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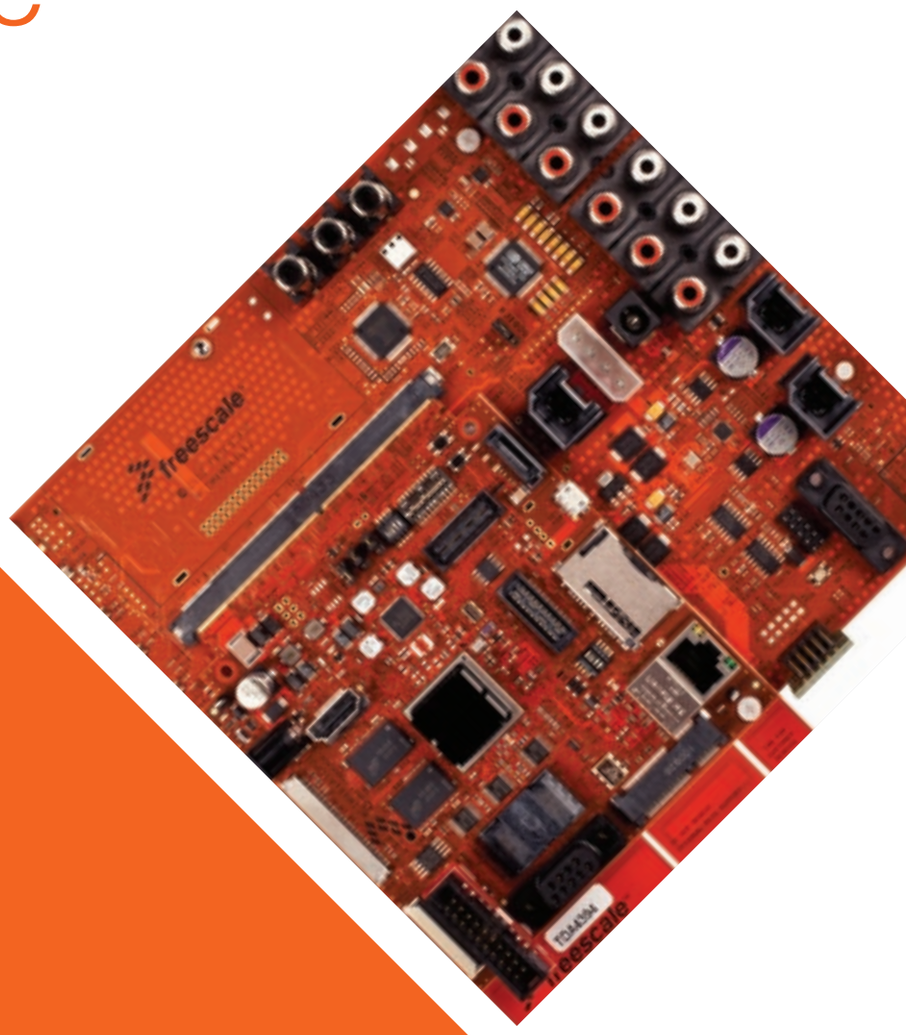
i.MX

SABRE for Automotive Infotainment Quick Start Guide

Smart Application Blueprint for Rapid Engineering Based on the i.MX 6 Series



About SABRE Platform for Automotive Infotainment Based on the the i.MX 6 Series

The SABRE platform for Automotive Infotainment offers a solid foundation for next-generation converged telematics and infotainment platform designs. The i.MX 6 series of applications processors represents our scalable family of products powered by single-, dual- and quad-core implementations of the ARM® Cortex®-A9 core for the automotive market. With multicore processing speeds of up to 1 GHz as well as a high level of integration, the SABRE for Automotive Infotainment enables customers to recreate today's consumer user experiences in the car.

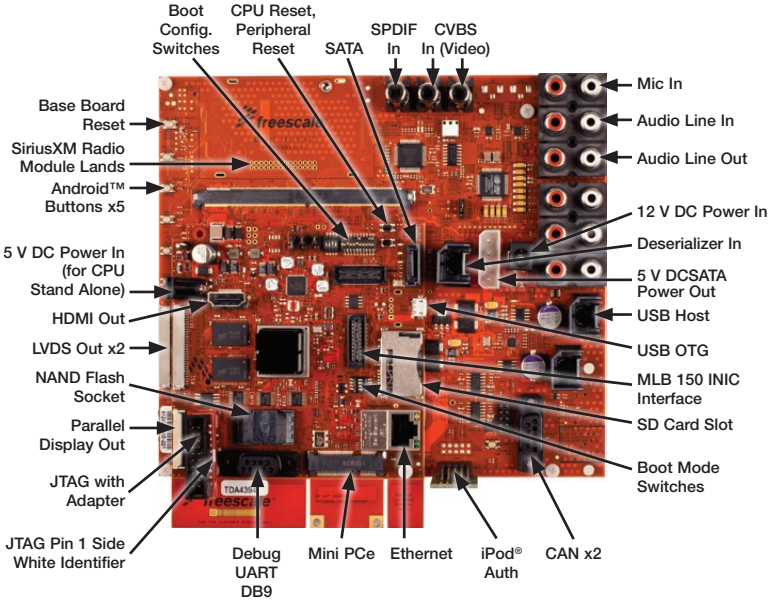
The following features are available with the SABRE for Automotive Infotainment CPU card:

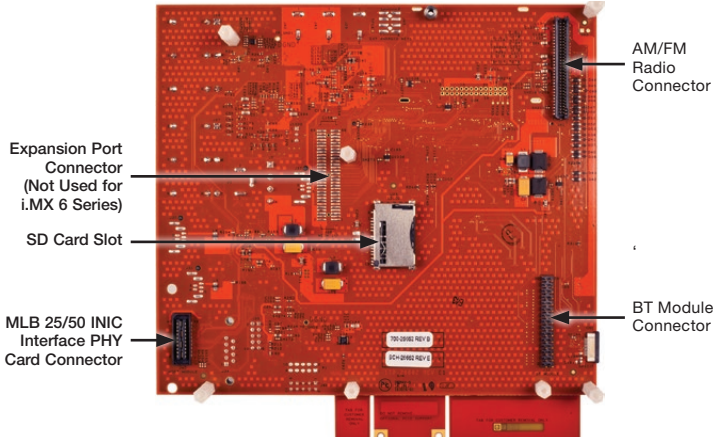
- 1 GHz i.MX 6Q processor or 800 MHz i.MX 6DL processor
- i.MX 6Q: 4 x 4 Gb DDR3 at 533 MHz (DDR-1066)
- i.MX 6DL: 4 x 4 Gb DDR3 at 400 MHz (DDR-800)
- 32 MB 16-bit parallel NOR flash
- NAND flash socket
- LVDS output
- RGB parallel output
- MLB150 INIC connector
- SD card slot
- High-Speed USB OTG interface
- SATA interface (i.MX 6Q only)
- Ethernet interface
- JTAG and UART interfaces
- Capable of running stand-alone on common 5 V DC power supply
- 281 card-edge fingers for base board connection or interface to user's system

The following features are available with the SABRE for Automotive Infotainment base board:

- LVDS output
- Multi-channel audio codec analog I/O for up to eight channel outputs, one stereo line input and two microphone inputs
- SPDIF receive interface
- I^2C module connector
- De-serializer input for remote video/ camera input
- Dual-channel video ADC to facilitate camera and video analog signal inputs
- USB host connector
- SiriusXM radio module PCB lands
- Terrestrial broadcast tuner module connector
- GPS module connector (UART)
- MLB25/50 INIC connector
- Low- and high-speed CAN interfaces
- Bluetooth® module connector (I^2S + UART)
- SD card interface (Wi-Fi® or data cards)
- 12 V DC input jack

Get to Know SABRE for Automotive Infotainment Based on the i.MX 6 Series





Getting Started

This section describes how to use the SABRE platform for Automotive Infotainment and associated components.

1 Unpacking the Kit

The SABRE for Automotive Infotainment is shipped with the items listed in table 1. Remove the circuit board from the conductive bag and perform a visual inspection to ensure all parts have been included.

Table 1: SABRE Development Kit Contents

Item	Description
Circuit board	SABRE for Automotive Infotainment printed circuit board
USB hardware	Micro-B to standard-A cable, A-female to A-female adaptor
Cable	3-pin female to 3-pin male power cord (shipped with base board)
Power supply	12 V DC @ 5.5 A power supply (shipped with base board)
Documentation	Quick Start Guide (this document)
SD card	The kit will include an SD card with software if available at the time of shipment. Software can be downloaded from freescale.com/SABREAI.
JTAG adapter	For attachment to J17 on CPU card

2 Download Software and Tools

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

Table 2: "Jump Start Your Design" Contents

Item	Description
SABRE platform for Automotive Infotainment documentation	Quick Start Guide (this document)
Software development tools	The latest BSPs and other software
SABRE for Automotive Infotainment design files	Design files, including hardware schematics, gerbers and OrCAD files

Setting Up the System

1 Insert SD Card

Insert the supplied SD card into the SD card socket J14 on the CPU card. Note: The SD card will be included if ready at date your kit was shipped. If there is no SD card, visit the **freescale.com/SABREAI** to download software.

2 Set Up Boot Switches

Verify that the switches are set to boot from SD card per tables 3 and 4. Ensure jumpers are correct per table 5.

3 Connect RS-232 Cable

Connect a user-supplied RS-232 cable to CPU card debug port J18. Support the connector with one hand while plugging in the cable to minimize flexing the board.

Serial port configuration:
115.2 kbaud, 8 data bits, 1 stop bit, no parity, no flow control

4 Connect HDMI Monitor

After boot-up, the kit's SD card outputs the OS desktop through the HDMI port.

5 Connect an LVDS LCD (optional)

Connect a display to CPU card connector J13. Freescale part number MCIMX-LVSD1 is a compatible display with touch panel.

6 Attach JTAG (optional)

Install the JTAG adapter per figure 1. Then, plug in the user-supplied cable to the JTAG interface while supporting the adapter.

Figure 1

7 Connect USB OTG (optional)

Connect the cable from the kit to micro USB connector J10 on the CPU card.

Note: To avoid damage, the micro USB plug must be carefully inserted upside down.

8 Connect the Power Supply

Setup A—CPU Card Mated with Base Board

First, plug in the 12 V DC supply to base board power jack J1, followed by plugging in the 120/240 V AC cord to a wall outlet. Four green LEDs and one yellow LED on the CPU card plus two red LEDS on the mother board should illuminate when the system powers up properly. An additional supply is not needed for the CPU card. Do not plug in a supply to CPU card J8.

Important: To ensure proper boot up and to minimize stress to the system, do not hot-plug a live 12 V DC supply to J1.

Tips: Use a power strip with a switch for convenient power on/off control. To re-boot, press CPU card reset button SW1.

Setup B—CPU Card Stand Alone

First, plug in a user-supplied 5 V DC supply to the CPU card power jack J8, followed by plugging in the 120/240 V AC cord to a wall outlet. A 5 A supply is recommended. Four green LEDs and one yellow LED should illuminate when the system powers up properly.

Important: To ensure proper boot up and to minimize stress to the system, do not hot plug a live 5 V DC supply to J8.

Tips: Use a power strip with a switch for convenient power on/off control. To re-boot, press CPU card reset button SW1.

DIP Switch Configurations

Table 3: Boot Configuration DIP Switches

Boot Config Switch	NAND Flash 64 GB	NAND Flash 16 GB	Parallel NOR Flash	SD on CPU Card	MMC on CPU Card	SATA HDD	Serial NOR Flash
S2-1	*	*	0	*	*	0	1
S2-2	0	0	0	0	1	1	1
S2-3	X	X	0	1	1	0	0
S2-4	1	1	0	0	0	0	0
S1-1	0	0	X	*	*	*	X
S1-2	0	0	X	1	*	*	X
S1-3	0	0	X	X	*	*	X
S1-4	1	1	X	0	0	*	X
S1-5	0	0	X	1	1	*	X
S1-6	X	X	1	*	*	X	X
S1-7	X	X	0	*	*	X	X
S1-8	0	0	X	*	X	X	X
S1-9	0	0	X	*	X	X	X
S1-10	0	0	0	*	*	X	X

Notes:
1=High Level **0**=Low Level **X**=Don't Care
*=Switch needs to be configured for high or low depending on the application needs.
Please check reference manual for boot configuration options. Default=**0**.
Default boot configuration=SD on CPU card
To boot from SPI NOR, remove R193 on green base board.
Orange base board requires no change.
SD speed selection on S1-10 and S1-9: **00**=SDR25, **01**=SDR12, **10**=SDR50, **11**=SDR104

Table 4: Boot Mode DIP Switches

Boot Mode	Fuses	Serial Downloader	Internal (Development)	Reserved
S3-2	0	1	0	1
S3-3	0	0	1	1

Notes:
S3-1 TAMPER **0**=Tamper detected **1**=No tamper
S3-4 SPI NOR WP_B **0**=Write protect enable **1**=No write protect

Table 5: Jumpers

Reference	Shunt Installation	Function
J3	1–2 2–3	Do not boot from SPI NOR (default) Boot from SPI NOR
J4	1–2 2–3	Data out of SXM (default) Data out of GPS
J5	1–2 2–3	CAN control of system power Power control to ON fixed by this setting

Get Started

Download installation software and documentation under **“Jump Start Your Design”** at **freescale.com/SABREAI**.

Support

Visit **freescale.com/support** for a list of phone numbers within your region.

Warranty

Visit **freescale.com/warranty** for complete warranty information.

For more information, visit freescale.com/iMXSABRE

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