

Handling precautions for LC-Displays

Liquid Crystal Displays (LCDs) are made out of the basic components glass, fluid/liquid crystal, polarizers and connectors (PINs, FPC, etc.), in high precision.

The adjacent schematic structure illustrates the material composition.

For dealing with LC-Displays, we have listed below some general information for you.

General instructions for use

- Please keep the room and storage temperature according to the display specification. At a too high humidity (>60%), as well as extreme temperatures, the polarizer can be damaged by blistering and peeling.
- Avoid mechanical forces acting on the display.
- Please press or rub the polarizer with no harder objects. The polarizer is soft and can easily be scratched.
- Do not use alcohol-based cleaners such as acetone, ethanol or isopropyl alcohol to clean the polarizers on the front and back, since they can be damaged by the chemicals.
- Water drops or fogging by moisture should be removed immediately. Should the LCD come into contact with water for any length of time, it may cause color changes.

Electrostatic discharge

Electrostatic discharges are baneful for displays and should be avoided generally. This specially applies to Chip-on-Glass modules (COG, COF).

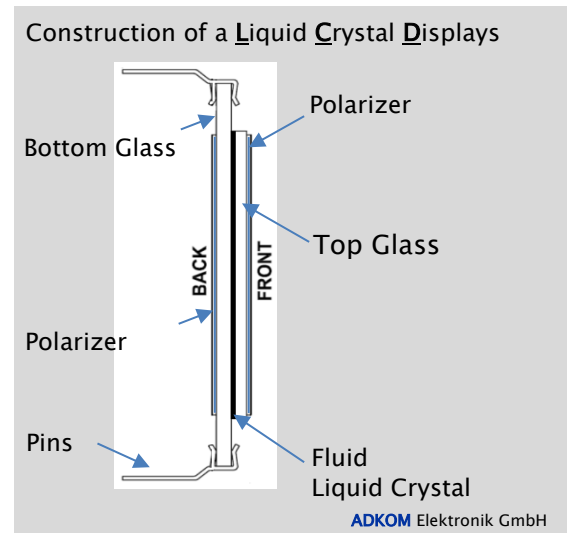
- Please take care that you are grounded, before removing the modules out of its packing, and that the modules have got the same electrical potential.
- LC displays should only be stored in antistatic bags or other suitable packaging.
- In order to avoid static charges, a relative humidity of 50–60 % is recommended.
- Please avoid any contact with the connector area.

Notices for soldering

A special note list composed for soldering, we have under the heading: „things worth knowing about displays“, at

<http://www.adkom.de/en/files/rund-um-displays/wissenswertes/soldering-information.pdf>

provided.



Applying the voltage

- In order to achieve the optimum on contrast, adjust the contrast voltage (V0) in accordance with the specification. Exceeding the operating voltage shortens the life time of the LCD.
- At temperatures underneath the specified values, the response time of the display is reduced partially. Once the designated temperature range is observed again, the "response time" is displayed again in the given time frame.
- Condensation or moisture at the pins can cause an electrochemical reaction, which can break the circuit. Thus a relative humidity of 50% should prevail.

Liquid Crystal / Fluid

Should it come, contrary to expectations, to a glass break and leakage of some fluid, avoid any skin contact with the liquid crystals. If some fluid is coming in contact with your skin or clothing, wash it thoroughly off with soap and water.

The proportion of liquid crystals in a single LC-Display is approximately 0.07% to its total weight. In coordination with the German Federal Environment Agency (UBA) and the producers of liquid crystals, extensive toxicity tests were conducted. According to these studies, commercial liquid crystal mixtures are

- not acutely toxic,
- not mutagenic in bacteria and mammalian cells,
- not harmful to aquatic organisms and
- not under suspect to be carcinogenic.

The liquid crystals used for this purpose are classified in Water Hazard Class 2 and are not easily biodegradable. Based on the studies of the ecotoxicology, UBA rates special requirements, due to the proportion of liquid crystals, for the disposal of LCDs as not justified.

(Source: UBA, LFU Bavaria, LAGA, Merck KGaA)

Storage

If a longer storage is necessary, the following should be noted:

- Store the parts in ESD compliant packaging. Close the opening and store the display away from direct sunlight or fluorescent lamps. In dense closure, additional drying agents are not necessary.
- The storage temperature is specified in the display datasheet and must not be outside this range of values.