

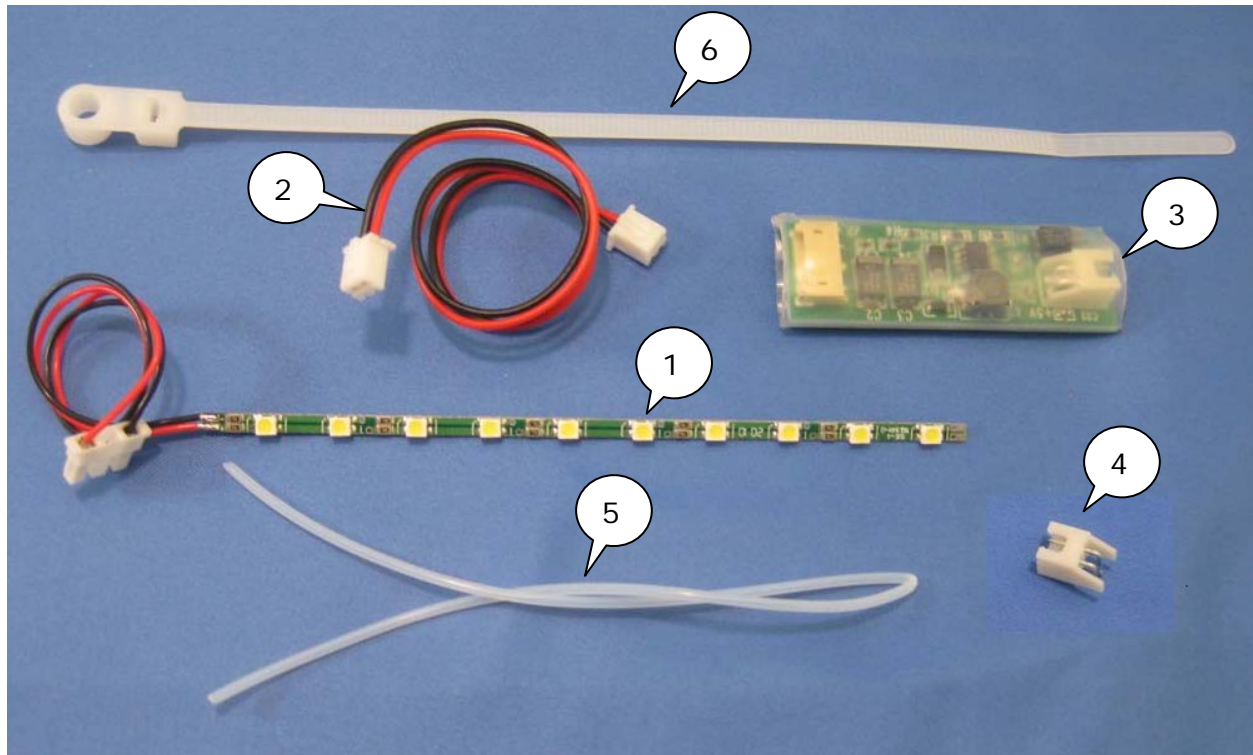
Synergy Controller LED Backlight Retrofit



Since their introduction in 2000, Synergy Controller and VersaTenn V 5.7" Liquid Crystal Displays (LCDs) utilize a CCFL (Cold Cathode Fluorescent Lamp) backlight. A Synergy LED Backlight Retrofit kit is now available that offers a lifetime guarantee. This kit, P/N TE2136, utilizes Hi-Brightness (HB) white LEDs from CREE and is backward compatible with all current Synergy Controller and VersaTenn V configurations equipped with 5.7" LCDs. This application note details the installation of this LED Backlight kit.

The Synergy LED Backlight kit ships in a protective shipping tube as shown below. To begin the installation, pull the cover off one end of the shipping tube and pull out the Application Note 74 and antistatic bag containing the kit contents.





The TE2136 kit contains one of each of the following items: (Identified in the figure above)

1. TE2113, Synergy Micro LED Backlight Lamp Assembly
2. TE2137, Synergy Micro LED Backlight Power Cable Assembly
3. TE2121, Synergy Micro LED Backlight Driver Assembly
4. S2B-XH-A, J17, Connector, 2 POS, Right/Angle Connector
5. Teflon Sleeving, 9 inches, .040" ID , CLR 0.065" OD, P/N TFT20018 NA005).
6. Tyrap Cable Ty (Panduit Corp, P/N PLC2S-S6-C0, CLAMP TIE STD #6SCR WR BK 7.9").
7. Synergy_Controller_App_Note_74_Synergy_LED_Backlight_Retrofit_P4 (this document)

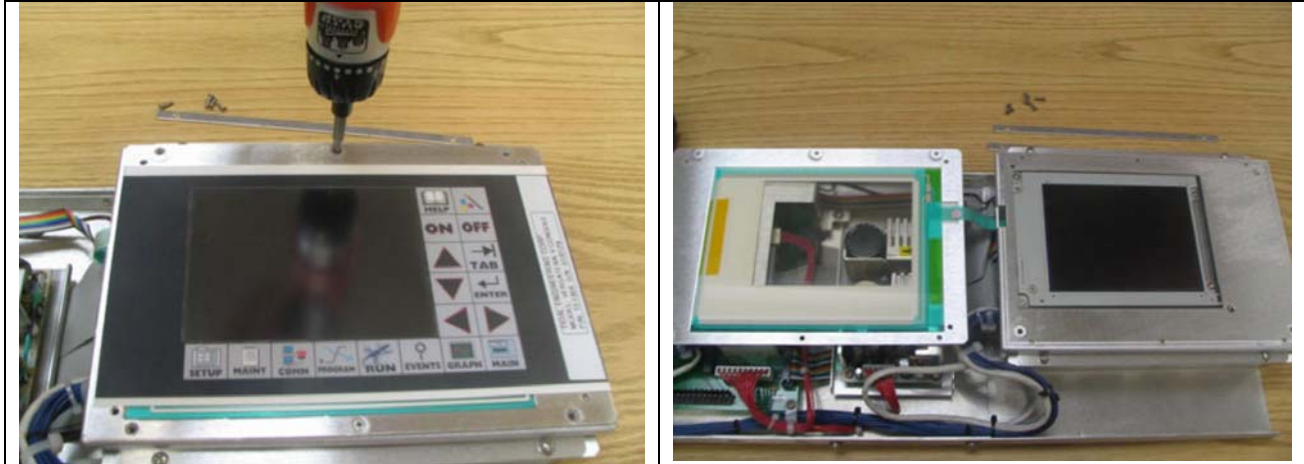
The installation steps are summarized as follows:

1. Remove controller from the system. See technical manual for detailed instructions.
2. Remove LCD from controller as described below.
3. Remove the CCFL Lamp and install the LED Backlight.
For Sharp Displays (Appendix A)
For other Styles (Appendix B).
4. Connect the TE2137 Power Cable Assembly to the TE2121 Driver and the 5 VDC Plug.
If necessary, solder the supplied S2B-XH-A connector in place.
5. Re-assemble system.

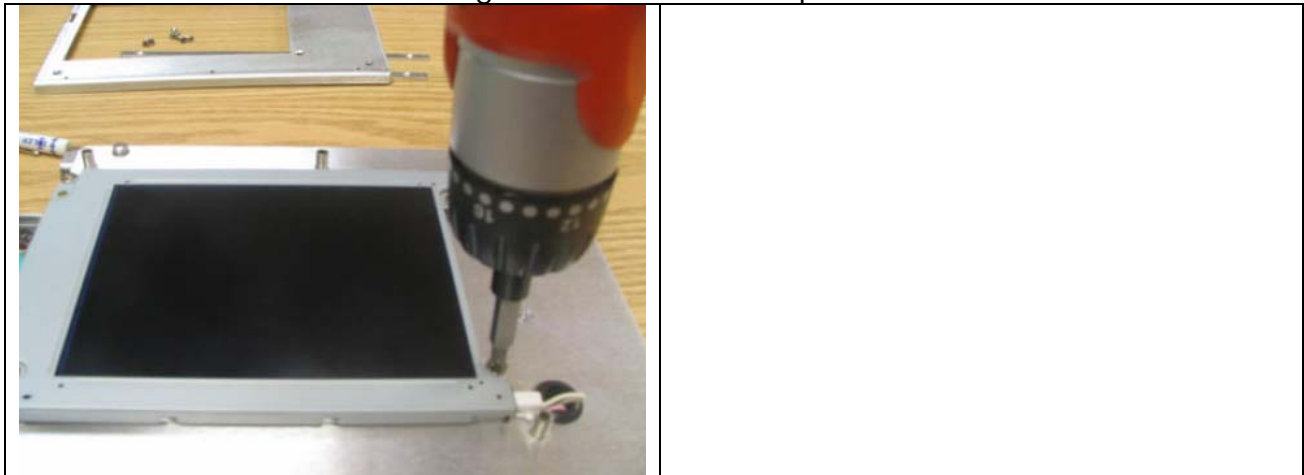
For VersaTenn V Controllers

Once the controller is removed from the chamber remove the four screws securing the LCD Display to the controller.

Remove the six screws, top and bottom, and flip the touch sensor frame to the left as shown below.

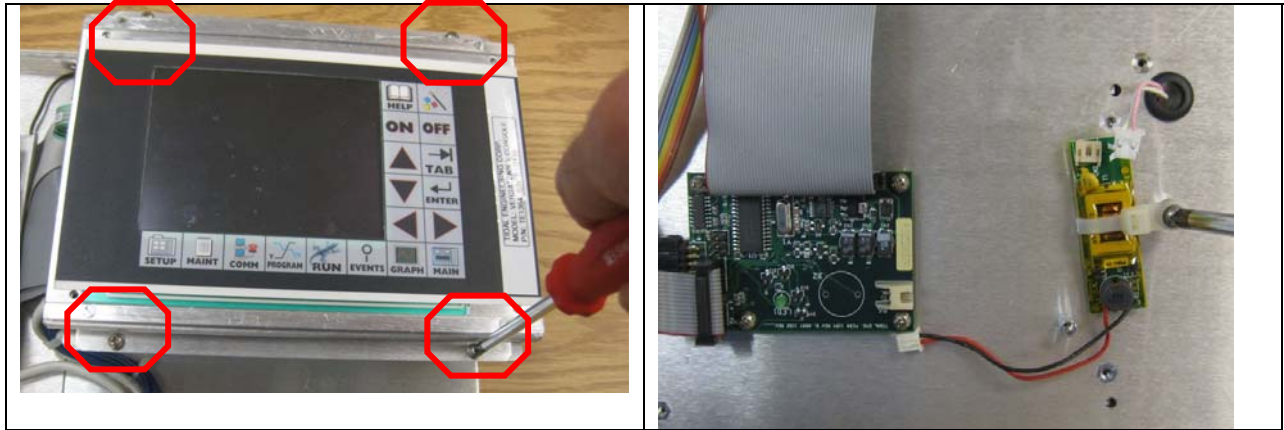


Remove the four screws holding the LCD to the LCD panel.

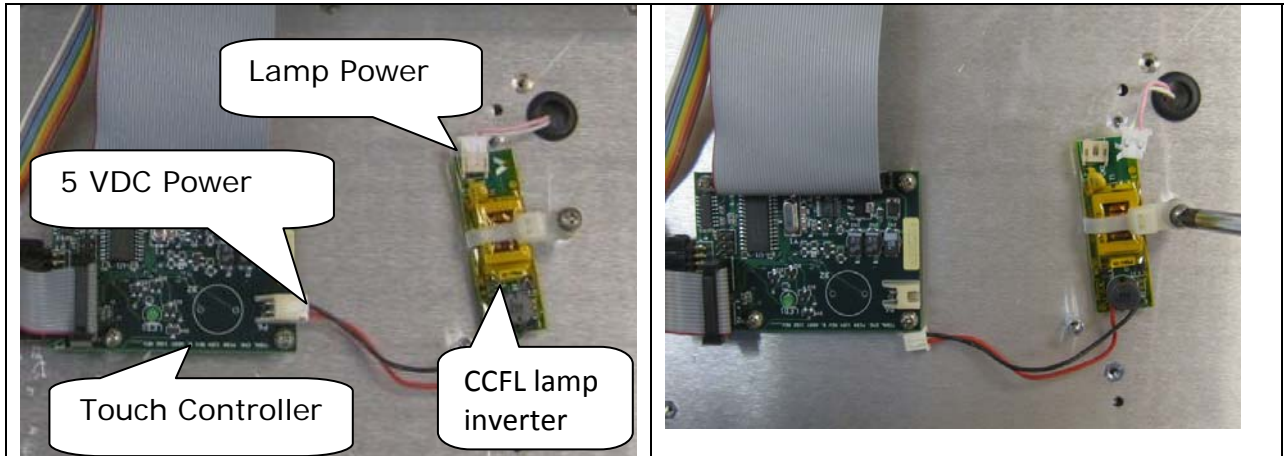


Remove the CCFL Lamp Assembly from the display and install the LED Lamp Assembly per Appendix A (for the Sharp Display) and Appendix B (for the FEMA display) as required.

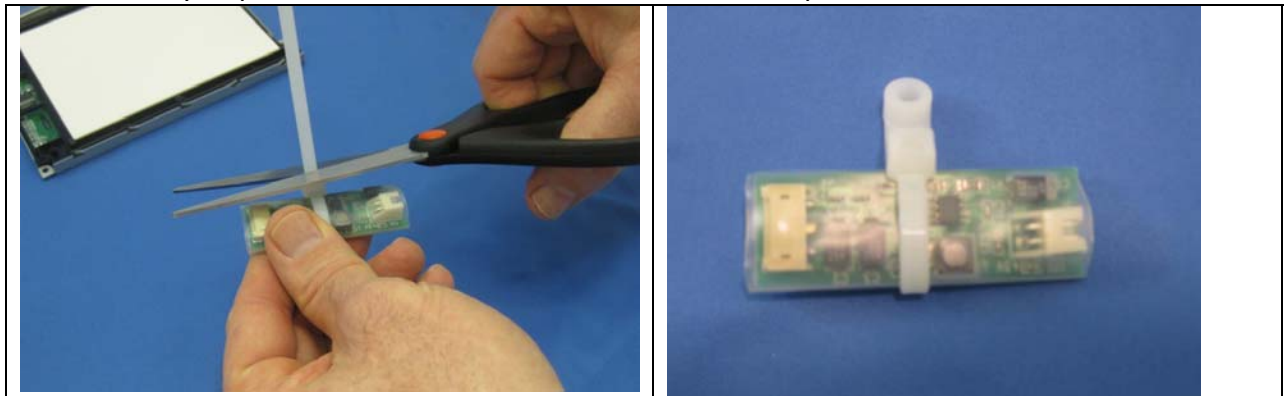
Remove the four screws and lift the panel to access the CCFL inverter as shown below:



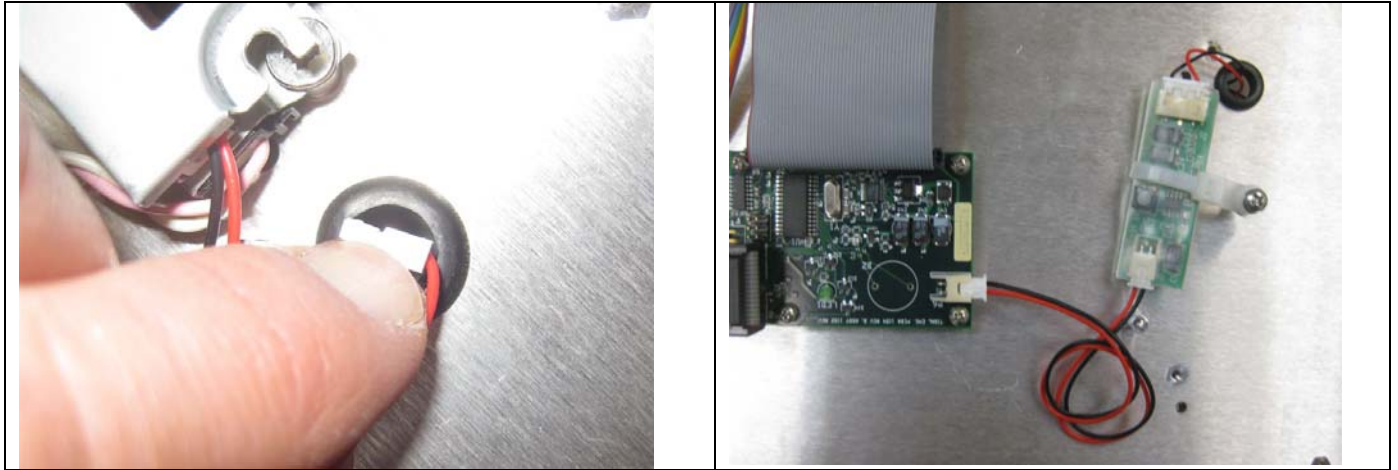
Flip the panel down and unplug the 5 VDC power from the touch controller and the lamp from the CCFL lamp inverter. Then remove the screw holding the CCFL inverter to the panel as shown below:



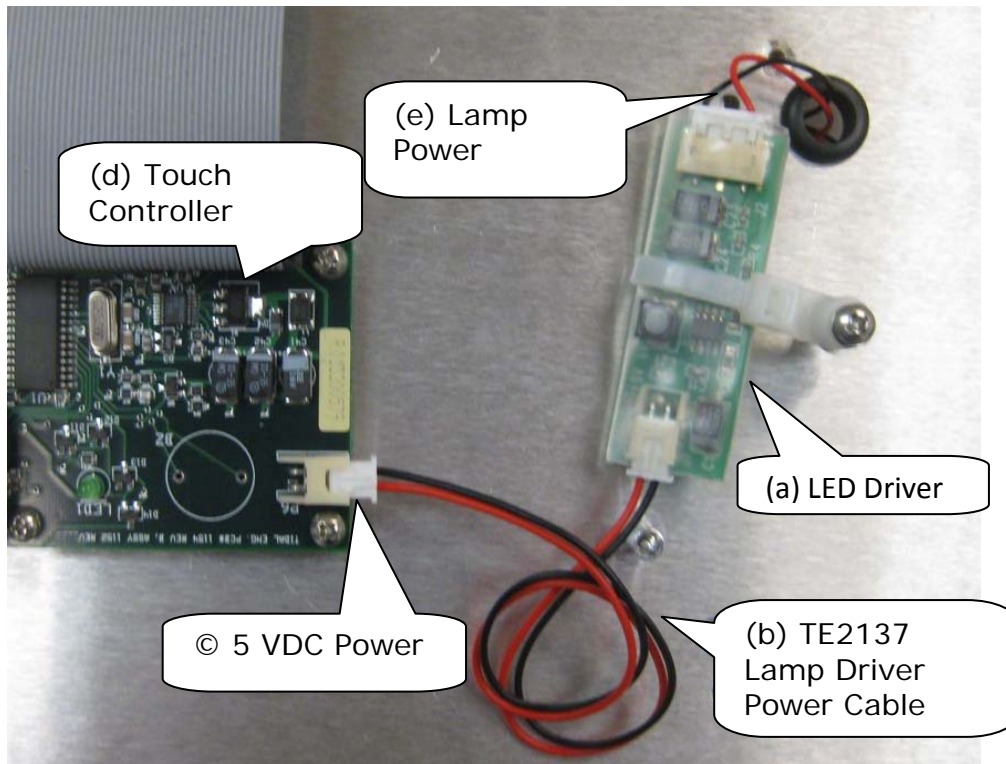
Secure the Ty-Rap around the LED Driver and cut the excess portion as shown below:



Push the Lamp Power Cable thru the grommet and connect to the LED Driver as shown below:



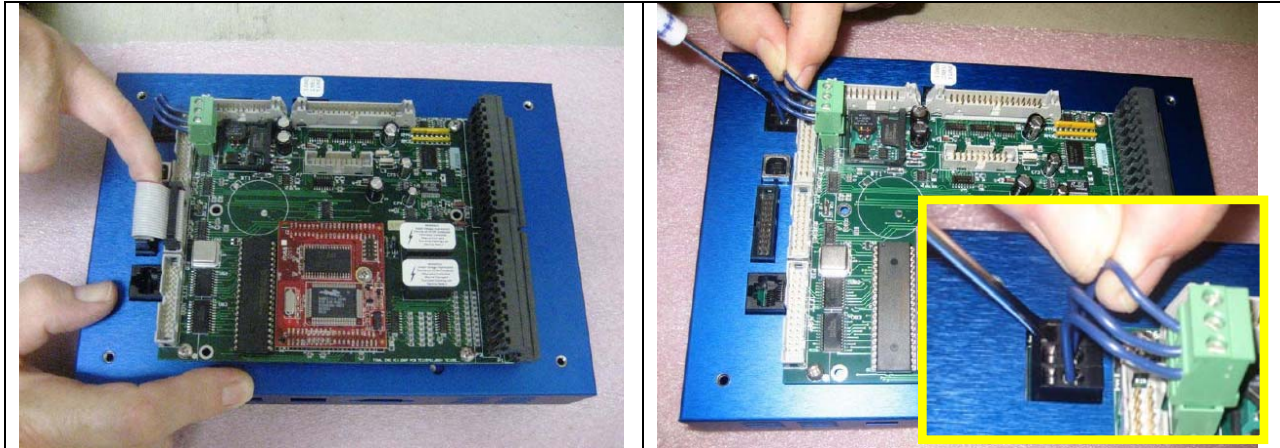
Secure the new (a) TE2121 LED Driver to the panel with the screw and plug the (b) TE2137 TE2137 power cable into the (c) 5 VDC plug on the (d) Touch Controller. Then connect the (e) Lamp Power cable to the LED Driver as shown below



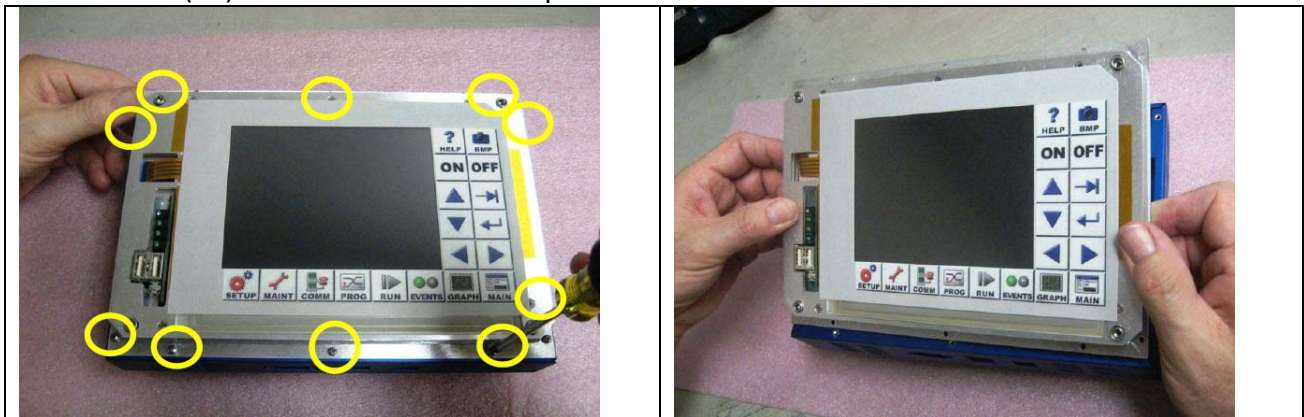
For Synergy Micro, Micro II, and Micro V Models:

Remove the controller from the chamber and remove the LCD Display hardware as follows.

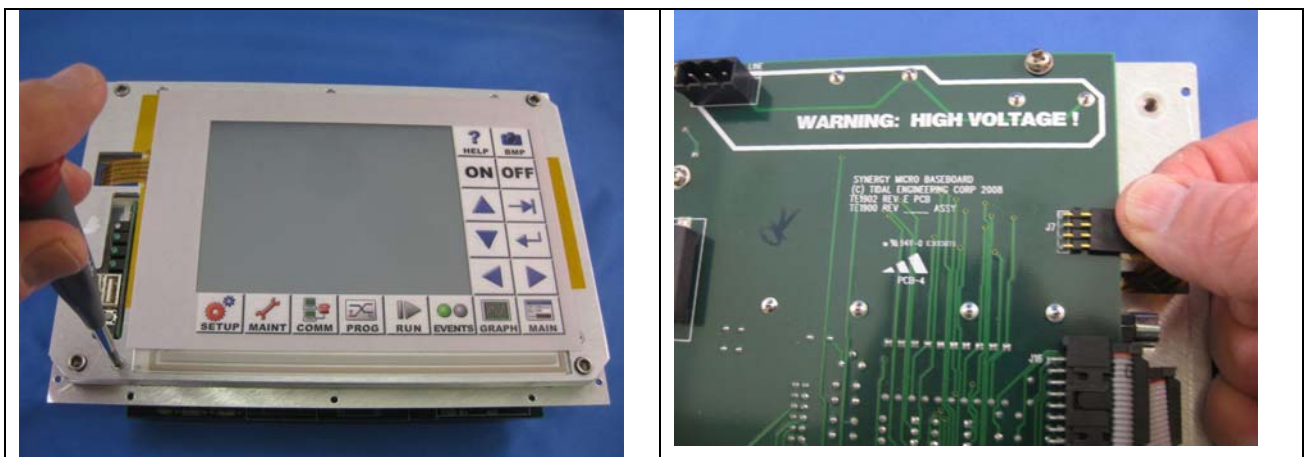
Unplug the ribbon cable and the three discrete wires from the controller as shown below.



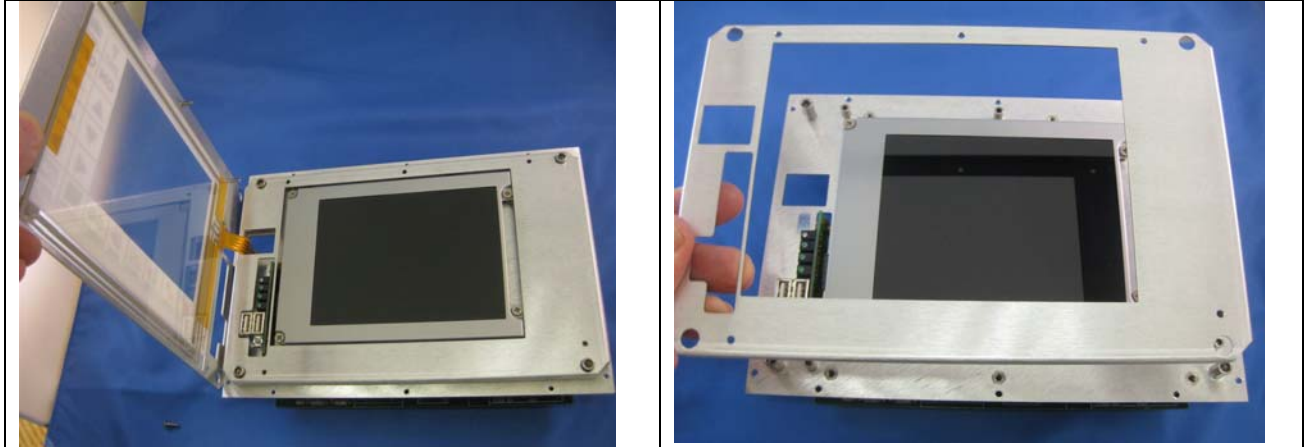
Remove the (10) screws and lift the LCD panel out of the case.



Remove the (5) screws securing the touch screen support and unplug the flex cable for the touch sensor as shown below.

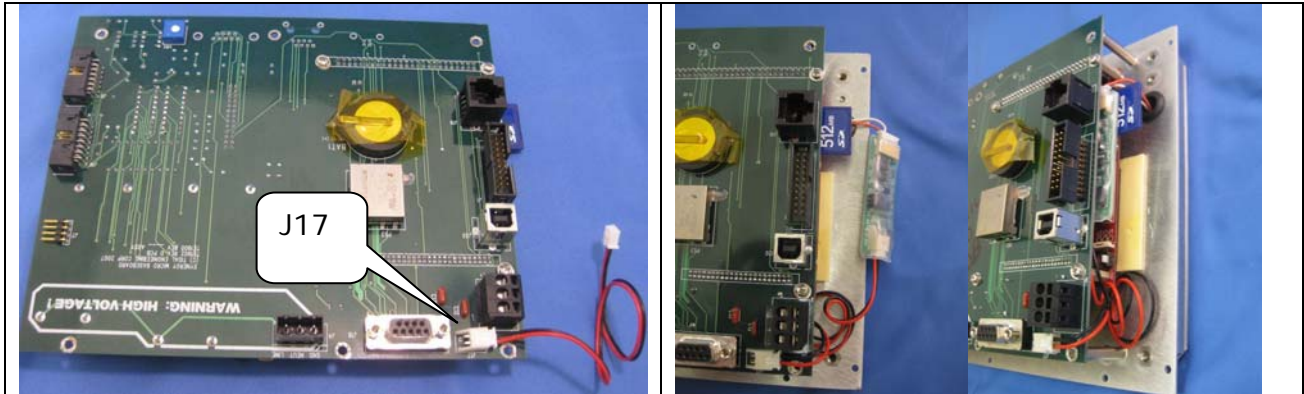


Remove the touch screen panel and the touch screen support as shown below.



Remove the (4) Screws securing the LCD to the panel and the touch screen support as shown below. Remove the CCFL Lamp and install the LED Kit per Appendix A (for the Sharp Display) and Appendix B (for the FEMA display) as required.

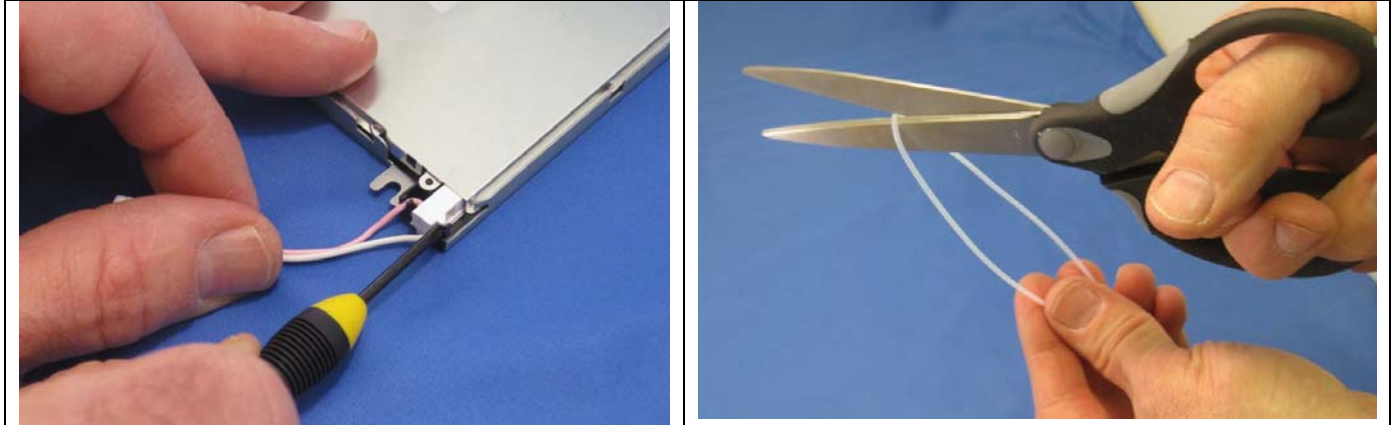
Connect the TE2137 LED Driver power cable and the TE2113 LED Lamp cable to the TE2121 LED Driver as shown in the figures below.



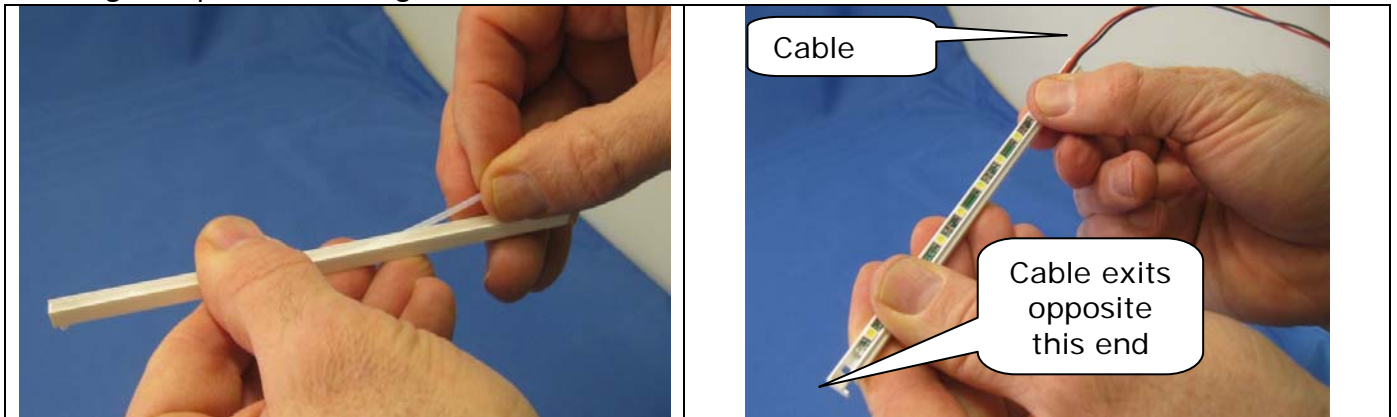
Note that the J17 site is not populated on all controllers and therefore the S2B-XH-A Connector is provided so it can be solder to the board.

Appendix A LED Lamp Installation in Sharp LM057 Display

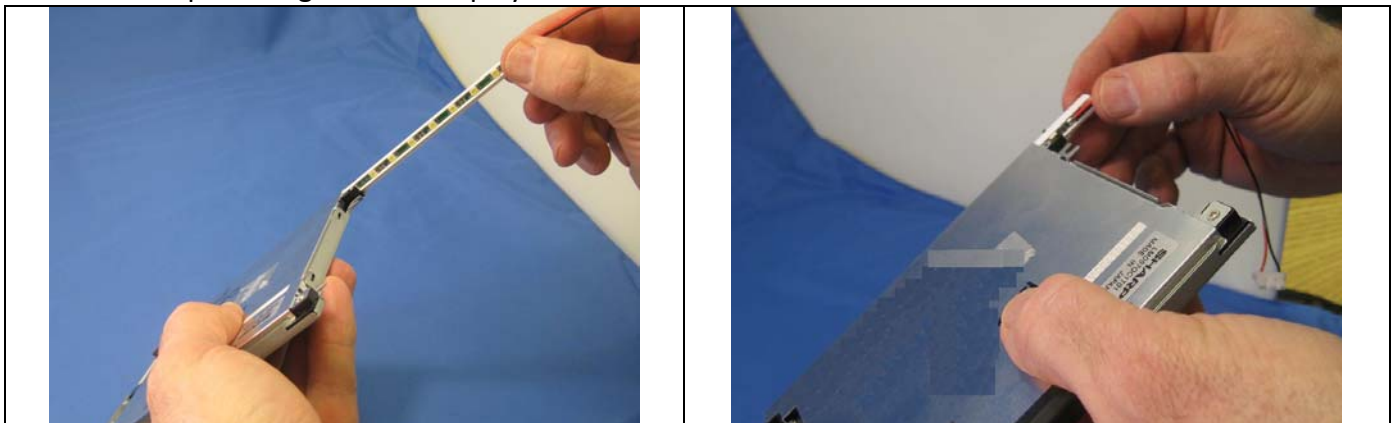
Push the lamp catch to the side and pull the lamp housing from the display using the cable as shown below. Cut the Teflon sleeving in half (4.5") as shown below.



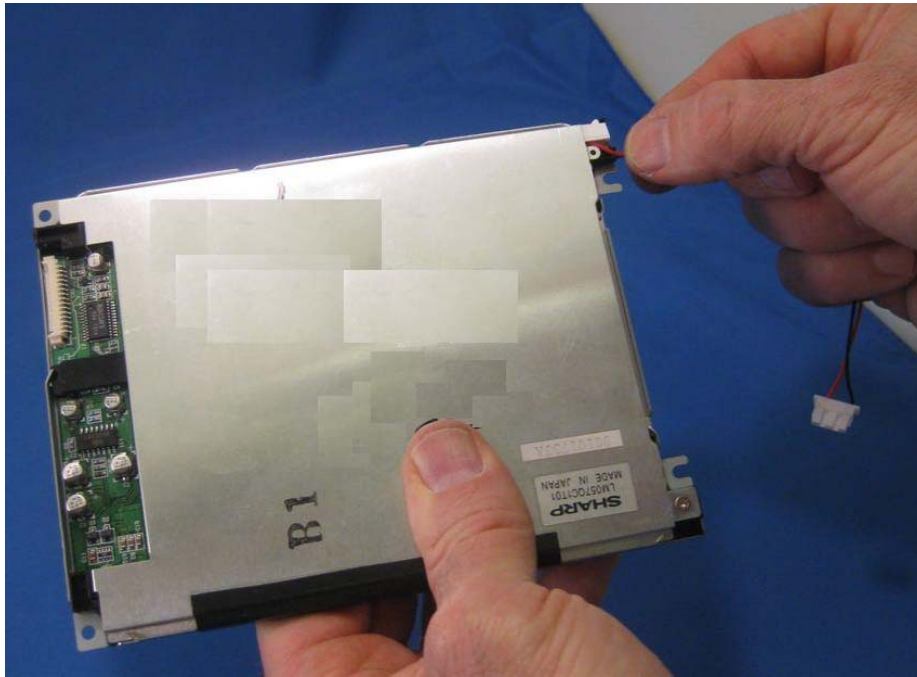
Place the sleeving in the lamp housing then place the TE2113 LED lamp in the display lamp housing on top of the sleeving as shown below.



Slide the lamp housing into the Display as shown below.

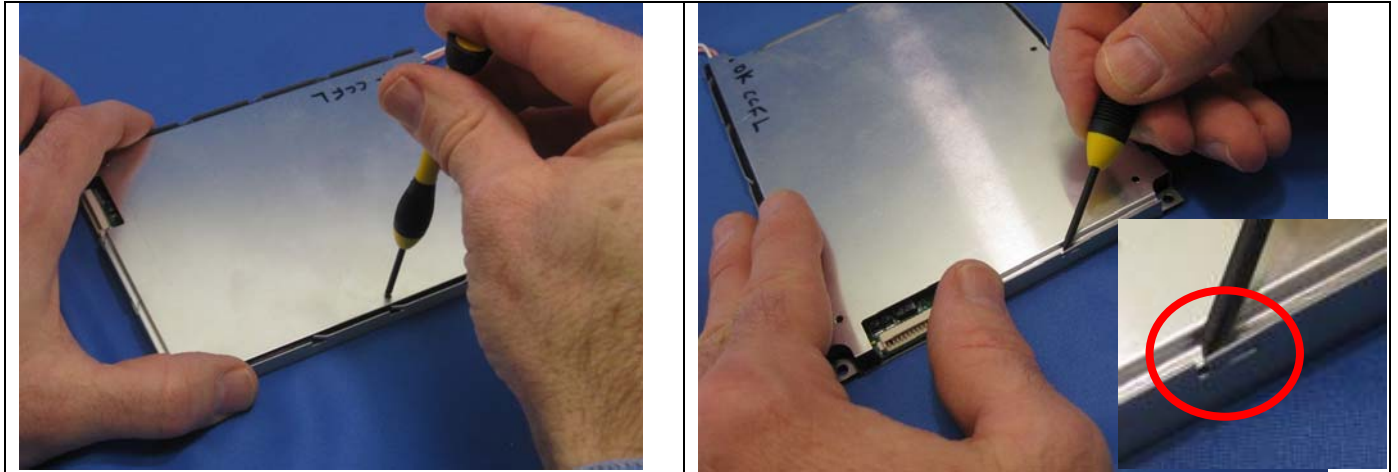


Secure the cable in the cable support as shown below.



Appendix B LED Lamp Installation in FEMA Display

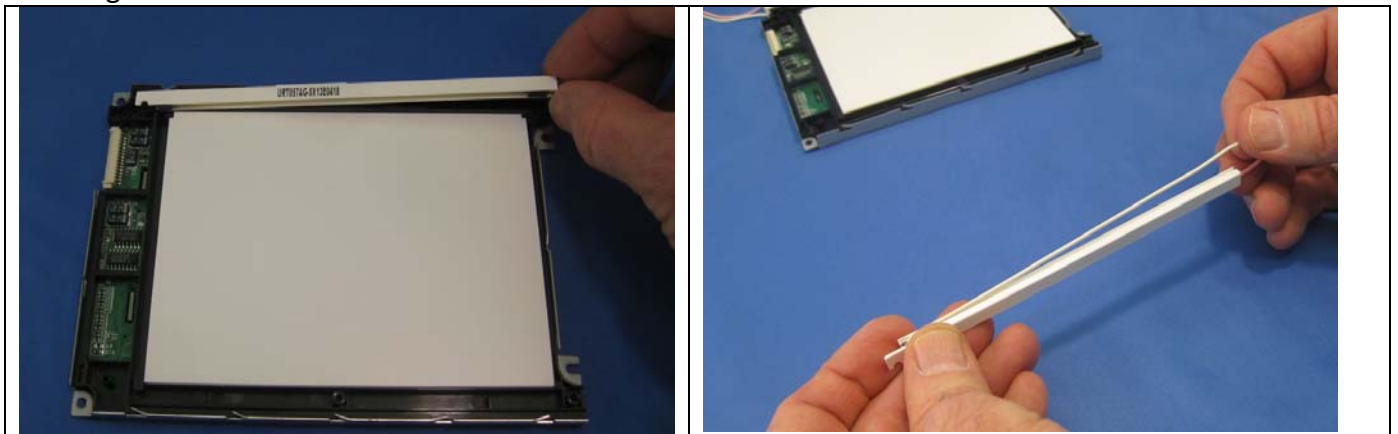
Remove the (5) screws on the back of the display and bend back the retaining tabs on the ends of the display as shown below



Lift the back cover as shown below:

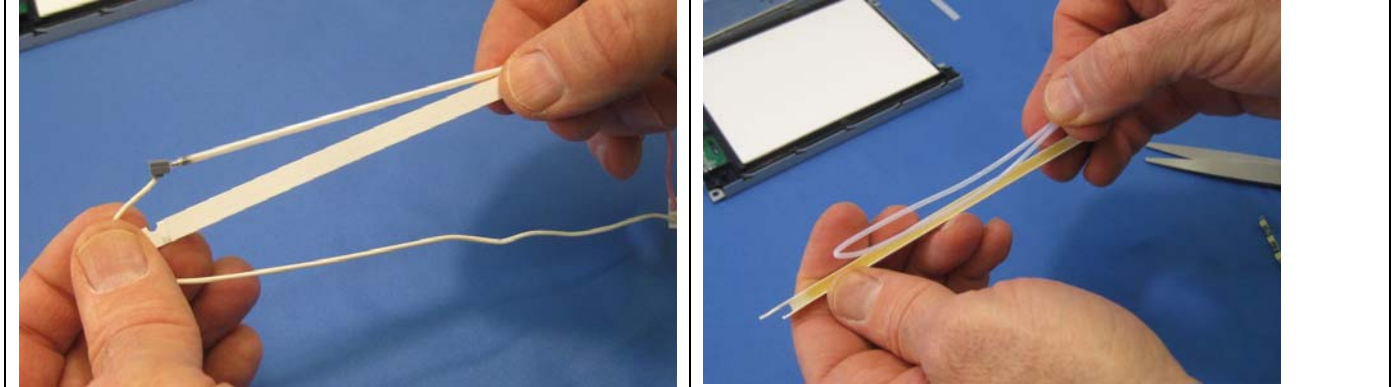


Lift the lamp housing and remove it from the display and pull the white lead from the lamp housing as shown below.

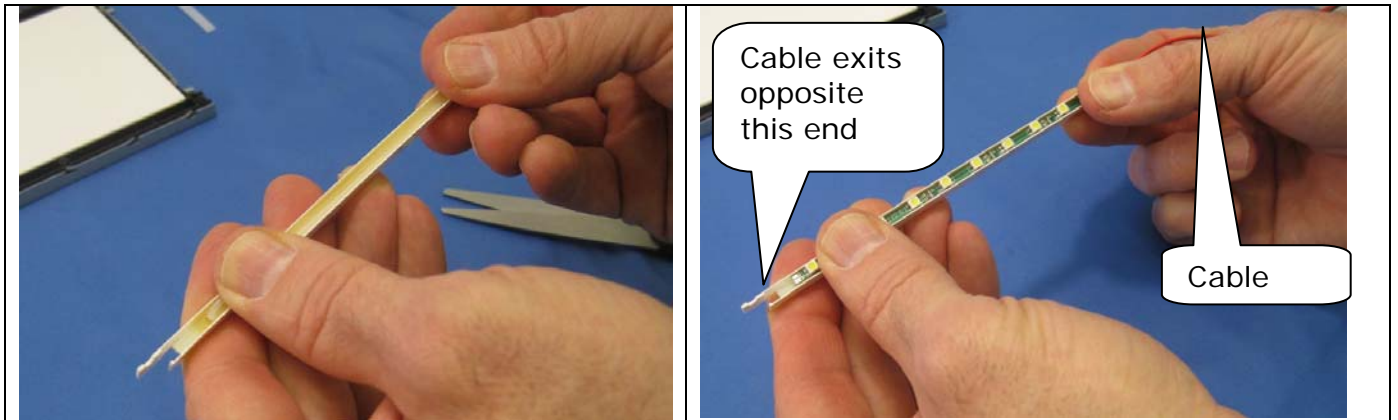


Gently lift the lamp out of the housing , fold the Teflon sleeving in half and place it in the lamp housing as shown below. Note that the sleeving is not cut in half for the FEMA but is for the Sharp

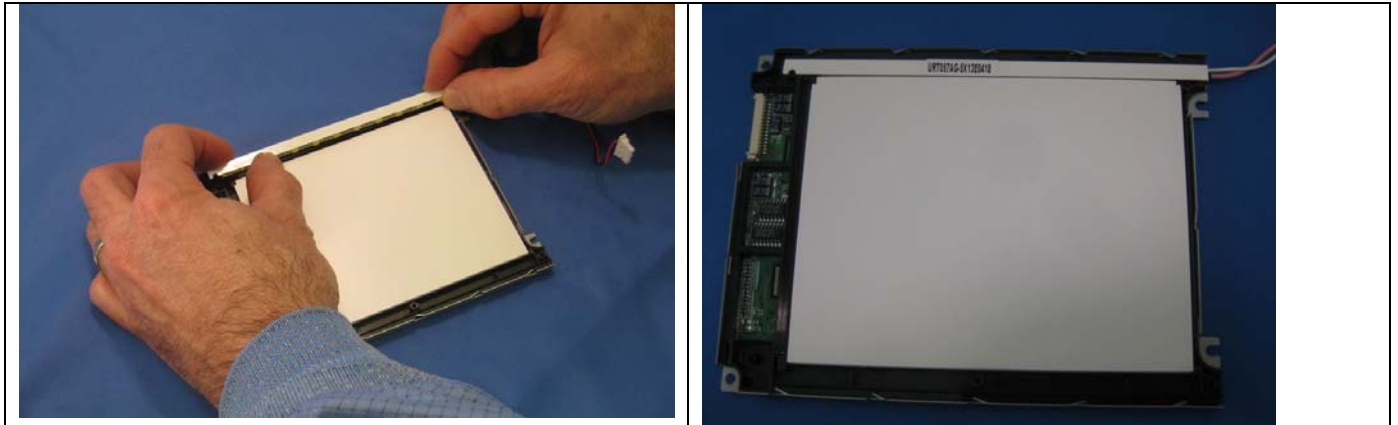
CAUTION: THE LAMP IS MADE OF GLASS AND IS VERY FRAGILE. BE CAREFULL.



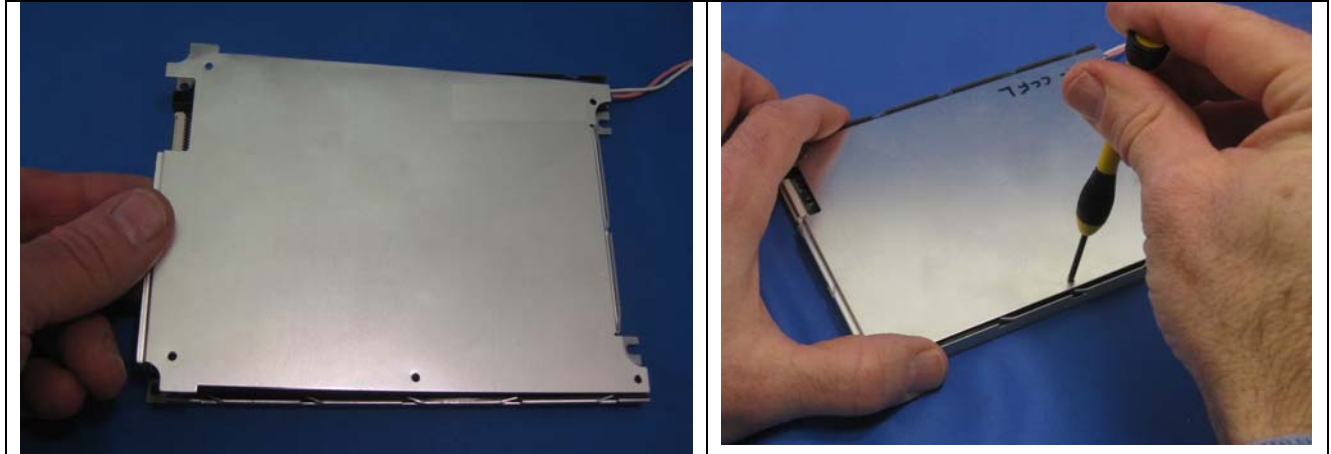
Seat the Teflon sleeving in the lamp housing then place the TE2113 LED Lamp assembly in the lamp housing as shown below: Note that the cable should exit the housing away from the end shown.



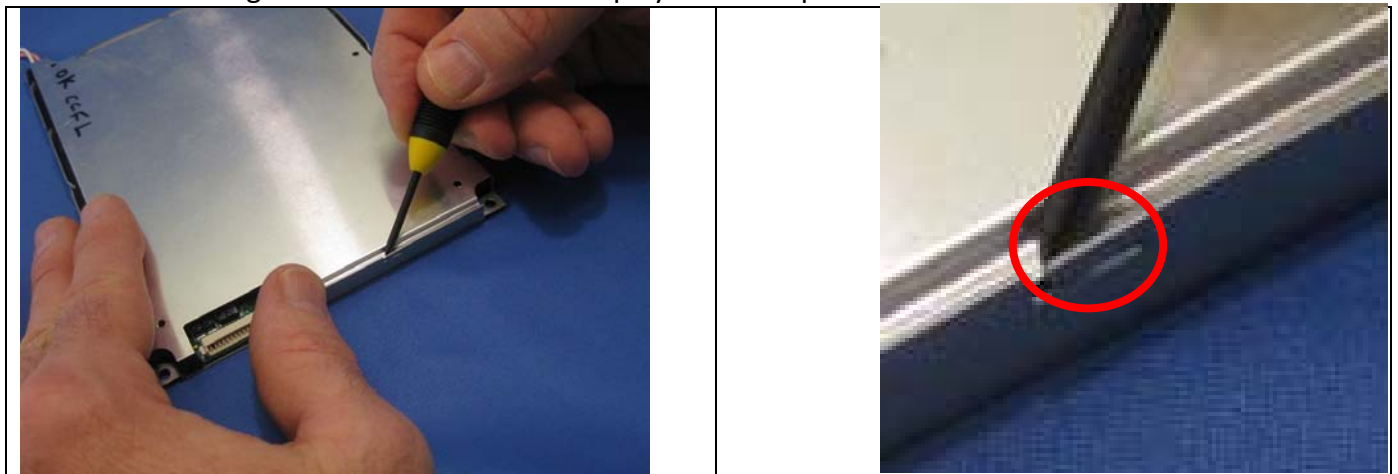
Place the lamp housing in the slot on the back of the display as shown below:



Place the back cover on the display and then replace the (5) screws on the back of the display as shown below.



Bend the retaining tabs on the ends of the display back into position.



About Tidal Engineering

Headquartered in Randolph, NJ, Tidal Engineering Corporation has been designing and building award-winning embedded hardware and software for test and measurement and data acquisition applications since 1992. The company is recognized for technical expertise in such areas as Embedded IEEE 488, and turnkey SCADA (Supervisory Control and Data Acquisition) systems. Tidal's products are available exclusively through ADI American Distributors Inc., an ISO-9002 certified distributor of electronic and electromechanical components and assemblies.

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