molex

AirBorn FOCuS

Active Optical Cables

AirBorn FOCuS

Overview

Innovative Optical Connectivity for Precision Applications

FOCuS Active Optical Cables (AOC) combine the benefits of fiber optics with the ease and reliability of copper, delivering high-speed data transmission with four channels operating at 12.5Gbps each (50Gbps aggregate).

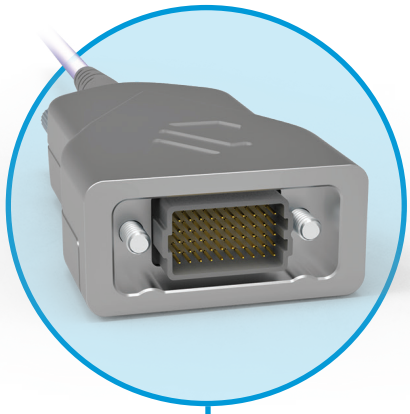
Designed for demanding conditions, these cables use radiation-hardened and non-outgassing components to ensure full reliability. Thoughtful engineering optimizes size, weight, and mechanical robustness—featuring multiple points of contact, strong tensile materials, and durable metal backshells—to withstand extreme environments, from spaceflight to rugged industrial and military applications.

Key Features & Benefits:

- Patented design
- Distances capable to 100 meters
- Data rates of 12.5 Gbps/channel
- Four Channels
- Rugged, light-weight and low-profile cable
- EMI immune
- No fiber cleaning concerns
- Fast installation: mate and go
- No transceiver needed
- Evaluation kit available (see page 43)

Elevating Performance for Next-Generation Applications

Engineered to excel in demanding aerospace, space, defense and industrial environments, AirBorn FOCuS Active Optical Cables are ideal for applications requiring...



High Speed
Supports speeds up to 12.5Gbps per channel.

Hassle-Free Fiber
Installs the same way as a copper cable.

Longer Distances
Delivers reliable high speeds up to 100m.

Sealed and Protected Optical Path
Eliminates the number one cause of link failure – foreign object debris (FOD).

Weight Savings
Provides significant weight savings over copper cables.

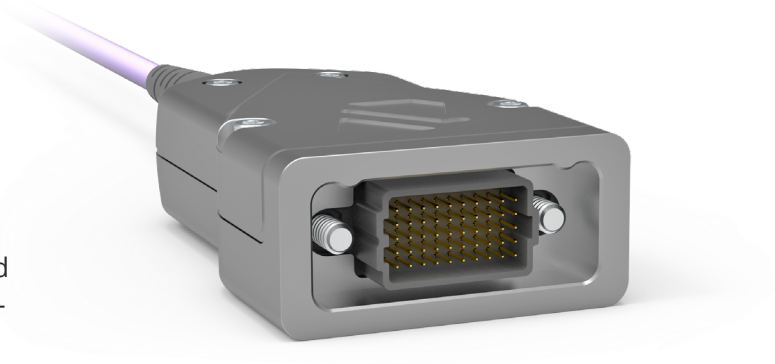
Easier Maintenance Than Fiber
Factory termination reduces potential for fiber contamination.

Reduced Space
Smaller cable bundles and eliminates the need for a transceiver on a PCB.

Multiple Environments
Offers radiation-hardened, space-rated and ruggedized options.

Improved EMI Protection
Cable and shell design help to reduce EMI.

Design Flexibility
Using the common AirBorn FOCuS pinout, copper and fiber cables are interchangeable.



AV4M2 — AOC Assembly

AirBorn FOCuS Active Optical Cable Assembly is a four channel, 12.5Gbps offering, available in both space-rated and rugged models. AV4M2 cables mate to VTF and VTRAF board-mount connectors and VPD panel-mount cables.

Sample Part Number Format: AV4M2-RN2-010-LS00-000

AV	4	M	2	-		N		-		-			-	

Series
AirBorn FOCuS AV – AOC verSI Cable Assembly

Lanes
4 – 4 Bi-Directional Optical Links

Gender
M – Plug

Shell Material
2 – Nickel Plated Aluminum

Application
S – Space
R – Rugged

Optical Package
N – Non-Hermetic

Fiber Type
1 – Radiation Hardened, 50/125 OM3 Multimode Fiber
2 – Non-Radiation Hardened, 50/125 OM3 Multimode Fiber

Fiber Length
005 – 16.40 Feet (5 Meters)
010 – 32.81 Feet (10 Meters)
020 – 65.62 Feet (20 Meters)
030 – 98.43 Feet (30 Meters)

Hardware
JS – Jacking Screw
LS – Locking Screw

Keying Polarization*
00 – Option 'A' - Standard
01 – Option 'B'
02 – Option 'C'
03 – Option 'D'
04 – Option 'E'
05 – Option 'F'
06 – Option 'G'
07 – Option 'H'
*See pages 36-43 for keying details and dimensions

Testing Code
See page 32-33 for testing code matrix.
100
200
201
300
400
401
500
600
601

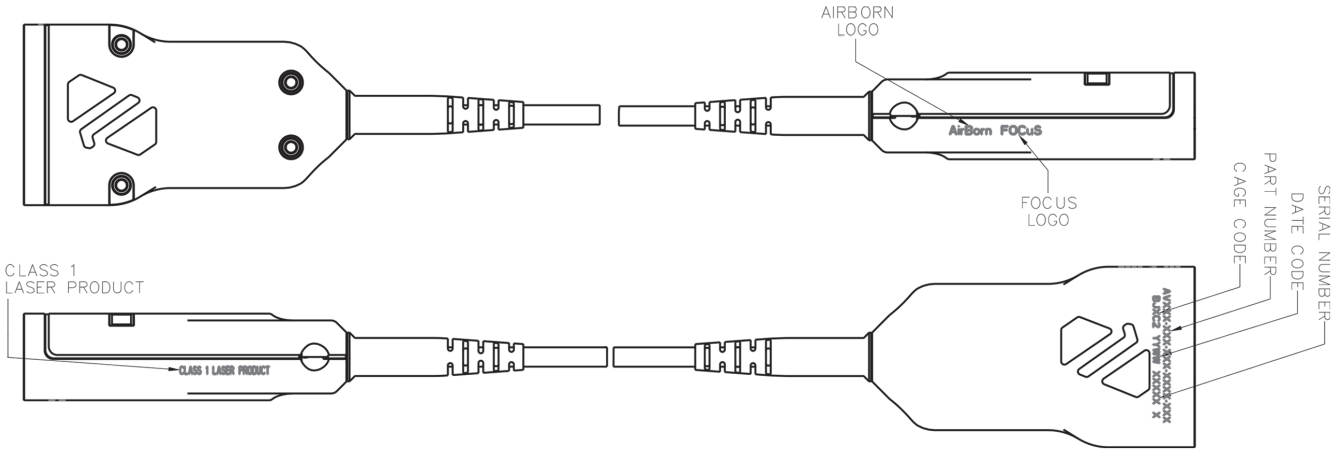
NOTES:

- Mates with connector series: VTF, VTRAF, and VPD.
- Packaging: Cable to be packaged with dust cover installed (not shown). Cable supplied fully assembled in ESD safe box.
- Molex requires a non-disclosure agreement before purchasing of the Active Optic Cables.

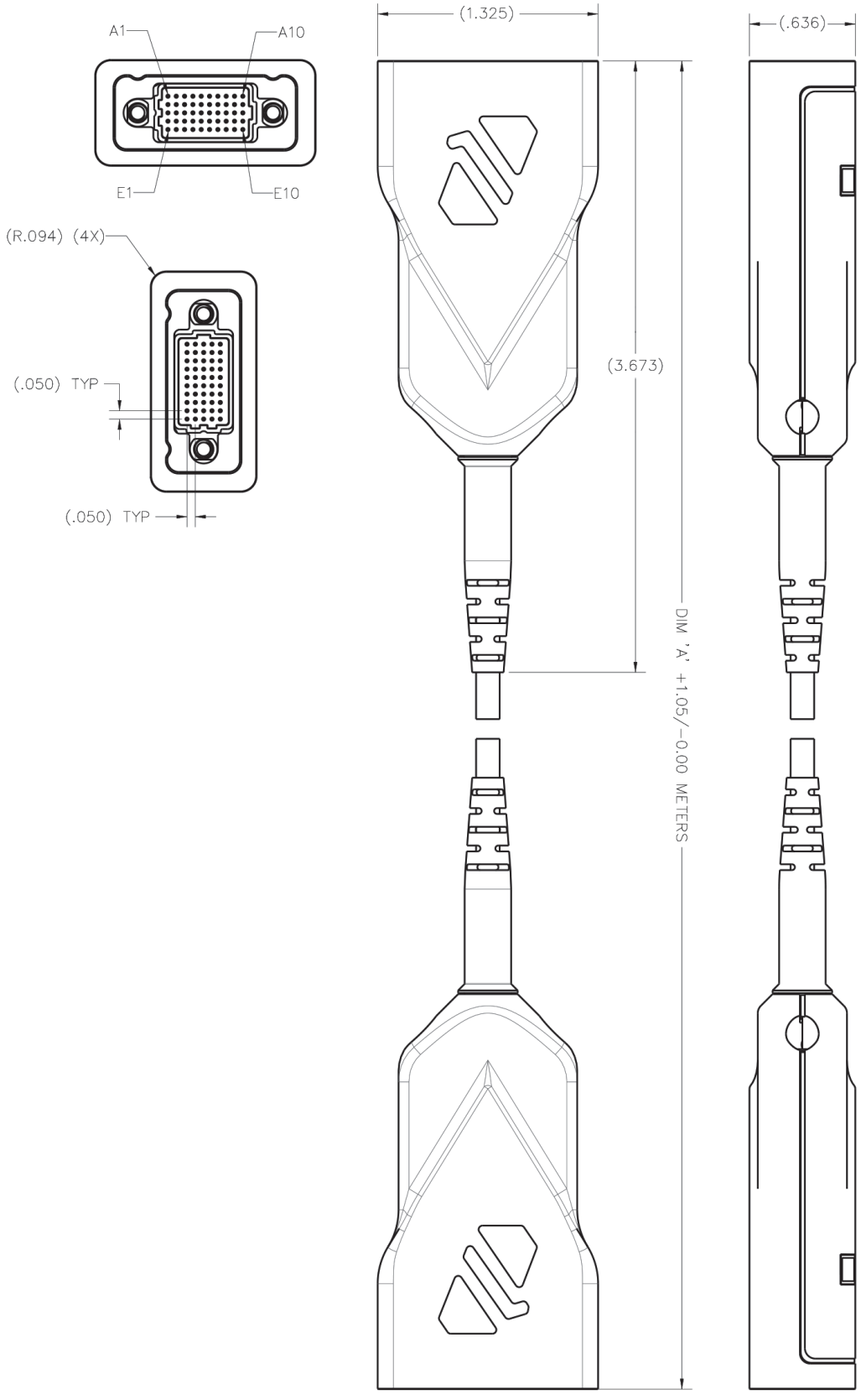
Please consult molex.com to configure your part number and for the latest revision controlled drawing and technical data.

Class I laser product that complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3, as described in Laser Notice No. 56, dated May 8, 2019.

Marking Detail



Dimensions



Please consult the Molex website for the latest revision of this document prior to beginning any design work.

Class I laser product that complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3, as described in Laser Notice No. 56, dated May 8, 2019.

VTF — Vertical Board-Mount Connector

VTF models are thermal interface connectors designed to mate with AV4M2 active optical cables and CV4M2 copper cables. VTF connectors are offered with multiple termination options including press-fit, paste-in-hole, and plated-through-hole. EMI gaskets are standard with this model connector.

Sample Part Number Format: VTF-05-10-50-00-00-N

VTF	05	10	50	☐☐	☐☐	☐

Series
AirBorn FOCuS
VTF – Vertical Thermal Female

Rows
05 – 5 Rows

Columns
10 – 10 Columns

Contact Plating
50 – 50µ inches Au

Termination
00 – Press-Fit
01 – Paste-In-Hole (PIH)
02 – Plated-through-hole (PTH) .078" Length
03 – PTH .109" Length
04 – PTH .140" Length
05 – PTH .156" Length
06 – PTH .172" Length

Keying Polarization*
00 – Option 'A' - Standard
01 – Option 'B'
02 – Option 'C'
03 – Option 'D'
04 – Option 'E'
05 – Option 'F'
06 – Option 'G'
07 – Option 'H'
*See pages 36-43 for keying details and dimensions

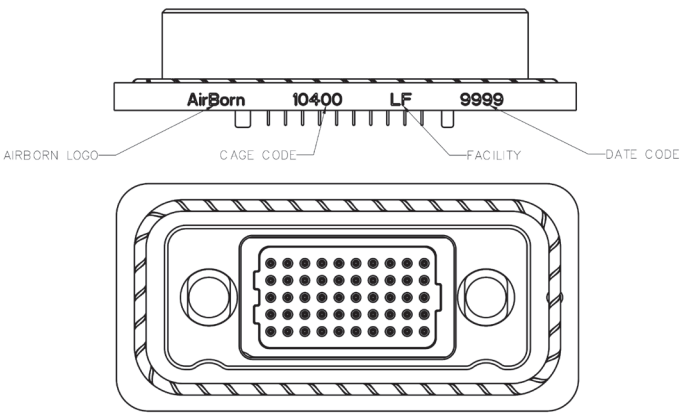
Hardware Options
N – Fixed Jacknut (.125" Max. Board Thickness)
N1 – Fixed Jacknut (.250" Max. Board Thickness)
NE – Fixed Jackset With Panel Mount

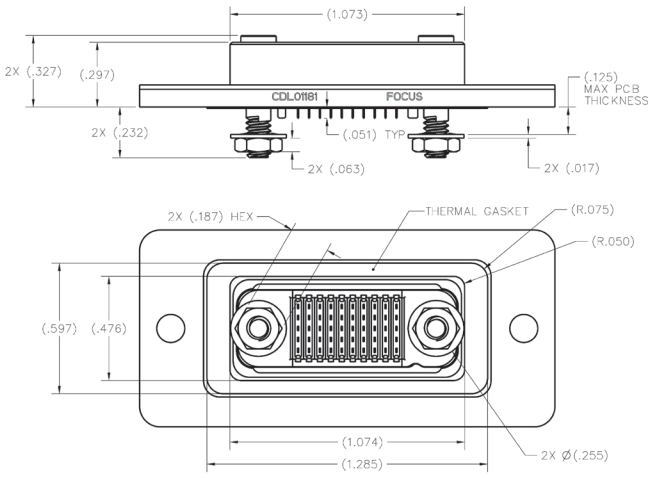
NOTES:

- Mates with AV4MX and CV4MX cables
- Packaging: parts supplied in thermoformed trays, hardware supplied uninstalled
- See Molex SPEC ESL5001 for additional application information

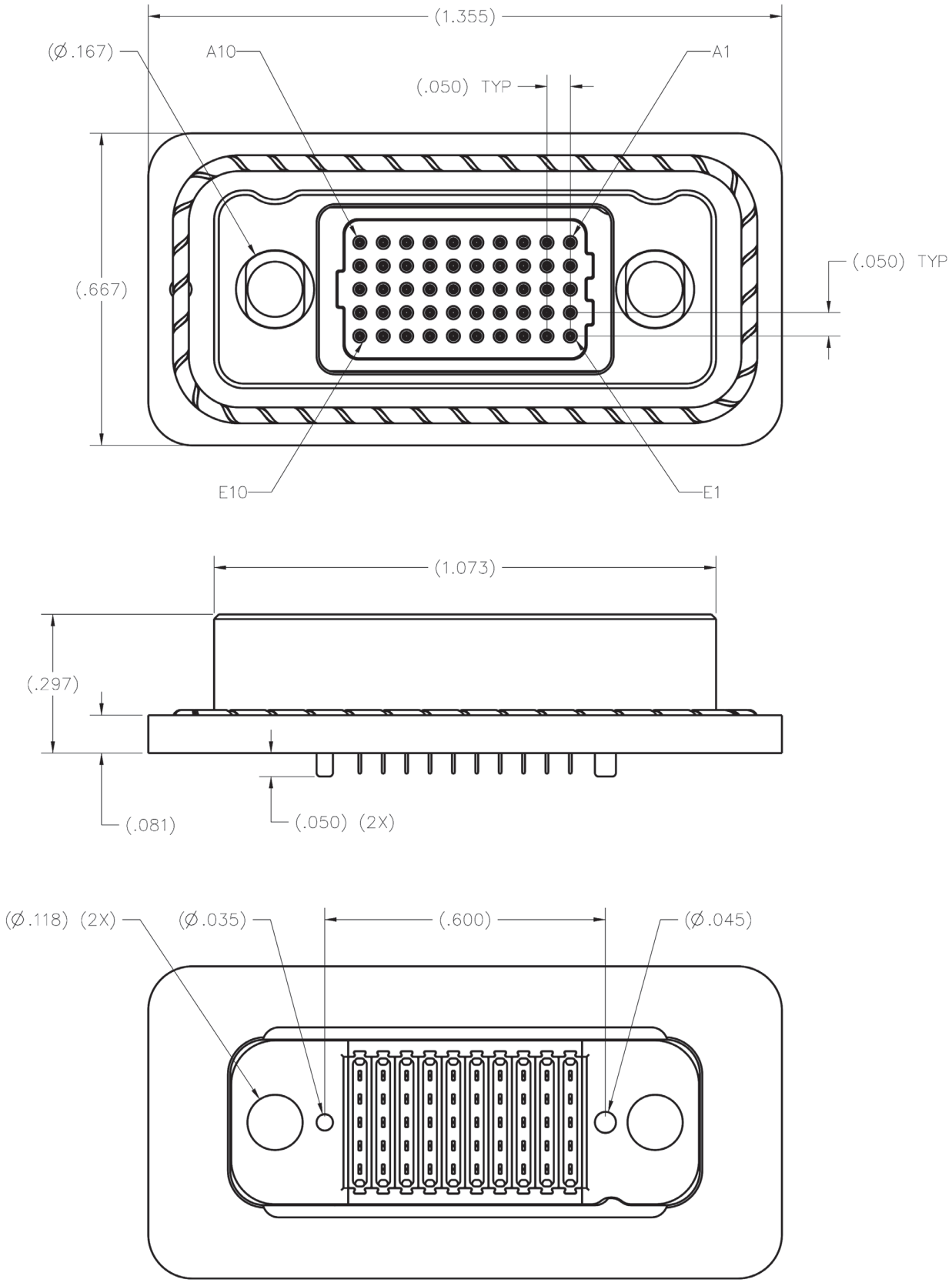
NOTE: Please consult molex.com to configure your part number and for the latest revision controlled drawing and technical data.

Marking Detail





Dimensions



Please consult the Molex website for the latest revision of this document prior to beginning any design work.

VTRAF — Right-Angle, Board-Mount Connector

VTRAF models are thermal interface connectors designed to mate with AV4M2 active optic cables and CV4M2 copper cables. VTRAF connectors are offered with multiple termination options including press-fit, paste-in-hole and plated-through-hole options. EMI gaskets are standard with this model connector.

Sample Part Number Format: VTRAF-05-10-50-00-0-N

VTRAF	–	05	–	10	–	50	–	☐	–	☐	–	☐

Series
AirBorn FOCuS
VTRAF – Vertical Thermal Right-Angle Female

Rows
05 – 5 Rows

Columns
10 – 10 Columns

Contact Plating
50 – 50µ inches Au

Termination
00 – Press-Fit
01 – Paste-In-Hole (PIH)
02 – Plated- through-hole (PTH) 0.078" Length
03 – PTH 0.109" Length
04 – PTH 0.140" Length
05 – PTH 0.156" Length
06 – PTH 0.172" Length

Keying Polarization*
00 – Option 'A' - Standard
01 – Option 'B'
02 – Option 'C'
03 – Option 'D'
04 – Option 'E'
05 – Option 'F'
06 – Option 'G'
07 – Option 'H'
*See pages 36-43 for keying details and dimensions

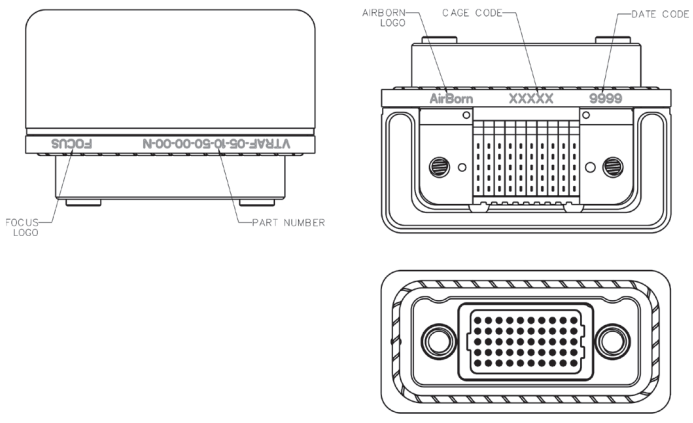
Hardware Options
N – Fixed Jacknut
NE – Fixed Jacknut With Panel Mount

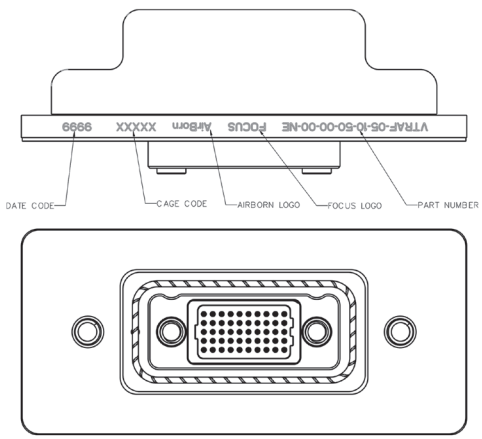
NOTES:

- Mates with cables: AV4MX-XXX-XXX-XXXX-XXX and CV4MX-XXX-XXXX-X
- Packaging: parts supplied in thermoformed trays, hardware supplied uninstalled
- See Molex SPEC ESL5001 for additional application information

NOTE: Please consult molex.com to configure your part number and for the latest revision controlled drawing and technical data.

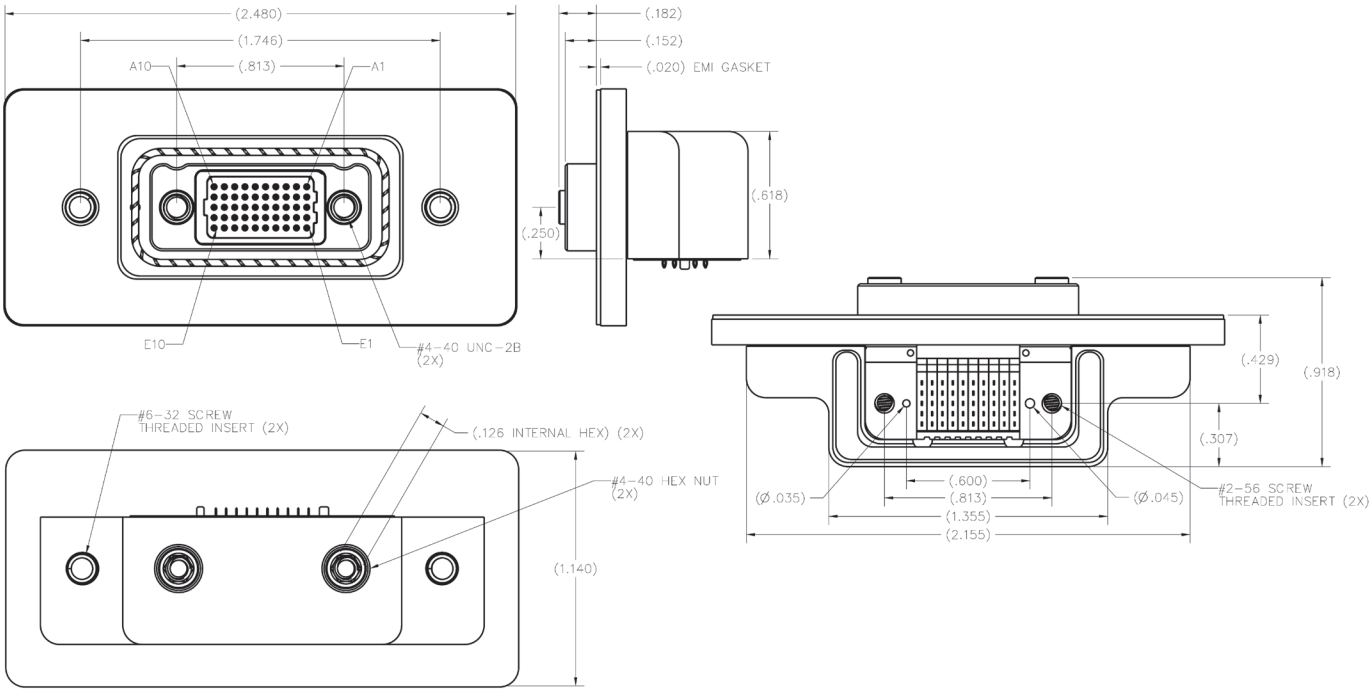
Marking Detail



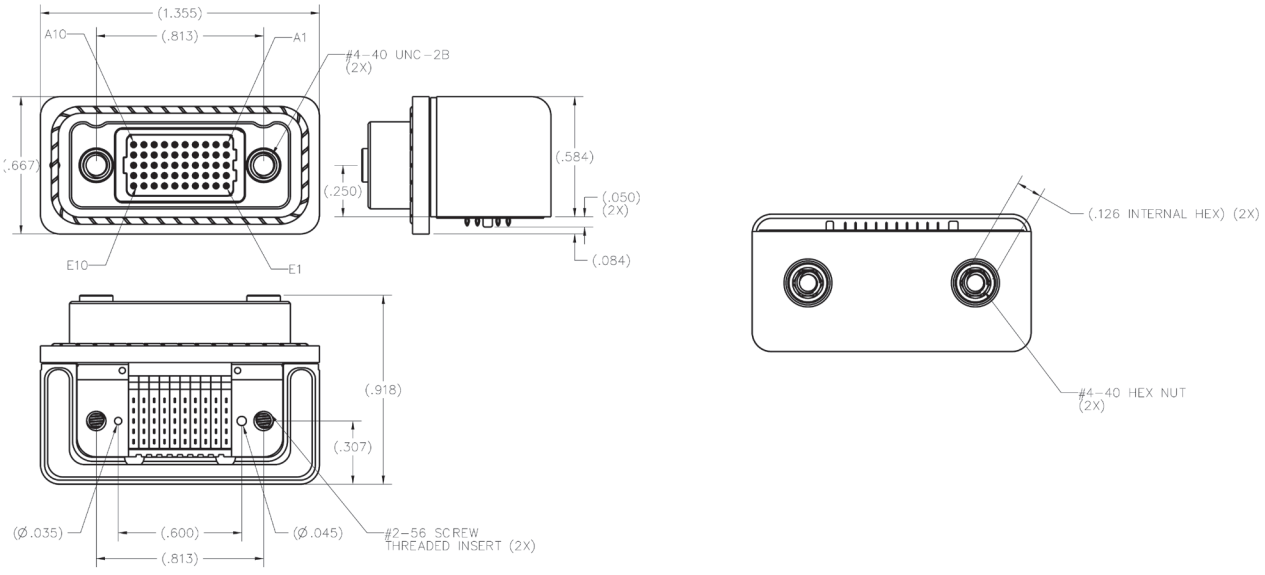


Dimensions

Panel Mount Option



Board Mount Option



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CV4M2 — Copper Cable Assembly

CV4M2 is a four channel, 12.5Gbps copper verSI cable assembly. CV4M2 cables mate with VTF and VTRAF board-mount connectors as well as VPD panel-mount cables.

Sample Part Number Format: CV4M2-040-JS00-1

CV	4	M	2	-	☐☐	-	☐☐	☐☐	-	☐☐

Series
AirBorn FOCuS
CV – Copper verSI Cable Assembly

Lanes
4 – 4 Bi-Directional Links

Gender
M – Plug

Shell Material
2 – Nickel Plated Aluminum

Length (Dim A)
030 – 0.98 Feet (0.30 Meters)
040 – 1.31 Feet (0.40 Meters)
050 – 1.64 Feet (0.50 Meters)
060 – 1.96 Feet (0.60 Meters)
070 – 2.29 Feet (0.70 Meters)
080 – 2.62 Feet (0.80 Meters)
090 – 2.95 Feet (0.90 Meters)
100 – 3.28 Feet (1.00 Meters)

Hardware
JS – Jacking Screw
LS – Locking Screw

Keying Polarization*
00 – Option 'A' - Standard
01 – Option 'B'
02 – Option 'C'
03 – Option 'D'
04 – Option 'E'
05 – Option 'F'
06 – Option 'G'
07 – Option 'H'
*See pages 36-43 for keying details and dimensions

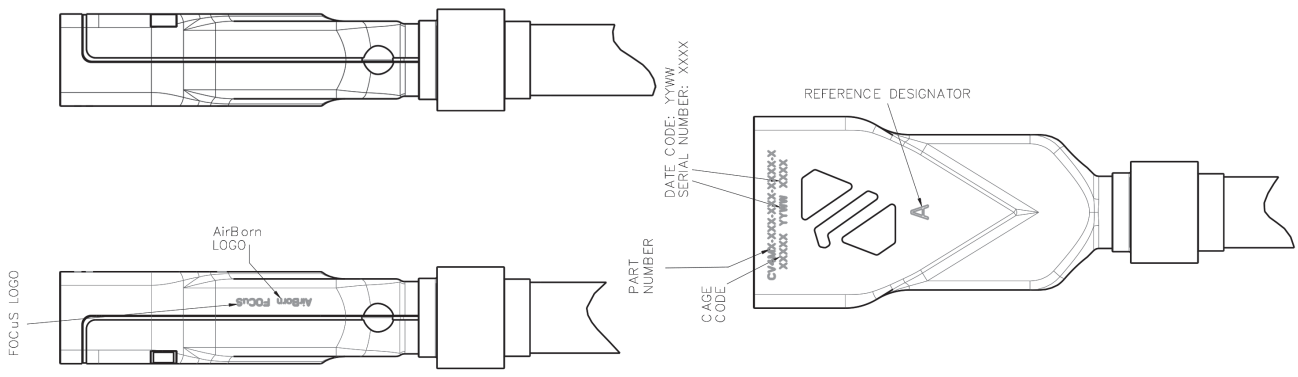
Braiding
1 – No Braid
2 – Metal Braid
3 – Halar Braid
4 – Halar Over Metal Braid

NOTES:

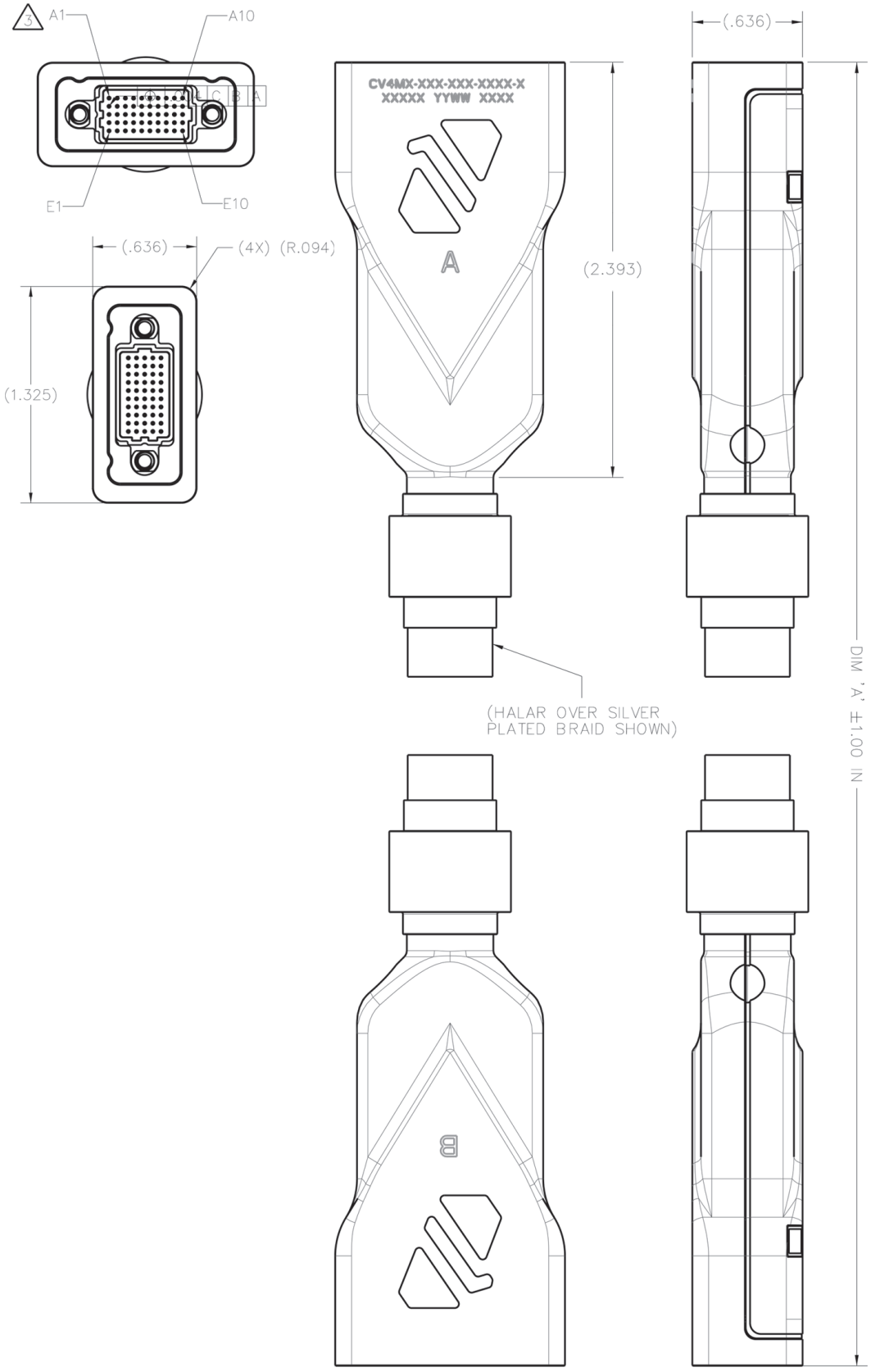
- Cable mates with connector series: VTF, VTRAF, and VPD.
- Packaging: Cable to be packaged with dust cover installed (not shown). Cable supplied fully assembled in ESD safe box.
- Cable ends A and B have identical pin outs and pin assignments.

NOTE: Please consult molex.com to configure your part number and for the latest revision controlled drawing and technical data.

Marking Detail



Dimensions



Please consult the Molex website for the latest revision of this document prior to beginning any design work.

VPD — I/O Copper Cable

VPD models are single-ended, thermal interface, panel-mounted cables designed to mate with AV4M2 active optical cables and CV4M2 copper cables. Dust covers come standard with this model cable.

Sample Part Number Format: VPD-05-10-03N-000-00-1-030

VPD	05	10	03N	000			
–	–	–	–	–	–	–	–

Series
AirBorn FOCuS
VPD – Vertical Panel-Mount Female

Rows
05 – 5 Rows

Columns
10 – 10 Columns

Connector 1: verSI Panel Mount
03N – Female With Threaded Jacknut #4-40

Connector 2
000 – Flying Leads

Keying Polarization*
00 – Option 'A' - Standard
01 – Option 'B'
02 – Option 'C'
03 – Option 'D'
04 – Option 'E'
05 – Option 'F'
06 – Option 'G'
07 – Option 'H'
*See pages 36-43 for keying details and dimensions

Braiding
1 – No Braid
2 – Braid

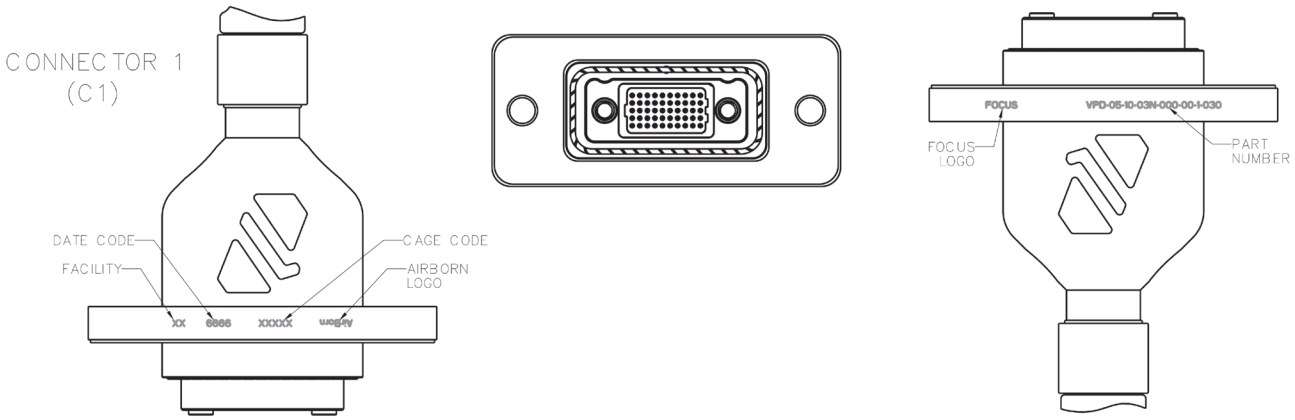
Length
030 – 0.98 Feet (0.30 Meters)
040 – 1.31 Feet (0.40 Meters)
050 – 1.64 Feet (0.50 Meters)
060 – 1.96 Feet (0.60 Meters)
070 – 2.29 Feet (0.70 Meters)
080 – 2.62 Feet (0.80 Meters)
090 – 2.95 Feet (0.90 Meters)
100 – 3.28 Feet (1.00 Meters)

NOTES:

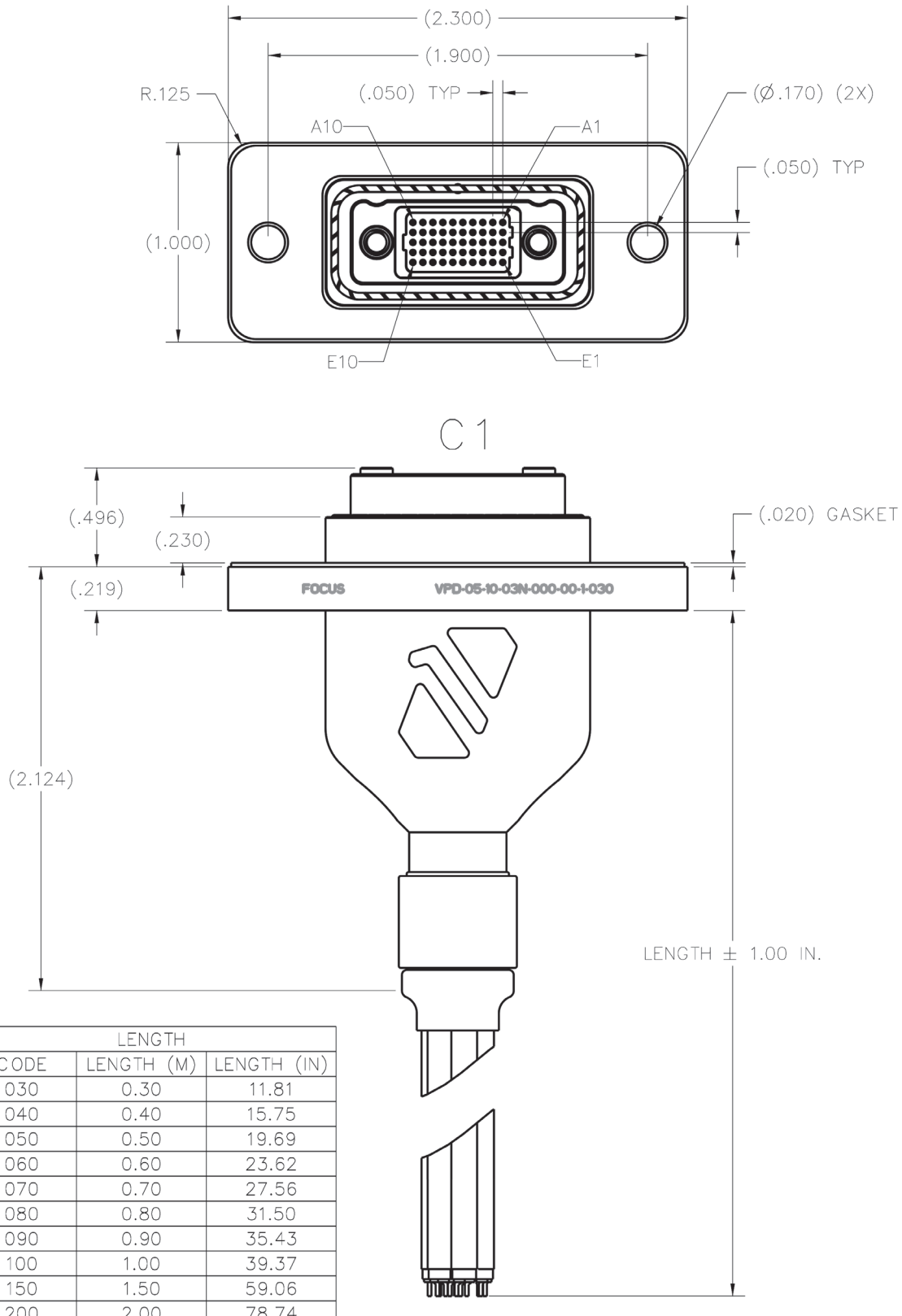
- Mates with AV4MX and CV4MX cables
- Packaging: cable to be packaged with dust cover installed (not shown) and in ESD safe packaging

NOTE: Please consult molex.com to configure your part number and for the latest revision controlled drawing and technical data.

Marking Detail



Dimensions



LENGTH		
CODE	LENGTH (M)	LENGTH (IN)
030	0.30	11.81
040	0.40	15.75
050	0.50	19.69
060	0.60	23.62
070	0.70	27.56
080	0.80	31.50
090	0.90	35.43
100	1.00	39.37
150	1.50	59.06
200	2.00	78.74
300	3.00	118.11

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

Materials and Finishes

Pin Contacts (Male)	Material	BeCu per ASTM B194
	Finish	50µ inches (µin) min localized Au per ASTM B 488 Type 11, code C over SO µIN min Ni per ASTM B689 Type I
Molded Insulator	Material	Glass-filled liquid crystal polymer (LCP) per ASTM D5138
Shell	Material	Aluminum alloy 6061-T6 per SAE AMS-4027 or 6061-T6511 per SAE AMS-QQ-A-200/8
	Finish	500 µin min electroless Ni per SAE AMS-2404, class 3
Hardware	Material	Stainless steel per ASTM A484/A484M, ASTM A582/A582M, or ASTM A320
	Finish	Passivate per SAE AMS-2700

Cable Performance

PARAMETER	SYMBOL	UNIT	MIN	TYPICAL	MAX
Storage Temperature Range	Ts	C	-55		125
Case Operating Temp. Range	Ta	C	-30		90
Operating Relative Humidity (Non-Condensing)		%	0		95
Pressurization		torr	10^{-9}		775
TID Radiation Hardening		krad		30 krad	
SEE MeVcm2/mg				>40	
Fiber Tension		N			30
Fiber Bend Radius		in	2.5		
Operating Voltage		Vdd	3.15	3.3	3.45
Data Rate Per Channel		Gbps	1.25		12.5
Power Consumption (Per End)		W		0.850	1.2
Bit Error Rate		BER			10^{-12}
Return Loss		dB		-8	
Rx Differential Output Voltage		mVp-p	250		780
Outgassing	Max TML of 1% and max CVCM of .1% per MIL-DTL-83513				

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

Materials and Finishes

Socket Contacts	Material	BeCu per ASTM B194
	Finish Socket End	50µ inches (µin) min localized Au per ASTM B488 Type II, code C, over 50µin min Ni per ASTM B689 type I
	Finish Termination End	PIH and PTH: 10 µin min localized Au flash per ASTM B488 type i, code A or C over 50 µin min ni per ASTM B689 Type I Press-fit: 50 µin min localized Au per ASTM B488 type II, code C over 50µin min Ni per ASTM B689 type I
Molded Insulators	Material	Glass-filled liquid crystal polymer (LCP) per ASTM D5138
Shell	Material	Aluminum alloy 6061-T6 per SAE AMS-4027 or 6051-t6511 Per SAE AMS-QQ-A-200/8
	Finish	500 µin min electroless Ni per SAE AMS-2404, class 3
Embedment	Material	Frey Eng. Co. Insulating compound CF3003-80 or equivalent
Hardware	Material	Stainless steel per ASTM A484/A484m, ASTM A582/A582m, or ASTM A320
	Finish	Passivated per SAE AMS-2700
Washers	Material	Stainless steel per SAE NASM35333 (ASTM A240)
	Finish	Passivated per NASM35333 (SAE AMS-2700)
EMI Spira Gasket	Material	Beryllium copper
	Finish	Electroplated, 90% tin, 10% lead per AMS-P-81728

Performance

Contact Rating 2	2 Amperes max, see Molex PTB66 for more info
Operating Temperature	-55°C TO 125°C, see Molex PTB66 for more info
Contact Engagement Force	6.0oz max*
Contact Separation Force	0.5oz min*
Connector Mating Force	10oz X (# of contacts) max tested per MIL-DTL-83513
Connector Unmating Force	10oz X (# of contacts) max tested per MIL-DTL-83513
Dwv (Sea Level)	600V, RMS, 60 Hz, see Molex PTB61 for more info
Recommended Max Operating Voltage	200V, RMS, 60Hz, see Molex PTB61 for more info
Insulation Resistance	5,000 MEGAOHMS minimum at 500 VDC, tested per MIL-DTL-83513
Durability	2,500 connector mating cycles, exceeds MIL-DTL-83513
Sinusoidal Vibration	20g, tested per MIL-DTL-83513
Shock	50g, tested per MIL-DTL-83513
Outgassing	Max TML of 1% and max CVCM of .1% per MIL-DTL-83513

*Max pin size used for contact engagement force and min pin size used for contact separation force.

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

Materials and Finishes

Socket Contacts	Material	BeCu per ASTM B194
	Finish Socket End	50µ inches (µin) min localized Au per ASTM B488 type II, code C, over 50 µin min nickerl per ASTM B689 Type I
	Finish Termination End	PIH and PTH: 10µin min localized Au flash per ASTM B488 type I, code A or C over 50 µin min Ni per ASTM B689 type I Press-fit: 50 µin min localized Au per ASTM B488 type II, code C over 50 µin min Ni per ASTM B689 type I
Molded Insulators	Material	Glass-filled liquid crystal polymer (LCP) per ASTM D5138
Shell	Material	Aluminum alloy 6061-T6 per SAE AMS-4027 or 6051-t6511 Per SAE AMS-QQ-A-200/8
	Finish	500 µin min electroless Ni per SAE AMS-2404, class 3
Embedment	Material	Frey Eng. Co. Insulating compound CF3003-80 or equivalent
Hardware	Material	Stainless steel per ASTM A484/A484m, ASTM A582/A582m, or ASTM A320
	Finish	Passivated per SAE MAS-2700
Washers	Material	Stainless steel per SAE NASM35333 (ASTM A240)
	Finish	Passivated per NASM35333 (SAE AMS-2700)
EMI Spira Gasket	Material	Beryllium copper
	Finish	Electroplated, 90% tin, 10% lead per AMS-P-81728
Thread Insert	Material	NAS1130-02-10
Thermal Electrical Gasket	Material	Silver-copper filled silicon, acrylic, electrically conductive, pressure sensitive adhesive (PSA) backing

Performance

Contact Rating 2	2 Amperes max, see Molex PTB66 for more info
Operating Temperature	-55°C to 125°C, see Molex PTB66 for more info
Contact Engagement Force	6.0oz max*
Contact Separation Force	0.5oz min*
Connector Mating Force	10oz X (# of contacts) max tested per MIL-DTL-83513
Connector Unmating Force	10oz X (# of contacts) max tested per MIL-DTL-83513
DWV (Sea Level)	600V, RMS, 60 Hz, see Molex PTB61 for more info
Recommended Maximum Operating Voltage	200V, RMS, 60 Hz, see Molex PTB61 for more info
Insulation Resistance	5,000 Megaohms minimum at 500 VDC, tested per MIL-DTL-83513
Durability	10,000 connector mating cycles, exceeds MIL-DTL-83513
Sinusoidal Vibration	20g, tested per MIL-DTL-83513
Shock	50g, tested per MIL-DTL-83513
Outgassing	Max TML of 1% and max CVCM of .1% per MIL-DTL-83513

*Max pin size used for contact engagement force and min pin size used for contact separation force.

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

CV4M2 Materials, Finishes, & Cable Performance

Materials and Finishes

Pin Contacts (Male)	Material	BeCu per ASTM B194
	Finish	Phosphor bronze per ASTM B103, 50 µin min localized Au per ASTM B488 Type II, code C over 50 µin min Ni per ASTM B689 Type I
Molded Insulator	Material	Glass-filled liquid crystal polymer (LCP) per ASTM D5138
Shell	Material	Aluminum alloy 6061-T6 per SAE AMS-4027 or 6051-T6511 Per SAE AMS-QQ-A-200/8
	Finish	500 µin min electroless Ni per SAE AMS-2404, class 3
Hardware	Material	Stainless steel per ASTM A484/A484M, ASTM A582/A582M, or ASTM A320
	Finish	Passivated per SAE AMS-2700
Spira Gasket	Material	BeCu
	Finish	Electroplated, 90% tin, 10% lead per AMS-P-81728
Cable: 26 AWG Twinax	Parallel, 100 ohm impedance	
Cable: 26 AWG Buss Wire	Electroplated, 90% tin, 10% lead per AMS-P-81728	
Heatshrink Tubing	AA59551-H26S1B per A-A-59551, plating: electrodeposited tin alloy coating per ASTM B545, class C. 90 ± 5% tin, remainder lead	
Lacing (Braid Option Only)	Per A-A-52081	
Tape	Acrylic adhesive polymide film (Kaption)	
Metal Braid Only (Option 2)	Silver-plated copper braid per aa59569r30soxxx. Secured to backshell with micro band. Potting compound shall be frey engineering CF-3003-80 (fullpot) and L-II-49 (prepot) or equivalent.	
Halar Braid (Option 3)	Halar braid secured to backshell with micro band. Potting compound shall be frey engineering CF-3003-80 (fullpot) and L-II-49 (prepot) or equivalent.	
Halar Over Metal Braid (Option 4)	Halar over silver-plated copper braid per AA59569R30SOXXX secured to backshell with micro band. Potting compound shall be frey engineering CF-3003-80 (fullpot) and L-II-49 (prepot) or equivalent.	

Performance

Contact Rating	2 Amperes max, see Molex PTB66 for more info
Operating Temperature	-55°C to 125°C, see Molex PTB66 for more info
Contact Engagement Force	6.0oz max*
Contact Separation Force	5.0oz min*
Connector Mating Force	10oz X (# of contacts) max tested per MIL-DTL-83513
Connector Unmating Force	10oz X (# of contacts) max tested per MIL-DTL-83513
DWV (Sea Level)	600V, RMS, 60 Hz, see Molex PTB61 for more info
Recommended Max. Operating Voltage	200V, RMS, 60 Hz, see Molex PTB61 for more info
Insulation Resistance	5,000 megaohms minimum at 500 VDC, tested per MIL-DTL-83513
Durability	2,500 connector mating cycles, exceeds MIL-DTL-83513
Sinusoidal Vibration	20g, tested per MIL-DTL-83513
Shock	50g, tested per MIL-DTL-83513
Outgassing	Max TML of 1% and max CVCM of .1% per MIL-DTL-83513

*Max pin size used for contact engagement force and min pin size used for contact separation force.

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

Materials and Finishes

Shell	Material	6061-T6, 6061-T651, or 6061-T6511 aluminum SAE AMS 4027 or SAE AMS-QQ-A-200/8
	Finish	500 µin min electroless Ni per SAE AMS-2404, class 3
Contacts	Socket Material	BeCu per ASTM B194
	Finish	50 µin min localized gold finish per ASTM B488, over 50 µin min Ni per ASTM B689 Type I
Cable	Finish	26 AWG, 100 Ohm twinax cable
Wire	Material	24 AWG, M22759/33-24, black
Molded Insulator	Finish	Glass-filled liquid crystal polymer (LCP) per ASTM D5138
Hardware	Material	Stainless steel per ASTM A582/A582M or ASTM A320
	Finish	Passivated per SAE MAS-2700
Embedment	Material	Frey Eng. Co. Insulating compound CF3003-80 and L-II-49 or equivalent
Solder	Material	SN/PB solder, 63% PB, 37% SN
PCB	Material	ISOLA 185HR PCB laminate
	Finish	Electroless nickel immersion gold per IPS-6012/DS
Spira Gasket	Material	Beryllium copper
	Finish	Electroplated, 90% tin, 10% lead per AMS-P-81728
Thermal Electrical Gasket	Material	Silver-Copper filled silicon, acrylic, electrically conductive, pressure sensitive adhesive (PSA) backing

Performance

Contact Rating	2 Amperes max, see Molex PTB66 for more info
Operating Temperature	-55°C to 125°C, see Molex PTB66 for more info
Contact Engagement Force	6.0oz max*
Contact Separation Force	0.5oz min*
Connector Mating Force	10oz X (# of contacts) max tested per MIL-DTL-83513
Connector Unmating Force	10oz X (# of contacts) max tested per MIL-DTL-83513
DWV (Sea Level)	600V, RMS, 60 Hz, see Molex PTB61 for more info
Recommended Maximum Operating Voltage	200V, RMS, 60 Hz, see Molex PTB61 for more info
Insulation Resistance	5,000 megaohms minimum at 500 VDC, tested per MIL-DTL-83513
Durability	10,000 connector mating cycles, exceeds MIL-DTL-83513
Sinusoidal Vibration	20g, tested per MIL-DTL-83513
Shock	50g, tested per MIL-DTL-83513
Outgassing	Max TML of 1% and max CVCM of .1% per MIL-DTL-83513

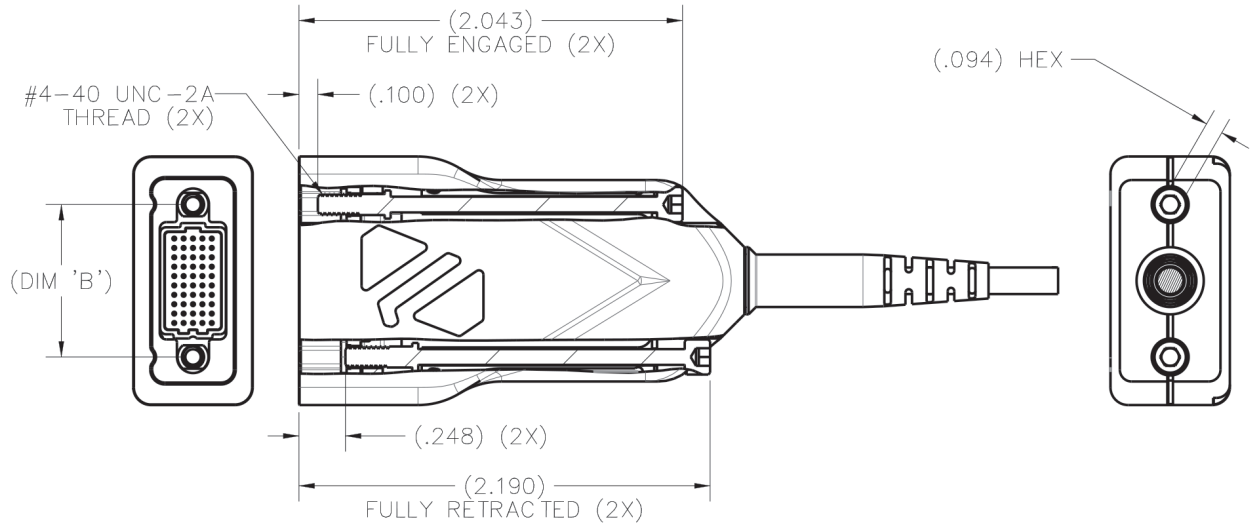
*Max pin size used for contact engagement force and min pin size used for contact separation force.

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

AVXXX–XXX–XXX–XXXX–XXX

HARDWARE OPTIONS	DESCRIPTION	DIM 'B'
JS	JACKING SCREW	.813
LS	LOCKING SCREW	

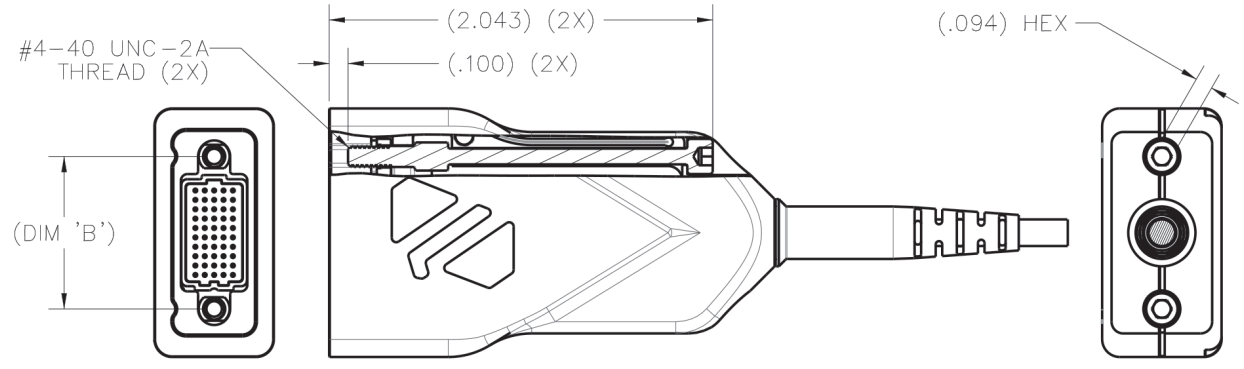
LOCKING SCREW DIMENSIONS (HARDWARE OPTION LS)



NOTE: TORQUE ALL HARDWARE OPTIONS TO 4.0 – 4.5 IN/LBS.

TURNING JACK SCREW DIMENSIONS (HARDWARE OPTION JS)

NOTE: TURN JACKING HARDWARE 1/2 REVOLUTION, ALTERNATELY PER SIDE UNTIL FULLY SEATED.

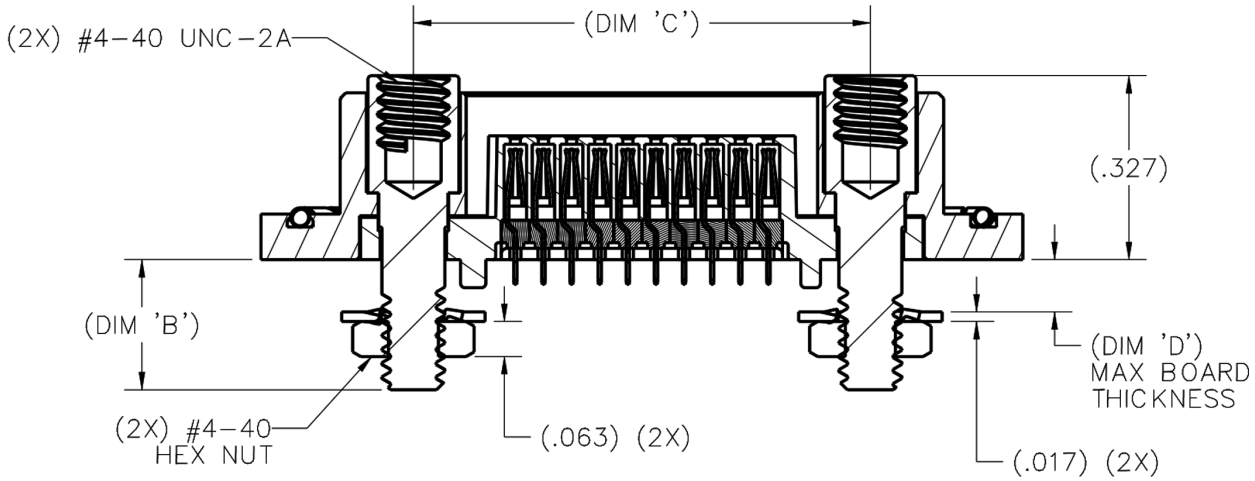


Please consult the Molex website for the latest revision of this document prior to beginning any design work.

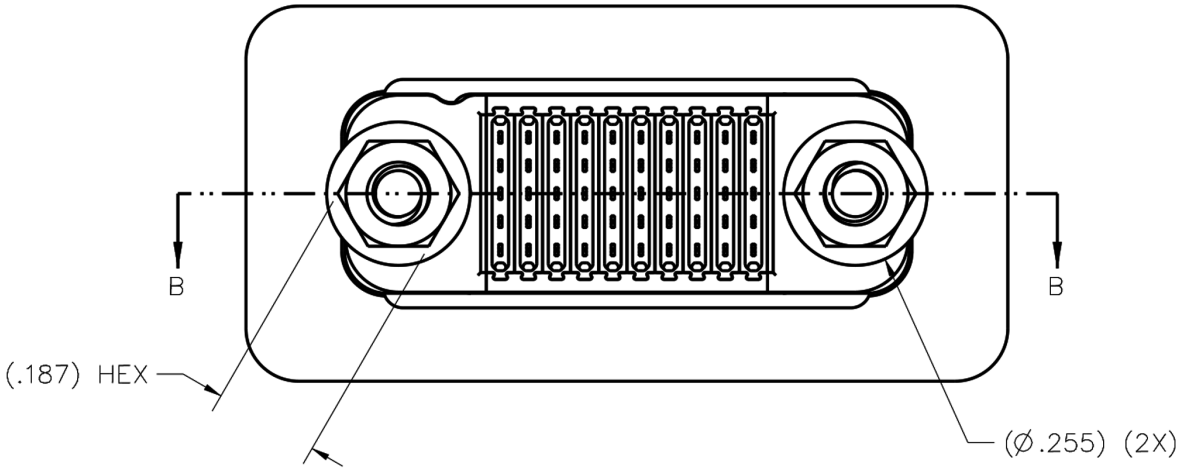
VTF–XX–XX–XX–XX–XX–XX

HARDWARE OPTION	DESCRIPTION	DIM 'B'	DIM 'C'	DIM 'D'
N	FIXED JACKNUT (.125" MAX BOARD THICKNESS)	.210	.813	.125
N1	FIXED JACKNUT (.250" MAX BOARD THICKNESS)	.335		.250

FIXED JACKNUT (HARDWARE OPTION N)



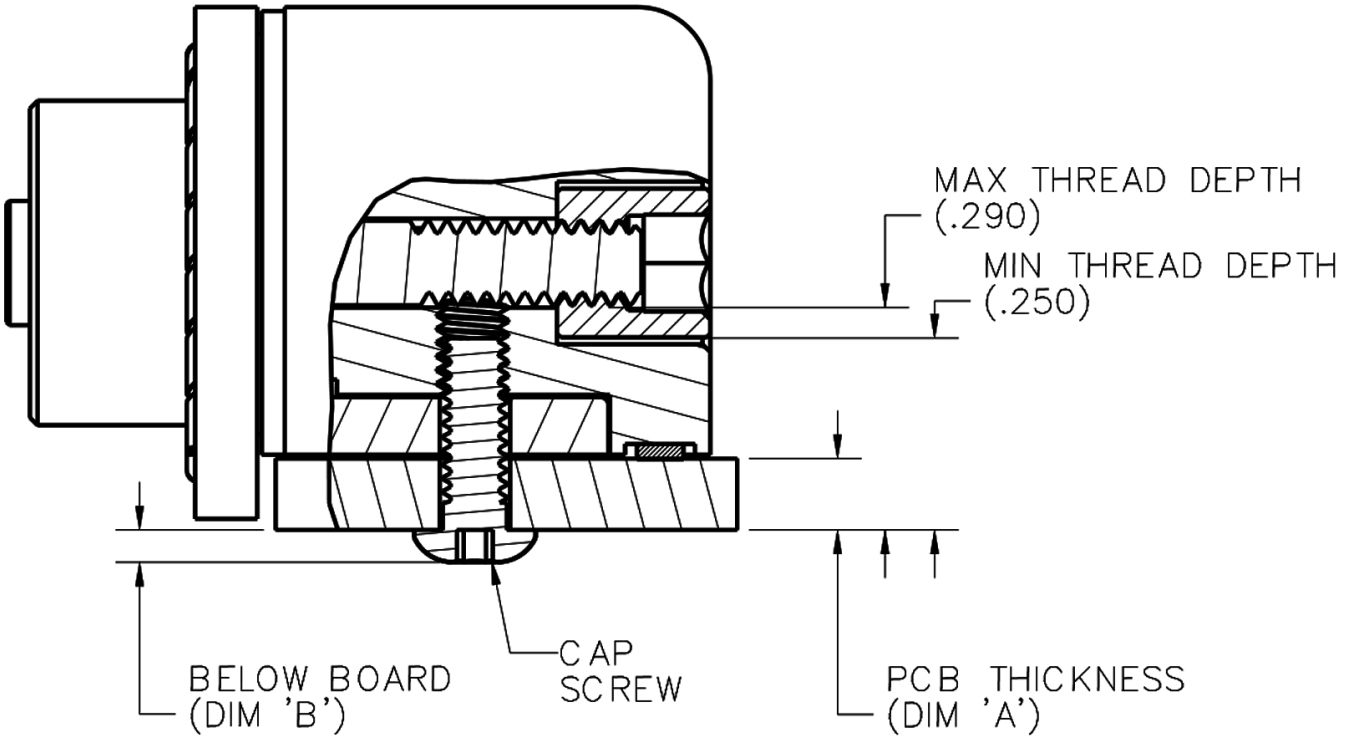
SECTION B–B



Please consult the Molex website for the latest revision of this document prior to beginning any design work.

AirBorn FOCuS - VTRAF Recommended Hardware (Mounting Hardware Not Included)

PCB THICKNESS (DIM 'A')	BELOW BOARD (DIM 'B')	BUTTON HEAD CAP SCREW
.062	.046	#2-56 X 3/16"
.094		#2-56 X 1/4"



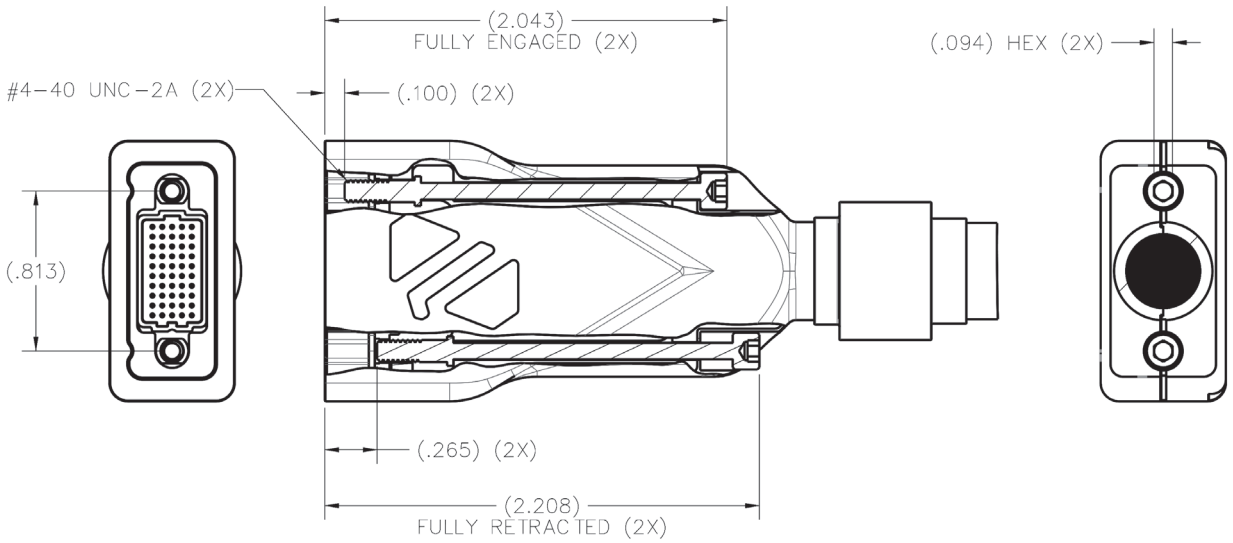
Please consult the Molex website for the latest revision of this document prior to beginning any design work.

NOTE: TORQUE ALL HARDWARE OPTIONS TO 4.0 – 4.5 IN/LBS

CV4MX–XXX–XXXX–X

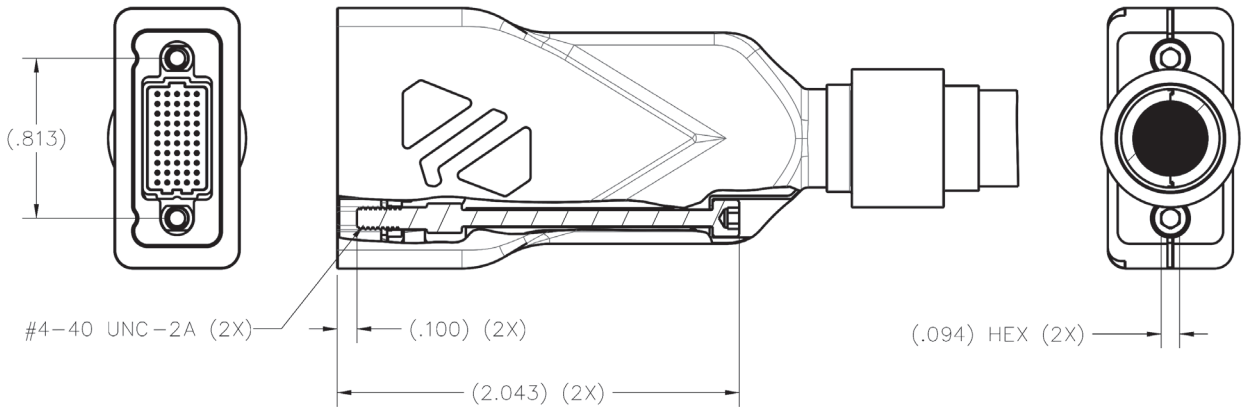
HARDWARE OPTIONS	DESCRIPTION
LS	LOCKING SCREW
JS	JACKING SCREW

LOCKING SCREW DIMENSIONS (HARDWARE OPTION LS)

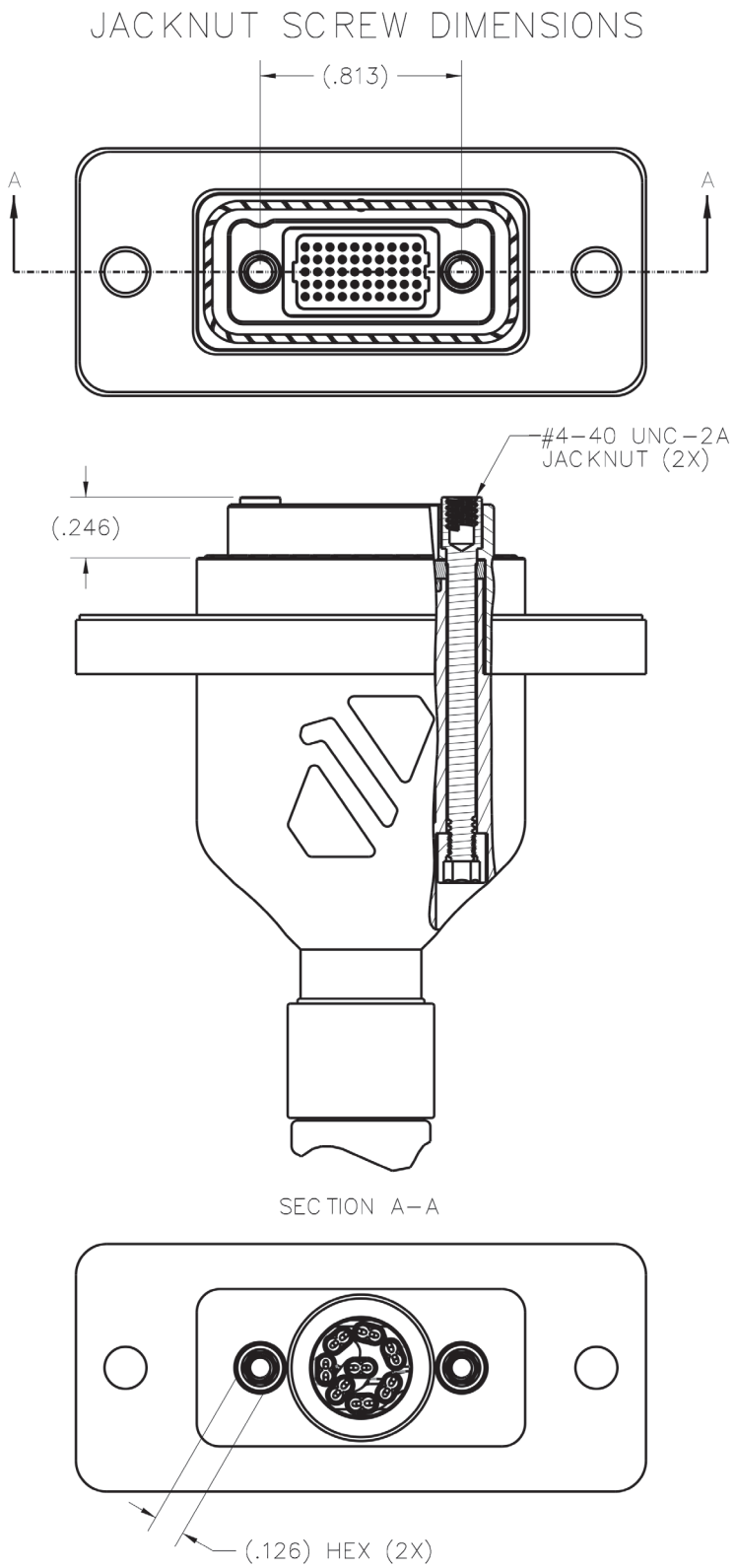


TURNING JACK SCREW DIMENSIONS (HARDWARE OPTION JS)

NOTE: TURN JACKING HARDWARE 1/2 REVOLUTION, ALTERNATELY PER SIDE UNTIL FULLY SEATED.

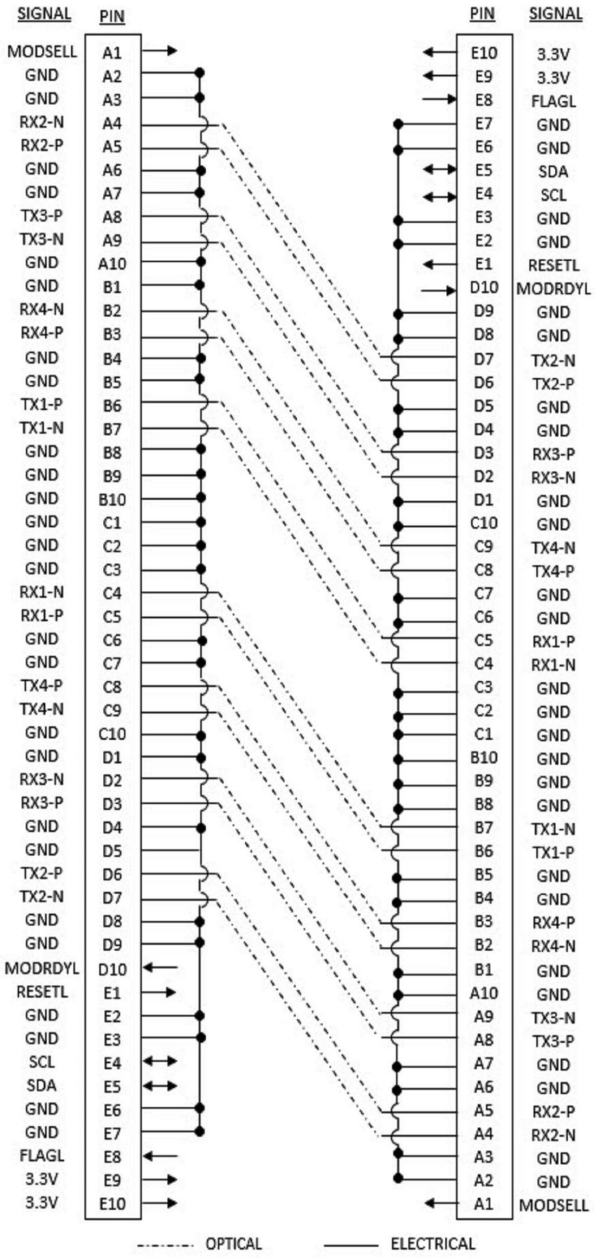


Please consult the Molex website for the latest revision of this document prior to beginning any design work.



Please consult the Molex website for the latest revision of this document prior to beginning any design work.

AirBorn FOCuS - AV4M2 Wire Connect Chart and Pin Out

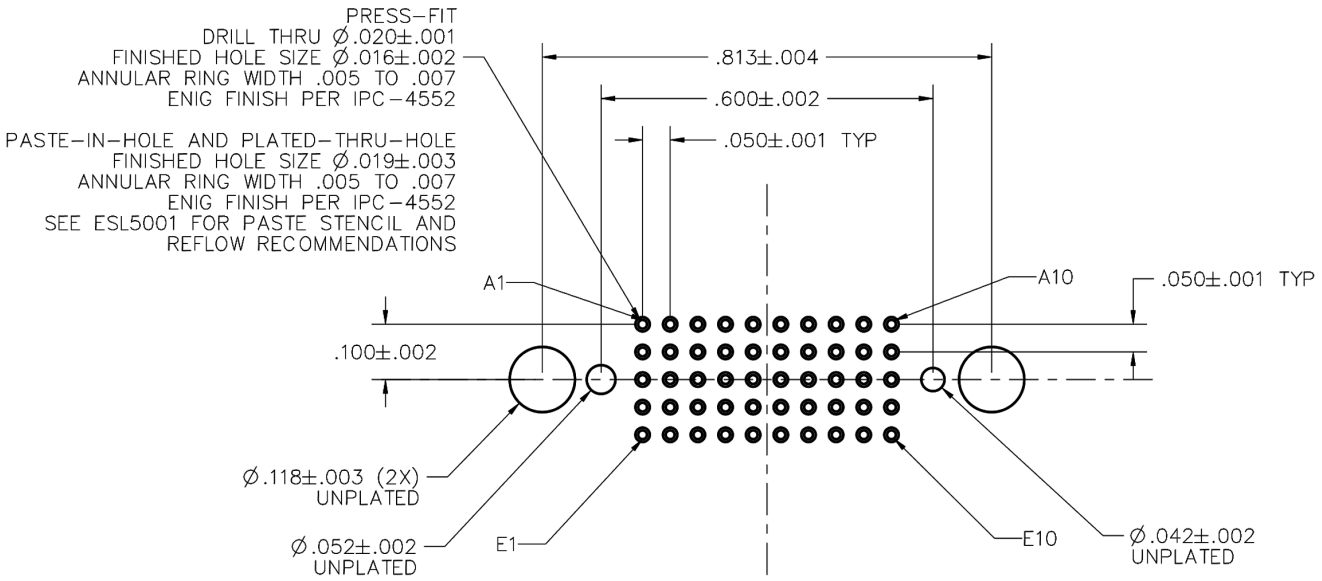


NOTE: PIN OUT REMAINS THE SAME FOR BOTH CABLE ENDS.

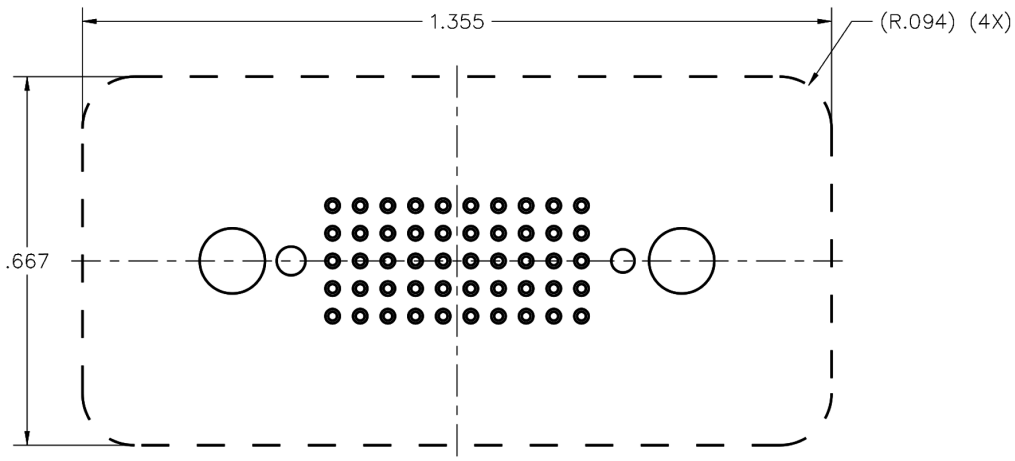
verSI Plug Pin-Out									
A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
MODSELL	GND	GND	RX2-N	RX2-P	GND	GND	TX3-P	TX3-N	GND
B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
GND	RX4-N	RX4-P	GND	GND	TX1-P	TX1-N	GND	GND	GND
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
GND	GND	GND	RX1-N	RX1-P	GND	GND	TX4-P	TX4-N	GND
D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
GND	RX3-N	RX3-P	GND	GND	TX2-P	TX2-N	GND	GND	MODRDYL
E1	E2	E3	E4	E5	E6	E7	E8	E9	E10
RESETL	GND	GND	SCL	SDA	GND	GND	FLAGL	3.3V	3.3V

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

AirBorn FOCuS - sVTF Recommended PCB Layout



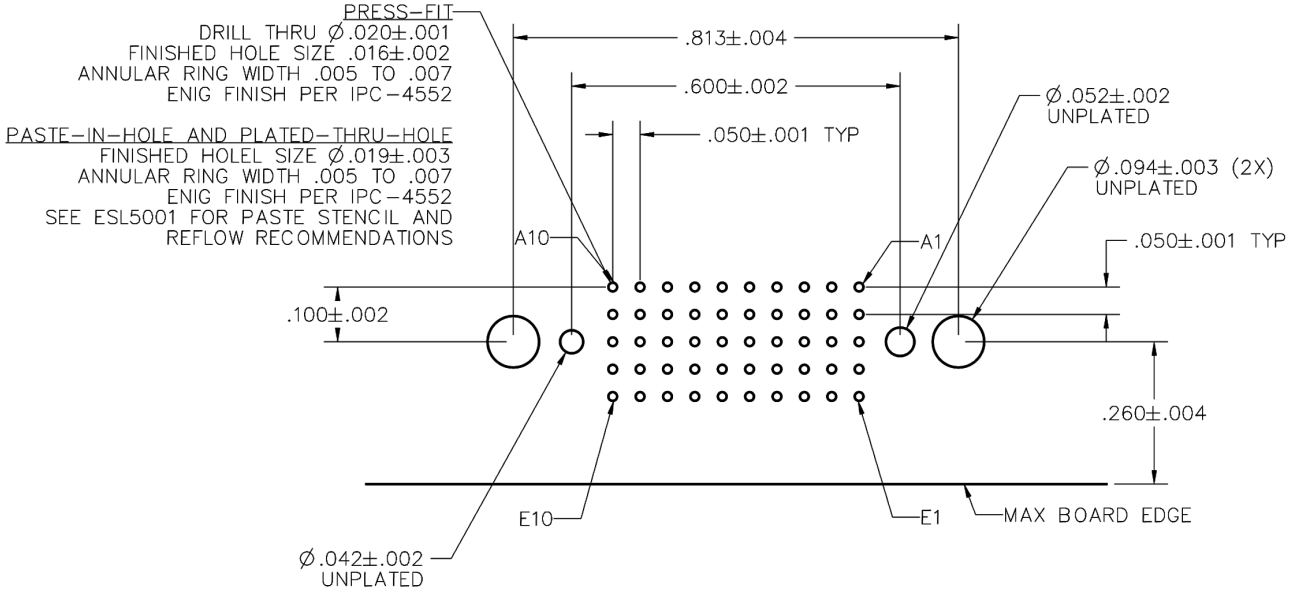
RECOMMENDED BOARD LAYOUT
COMPONENT SIDE



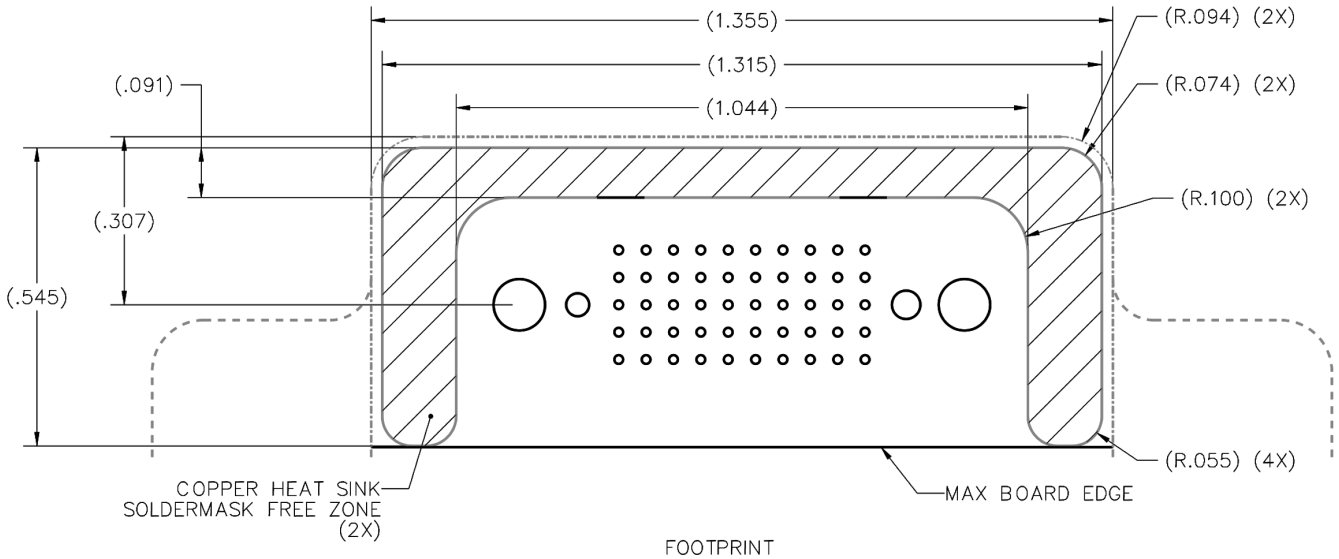
FOOTPRINT
COMPONENT SIDE

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

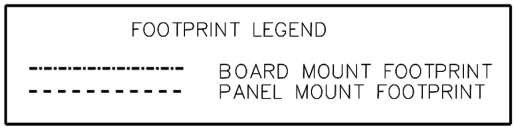
AirBorn FOCuS - VTRAF Recommended PCB Layout



RECOMMENDED BOARD LAYOUT
COMPONENT SIDE

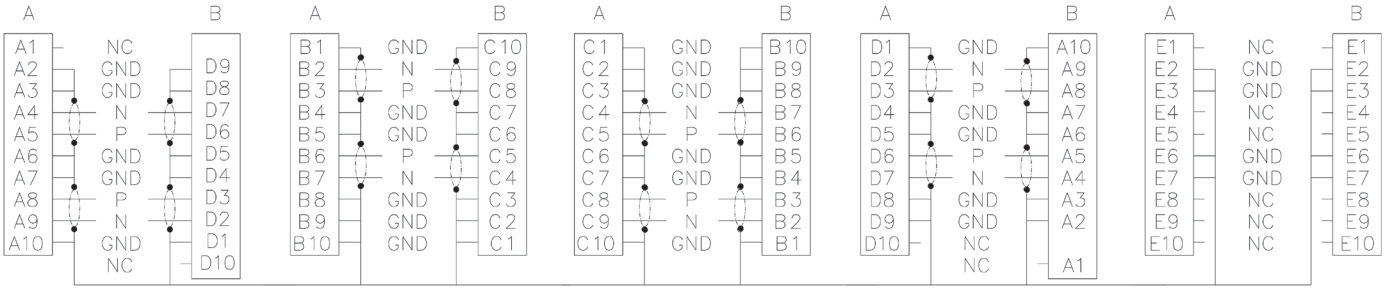


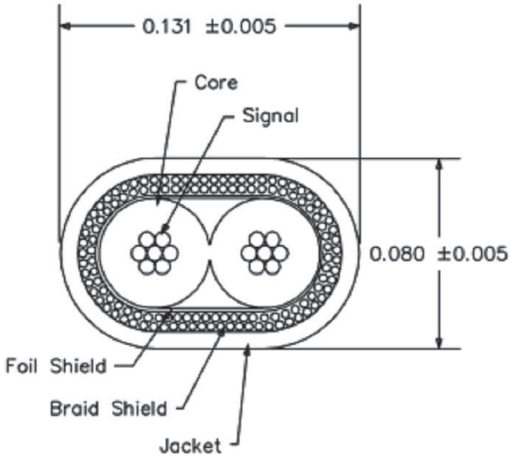
FOOTPRINT
COMPONENT SIDE



Please consult the Molex website for the latest revision of this document prior to beginning any design work.

AirBorn FOCuS - CV4MX Wire Chart





NOTES

Signal Conductor: 26 AWG, 7/34 SPC per ASTM B298
DC Resistance: 39.1 ohms/1000ft max @ 20C
Core: FEP, 1.4mm (0.055") OD
Color: One Blue, One Green
Braid Shield: 42 AWG SPC per ASTM B298, >85% Coverage
DC Resistance: 16.8 ohms/1000ft typical
Jacket: FEP, 0.005" Wall Thickness
Color: Gray
Impedance: 100 ±10 ohms
Capacitance: 47.6 pF/m (14.5 pF/ft) Ref
Inductance: 0.47 µH/M (0.145 µH/ft) Ref.
Propagation Delay: 4.76 ms/m (1.45 ns/ft) Ref.
Skew: < 82 ps/5m
Temperature Rating: −55C to 200C
Voltage Rating: 300V
Min. Bend Radius: 13 mm (0.5")
Packaging: 12" Plastic Spool
Footage per Spool: Up To 2500ft
Minimum Length: 10ft

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

Testing Code									Inspection/Test	Test Methods, Conditions and Requirements
100 (Standard)	200	201	300	400	401	500	600	601		
✓	✓	✓	✓	✓	✓	✓	✓	✓	PCBA Burn-In Testing	Environmental Conditions DUT Configuration Test Parameters Test Function Environmental Conditions
✓	✓	✓	✓	✓	✓	✓	✓	✓	Manufacturing Testing	DUT Configuration Test Parameters Test Function
✓	✓	✓	✓	✓	✓	✓	✓	✓	Final Production Testing	Environmental Conditions DUT Configuration Test Parameters Test Function Test Report
✓	✓	✓	✓	✓	✓	✓	✓	✓	Thermal Screening Testing	Environmental Conditions DUT Configuration Test Parameters Test Function
	✓	✓		✓	✓		✓	✓	Vibration Testing	 Sine Vibration Random Vibration Sine Vibration
			✓	✓	✓		✓	✓	X-Ray Screening	Screening Parameters
						✓	✓	✓	Thermal Vacuum Testing	Environmental Conditions DUT Configuration Test Parameters Test Function Test Report
		✓			✓			✓	In Situ Testing	

*Customer Specific Testing: Speak with your AirBorn Sales Representative about custom testing for your specific applications and environments. AirBorn can provide a wide suite of test services, including custom test fixture design and manufacturing.

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

Test Methods, Conditions and Requirements - Continued

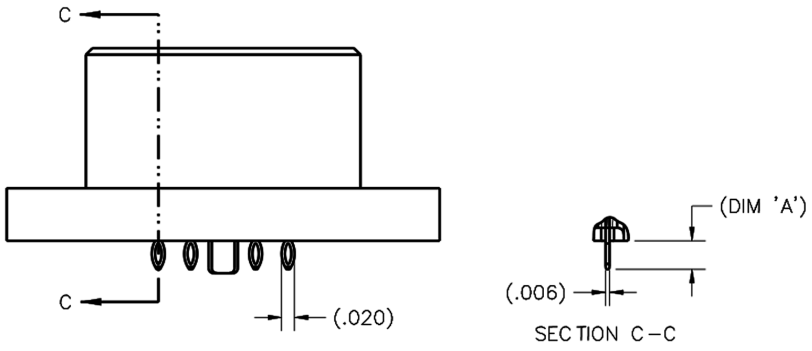
160 hours @ 85°C, ramp rate = 1°C/min	
PCBA in test socket, No optical fiber attached	
Supply Voltage: 3.3 VDC nominal, High VCSEL bias current: 11.5 mA	
Monitor continuous I2C communication and DUT status	
Ambient temperature, benchtop test	
Tested twice during the manufacturing process:	
1. Single-ended active optical cable, MPO terminated opposite end	
2. Double-ended active optical cable	
Supply Voltage: 3.3 VDC nominal, VCSEL bias current: 6.67 mA (Optical Power and Coupling) and 4-6 mA (Data Eye)	
Measure and record:	
1. Optical power	
2. RSSI	
3. Optical coupling	
4. Capture data eye.	
Ambient temperature, benchtop test	
Double ended active optical cable	
Supply Voltage: 3.3 VDC nominal, Standard VCSEL bias current: 4-6 mA	
Measure and record:	
1. Passive Mode Test	
2. Reset Mode Test	
3. Active Mode Test	
4. Serial Telemetry	
5. Discrete Telemetry	
6. Bit Error Rate Test	
7. Health Check	
Individual test report by serial number provided to customer	
5 thermal cycles, 95°C/-34°C, 1 hour dwells at all hot and cold holds	
Double-ended active optical cable	
Supply Voltage: 3.3 VDC nominal, Standard VCSEL bias current: 4-6 mA	
Measure and record:	
1. Passive Mode Test	
2. Reset Mode Test	
3. Active Mode Test	
4. Serial Telemetry	
5. Discrete Telemetry	
6. Bit Error Rate Test	
7. Health Check	
8. Max and Min DUT Temperatures	
Parameters	Pass/Fail Criteria
Frequency Range = 20 to 2,000 Hz,	No evidence of physical damage preventing proper function.
2 octaves per minute, each axis	Measure and record frequency response.
Peak level = .5 g_n	No evidence of physical damage preventing proper function.
60 seconds per axis	
Vibration Environments defined in Figures 5 and 6, Tables 5 and 6	
Frequency Range = 20 to 2,000 Hz,	No evidence of physical damage preventing proper function.
2 octaves per minute, each axis	Measure and record frequency response.
Peak level = .5 g_n	No change in frequency response greater than 5% from baseline.
FP-TD-034	
5 thermal vacuum cycles, 90°C/-29°C, 6 hour dwells at all hot plateaus and 1 hour dwells at all cold plateaus	
Ramp rate ≤ 6°C/min	
Vacuum Pressure 1x10^{-4} torr or less	
Double-ended active optical cable.	
Mated to test fixture, powered on.	
Supply Voltage: 3.135 – 3.465 VDC nominal	
Standard VCSEL bias current: 4-6 mA	
Measure and record:	
1. Serial Telemetry	
2. Discrete Telemetry	
3. Power Consumption	
4. Bit Error Rate Test	
5. Health Check	
6. Parametric Eye Data	
Individual test report by serial number provided to customer	
AirBorn has tahe capability of 'in situ' continuous monitoring of full Bit Error Rate, Telemetry, and Power during Vibration Testing. A test report is provided with each cable, documenting the test results.	

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

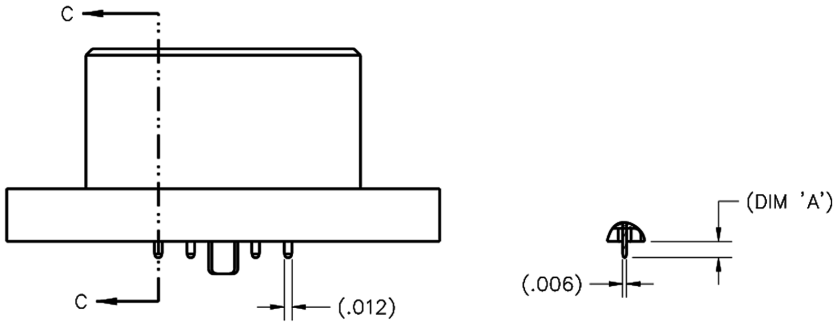
VTF–XX–XX–XX–XX–XX–XX

TERMINATION	RECOMMENDED PCB THICKNESS FOR EACH TERMINATION TYPE	(DIM 'A')
–00	.062" MIN	.044
–01	.025" MIN	.025
–02	.068" MAX	.078
–03	.099" MAX	.109
–04	.130" MAX	.140
–05	.145" MAX	.156
–06	.162" MAX	.172

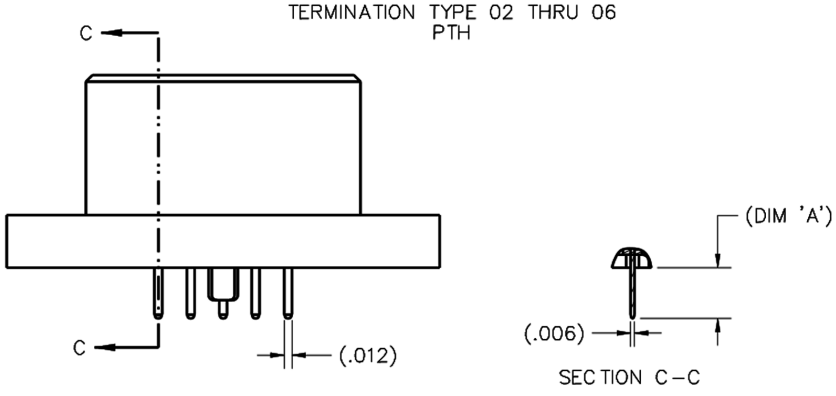
TERMINATION TYPE 00
PRESS–FIT



TERMINATION TYPE 01
PIH



TERMINATION TYPE 02 THRU 06
PTH



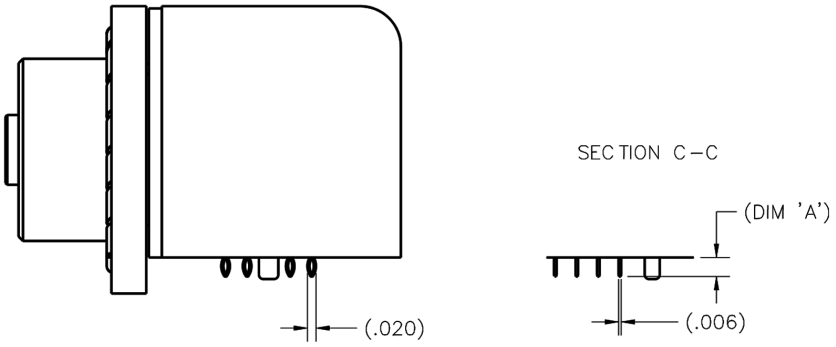
Please consult the Molex website for the latest revision of this document prior to beginning any design work.

AirBorn FOCuS - VTRAF Termination Dimensions

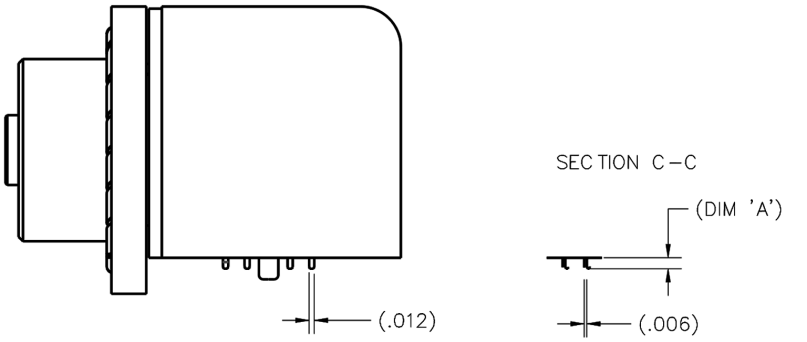
VTRAF–XX–XX–XX–XX–XX–XX

TERMINATION	RECOMMENDED PCB THICKNESS FOR EACH TERMINATION TYPE	DIM 'A'
–00	.062" MIN	.044
–01	.025" MIN	.025
–02	.068" MAX	.078
–03	.099" MAX	.109
–04	.130" MAX	.140
–05	.145" MAX	.156
–06	.162" MAX	.172

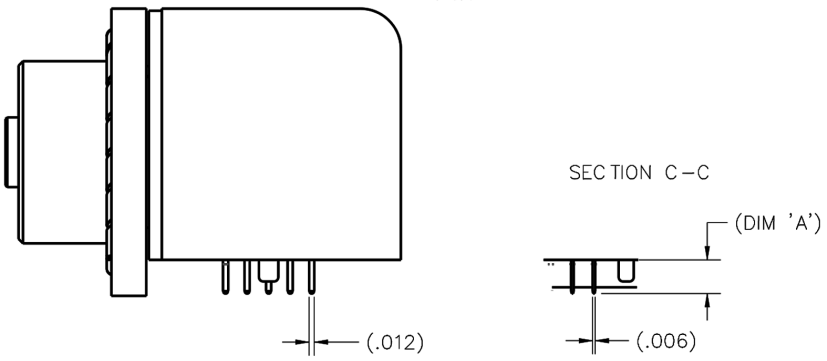
TERMINATION TYPE 00
PRESS–FIT



TERMINATION TYPE 01
PIH



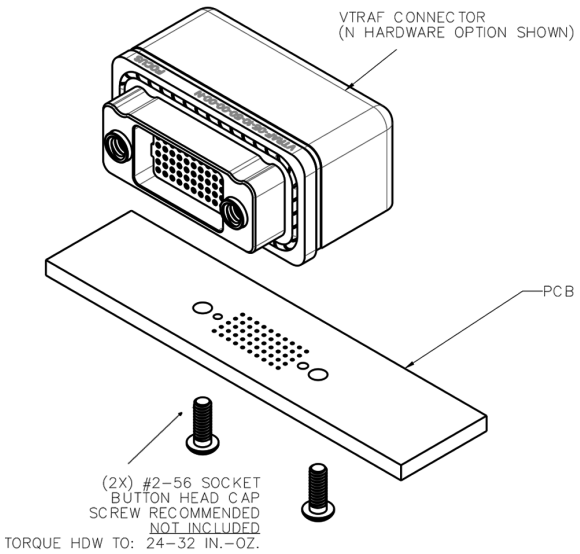
TERMINATION TYPE 02 TO 06
PTH



Please consult the Molex website for the latest revision of this document prior to beginning any design work.

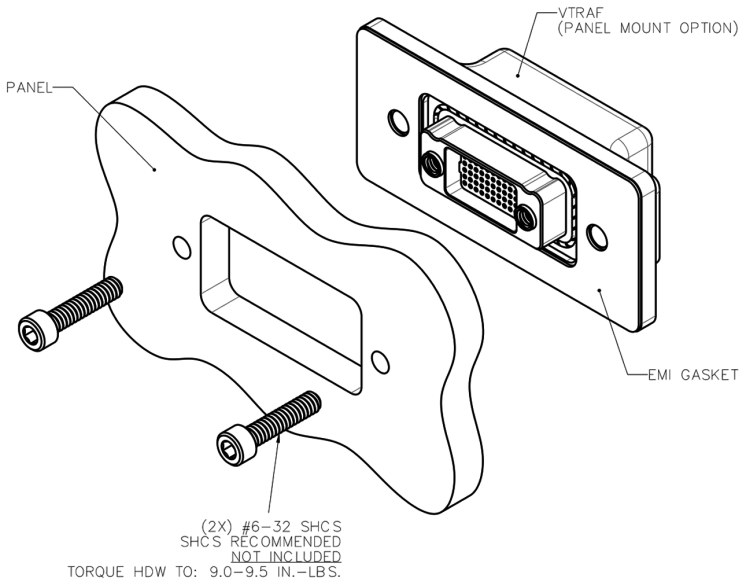
PCB MOUNTING INSTRUCTIONS

BOARD MOUNT AND PANEL MOUNT OPTIONS
(VRRAF-05-10-50-00-00-N SHOWN)
SHELLS AND HARDWARE COME INSTALLED

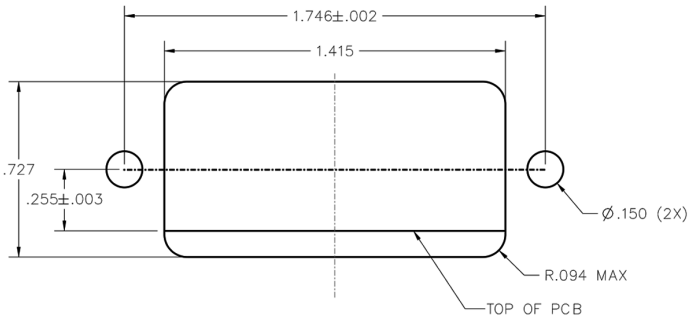


PANEL MOUNTING INSTRUCTIONS

PANEL MOUNT OPTION ONLY
(VRRAF-05-10-50-00-00-NE SHOWN)
SHELLS AND HARDWARE COME INSTALLED



RECOMMENDED PANEL CUTOUT

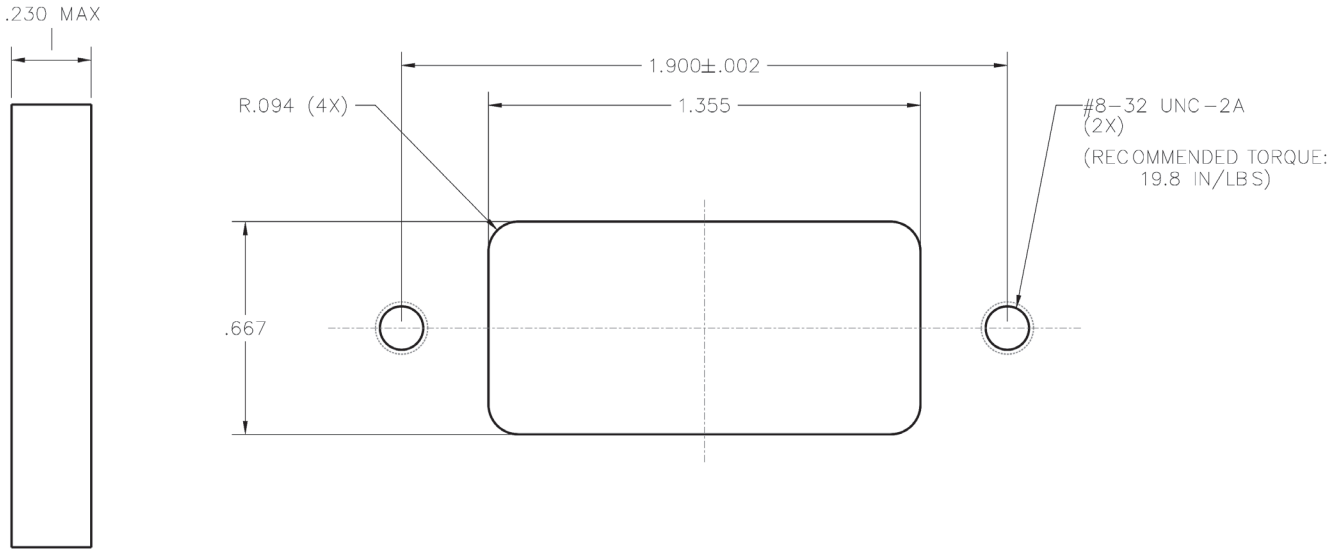


Please consult the Molex website for the latest revision of this document prior to beginning any design work.

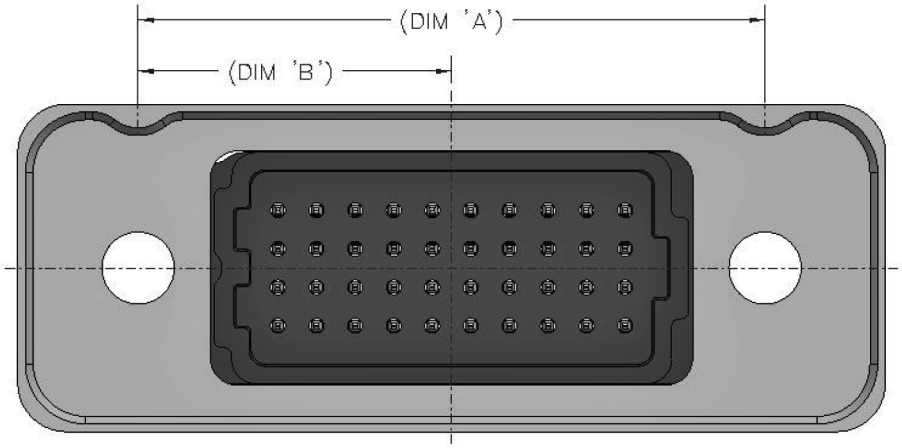
CONNECTOR 1 PIN-OUT									
A10 GND	A9 TX3-N	A8 TX3-P	A7 GND	A6 GND	A5 RX2-P	A4 RX2-N	A3 GND	A2 GND	A1 MODSELL
B10 GND	B9 GND	B8 GND	B7 TX1-N	B6 TX1-P	B5 GND	B4 GND	B3 RX4-P	B2 RX4-N	B1 GND
C10 GND	C9 TX4-N	C8 TX4-P	C7 GND	C6 GND	C5 RX1-P	C4 RX1-N	C3 GND	C2 GND	C1 GND
D10 MODRDYL	D9 GND	D8 GND	D7 TX2-N	D6 TX2-P	D5 GND	D4 GND	D3 RX3-P	D2 RX3-N	D1 GND
E10 3.3V	E9 3.3V	E8 FLAGL	E7 GND	E6 GND	E5 SDA	E4 SCL	E3 GND	E2 GND	E1 RESETL

* ALL GNDS & TWINAX SHIELDS COMMON.
** POSITIONS A1, D8, D9, D10, E1, E3, E4, E5, E6, E8-E10 POPULATED WITH 24 AWG WIRE.
*** FOUR DISCRETE (A1, D10, E8, E1) AND FOUR TWISTED PAIR (D9/E10 D8/E9, E5/E6, E3/E4).

RECOMMENDED CONNECTOR 1 (C1) PANEL CUTOUT

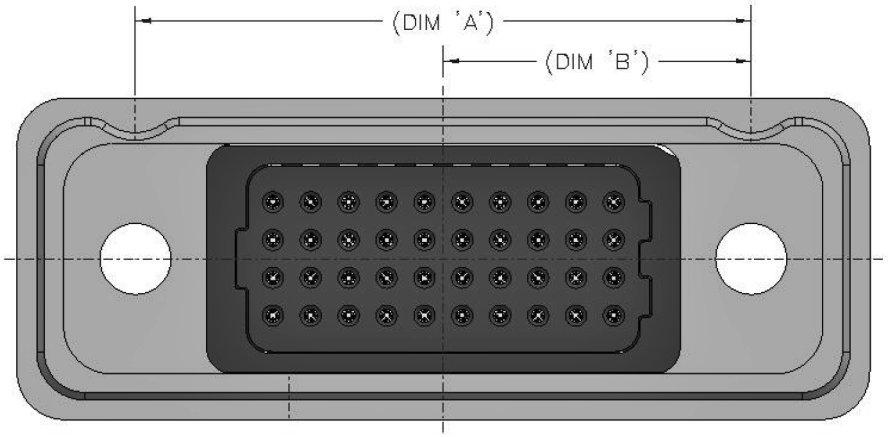


Please consult the Molex website for the latest revision of this document prior to beginning any design work.



VerSI Male Connector Keying

(VRM-04-10-100-50-00 SHOWN FOR REFERENCE ONLY)



VerSI Female Connector Keying

(VRF-04-10-50-00 SHOWN FOR REFERENCE ONLY)

ROWS	DIM 'A' (INCHES)	DIM 'B' (INCHES)
10	.813	.407
20	1.313	.657
30	1.813	.907
40	2.313	1.157
50	2.813	1.407

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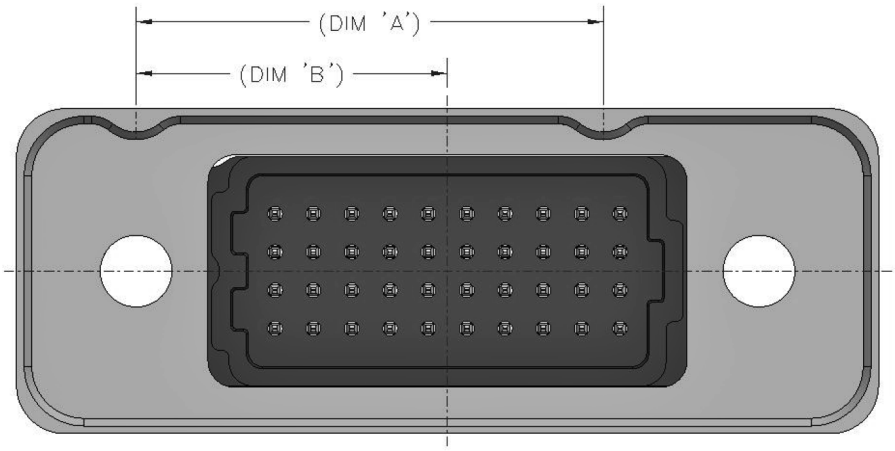
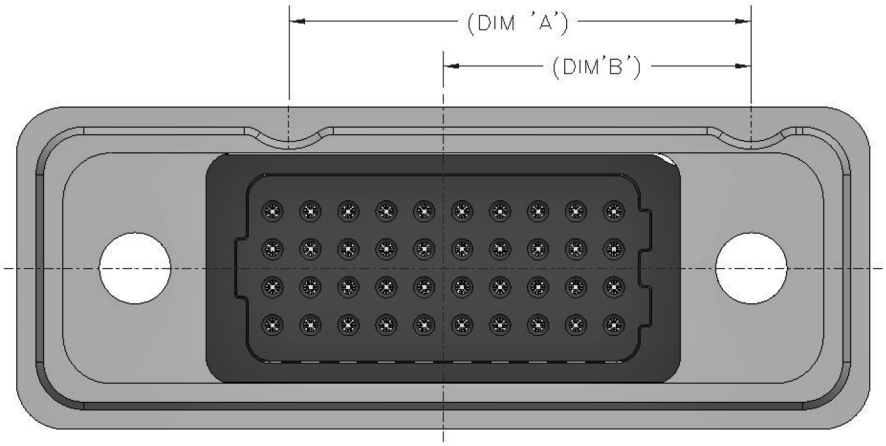


VerSI Male Connector Keying

(VRM-04-10-100-50-00 SHOWN FOR REFERENCE ONLY)



VerSI Female Connector Keying

(VRF-04-10-50-00 SHOWN FOR REFERENCE ONLY)

ROWS	DIM 'A' (INCHES)	DIM 'B' (INCHES)
10	.610	.407
20	.985	.657
30	1.360	.907
40	1.735	1.157
50	2.110	1.407

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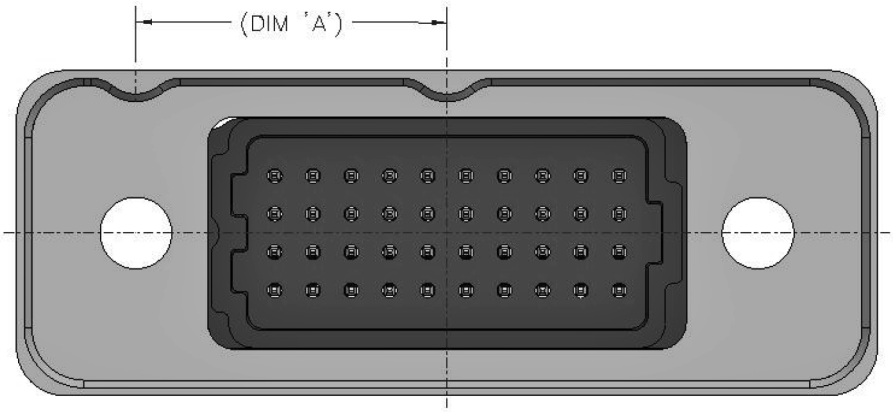

VerSI Male Connector Keying

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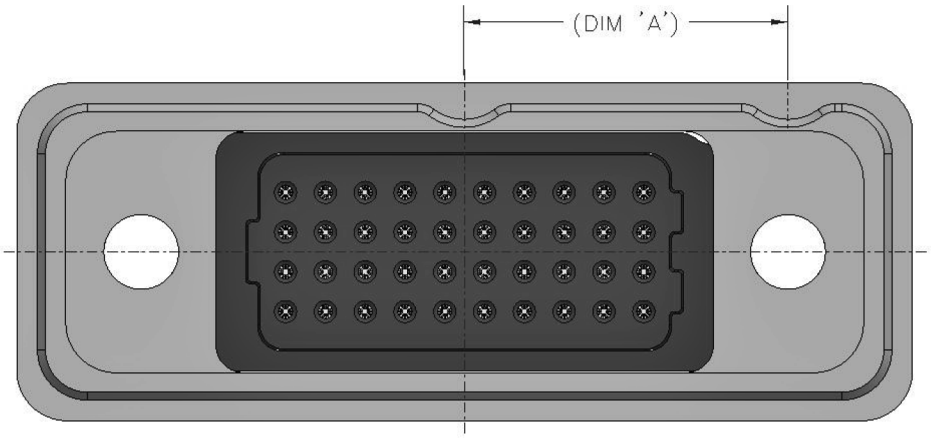

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ROWS	DIM 'A' (INCHES)
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20	.657
30	.907
40	1.157
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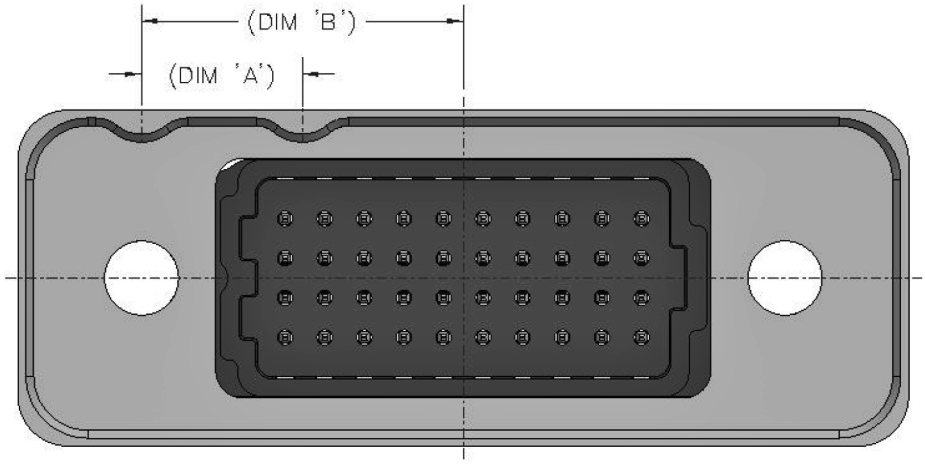
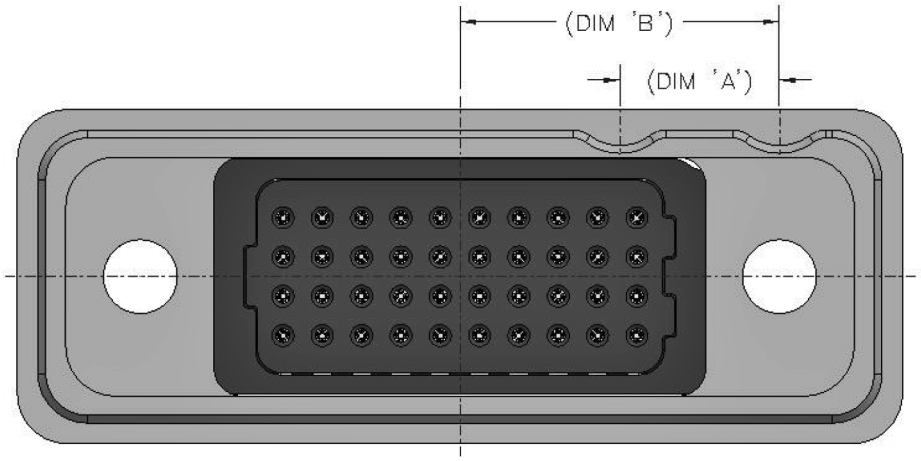


VerSI Male Connector Keying

(VRM-04-10-100-50-00 SHOWN FOR REFERENCE ONLY)



VerSI Female Connector Keying

(VRF-04-10-50-00 SHOWN FOR REFERENCE ONLY)

ROWS	DIM 'A' (INCHES)	DIM 'B' (INCHES)
10	.203	.407
20	.328	.657
30	.453	.907
40	.578	1.157
50	.703	1.407

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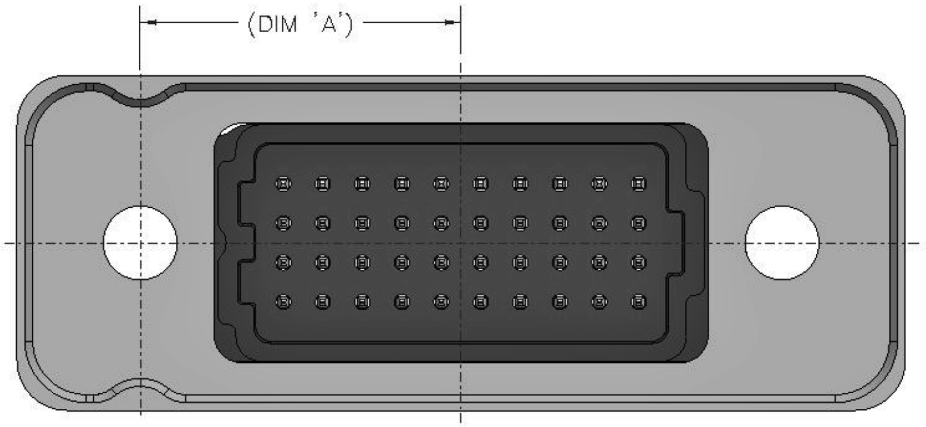

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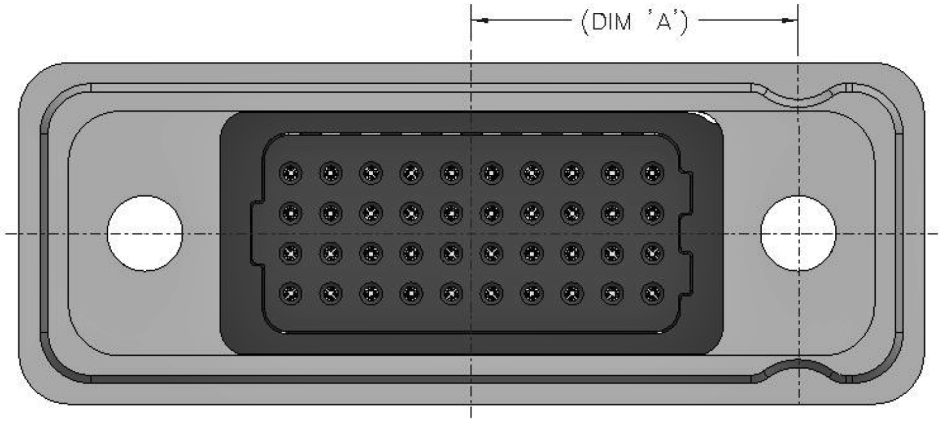

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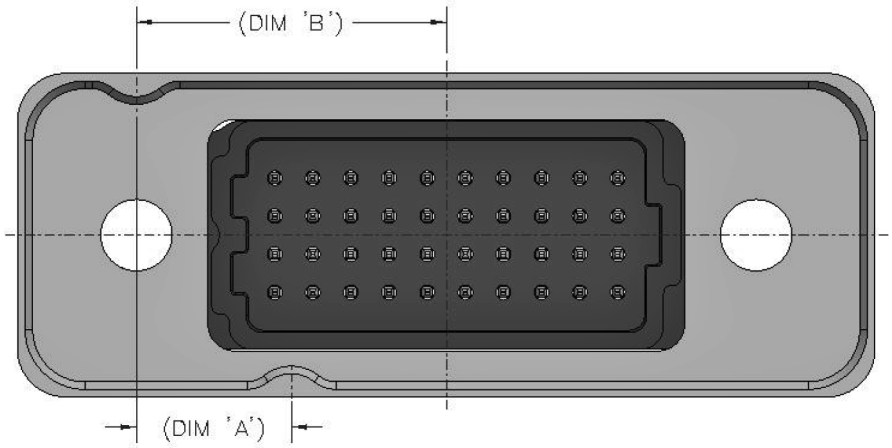

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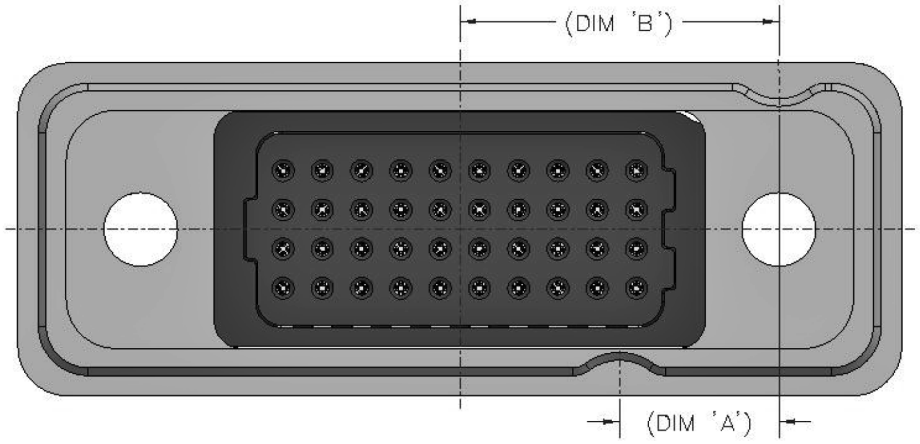

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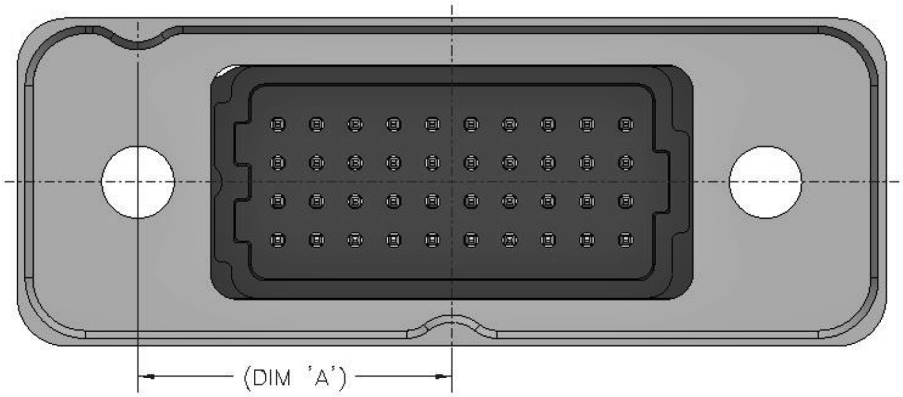

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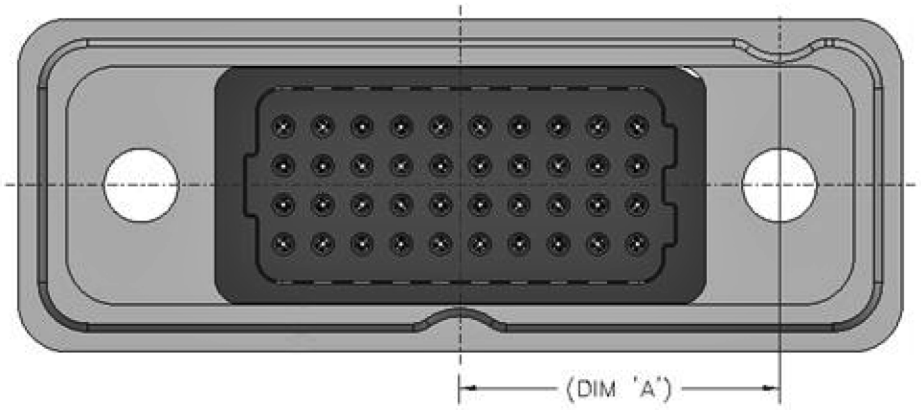

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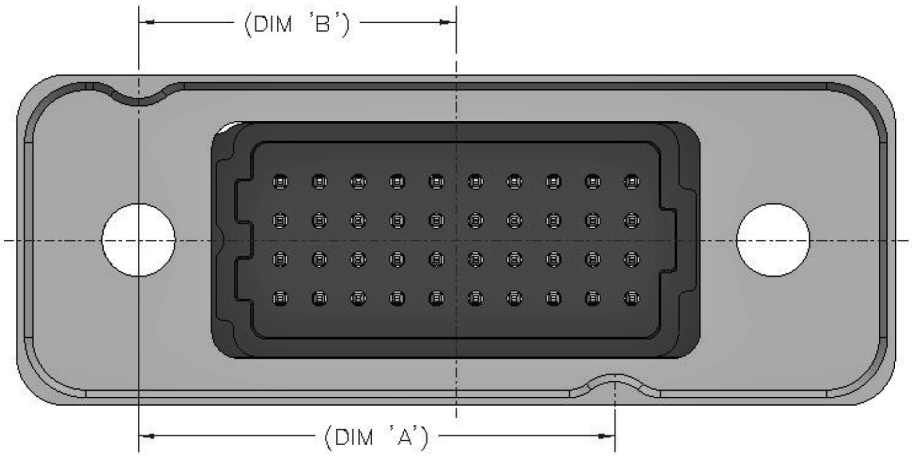

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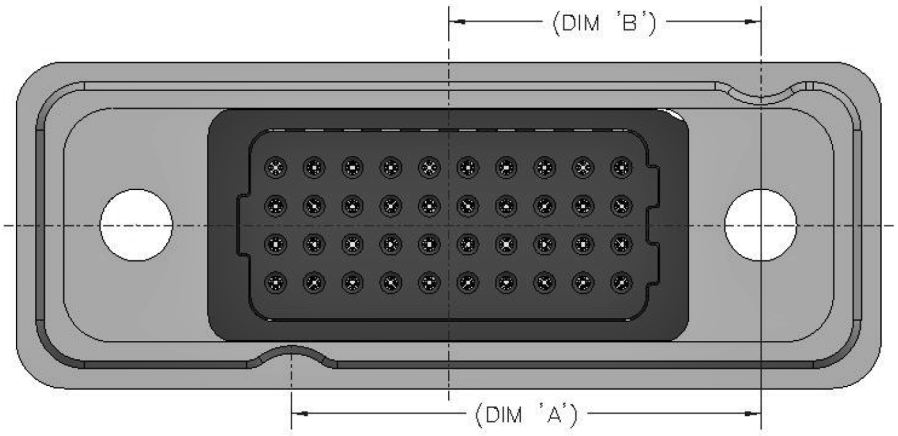

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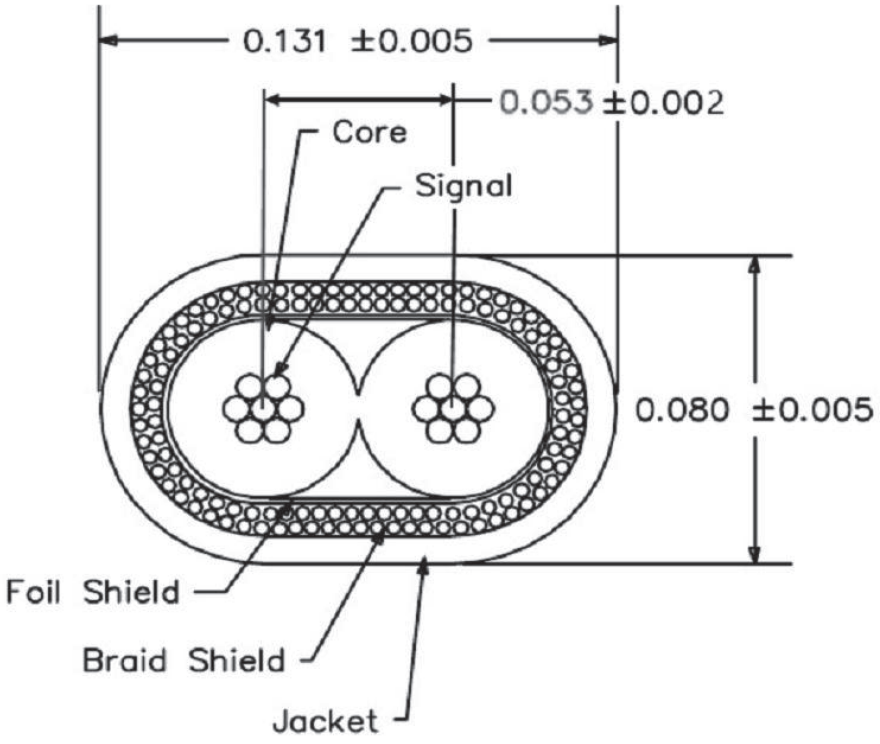
DESCRIPTION	
PARALLEL PAIR TWINAX CABLE	
CONSTRUCTION	
SIGNAL	26 AWG, 7/34 SPC. PER ASTM B298
CORE	FEP (ONE BLUE, ONE GREEN)
BRAID SHIELD	42 AWG SPC PER ASTM B298 SILVER PLATED COPPER, >85% COVERAGE
JACKET	FEP (GRAY)
PROPERTIES	
OPERATING TEMPERATURE	−55°C TO +200°C
DIFFERENTIAL IMPEDENCE	100±10 OHMS
MIN. BEND RADIUS	0.50"



Please consult the Molex website for the latest revision of this document prior to beginning any design work.

AirBorn FOCuS Evaluation Kits Available

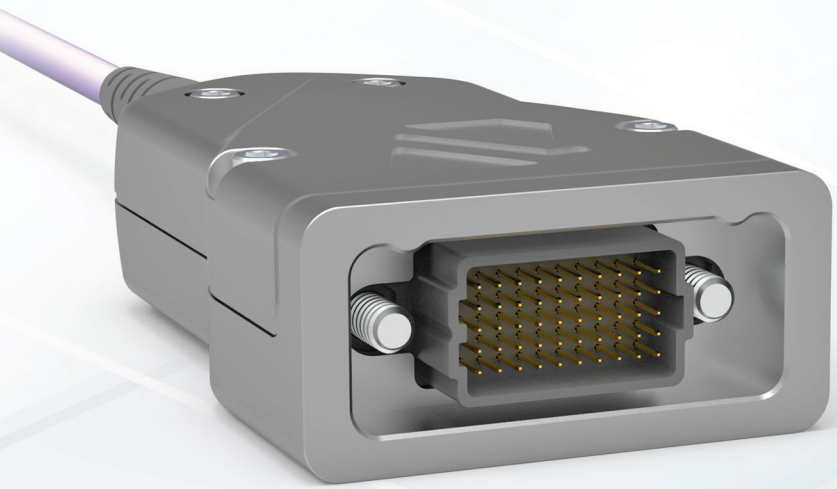
Experience the quality and design ingenuity of our active optical cables firsthand. Order a kit to test the product in your own lab and within your unique product design—discover its performance and reliability on your terms.

Please consult the Molex website for the latest revision of this document prior to beginning any design work.

AirBorn FOCuS

Space-Rated Active Optical Cable Qualifications Review

Class I laser product that complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3, as described in Laser Notice No. 56, dated May 8, 2019.



Qualification Testing

The cables in qualification testing go through the following verification testing. Each cable is fully functional throughout all tests, with bit error monitoring, as well as power and telemetry checks throughout. Passing criteria for each test includes: BER better than 1x10-12. Telemetry interface responds without error. No changes in current draw greater than 5% from baseline. No signs of physical damage.

Thermal Life Testing

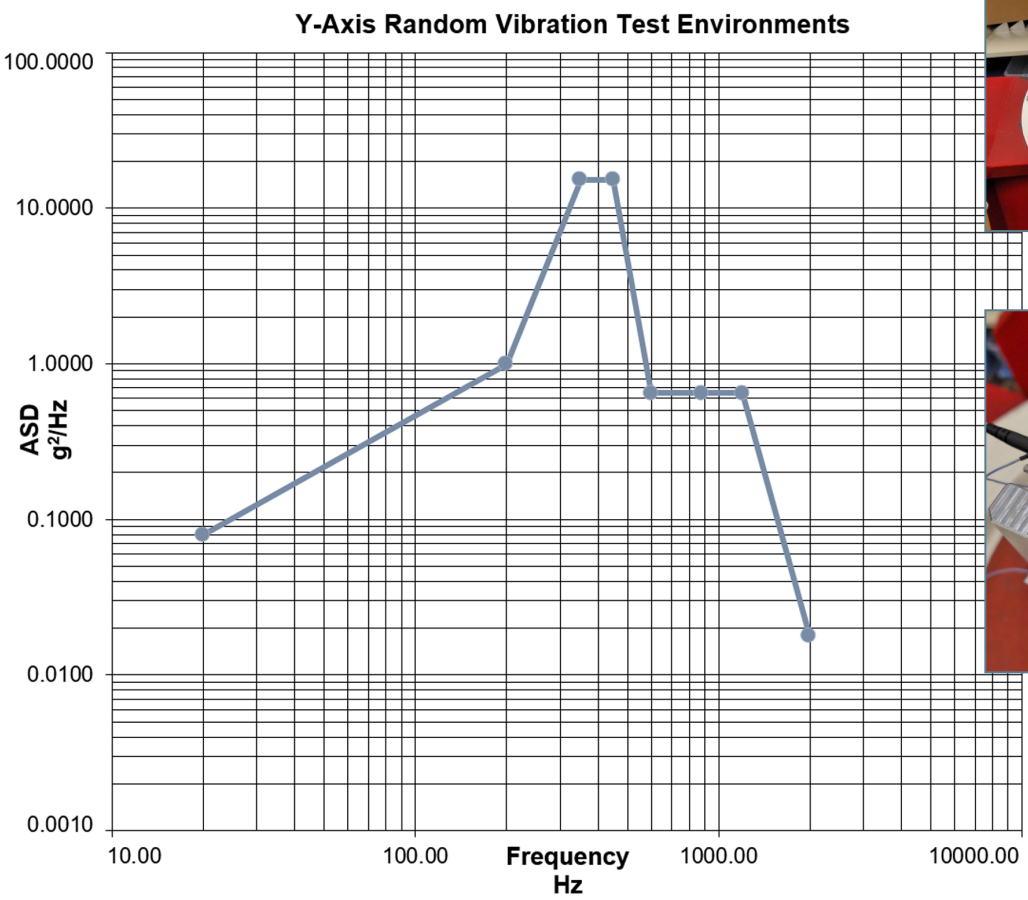
134 thermal cycles of +95°C to -34°C, 1 hour dwells on all plateaus, ramp rate ≤ 6°C.

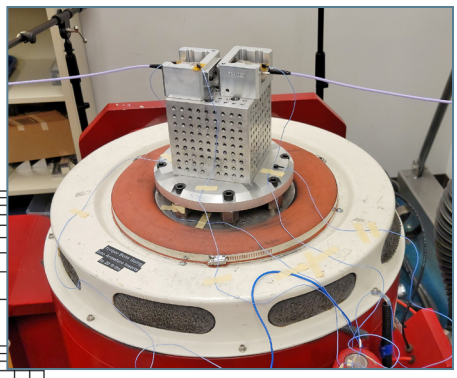
Thermal Vacuum Testing

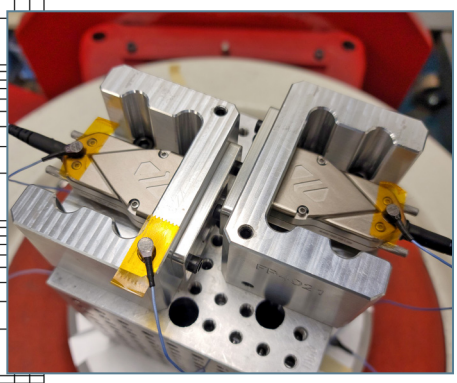
24 thermal cycles of +95°C to -34°C, 6 hour dwells on all hot plateaus, 1 hour dwells on all cold dwells, ramp rate ≤ 6°C, chamber pressure of 1x10-4 torr.

Vibration Testing

Vibration testing is meant to simulate the environment the cable would experience as it is rocketed into orbit. 60.26 Grms total, 3 minutes per axis. Vibration profile and test images shown below.





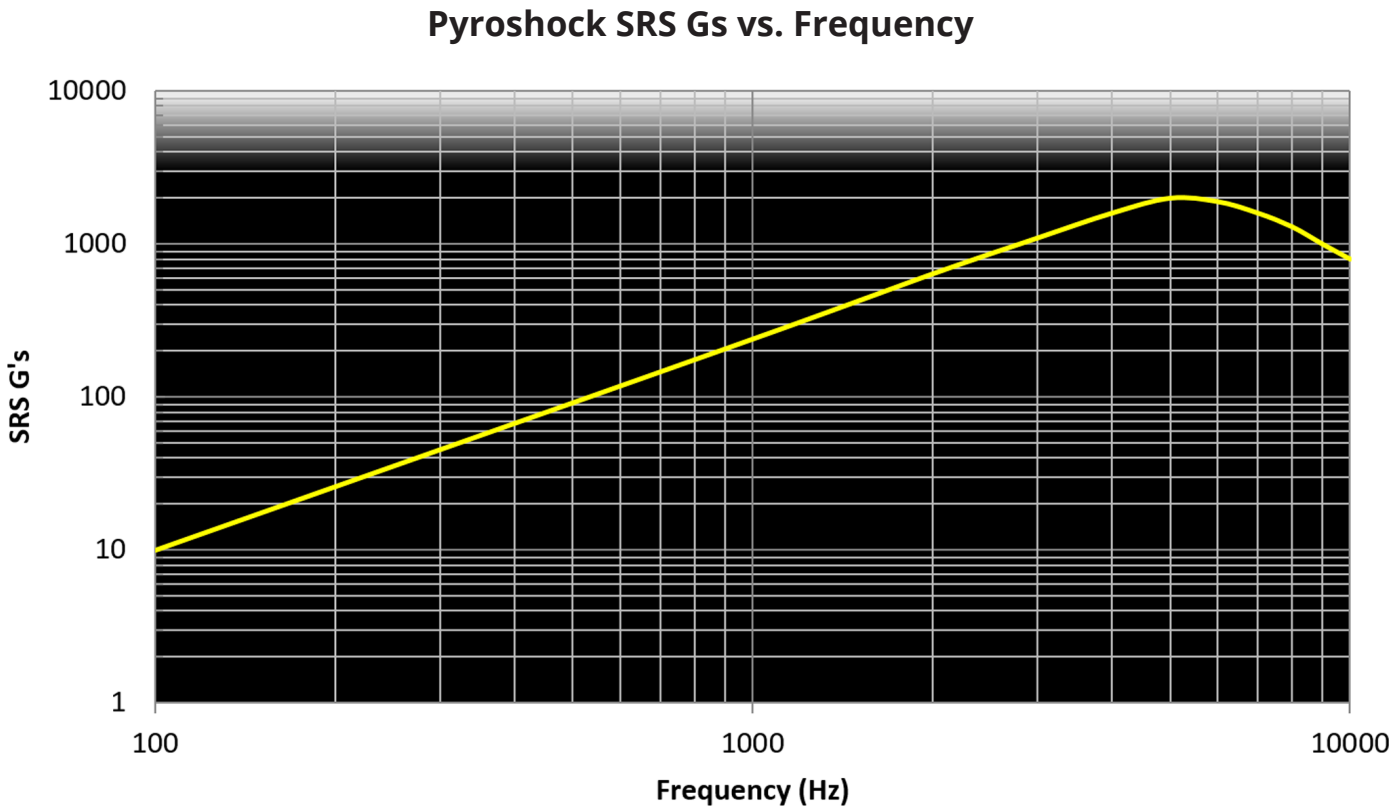


Vibration Testing

Class I laser product that complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3, as described in Laser Notice No. 56, dated May 8, 2019.

Pyroshock

Pyroshock testing is meant to simulate high-magnitude shock waves propagating through a material during an explosive event, such as when an explosive charge is used to separate a multistage rocket. Each cable undergoes the following pyroshock profile, applied three times in each direction of each orthogonal axis. The cables are not powered for this test.

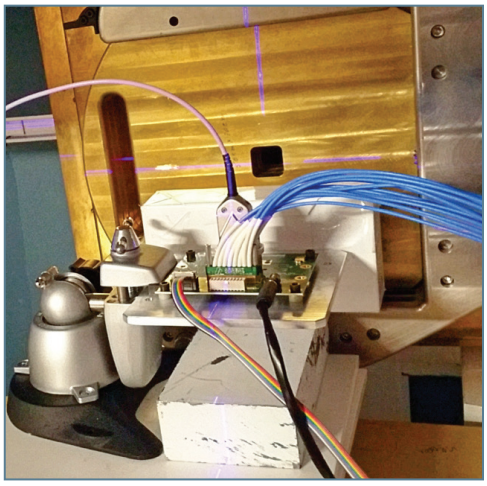


Additional Verification Testing

The following tests are performed outside of the official Qualification test plan and verify that additional design criteria have been met.

Radiation Testing

Radiation testing has been performed on all Active Optical Cable designs. A high flux, continuous 200MeV proton beam was focused on the cable end, while power, telemetry and bit error rate were measured and recorded for all four channels. No latchup events nor permanent degradation in functionality were observed, with a total ionizing dose of over 95 kRad (TID Si) delivered to the optical engine components. Test setup shown below.



Radiation Testing

EMC Testing

EMC testing per MIL-STD-461F has been performed on all Active Optical Cable designs. The test results indicate that the cable's external interfaces and enclosures successfully contained all EMC emissions. EMC testing will be performed on all future cable configurations. The same robust design features which made the legacy product so effective at mitigating EMC emissions are incorporated into each new product configuration.

Cable Pullout Testing

AirBorn FOCuS Series cables have been tested and verified to meet a 10lbf axial pull force on the cable jacket without separation from the cable end body. Test setup shown below.

Cable Pull Testing

VCSEL and Photodiode Extended Life Testing

Each unique VCSEL and Photodiode lot used in AirBorn FOCuS production assemblies undergo extended life testing before they are approved for use. Three subgroups of 30 pieces each run through spectrum analysis, LIV curve testing, burn-in, and a life test of up to 2,500 hours at 150°C. This testing provides confidence that our products will withstand extreme operating conditions over their lifespan.

Element Evaluation Testing

All microcircuit and semiconductor die lots used in the AirBorn FOCuS product are tested per MIL-PRF-38534J, appendix C, table C-II, before being used in production assemblies. The testing is tailored to our exact usage case. See table for more information on what is included in testing.

MIL-PRF-38534J APPENDIX C

TABLE C-II. Microcircuit and semiconductor dice evaluation requirements.

Subgroup	Class		Test	MIL-STD-883		Quantity (accept number)	Reference paragraph
	K	H		Method	Condition		
1	X	X	Element electrical			100 percent	C.3.3.1
2	X	X	Element visual	2010 1/ 2069 1/ 2070 1/ 2072 1/ 2073		100 percent	C.3.3.2
3	X	X	Internal visual	2010 1/ 2069 1/ 2070 1/ 2072 1/ 2073		10 (0)	C.3.3.3 C.3.3.4.2
4	X		Temperature cycling	1010	C	2/ 10 (0)	C.3.3.3
	X		Mechanical shock or Constant acceleration	2002 2001	B, Y1 direction 3,000 g's, Y1 direction		
	X		Interim electrical				C.3.3.4.3
	X		Burn-in	1015	240 hours minimum at +125°C		
	X		Post burn-in electrical				C.3.3.4.3
	X		Steady-state life	1005			
	X	X	Final electrical				C.3.3.4.3
5	X	X	Wire bond evaluation	2011		10 (0) wires or 20 (1) wires	C.3.3.3 C.3.3.5
6	X		SEM	2018 1/ 2077		See method 2018 of MIL-STD-883 or method 2077 of MIL-STD-750	C.3.3.6

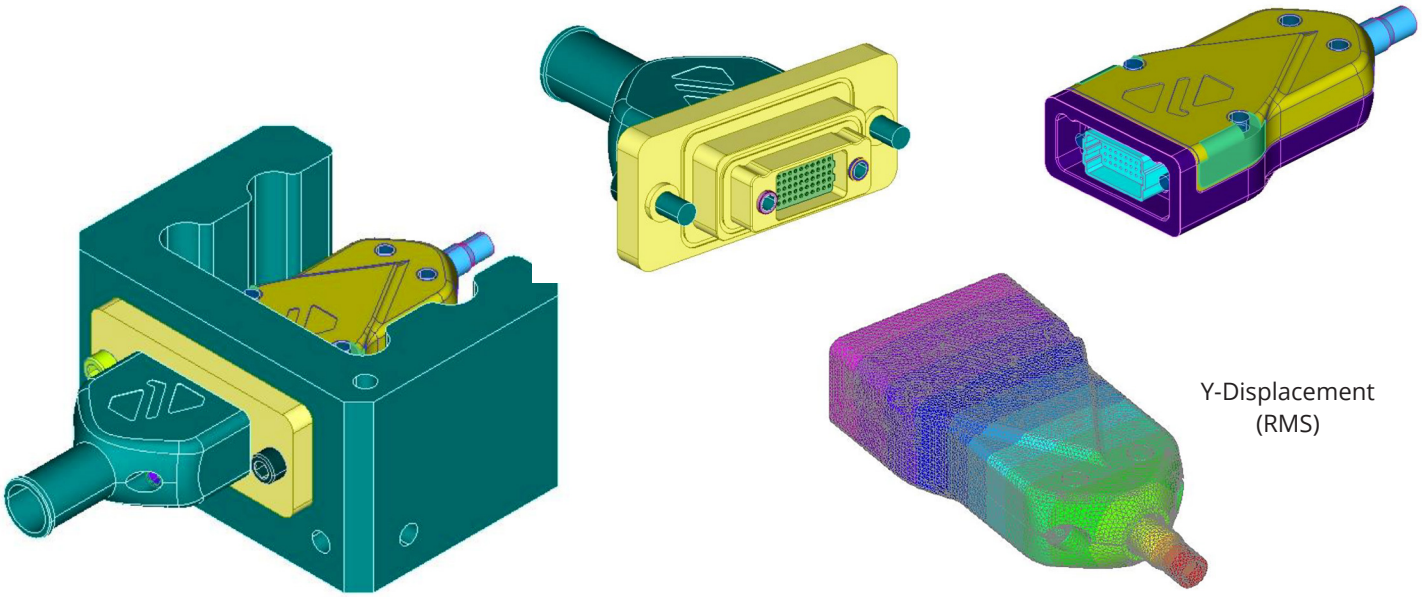
Class I laser product that complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3, as described in Laser Notice No. 56, dated May 8, 2019.

Design Analysis

Several design analyses were performed on the AirBorn FOCuS 4X verSI cable throughout the design process, in order to provide insight for how to optimize the design. These optimizations greatly improve the ability of the cable to successfully pass qualification testing and perform in the field.

FEA Modal and Stress Analysis

A finite-element analysis using Nastran has been performed on the cable and mating interface to determine natural frequencies and Von Mises stress levels developed during vibration testing. Positive margins of safety are maintained throughout this test, both in Yield and Ultimate Strength, for all mechanical components. Additionally, fastener torque levels have been analyzed to assure preload is maintained. When paired with vibration testing, this analysis provides a high confidence level that the cable can withstand extreme vibration environments. An excerpt from the report can be seen below, as well as images of the FEA model.



Y-Displacement (RMS)

Margins of Safety

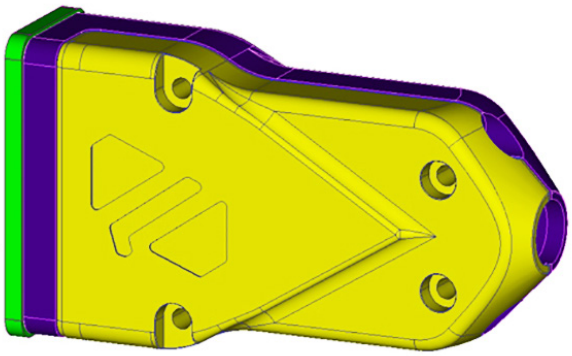
Part	Von Mises Stress (3σ) ksi	Yield Strength (ksi)	Ultimate Strength (ksi)	MOS-y FS – 1.0	MOS-u FS – 1.4
PWB – Cu	1.8	4.83	30.5	1.68	> 5
PWB – FR4	0.3	N/A	45.0	N/A	> 5
Flex Circuit - Polyimide	1.8	N/A	50.0	N/A	> 5
Flex Circuit – Cu	0.3	4.83	30.5	> 5	> 5
Cover	8.8	40.0	45.0	3.56	2.62
Backshell	12.9	40.0	45.0	2.09	1.46
Jackscrew	23.9	75.0	125.0	2.14	2.70
Jacknut	24.4	75.0	125.0	2.07	2.62
Fixture – Connector	7.7	40.0	45.0	4.20	3.13
Fixture – Backshell	5.6	40.0	45.0	> 5	4.69
Fixture - Block	1.5	40.0	45.0	> 5	> 5

Structural and Thermal Fatigue Analysis

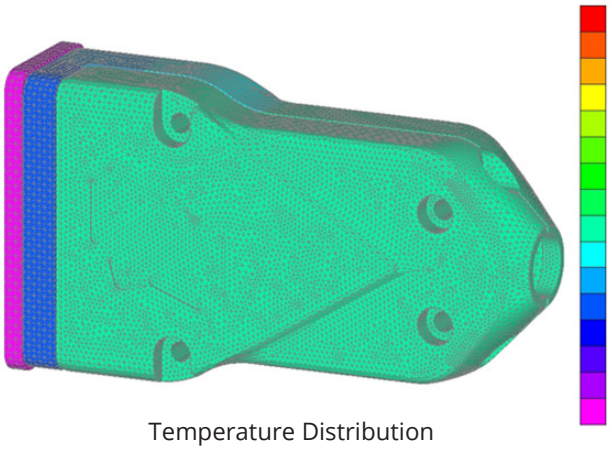
A structural and thermal fatigue analysis has been performed on all legacy Active Optical Cable designs, to ensure structural integrity throughout the mission. The structural fatigue analysis accounted for damage due to vibration as well as thermal cycling.

Heat Transfer Analysis

The AirBorn FOCuS PCBA has been optimized to enhance thermal transfer from high-power-consuming-die onboard, into the host assembly, thereby minimizing the temperature rise of these die. A complete finite element model of the PCBA and thermal path has been generated, to predict maximum case and junction temperatures for all onboard die. In conjunction with thermal vacuum testing, this analysis provides high confidence that the cable will continue to perform within our stated operating temperature range.



CAD Geometry



Temperature Distribution

Venting Analysis

A venting analysis has been performed of the cable backshell and all inner semi-enclosed cavities, to ensure the pressure change due to rapid ascent or descent through Earth's atmosphere does not cause structural damage. The analysis follows the approach of NASA Memorandum 85016 to determine pressure differentials, and utilizes structural FEA analysis to show margins of safety.

$$\Delta P = \frac{1}{2RTPe}\left(\frac{\dot{V}Pe}{AC_D}\right)^2$$

Parts & Materials List and Outgassing

A complete parts and materials list has been generated to identify every unique material utilized within the cable assembly, with the exception of board-mounted electronics. All non-metallic materials have been outgas tested per ASTM-E-595.

Class I laser product that complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3, as described in Laser Notice No. 56, dated May 8, 2019.

Failure Mode, Effects and Criticality Analysis

A Failure Mode, Effects and Criticality Analysis (FMECA) has been performed on all Active Optical Cable designs to identify and eliminate single point failures, in an effort to reduce the possibility of mission failure.

Reliability Analysis

A Reliability Analysis has been performed on all legacy Active Optical Cable designs to calculate the predicted probability of success for a mission. This analysis accounts for all components in the data transfer path, from one end of the cable to the other.

Worst Case Analysis

A Worst Case Analysis has been performed on all Active Optical Cable designs. This analysis provides a method for analytically verifying circuit performance and de-rating requirements have been met over a program specified environment and design life. It is an effective tool in validating electrical circuit design stress and estimated performance margins, to a customer's specific operating environment.

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