

ComboLok 1.6 Retrofit Instructions

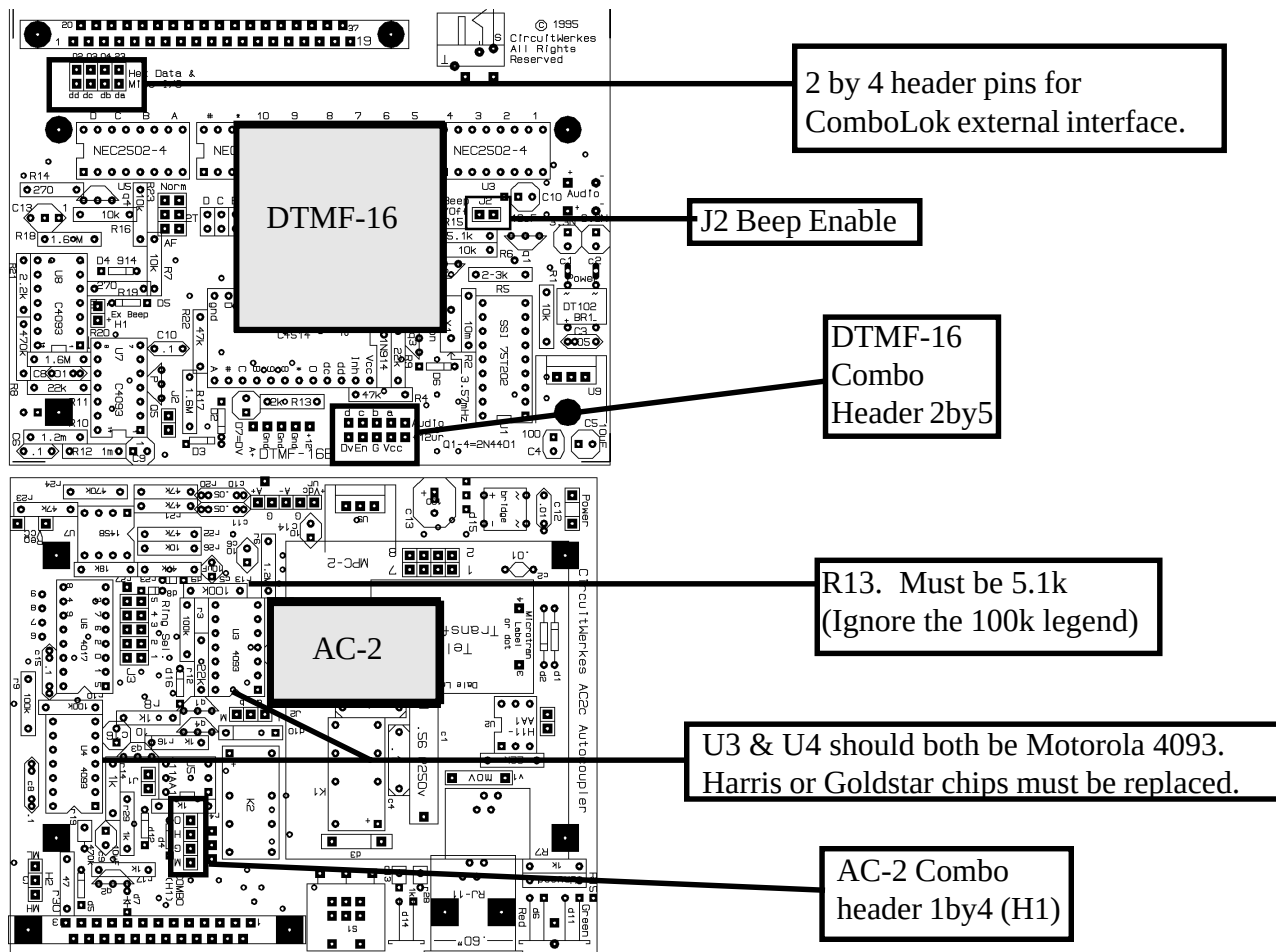
Before attempting to install the ComboLok option please read the instructions and familiarize with the installation procedure.

Before working on the AD-16, be certain that the unit is not powered. Please note that the ComboLok board, the AC-2 board, and the DTMF-16 board ALL use CMOS chips that are static sensitive. Take CMOS handling precautions when working on the disassembled unit. It is also possible that you will have to replace a resistor with one of a different value on your AC-2 coupler board. In that case you will need to be able to carefully remove and replace the resistor. CircuitWerkes will not warrant damage to the circuit board caused by improper removal/replacement procedures. If you are not familiar with CMOS handling precautions or are not skilled in component removal and installation on double sided circuit boards, you should not perform this retrofit. CircuitWerkes will factory-upgrade your unit free of charge (except for shipping and the cost of the upgrade-board) at your request.

- 1) Inventory the parts kit.
It should include:

1	ComboLok printed circuit board
1	three conductor ribbon cable with 1by3 connectors on each end
1	instructions and manual addendum pages
- 2) Remove the six screws that hold the case together. Don't lose them.
- 3) Refer to the layout diagram on the next page and locate the DTMF-16 board and the AC-2 board on the enclosure's bottom half. The ComboLok will be mounted to the top of the DTMF-16 board and connected by several sets of pins from the DTMF-16. Take this time to locate the 2by5 and 2 by 4 header pins and J2, the beep enable jumper, on the DTMF board. You will also need to locate the 1by4 header pins on the AC-2 board labeled COMBO (H1). These are the connection points for your ComboLok. If there is a jumper on any of the pins, remove them and set them aside for now.
- 4) Locate resistor R13 on the AC-2 board. It should be located directly behind U3 a Motorola MC14093. If R13 is a 5.1k, you're in good shape. If it is a 10k, it will have to be removed and replaced with a 5.1k. Alternately, you could solder a second 10k resistor in parallel to the leads of the existing 10k without removing the circuit board from the case. Also, both of the 14 pin chips on the AC-2 MUST be Motorola or Signetics brand to work with the ComboLok. If you have another type of 4093 in either socket and cannot get Motorola or Signetics parts, you will need to obtain the replacement ICs from us.
- 5) Carefully place the ComboLok on the DTMF decoder making sure that the mating connectors CN1, CN3 and CN4 are connected to their corresponding pins on the DTMF Decoder. Pay special attention to the connection between CN4 and The DTMF-16's J2. It is easy to misalign these two. If you don't get them on straight, the beep won't work. After mating the two boards, verify that CN1 is resting squarely on the DTMF-16's 2 by 5 pins. The DTMF acknowledge beep will be "on" by jumpering the ComboLok's J1.
- 6) Connect the three-conductor cable between the AC-2 and the ComboLok board. There is a four conductor set of pins on the ComboLok marked H2. The corresponding assembly on the AC-2 is marked H1. Polarity is critical. Each of the connectors is labelled with the key OHGB. You will be connecting OHG together on both boards. B is left unconnected. If you accidentally reverse this connection, the online LED of the AC-2 will light constantly but no damage will occur, however, the ComboLok will not operate as long as the cable is reversed.
- 7) If you wish to change the combination from the pre-set one, follow the enclosed instructions. Whether you decide to change the combination or leave it the same, we recommend that you test the assembly before putting the enclosure back together. A simple test procedure is on the second page of this retrofit guide.
- 8) Getting the two halves back together can be the toughest part of the installation. Be careful not to pinch any wires between the enclosure halves as you put the unit back together. Also, make sure that the two end pannels are securely held in the mating channel of the top half of the case as you reassemble the two halves. Once the case halves are assembled, but before screwing it all together, hold the two halves firmly together and gently but firmly push on the top edges of each front pannel to be sure that they are seated and that they do not push in. Now where are those case screws???

The insides of the AD-16



Bottom Half of AD-16 Enclosure

The Combolok board will be mounted to the DTMF-16 board via the header connector pins on the DTMF-16.

Testing the Unit before re-assembly:

- 1) Connect power to the unit (all boards are powered by the plug-in transformer supplied with your AD-16).
- 2) Connect a phone line to the unit, preferably one that seldom used for incoming calls.
- 3) On another phone line, dial up the unit's test line. It should answer after the number of ring that the counter on the AC-2 has been jumpered for.
- 4) Don't do anything...the AD-16 should hang up on you within ten seconds. If you enter digits other than the proper access codes, no outputs should occur from the DTMF-16. This verifies that the wiring was properly connected between the boards.
- 5) Call it again. This time enter the combination for your ComboLok after the coupler answers the line. The unit should not hang up. After entering the codes, DTMF outputs should work normally.
- 6) This completes the test procedure...If you had problems feel free to call us for customer support. Our phone number is (352) 335-6555 or fax us at (352) 331-6999.