

Cambridge Electronic Design Limited

Fitting instructions for CED 1401*plus* analogue buffer card

Introduction

The CED 2703 16-channel analogue input buffer is a retro-fit card designed to prevent multiplexer switching noise propagating backward out of the analogue input sockets. Such noise is inherent to CMOS analogue switches and unavoidable. The buffer is a long, narrow card that fits into the space between the main card-frames and the front panel.

What you will need

It is essential to take precautions against electrostatic discharge. Before handling the buffer card or opening your 1401*plus* you should earth yourself to the 1401*plus*, preferably with a wrist strap also connected to mains earth. You will need:

- The CED 2703 buffer card, the fixing bolts and washers (four sets) and the short length of 40-way ribbon cable.
- An earth-strap
- A small (1-pt) cross-head screwdriver

Preparing the 1401*plus*

Before starting work, ensure that you are properly earthed, as above. Switch off the 1401*plus* and remove all cables connected to it.

1. Place the 1401*plus* on a bench with the rear facing you.
2. Undo the three black bolts that retain the lid, and remove it by pulling it backward and upward.
3. The interior of the 1401*plus* is now open to view. The top card - the analogue card - must now be removed. Turn the 1401*plus* around so the front is facing you.
4. First undo the five cables connected to the analogue card. These are:
 - The 40-way analogue I/O cable
 - The 26-way events cable
 - The 60-way inter-board cable.

Release these three cables by pulling the locking ears outward.

- The 5-way 0.2" power cable
- The 3-way 0.1" power LED cable.

Slide the sockets off their pin-headers. Grasp the socket bodies rather than the wires.

5. Unlock the analogue card by pushing the entire card-frame about 10mm to the right. The card-frame can now be swung upward into the vertical position.
6. Identify the card-frame hinge: an aluminium rod with a thicker sleeve at one end. The hinge is spring-loaded.
7. Compressing the hinge fully allows the analogue card-frame to be lifted from the chassis. This may take a little effort. Set the card-frame carefully aside.

Installing the CED 2703

The CED 2703 is supported on five tapped pillars. Four of these are secured by bolts that pass through the ventilating slots at the front of the chassis base. The fifth just rests on the chassis floor.

1. Unplug the 4-way 0.2" power socket and the 3-way 0.1" test LED socket from the bottom card - the digital card.
 2. Pull the various loose cables up and out of the way. These include the 40-way and 26-way ribbon cables, the two LED cables and the two power cables.
 3. Tuck the 37-way interface cable out of the way by taking up the slack at the rear by the power supply enclosure.
 4. Tuck the 50-way digital I/O cable as far as it will go beneath the digital card-frame. Do not strain it.
 5. The CED 2703 is supplied with the bolts and wide washers screwed into the pillars. Undo them now.
 6. Orient the card: the flying cable-lead is to the right as you face the front of the 1401*plus*.
-

7. Offer the CED 2703. The two pillars near the middle of the card line up with the sixth slot from the left, which leaves a gap of about 20mm between the left edge of the card and the frame-mounting cheeks.
8. Tilt up the front of the 1401*plus* and screw the four bolts and washers into the pillars. You may need to nudge the card a little before the holes line up.

Connecting-up the CED 2703

1. Push the 40-way cable from the front-panel analogue I/O onto the right-hand header on the CED 2703. The header is clearly labelled FROM 1401 FRONT PANEL. The cable has polarising clips and will only fit one way.
2. Connect the power cable that previously went to the analogue card to the 5-way 0.2" plug on the CED 2703. This socket also is polarised.
3. Reconnect the power cable and test LED cable to the digital card. Both these are symmetrical and can go either way round.
4. Connect the short length of 40-way ribbon cable to the CED 2703's left-hand header if it is not already there. The header is clearly labelled TO 1401-4 ANALOGUE I/O. The cable has polarising clips and will only fit one way.

Replacing the analogue card-frame

1. Make sure the various cables are out of the way of where the analogue card-frame's hinge is going to go.
2. Compress the hinge fully and ease the frame between the frame-mounting cheeks. Line the hinge up with its holes. The hinge will pop home with two loud clicks.
3. Ensure the card-frame is horizontal and fully over to the left. The short length of 40-way cable should now line up with the 40-way header on the analogue card.
4. Push the 40-way, the 26-way, and the 60-way ribbon cables into their corresponding headers. All the cables are polarised and will only go in one way.
5. Plug the 5-way 0.2" power cable and the 3-way 0.1" power LED cable back in. These also are polarised.

The CED 2703 16-channel analogue buffer card is now installed. Before the cover is replaced, the 1401*plus* should be powered up to ensure that it passes its self-test.

Power-up test

Before closing the 1401*plus*, reconnect the lead from the power supply and power it up briefly, to make sure that it passes its power-up self test: the red "TEST" light should come on for a few seconds then turn off. If it flashes continuously, the self-test has failed; switch the 1401*plus* off and check that the CED 2703 is installed properly. In particular, make sure that all the cables are fully inserted. If it still does not pass the test, contact the CED hardware help desk on (+44) 1223 420186.

Closing the 1401plus

Close the 1401*plus* by reversing the opening procedure detailed above.