

Upgrading a Delegate Unit for use with the CH-103/CT-10

This manual describes the procedure for updating a *Close Talk Conference System* Delegate Unit to make it compatible with the *CH-103 Charger Holder* and *CT-10 Charger Trolley*.

Even though the upgrade is a fairly straightforward operation, it should **ONLY BE DONE BY A QUALIFIED TECHNICIAN!**

Warning!

Handling electronic products *requires* anti-static preparations and tools. Electronic components are very sensitive to electro-static discharge and Close Talk Marketing reserves the right to deny any warranty claims if it is apparent that the fault is due to substandard upgrade attempts.

The following tools are required:

- A metric Allen/Hexkey, size 3mm
- Cross screw drivers
- Wire cutter
- Small flat nose screwdriver
- Tweezers
- Soldering iron
- Solder
- Deburring tool
- Ohm-meter



Fig. 1: Upgrade toolkit

If several Delegate Unit's are to be upgraded, a screwdriver power tool will be advantageous. The deburring tool is only needed for newer unit's that have a metallized case interior (see section 6).

The upgrade kit consists of:

- One red, short cable for positive pole
- One black, long cable for negative pole
- Two M4x16mm cross pattern screws
- Two brass spacers
- Two non-corrosive battery cover replacement HexKey screws



Fig. 2: Delegate Unit upgrade kit

Procedure:

1: Verifying the need for an upgrade

Turn the delegate unit upside-down and see if the label shown in the image to the right is attached to the unit. If so, check if the battery cover screws are regular zinc treated cross pattern screws. If they are, the only required modification is to change the two screws to the non-corrosive HexKey screws. If the label and HexScrews are found, the unit does not need the upgrade.



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2: Removing the battery

Use a suitable cross screwdriver to remove the battery cover screws.



Fig. 3: Battery cover screws



Fig. 4: Battery cover open



Fig. 5: Battery removed

Remove the battery cover. The battery is now exposed. Carefully unplug the two battery connections by pulling the connector, *not* the wire. Lift out the battery and store it safely. Be cautious not to short-circuit the battery.

Warning!

All through the upgrade, the microphone must be protected from excessive bending or it will be damaged!

3: Opening the case

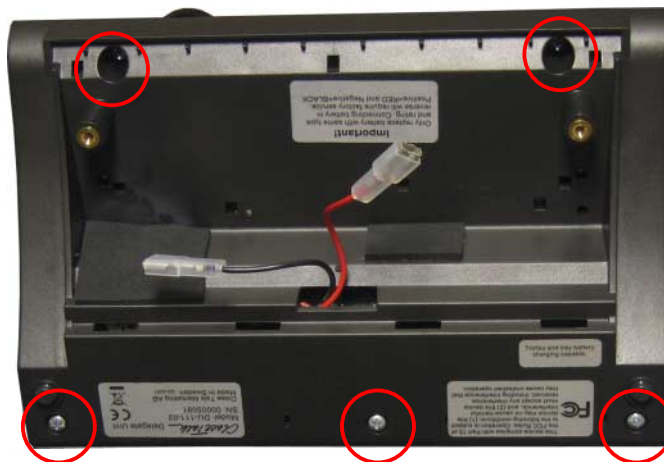


Fig. 6: Top and bottom cover fastening screws

Use a suitable cross screwdriver to remove the five screws holding the top and bottom of the case together.

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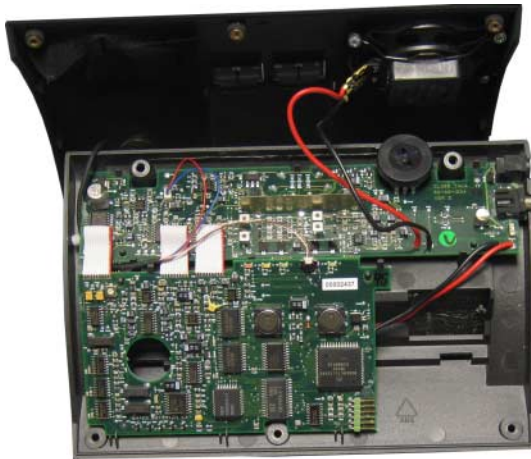


Fig. 7: Non-metallized case interior with two connector microphone

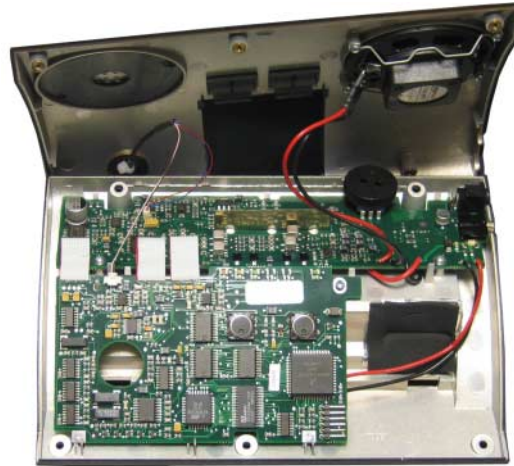


Fig. 8: Metallized case interior with two-connector microphone

Carefully separate the case top and bottom, be very attentive to stuck cables.

Depending on the type of microphone used, it may have one or two connectors inserted on the PC-board. Also note if the case interior is metallized or not, a metallized interior will have a distinct silver shine whilst a non-metallized case is matt grey.

Disconnect the microphone and speaker cables while being very careful not to damage the cables. Only pull by the connector housing, *not* the wires.

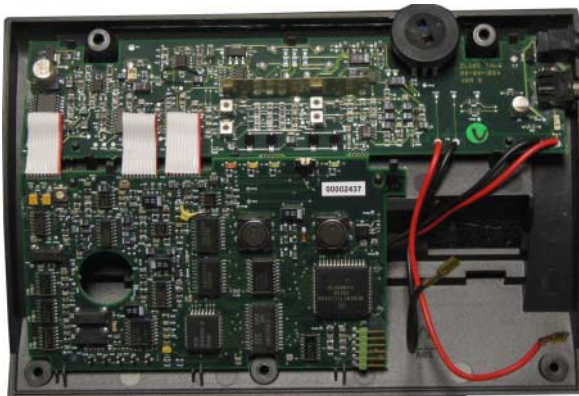


Fig. 9: Non-metallized case with Ver. D board. Microphone and speaker disconnected, top removed

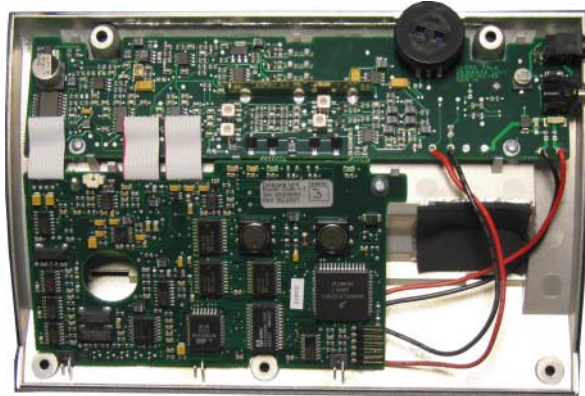


Fig. 10: Metallized case with Ver. H board. Microphone and speaker disconnected, top removed

4: Determining the PC-board version

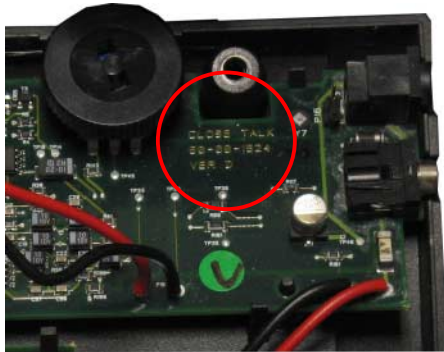


Fig. 11: Board version

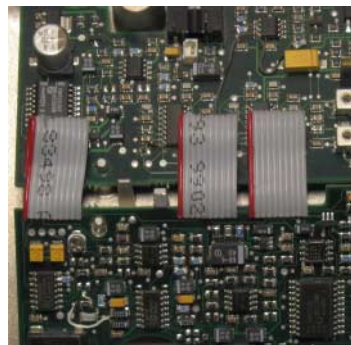


Fig. 12: Board interconnection cable type on Ver. C

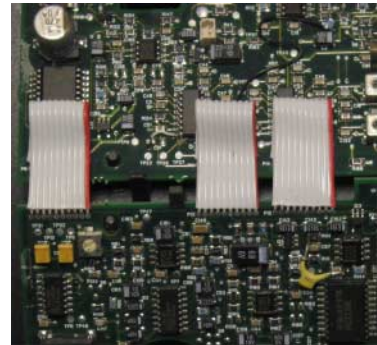


Fig. 13: Board interconnection cable type on Ver. D and later

At this manual's writing there were six board versions on the market, versions **C** to **H**. Where the two upgrade kit cables are soldered depends on the board version, figure 11 shows where to find the version letter.

The board interconnection cable type is also important, on Ver. C boards there may be a multi-stranded, more flexible cable (figure 12) whereas on Ver. D and later, a single-stranded, more rigid cable is used (figure 13). The flexible cable found on some Ver. C boards is very sensitive to bending! Pay extra attention not to break the connections during the upgrade.

4: Soldering the upgrade kit cables

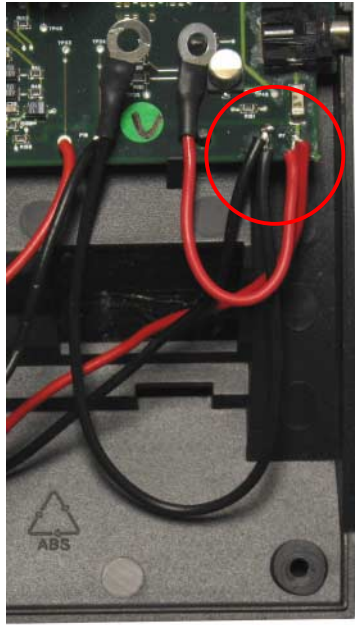


Fig. 14: Ver. C to E Board

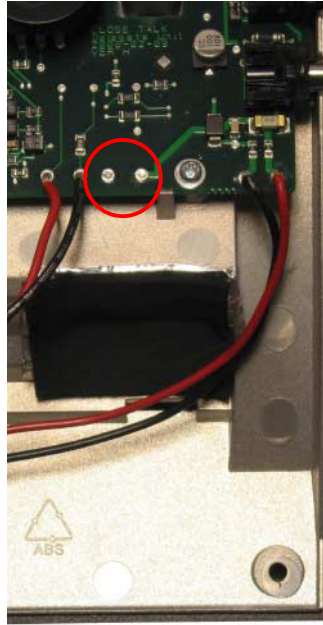


Fig. 15: Ver. F and later

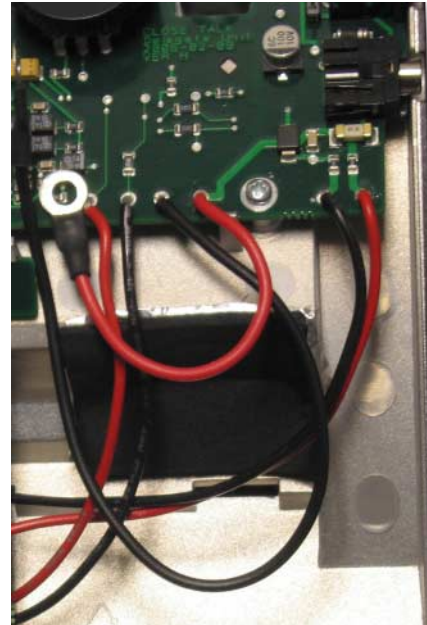


Fig. 16: Ver. F and later, cables soldered

Board versions C to E do not have soldering terminals for the charger cables, they are soldered directly to the battery cable terminals as Fig. 14 shows where red cable solders to red and black to black cable colour. Beginning with board Ver. F, there are two terminals on the board as figure 15 shows. Solder the two cables as figure 16 shows, paying attention to the cable colours.

5: Accessing the cable fixing points

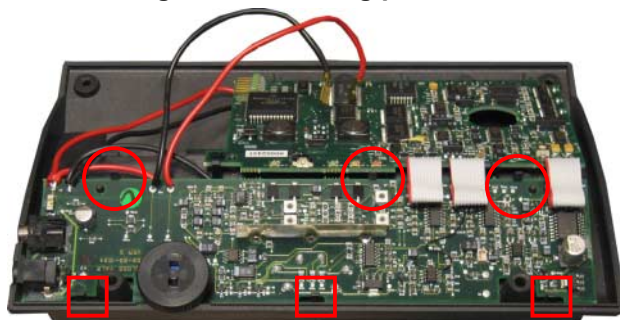


Fig. 17: Non-metallized case, board fixing points

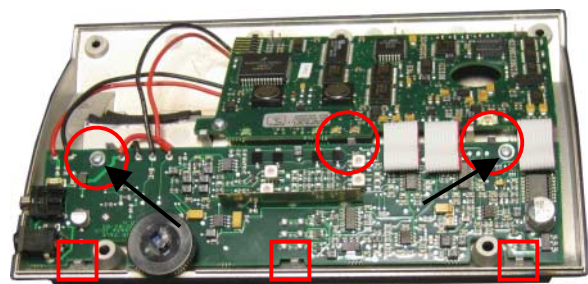


Fig. 18: Metallized case, board fixing points

The cable fixing points are under the narrow, top PC-board which is fixed by the plastic case hooks as Fig. 17 and 18 shows. On non-metallized cases, carefully lift the outer edge of the board, lock by lock by slightly bending each lock marked by a square in figure 17 outwards until the board edge can be lifted out of the lock. Continue with the other two locks using the circled locks as a hinge and flip the board vertical. If the board has the extra flexible interconnection cables as discussed in section 4, be extra careful not to bend the cables excessively!

With the metallized case, the board is also secured with two screws as shown with arrows in figure 18, remove them first and then proceed as described for the non-metallized case to lift the board.

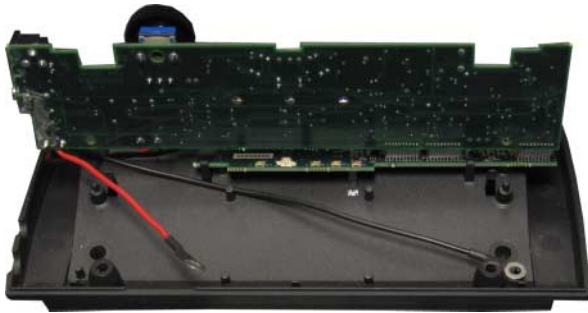


Fig. 19: Non-metallized case, board lifted and cables inserted

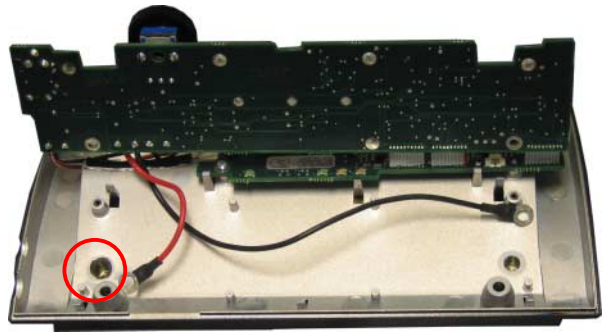


Fig. 20: Metallized case, board lifted and cables inserted

6: Securing the cable ends

If the case is metallized, one extra step is needed before securing the cable ends. Since the case is metallized and connected to unit ground, the red, positive pole cable must not come in contact with the case. Use the deburring tool to remove 1-2mm of metallization around the opening of the left thread well shown circled in figure 20. Be sure to remove any plastic and metallization debris before proceeding.

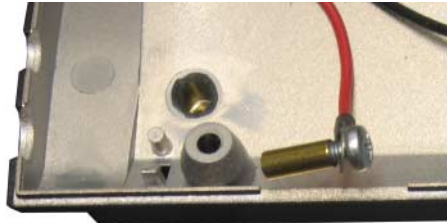
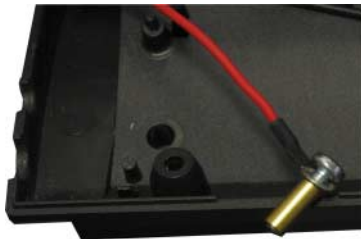


Fig. 21: Cable ends with M4x16mm screw and brass spacer

The cable ends are secured in the battery cover thread wells using the M4x16mm screws and brass spacers as shown in figure 21. Start with the red positive pole cable and secure it firmly. In case of a metallized interior, check with the Ohm-meter between the screw and metal surface that there is no short to ground and then secure the black negative pole cable.

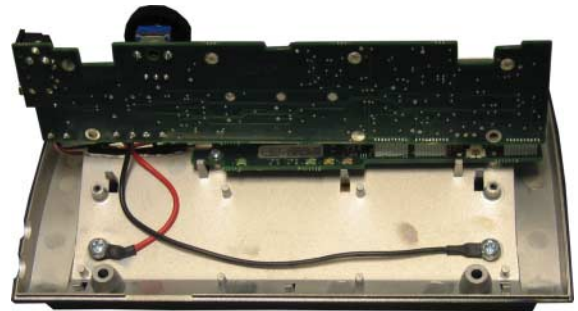


Fig. 22: Both cable ends have been secured

After securing the cable ends, arrange them neatly so they will not interfere with the return of the PC-board.

7: Return the lifted PC-board section

Use the procedure in stage 5 in reverse to return the board to its fixed position. In case of a metallized case, do not forget to return the two board fixing screws.



Fig. 23: Top board re-seated, screws returned on metallized case, both cables ready

Check for any damages to cables, case or board before proceeding.

8: Connecting the microphone and speaker

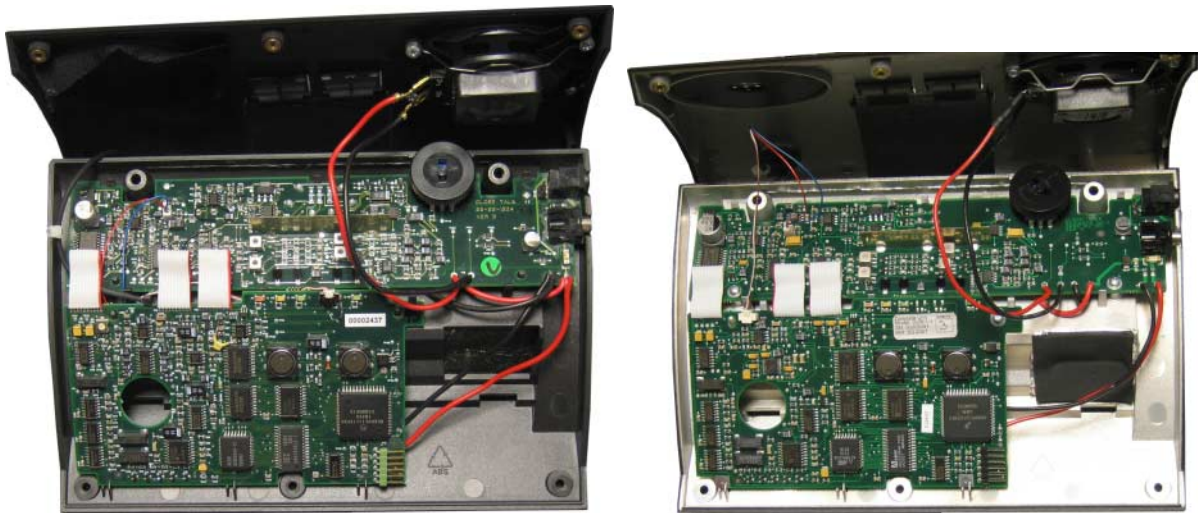


Fig. 24: Case top with re-connected microphone and speaker

Return the case top part and re-connect the microphone and speaker. For microphones with two connectors, make sure the connectors are inserted in the correct PC-board connector.

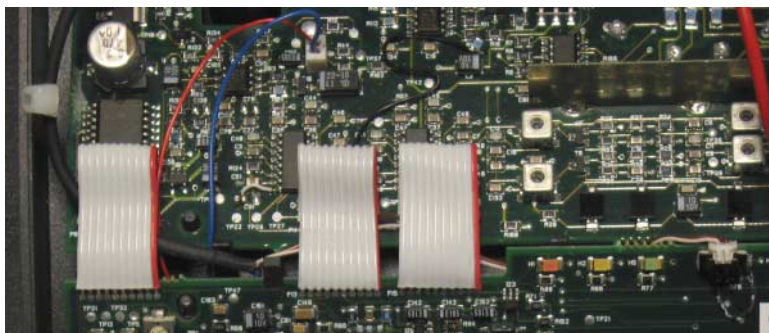


Fig. 25: Ver. C and D boards requires some cable arrangement

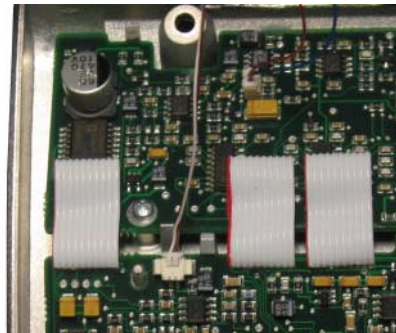


Fig. 26: Ver.E and later

Especially on Ver. C and D boards, arrange the microphone cables so they will not interfere with the unit buttons or become visible in the units plastic IR signal window.

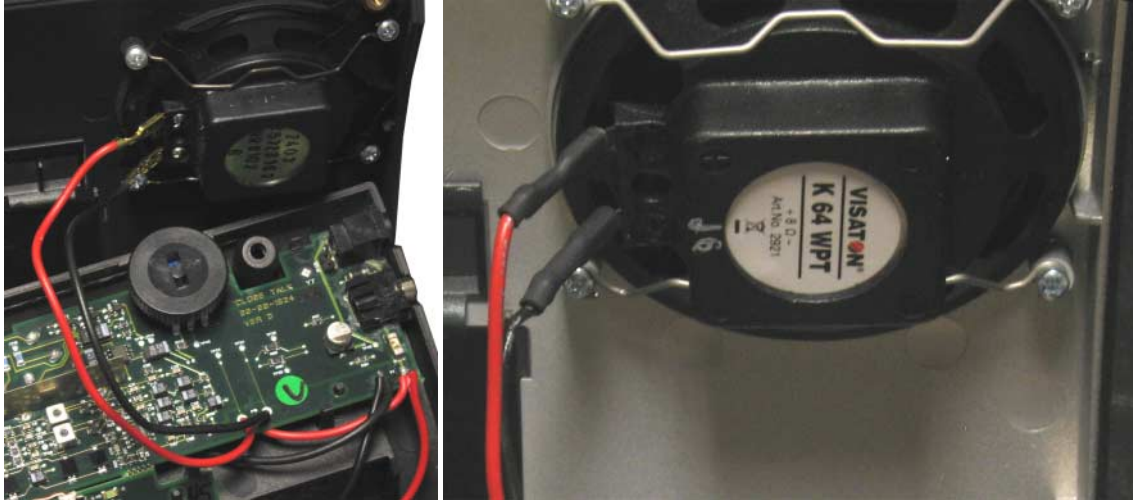


Fig. 27: Speaker polarization

Make sure the speaker polarization is correct.

9: Returning the case top part

When returning the case top, the microphone and speaker cables need some arrangement. Make sure that the microphone cables do not interfere with the unit buttons and that they do not show in the unit's IR window. Arrange the speaker cables so they go under the tilted PC-board as figures 28 and 29 shows.



Fig. 28 and 29: Speaker cable arrangement, cable goes under the PC-board

When the two case parts fit without excessive force, return the five case screws shown in figure 6. Check that all case joints have connected, that no cables have become stuck between the top and bottom part, that the IR window has not gotten loose and that the unit buttons operate normally.

10: Returning the battery



Fig. 30 and 31: Connected battery with correct case position

Connect the battery *making sure* to use the correct polarization, reversing the battery will result in a blown internal fuse and will require servicing. Place the battery in the compartment as shown in figure 31 and return the battery cover. Secure the battery cover firmly using the new, non-corrosive HexKey screws.



Fig. 32: Battery cover returned

11: Testing

When the unit is re-assembled, test it for normal operation including microphone audio, microphone LED lamp and speaker sound. Then test the upgrade by placing the unit in an operational CH-103/CT-10 unit. The charging activity LED will become lit, depending on the battery state either indicating “Charging” or “Done”. If not, re-open the unit and check each upgrade step for problems.

12: Done!

The unit is now ready for use.