

INDUSTRIAL MOBILE DISPLAYS

NEC ELECTRONICS AMERICA

NEC LCD TECHNOLOGIES

**Higher LCD performance
in a small package**

Historically small-sized LCD modules, ranging in sizes from 1.x-inch to 4.x-inch, have been used in consumer electronic applications such as digital cameras, cell phones and portable media players. Products within this space change frequently as consumers demand more sophisticated, feature rich products. Thus within the consumer space the displays that go into these products rapidly become obsolete. Due to this rapid product turnover in the consumer space and the rapid obsolescence of LCDs designed for the consumer market, medical and industrial applications have been slower to adopt portable handheld equipment designed to use small-sized LCD displays.

NEC has leveraged its experience with mid- to large-sized LCDs designed for medical and industrial applications and applied their knowledge of the market requirements to the design of small-sized TFT LCDs. NEC offers a variety of small size amorphous silicon (a-Si) TFT LCD products and just recently began mass production of a 3.5-inch low-temperature polysilicon (LTPS) TFT LCD product with a variety of other LTPS products under development.

Amorphous Silicon (a-Si) Mobile Displays

LCD modules used for industrial-type mobile applications must meet very specific design constraints and provide the high levels of brightness and contrast required to clearly display information and facilitate easy reading in multiple ambient light environments. Our small-sized LCD modules address these market demands with high luminance levels and contrast ratios, optimized designs and advanced features that contribute to significantly reduced form factors in portable devices.

Low-temperature Polysilicon (LTPS) Mobile Displays

Recently NEC began mass production of LTPS displays at their factory in Akita, Japan. With the addition of the LTPS line, NEC has expanded its core technologies to include value-integrated TFT (VIT™) technology. By applying its VIT technology, which integrates peripheral circuitry on the glass substrate of the LCD module using LTPS technology, NEC LCD Technologies achieves a significant reduction in the peripheral wiring of the glass substrate and in the number of connections with external circuits. This results in pixel density that is four times higher than that of conventional 3.5-inch quarter VGA (QVGA) modules, making the new module ideal for a wide variety of portable devices, including personal digital assistants (PDAs) and navigation devices. The VIT technology on the system-on-glass module also significantly improves pixel aperture ratio and backlight efficiency while yielding an overall higher level of balance among attributes.

www.am.necel.com/displaywww.nec-lcd.com/en

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Environmental Initiatives

Our products are RoHS compliant.

Out of concern for the environment, NEC LCD Technologies began reducing the use of hazardous substances in our LCD modules prior to the RoHS Directive. We have eliminated the six substances targeted in the RoHS Directive as well as other substances we have identified as potentially hazardous, so that our products are RoHS-compliant.

a-Si Mobile Display Modules

SIZE	RESOLUTION	PART NUMBER	ADDITIONAL ATTRIBUTES	AVAILABILITY
2.7-inch	QVGA	NL2432HC17-04A	140 cd/m ² , CR 150:1 (on), LED, 35% reflection ratio, SR-NLT	Now
		NL2432HC17-04B	120 cd/m ² , CR 150:1 (on), LED, 35% reflection ratio, SR-NLT, with touch	Now
		NL2432HC17-07A	550 cd/m ² , CR 400:1, LED, high bright	Now
		NL2432HC17-07B	500 cd/m ² , CR 400:1, LED, high bright, with touch	
		NL2432HC17-10B	500 cd/m ² , CR 400:1, LED, high bright, with touch, extended FPC	?
3.5-inch	QVGA	NL2432HC22-40A	220 cd/m ² , CR 150:1 (on), LED, 15% reflection ratio, SR-NLT	Now
		NL2432HC22-41B	200 cd/m ² , CR 150:1 (on), LED, 15% reflection ratio, SR-NLT, with touch	Now
		NL2432HC22-42B	200 cd/m ² , CR 130:1 (on), LED, 15% reflection ratio, SR-NLT, with touch, A/G	Now
		NL2432HC22-45A	100 cd/m ² , CR 150:1 (on), LED, 16% reflection ratio, SR-NLT	Now
4.3-inch	WQVGA	NL4827HC19-05A	600 cd/m ² , CR 500:1, LED, 8-bit RGB	Now
		NL4827HC19-05B	500 cd/m ² , CR 500:1, with touch, LED, 8-bit RGB	Now

LTIPS Mobile Display Modules (VIT™)

SIZE	RESOLUTION	PART NUMBER	ADDITIONAL ATTRIBUTES	AVAILABILITY
2.7-inch	QHD	NL9654HL06-01J	300 cd/m ² , CR 400:1, LED, 8-bit RGB, 960 × 540 pixels	TBD
3.5-inch	VGA	NL4864HL11-01B	200 cd/m ² , CR 180:1 (on), LED, 7% reflection ratio, SR-NLT, with touch	Now
	VGA	NL4864HL11-02A	220 cd/m ² , CR 180:1 (on), LED, 7% reflection ratio, SR-NLT	Now
4.1-inch	WVGA	NL8048HL11-01A	400 cd/m ² , CR TBD, LED, 8-bit RGB	TBD
		NL8048HL11-01B	350 cd/m ² , CR 400:1, LED, 8-bit RGB, with touch	Now

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