



TOUCH PANELS

SPECIALIST MEMBRANE SWITCH MANUFACTURERS

Electroluminescent (EL) Lamps

Low-temperature EL lamps can be fitted to most membrane panels as a backlighting option. Illumination is bright and even, giving a clear view of the panel in any light level.

What is an EL lamp?

An EL lamp is a lossy parallel-plate capacitor. In other words, it's an electronic device that is electrically charged, then loses its energy in the form of light.

To do this, an EL lamp requires an AC current, which is applied to both plates. The current allows energy to build up within a phosphor layer between the plates, and the energy is released as light during each half cycle of the AC current. The number of times that the field changes within a given time period influences the brightness of the light emitted by the phosphor.

How do we make an EL lamp?

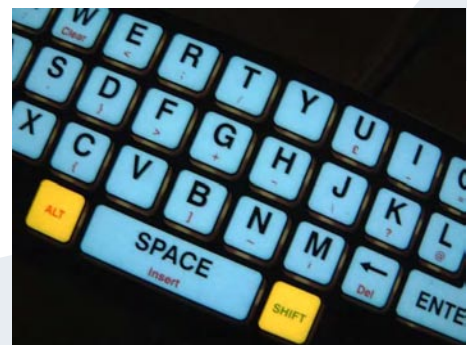
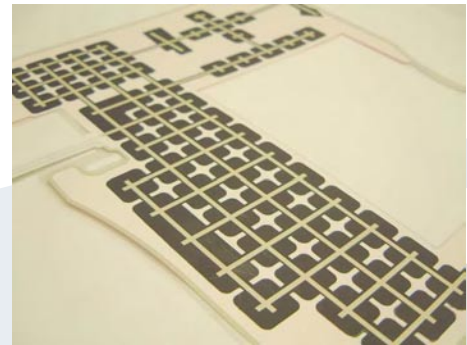
The base material for an EL lamp is polyester film that has been sputter-coated with indium tin oxide (ITO), a transparent conductive material that serves as the lamp's outer electrode. Over the ITO-coated side of this film, you print a silver bus bar. Next, you print a light-emitting phosphor layer, followed by a dielectric insulating layer of barium titanate. You complete the lamp with a final layer of silver or conductive carbon ink, which serves as the second electrode.

How do you power an EL lamp?

In most cases, when membrane keypads are part of hand held or portable equipment, the devices are battery powered. So if the switch includes an EL lamp, an inverter is required to convert the DC current from the batteries into the AC current required to drive the lamp.

Today's inverter technology matches the simplicity, portability, and cost efficiency of EL lamps. Small, surface-mounted inverters, including integrated chips, are now common in mobile phones and watches and are rapidly spreading to a broad range of portable devices with membrane-switch controls.

In modern inverters, AC voltage and frequency has been shifted from the traditional 115V/400Hz levels, to lower voltages of 60-70V and frequencies of 1000-1500Hz. The lower voltage and higher frequency tend to shorten phosphor life, however, today's encapsulated phosphors are more than sufficient to cover the life-expectancy of the portable products in which they are used.



TOUCH PANEL PRODUCTS

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