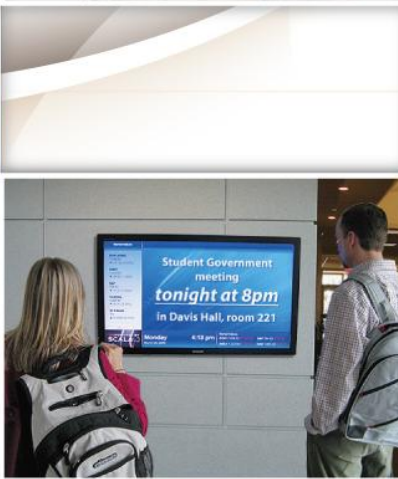
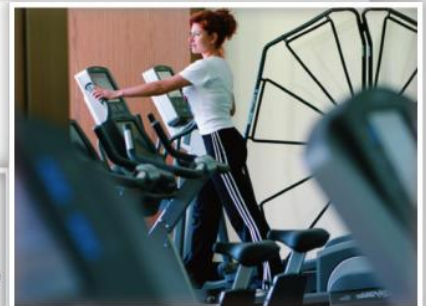


NSD series Smart Display

The ideal platforms for multimedia, display and HMI applications



Overview

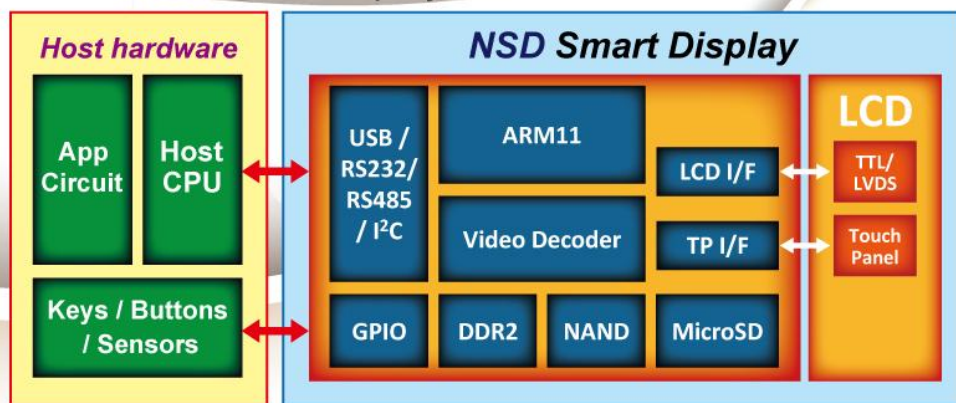
The NSD smart display is a combination of three components: a high resolution TFT LCD module with touch panel, a high-performance ARM1176 processor and an Android operating system.

NSD can work as a display device with various terminal ports, such as low speed RS232, RS485 and high speed USB, to process commands from an 8-bit MCU or 32-bit CPU. The commands include launching applications in NSD to run texts, images, videos and 3D animation display tasks.

This feature helps product developers to rapidly integrate this TFT LCD module to their equipment without modifying or upgrading hardware and processor. Typical applications would include an elevator display, home electronics touch control panel, industrial equipment display, rack-mount server display, and exercise equipment display, etc.

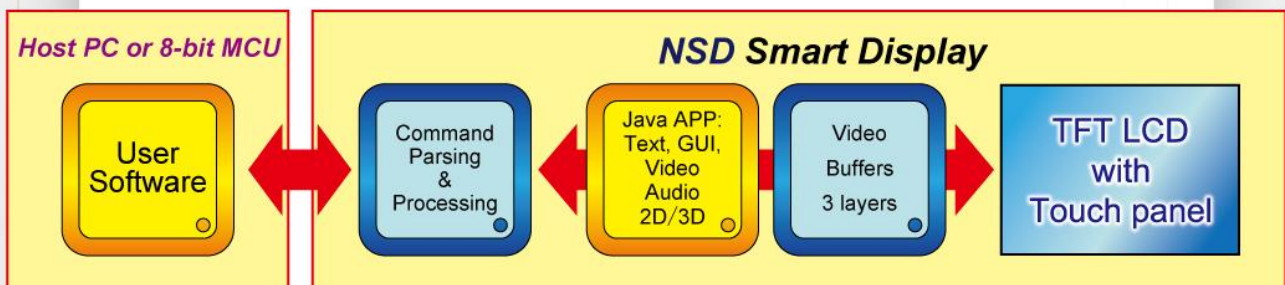
NSD will be also capable of running as a standalone Android device with a touch screen LCD and high-performance ARM processor. Typical application usages would include digital signage devices, multimedia players, POS system, vending machines, home automation console and vehicle infotainment system.

NSD smart display hardware architecture:



Since NSD is an Android-based open system, many development tools and open source resources are available to use for product development. Developers can now obtain a huge amount of free resources to enable them quickly complete the product design. This makes NSD superior to other competitors, who use proprietary systems.

NSD smart display **software** architecture: Software designed by user or modified from NSD templates. NSD built-in software.



The NSD series is available with display sizes ranging from 3.5" to 10.1" LCD. Other LCD sizes can also be made available with prior customer requirements.

NSD Features and Benefits

Easy Control

NSD provides a command-based environment to exchange information between a client (NSD) and a host (e.g. PC or MCU). This significantly reduces the workload of the host server.

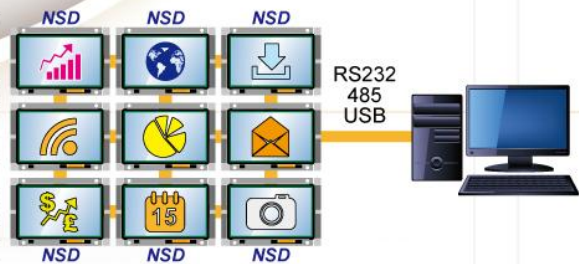
Multiple Communication Interface

NSD allows a host/server processor to control the NSD(s) via a variety of interfaces, such as RS232, RS485, USB, and I2C. Upon the receipt of a valid 16-bit command, it will launch and communicate with an application. For example, you may use remote control to open a video player, control the playback, pause a video or change a video. You may also use remote control to run a user interface application, draw an icon, paste a picture or draw a box.



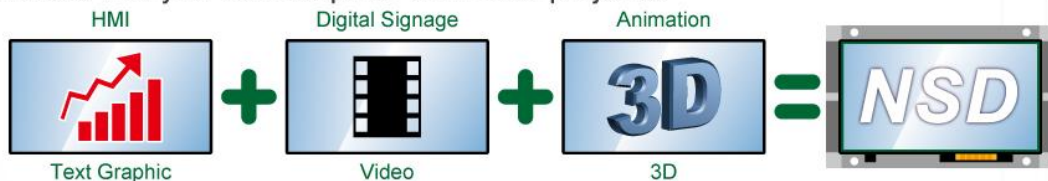
Multi-Display Support

More than one NSD can be simultaneously connected to a host processor concurrently. This allows design engineers to implement a multiple display system centrally controlled by a single host processor or MCU. For example, you can connect four to six NSDs via USB interface to a PC USB ports and develop PC application software to perform complicated display tasks on NSDs.



More than Just an HMI

NSD is more than just a graphics-based visual tool. The fact is that NSD can offer much more capability than a normal text and image displaying solution. With the built-in MPEG2/H.264/JPEG hardware decoder, you can enjoy flawless video playback, enhance sharp images and animated graphics, on your smart display. The embedded 2D/3D graphic engine will give you the most incredible stunning 2D or 3D visual experiences that you can adapt for countless projects.



High Performance Processor

The high-performance ARM 1176 processor helps design engineers to implement complicated tasks that normally cannot be done by a lower end ARM9 processor.



Free to Import External Resources

NSD supports an open source Android 2.3 operating system which enables developers to design their products through a large array of open source materials, such as applications, multiple language fonts, icons and images. This feature is different from the typical closed source product which only relies on one supplier to meet the fulfillment need from start to finish.



Platform Independent Programming Language

Unlike other competitors who use a proprietary macro language, NSD uses Java as the application programming language. Developers can also be free to choose Basic or C for NSD. One of the advantages of Java-based applications is that it is easy to port to other platforms with little or no source code changes.



Open Source Development Tool

The NSD application software can be built using the open source Eclipse IDE or any other software development environment that supports Android 2.3.



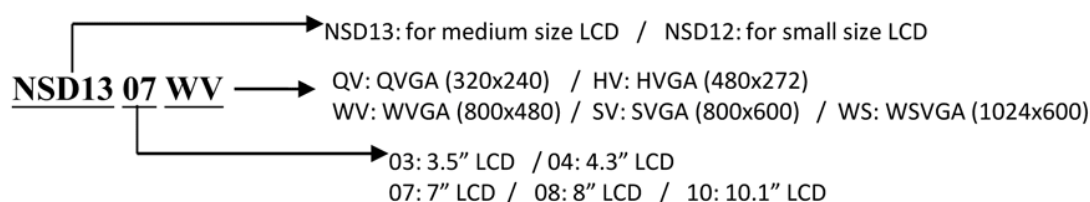
Rich-Featured Application Templates

NSD offers several sample Java application templates, which include an elevator floor display, digital signage and multimedia player for developers to customize the layout, appearance and content according to their needs. They can also refer to the NSD template documentation to install components, such as an image viewer, a video player, a marquee and a clock, into an entire new application. The advantage is that developers can leverage this to reduce the product development cycle.



NSD Specifications

NSD Series naming rules:



NSD13 series products

	NSD1307WV	NSD1308SV	NSD1310WS
Display Type	7" (800x480)	8" (800x600)	10.1" (1024x600)
Colors	262K	262K	262K
Contrast Ratio	500	500	500
Brightness	440 cd/m ²	320 cd/m ²	200 cd/m ²
Backlight	LED	LED	LED
View Angle (H/V)	140/110	140/125	140/110
Touch Screen	4w resistive	4w resistive	4w resistive
Processor	ARM1176 processor		
Memory	256MB DDR2 SDRAM + 512MB NAND Flash		
Audio	Line In x 1 + MIC In x 1 + Ear Phone x 1		
Video	MPEG2/MPEG4/H.264 hardware video decoder		
LAN	N/A		
Interfaces	USB2.0 OTG port x 1		
	Micro SD card slot x 1		
	RS232 x 2 (one as console) + RS232/485 port x1		
	I ² C port x 1 (master or slave port)		
Power Input	DC +12V @ 2A		
Environment	Operating Temperature: 0°C to 60°C (NSD1310WS is 0°C to 50°C)		
Dimension	~182x126x25 (mm)	~200x160x25 (mm)	~252x157x25 (mm)
Weight	~350g	~540g	~560g

NSD12 series products

	NSD1203QV	NSD1204HV
Display Type	3.5" (320x240)	4.3" (480x272)
Colors	16.7M	16.7M
Contrast Ratio	300	350
Brightness	250 cd/m ²	500 cd/m ²
Backlight	LED	LED
View Angle (H/V)	120/110	130/110
Touch Screen	4w resistive	4w resistive
Processor	ARM1176 processor	
Memory	256MB DDR2 + 512MB NAND	
Audio	N/A	
Video	MPEG2/4/H.264 hardware video decoder	
LAN	N/A	
Interfaces	USB2.0 OTG port x 1	
	Micro SD card slot x 1	
	RS232 x 1	
	I ² C port x 1 (master or slave port)	
Power Input	DC +5V @ 2A	
Environment	Operating Temperature: 0°C to 60°C	
Dimension	~ 95x82x17 (mm)	~ 120x85x18 (mm)
Weight	115g	155g

Ordering Information:

NSD12/NSD13 Development Kit:

1 x NSD12 or NSD13 smart display device
 1 x Power Adapter
 1 x RS232 cable
 1 x debug cable (NSD12 product only)
 1 x NSD plastic holder kit
 1 x SW DVD

NSD Accessories:

NSD_HKT01	Plastic Holder kit for NSD12xx
NSD_HKT02	Plastic Holder kit for NSD13xx
NSD_COM_Cable	RS232 cable for NSD12 and NSD13
NSD_DBG_Cable	Debug cable (for NSD12 only)

NSD Device --

Part No.	Descriptions	Part No.	Descriptions
NSD1203QV	(ARM11/256MB /512MB) + PWR + 3.5" LCD	NSD1307WV	(ARM11/256MB /512MB) + PWR + 7" LCD
NSD1204HV	(ARM11/256MB /512MB) + PWR + 4.3" LCD	NSD1308SV	(ARM11/256MB /512MB) + PWR + 8" LCD
---	---	NSD1310WS	(ARM11/256MB /512MB) + PWR + 10.1" LCD



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