

§10 Precautions In Use Of LCM

Precautions for Handling LCD Modules:

Okaya Electric's LCMs have been assembled and adjusted before delivery; therefore, observe the following procedures for handling:

- (1) Do not subject to excessive shock by dropping the units.
- (2) Do not modify or adjust the tab of the metal bezel.
- (3) Do not modify the printed circuit board.
- (4) Limit the soldering to the printed circuit board to only the I / O terminals.
- (5) Do not touch the connective rubber (inter-connector), or modify its location.

➤ Warning for Static Electricity:

Okaya Electric's LCMs use CMOS LSI. Therefore, measures to protect static electricity have been taken through all the processes from manufacturing to shipping. When handling, take necessary care to prevent static electricity as you would any CMOS IC.

- (1) **Do not take LCM from its anti-static bag until it is time to assemble:**
LCMs are individually packaged in bags treated to resist static electricity. An LCM should not be removed from the bag until it is time to solder the terminals. When storing the LCMs keep them packaged in the anti-static bags, or a container that is resistant to static electricity, or in an electric conductive container.
- (2) **Always use a body ground when handing an LCM:**
Always apply grounding to your body while you are working with an LCM from the time it is taken out of the anti-static bag until it is assembled. When it is necessary to handle the LCM, once it is taken out of the bag, always place it in a electric conductive container. Avoid wearing clothes of chemical fiber. Cotton or conductive treated fiber clothes are recommended.
- (3) **Use a no-leak soldering iron:**
The soldering iron used for soldering the I/ O terminals of the LCM should be insulated at the iron tip or grounded on the iron tip.
- (4) **An electrical apparatus is always required for assembly:**
When the LCM is to be assembled with an electrical apparatus, this assembly should be grounded to avoid transmitting spike noise generated with the motor rotating.
- (5) **Make the operation bench equal to the ground**
When the operation bench is grounded with an aluminum or steel plate, there is always the possibility of an electric shock being generated, when the impedance is too low. It is therefore recommended that an electric conductive (rubber) mat be used.
- (6) **Peel off the LCM protective film slowly:**
To the face of the LCM is a film to protect the display surface from contamination, flaw, adhesion of flux, etc. Peeling off this film too abruptly may cause static electricity to be generated. Thus peel off the tape slowly.
- (7) **Attention should be paid to humidity:**
50~60%RH is acceptable.

➤ **Precautions when soldering the LCM**

The following procedures should be followed when soldering the LCM:

***Solder is to be applied only to the I / O terminals.**

***Use a soldering iron with no leakage.**

In addition, further attention should be paid to the following.

(1) Conditions for soldering I / O terminals:

Temperature at iron tip: 280oC + 10oC

Soldering time: 3-4 sec. / terminal

Type of solder: Eutectic solder (rosin flux filled)

Avoid using flux, since it may penetrate the LCM and could possibly cause contamination. When cleaning is required do not remove the protective film until after soldering the I / O terminals has been completed. This will eliminate contamination with by the dispersion of flux where soldering.

(2) Removing the wiring:

When a lead wire or a connector that has been soldered to the I / O terminals of the LCM is to be removed , do so only after the solder at the connection has sufficiently melted. If this wire or connector is forcefully removed, it may cause the terminal to break or peel. It is recommended that a suction-type soldering iron be used. Do not attempt to solder a lead wire or connector more than 3 times to a given LCM.

➤ **Long-Term Storage**

When long-term storage of an LCM is necessary, the following procedures should be complied with:

If not stored properly, it could cause deterioration of the polarizer and oxidation of the I/O terminals that would make soldering more difficult.

(1) Store in original packaging if possible.

(2) For individual LCMs, place them in anti-static bags, sealing the opening and storing it where it is not subject to direct sunlight or the light from a fluorescent light.

(3) Store in a temperature range of 0°C ~35°C with low humidity. Note, refer to the specific module specification for requirements regarding storage temperature and humidity.

- **Excess Electric Current Protection:**
An over current protection circuit is not provided with the LCM. Therefore, it is recommended to use an electrical source which will provide for this current protection.

- **Precautions for use of LCDs**
Prevent external shock.
Do not wipe the surface of the LCD with hard materials.
Do not apply excessive force on the surface of the LCD.
Do not apply DC voltage.
Do not expose to direct sunlight or fluorescent light for extended periods.
Avoid storage in high temperature and humidity. (When storage for an extended period at 40°C or higher, R/H should be less than 60%)
The fluid within the LCD is hazardous. Do not permit this liquid to come into contact with the eyes or mouth area.