

# OUR GLOBAL COMPETENCE CENTRES



 APOLLO DISPLAY  
TECHNOLOGIES



 DISTEC



 DISPLAY  
TECHNOLOGY



**FORTEC**  
ELEKTRONIK AG

# Product Catalog Industrial

Tianma  
2020

**FORTEC**  
ELEKTRONIK AG

# PRODUCT CATALOG INDUSTRIAL 2020



SHENZHEN | SHANGHAI | TAIWAN | HONG KONG | JAPAN | KOREA | INDIA | AMERICA | GERMANY

## ASIA

### CHINA

#### SHENZHEN

Address: No.88, Daxin Road, Tianma Building,  
Nanshan District, Shenzhen, China  
TEL: +86-755-3635 1000  
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#### SHANGHAI

Address: No.889, Huiqing Road, Pudong New  
District, Shanghai, China  
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FAX: +86-21-3866 1905  
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District, Shanghai, China  
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#### TAIWAN

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TEL: +886-3-3562660  
FAX: +886-3-3582201

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Address: 20/F., Tower II, Admiralty Centre,  
18 harcourt Road, Admiralty, Hong Kong  
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FAX: 00852-28829216

### JAPAN

#### KAWASAKI

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Tower 28F1-1-2, Kashimada, Saiwai-ku,  
Kawasaki, Kanagawa, Japan  
TEL: +81-44-330 9933  
FAX: +81-50-3823 9034

### KOREA

#### SEONGNAM

Address: 805 Geumgokdong, Mido plaza, 168,  
Seongnam-daero, Bundang-gu, Seongnam-si,  
Gyeonggi-do, Korea  
TEL: +82-31-717 8770  
FAX: +82-31-717 8775

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#### DELHI

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Co-operative, Industrial Estate, Mathura Road,  
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TEL: +91-11 4210 1100  
+91-11 4210 1200

## AMERICA

### THE UNITED STATES

#### CHINO

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USA  
TEL: +1-909-590-5833  
FAX: +1-909-590-5858

#### SANTA CLARA

Address: 2550 Walsh Avenue Suite 250 Santa Clara,  
CA 95051  
TEL: +1-408-816-7029

#### TROY

Address: 1875 Research Drive, Suite 150 Troy,  
MI 48083, USA  
TEL: +1-909-590-5833

## EUROPE

### GERMANY

#### DUSSELDORF

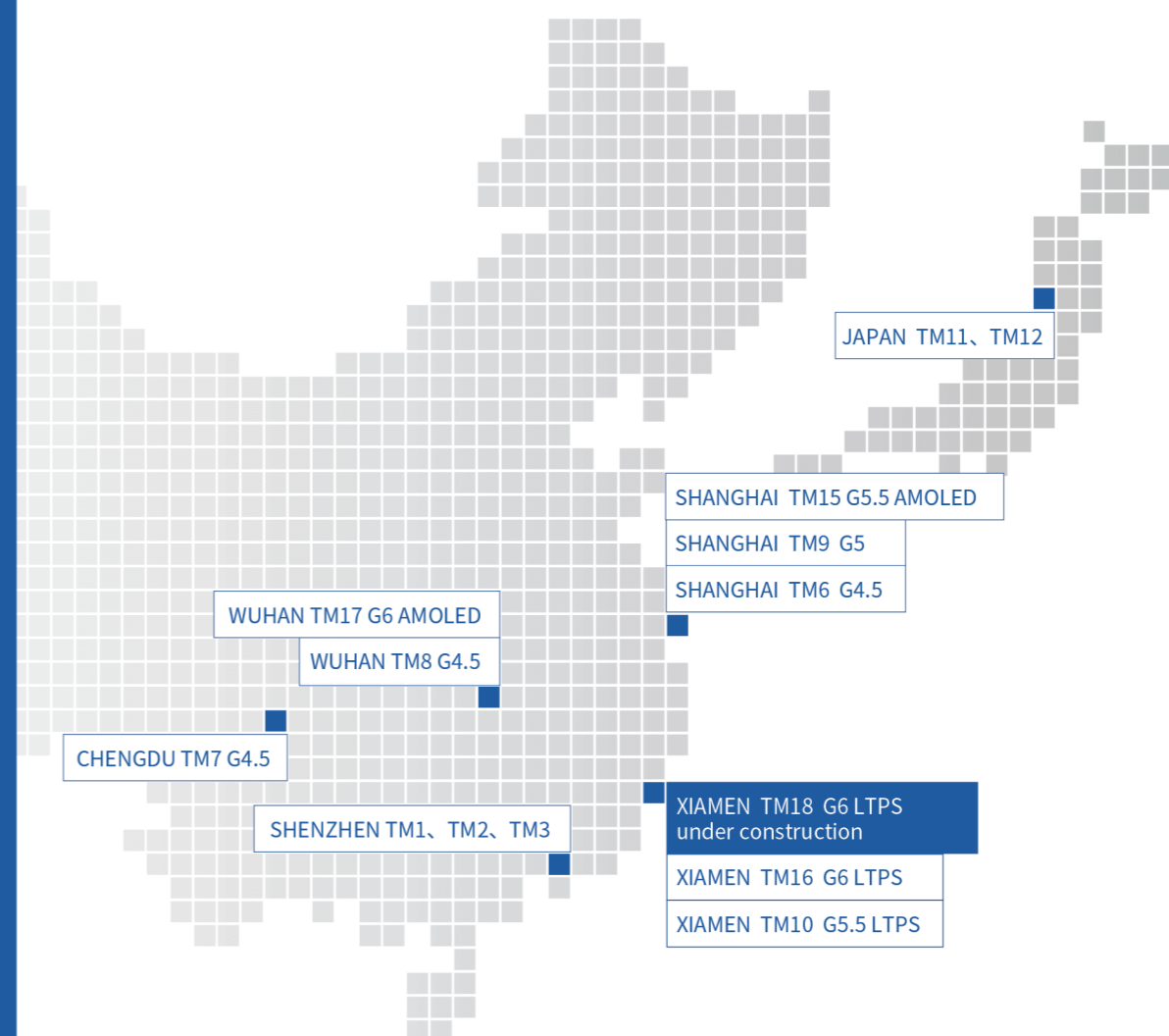
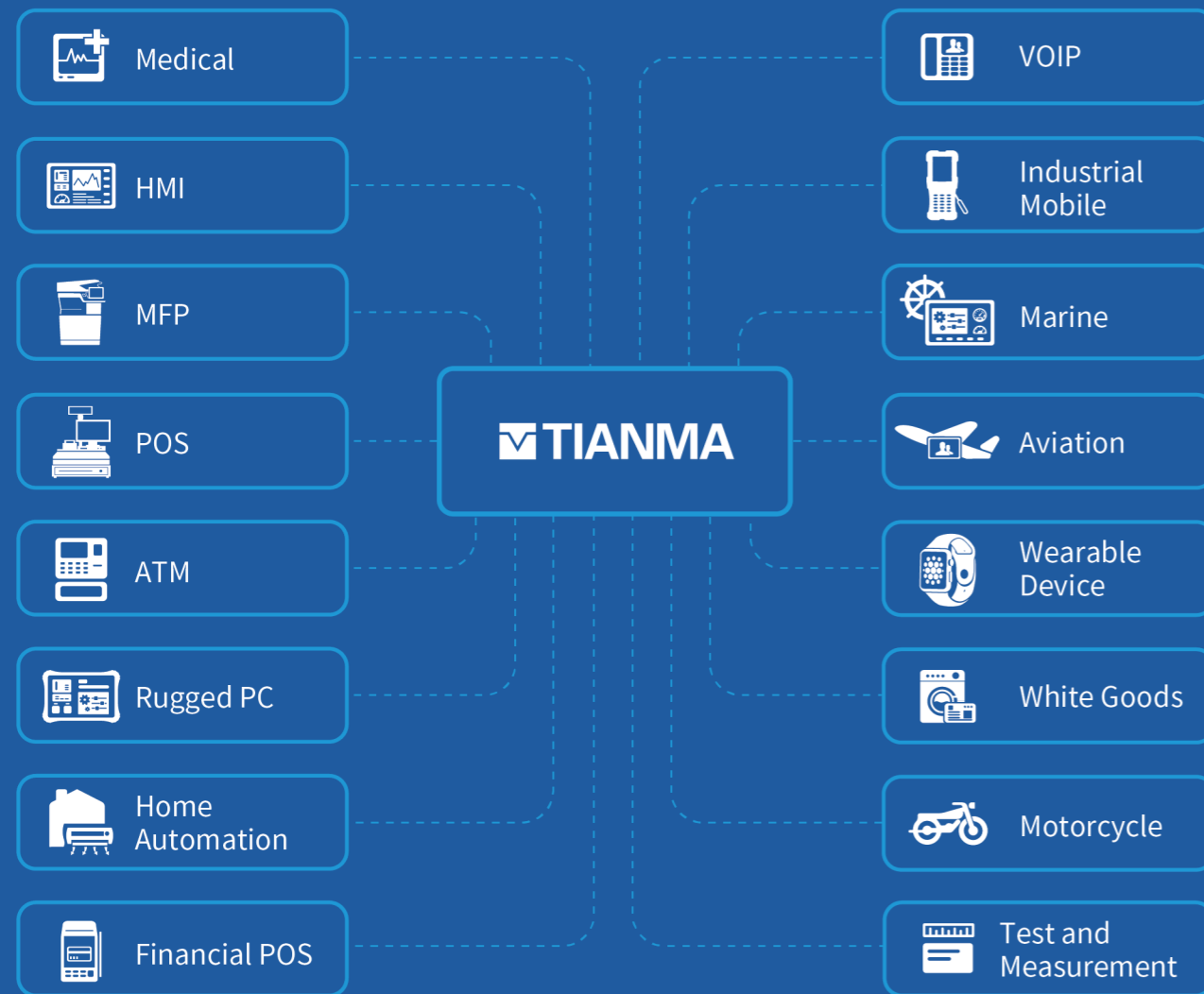
Address: Peter-Müller-Str. 22, 40468,  
Düsseldorf, Germany  
TEL: +49 211 6881 8100  
FAX: +49 211 6881 8189



Tianma Microelectronics Co., Ltd. (Tianma) specializes in providing display solutions and efficient support services worldwide. Originally established in 1983 and publicly listed on the Shenzhen Stock Exchange (SZ. 000050) in 1995, Tianma is committed to continuous innovation, best-in-class customer service, supporting the various design requirements needed for diverse industrial applications.

Our company focuses on providing smart mobile terminal

represented by smart home automation, medical instrumentation, and high-level desktop as well as professional display industries represented by automotive instrumentation, medical instrumentation, POS, AND HMI. Our market share for high-end medical devices, aviation entertainment, navigation and VOIP products maintain a leadership role in the world. Tianma continues to develop advanced technology, optimize product portfolio, and is committed to providing professional customized services to customers around the world.



2020  
XIAMEN TM18 LTPS under construction



2016  
WUHAN TM17



2014  
XIAMEN TM16



2013  
SHANGHAI TM15



2011  
JAPAN TM11, TM12



2011  
XIAMEN TM10



1983  
SHENZHEN TM1, TM2, TM3



2006  
SHANGHAI TM6



2008  
CHENGDU TM7



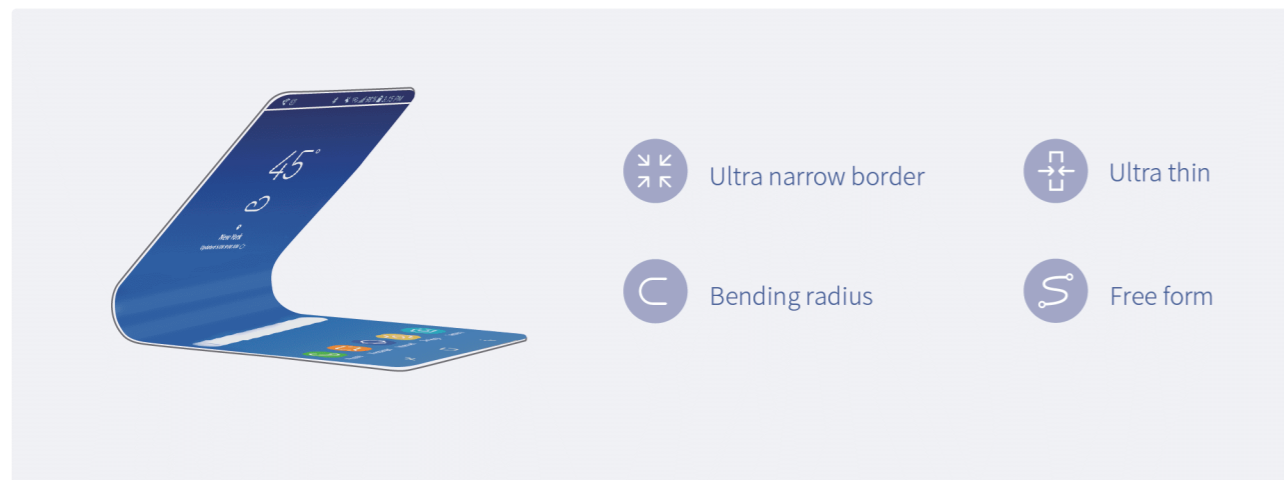
2008  
WUHAN TM8



2009  
SHANGHAI TM9

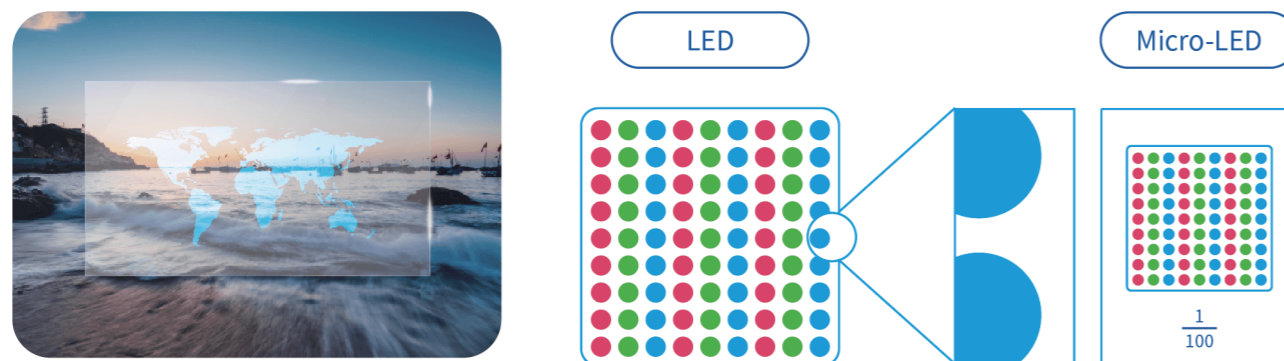
### Flexible OLED Curved Display

Flexible OLED curved displays have broad application prospects in the smart mobile display segment, which use polyimide flexible substrate, thin film encapsulation technology, supporting narrow border and ultra thin design.



### Micro LED

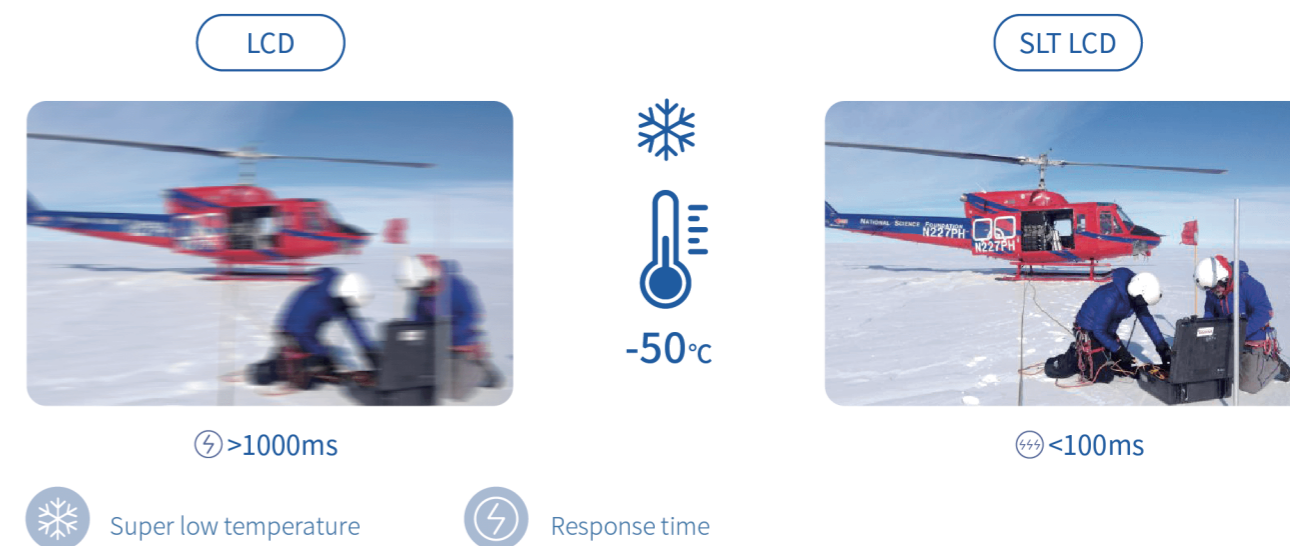
Micro LED features miniature LED arrays, with each Micro LED functioning as a pixel, individually driven to emit light. This enables modules to become more energy efficient, with high transmittance, high contrast, high brightness, narrow border and ultra-thin, etc.



- High transpency (water drop icon)
- Seamless splicing (two overlapping squares icon)
- Narrow border (square with thin border icon)

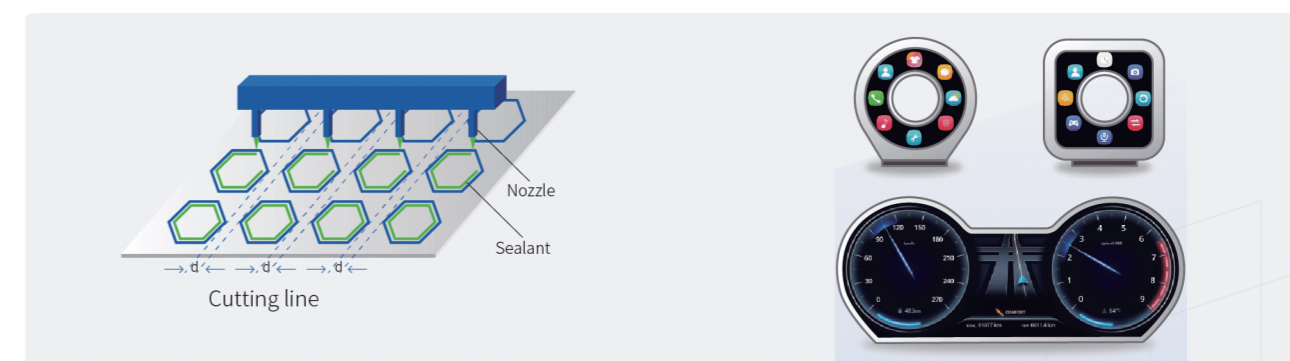
### Super Low Temperature (SLT) LCD

Tianma has developed a new technology designed to allow LCDs to function normally in extremely low temperatures, down to -45 deg. C. This technological advancement adopts a proprietary new design scheme, process and materials, all to solve the response time problem inherent with traditional LCDs. Tianma's SLT technology can display dynamic pictures normally in super-low temperatures, with a clear picture and no ghosting or response time delay phenomenon.



### Free Form

Provides greater flexibility for designs, based on customers' unique display requirements. Outlines can be round, polygon, annulus or even trapezoid, instead of the traditional rectangular shapes.

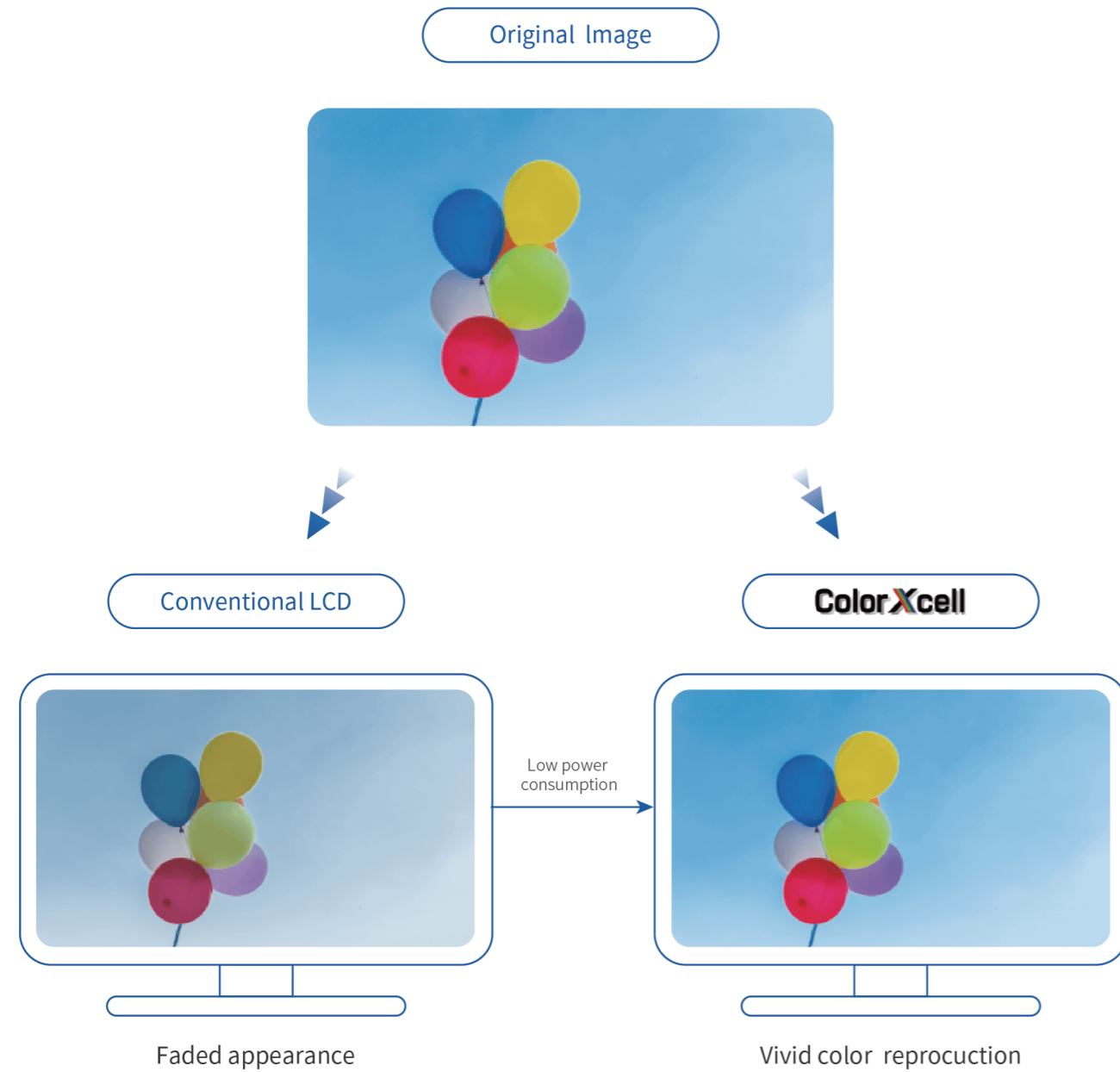


- Customized outline (crosshair icon)
- Flexible design (plus sign icon)

## ColorXcell Technology

High color reproduction with low power consumption

Tianma's proprietary ColorXcell technology enables the reproduction of images that are comparable in color intensity to the original video source, without increasing power consumption.



 High color reproduction

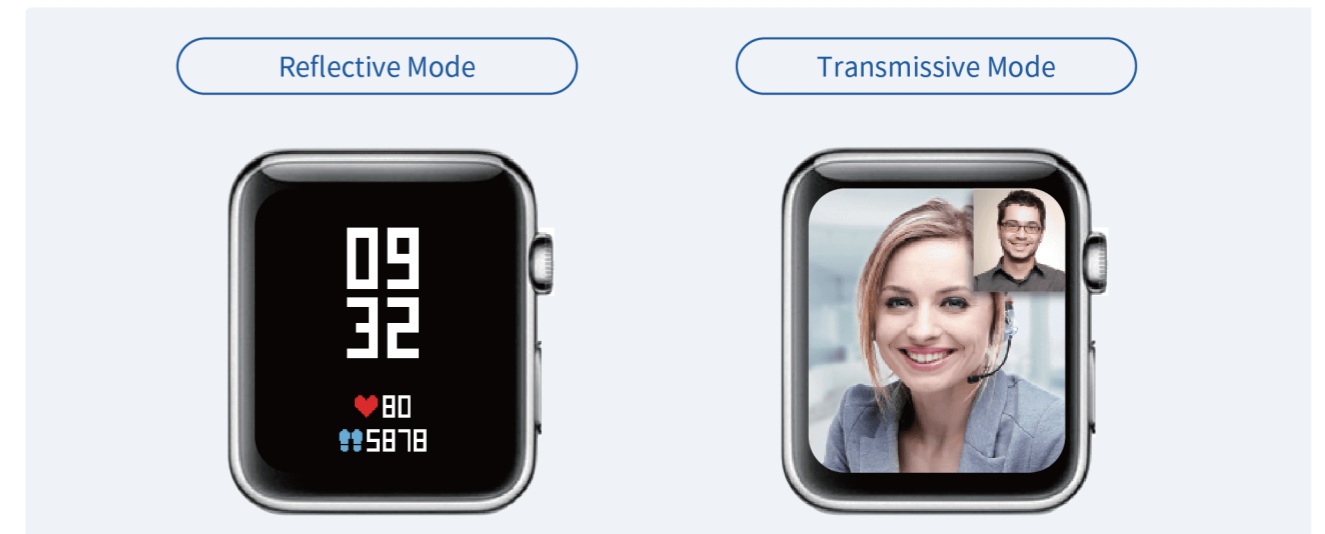
 Low power consumption

 Environmental friendly

## Low Power Technology

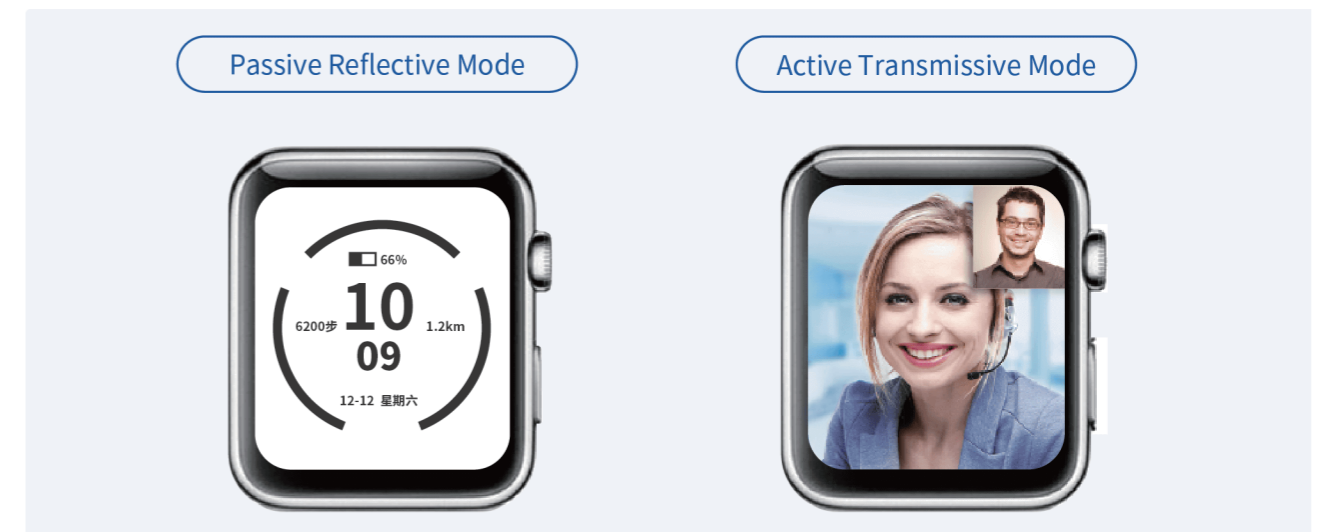
### EVT - Enhanced View TFT Technology

Enhanced View TFT Technology realizes the function of supporting the video image in reflective display mode, with super low power consumption and in transmissive display mode with the technology that can freely switch between high frequency mode and low frequency mode.



### Passive and Active Switching Technology

Passive and Active Switching Technology can freely switch between Passive black and white display mode and Active color display mode to achieve low power consumption in Passive black and white display mode versus conventional power consumption in Active full color display mode.



 Ultra-long standby time

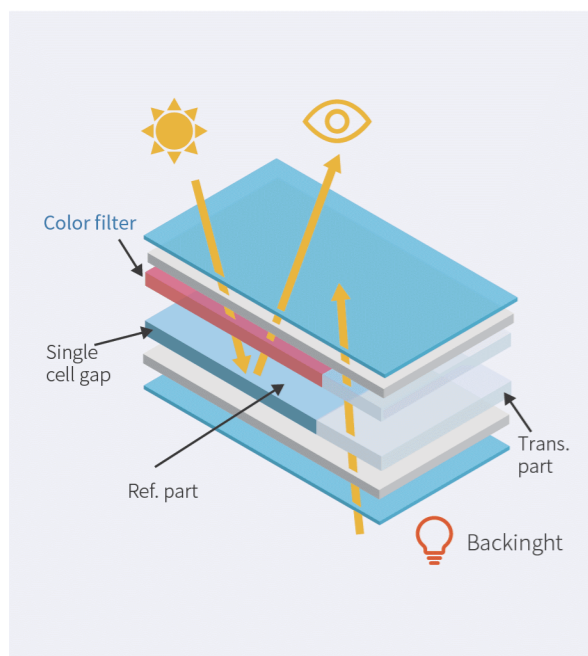
 Support video

## Reflective LCD

Ideal for outdoor and high ambient light conditions, providing better optical performance in direct sunlight or with the backlight off, it will reduce power consumption and eliminate blue light issues, to help better protect the eyes.

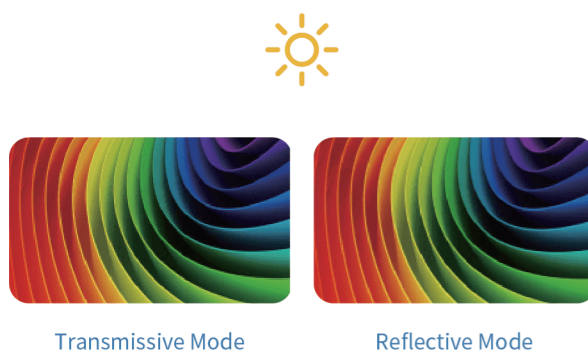
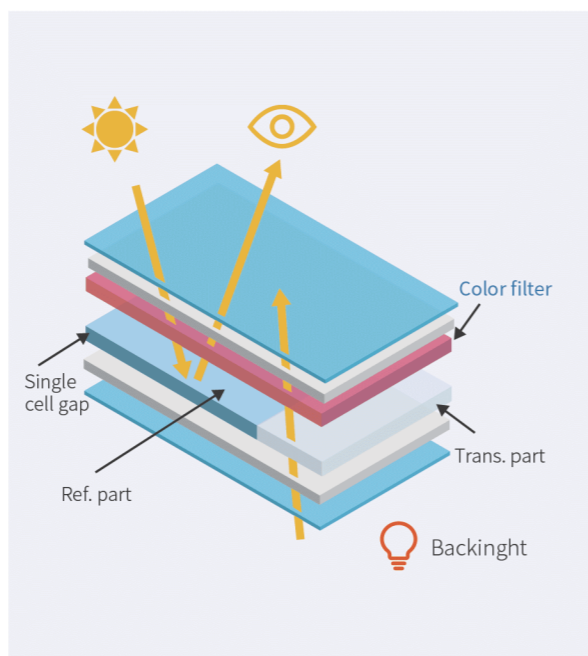
### Transmission zone and reflection zone CF design are different

Transmission and reflection display color gamut is the same or similar, transmission and reflection mode switch will not produce obvious changes in the display screen



### The transmission area and the reflection area CF design are the same

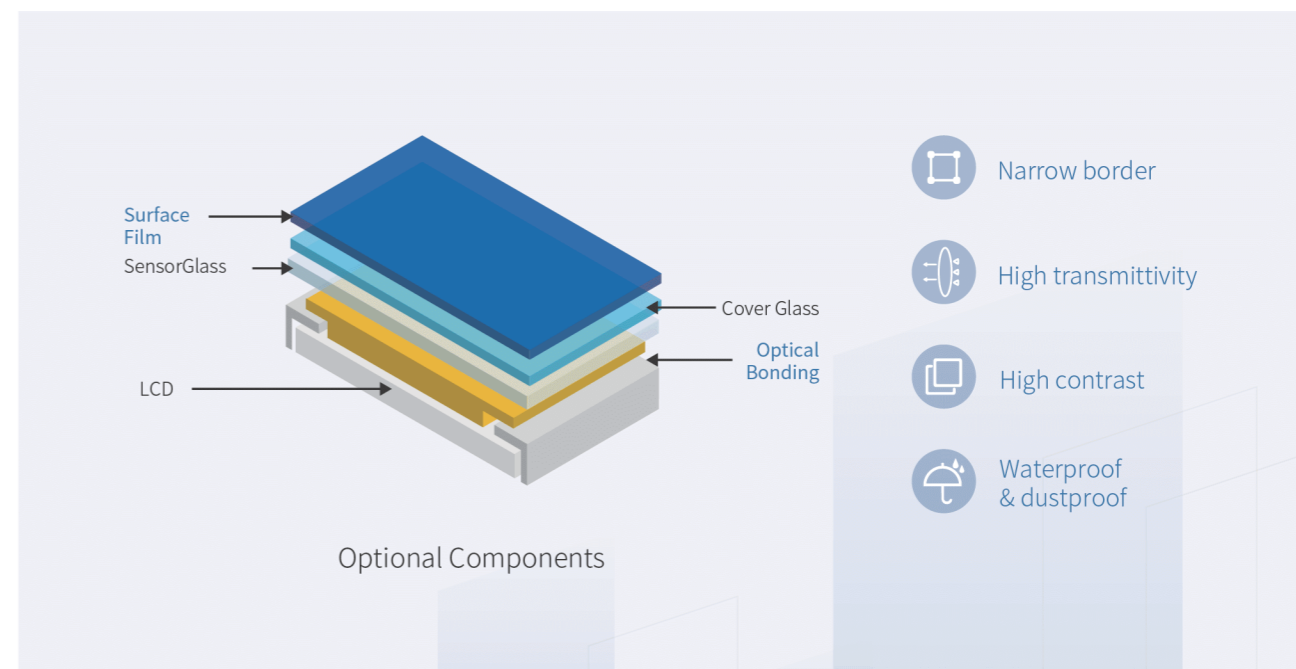
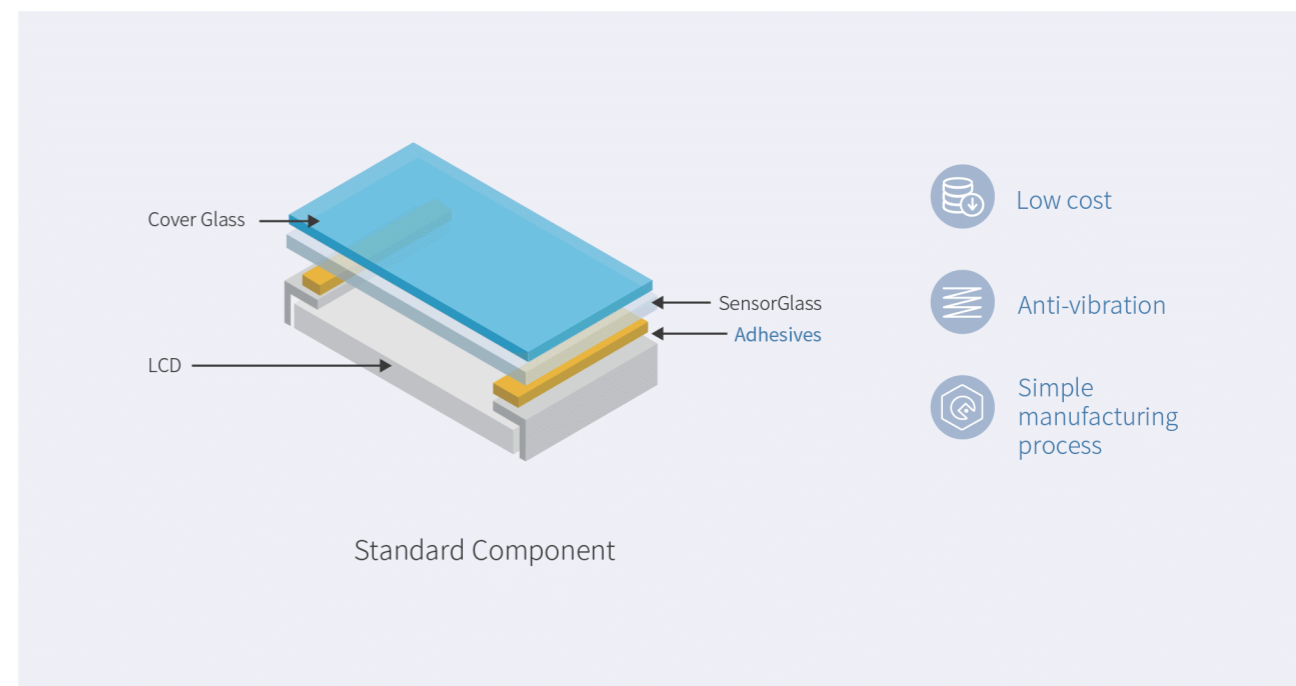
CF with ultra-low gamut is adopted to improve reflectivity while ensuring gamut



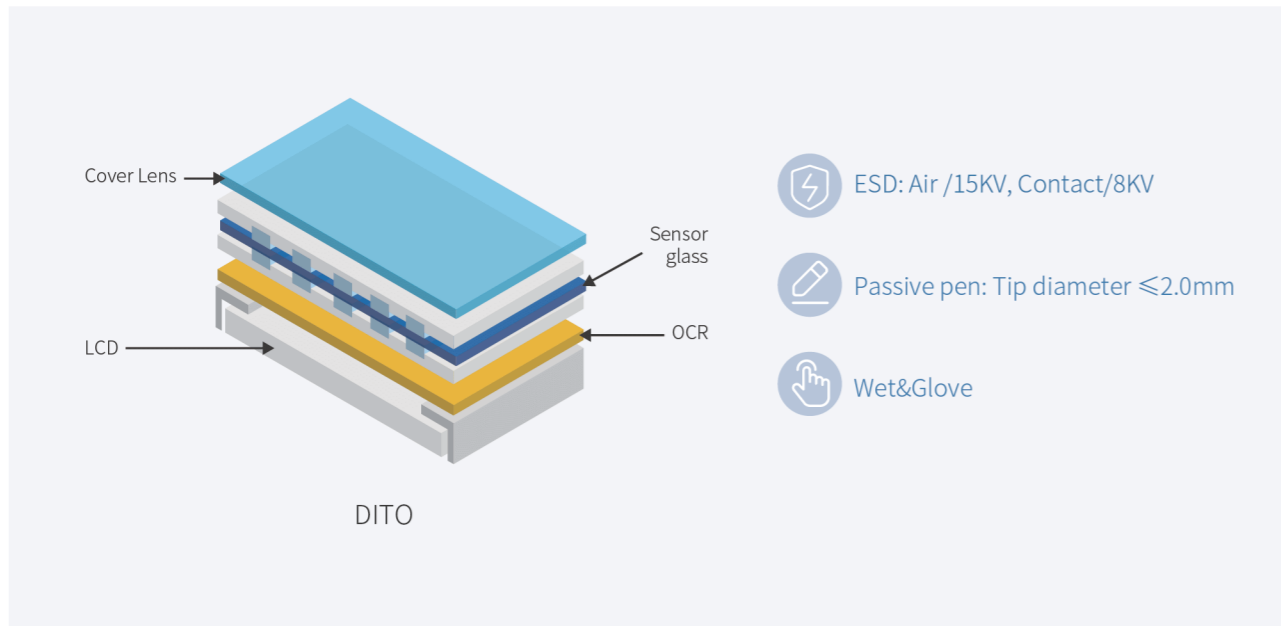
- Eye protection
- Low power consumption
- Anti blu-ray

## One-Stop Touch Solutions

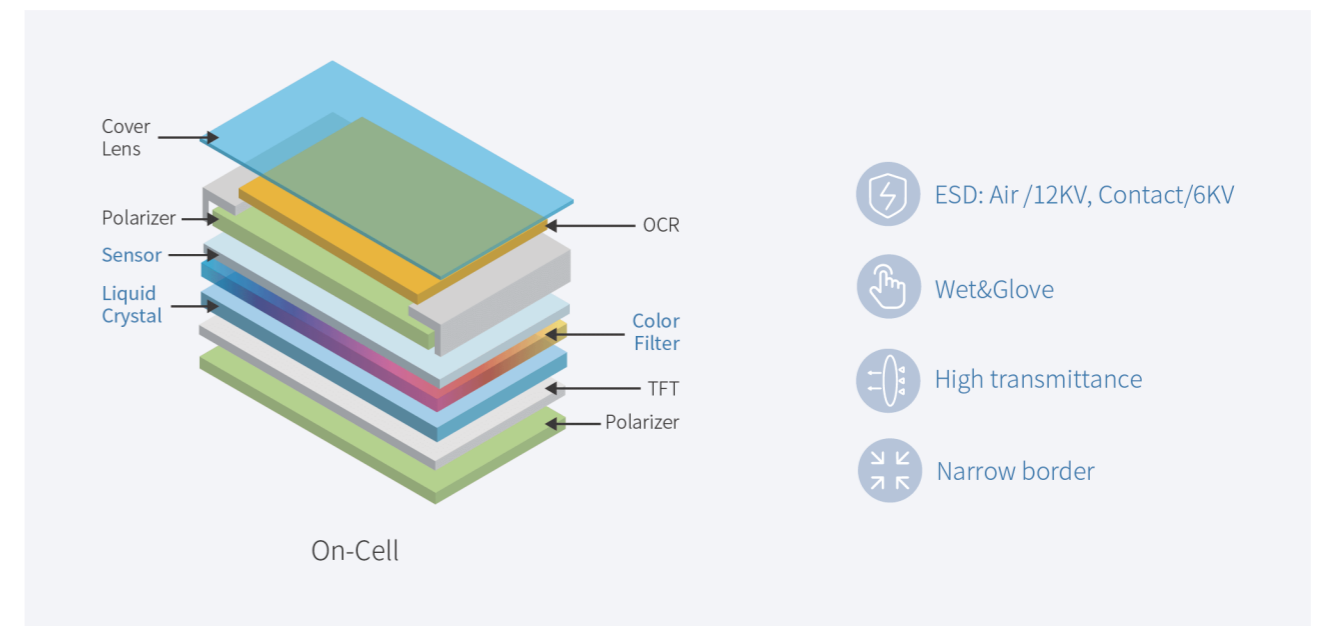
Tianma provides factory installed touch panels with touch controller included, as well as both standard and custom cover glass options. Based on our own, inhouse design and manufacturing capabilities, we offer high quality, integrated PCAP solutions, direct from the factory.



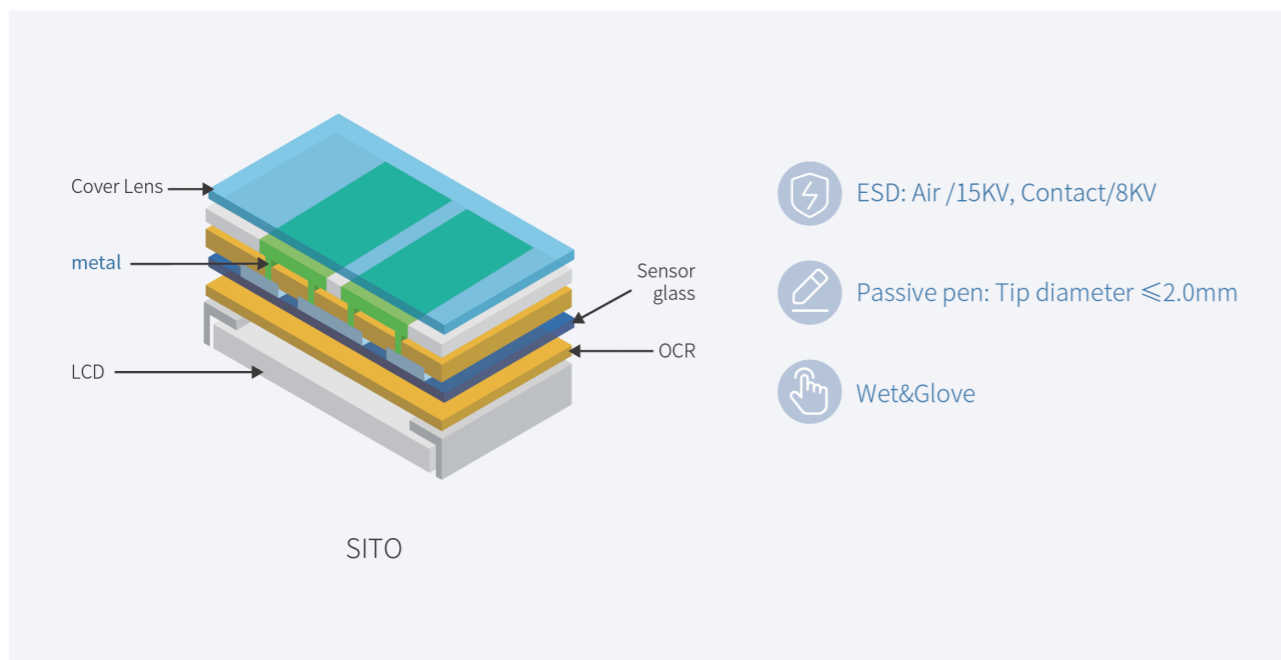
■ **DITO:** The touch pattern is composed of two layers of Indium Tin Oxide (ITO)



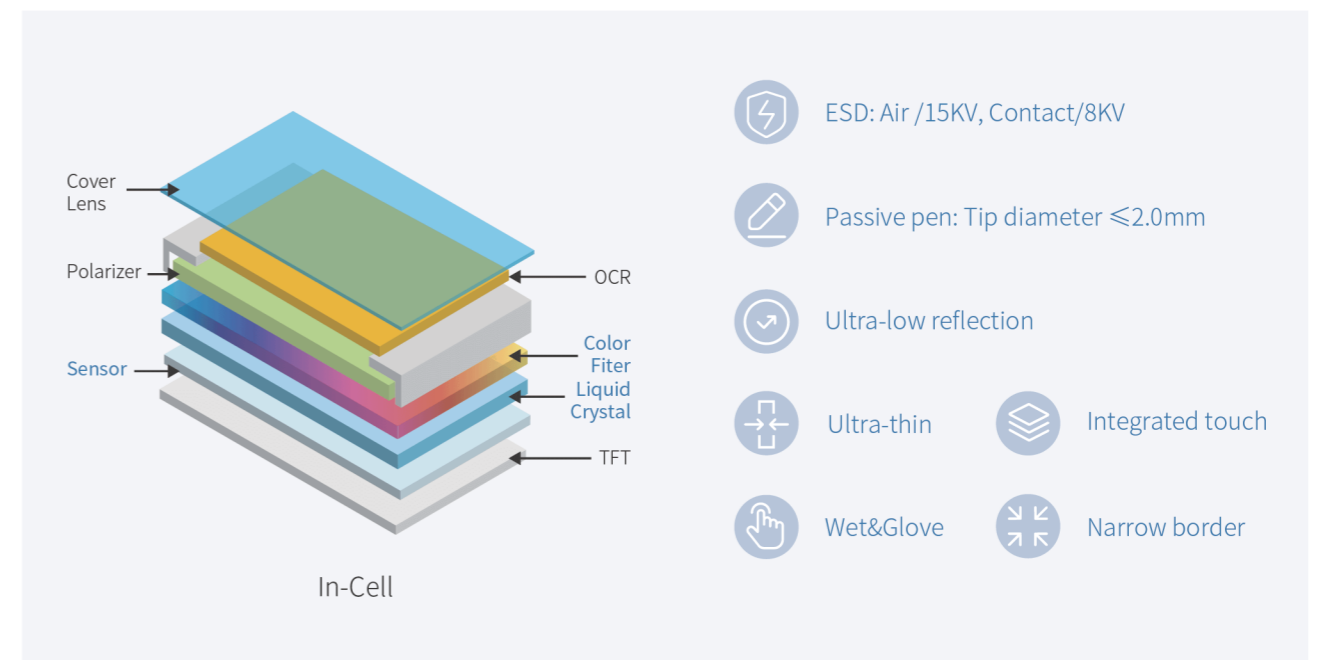
■ **On-Cell:** ITO pattern forms mutual capacitance electrodes on the color filter substrate.



■ **SITO:** The touch pattern consists of a single layer of Indium Tin Oxide (ITO)



■ **TED:** Touch Embedded Display (TED) technology integrates a high performance touch function sensor inside the TFT glass cell.



\*DITO: Double ITO / \*SITO: Single ITO

\*TED: Touch bedded Display




## High Visual Experience Technologies

**High Brightness** 




1500~1800 cd/m<sup>2</sup>

**High Contrast Ratio** 

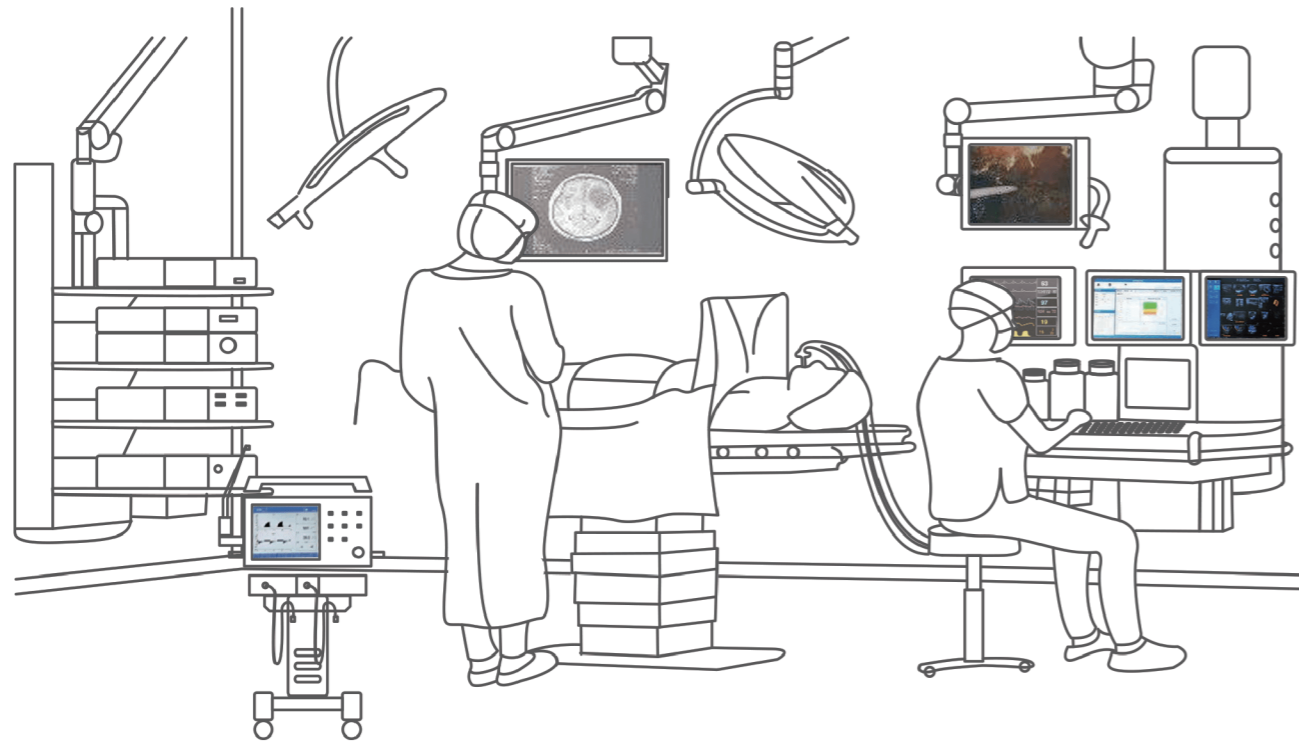


2000~2200:1

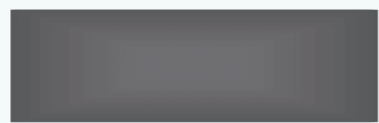
**High Color Gamut** 



110~120 % **ColorXcell**



**High Black Uniformity** 




70~75 %

**High Gray Scale Uniformity** 



80~85 %

## High Reliability Technologies

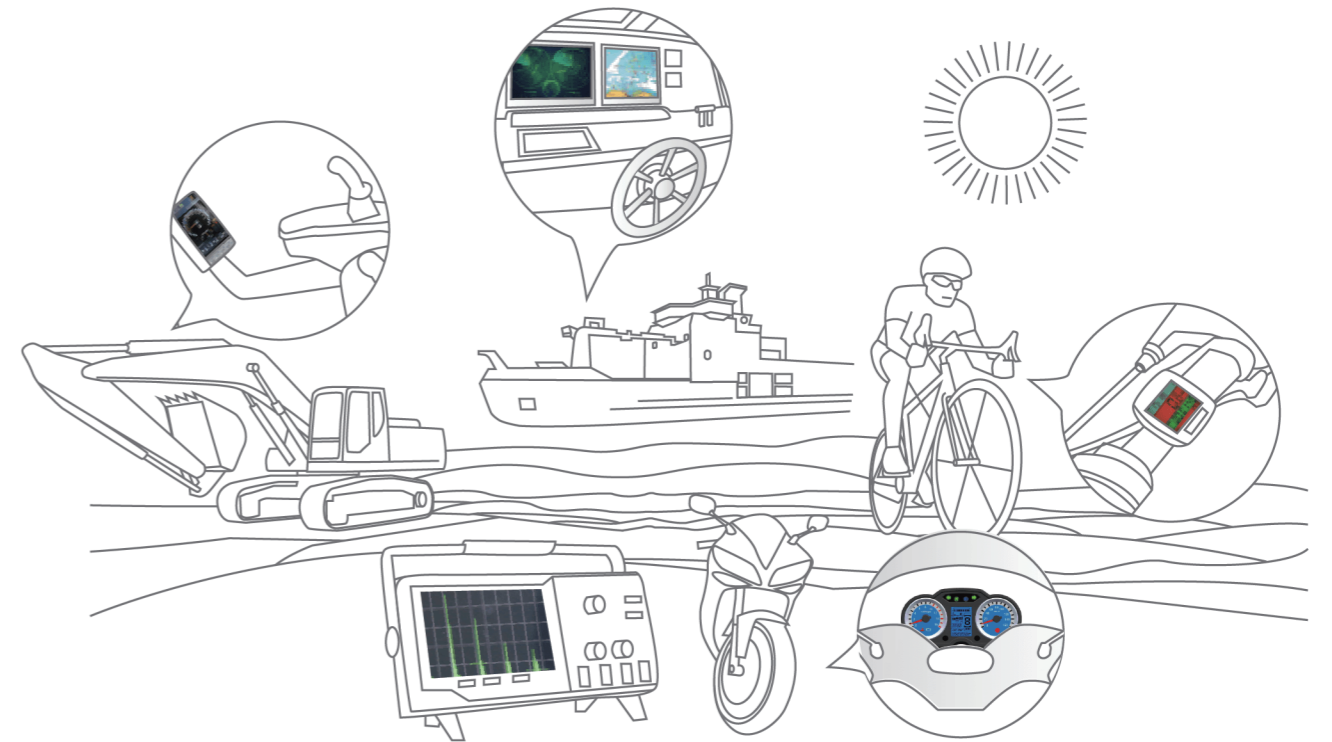
**Anti-vibration** 


**Anti-vibration** 10~400 Hz X/Y/Z 20 Hrs

**Normal** 10~50 Hz X/Y/Z 2 Hrs Total 6 Hrs

**Ultraviolet Protection** 

**UV** 1120 W/m<sup>2</sup>



**Super Low Temperature** 

**Room Temperature** -20 °C ~ +75 °C

**Low Temperature** -40 °C ~ +85 °C

**Longer Life** 

>50000 hours

# Main Products



## Ultrasound Monitor

- 4.3" WQVGA (480×272)
- 7" WVGA (800×480)
- 8.4" SVGA (800×600)
- 10.1" WXGA (1280×800) **SFT**
- 10.4" SVGA (800×600)
- 12.1" WXGA (1280×800) **SFT**
- 15" XGA (1024×768) **SFT**
- 15.6" FHD (1920×1080) **SFT** **FHD**



## Diagnostic Monitor

- 15.6" FHD (1920×1080) **SFT** **FHD**
- 18.5" FHD (1920×1080) **SFT** **FHD**
- 19" SXGA (1280×1024) **SFT**
- 21.3" QSXGA (2560×2048) **SFT** ★
- 30" QSXGA+ (3280×2048) **SFT**



## HMI

- 4.3" WQVGA (480×272) **SFT**
- 7" WVGA (800×480)
- 7" WSVGA (1024×600)
- 8" XGA (1024×768) **SFT**
- 8" SVGA (800×600)
- 8.4" SVGA (800×600)
- 10.1" WXGA (1280×800) **SFT**

- 10.4" SVGA (800×600) **SFT**
- 12.1" WXGA (1280×800) **SFT**
- 12.1" SVGA (800×600)
- 12.1" XGA (1024×768)
- 15" XGA (1024×768) **SFT**
- 15.6" FHD (1920×1080) **SFT** **FHD**
- 18.5" FHD (1920×1080) **SFT** **FHD**



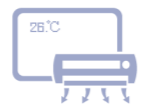
## MFP

- 2.2" QVGA (240×320)
- 2.4" QVGA (240×320)
- 2.8" QVGA (240×320)
- 4.3" WQVGA (480×272) **SFT**
- 7" WVGA (800×480)
- 7" WSVGA (1024×600)



## POS

- 7" WVGA (800×480)
- 8" XGA (1024×768)
- 10.1" WXGA (1280×800)
- 10.4" SVGA (800×600)
- 11.6" FHD (1920×1080) **SFT** **FHD**
- 12.1" XGA (1024×768)
- 15" XGA (1024×768)
- 15.6" FHD (1920×1080) **SFT** **FHD**



## Home Automation

- 2.2" QVGA (240×320) **SFT**
- 2.4" QVGA (240×320) **SFT**
- 2.8" QVGA (240×320)
- 3.5" QVGA (240×320) **SFT**
- 4.3" WQVGA (480×272)
- 4.3" WVGA (800×480)
- 5" WVGA (800×480)
- 7" WVGA (800×480)
- 7" WSVGA (1024×600) **SFT**
- 10.1" WXGA (1280×800) **SFT**



## Financial POS

- 2.2" QVGA (240×320)
- 2.4" QVGA (240×320)
- 2.8" QVGA (240×320)
- 3.5" QVGA (240×320)
- 4.3" WQVGA (480×272)
- 5" HD (1280×720) **HD**
- 5.5" HD (1280×720) **HD**
- 7" WVGA (800×480)



## VOIP

- 2.4" QVGA (240×320)
- 3.5" QVGA (240×320)
- 4.3" WQVGA (480×272) **SFT**
- 5" WVGA (800×480) **SFT**
- 5" HD (1280×720) **SFT** **HD**
- 7" WVGA (800×480)
- 7" WSVGA (1024×600)
- 8" XGA (1024×768)



## Industrial Mobile

- 2.2" QVGA (240×320) ★
- 2.4" QVGA (240×320)
- 2.8" QVGA (240×320)
- 3" SQVGA (240×400) ★
- 3.5" QVGA (240×320)
- 4.3" WQVGA (480×272)
- 5" WVGA (800×480)
- 5" HD (1280×720) **SFT** **HD**



## Marine

- 4.3" WQVGA (480×272)
- 5" WQVGA (800×480)
- 7" WVGA (800×480)
- 9" WSVGA (1024×600)

- 10.1" WXGA (1280×800) ★
- 11.6" FHD (1920×1080) **SFT** **FHD** ★
- 12.1" WXGA (1280×800) **SFT** ★
- 15.6" FHD (1920×1080) **SFT** **FHD** ★



## White Goods

- 2.4" QVGA (240×320) **SFT**
- 3.5" QVGA (240×320)
- 4.3" WQVGA (480×272) **SFT**
- 5" WVGA (800×480)
- 5" HD (1280×720) **SFT** **HD**
- 7" WVGA (800×480)
- 10.1" WXGA (1280×800) **SFT**
- 12.1" WXGA (1280×800) **SFT**



## Construction Machinery

- 3.5" QVGA (240×320) **SFT** **HD**
- 7" WVGA (800×480)
- 9" WSVGA (1024×600)
- 10.4" SVGA (800×600) **HD**
- 15.6" FHD (1920×1080) **SFT** **FHD**



## 2-Wheel Vehicles

- 3.5" QVGA (240×320) **HD** ★
- 4.3" WQVGA (480×272) ★
- 5" WVGA (800×480) **HD** ★
- 7" WVGA (800×480) **HD** ★

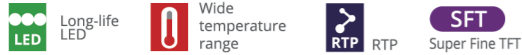


Screen Size	2.0"	2.2"	2.3"	2.4"	2.4"	2.83"
Mode	TN		TN	TN	<b>SFT</b>	TN
Resolution (pixl)	176×220	240×320	320×240	240×320	240×320	240×320
Active Area (mm)	31.68×39.60	33.84×45.12	35.064×46.752	36.72×48.96	36.72×48.96	43.20×57.60
Luminance (cd/m <sup>2</sup> )	220	90	320	300	300	300
Contrast Ratio	500:1	120:1	350:1	500:1	800:1	500:1
Viewing Angle (U/D/L/R)	70/60/70/70	48/45/40/45	45/55/55/60	70/60/70/70	80/80/80/80	70/60/70/70
Wide Color Gamut	60	50	50	50	70	65
Interface	CPU 8/16 bits	RGB 18 bits	CPU 16 bits	CPU 8 bits	CPU 8 bits	RGB
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Storage Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Module Size (WxHxD) (mm)	38.03×51.65×2.50	40.60×56.60×2.70	53.30×46.90×2.25	42.72×60.26×5.45	42.72×60.26×2.55	49.90×66.10×3.90
Life Time (H)	20000	20000	20000	20000	20000	30000
Application	Industrial Mobile	Industrial Mobile HMI MFP	POS Industrial Mobile	Industrial Mobile Financial POS	Home Automation Financial POS MFP	POS Home Automation Industrial Mobile

Screen Size	2.83"	3.0"	3.5"	3.5"	3.5"
Mode	<b>SFT</b>		TN	TN	TN
Resolution (pixl)	240×320	240×400	320×480	320×240	320×240
Active Area (mm)	43.20×57.60	38.88×64.80	48.96×73.44	70.08×52.56	70.08×52.56
Luminance (cd/m <sup>2</sup> )	280	150	300	300	350
Contrast Ratio	800:1	10:1	500:1	500:1	500:1
Viewing Angle (U/D/L/R)	80/80/80/80	35/35/30/30	70/60/70/70	60/70/70/70	60/70/70/70
Wide Color Gamut	70	7	60	50	50
Interface	MCU 8/16 bits	CPU 16 bits	RGB 24 bits	RGB 24 bits	RGB 24 bits
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Storage Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Module Size (WxHxD) (mm)	48.40×69.20×2.20	76.65×46.48×2.97	55.26×84.69×2.20	76.90×63.90×3.15	76.90×63.90×4.00
Life Time (H)	30000	20000	20000	20000	20000
Application	POS Home Automation Industrial Mobile	GPS Industrial Mobile	Financial POS Medical HMI	Financial POS MFP Scanner	Medical/Industrial Mobile White Goods VOIP

Screen Size	3.5"	3.5"	4.3"	4.3"	4.3"
Mode	<b>SFT</b>	TN	<b>SFT</b>	<b>SFT</b>	TN
Resolution (pixl)	320×240	320×240	480×800	480×272	480×272
Active Area (mm)	70.08×52.56	70.08×52.56	56.16×93.60	95.040×53.856	95.04×53.86
Luminance (cd/m <sup>2</sup> )	350	400	300	400	400
Contrast Ratio	800:1	400:1	800:1	800:1	900:1
Viewing Angle (U/D/L/R)	80/80/80/80	60/70/70/70	85/85/85/85	80/80/80/80	80/60/80/80
Wide Color Gamut	60	60	65	50	50
Interface	RGB 24 bits	RGB 24 bits	RGB 24 bits	RGB 24 bits	RGB 24 bits
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Storage Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Module Size (WxHxD) (mm)	76.90×63.90×3.15	76.90×63.9×2.80	61.96×104.50×1.90	105.50×67.20×2.90	105.50×67.20×2.90
Life Time (H)	20000	20000	20000	30000	30000
Application	Financial POS MFP HMI	Financial POS Industrial Mobile	Medical Industrial Mobile	VOIP MFP HMI	MFP HMI

Screen Size	4.3"	4.3"	4.3"	4.66"	5.0"
Mode	TN	<b>SFT</b>	TN	<b>SFT</b>	TN
Resolution (pixl)	480×272	480×800	480×272	720×1280	800×480
Active Area (mm)	95.04×53.86	95.04×53.86	97.04×55.86	58.10×103.30	108.00×64.80
Luminance (cd/m <sup>2</sup> )	280	300	350	400	300
Contrast Ratio	450:1	800:1	900:1	900:1	450:1
Viewing Angle (U/D/L/R)	70/50/70/70	85/85/85/85	80/60/80/80	85/85/85/85	50/70/70/70
Wide Color Gamut	50	65	50	70	50
Interface	RGB 24 bits	RGB 24 bits	RGB 24 bits	MIPI	RGB 24 bits
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Storage Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Module Size (WxHxD) (mm)	105.50×67.20×4.10	67.50×117.70×4.775	113.44×71.46×4.65	61.06×113.18×1.43	120.70×75.80×3.00
Life Time (H)	20000	20000	20000	20000	20000
Application	MFP Medical White Goods	MFP Medical White Goods	MFP Medical White Goods	Industrial Mobile Financial POS	VOIP HMI Medical



Screen Size	5.0"	5.0"	5.0"	5.0"	5.0"
Mode	TN	TN	TN	SFT	SFT
Resolution (pixl)	800×480	800×480	800×480	800×480	720×1280
Active Area (mm)	108.00×64.80	108.00×64.80	64.80×108.00	108.60×65.16	62.10×110.40
Luminance (cd/m <sup>2</sup> )	250	1000	330	850	600
Contrast Ratio	600:1	750:1	600:1	800:1	800:1
Viewing Angle (U/D/L/R)	50/70/70/70	70/80/80/80	50/70/70/70	80/80/80/80	88/88/88/88
Wide Color Gamut	50	50	50	70	70
Interface	RGB 24 bits	RGB 24 bits	RGB 24 bits	RGB 24 bits	MIPI
Operating Temperature	-20°C~+70°C	-30°C~+85°C	-20°C~+70°C	-30°C~+85°C	-20°C~+70°C
Storage Temperature	-30°C~+80°C	-40°C~+90°C	-30°C~+80°C	-40°C~+90°C	-30°C~+80°C
Module Size (WxHxD) (mm)	120.70×75.80×3.10	120.70×77.80×5.70	75.80×120.70×3.10	124.00×80.46×6.60	65.40×118.90×1.72
Life Time (H)	20000	50000	20000	50000	20000
Application	VOIP Marine HMI	Motorcycle 测量设备	HMI Industrial Mobile Medical	Motorcycle Construction/Machinery	Financial POS Industrial Mobile HMI

Screen Size	5.5"	5.7"	5.7"	5.7"	5.7"
Mode	SFT	TN	TN	TN	SFT
Resolution (pixl)	720×1280	320×240	320×240	640×480	720×1280
Active Area (mm)	68.04×120.96	115.20×86.40	115.20×86.40	115.20×86.40	71.28×126.72
Luminance (cd/m <sup>2</sup> )	350	400	400	400	450
Contrast Ratio	1000:1	500:1	500:1	500:1	900:1
Viewing Angle (U/D/L/R)	80/80/80/80	60/70/70/70	70/60/70/70	60/70/70/70	85/85/85/85
Wide Color Gamut	70	50	50	50	70
Interface	MIPI	RGB 18 bits	RGB 18 bits	RGB 18 bits	MIPI
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Storage Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Module Size (WxHxD) (mm)	76.00×143.40×3.72	144.00×104.60×12.30	144.00×104.60×12.30	144.00×104.60×12.30	74.98×137.00×1.57
Life Time (H)	20000	50000	50000	50000	20000
Application	Financial POS Industrial Mobile	HMI	HMI Medical	HMI Elevator	Industrial Mobile

Screen Size	6.0"	6.2"	7.0"	7.0"	7.0"
Mode	SFT	TN	TN RTP	TN	TN
Resolution (pixl)	800×1280	800×480	800×480	1024×600	800×480
Active Area (mm)	80.76×129.22	137.40×77.28	154.08×85.92	153.6(H)×90.0(V)	156.68×88.52
Luminance (cd/m <sup>2</sup> )	360	400	350	270	300
Contrast Ratio	800:1	500:1	800:1	500:1	500:1
Viewing Angle (U/D/L/R)	85/85/85/85	60/70/75/75	60/80/80/80	70/75/75/75	60/70/70/70
Wide Color Gamut	70	50	49.2	50	50
Interface	MIPI	TTL 24 bits	RGB 24 bits	LVDS	RGB 24 bits
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Storage Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Module Size (WxHxD) (mm)	140.57×87.76×2.70	155.20×88.20×4.90	164.90×100.00×6.80	171.50×110.30×5.00	171.5×110.30×7.35
Life Time (H)	20000	20000	20000	20000	30000
Application	VOIP	Construction/Machinery Marine	HMI Medical Test and Measurement	HMI Home Automation	HMI Medical

Screen Size	7.0"	7.0"	7.0"	7.0"	8.0"
Mode	TN	SFT	TN	SFT	TN
Resolution (pixl)	800×480	800×480	1024×600	1280×800	1024×768
Active Area (mm)	154.08×85.92	152.40×91.44	153.60×90.00	149.76×93.60	162.05×121.54
Luminance (cd/m <sup>2</sup> )	1000	400	320	400	400
Contrast Ratio	1000:1	1000:1	900:1	800:1	700:1
Viewing Angle (U/D/L/R)	60/80/80/80	85/85/85/85	70/70/75/75	88/88/88/88	80/80/80/80
Wide Color Gamut	50	70	50	50	50
Interface	RGB 24 bits	LVDS	LVDS 6 bits	LVDS	LVDS 6 bits
Operating Temperature	-30°C~+85°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Storage Temperature	-40°C~+90°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Module Size (WxHxD) (mm)	164.90×100.00×5.70	167.00×106.30×6.80	165.75×105.39×3.40	161.00×107.00×3.35	183.00×141.00×3.40
Life Time (H)	50000	50000	20000	30000	30000
Application	Motorcycle Marine Test and Measurement	HMI MFP Scanner/POS/ATM/KIOSK	HMI White Goods	VOIP HMI POS/ATM/White Goods	MFP HMI VOIP



Screen Size	8.0"	8.0"	8.0"	8.4"	8.4"	9.0"
Mode	<b>SFT</b>	TN	TN	TN	TN	TN
Resolution (pixl)	1024×768	800×600	800×600	800×600	800×600	1024×600
Active Area (mm)	162.05×121.54	162.00×121.50	162.00×121.50	170.40×127.80	170.40×127.80	196.60×114.15
Luminance (cd/m <sup>2</sup> )	460	500	250	350	350	500
Contrast Ratio	1800:1	500:1	800:1	500:1	500:1	800:1
Viewing Angle (U/D/L/R)	85/85/85/85	50/70/70/70	60/70/70/70	60/70/70/70	60/70/70/70	50/70/70/70
Wide Color Gamut	50	50	50	50	50	50
Interface	LVDS	RGB 24 bits	RGB 24 bits	LVDS 6/8 bits	RGB 24 bits	LVDS
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Storage Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Module Size (WxHxD) (mm)	183.43×138.35×3.75	183.00×141.00×5.60	183.00×141.00×5.60	203.00×142.50×5.70	189.75×149.40×4.80	211.10×126.50×5.70
Life Time (H)	30000	40000	25000	50000	30000	20000
Application	Home Automation HMI Elevator	White Goods POS HMI	HMI POS	HMI Medical	KIOSK HMI	HMI Marine

Screen Size	9.7"	10.1"	10.1"	10.1"	10.1"	10.1"
Mode	TN	TN	<b>SFT</b>	TN	<b>SFT</b>	<b>SFT</b>
Resolution (pixl)	1024×768	1024×600	1280×800	1024×600	1280×800	1280×800
Active Area (mm)	196.61×147.46	222.72×125.28	216.96×135.60	222.72×125.28	216.96×135.60	216.96×135.60
Luminance (cd/m <sup>2</sup> )	350	450	500	360	400	430
Contrast Ratio	500:1	800:1	800:1	800:1	800:1	800:1
Viewing Angle (U/D/L/R)	60/70/70/70	75/80/80/80	85/85/85/85	75/80/80/80	85/85/85/85	85/85/85/85
Wide Color Gamut	50	47	50	47	50	50
Interface	LVDS 6 bits	LVDS 6/8 bits	LVDS 6/8 bits	LVDS 6/8 bits	LVDS 8 bits	LVDS 6/8 bits
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-10°C~+50°C	-20°C~+70°C
Storage Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-20°C~+60°C	-30°C~+80°C
Module Size (WxHxD) (mm)	210.20×166.30×3.28	235.00×143.00×4.90	231.22×150.60×4.30	236.40×147.89×7.25	229.46×149.10×2.50	233.93×156.00×6.73
Life Time (H)	30000	30000	50000	30000	30000	50000
Application	MFP Medical POS	POS VOIP Medical	HMI Medical Elevator	HMI MFP Rugged PC	Rugged PC POS	HMI Medical POS

Screen Size	10.4"	10.4"	12.1"	12.1"	12.1"	12.1"
Mode	TN	TN	<b>SFT</b>	TN	TN	<b>SFT</b>
Resolution (pixl)	800×600	800×600	1280×800	800×600	1024×768	1280×800
Active Area (mm)	211.20×158.40	211.20×158.40	261.10×163.20	246.00×184.50	245.76×184.32	261.10×163.20
Luminance (cd/m <sup>2</sup> )	350	400	450	350	450	450
Contrast Ratio	500:1	400:1	1000:1	700:1	700:1	1000:1
Viewing Angle (U/D/L/R)	60/70/70/70	60/70/70/70	85/85/85/85	65/75/80/80	80/80/80/80	85/85/85/85
Wide Color Gamut	50	50	72	55	55	40
Interface	RGB 24 bits	LVDS 6 bits	LVDS 6/8 bits	LVDS 1 port	LVDS	LVDS 6/8 bits
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Storage Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Module Size (WxHxD) (mm)	228.40×175.40×6.20	236.00×176.90×5.60	278.00×184.00×9.90	279.00×209.00×9.00	279.00×209.00×8.60	278.00×184.00×9.90
Life Time (H)	30000	20000	50000	30000	50000	50000
Application	HMI POS	HMI POS Medical	HMI Medical	POS HMI Medical	Medical HMI	Medical HMI Marine

Screen Size	15.0"	15.0"	15.6"	18.5"	21.3"
Mode	TN	TN	SFT	SFT	SFT
Resolution (pixl)	1024×768	1024×768	1920 x 1080	1920 x 1080	2560 x 2048
Active Area (mm)	304.12×228.09	304.12×228.09	344.16 x 193.59	408.96 x 230.04	337.92 x 422.4
Luminance (cd/m <sup>2</sup> )	450	300	400	400	1100
Contrast Ratio	800:1	800:1	1000:1	1000:1	2000:1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	88/88/88/88	88/88/88/88	89/89/89/89
Wide Color Gamut	60	60	72	72	72
Interface	LVDS 1 port	eDP1.2	LVDS	eDP	LVDS
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-0°C~+60°C
Storage Temperature	-30°C~+80°C	-30°C~+80°C	-20°C~+70°C	-30°C~+80°C	-20°C~+60°C
Module Size (WxHxD) (mm)	326.50×253.50×11.80	326.50×253.50×11.80	363.8 x 215.9 x 6.3	430.4 x 254.6 x 13.5	354.9 x 442.3 x 20.9
Life Time (H)	50000	30000	50000	50000	50000
Application	POS ATM HMI	POS HMI	Medical	Medical	Medical



Screen Size	5.7 "	5.7 "	5.7 "	5.7 "	5.7 "
Part No.	NL3224AC36-01D	NL6448AC18-11D	NL6448AC18-08F	NL6448AC18-08D	NL6448BC18-07
Mode	TN	TN	TN	TN	TN
Resolution (pixl)	320×240	640×480	640×480	640×480	640×480
Active Area (mm)	115.2×86.4	115.2×86.4	115.2×86.4	115.2×86.4	115.2×86.4
Display Color	262K	16.19M	262K	262K	262K
Luminance (cd/m <sup>2</sup> )	500	550	800	550	300
Contrast Ratio	900:1	900:1	900:1	900:1	900:1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	80/80/80/80	80/80/80/80	80/80/80/80
Response Time(ms)	18	18	18	18	18
Interface	CMOS RGB 6 bits	CMOS RGB 6 bits	CMOS RGB 6 bits	CMOS RGB 6 bits	CMOS RGB 6 bits
Power Consumption	1.6	2.4	3.6	2.3	1.4
Operating Temperature	-30°C~+85°C	-30°C~+85°C	-30°C~+85°C	-30°C~+85°C	-20°C~+70°C
Polarizer Surface	AG	AG	AG	AG	Clear
Module Size (WxHxD) (mm)	144.00×104.6×12.8	144.0×104.6×12.8	144.0×104.6×12.8	144.0×104.6×12.8	127.2×100.4×6.1
Weight (g)	150	150	150	150	110
Remarks					-

Screen Size	6.5 "	6.5 "	6.5 "	6.5 "	6.5 "
Part No.	NL6448BC20-35/35D	NL6448BC20-30C/30F	NL6448BC20-30/30D	NL10276BC13-01C	NL10276BC13-01
Mode	TN	TN	TN	TN	TN
Resolution (pixl)	640×480	640×480	640×480	1024×768	1024×768
Active Area (mm)	132.48×99.36	132.48×99.36	132.48×99.36	132.096×99.072	132.096×99.072
Display Color	262K	16.77M / 262K	16.77M / 262K	16.77M / 262K	16.77M / 262K
Luminance (cd/m <sup>2</sup> )	600	1000	600	650	500
Contrast Ratio	800:1	800:1	800:1	500:1	500:1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	80/80/80/80	80/60/80/80	80/60/80/80
Response Time(ms)	18	18	18	25	25
Interface	CMOS RGB 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits
Power Consumption	2.7	3.8	2.6	3.9	3.9
Operating Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-20°C~+70°C	-20°C~+70°C
Polarizer Surface	-35: Clear -35D: AG	-30C: Clear + AR -30F: Clear	-30: Clear -30D: AG	Clear + AR	Clear
Module Size (WxHxD) (mm)	153.0×118.0×8.7	153.0×118.0×8.7	153.0×118.0×8.7	153.0×118.0×9.5	153.0×118.0×9.5
Weight (g)	150	-30C: 155 -30F: 150	150	170	165
Remarks					-

Screen Size	8.4 "	8.4 "	8.4 "	8.4 "	8.4 "
Part No.	NL6448BC26-27/27D	NL6448BC26-26C/26F	NL6448BC26-26/26D	NL6448AC26-47D	NL8060BC21-21D
Mode	TN	TN	TN	TN	TN
Resolution (pixl)	640×480	640×480	640×480	640×480	800×600
Active Area (mm)	170.88×128.16	170.88×128.16	170.88×128.16	170.88×128.16	170.4×127.8
Display Color	16.77M / 262K	262K	262K	262K	16.77M / 262K
Luminance (cd/m <sup>2</sup> )	500	900	500	380	400
Contrast Ratio	1000:1	1000:1	1000:1	1000:1	800:1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	80/80/80/80	80/80/80/65	80/80/80/80
Response Time(ms)	18	18	18	8	18
Interface	LVDS RGB 8 bits / 6 bits	CMOS RGB 6 bits	CMOS RGB 6 bits	CMOS RGB 6 bits	LVDS RGB 8 bits / 6 bits
Power Consumption	3.1	5.1	3.2	3.3	3.3
Operating Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Polarizer Surface	-27: Clear -27D: AG	-26C: Clear + AR -26F: Clear	-26: Clear -26D: AG	AG	AG
Module Size (WxHxD) (mm)	200.0×152.0×8.7	200.0×152.0×8.7	200.0×152.0×8.7	221.0×152.4×9.0	200.0×152.0×8.7
Weight (g)	260	260	260	285	260
Remarks					

Screen Size	8.4 "	8.4 "	8.4 "	10.4 "	10.4 "
Part No.	NL8060BC21-11C/11F	NL8060BC21-11/11D	NL10276BC16-06/06D	NL6448AC33-A1D	NL6448AC33-A0D
Mode	TN	TN	SFT	TN	TN
Resolution (pixl)	800×600	800×600	1024×768	640×480	640×480
Active Area (mm)	170.4×127.8	170.4×127.8	170.496×127.872	211.2×158.4	211.2×158.4
Display Color	16.77M / 262K	16.77M / 262K	16.77M / 262K	262K	262K
Luminance (cd/m <sup>2</sup> )	800	400	600	370	500
Contrast Ratio	800:1	800:1	1000:1	900:1	900:1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	88/88/88/88	80/80/80/80	80/80/80/80
Response Time(ms)	18	18	25	18	18
Interface	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	CMOS RGB 6 bits	CMOS RGB 6 bits
Power Consumption	5.0	3.0	5.6	3.3	5.0
Operating Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+70°C	-30°C~+80°C	-30°C~+80°C
Polarizer Surface	-11C: Clear + AR -11F: Clear	-11: Clear -11D: AG	-06: Clear -06D: AG	AG	AG
Module Size (WxHxD) (mm)	200.0×152.0×8.7	200.0×152.0×8.7	200.0×152.0×8.7	227.3×177.5×9.8	246.5×179.4×10.0
Weight (g)	260	260	260	380	390
Remarks					











Screen Size	10.4"	10.4"	10.4"	10.4"	10.4"
Part No.	NL6448BC33-71C/71F	NL6448BC33-71/71D	NL6448BC33-70C/70F	NL6448BC33-70/70D	NL8060AC26-54D
Mode	TN	TN	TN	TN	TN
Resolution (pixl)	640×480	640×480	640×480	640×480	800×600
Active Area (mm)	211.2×158.4	211.2×158.4	211.2×158.4	211.2×158.4	211.2×158.4
Display Color	16.77M / 262K	16.77M / 262K	262K	262K	16.77M / 262K
Luminance (cd/m <sup>2</sup> )	900	450	900	450	450
Contrast Ratio	900:1	900:1	900:1	900:1	900:1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	80/80/80/80	80/80/80/80	80/80/80/80
Response Time(ms)	18	18	18	18	18
Interface	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	CMOS RGB 6 bits	CMOS RGB 6 bits	LVDS RGB 8 bits / 6 bits
Power Consumption	6.2	3.5	6.4	3.7	5.1
Operating Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Polarizer Surface	-71C:Clear+AR -71F:Clear	-71: Clear -71D:AG	-70C:Clear+AR -70F:Clear	-70: Clear -70D:AG	AG
Module Size (WxHxD) (mm)	243.0×185.1×11.0	243.0×185.1×11.0	243.0×185.1×11.0	243.0×185.1×11.0	227.3×177.5×9.8
Weight (g)	475	475	475	475	375
Remarks					









Screen Size	10.4"	10.4"	10.4"	10.4"	10.4"
Part No.	NL8060AC26-52D	NL8060BC26-35C/35F	NL8060BC26-35/35D	NL10276BC20-47	NL10276BC20-18C/18F
Mode	TN	TN	TN	SFT	TN
Resolution (pixl)	800×600	800×600	800×600	1024×768	1024×768
Active Area (mm)	211.2×158.4	211.2×158.4	211.2×158.4	210.432×157.824	210.432×157.824
Display Color	16.77M / 262K	16.77M / 262K	16.77M / 262K	262K	16.77M / 262K
Luminance (cd/m <sup>2</sup> )	400	800	400	300	800
Contrast Ratio	900:1	900:1	900:1	700:1	900:1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	80/80/80/80	80/80/80/80	80/80/80/80
Response Time(ms)	18	18	18	25	18
Interface	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 6 bits	LVDS RGB 8 bits / 6 bits
Power Consumption	4.7	6.3	3.6	3.9	7.5
Operating Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	0°C~+55°C	-30°C~+80°C
Polarizer Surface	AG	-35C : Clear+AR -35F : Clear	-35 : Clear -35D : AG	Clear	-18C : Clear+AR -18F : Clear
Module Size (WxHxD) (mm)	243.0×185.1×11.0	243.0×185.1×11.0	243.0×185.1×11.0	227.0×175.4×9.2	228.0×178.5×9.2
Weight (g)	430	475	475	360	380
Remarks					

Screen Size	10.4"	12.1"	15.0"	15.0"	15.0"
Part No.	NL10276BC20-18/18D	NL8060BC31-50F	NL10276AC30-52C	NL10276AC30-58F	NL10276AC30-48D
Mode	TN	TN	TN	TN	SFT
Resolution (pixl)	1024×768	800×600	1024×768	1024×768	1024×768
Active Area (mm)	210.432×157.824	246.0×184.5	304.128×228.096	304.128×228.096	304.128×228.096
Display Color	16.77M / 262K	262K	16.77M / 262K	16.77M / 262K	16.77M / 262K
Luminance (cd/m <sup>2</sup> )	400	900	1600	1600	350
Contrast Ratio	900:1	1000:1	1000:1	1000:1	900:1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	80/80/80/80	80/80/80/80	88/88/88/88
Response Time(ms)	18	18	8	8	25
Interface	LVDS RGB 8 bits / 6 bits	LVDS RGB 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits
Power Consumption	4.8	7.1	24.1	24.1	9.5
Operating Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+70°C	-30°C~+70°C	-20°C~+70°C
Polarizer Surface	-18 : Clear -18D : AG	Clear	Clear + AR	AG	AG
Module Size (WxHxD) (mm)	228.0×178.5×9.2	260.5×203.0×9.2	326.5×253.5×13.5	326.5×253.5×13.5	326.5×253.5×12.3
Weight (g)	380	490	1150	1150	870
Remarks					






Screen Size	15.0"	15.0"	15.0"	19.0"
Part No.	NL10276AC30-45D	NL10276AC30-42D	NL10276AC30-42C	NL128102AC29-17
Mode	TN	TN	TN	SFT
Resolution (pixl)	1024×768	1024×768	1024×768	1280×1024
Active Area (mm)	304.128×228.096	304.128×228.096	304.128×228.096	376.32×301.056
Display Color	16.77M / 262K	16.77M / 262K	16.77M / 262K	16.77M
Luminance (cd/m <sup>2</sup> )	400	600	600	800cd/m <sup>2</sup>
Contrast Ratio	600:1	600:1	600:1	1000 : 1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	80/80/80/80	88°/88°/88°/88°
Response Time(ms)	8	8	8	25ms
Interface	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	2port LVDS RGB 8 bits
Power Consumption	7.8	11.9	11.9	45.0
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Polarizer Surface	AG	AG	Clear + AR	AG
Module Size (WxHxD) (mm)	326.5×253.5×12.1	326.5×253.5×12.1	326.5×253.5×12.1	396.0×324.0×18.5
Weight (g)	1050	1050	1050	2100
Remarks				


# Wide Format Model

Screen Size	7.0 " Wide	7.0 " Wide	7.0 " Wide	8.0 " Wide	9.0 " Wide
Part No.	NL8048AC19-21	NL8048AC19-14F	NL8048AC19-13	NL8048BC21-03F	NL8048BC24-09/09D
Mode	TN	TN	TN	SFT	SFT
Resolution (pixl)	800×480	800×480	800×480	800×480	800×480
Active Area (mm)	152.4×91.44	152.4×91.44	152.4×91.44	174.0×104.4	196.8×118.08
Display Color	16.19M	262K	262K	16.77M / 262K	16.77M / 262K
Luminance (cd/m <sup>2</sup> )	500	1000	500	1000	400
Contrast Ratio	800:1	800:1	800:1	1000:1	800:1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	80/80/80/80	88/88/88/88	88/88/88/88
Response Time(ms)	8	8	8	20	25
Interface	LVDS RGB 6 bits	LVDS RGB 6 bits	LVDS RGB 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits
Power Consumption	3	5.4	3	5.6	4.4
Operating Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-40°C~+80°C	-20°C~+70°C
Polarizer Surface	Clear	AG	Clear	AG	-09: Clear -09D: AG
Module Size (WxHxD) (mm)	170.0×111.0×9.0	170.0×111.0×9.0	170.0×111.0×9.0	192.0×122.0×7.9	220.5×136.5×8.7
Weight (g)	185	185	185	225	275
Remarks	 	 	 		

Screen Size	9.0 " Wide	10.1 " Wide	11.6 " Wide	12.1 " Wide	12.1 " Wide
Part No.	NL192108AC10-01D	NL12880BC16-02F	NL192108AC13-02D	NL12880AC20-20D	NL12880AC20-20D
Mode	SFT	SFT	SFT	SFT	SFT
Resolution (pixl)	1920×1080	1280×800	1920×1080	1280×800	1280×800
Active Area (mm)	198.72×111.78	216.96×135.6	256.32×144.18	261.12×163.2	261.12×163.2
Display Color	16.77M / 262K	16.77M / 262K	16.77M	16.77M	16.77M
Luminance (cd/m <sup>2</sup> )	400	1000	450	400	1100
Contrast Ratio	700:1	800:1	1000:1	1000:1	1000:1
Viewing Angle (U/D/L/R)	88/88/88/88	88/88/88/88	88/88/88/88	88/88/88/88	88°/88°/88°/88°
Response Time(ms)	25	25	20	25	25
Interface	2 port LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	2 lanes eDP 8bit	LVDS RGB 8 bits	LVDS RGB 8 bits
Power Consumption	11.4	6.7	8.5	7.1	8.5
Operating Temperature	-20°C~+70°C	-40°C~+85°C	-20°C~+70°C	-20°C~+70°C	-30°C~+80°C
Polarizer Surface	AG	AG	AG	AG	AG
Module Size (WxHxD) (mm)	214.6×130.0×9.6	235.4×153.8×12.1	276.5×165.6×6.0	277.7×180.6×9.2	277.7×180.6×9.2
Weight (g)	270	400	355	470	470
Remarks	  	 	 		-



Screen Size	12.1 " Wide	15.6 " Wide	15.6 " Wide	15.6 " Wide	15.6 " Wide
Part No.	NL12880BC20-07F	NL13676BC25-07F	NL13676AC25-05D	NL192108BC18-06F	NL192108AC18-02D
Mode	TN	TN	TN	SFT	SFT
Resolution (pixl)	1280×800	1366×768	1366×768	1920×1080	1920×1080
Active Area (mm)	261.12×163.2	344.232×193.536	344.232×193.536	344.16×193.59	344.16×193.59
Display Color	16.77M / 262K	16.19M / 262K	16.77M / 262K	16.77M	16.77M
Luminance (cd/m <sup>2</sup> )	1800	1250	400	1500	400
Contrast Ratio	800:1	900:1	900:1	750:1	1000:1
Viewing Angle (U/D/L/R)	80/80/80/80	80/80/80/80	80/80/80/80	88/88/88/88	88/88/88/88
Response Time(ms)	15	18	18	25	25
Interface	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	LVDS RGB 8 bits / 6 bits	2 lanes eDP RGB 8 bits	2 port LVDS RGB 8 bits
Power Consumption	16.7	16.2	8.5	23.3	13.9
Operating Temperature	-20°C~+70°C	-30°C~+80°C	-20°C~+70°C	-30°C~+85°C	-20°C~+70°C
Polarizer Surface	AG	AG	AG	AG	AG
Module Size (WxHxD) (mm)	277.7×180.6×9.2	363.8×215.9×13.1	363.8×215.9×10.8	363.8×215.9×16.2	363.8×215.9×6.8
Weight (g)	470	1070	800	1050	610
Remarks				-	 

Screen Size	15.6 " Wide	18.5 " Wide	18.5 " Wide	30 " Wide
Part No.	NL192108AC18-01D	NL192108AC21-04	NL192108AC21-01	NL328204AC19-01
Mode	SFT	SFT	SFT	SFT
Resolution (pixl)	1920×1080	1920×1080	1920×1080	3280×2048
Active Area (mm)	344.16×193.59	408.96×230.4	408.96×230.4	645.504×403.046
Display Color	16.77M	16.77M	16.77M	1073M
Luminance (cd/m <sup>2</sup> )	400	400	400	1000
Contrast Ratio	1000:1	1000:1	1000:1	1500:1
Viewing Angle (U/D/L/R)	88/88/88/88	88/88/88/88	88/88/88/88	88°/88°/88°/88°
Response Time(ms)	25	25	25	25
Interface	2 lanes eDP RGB 8 bits	2 port LVDS RGB 8 bits	2 lanes eDP RGB 8 bits	4 lanes eDP RGB 10 bits
Power Consumption	13.9	15.3	15.3	114
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	0°C~+60°C
Polarizer Surface	AG	AG	AG	AG
Module Size (WxHxD) (mm)	363.8×215.9×6.8	430.4×254.6×14.0	430.4×254.6×14.0	670.0×427.0×30.5
Weight (g)	610	1550	1550	5500
Remarks	 	 	 	 



# PCAP

Screen Size	4.3 "	4.3 "	5.0 "	5.7 "	5.7 "	7.0 "
Resolution (pixl)	480×272	480×800	800×480	320×240	640×480	800×480
Multi Touch (points)	2~5	5	2~5	2~5	2~5	2~5
Active Area (mm)	96.04×54.86	94.40×56.96	96.04×54.86	116.60×87.80	116.60×87.80	155.24×87.12
Luminance (cd/m <sup>2</sup> )	88	88	88	88	88	88
Reflectivity (%)	4	4	4	4	4	4
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Input	Finger/Glove	Finger/Glove Passive Pen	Finger/Glove	Finger/Glove	Finger/Glove	Finger/Glove
Cover Glass Thickness (mm)(Max.)	4	4	4	3	3	3
Application	Industrial Mobile Finacial POS Home Automation	Industrial Mobile Medical HMI	Industrial Mobile HMI Measurement Tester	Industrial Mobile	Industrial Mobile	Industrial Mobile

Screen Size	7.0 "	7.0 "	8.0 "	10.1 "	10.1 "	10.1 "	10.1 "
Resolution (pixl)	1024×600	1280×800	1024×768	1280×800	1280×800	1280×800	1024×600
Multi Touch (points)	2~5	2~5	2~10	2~10	2~10	2~10	2~10
Active Area (mm)	155.20×91.40	150.76×94.60	163.05×122.54	218.36×137.00	218.36×137.00	218.36×137.00	223.72×126.28
Luminance (cd/m <sup>2</sup> )	88	88	88	88	88	88	88
Reflectivity (%)	4	4	4	4	4	4	4
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Input	Finger/Glove	Finger/Glove	Finger/Glove	Finger/Glove	Finger/Glove	Finger/Glove	Finger/Glove
Cover Glass Thickness (mm)(Max.)	3	10	3	10	10	10	10
Application	Industrial Mobile	Industrial Mobile	HMI Medical	HMI Test and Measurement	Medical	Home Automation	HMI Medical

# PCAP+LCM



Screen Size	5.5 "	5.5 "	5.7 "	7.0 "
Mode	SFT	SFT	TN	TN
Resolution (pixl)	720×1280	720×1280	320×240	1024×600
Active Area (mm)	62.10×110.40	68.04×120.96	115.20×86.40	157.00×92.80
Luminance (cd/m <sup>2</sup> )	300	350	340	270
Contrast Ratio	900:1	1000:1	500:1	500:1
Viewing Angle(U/D/L/R)	85/85/85/85	80/80/80/80	70/60/70/70	70/75/75/75
Wide Color Gamut (%)	70	70	50	50
Interface	MIPI	MIPI	RGB 18 bits	LVDS 6 bits
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Module Size (WxHxD) (mm)	71.64×145.40×2.49	76.00×143.40×3.72	144.00×104.60×12.30	171.50×110.30×5.00
Life Time (H)	20000	20000	50000	20000
Application	Industrial Mobile Finacial POS	Industrial Mobile Finacial POS	Home Automation HMI	HMI Finacial POS

Screen Size	7.0 "	7.0 "	10.1 "	12.1 "
Mode	SFT	TN	SFT	TN
Resolution (pixl)	1280×800	800×480	1280×800	1024×768
Active Area (mm)	152.16×96.00	154.08×85.92	218.76×137.40	245.76×184.32
Luminance (cd/m <sup>2</sup> )	500	1200	350	450
Contrast Ratio	800:1	1000:1	800:1	700:1
Viewing Angle(U/D/L/R)	85/85/85/85	60/80/80/80	85/85/85/85	80/80/80/80
Wide Color Gamut (%)	50	50	50	55
Interface	LVDS 6/8 bits	RGB 24 bits	LVDS 6/8 bits	LVDS 6/8 bits
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Module Size (WxHxD) (mm)	179.760×123.60×6.35	171.50×110.30×7.35	248.76×167.40×10.69	293.00×232.00×10.10
Life Time (H)	50000	50000	30000	50000
Application	HMI Finacial POS	HMI Finacial POS	HMI Finacial POS Medical	HMI POS

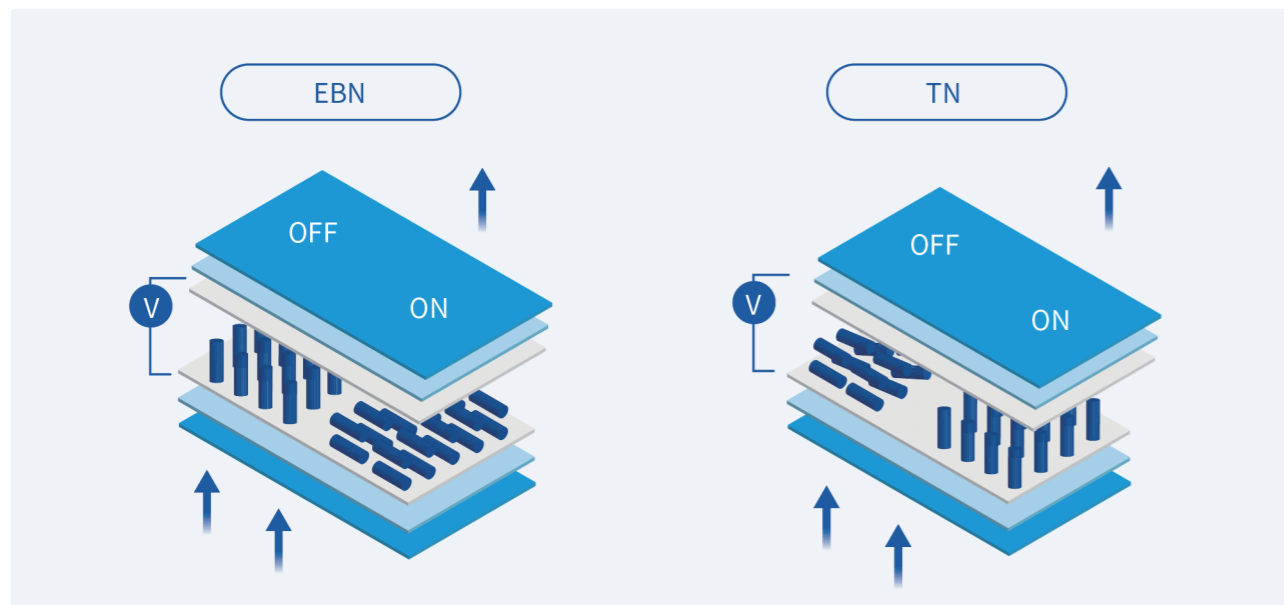
Screen Size	6.5 "	6.5 "	7.0 " Wide	7.0 " Wide
Part No.	NL6448BC20-30JF	NL10276BC13-01JA	NL8048AC19-14KH	NL8048AC19-13KD
Mode	TN	TN	TN	TN
Resolution (pixl)	640×480	1024×768	800×480	800×480
Module Size (WxHxD)(mm)	153.0×118.0×10.0	153.0×118.0×10.7	170.0×111.0×11.2	170.0×111.0×11.2
Active Area (mm)	132.48×99.36	132.096×99.072	152.4×91.44	152.4×91.44
Luminance (cd/m <sup>2</sup> )	950	480	950	470
Viewing Angle(U/D/L/R)	80/80/80/80	80/60/80/80	80/80/80/80	80/80/80/80
Multi Touch (points)	Available	Available	Available	Available
Polarizer Surface	Clear + AFP	Clear	AG + AFP	AG + AFP
Cover Glass Thickness (mm)(Max.)	-	-	0.7	0.7
Operating Temperature	-30°C~+80°C	-20°C~+70°C	-30°C~+80°C	-30°C~+80°C
Remarks	Optical Bonding	Optical Bonding	Optical Bonding	Optical Bonding

Screen Size	7.0 " Wide	8.4 "	8.4 "	10.4 "
Part No.	NL8048AC19-13BD	NL8060AC21-21KD	NL8060BC21-11KG	NL8060BC26-56KD
Mode	TN	TN	TN	TN
Resolution (pixl)	800×480	800×600	800×600	800×600
Module Size (WxHxD)(mm)	170.0×111.0×11.2	200.0×152.0×10.9	200.0×152.0×10.8	243.0×185.1×13.2
Active Area (mm)	152.4×91.44	170.4×127.8	170.4×127.8	211.2×158.4
Luminance (cd/m <sup>2</sup> )	430	370	750	380
Viewing Angle(U/D/L/R)	80/80/80/80	80/80/80/80	80/80/80/80	80/80/80/80
Multi Touch (points)	Available	Available	Available	Available
Polarizer Surface	AG + AFP	AG + AFP	AR	AG + AFP
Cover Glass Thickness (mm)(Max.)	0.7	0.7	0.7	0.7
Operating Temperature	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C	-30°C~+80°C
Remarks	-	Optical Bonding	Optical Bonding	Optical Bonding

Screen Size	10.4 "	10.4 "	10.6 "	12.1 " Wide
Part No.	NL8060BC26-35BD	NL8060BC26-35BA	NL12876AC18-07DC	NL12880BC20-13ND
Mode	TN	TN	SFT	SFT
Resolution (pixl)	800×600	800×600	1280×768	1280×800
Module Size (WxHxD)(mm)	243.0×185.1×12.7	243.0×185.1×12.5	267.8×174.2×9.2	298.7×200.8×11.5
Active Area (mm)	211.2×158.4	211.2×158.4	230.4×138.24	261.12×163.2
Luminance (cd/m <sup>2</sup> )	350	350	250	430
Viewing Angle(U/D/L/R)	80/80/80/80	80/80/80/80	88/88/88/88	88/88/88/88
Multi Touch (points)	Available	Available	Available	Available
Polarizer Surface	AG + AFP	Clear	AR	AG Etching
Cover Glass Thickness (mm)(Max.)	0.7	0.7	1.1	0.95
Operating Temperature	-30°C~+80°C	-30°C~+80°C	-20°C~+70°C	-20°C~+70°C
Remarks	Wet&Glove	Wet&Glove	-	Optical Bonding

Screen Size	12.1 " Wide	12.1 " Wide	15.0 "	15.0 "	15.3 " Wide
Part No.	NL12880BC20-05BD	NL12880BC20-05BA	NL10276KC30-50DD	NL10276KC30-43DD	NL12876BC26-33NA
Mode	SFT	SFT	TN	TN	SFT
Resolution (pixl)	1280×800	1280×800	1024×768	1024×768	1280×768
Module Size (WxHxD)(mm)	277.7×180.6×11.2	277.7×180.6×11.2	326.5×253.5×15.0	326.5×253.5×15.0	385.0×251.4×17.3
Active Area (mm)	261.12×163.2	261.12×163.2	304.128×228.096	304.128×228.096	334.08×200.45
Luminance (cd/m <sup>2</sup> )	400	400	450	450	470
Viewing Angle(U/D/L/R)	88/88/88/88	80/80/80/80	88/88/88/88	88/88/88/88	88/88/88/88
Multi Touch (points)	Available	Available	Available	Available	Available
Polarizer Surface	AG + AFP	Clear	AG + AFP	AG + AFP	Clear
Cover Glass Thickness (mm)(Max.)	0.7	0.7	1.8	1.8	1.1
Operating Temperature	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C	-20°C~+70°C
Remarks	-	-	Wet&Glove	Wet&Glove	Optical Bonding

## EBN Enhanced Black Nematic



-  Wide operation temperature
-  Suitable for every color backlight
-  High contrast
-  Super black background
-  Wide viewing angle

Duty	1/1	1/4	1/9	
Bias	1/1	1/3	1/3	1/4
Available Backlight	Mono	Mono	Mono	Mono
CR at -30°C	1000:1	1000:1	1000:1	900:1
CR at 22°C	3000:1	1500:1	1500:1	1000:1
CR at 85°C	1000:1	1000:1	1000:1	1000:1
Ton+Toff (-30°C)(s)	2	9	4	9
Ton+Toff (22°C)(ms)	30	100	50	100
Color/Background	black	black	black	black
Transmittance (%)	22	13	10	12
Operation Temperature	-30°C~+85°C	-30°C~+85°C	-30°C~+85°C	-30°C~+85°C
Storage Temperature	-40°C~+90°C	-40°C~+90°C	-40°C~+90°C	-40°C~+90°C
Vertical (CR>100)	-60°/+60°	-25°/+60°	-25°/+50°	-15°/+38°
Horizontal (CR>100)	-60°/+60°	-60°/+60°	-60°/+50°	-30°/+30°

Duty	1/16	1/32	WEBN(1/4-static)	DEBN(1/4-static)
Bias	1/5	1/6	1/3	1/3
Available Backlight	Mono	Mono	Mono	Mono
CR at -30°C	600:1	200:1	600:1	1000:1
CR at 22°C	800:1	300:1	1000:1	1000:1
CR at 85°C	600:1	200:1	600:1	1000:1
Ton+Toff (-30°C)(s)	11	15	20	7
Ton+Toff (22°C)(ms)	100	250	90	40
Color/Background	black	black	black	black
Transmittance (%)	10	13	5	7
Operation Temperature	-30°C~+85°C	-30°C~+85°C	-30°C~+85°C	-30°C~+85°C
Storage Temperature	-40°C~+90°C	-40°C~+90°C	-40°C~+90°C	-40°C~+90°C
Vertical (CR>100)	-20°/+60°	-18°/+60°	-25°/+50°	-20°/+60°
Horizontal (CR>100)	-50°/+49°	-45°/+40°	-60°/+50°	-50°/+40°

## ASTN Advanced STN

### ASTN - WV

Duty	66	66	66	88
Bias	9	9	9	10
Available Backlight	Mono	Mono	Mono	Mono
Mode	Transmissive NB	Transmissive NB	Transflective NB	Transmissive NB
CR at -30°C	22:1	22:1	22:1	22:1
CR at 22°C	85:1	70:1	70:1	80:1
CR at 80°C	20:1	20:1	20:1	20:1
Ton+Toff (-30°C)(s)	9	5.6	5.6	9.5
Ton+Toff (22°C)(ms)	400	300	300	450
Color/Background	white/black	white/blue	white/blue	blue/black
Transmittance (%)	20	18	10	12
Vertical (U/D)(CR>3)	45°/-20°	40°/-18°	40°/-18°	45°/-20°
Horizontal (L/R)(CR>3)	-41°/42°	-41°/42°	-41°/42°	-42°/40°

### ASTN - High Duty

Duty	136	136	168
Bias	11	11	13
Available Backlight	Mono	Mono	Mono
Mode	Transmissive NB	Transmissive NB	Transmissive NB
CR at -30°C	16:1	16:1	15:1
CR at 22°C	55:1	45:1	39:1
CR at 80°C	18:1	18:1	8:1
Ton+Toff (-30°C)(s)	15	8	11.3
Ton+Toff (22°C)(ms)	500	280	300
Color/Background	blue	blue	red
Transmittance (%)	23	21	11
Vertical (U/D)(CR>3)	42°/-28°	40°/-25°	40°/-25°
Horizontal (L/R)(CR>3)	-30°/40°	-28°/35°	-35°/42°

### ASTN - NW

Duty	33	65	124
Bias	6	7	11
Available Backlight	Mono	Mono	Mono
Mode	Transflective NW	Transflective NW	Transflective NW
CR at -30°C	6.6:1	6.5:1	5.5:1
CR at 22°C	7:1	6.7:1	4.8:1
CR at 80°C	2.5:1	2.2:1	2:1
Ton+Toff (-30°C)(s)	6.3	8	10
Ton+Toff (22°C)(ms)	187	217	227
Color/Background	black/white	black/white	black/orange
Transmittance (%)	15	17	8.8
Vertical (U/D)(CR>3)	43°/-49°	34°/-47°	35°/-37°
Horizontal (L/R)(CR>3)	45°/49°	-39°/45°	-33°/34°

## TN

Duty	4	4	8	4	4
Bias	3	3	3	3	3
Available Backlight	Mono	Mono	Mono	Mono	Mono
Mode	Transflective NW	Transflective NW	Transflective NW	Transmissive NB	Transmissive NB
CR at -30°C	8.4:1	7.4:1	3:1	34:1	20:1
CR at 22°C	8.6:1	7.6:1	3.5:1	135:1	150:1
CR at 80°C	3.5:1	3.6:1	2.2:1	12:1	8.9:1
Ton+Toff (-30°C)(s)	5.6	3.3	8	3	4
Ton+Toff (22°C)(ms)	88	134	157	66	80
Color/Background	black/white	black/white	black/white	orange/black	red/black
Transmittance (%)	15	15	16	21	18
Vertical (U/D)(CR>3)	50°/-15°	50°/-15°	40°/-18°	50°/-40°	50°/-40°
Horizontal (L/R)(CR>3)	-60°/60°	-60°/60°	-41°/42°	-60°/60°	-50°/50°

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