



## LA100 Application Note 20: UPG – LA100 User Upgrade Kit

### Contents:

- 1 x BKLUCD upgrade kit
- 1 x 5th edition manual and supplement registration card

### Introduction

In order to be able to use the latest LA100 software it is necessary to (return the LA100 bottom boards for Recalibration and to) perform some modifications to the top boards of the LA101 and LA102 so that larger (32Kb) EPROMs can be used.

Only units with serial numbers in the range 0100 to 0400 (issue 3 top boards) can be upgraded in this way. Units with serial number below 0100 must be returned to the factory to have replacement boards fitted (order UPG1), while units with serial number over 0400 do not need any modification because they can already access the larger EPROMs.

The new EPROMs for your LA100 have a serial number 1000 greater than the original serial number of the unit. This is deliberate as it allows upgraded units to be easily recognized and also simplifies our computer storage of unit information. Note that each EPROM contains error correction data unique to your unit, extracted from our computer files. EPROMs are NOT interchangeable and should only be used in the unit for which they have been programmed, so check that the serial numbers agree in the last three digits.

**Please return old EPROMs to the below address to ensure future software updates.**

The BKLUCD (backlit LCD package) is self contained and can either be fitted after the modifications described in this leaflet have been completed, or together with the modifications described here. We recommend that you read both this sheet and the one accompanying the BKLUCD before starting any work.

### Procedure

The following description describes modification of an LA102. The procedure for the LA101 is the same.

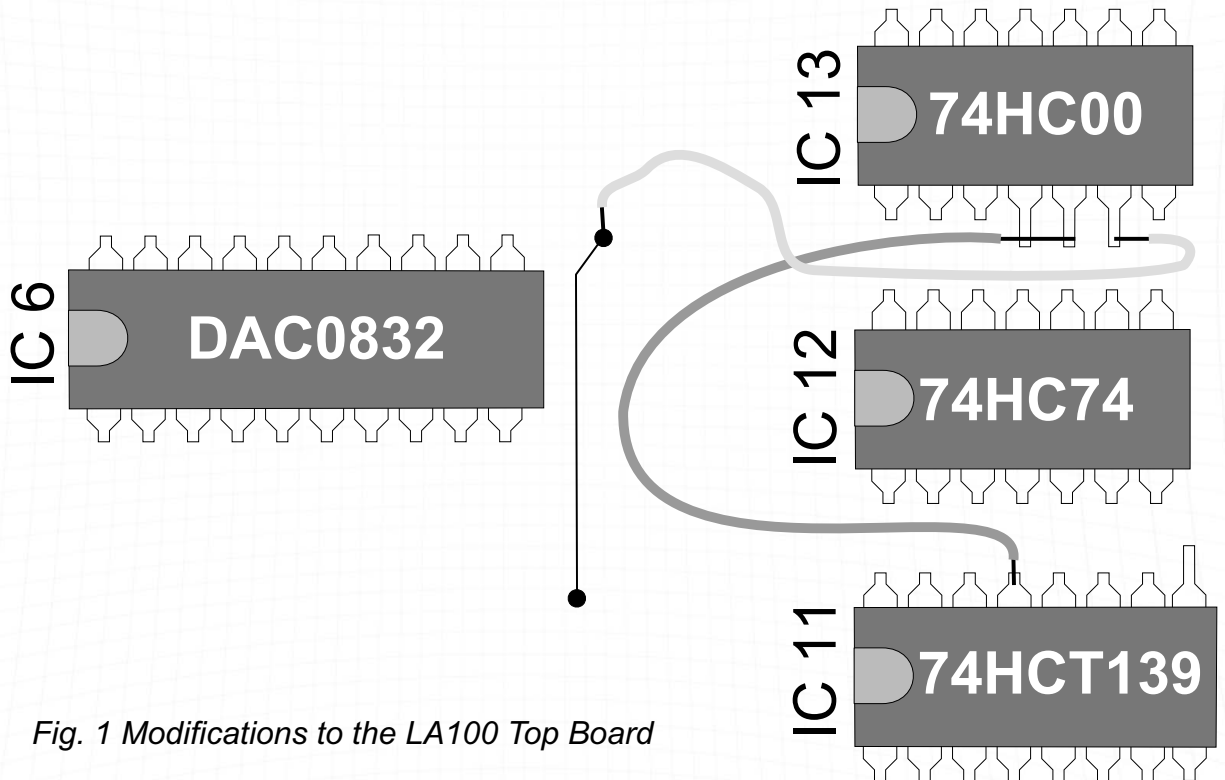
**TAKE STATIC PRECAUTIONS**, the Integrated Circuits (ICs) are CMOS devices. We recommend sitting down with the units and EPROMs in their protective tube to minimise further static generation, touching an earthed metal object, and then proceeding. This is normally adequate in our experience.

Disconnect the LA102 from the mains and ensure that it is turned off. Remove the rack mount angles where fitted. Remove the top cover.

The simplest way to modify the board is to bend IC pins free from sockets and solder leads directly to them and this can be performed without removing the board from the unit. This method is described first. However, a neater but more difficult way involves cutting IC tracks, one of which is beneath an IC socket, so the socket must be unsoldered and removed completely. This method is described later.

### Quick method

1. Remove IC11 (74HCT139) from its socket. Bend pin 9 out through 90° and replace the IC its socket ensuring that pin 9 does not make contact with the socket. Strip the ends from a short (~5cm) piece of insulated wire and solder one end to the TOP of pin 13 of this IC (note that pin 13 is NOT bent out, and still connects with the socket). See Fig. 1 below.
2. Remove IC13 (74HC00), gently bend pins 4, 5 and 6 out through 90° and replace it. Form a loop from the end of the wire connected to IC11 pin 9, and solder it to pins 4 and 5 of IC13.
3. Strip the ends from another short (~3cm) piece of insulated wire, form a loop at one end and solder it to pin 6 of IC13 (74HC00). Ensure that it is clear of pin 5 and bend pin 6 away slightly if necessary.



*Fig. 1 Modifications to the LA100 Top Board*

4. With the board orientated so that the blue mains transformer is at the top right, locate IC6 (DAC0832 in the LA102, generally an empty IC socket in the LA101), and to the right of the top row of pins you should see an isolated narrow vertical track 19mm long connecting two “plated through holes”. Solder the wire from pin 6 of IC13 to this track at the top hole (to the left and slightly below R1). The board should now look like fig. 1.

Proceed to the TESTING section, and then repeat the entire operation for the LA101.

**Slower but neater method.**

1. Carefully unplug the various connections to the top board and remove the self tapping screws fixing the board at its edges. Carefully move the board to one side so that you can remove the 2 bolts holding the IEC mains socket to the chassis, and also remove the bolt holding the earth tag. The top board (together with the IEC mains socket) may now be lifted free from the unit.
2. Remove IC13 (74HC00) and remove the socket by unsoldering each pin in turn using a soldering iron and a desoldering gun (or 'solder sucker'). Cut the track to pins 4 and 5, but ensure that the track between pins 4 and 5 remains. Solder the socket back into place.
3. Strip the ends of a piece of short (~5cm) insulated wire and solder it between IC13 (74HC00) pin 4 and IC11 (74HCT139) pin 13 on the underside of the board.
4. Cut (or drill) the track to IC11 pin 9 on the underside of the board.
5. With the board orientated so that the blue mains transformer is at the top right, locate IC6 (DAC0832 in the LA102, generally an empty IC socket in the LA101), and to the right of the top row of pins you should see an isolated narrow vertical track 19mm long connecting two "plated through holes". Solder a wire from the top via hole (underneath the board) to pin 6 of IC13. Replace IC13 (74HC00).
6. At this point, before refitting the top board to the chassis, you may wish to carry out the modifications described in the BKLU instructions.
7. Bolt the IEC mains socket and earth tag back in place taking care to ensure that the socket is not upside down. Remember all of the "shake-proof" washers - two on the earth tag, one on each of the other bolts. Reconnect the three ribbon cables supporting the edge of the board from below so as not to bend it unnecessarily, and screw the board to the chassis.

Proceed to the TESTING section, and then repeat the entire operation for the LA101.

**Testing**

Connect the mains supply, turn the unit on and verify that it still works. If it doesn't work, go back and check your work carefully.

Disconnect from the mains again, and reconnect the battery. Carefully prise out the old EPROM (IC2) a bit at a time using a small screwdriver under each end in turn. This is important on early units as the socket contacts have been known to "bite in" and unfold.

Later units have turned-pin sockets. All EPROMS are unique, containing error correction data from our computer files (units below s/n 400 are required to be recalibrated in order to have serial number change and software update), so check that the serial numbers are 1000 greater than those on the old EPROMs. Insert the new EPROMS carefully with the notch on the left (viewed from the front) and switch on. The unit should display "MEMORY CLEARED" briefly the first time it is turned on and should then display the new serial number and version number briefly. If you have also fitted the new backlit LCD, the contrast control on the top board may require adjustment. If the display operates normally, link XLR sockets and carry out the selftest (Sequence 6). Non-volatile memory will be completely reset by the new software, so configuration options, sequence definitions and other user settings must be re-entered.

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