Quick Start Guide
SABRE Board for Smart Devices
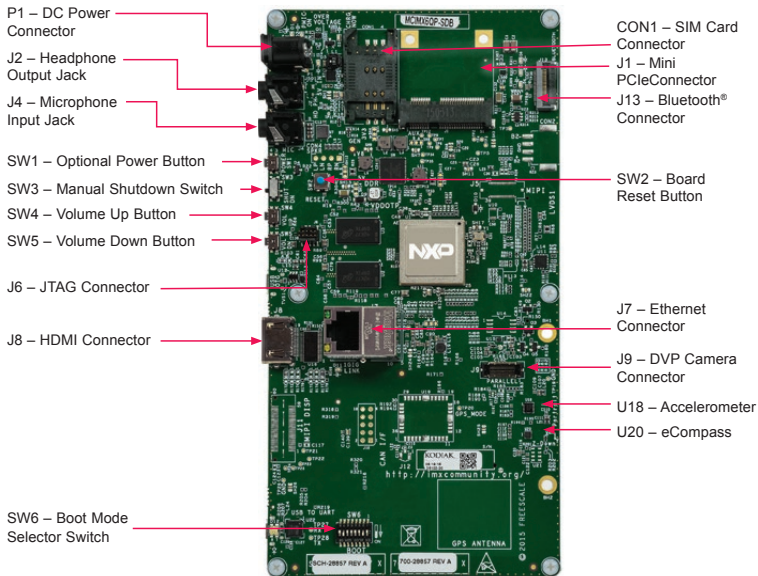
Based on the i.MX 6 Series
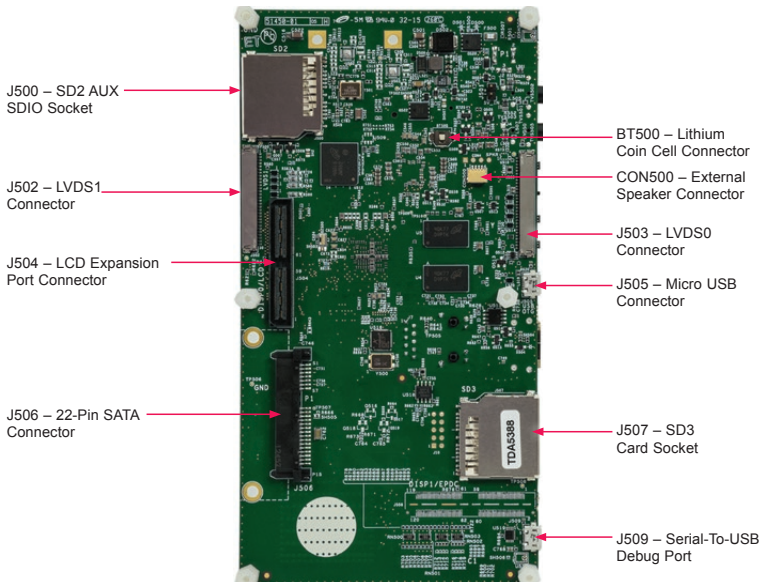
SMART APPLICATION BLUEPRINT FOR RAPID
ENGINEERING (SABRE)

GET TO KNOW SABRE BOARD FOR SMART DEVICES BASED ON THE i.MX 6 SERIES

P1 – DC Power Connector

J2 – Headphone Output Jack

J4 – Microphone Input Jack

SW1 – Optional Power Button

SW3 – Manual Shutdown Switch

SW4 – Volume Up Button

SW5 – Volume Down Button

J6 – JTAG Connector

J8 – HDMI Connector

SW6 – Boot Mode Selector Switch

CON1 – SIM Card Connector

J1 – Mini PCIeConnector

J13 – Bluetooth® Connector

SW2 – Board Reset Button

J7 – Ethernet Connector

J9 – DVP Camera Connector

U18 – Accelerometer

U20 – eCompass

J500 – SD2 AUX
SDIO Socket

J502 – LVDS1
Connector

J504 – LCD Expansion
Port Connector

J506 – 22-Pin SATA
Connector

BT500 – Lithium
Coin Cell Connector

CON500 – External
Speaker Connector

J503 – LVDS0
Connector

J505 – Micro USB
Connector

J507 – SD3
Card Socket

J509 – Serial-To-USB
Debug Port

GET TO KNOW SABRE BOARD FOR SMART DEVICES BASED ON THE i.MX 6 SERIES

The Smart Application Blueprint for Rapid Engineering (SABRE) board for smart devices provides the development kit and software to evaluate the i.MX 6 series of applications processor. The development kit provides an out-of-box working demonstration to power-on and run an operating system from an SD card, exercising the features found on the SABRE board. Design information including documentation, hardware schematics, software board support packages (BSP) for Linux® and Android™ reference links are provided.

FEATURES

The following features are available with the SABRE board for smart devices:

- i.MX 6QuadPlus 1 GHz applications processor
- 1 GB DDR3, 533 MHz
- 8 GB eMMC NAND
- Two SD card slots
- SATA 22-pin connector
- HDMI connector
- Two LVDS connectors
- LCD expansion port connector
- Serial camera connector

- Two 3.5 mm audio ports (stereo HP and microphone)
- USB OTG connector
- Debug out via USB µAB device connector
- Gigabit Ethernet connector
- JTAG 10-pin connector
- mPCIe® connector
- Sensor package including:
  - 3-axis accelerometer
  - Digital compass

STEP-BY-STEP INSTRUCTIONS

This section describes how to use the SABRE board for smart devices and the components in the kit. This section also describes the PC requirements to develop applications using the SABRE board for smart devices.

1 Unpack the Kit

The SABRE board for smart devices is shipped with the items listed in Table 1. Ensure the items listed in Table 1 are available in the i.MX 6 series development kit. Remove the board from the antistatic bag.

Development Kit Contents

Item	Description
Board	i.MX 6 SABRE board for smart devices
USB Cable	USB cable (micro-B to standard-A)
Power Supply	5 V/5 A universal power supply
Documentation	Quick Start Guide (this document)
8 GB SD Card	Bootable operating system demonstration image
JTAG cable	10-conductor ribbon cable
JTAG adapter	20-pin adapter card

Table 1: SABRE Board for Smart Devices Based on i.MX 6 Series Development Kit Contents

STEP-BY-STEP INSTRUCTIONS

2 Download Software and Tools

Download installation software and documentation under **"Jump-Start Your Design"** at **nxp.com/SABRESDB**.
Table 2 lists the documents available on the kit website.

"Jump-Start Your Design" Contents

Item	Description
SABRE board for smart devices documentation	• Schematics, layout and Gerber files • SABRE Board for Smart Devices Quick Start Guide (this document)
Software development tools	Android™ and Linux® BSPs
SABRE board for smart devices demo images	Copy of the bootable operating system demonstration image provided on the SD card

Table 2: "Jump-Start Your Design" Contents

SETTING UP THE SYSTEM

1 Insert SD Card

Insert the supplied SD card into socket SD3.

2 Connect USB Debug Cable (Optional)

Connect the micro-B end of the supplied USB cable into debug port J509. Connect the other end of the cable to a PC acting as a host terminal. If needed, the Serial-to-USB drivers can be found at **www.ftdichip.com/FTDrivers.htm**.

Terminal window configuration: 115.2 kbaud, 8 data bits, 1 stop bit, no parity

3 Connect Display

Option 1: HDMI
Connect an HDMI cable to the HDMI connector J8. Connect the other end of the HDMI cable to an HDMI-capable monitor.

Linux:
Add "video=mxcfb0:dev=hdmi,1920x1080 M@60,bpp=32" into kernel command line in U-Boot.

Android:
U-Boot > setenv bootcmd booti mmc2

U-Boot > setenv bootargs console=ttymxc0,115200 androidboot. console=ttymxc0 consoleblank=0 vmalloc=400M init=/init video=mxcfb 0:dev=hdmi,1920x1080M@60,bpp=32 video=mxcfb1:off video=mxcfb2:off video=mxcfb3:off androidboot. hardware=freescale cma=384M

U-Boot > saveenv

SETTING UP THE SYSTEM (CONT.)

Option 2: LVDS
Linux:
Add "video=mxcfb0:dev=ldb,bpp=32" into kernel command line in U-Boot.

Android:
U-Boot > setenv bootcmd booti mmc2

U-Boot > setenv bootargs console=ttymxc0,115200 init=/init video=mxcfb0:dev=ldb,bpp=32 video=mxcfb1:off video=mxcfb2:off video=mxcfb3:off vmalloc=400M androidboot.console=ttymxc0 consoleblank=0 androidboot. hardware=freescale cma=384M

U-Boot > saveenv

For more details, please refer to Linux User Guide document or the Android Quick Start document.

4 Connect User Interface Devices

The touch screen can be used to interact with the user interface on the LVDS display. To interact with the user interface displayed on the monitor it may be desirable to attach a keyboard and/or a mouse. Attach a USB hub to USB jack J505 and connect the keyboard and mouse to the hub. If only one device is used, it can be plugged directly into the USB jack. A micro B male to A female adapter cable may be needed.

5 Connect Ethernet Cable (Optional)

Connect an Ethernet cable to the Ethernet jack J7.

6 Connect Power Supply

Connect the 5 V power supply cable to the 5 V DC power jack P1. When power is connected to the smart device, it will automatically begin the boot sequence.

BOOT PROCESS FOR SD CARD IMAGE

1 Boot Process

- During the boot process, there will be operating system status information scrolling on the terminal window of the PC (if connected). The Linux penguin images will initially appear in the upper left corner of the display, one for each operating ARM® core.

- When the boot process is complete, the user interface will be displayed.

- To work from the terminal window on the host PC, press enter at the terminal window to get the command prompt.

- Linux:
  Login credentials
  User: root
  Password: <no password required, just press enter>

- Android:
  No login credentials necessary, however if running Lollipop or later, the serial input is disabled by default and only serial output is enabled by NXP.

- The uboot bootargs must be modified to include: androidboot. selinux=disabled.

DIP SWITCH CONFIGURATION

Table 3 shows the jumper configuration to boot the smart device from SD card slot SD3.

DIP Switch Configuration (SW6)

D1	D2	D3	D4	D5	D6	D7	D8
Off	On	Off	Off	Off	Off	On	Off

Table 3: SABRE Board for Smart Devices DIP Switch Configuration (SW6)

SWITCH FUNCTIONS

Table 4 shows the functions of the five pushbutton switches on the board.

Button Operations

Item	Description

POWER SW1	**SABRE board POWER button**
	• Linux:
	Prolonged depress (> 5 sec) will force an immediate hardware shutdown.
	• Android:
	    • Momentary depress of button will place the system in standby.
	    • Long press of the button will display a software drive shutdown option menu.
	    • Prolonged depress (> 5 sec) will force an immediate hardware shutdown.
	    • If board is in the OFF state, momentary depress of button will restart (boot) the system.
	    • If board is in the STANDBY state, momentary depress of the button will bring the system out of standby (resume operations, no boot).

RESET SW2	**SABRE board RESET button** Momentary depress of button will reset the system and begin a boot sequence.
SHUTDOWN SW3	**SABRE board shutdown switch** • Sliding the switch to the ON position connects the 5 V power supply to the SABRE board main power system. • Sliding the shutdown switch immediately removes all power to the board.
Volume up SW4	Volume +
Volume down SW5	Volume -

Table 4: SABRE Board for Smart Devices Button Operations

SUPPORT

Visit i.MX community at **imxcommunity.org**.

WARRANTY

Visit **www.nxp.com/warranty** for complete warranty information.

Get Started

Download installation software and documentation under **"Jump Start Your Design"** at **nxp.com/SABRESDB**.

Doc Number: SABRE6QUADPLUSQSG REV 1
Agile Number: 926-28857 REV A