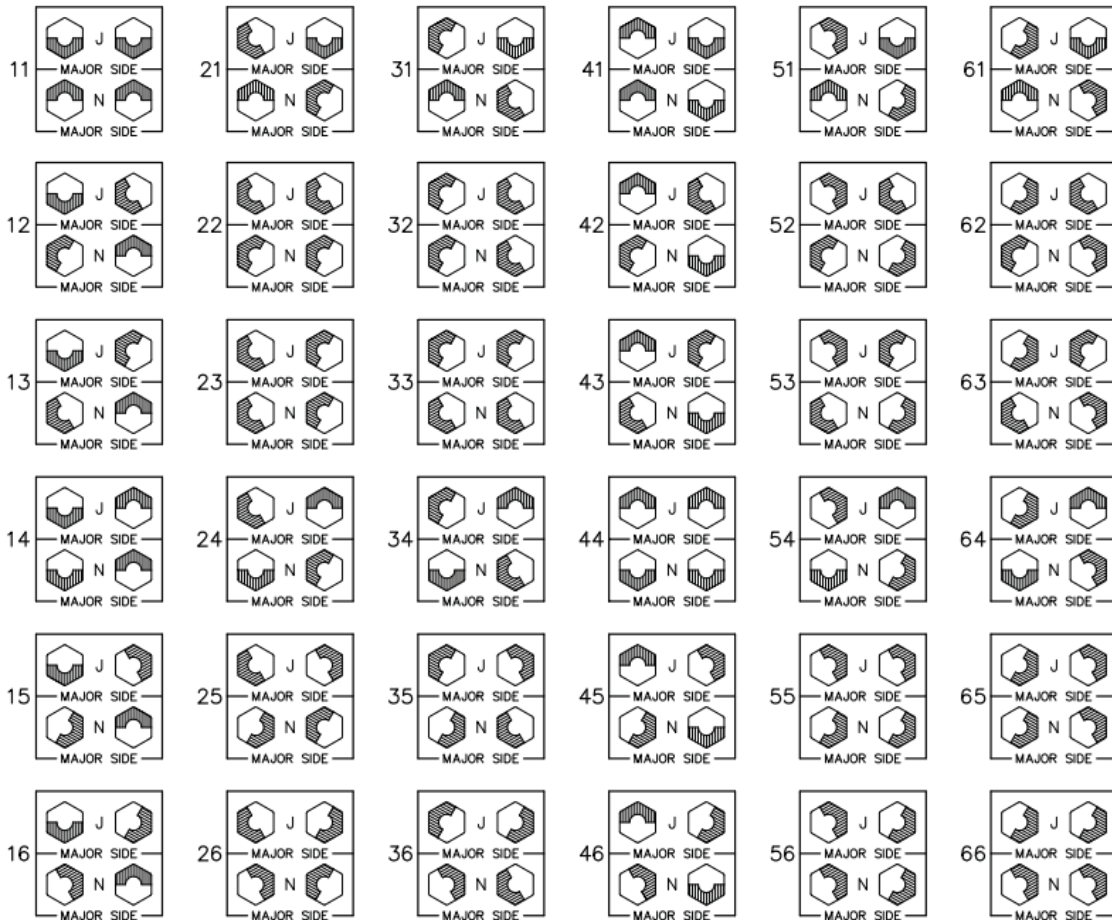
* Corrosion has been experienced on connectors that are pre-wired with M22759/33 and stored in sealed environments. Exercise caution in packaging and storing when using this wire.

Option is not RoHS-compliant



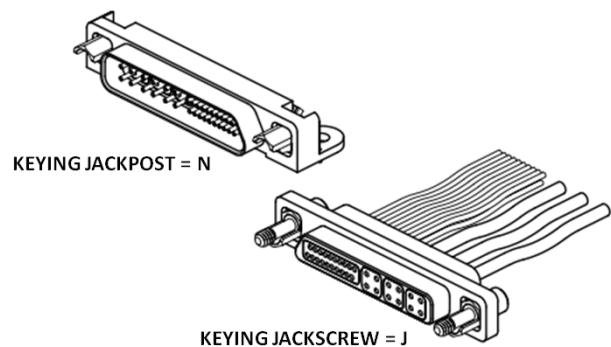
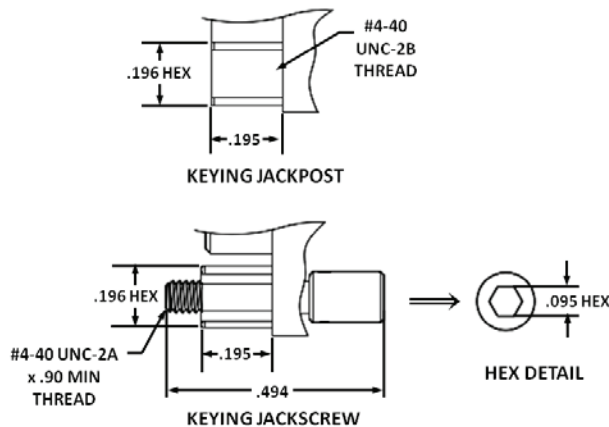
HARDWARE KEYING OPTIONS

microQUAD



Select the appropriate two-digit number above and include as the last two digits of the hardware code in the part number. (Keying is factory-installed and non-removable.)

Example: MMHS-03L2-12D-197-2J11
 MKHS-03R2-200-275-2N11



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