



## Application Note

#101 – April 2016

### TR Multicoax Series Straight Mount Installation

**Purpose:** This application note provides detailed instructions on successfully mounting the TR Multicoax Series (20/40/70) connector to a printed circuit board.

#### BOARD PREPARATION

- Inspect the TR board mounting surface for contamination and any obvious surface obstructions, bumps, or imperfections.
- Inspect the surface for solder and solder flux contaminants, surface should be solder free.
- Use lint free cleaning cloth to wipe the board mounting surface clean of dust and contaminants.
- Apply a few drops of uncontaminated isopropyl  $\geq 70\%$  alcohol to a cleaning cloth to remove particles that are not easily removed.
- Ensure most alcohol is removed from the PCB surface by wiping the surface with a dry lint free cleaning cloth.
- After the board footprint surface has been inspected and cleaned, avoid contact with the board surface with fingers or other contaminating objects.
- CAUTION: The TR must rest evenly on the board surface to work correctly.
- NOTE: An alternative solution to remove dust is to use a filtered compressed dust can.
- CAUTION: Do not apply large bursts of air pressure to avoid static shock to circuit components.

- CAUTION: All vias must be filled and capped. There should be no solder mask within the TR footprint area.

## INSTALLING THE STIFFENER BLOCK

For boards thinner than 94 mils (2.4 mm) it is recommended to use a PCB Stiffener Block (Example Part number SB12X1-1) under the PCB to aid in PCB planarity.

- Carefully remove the shipping cover and Stiffener Block from the TR Assembly by loosening the M2 Captive Screws at the top of the Strain Relief Block until they are easy to slide out of the stiffener and PCB (See Figures 1 and 2).
- NOTE: These screws will not completely remove from the TR Assembly in normal use. If the screws are damaged and need to be replaced, see section Care and Maintenance in master application note.

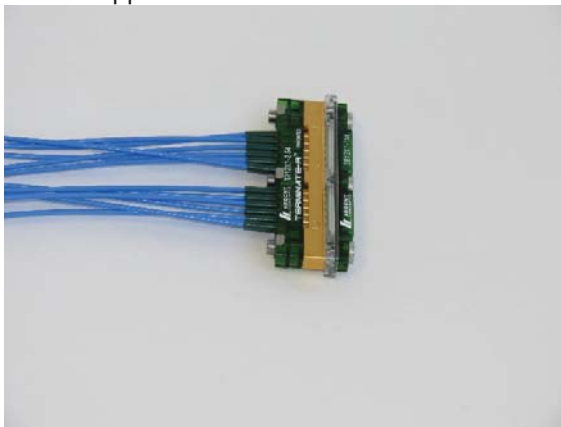


Figure 1: TR Assembly

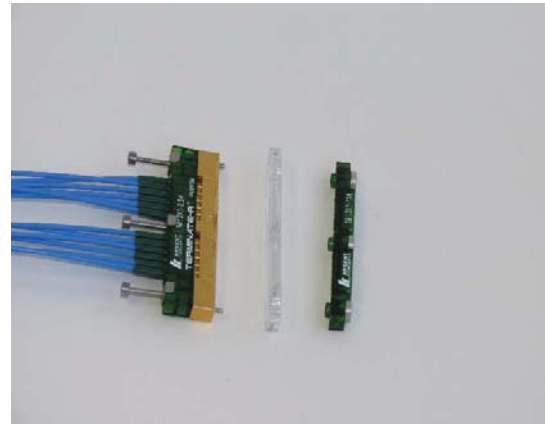


Figure 2: Protective Bottom Cover and Stiffener Block Removed from the TR Assembly

- Once all the M2 mounting screws are removed from the Stiffener Block, the protective Shipping Cover and the Stiffener Block will fall away from the assembly (See Figure 2).
- Carefully locate the TR board footprint and align the press bosses of the Stiffener Block to the back of the TR footprint on the PCB (See Figures 3 and 4).
- NOTE: The Stiffener Block is symmetrical in design so attention to left/right orientation is not required. The press bosses will hold the Stiffener Block to the PCB backside. At this point, an arbor press MAY be used if necessary to fully seat the bosses on the Stiffener Block.
- With the press bosses aligned and holding the Stiffener Block in place, carefully apply hand pressure to press the bosses into the PCB.
- NOTE: It is not necessary to fully compress the Stiffener Block to the PCB at this stage. During further installation of the the TR Assembly, the M2 Captive Screws will fully seat the stiffener before being fully torqued.

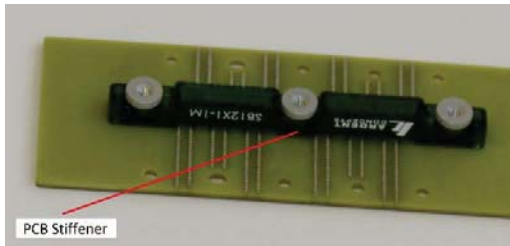


Figure 3: Mounting the Stiffener Block

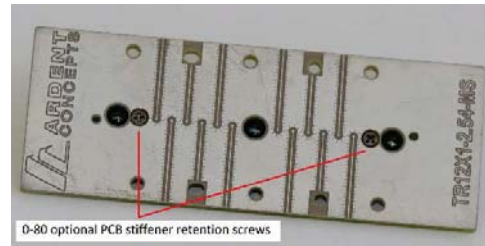


Figure 4: Mounting the Stiffener Block with Retention

- NOTE: At this stage, optional 0-80 screws may be used to secure the stiffener to the PCB. If these screws are used, it is vitally important that the screw heads be recessed or below the top metal mounting plane (See Figure 4).
- NOTE: For boards greater than 94 mils (2.4 mm) M2 pem nuts may be used in place of the Stiffener Block.
- NOTE: For Boards less than 25 mils thick (flex circuits) consult Ardent.

## MOUNTING TR MULTICOAX

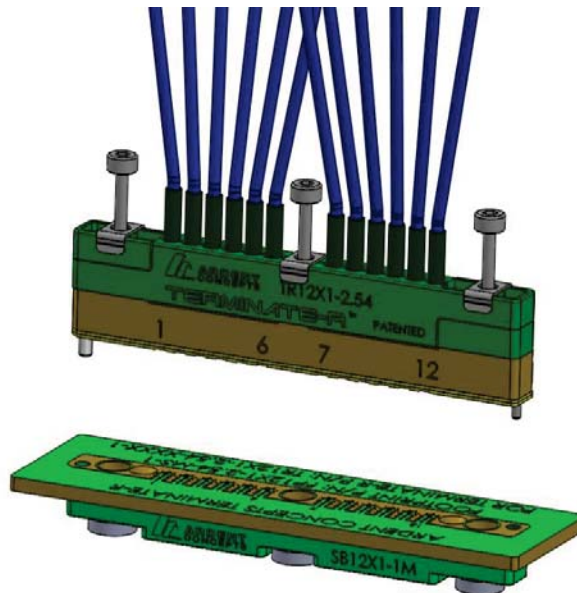


Diagram 2: Exploded CAD image of TR12X1 assembly mounting on a PCB

- Locate the alignment dowels on the bottom of the TR Assembly and reference them for alignment (See Figure 5).
- CAUTION: Avoid contact with the interface springs to prevent damage.
- Carefully align the two dowel pins with their corresponding holes being sure to align the 1.5mm dowel pin with the 1.5mm hole and the 1mm dowel slot pin with the 1mm slot hole (See Figure 6).
- NOTE: The 1.5mm dowel will always align near Channel 1.

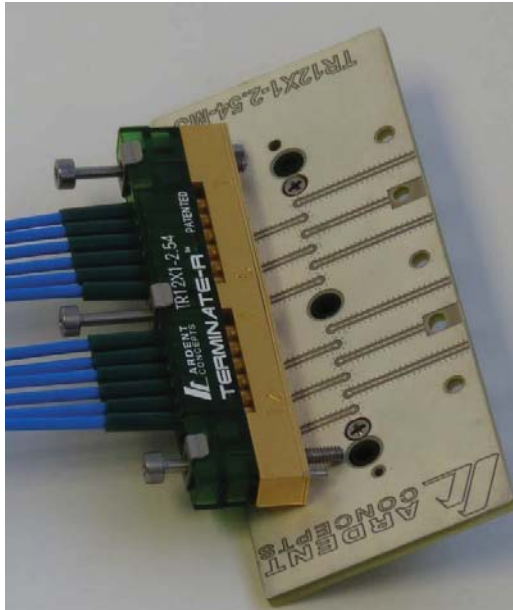


Figure 5: Aligning the TR Assembly

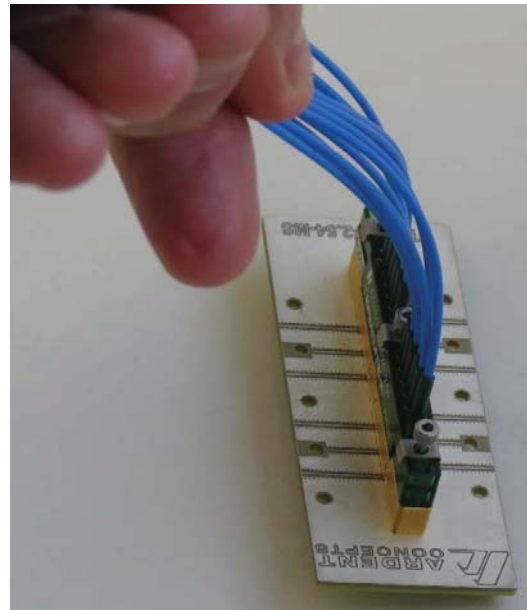


Figure 6: Holding the TR Assembly in Place

- Carefully push down on the block and hold it in place (See Figure 6).
- To ensure that the Stiffener Block is aligned with the TR Assembly, push the hex screws in and rotate to verify contact.
- If the TR assembly has 3 M2 screws as in a X12 or X24 assemblies, tighten the middle screw before tightening the side screws (See Figure 7).
- While holding the TR Assembly in place, tighten the M2 hex screws located on top of the Strain Relief Block until a torquing resistance is observed (See Figure 8).

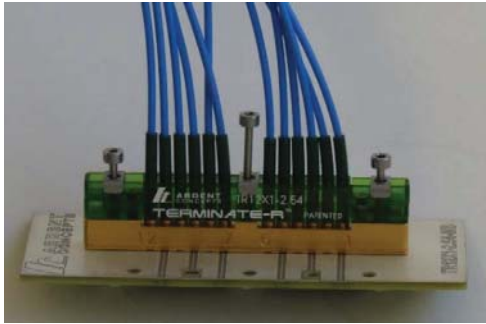


Figure 7: Verifying M2 Screw Contact

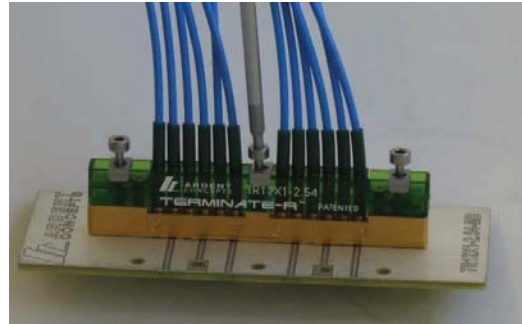


Figure 8: Tightening the Middle M2 Screw

- After all the screws have been tightened snugly into place, go back over the M2 screws with the driver to be sure they are all torqued evenly to 1.5 in-lbs (0.169Nm).
- NOTE: There will be a noticeably large resistance to turning the screws when they are fully tightened (See Figure 9).

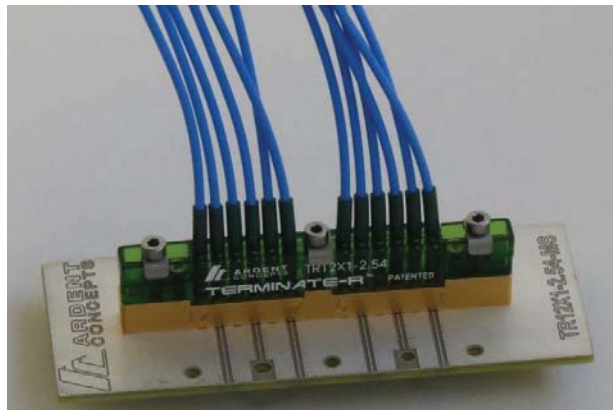


Figure 9: Mounted TR Assembly Complete

- CAUTION: Do not overtighten the M2 hex screws (maximum torque is 1.5 inch pounds).
- NOTE: The Stiffener Block is fully compressed into the board at this stage.



## APPLICATION NOTE SUMMARY

- Inspect board and ensure it is free of contaminants.
- For boards thinner than 94 mils (2.4 mm) it is recommended to use a PCB Stiffener Block.
- An arbor press MAY be used if necessary to fully seat the bosses on the Stiffener Block.
- For boards greater than 94 mils (2.4 mm) M2 pem nuts may be used in place of the Stiffener Block.
- When screwing TR series multicoax into the board, do not overtighten the M2 hex screws (maximum torque is 1.5 inch pounds).

## END OF DOCUMENT



### Who is Ardent Concepts

Ardent Concepts, Inc. is a leading designer and manufacturer of high performance multicoax, probes, connectors, sockets used in the development of next generation semiconductors and electronics systems. Our core technology is the smallest, fastest, most electrically efficient compression mount connector technology worldwide. It is used to connect: integrated circuits and printed circuit boards to instrumentation and to each other offering superior signal integrity in a high speed environment. Markets for our products include: Semiconductor, Test & Measurement, Military/Aerospace, Communications and Medical.

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