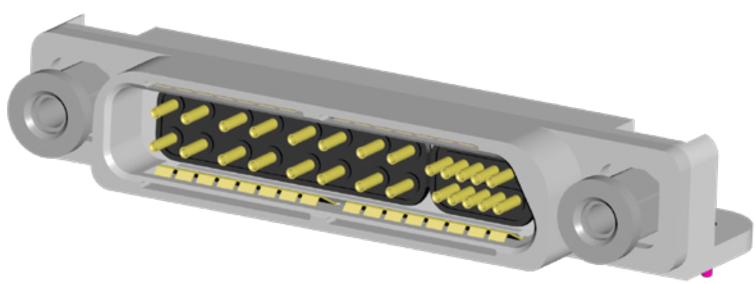
microQUAD™

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.

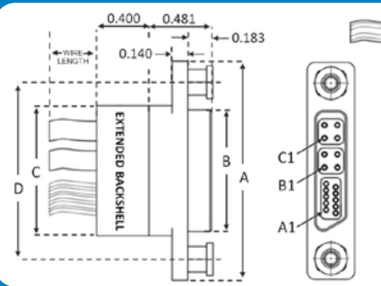


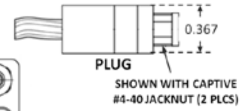
microQUAD™

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

	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

	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 - □□ - □□□ - □ - □□

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)

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 – Plug

WIRE TYPE & GAUGE, QUADRAX
X – See Quadrax Wire Codes on page 13

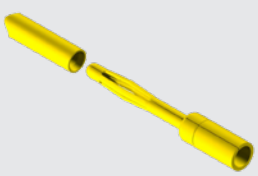
WIRE TYPE & GAUGE, SIGNALS
0 – No signal contacts
X – See Wire Codes on page 14

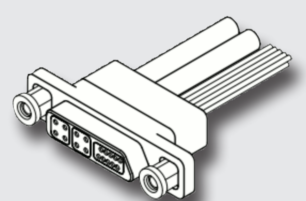
WIRE LENGTH
XXX – Wire length in inches (minimum 3”)
Example: 018 = 18”

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
620 – Two fixed jacknuts, captivated**
810 – Turning jackscrews, captivated**
NXX – Keying jacknuts***
JXX – Keying jackscrews***

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

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

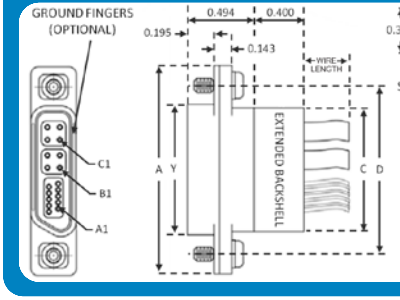
Contact Rating: . . . . 3 amperes maximum
Operating Temperature: . . . . -55° C to 125° C
Maximum Working Voltage: . . . . 600V, RMS, 60Hz
Insulation Resistance . . . . 5,000 megohms minimum @ 500 VDC
Durability: . . . . 500 connector mating cycles
Contact Engaging Force: . . . . 6.0 ounces maximum/contact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

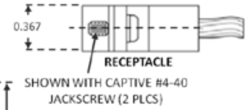
microQUAD™

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

	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

	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 - ☐ ☐ - ☐ ☐ ☐ - ☐ - ☐ ☐

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)

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
2 – Receptacle
4 – Receptacle with ground fingers (preferred)

WIRE TYPE & GAUGE, QUADRAX
X - See Quadrax Wire Codes on page 13

WIRE TYPE & GAUGE, SIGNALS
0 – No signal contacts
X – See Wire Codes on page 14

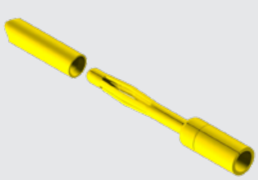
WIRE LENGTH
XXX – Wire length in inches (minimum 3")
Example: 018 = 18"

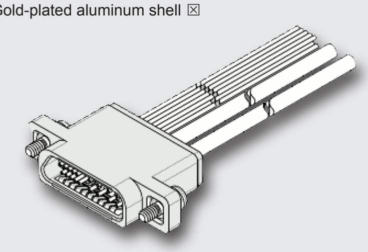
BODY PLATING (LCP INSULATORS)
1 – Electroless nickel-plated aluminum shell
2 – Electroless nickel-plated aluminum shell ☒
3 – Electrodeposited cadmium-plated aluminum shell ☒
5 – Gold-plated aluminum shell
6 – Gold-plated aluminum shell ☒

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

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

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 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
Y	"A" minus 0.624

TABLE A

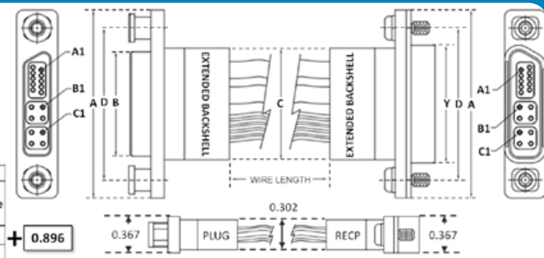
	Dimension
Module	0.200
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

\+

TABLE B

	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



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

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)

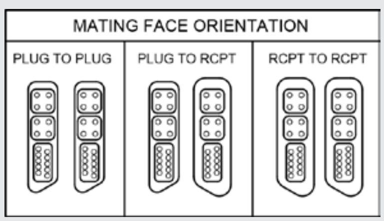
WIRE TYPE & GAUGE, QUADRAX
X – See Quadrax Wire Codes on page 13

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 jackscrews, captivated** (both)
860 – Fixed jacknuts, captivated (female) & turning jackscrews (male)
870 – Fixed jacknuts, captivated (male) & turning jackscrews (female)
NXX – Keying jacknuts (both)***
JXX – Keying jackscrews (both)***
AXX – Keying jacknuts (female) & keying jackscrews (male)***
BXX – Keying jacknuts (male) & keying jackscrews (female)***



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

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

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CALL 512-863-5585
x6400

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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

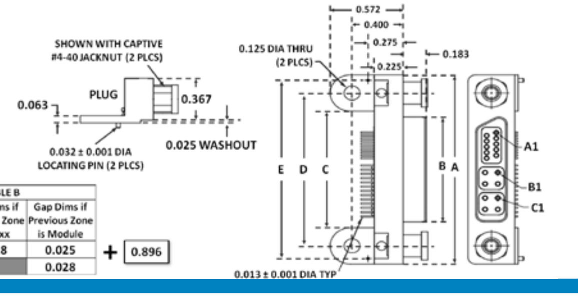
DIMENSIONS	
A	Body Length (see calculation below)
B	"A" minus 0.744
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.096

TABLE A	
	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		
	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: 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)

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
100 – Plug

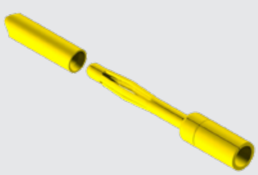
CONTACT TERMINATION
17 – Pin, horizontal surface-mount (SMT)

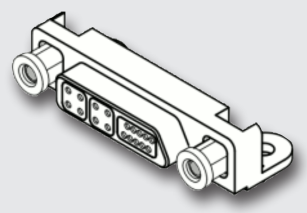
TERMINATION PLATING
5 – 50 μ" Gold contact, Sn/Pb alloy termination ☒
7 – 50 μ" Gold contact, SAC305-plated termination

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
620 – Two fixed jacknuts, captivated**
810 – Turning jackscrews, captivated**
NXX – Keying jacknuts***
JXX – Keying jackscrews***

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.

Mechanical model & drawing for PCB layout information available on AirBorn.com.

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

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

AirBorn

CONTACT CUSTOMER SERVICE
CALL 512-863-5585
x6400

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

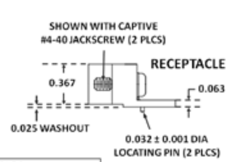
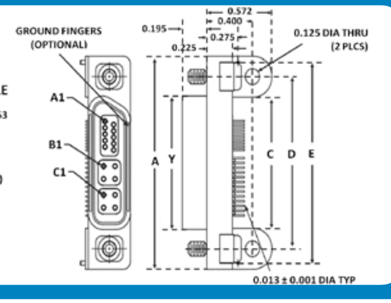


TABLE A	Dimension
Module	0.200
SIG 10	0.321
SIG 20	0.571
SIG 30	0.821
SIG 40	1.071
SIG 50	1.321

+

TABLE B	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: MKHS-04R1-400-275-2620

MKHS - ☐ ☐ - ☐ - ☐ ☐ - ☐ ☐

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)

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
200 – Female
400 – Female with ground fingers (preferred)

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

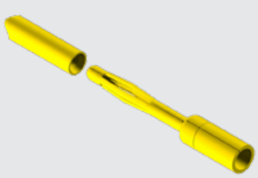
TERMINATION PLATING
5 – 50 µ" Gold contact, Sn/Pb alloy termination ☒
7 – 50 µ" Gold contact, SAC305-plated termination

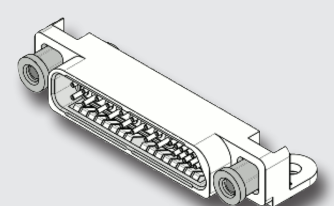
BODY PLATING (LCP INSULATORS)
2 – Electroless nickel-plated aluminum shell
3 – Electrodeposited cadmium-plated aluminum shell ☒
6 – Gold-plated aluminum shell

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

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.

Mechanical model & drawing for PCB layout information available on AirBorn.com.

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

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 (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

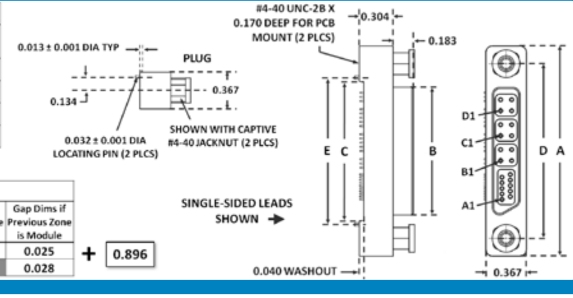
DIMENSIONS	
A	Body Length (w/o feet) for V-SMT Turning Hardware (see calculation below)
B	"A" minus 0.744
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.570

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

+ 0.896



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

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)

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
100 – Plug

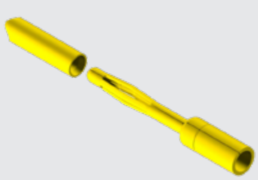
CONTACT TERMINATION
37 – Pin: vertical SMT, staggered leads
57 – Pin: vertical SMT, staggered leads - high-speed; single-sided leads - signals
77 – Pin: vertical SMT, single-sided leads - high-speed; staggered leads - signals
A7 – Pin: vertical SMT, single-sided leads

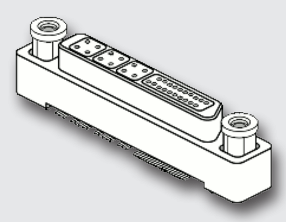
TERMINATION PLATING
5 – 50 µ" Gold contact, Sn/Pb alloy termination ☒
7 – 50 µ" Gold contact, SAC305-plated termination

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
620 – Two fixed jacknuts, captivated**
NXX – Keying jacknuts***

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.

Mechanical model & drawing for PCB layout information available on AirBorn.com.

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

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

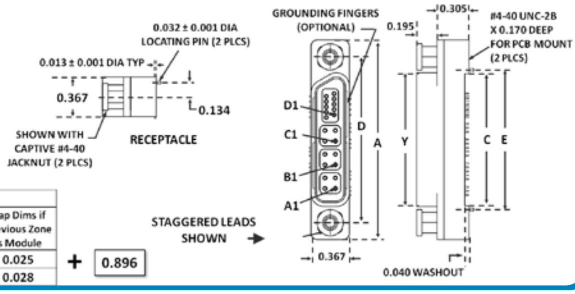
DIMENSIONS	
A	Body Length (see calculation below)
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.570
Y	"A" minus 0.624

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	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: 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)

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
200 – Female
400 – Female with ground fingers (preferred)

CONTACT TERMINATION
47 – Socket: vertical SMT, staggered leads
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

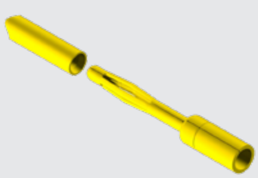
TERMINATION PLATING
5 – 50 µ" Gold contact, Sn/Pb alloy termination ☒
7 – 50 µ" Gold contact, SAC305-plated termination

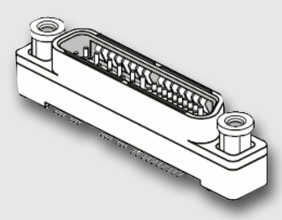
BODY PLATING (LCP INSULATORS)
2 – Electroless nickel-plated aluminum shell
3 – Electrodeposited cadmium-plated aluminum shell ☒
6 – Gold-plated aluminum shell

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

High-Reliability Contact

MIL-DTL-83513





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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.

Mechanical model & drawing for PCB layout information available on AirBorn.com.

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

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

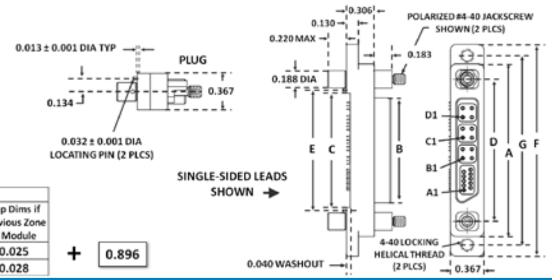
DIMENSIONS	
A	Body Length (w/o feet) for V-SMT Turning Hardware (see calculation below)
B	"A" minus 0.744
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.570
F	"A" PLUS 0.430
G	"F" minus 0.250

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	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: 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)

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
300 – Plug

CONTACT TERMINATION
37 – Pin: vertical SMT, staggered leads
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

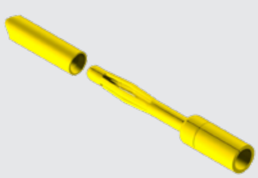
TERMINATION PLATING
5 – 50 µ" Gold contact, Sn/Pb alloy termination ☒
7 – 50 µ" Gold contact, SAC305-plated termination

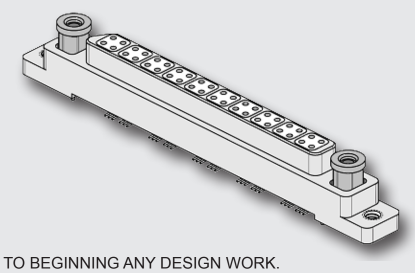
BODY PLATING (LCP INSULATORS)
2 – Electroless nickel-plated aluminum shell
3 – Electrodeposited cadmium-plated aluminum shell ☒
6 – Gold-plated aluminum shell

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

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.

Mechanical model & drawing for PCB layout information available on AirBorn.com.

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

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

AirBorn

CONTACT CUSTOMER SERVICE
CALL 512-863-5585
x6400

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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

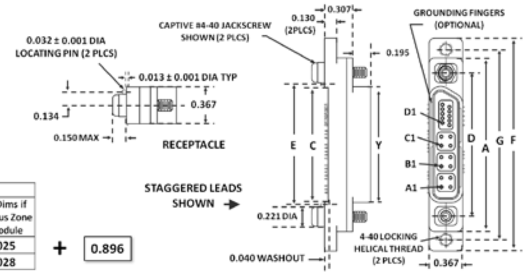
DIMENSIONS	
A	Body Length (w/o feet) for V-SMT Turning Hardware (see calculation below)
C	"A" minus 0.640
D	"A" minus 0.320
E	"A" minus 0.570
F	"A" PLUS 0.430
G	"F" minus 0.250
Y	"A" minus 0.624

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	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: MLHS-03L3-800-477-2J21

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)

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

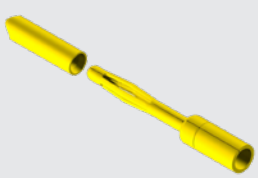
CONTACT TERMINATION
47 – Socket: vertical SMT, staggered leads
67 – Socket: vertical SMT, staggered leads - high-speed; single-sided leads - signals
87 – Socket: vertical SMT, single-sided leads - high-speed; staggered leads - signals
B7 – Socket: vertical SMT, single-sided leads

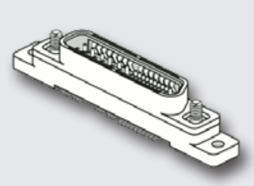
TERMINATION PLATING
5 – 50 µ" Gold contact, Sn/Pb alloy termination ☒
7 – 50 µ" Gold contact, SAC305-plated termination

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 jack-screws***

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.

Mechanical model & drawing for PCB layout information available on AirBorn.com.

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

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

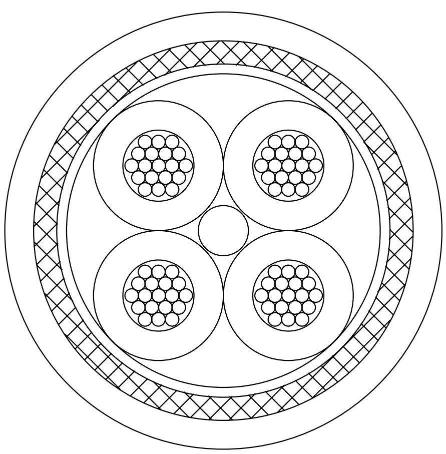
PERFORMANCE

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
Outer Shield:	Braided silver-plated copper (95% min. coverage)
Jacket:	White FEP
Differential Pairs:	Pair 1 - blue (position M1), orange (position M3) Pair 2 - green (position M2), red (position M4)
Differential Impedance:	100 Ω ±10 Ω; 110 Ω ±6 Ω
Delay Skew within Pair:	5.0 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

microQUAD

SIGNAL WIRE CODES

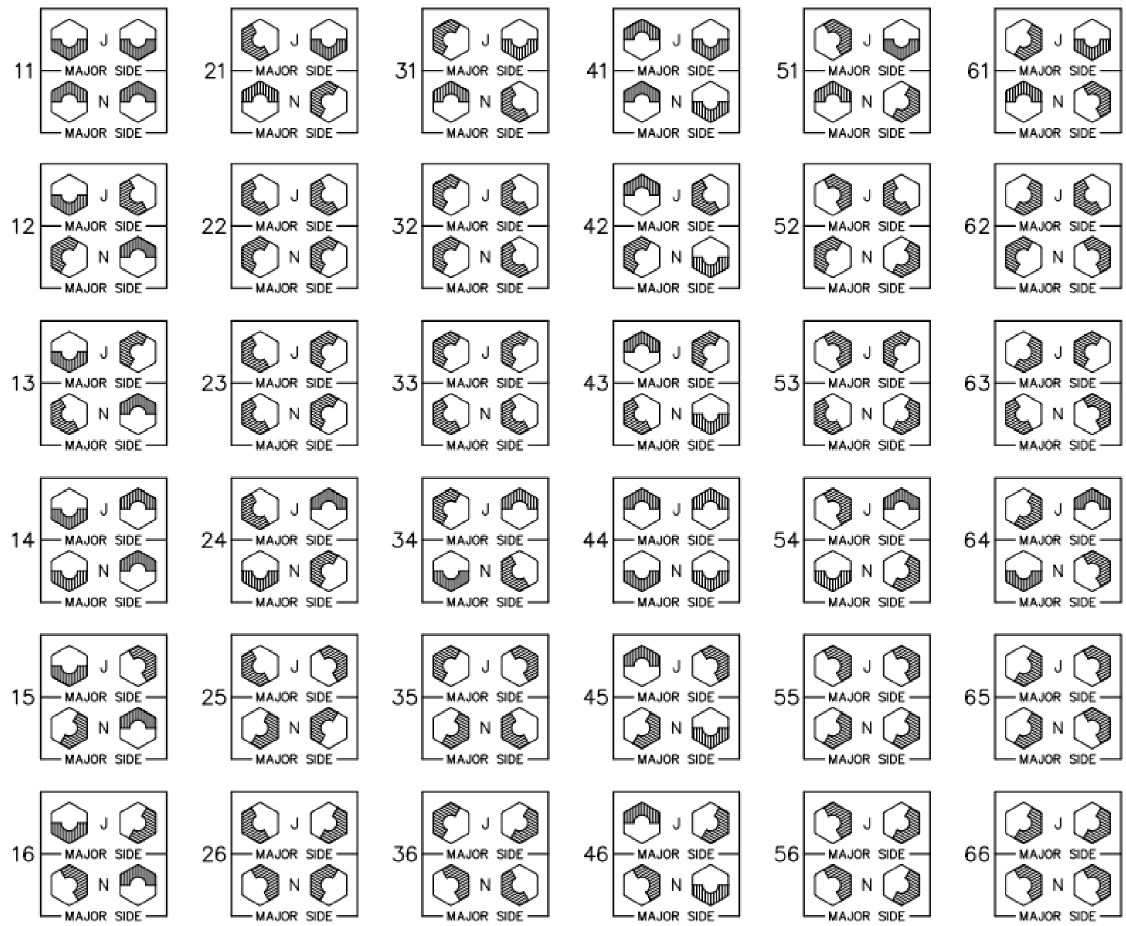
A	SAE AS22759/11-24	Ten repeating colors per M83513
B	SAE AS22759/11-24	Non-repeating colors per MIL-STD-681
C	SAE AS22759/11-24	White
D	SAE AS22759/11-26	Ten repeating colors per M83513
E	SAE AS22759/11-26	Non-repeating colors per MIL-STD-681
F	SAE AS22759/11-26	White
G	SAE AS22759/11-28	Ten repeating colors per M83513
H	SAE AS22759/11-28	White
J	SAE AS22759/33-24*☒	Ten repeating colors per M83513
K	SAE AS22759/33-24*☒	White
L	SAE AS22759/33-26*☒	Ten repeating colors per M83513
M	SAE AS22759/33-26*☒	White
N	SAE AS22759/33-28*☒	Ten repeating colors per M83513
P	SAE AS22759/33-28*☒	White
Q	SAE AS22759/33-30*☒	Ten repeating colors per M83513
R	SAE AS2275933-30*☒	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.

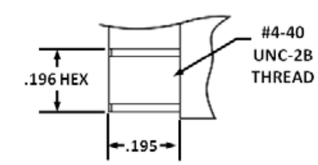
☒ Option is not RoHS-compliant

HARDWARE KEYING OPTIONS microQUAD

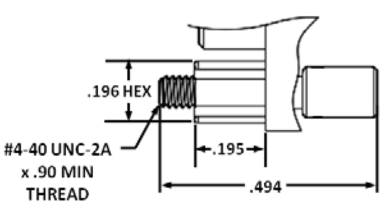


Select the appropriate two-digit number above and include as the last two digits of the hardware code in the part number. (Keying is factory-installed and non-removable.)

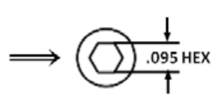
Example: MMHS-03L2-12D-197-2J11
MKHS-03R2-200-275-2N11



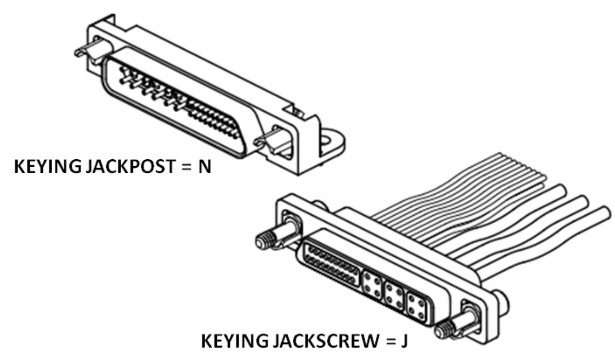
KEYING JACKPOST



KEYING JACKSCREW



HEX DETAIL



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