NSD2100 Smart Display

The ideal platforms for multimedia, digital signage and HMI applications

- ➤ **1200nits High Brightness TFT LCD**

- ➤ **7 inch ~ 22 inch, 1920x1080 pixel**

- ➤ **Resistive and Capacitive Touch Screen**

- ➤ **9V ~ 36V Wide Range Power Input**

- ➤ **Over voltage protection (optional)**

- ➤ **Quad Band 3G Module (optional)**

- ➤ **ARM Cortex-A9 Processor**

- ➤ **Android 4.2, Ubuntu OS**

➢ Overview

NSD2100 smart display is a combination of three components: a TFT LCD module with touch panel, an ARM Cortex-A9 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.
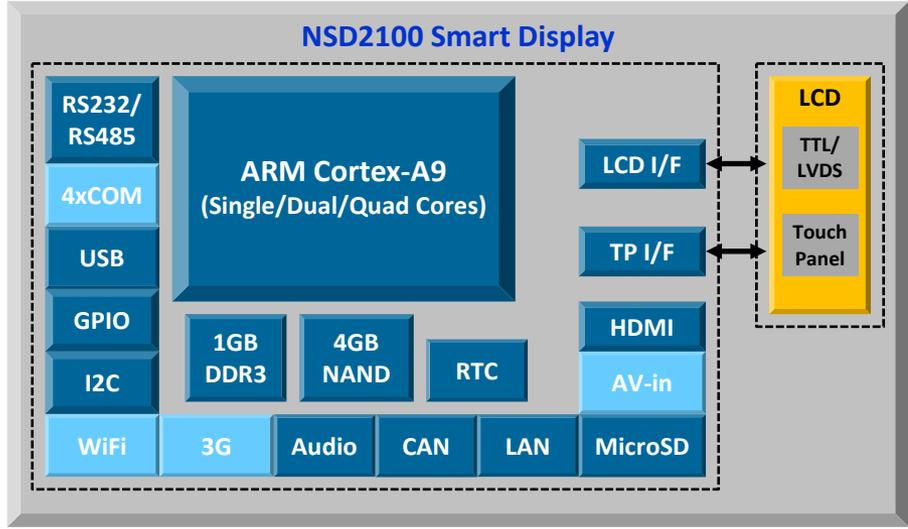
(*) Freescale iMX6 Application Processor

(**) Ubuntu Linux and WinCE OS are also available.

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.

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.

The NSD2100 is available with display sizes ranging from 7" to 22" LCD. Other LCD sizes can also be made available with prior customer requirements.

NSD2100 Smart Display

RS232/RS485	ARM Cortex-A9 (Single/Dual/Quad Cores)
4xCOM	
USB	LCD I/F → TTL/LVDS (LCD)
GPIO	TP I/F → Touch Panel
I2C	1GB DDR3 / 4GB NAND / RTC
WiFi / 3G / Audio / CAN / LAN / MicroSD	HDMI / AV-in

Typical Applications

- ☐ Digital signage
- ☐ POS, KIOSKs
- ☐ Gaming devices
- ☐ Machine control
- ☐ Data logger
- ☐ Vehicle Infotainment
- ☐ Industrial Equipment
- ☐ Home Automation Console

➤ NSD2100 Functions

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 processor.

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 I^{2}C. 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-Device 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.

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 Cortex-A9 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 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. 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.

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.

➤ Specifications

	NSD2107WV	NSD2110WX	NSD2115XG	NSD2122FD
Display Type	7" (800x480 WVGA)	10.1" (1280x800 WXGA)	15" (1024x768 XGA)	21.5" (1920x1080 Full HD)
Colors	262K	16.7M	16.7M	16.7M
Luminance	STD: 300 cd/m^2 High: <TBD>	STD: 350 cd/m^2 High: <TBD>	STD: 300 cd/m^2 High: 1200 cd/m^2	STD: 300 cd/m^2 High: 1200 cd/m^2
Backlight/Life	LED / 20K hrs	LED / 20K hrs	LED / 50K hrs	LED / 30K hrs
View Angle (H/V)	140/130	170/170	140/120	120/100
Touch Screen	Resistive (4-wire)	Projected capacitive	Resistive (4-wire)	IR Touch
Weight	<TBD>	<TBD>	<TBD>	<TBD>
Dimension	<TBD>	<TBD>	<TBD>	<TBD>
Processor	ARM (Quad/Dual/Single Core) Cortex-A9 processor @ 1Ghz (Freescale iMX6 Q/D/S)			
Memory	512MB/1GB DDR3 SDRAM + 4GB NAND Flash (eMMC)			
OS	Android 4.2.2 / Ubuntu 11.10			
Audio / Display	Speaker connector x2 + MIC In x 1 + Ear Phone x 1 + HDMI connector x 1			
Network	10M/100M/1G bps Ethernet LAN x1			
USB / SD Card	USB2.0 OTG port x 1 + USB2.0 Host port x 2 + Micro SD card slot x 1			
UART/I^{2}C/GPIO	RS232 x 2 (one as console) + RS485 x1 + I^{2}C master port x 1 + 8-bit GPIO			
Power/Environment	DC +12V @ 2A / Operating Temperature: 0ºC to 50ºC			

Optional Functions (part number with –V)

1x CAN bus port + additional 8-bit GPIO + over voltage protection + over current protection

Optional Modules

802.11 b/g/n Wi-Fi module

Bluetooth module

3G (quad-band WCDMA) module

4-ch AV-in (NTSC/PAL) video capture module

4x RS232/RS485 port module

➤ Ordering Information

	7" LCD with resistive TP		10.1" LCD with capacitive TP		15" LCD with resistive TP		21.5" LCD with IR TP	
	Android	**Ubuntu**	**Android**	**Ubuntu**	**Android**	**Ubuntu**	**Android**	**Ubuntu**
iMX6Q CPU	NSD2107WV-QAR NSD2107WV-QAR-V	NSD2107WV-QUR NSD2107WV-QUR-V	NSD2110WX-QAC NSD2110WX-QAC-V	NSD2110WX-QUC NSD2110WX-QUC-V	NSD2115XG-QAR NSD2115XG-QAR-V	NSD2115XG-QUR NSD2115XG-QUR-V	NSD2122FD-QAR NSD2122FD-QAR-V	NSD2122FD-QUR NSD2122FD-QUR-V
iMX6D CPU	NSD2107WV-DAR NSD2107WV-DAR-V	NSD2107WV-DUR NSD2107WV-DUR-V	NSD2110WX-DAC NSD2110WX-DAC-V	NSD2110WX-DUC NSD2110WX-DUC-V	NSD2115XG-DAR NSD2115XG-DAR-V	NSD2115XG-DUR NSD2115XG-DUR-V	NSD2122FD-DAR NSD2122FD-DAR-V	NSD2122FD-DUR NSD2122FD-DUR-V
iMX6S CPU	NSD2107WV-SAR NSD2107WV-SAR-V	NSD2107WV-SUR NSD2107WV-SUR-V	NSD2110WX-SAC NSD2110WX-SAC-V	NSD2110WX-SUC NSD2110WX-SUC-V	N/A	N/A	N/A	N/A