



Advanced Black Nematic (ABN) LCD
Multi Domain Vertical Alignment (MVA) LCD

ABN LCD Technology – Function and mode of action

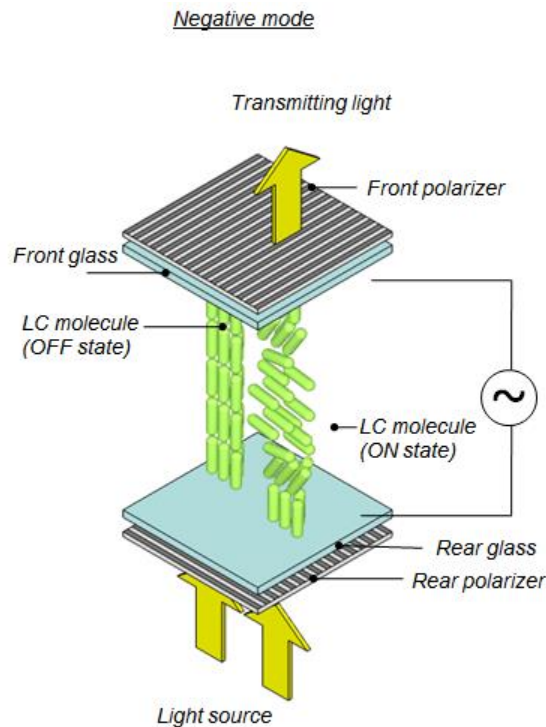
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ABN – Working principle



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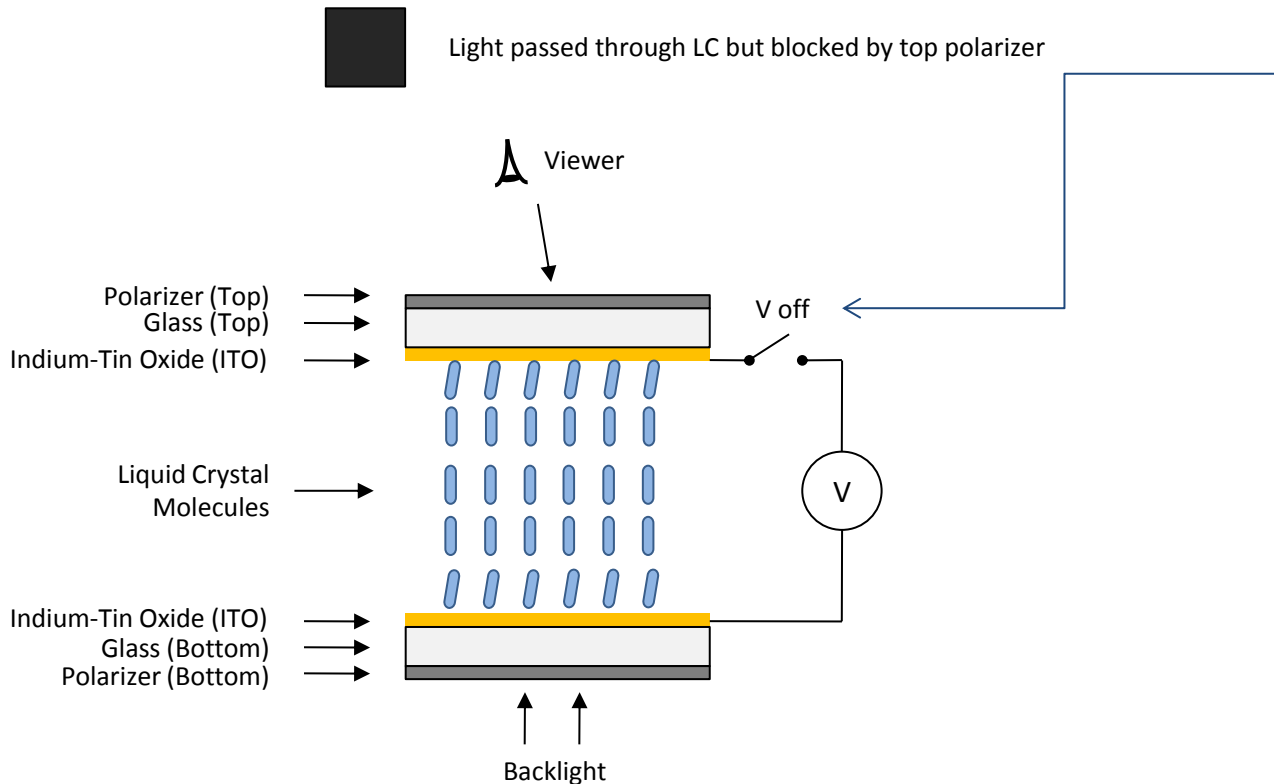
ABN – Advanced Black Nematic Vertical Alignment (VA)

In ABN LCD (so called VA, Vertical Alignment), liquid crystal materials are switched parallel to the glass substrates by applied an electric field.

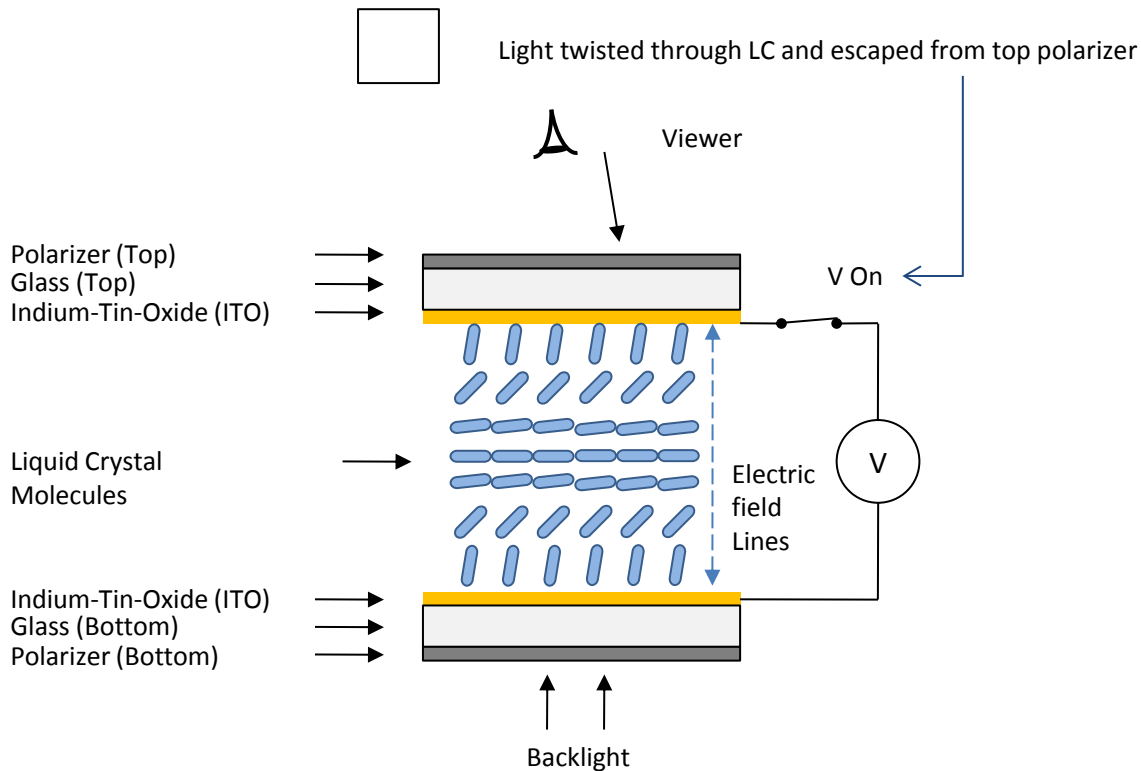
However, when no voltage is applied to ABN LCD, LC materials are vertically alignment and initially produces an ideal black state between crossed polarizers.

ABN LCD is therefore characterized by excellent contrast values and are generally operated in negative mode.

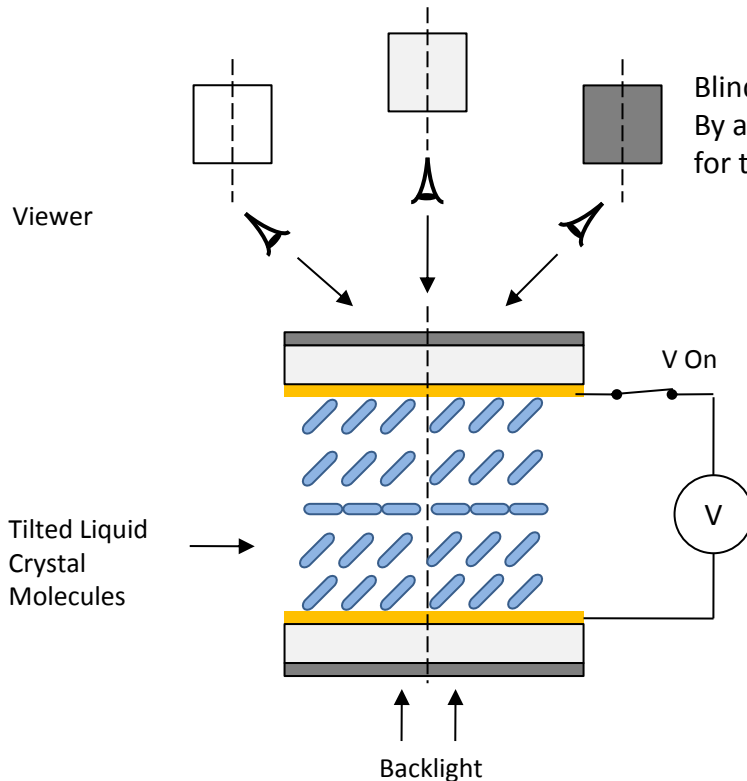
OFF State – No voltage applied



ON State – Voltage on state



Blind Spot – Visual restriction by blind spots



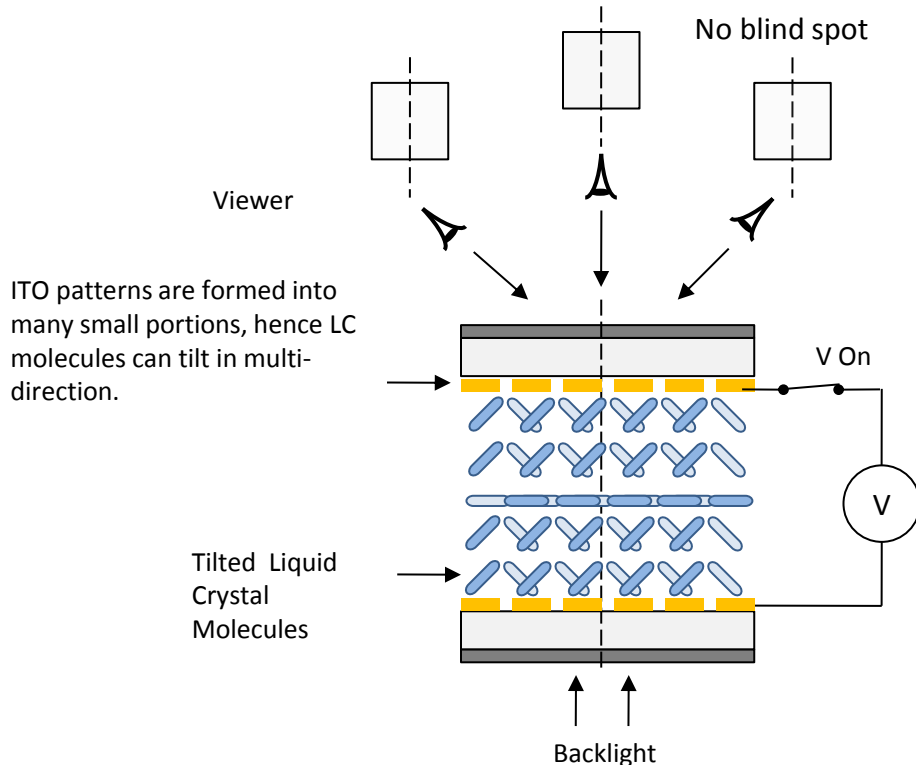
Blind spot (Grey-scale inversion)
By alignment of the liquid crystal molecules the light will be blocked for this viewing angle.

Result: An ABN display has got an excellent contrast ratio. To achieve good performance and color fidelity of the background a low multiplex rate is to be observed. For absolute color fidelity mux rates from 1:8 up to 1:16 are recommendable.

For applications with defined viewing angles like tabletop units, ABN technology is a fine alternative with a modern image.

To avoid technologically limited viewing constrictions for areas beyond the optimal viewing angle, the following specified Multi Domain Vertical Alignment (MVA) as advancement a perfect solution.

Multi-domain ABN - All Viewing Direction VA



A Multi Domain ABN-Display as advancement of ABN technology permits insight from all viewing directions without restraint.

This plus of flexibility is realized by segmentation of the Indium-Tin-Oxide layer (ITO-layer) in many equal ITO-sectors.

MVA-Displays are a real alternative for the development of new products with a view to a modern image. Ideal for applications which do not avail of a defined- but an universal viewing angle.

MVA Displays stand in summary for:

- A deep black background
- Temperature stability of the black level over the complete range of -30° up to 80°C
- An extreme wide viewing angle from all sides
- A very high contrast
- Sequential coloration is possible
- Usable for all kinds of backlights
- Touch implementation is feasible

More details about the performance of ABN in comparison to other LCD technologies you will find [here](#).