

NUMBER: AS-003	CATEGORY: APPLICATION SPECIFICATION	AMPHENOL ARDENT CONCEPTS	
TITLE 16 Pair Screw Mount micro-LinkOVER Connector		PAGE: Page 1 of 12	REVISION: 4
		GUARDIAN (VERIFIED BY): S. DIAZ	DATE: 2020-12-02
		APPROVED BY: S. DIAZ	
		CLASSIFICATION: UNRESTRICTED	

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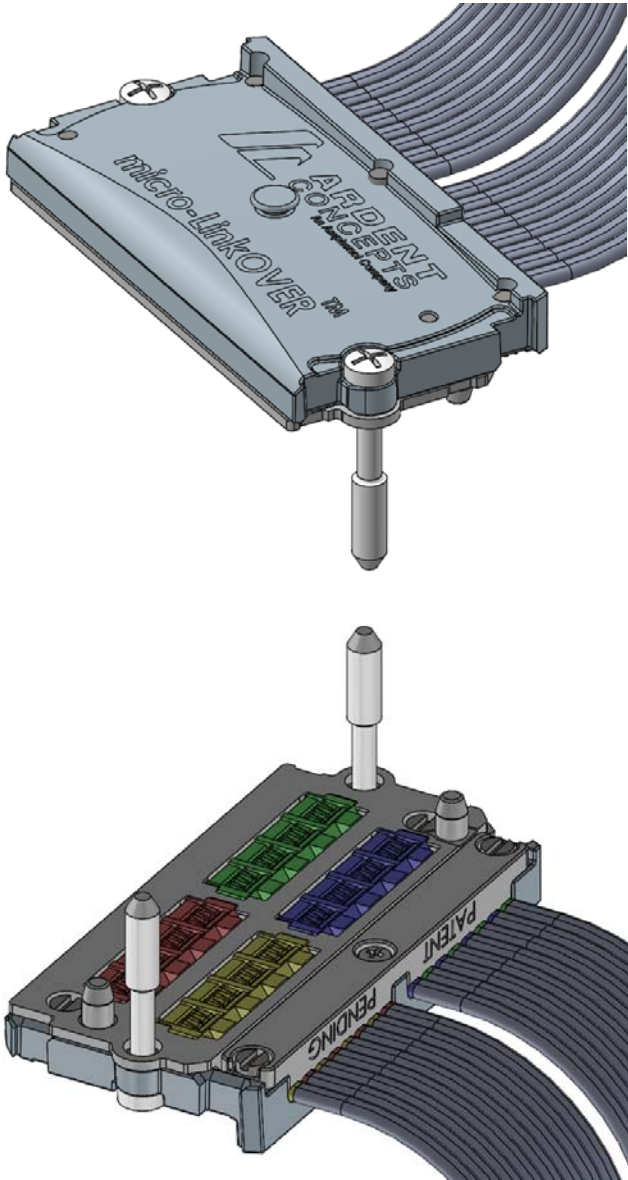


FIGURE 1: 16 PAIR SCREW MOUNT micro-LinkOVER CONNECTOR

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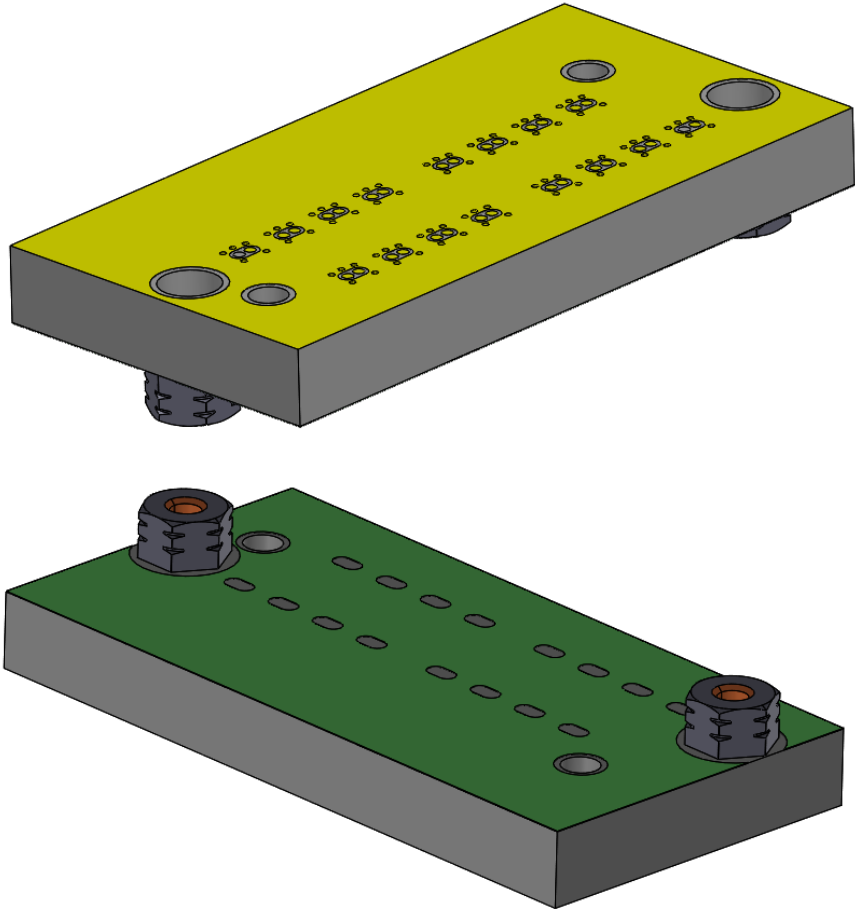


FIGURE 2: SMT M1.6 NUTS MOUNTED ON THE BACK OF THE PCB

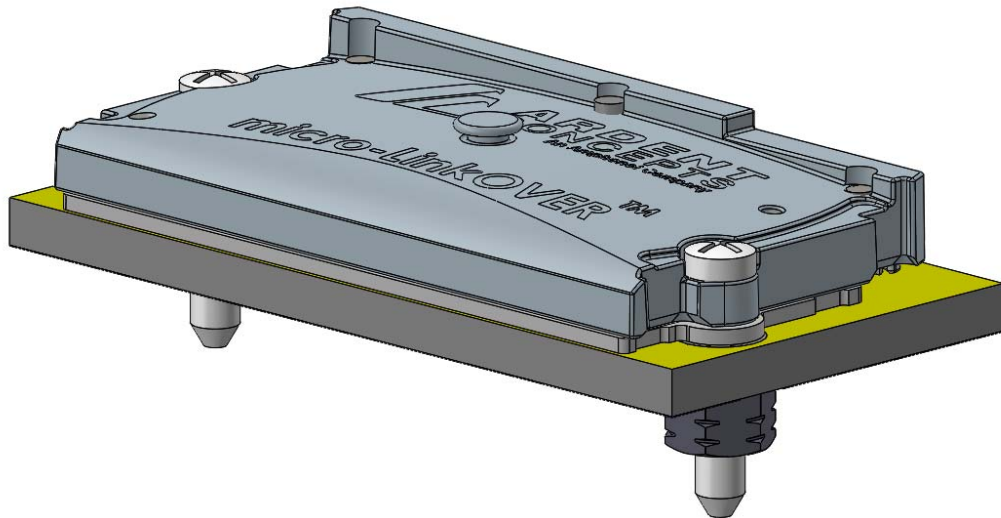


FIGURE 3: micro-LinkOVER CONNECTOR IN BOLTED POSITION

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1.0 OBJECTIVE

This specification recommends a customer application of the micro-LinkOVER (micro-LO) connector. It is intended to provide general guidance for development of assembly processes. It should be acknowledged that no single process will work for every customer application and that customers will develop processes to meet their needs. However, if such processes should deviate extensively from the recommendation put forth in this document, Amphenol Ardent Concepts cannot guarantee good results.

2.0 SCOPE

This specification provides information and requirements regarding application of the micro-LO Screw Mount connector and SMT Mount M1.6 nuts.

3.0 PCB DESIGN

3.1 BOARD LAYOUT

Refer to *mLO-FP-16X2-01* or the applicable Amphenol Ardent Concepts customer drawing for the specific connector footprint and outline. For Screw Mount applications, keep out zones, solder mask outlines, and solder paste notes for the SMT Mount M1.6 nuts should be followed.

CAUTION: It is critical that Board Manufacturers abide by the dowel hole size and positional tolerances specified in the footprint drawings. Any deviation may result in damaged connectors.

3.2 BOARD THICKNESS

The screw mount micro-LO connector is not compatible with belly-to-belly mounting. The SMT Mount M1.6 nuts can be used for board thickness range of .063" [1.60mm] and above. For thinner boards, a mounting plate assembly should be used for stiffening.

3.3 BOARD FIT INSPECTION

Customers can request guide plate samples to check its mechanical fit to the dowel holes in the PCB. The part number is mLO-GP-16X2-01. Please contact the factory before your board arrives to request samples of this part. To execute the fit test, install the guide plate in the right orientation, turn the PCB over, and check if the guide plate falls off.

4.0 PACKAGING

A pair of SMT Mount M1.6 nuts ships with each Screw Mount micro-LO connector. The part number for the M1.6 nuts is SMTSO-M1.6-2ET from Penn Engineering. The micro-LO connector is supplied in tray packaging for manual assembly.

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5.0 APPLICATION INFORMATION

5.1 CONNECTOR FOOTPRINT SPACING

There are times when several connectors need to be placed on the board side by side and in rows to accommodate a larger number of pairs. In those cases, board real estate requires tight spacing between connectors and connector rows. **Figure 4** below defines the minimum centerline to centerline spacing in X and Y as well as the edge of the keep out zone required for an array of Screw mount 16 Pair micro-LO connectors.

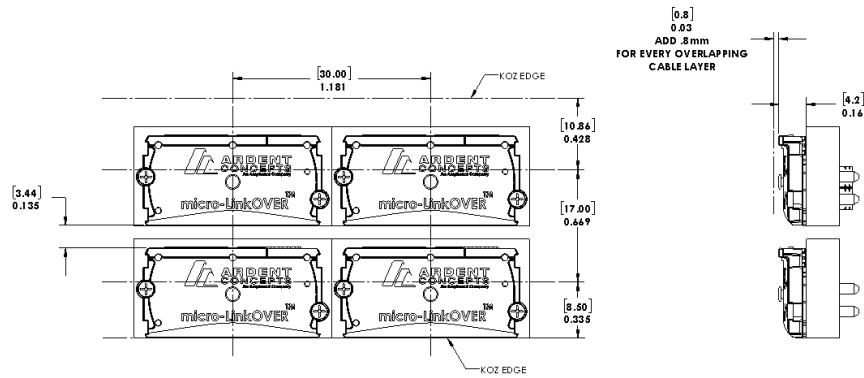


FIGURE 4: ARRAY SPACING AND KEEPOUT ZONES

5.2 SMT MOUNT M1.6 NUTS INSTALLATION

5.2.1 METHOD

The SMT nuts need to be installed on the back of the micro-LO footprint before the connector can be installed. The operations described below pertain to the back of the board only. **Figure 5** below shows an assembly model of the SMT nuts and the PCB.

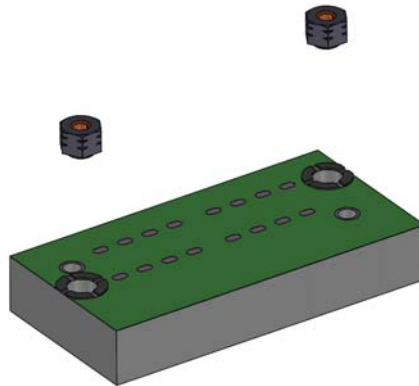


FIGURE 5: SMT NUTS AND THE BACK OF THE PCB micro-LO FOOTPRINT. THE GREEN AREA IS SOLDER MASK. SOLDER PASTE IS APPLIED BY STENCIL OR MANUALLY AROUND THE MOUNTING HOLES.

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Please consult Penn Engineering (pemnet.com) for the most up to date information. **Figure 6** below summarizes the solder paste application process.

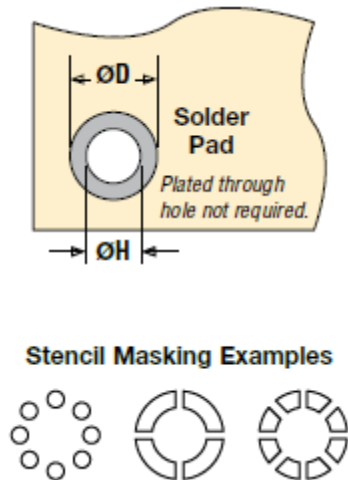


FIGURE 6: SOLDER PASTE LAYOUT RECOMMENDATIONS FOR SMT NUT

The back of the PCB should have solder mask defined openings around both of the mounting holes. Please consult the 16 Pair micro-LinkOVER Screw Mount Footprint Drawing, *mLO-FP-16X2-01*, for pad and hole diameter information. If a stencil is used for depositing solder paste, the three examples above can be used. The SMT Mount M1.6 Nut is available loose piece or in tape and reel from electronics hardware distributors. Standard SMT Mount techniques can be used to install this component.

5.2.2 INSPECTION

Inspect PCB after reflow to ensure that the signal pads are not contaminated with flux. If contaminants are present, use standard cleaning techniques to clean them off. Inspect the SMT Nuts to ensure they are planar with the back of the board and to ensure solder has not entered the threads.

5.3 CONNECTOR INSTALLATION

This step should be done only after the SMT Nuts have been installed. The connector should never be put in the reflow oven.

5.3.1 METHOD

The micro-LO connector assembly procedure is described below and illustrated in **Figures 7-9**. The use of a torque driver with a #000 Philips bit is recommended to ensure easy and full seating of the connector. First, separate the connector from its shipping cover, washers, and SMT nuts. **Figure 7** shows the connector as it is shipped. In this orientation, hold the connector by its sides with one hand and use the other hand to loosen the screws, in an alternating pattern, until the nuts and washers drop off.

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The shipping cover may stick to the connector. If so, carefully pull the shipping cover downwards in the direction of the blue arrow in **Figure 7**. A smooth, fluid motion in the direction normal to the bottom of the connector is best.

The shipping cover and screws can be discarded or stored.

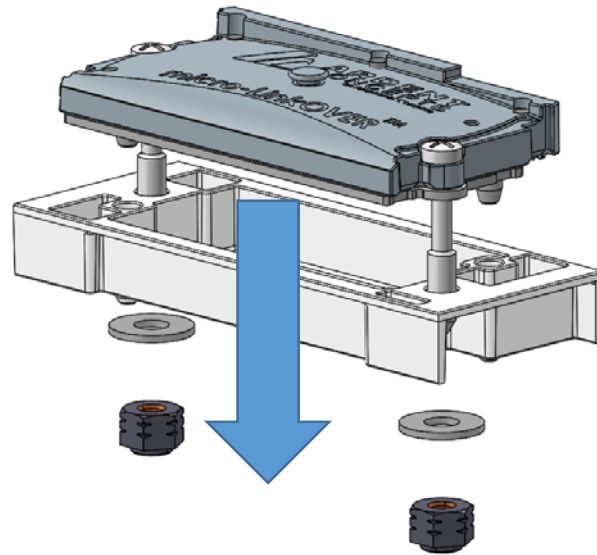


FIGURE 7: SEPARATING THE CONNECTOR FROM ITS SHIPPING COVER, WASHERS AND SMT NUTS.

NOTE: It is important to allow some slack in the cable bundle between the two footprints. Slack of ½" to 1 inch is recommended. For reference, the cable loss per inch at 28 GHz is -0.28 dB.

To install the connector, align it manually with its footprint being sure the cables are exiting in the correct direction, as shown on **Figure 8**. The twinax cables typically exit away from the soldered-down or socketed integrated circuit (IC). If installing multiple connectors in rows, begin with the rows farthest away from the IC.

CAUTION: Do not attempt to force the connector onto its footprint if the cable length will not allow it. Doing so will damage the connector. If the micro-LO connector end is installed first, and tension needs to be applied to the cable bundle, first ensure the screws are fully tightened to their recommended torque specification, and then ensure the tension does not exceed 4 lbs (0.45 kg).

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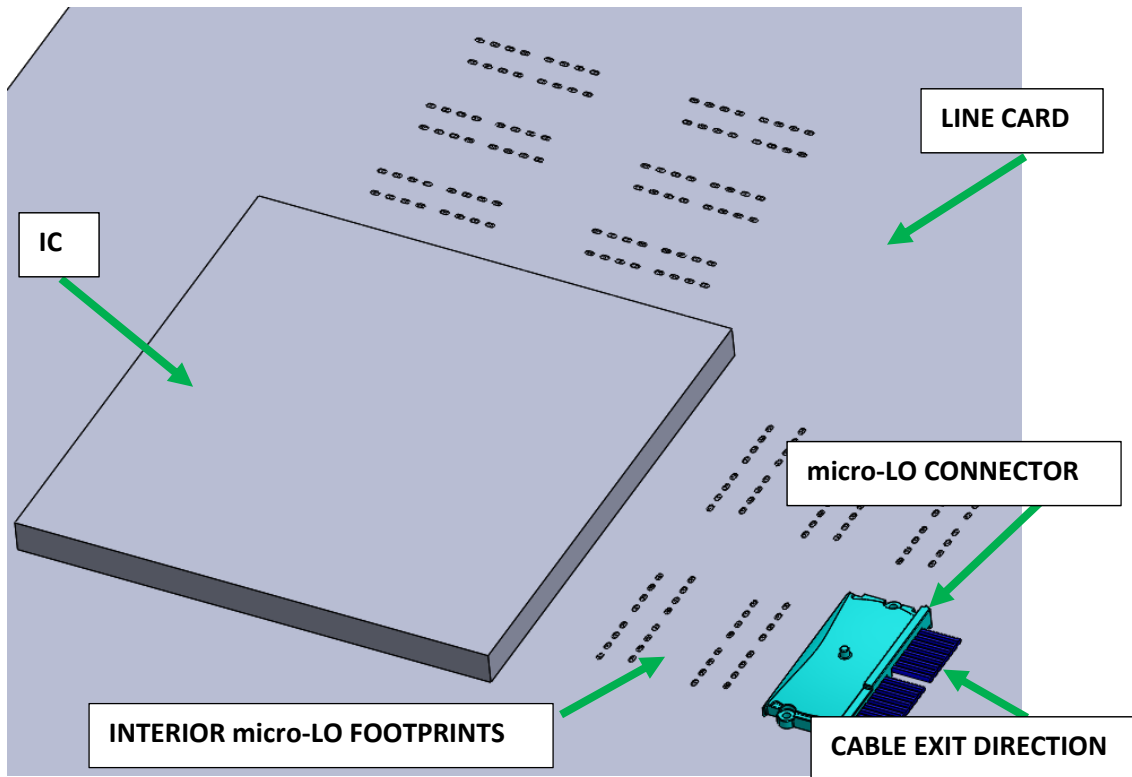


FIGURE 8: ORIENTATION OF INSTALLED CONNECTOR WITH RESPECT TO IC

Next, push down firmly on the center of the connector with one finger as indicated by the red arrow on **Figure 9**. With the other hand, tighten the mounting screws with the torque driver in an alternating fashion until a torque setting of 15 inch-ounces is achieved. **Figure 10** shows an example torque limiting tool that can be used to verify the installation torque. The slotted blade fits well on the heads of the custom captive screws.

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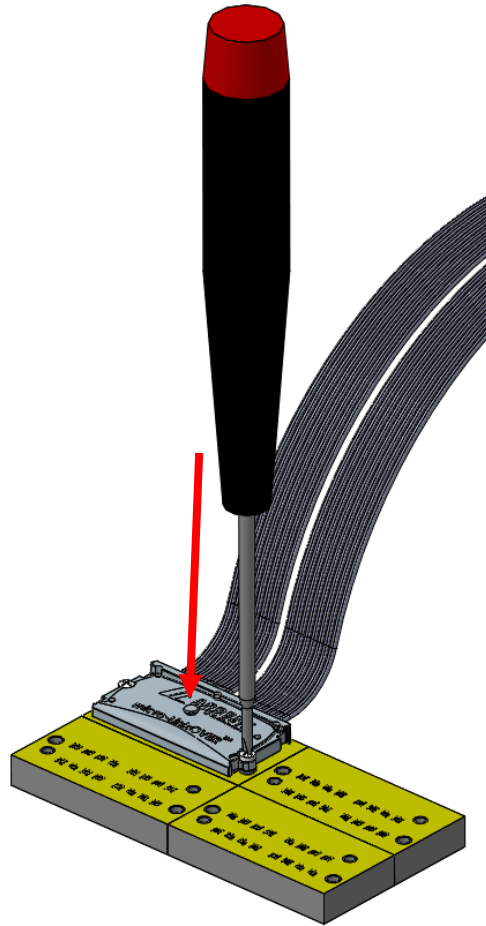


FIGURE 9: TIGHTENING THE MOUNTING SCREWS



FIGURE 10: Wiha p/n 28501 with 2mm slotted blade tip

5.3.2 INSPECTION

Visually inspect the connector after it has been assembled to the board to ensure no damage has occurred during the installation process. As shown on **Figure 11**, the bottom surface of the connector should be flush with the board.

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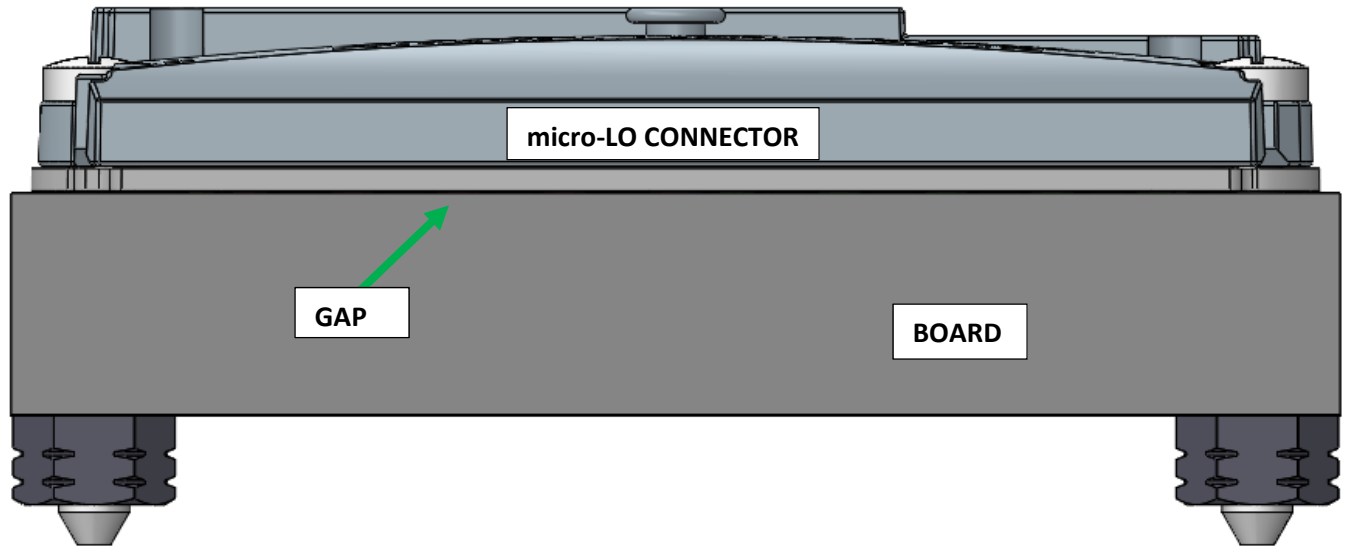


FIGURE 11: LITTLE OR NO GAP BETWEEN CONNECTOR AND BOARD.

5.4 MOUNTING PLATE ASSEMBLY

Test board applications typically use less routing layers and are therefore thinner. For those applications, a mounting plate assembly is recommended to stiffen the region of the PCB under the micro-LO connector footprint. Boards under .063" or 1.6mm in thickness will need a mounting plate. **Figure 12** below shows a typical low volume mounting plate design. Please consult the factory for more details.

CAUTION: If designing a custom stiffener, please use a minimum diameter of 2mm for the dowel clearance holes to avoid damaging the connector.

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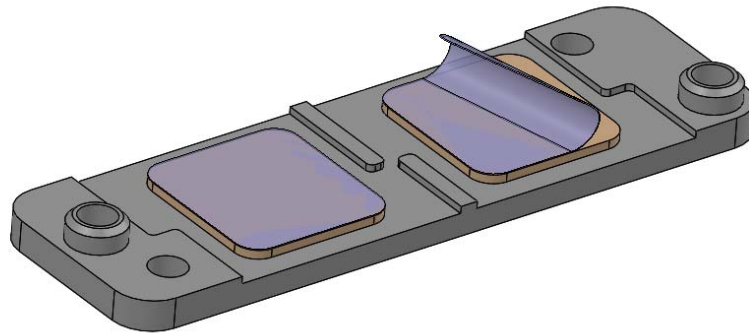
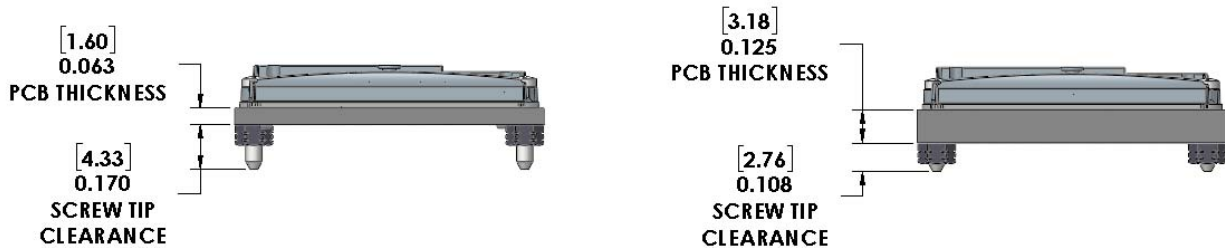


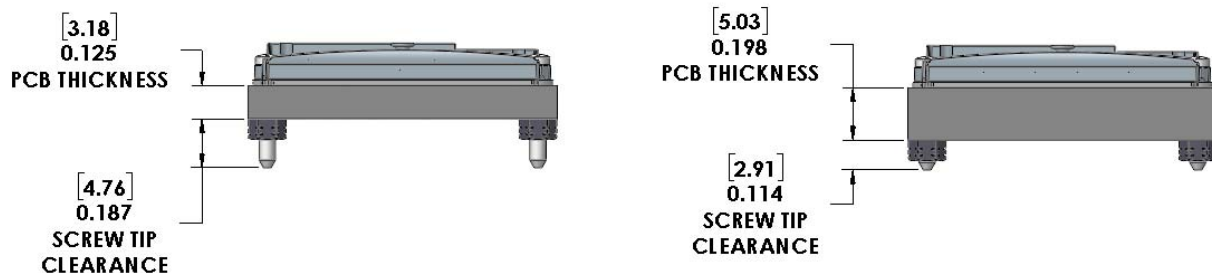
FIGURE 12: LOW VOLUME, CNC MACHINED MOUNTING PLATE ASSEMBLY. TAN PIECES ARE 3M ADHESIVE LINED FOAM. THE ASSEMBLY IS SHIPPED WITH FILM INSTALLED. TO INSTALL ON PCB, REMOVE FILM AND PRESS ASSEMBLY LIGHTLY AGAINST THE BACK OF THE micro-LO FOOTPRINT.

5.5 SCREW LENGTH INFORMATION

Figure 13 below describes the screw part number to use for a given board thickness. Please consult the factory if your board thickness is not shown in this Figure.



CAPTIVE SCREW PART NUMBER: M16CPHCS08



CAPTIVE SCREW PART NUMBER: M16CPHCS10

FIGURE 13: micro-LO CONNECTORS SHIP WITH 10mm CAPTIVE M1.6 SCREWS BY DEFAULT. THIS SCREW LENGTH IS COMPATIBLE WITH PCBs WITH THICKNESS 3.2mm TO 5mm. FOR PCBs OF THICKNESS 1.6mm TO 3.2mm, 8mm CAPTIVE M1.6 SCREWS ARE RECOMMENDED.

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6.0 REFERENCE DOCUMENTS

- Amphenol Ardent Concepts 16 Pair Screw Mount micro-LinkOVER connector drawing, *mLO-S16X2-XXX-S-01*.
- Amphenol Ardent Concepts 16 Pair Screw Mount mounting plate assembly drawing, *mLO-MPA-16X2-01*.
- Amphenol Ardent Concepts 16 Pair Screw Mount footprint drawing, *mLO-FP-S16X2-01*.

Product drawings and specifications are available by accessing the Amphenol Ardent Concepts website.

7.0 REVISION RECORD

REV	PAGES	DESCRIPTION	ECN #	DATE
4	All	Updated figures to reflect component updates, updated installation torque spec and tool information, updated connector spacing	PDM Release	2021/11/08
3	All	Added cautions about footprint dowel holes and cable slack	ECN21-XXXX	2021/03/25
2	All	Updated information about mounting plate assembly, PCB thickness ranges for mounting screws, and SMT Mount PEM nuts	ECN21-4583	2021/02/06
1	All	Preliminary Release	---	2020/12/02