

ZETTLER DISPLAYS

IPS TFT MODULE

A Perfect Solution for Exceptional color and
Extra-wide viewing angles



WHAT IS IPS TFT ?

Like all LCDs, **IPS** (in-plane switching) TFT also uses voltage to control the alignment of liquid crystals. However unlike with **TN** LCD, **IPS** LCDs use a different crystal orientation, one where the crystals are parallel to the glass substrates, hence the term 'in plane'.

Rather than 'twisting' the crystals to modify the amount of light let through, IPS crystals are essentially rotated, which has a range of benefits.

So **IPS TFT** offers the **best color reproduction** as well as the **widest viewing angles** compared to other LCD modes.



IPS TFT is ideal for a wide array of applications such as medical, industrial, HVAC, Pool/Spa due to the ability to use the displays in both landscape and portrait mode while maintaining uniform viewing angles. This also allows for displays to be seen from different angles and heights, ideal for jacuzzi controls and thermostats that tend to require consideration of dynamic user parameters.

IPS TFT Advantages

Color reproduction

- One of the advantages of IPS panel over a TN panel is much **better color accuracy** and **better image quality** due to **better color reproduction**.
- As IPS mode is normally black, it has darker background than TN mode. Hence it has better contrast ratio. Normally IPS **contrast** could be **800~1000 : 1** while TN mode is around 300~500 : 1.
- With its **superior color reproduction**, IPS is a favorable LCD option for color critical works and color performance

IPS TFT Advantages

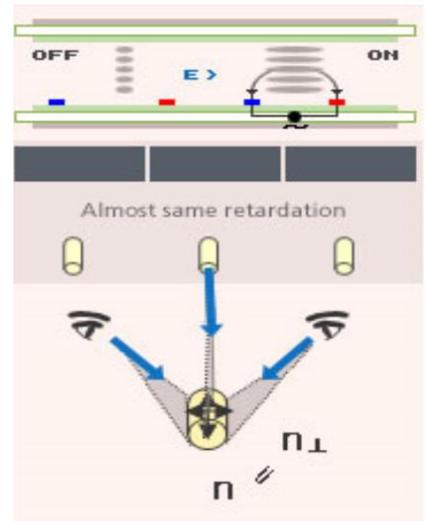
Viewing angle

- Strong dependence on viewing angle is another disadvantage of twisted nematic (TN) LCD. A user needs to view a TN panel from a straight up 90-degree angle to maximize its visual performance. When viewed from other angles, colors and images on a TN panel will appear duller and darker.
- **Exceptionally wide viewing angle** is an advantage of **IPS** panel over TN panels nonetheless. IPS TFT panels produce consistent brightness and contrast levels when viewed from different angles. So you won't get much shift in colors or contrast from any angle. Refer to next page for comparison.

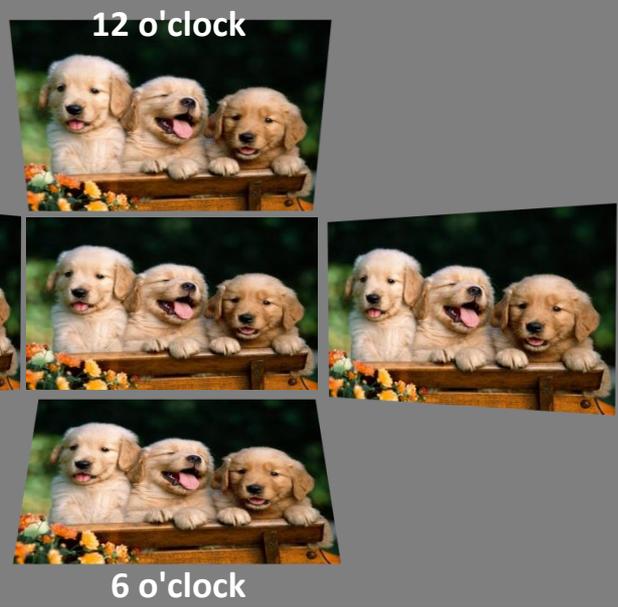
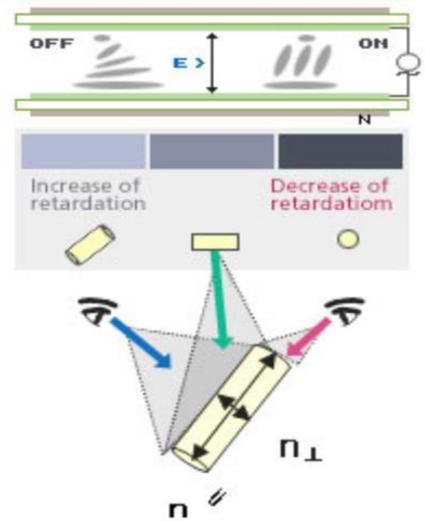
Viewing angle - IPS vs TN

ZETTLER DISPLAYS

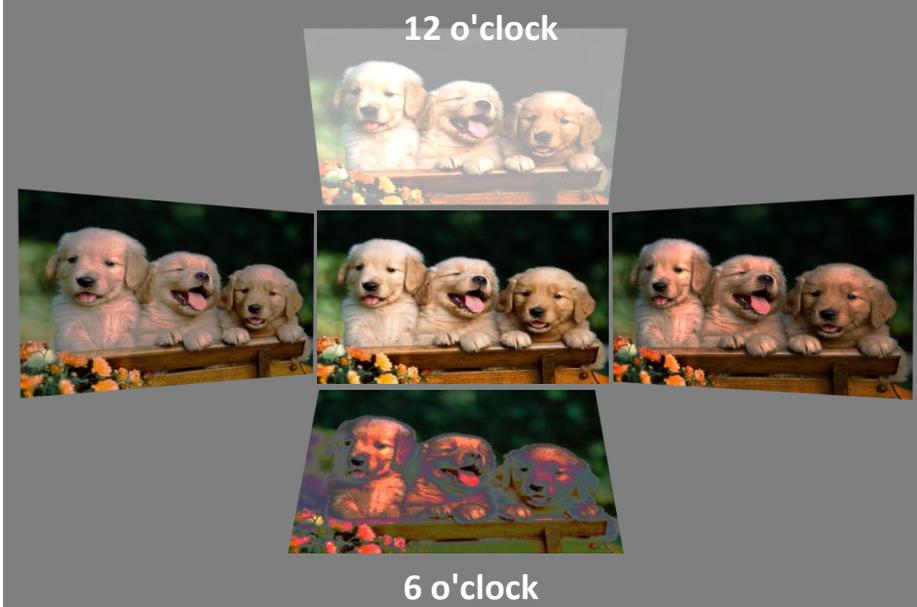
IPS Mode



TN Mode



Display image of IPS

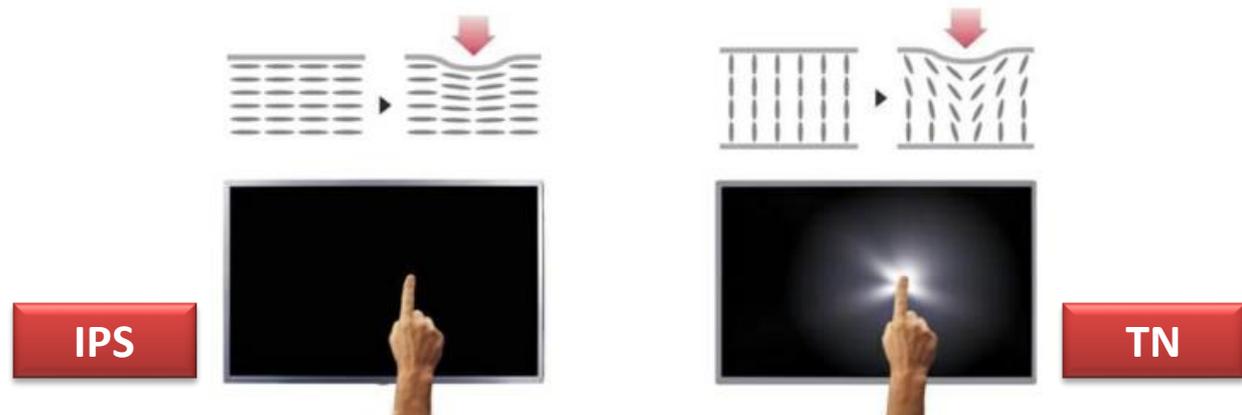


Display image of TN

IPS TFT Advantages

No “Ripple” when touch

- For TN TFT , when pressing finger against the screen, it will appear obvious "water ripple" distorting the image because you essentially disturb the alignment of the liquid crystals in those pixels.
- IPS type liquid crystal arrangement is different from TN type and is less affected by external force. So the display doesn't lighten or show tailing, thus no “Water Ripple”, when you press your finger on the screen. This is one of advantages of IPS technology for touchscreen devices .



TN TFT +O FILM

Compensated full viewing angle,
with Wide angel Polarizer (O Film)

Contrast changes from different
angles

More TFT modules optional

V S

IPS TFT

True full viewing angle

Contrast does not change from
different angles

Limited options

ZETTLER IPS TFT list

Size	P/N	Resolution	Brightness (cd/m2)	Landscape / Portrait	Outline dimension(mm)	Active area (mm)	Interface	TP
1.54"	ATM0154B1 series	240x240	500	--	31.52x33.72	27.72x27.72	SPI	N.A.
3.5"	ATM0350D17 series	320x240	500	L	77x64	70.08x52.56	RGB	RTP
4.0"	ATM0400D1 series	480x480	400/1000	--	77.66x78.97	71.86x70.18	RGB	N.A.
4.3"	ATM0430D44 series	800x480	550	L	105.5x67.2	95.04x53.86	RGB	CTP/RTP
5.0"	ATM0500D27 series	800x480	400/700/1100	L	120.7x75.8	108.0x64.8	RGB	CTP/RTP
6.8"	ATM0680L2 series	480x1280	450/1100	P	66.6x181	60.22x160.59	MIPI	CTP
7.0"	ATM0700L61 series	1024x600	600	L	164.9x100	154.21x85.92	LVDS	CTP
7.84"	ATM0784L1 series	400x1280	550	P	67.8x205.78	59.40x190.08	MIPI	N.A.
10.1"	ATM1010L19 series	1280x800	330	L	229.46x149.1	216.96x135.6	LVDS	CTP/RTP

ZETTLER IPS TFT Series

1.54"



3.5"



4.0"



6.8"



4.3"



5.0"



10.1"



7.0"



7.84"



Value-added services

TFT Overall Solution

Customized cover glass

Touch panel option:

Resistive TP

Capacitive TP

USB adaptor

Optical bonding

TFT display (various sizes)

Backlight option:

Up to 1300cd/m²

Control board option:

RGB/TTL/LVDS interface

Parallel/SPI/IIC interface

VGA/HDMI interface

UART interface

