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Subject: MC224 ribbon connector 0V modification

Technical Note

1. Overview:

This document describes a modification to the MC224 version E printed circuit board that improves the 0V and +5V power distribution to the Ribbon Cable expansion bus. This arrangement may help to overcome random mal-operation effects seen on axis daughter boards installed in the P301 expansion modules and on the MC224 itself.

The P301 Axis Expander already has connections to the extra 5V and 0V pins and so completes the circuit without needing any modification.

It is recommended that this modification is made only after consultation with Trio Motion Technology. Please contact your Trio Distributor before proceeding.

This modification must not be made to any other version of the MC224 PCB. It applies to Version E ONLY.

Version F PCBs will have this modification fitted as standard.

2. Requirements:

The modification must be done on a static safe work surface. All efforts must be made to ensure the work area is static safe. E.g. wear a wrist-strap, heel strap etc.

Tools:

- Soldering Iron,
- Solder,
- Single strand insulated wire (30AWG)
- Multi-strand wire, e.g. 7 x 0.2 to 16 x 0.2
- Electronic pliers, cutters etc.
- Cross-point screw drivers.
- DVM or ohm meter.

3. Procedure:

- a) Remove the MC224 front, top panel and case.
- b) Unscrew the daughter boards, if any, and unplug them.
- c) Unscrew the serial connector panel and remove it.
- d) Unscrew the IO panel and remove it.
- e) Unplug the LED PCB.
- f) Now remove the 5 screws holding the PCB to the case and remove the circuit board.
- g) Turn the board over and identify the rear of the ribbon cable connector.

The modification can now be done as follows:

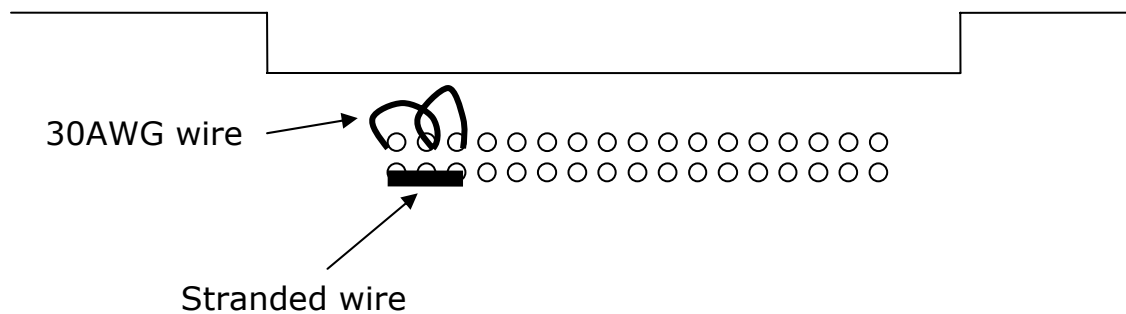


Fig. 1: Modification Detail

- a) Strip the insulation from a short length of the stranded wire.
- b) Tin the wire and solder it to the lower 3 pins at the left end of the ribbon connector. This is the 0V connection.
- c) Cut 2 short lengths of the 30AWG wire (1 to 2 cm) and strip the ends so that about 5mm of bare wire is exposed.
- d) Make a small loop in each bared wire end with fine-nosed pliers.
- e) Solder the wires to the top 3 left hand pins of the connector as shown.

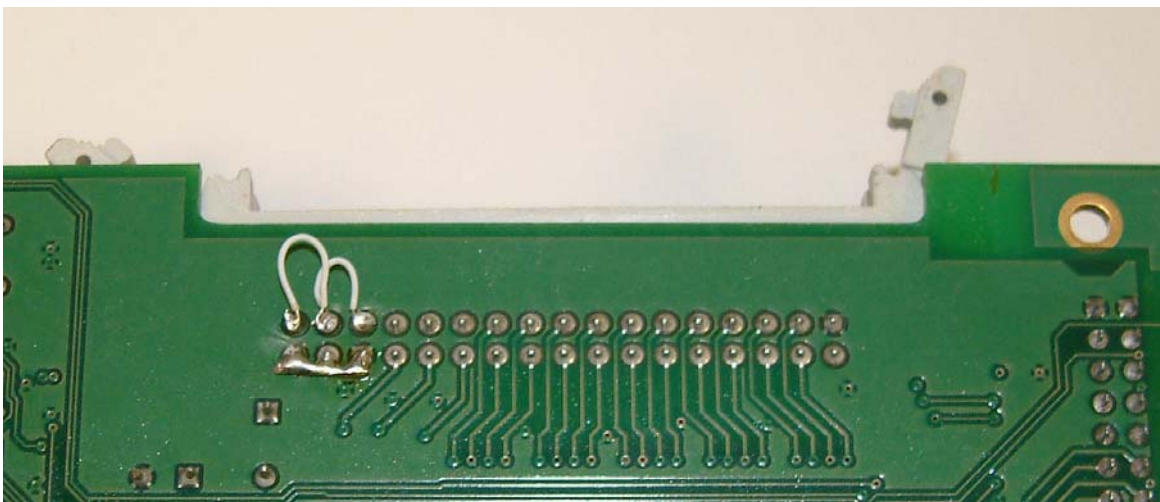


Fig. 2: Completed Mod.

4. Re-assembly:

Before re-assembling the pcb into the MC224 case, use a DVM or ohm meter to check that the 3 upper pins, joined with the 30AWG wire, are not shorted to the 0V plane. Put one meter probe on each of the top 3 pins in turn, with the other probe on the lower 3 pins. There should not be a low resistance (short circuit) shown on the meter.

Re-assembly is the reverse of dismantling. Ensure that all screws are tight but do not over-tighten the screws holding the PCB to the case.

After re-assembly power up the MC224 and run a simple functional test by connecting Motion Perfect.

Re-fit the MC224 to the machine and run a full test of all machine functions.