

# HANTRONIX

LEADING THE INDUSTRY SINCE 1979

Crystal Clear &  
Visibly Superior  
LCD Modules



Support

LCD

Modules

Custom

TFT

Character

Glass

Graphic

STN

OLED

Quality

**The Hantronix Advantage** is our ability to add value and provide a competitive-edge for our customers in the global market. As a partner-supplier, we are committed to delivering additional value to your business.



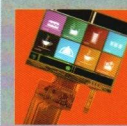
**Experience** - Hantronix is a well-established company with a solid reputation in the LCD industry since 1979. Our experience and know-how is second to none.



**Quality** - All our production facilities are ISO9001 and ISO/TS 16949 certified with continuous process improvement plans implemented.



**Support** - Real time engineering and technical support from USA based team. Sales, warehouse, and value add facility in California.



#### TFT LCD Modules

Exceptionally high contrast ratio, crisp color saturation, high brightness, and excellent viewing angles



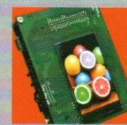
#### STN LCD Modules

High quality character and graphic displays offered in a wide range of sizes and resolutions



#### Custom Glass LCD

Capability and know-how to deliver unique solutions to any challenging custom display requirement



#### OLED

Offering thin, efficient, and bright displays in both monochrome and full color

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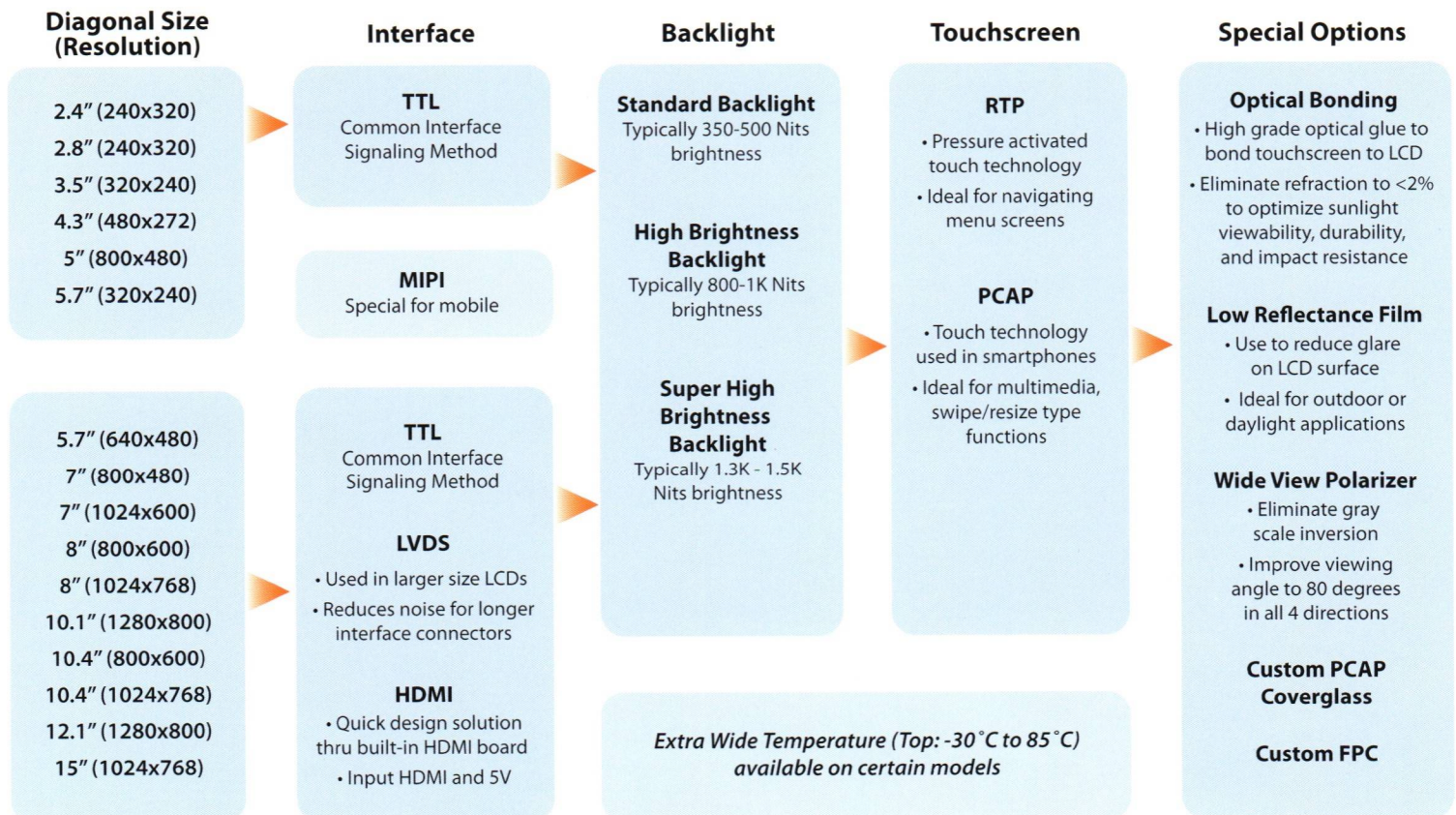


# TFT LCD Modules

Hantronix TFT LCDs deliver on our commitment to provide the best in class value and solution for any display project. We begin with our standard TFT LCDs, which we have developed for the most demanding industrial and mission critical applications. In addition, we offer a wide range of special materials and processes to enhance TFT performance, functionality, and reliability. We can provide capacitive touchscreens, extra-wide temperature displays, optical enhancement films, optical bonding, and super high brightness backlights. We also welcome opportunities to customize LCDs to meet even the most demanding and precise customer requirements. All our LCDs are backed by over 37 years of Hantronix know-how and success, and each of our customers is supported in real time by a USA based engineering, technical, and sales team.



## Hantronix TFT Selection Guide





## TFT LCD Modules

Size	Pixel Format	Type	Interface	Brightness (Nits)	Touchscreen R(RTP) C(PCAP)	Part Number
<b>Standard Brightness - Industrial Grade LCD</b>						
2.4"	240x320	QVGA	TTL	300	R, C	HDA240-3S
2.8"	240x320	QVGA	TTL	300	R, C	HDA280-3S3
3.5"	320x240	QVGA	TTL	500	R, C	HDA350-3S
4.3"	480x272	WQVGA	TTL, LVDS	500	R, C	HDA430-6S
5.0"	800x480	WVGA	TTL, LVDS	500	R, C	HDA500-G
5.7"	320x240	QVGA	TTL	500	R, C	HDA570S-G
5.7"	640x480	VGA	TTL, LVDS	500	R, C	HDA570V-G
7.0"	800x480	WVGA	TTL, LVDS	500	R, C	HDA700L-2S
8.0"	800x600	SVGA	TTL, LVDS	500	R, C	HDA800S-G
8.0"	1024x768	XGA	LVDS	350	R, C	HDA800X-SL
10.1"	1280x800	WXGA	LVDS	500	R, C	HDA1010W-S-WV
10.4"	800x600	SVGA	LVDS	500	R, C	HDA1040S-G
10.4"	1024x768	XGA	LVDS	500	R, C	HDA1040X-A
12.1"	1280x800	WXGA	LVDS	500	R, C	HDA1210WX-GH
15"	1024x768	XGA	LVDS	500	R,C	HDA1500X-A
<b>High Brightness - Sunlight Readable, Industrial Grade LCD</b>						
3.5"	320x240	QVGA	TTL	1K	R, C	HDA350-LGH
4.3"	480x272	WQVGA	TTL, LVDS	1K	R, C	HDA430-6SH
5.0"	800x480	WVGA	TTL, LVDS	1K	R, C	HDA500-GH
5.7"	320x240	QVGA	TTL	1K	R, C	HDA570S-GH
5.7"	640x480	VGA	TTL, LVDS	1K	R, C	HDA570V-GH
7.0"	800x480	WVGA	TTL, LVDS	1K	R, C	HDA700L-6SH
8.0"	800x600	SVGA	TTL, LVDS	1K	R, C	HDA800S-GH
10.1"	1280x800	WXGA	LVDS	1K	R, C	HDA1010WC-S-WV1
10.4"	800x600	SVGA	LVDS	1K	R, C	HDA1040S-GH
10.4"	1024x768	XGA	LVDS	1.3K	R, C	HDA1040X-AH
12.1"	1280x800	WXGA	LVDS	1K	R, C	HDA1210WX-GH
15"	1024x768	XGA	LVDS	1K	R,C	HDA1500X-AH
<b>Super Wide Temp (Top: -30°C to +85°C) - Premium Material LCD</b>						
3.5"	320x240	QVGA	TTL	1K	R, C	HDA350H-LGH
4.3"	480x272	WQVGA	TTL, LVDS	1K	R, C	HDA430H-3GH-1
5.0"	800x480	WVGA	TTL, LVDS	1K	R, C	HDA500H-GHA
5.7"	320x240	QVGA	TTL	1K	R, C	HDA570SH-GH
5.7"	640x480	VGA	TTL, LVDS	1K	R, C	HDA570VH-GH
7.0"	800x480	WVGA	TTL, LVDS	1K	R, C	HDA700H-GH
<b>PCAP/RTP Touchscreen Available - Industrial Grade LCD</b>						
2.4"	240x320	QVGA	TTL	300	R, C	HDA240T-3S
2.8"	240x320	QVGA	TTL	300	R, C	HDA280T-3S3
3.5"	320x240	QVGA	TTL	400, 900	R, C	HDA350PT-3S
4.3"	480x272	WQVGA	TTL, LVDS	400, 900	R, C	HDA430PT-6S
5.0"	800x480	WVGA	TTL, LVDS	400, 900	R, C	HDA500PT-1S
5.7"	320x240	QVGA	TTL	400, 900	R, C	HDA570ST-G
5.7"	640x480	VGA	TTL, LVDS	400, 900	R, C	HDA570VPT-G
7.0"	800x480	WVGA	TTL, LVDS	400, 900	R, C	HDA700LPT-3S1
8.0"	800x600	SVGA	TTL, LVDS	400, 900	R, C	HDA800ST-G
8.0"	1024x768	XGA	LVDS	300	R, C	HDA800XPT-SL
10.1"	1280x800	WXGA	LVDS	400, 900	R, C	HDA1010WPT-S-WV
10.4"	800x600	SVGA	LVDS	400, 900	R, C	HDA1040ST-G
10.4"	1026x768	XGA	LVDS	400, 900	R, C	HDA1040XPT-A
12.1"	1280x800	WXGA	LVDS	400, 900	R, C	HDA1210WXT-GH
15"	1024x768	XGA	LVDS	900	R,C	HDA1500XT-AH
<b>Quick Design Solution - HDMI Input LCD Module</b>						
7.0"	800x480	WVGA	HDMI	500, 1K	R, C	HDA700L-HDMI
8.0"	800x600	SVGA	HDMI	500, 1K	R, C	HDA800S-HDMI
10.1"	1280x800	WXGA	HDMI	500, 1K	R, C	HDA1010W-HDMI

## Hantronix TFT Highlights

- Product Stability and Support for Industrial/ Medical Applications
- Highest Contrast Ratio: 500:1
- Display Color Capability: 262K - 16.7M
- Exceptional Viewing Angles: Up to 180 degrees
- Super Brightness: Up to 1.5K Nits
- Extra Wide Temperature Range: -30°C to 85°C
- Very Fast Response Time: < 15ms
- Convenience Features: Built-in Controller, DC-DC Circuit
- Optical Superiority: IPS/MVA Technologies
- Value Add: Optical Bonding, Optical Enhancement Treatments
- Touchscreens: Resistive, Projected Capacitive up to 10 touchpoints

## Solutions Available on All Hantronix LCDs

- Optical bonding using highest grade optical resin
- FPC modifications per customer design
- Custom logos printed on cover glass
- Custom dimension touchscreens, cover glass, camera/light sensor openings
- Cover glass with 3M VHB for ease and secure assembly into customer enclosure
- Wide view film for universal viewing direction
- Low reflectance film and outdoor touchscreen for maximum sunlight performance
- Various specialized interfaces including MIPI

## Hantronix LCDs have been used for:

- Advertising
- ATMs
- Automotive
- Gaming/Lottery
- Climate Control
- Kiosks
- Multimedia
- POS Terminals
- Transportation
- VoIP
- White Goods
- Medical Devices
- Factory Automation
- Handheld Devices
- Health/Fitness/Sports
- Home Automation
- In-flight Entertainment
- Industrial Controls
- Navigation Systems
- Test and Measurement
- Wearable Technology



# STN LCD Modules

Hantronix standard STN graphic and character displays are offered in a wide range of sizes and resolutions with and without touch panels. We offer semi-custom and full custom LCD solutions tailored for a broad range of applications and markets including industrial, medical, and consumer.

## Character

Characters/ Lines	Part #	Module Size(mm)
8x1	HDM08111-1	54x37
8x1 Large	HDM08111-L	84x44
8x2	HDM08216-3	58x32
12x2	HDM12216	58x37
16x1	HDM16116-H	85x28
16x1 Large	HDM16116-7	122x33
16x1 Xtra Large	HDM16116-L	151x40
16x2	HDM16216-2	85x36
16x2 Small	HDM16216-S	53x20
16x2 Large	HDM16216-4	122x44
16x4	HDM16416	87x60
20x2	HDM20216	116x37
20x2 Large	HDM20216-L	146x43
20x4	HDM20416	98x60
20x4 Small	HDM20416-S	77x47
20x4 Large	HDM20416-M	146x63
24x2	HDM24216	118x36
24x4	HDM24416	125x39
40x2	HDM40216	182x34
40x4	HDM40416	190x54

## Graphic: Small Size

# of Pixels	Part #	Module Size(mm)
122x32	HDM32GS12-B	84x44x14
128x32	HDM32GS12L-8	110x65x15
128x64	HDM64GS12	93x70x14
128x64	HDM64GS12-1	78x70x13
128x64	HDM64GS12L-5	75x53x9
240x64	HDM64GS24-2	180x65x14
240x128	HDM128GS24	144x104x13
240x128	HDM128GS24-1	170x102x14

## Graphic: QVGA & VGA

# of Pixels	Part #	Module Size(mm)
240x320	HDM2432L-T	71x94x8
320x240	HDM3224L-G	88x69x6.5
320x240	HDM3224-5	134x117x14
320x240	HDM3224L-1	160x109x11
320x240	HDM3224NL-1	160x109x11
640x480	HDM6448-6	168x123x11

# Enhanced Monochrome LCD

Hantronix offers custom LCD solutions using leading edge monochrome technologies. Our display solutions offer sensible upgrade options for current TN/STN display users.



## EPD (Electronic Paper Display)

- Paper-like readability
- Indefinitely maintain image without power
- Sunlight & non-uniform light visibility
- High reflectivity and high contrast
- Viewing angle 180 degrees
- Flexible structure
- Ultra low power consumption (no backlight)



## VA (Vertical Alignment)

- Negative mode up to 1/32 multiplexing
- Ultra-high contrast up to 2500:1
- Operating temperature: -30°C to 85°C
- Less light leakage: crystals tile up horizontally
- Color film can be added (color option)
- Recommended LED color: white, red, amber

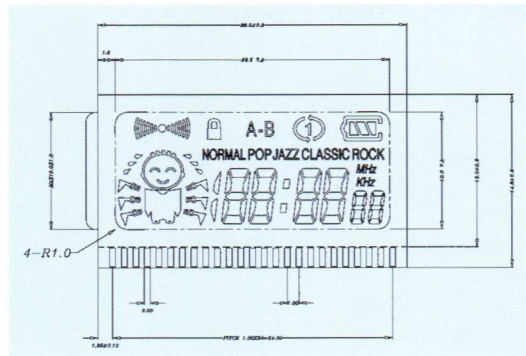


## VA-FS (Vertical Alignment - Field Sequential Color)

- Addressable color segments
- RGB LED backlight
- Ultra high contrast up to 2500:1
- Excellent view angles in all directions
- Simple interface
- Lower cost alternative to TFT

# Custom Glass LCD

Hantronix strengths include the intricate design and production of custom glass LCD panels. Our experience includes low operating voltage, special operating temperature range, and long lasting polarizer. Other capabilities include multiple sided LCD panel to fit your enclosure and silk screening on the LCD glass surface. Our tooling costs are competitive and we strive towards a quick sample turnaround time. Hantronix is ready to make a perfect LCD for you.



## Development Steps

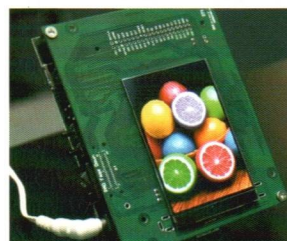
1. Clarify LCD glass physical dimensions
2. Define artwork: Segments/Icons
3. Quotation
4. Tooling payment
5. Counter drawing (1-2 weeks)
6. Sample preparation (4-6 weeks)
7. Production (10-12 weeks)

## Applications

- Portable test equipment
- Measuring device
- Diagnostics device
- Automotive display
- Medical equipment
- Electric, water, gas meters
- Marine equipment
- Telecom products

# OLED

OLED displays are thin, efficient, and bright displays. Hantronix offers OLEDs in both monochrome (Blue, White, Yellow) and full color (262K colors). Sizes range from 0.7" diagonal (64x64 resolution) up to 3.2" (256x64 resolution).



- Excellent contrast: 2000:1
- Lower power consumption (no backlight)
- Faster refresh rate: 10µs
- Wide operating temperature: -40°C to 70°C
- Typical lifetime of 50K hours (yellow)
- Greater brightness-Fuller viewing angle: 160°
- Thinner displays: From 1.2mm to 2mm