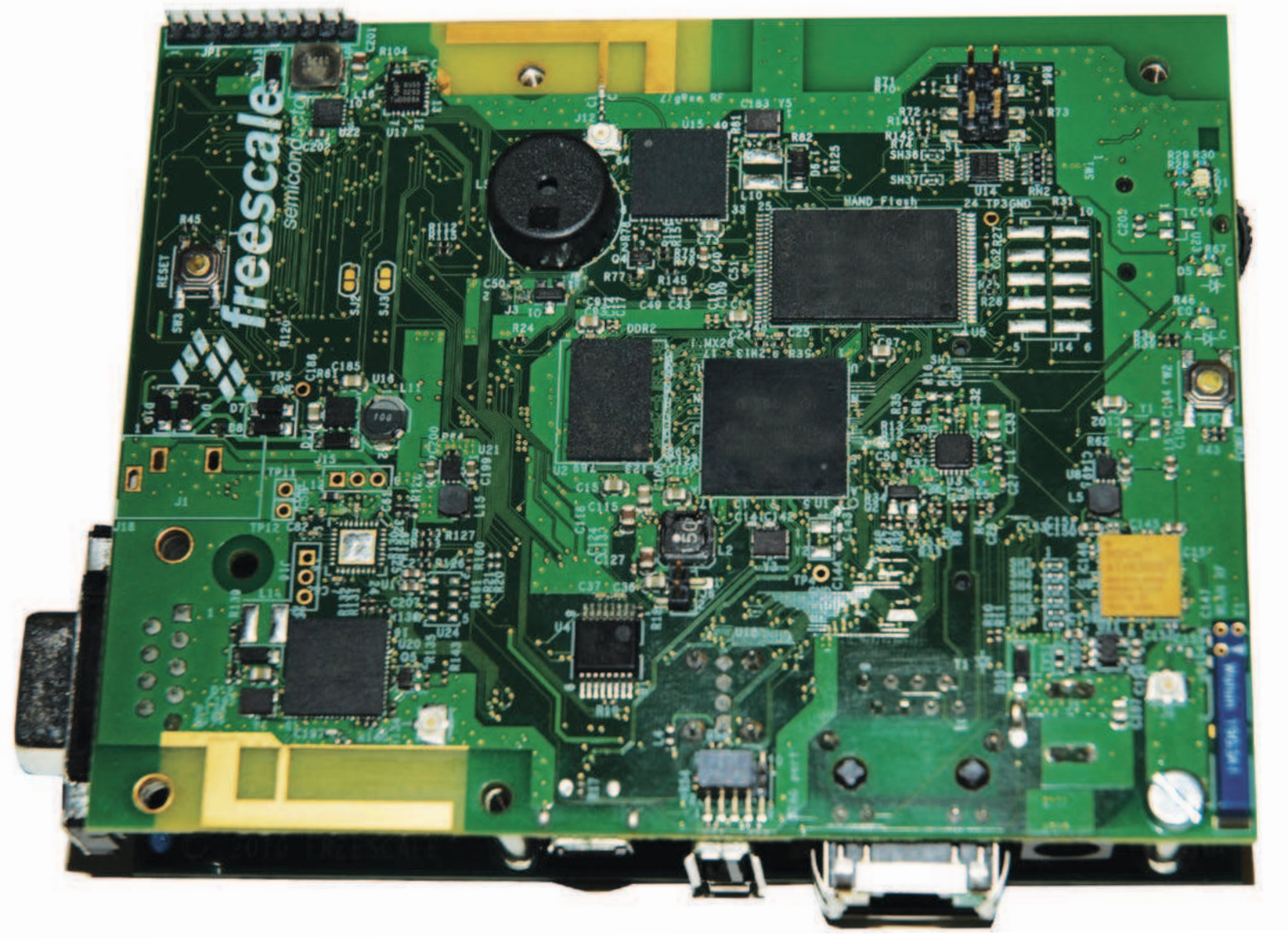


Home Energy Gateway Reference Platform

Quick Start Guide

freescale™
semiconductor

About the Home Energy Gateway Reference Platform

This section provides information about the Home Energy Gateway (HEG) reference platform and the location of the connectors and switches.

The HEG board is designed to offer a highly integrated and flexible reference platform to jump start development time in the areas of demand response, smart management, and energy consumption monitoring.

The board support packages (BSPs), connectivity drivers, application demos and user interfaces are delivered through the Adeneo Embedded website under the form of source code or binaries, with HEG schematics and Gerber files.

The board is pre-flashed with either Linux® 2.6 (P/N Adeneo HEG-IMX28KIT-LNX) or Windows® Embedded Compact 7 (P/N Adeneo HEG-IMX28KIT-WCE) OS images.

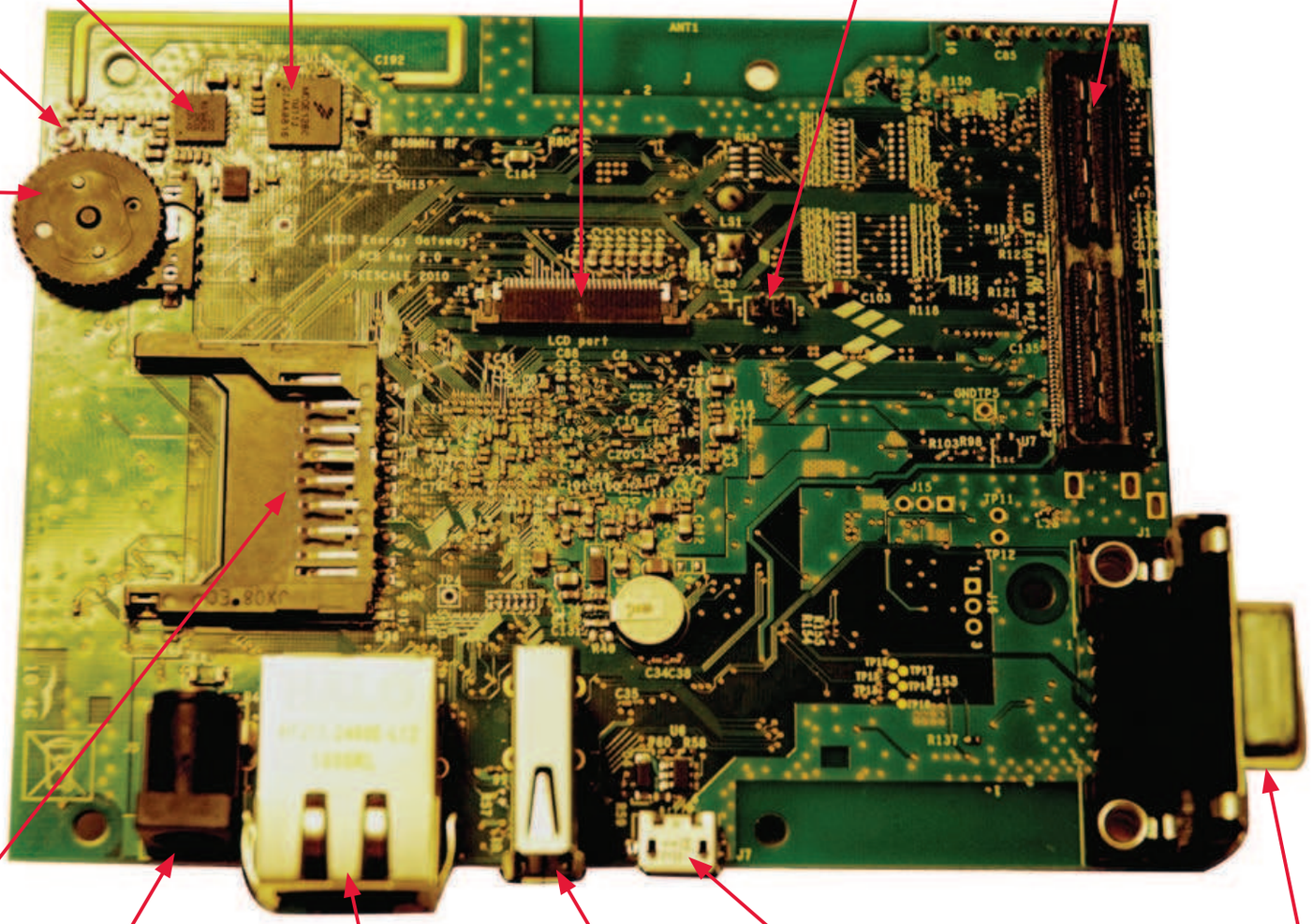
The following features are available in the HEG reference platform:

- Application Processor: 454 MHz ARM926EJ™ i.MX283
- Memory: 128 MB SLC Nand Flash + 128 MB DDR2 SDRAM
- Dual certified ZigBee®: Freescale MC13224V ZigBee SE 1.0 and HA with on-board antenna
- Sub GHz: Freescale 8-bit MCU 9S08QE128 + Semtech SX1231 transceiver with on-board antenna
- Wi-Fi® 802.11b/g: Atheros AR6102 with on-board antenna
- One Ethernet port
- One RS-232 port for debug
- One RS-485 port
- One Full-Speed USB OTG and one Full-Speed USB host port
- One SD/MMC card reader multiplexed with one U-SNAP port

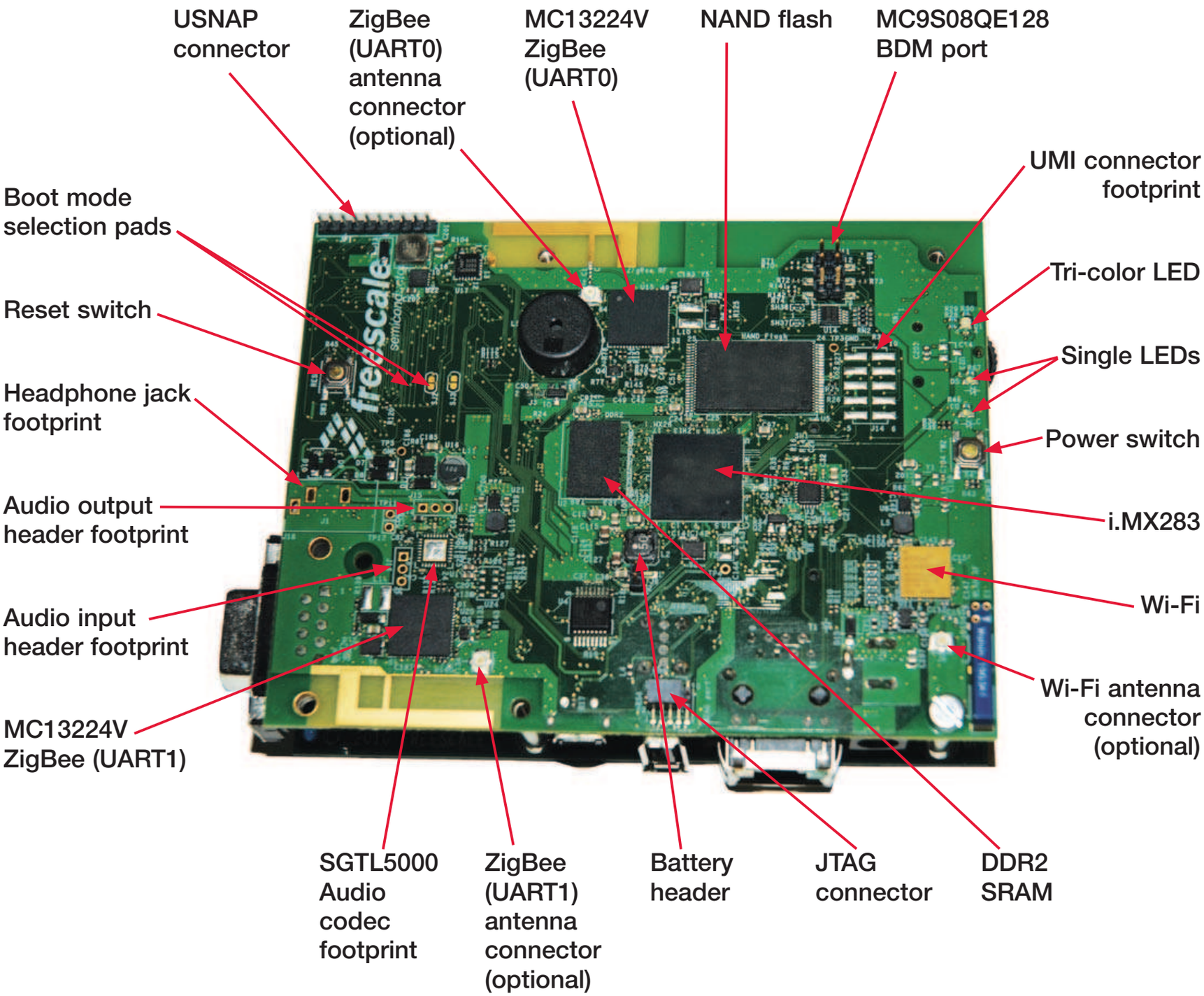
Optional: Matrix LCD (flex connector)

Optional: 4”3 WVGA LCD (daughter card)

Get to Know the HEG Board



Get to Know the HEG Board (back side)



Getting Started

This section describes how to use the HEG reference platform and the components in the package. This section also describes the environment to develop applications using the HEG reference platform.

STEP 1 Unpacking the Kit

The HEG Reference Platform is shipped with the items listed in table 1. Ensure the items listed in this table are included in the contents of your HEG kit. Remove the HEG board from the anti-static bag and perform a visual inspection.

Note: The LCD display daughter card is an optional add-on module and can be ordered separately from **freescale.com** Part number: MCIMX28LCD

HEG Reference Platform Kit Contents	
Item	Description
Board	HEG board
Cables	Ethernet straight, serial and USB-MicroUSB cables
Power Supply	5.0V/3.8A universal power supply
Documentation	Quick Start Guide (this document)

Table 1

STEP 2 Web-Based Contents

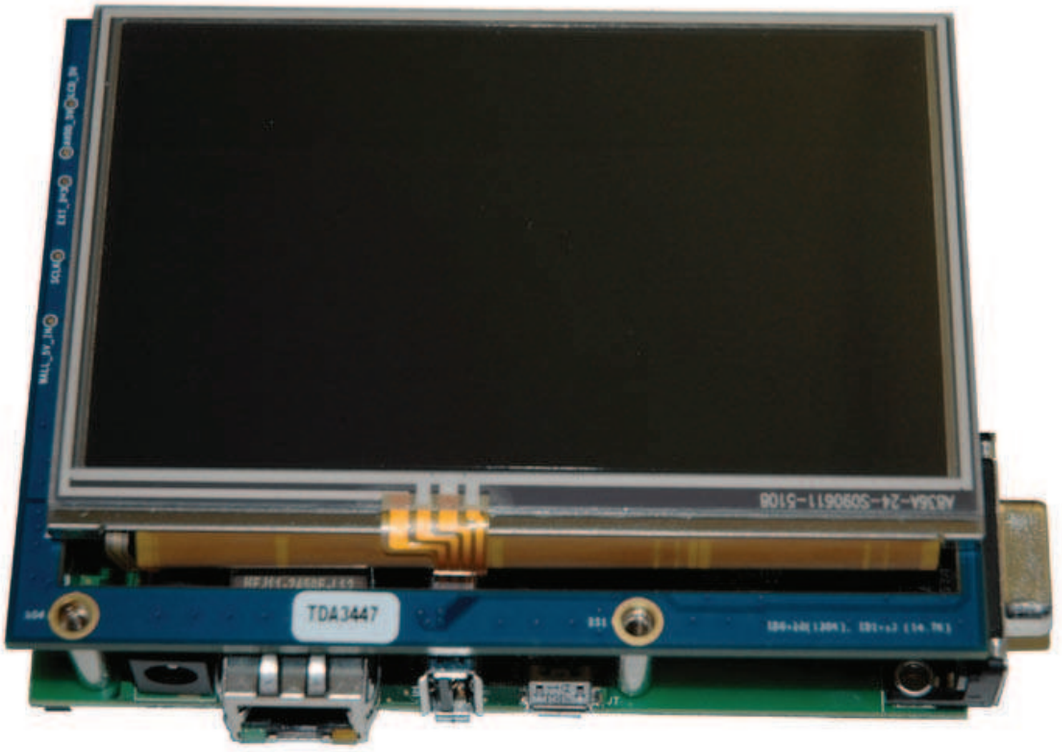
Refer to the Adeneo Embedded website: **adeneo-embedded.com/heg** for the latest HEG documents and software.

Table 3 lists the documents available on the Adeneo Embedded website.

Optional LCD Board Assembly

Connecting the LCD board to the HEG reference platform.

The HEG board is connected to the add-on LCD board using 120-pin surface mount connectors. The connectors are keyed to avoid incorrect connection. Therefore, there is only one way to connect the boards. The LCD board is connected to the J13 connector. This J13 connector is located on the top of the HEG board as shown in the following picture.

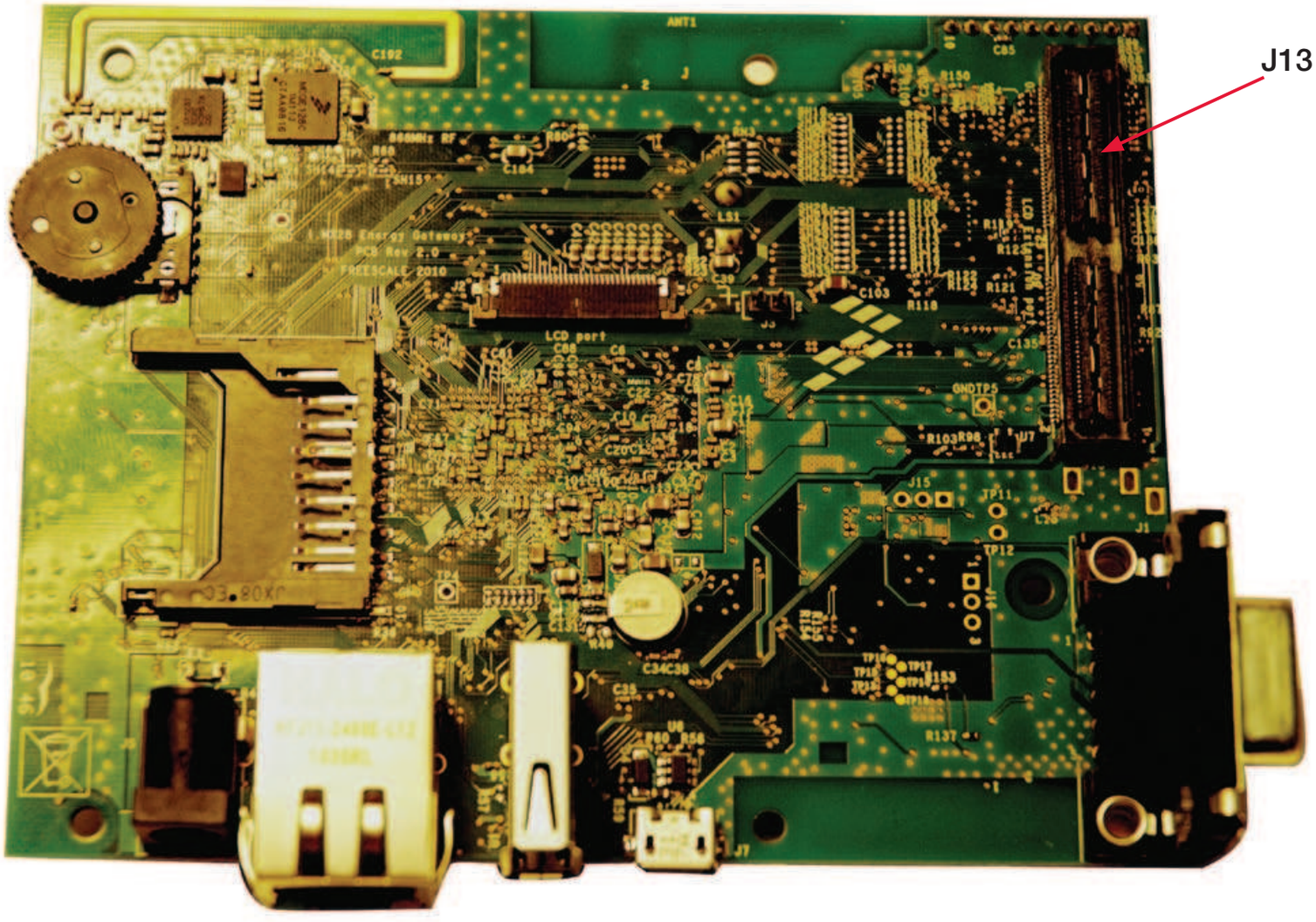


NOTE:
The 4.3¨ widescreen video graphics array (WVGA) LCD board is an optional card for the HEG reference platform and is sold separately at **freescale.com**
P/N: MCIMX28LCD

NOTE:
To connect the Matrix LCD, please refer to the HEG hardware user's guide.

LCD Board Connector

HEG board shown without optional LCD.



HEG Board Jumper and Switch Options

The following is a list of all jumper options. The ***default*** jumper and switch settings are shown in **bold** with asterisks.

HEG Board Jumper and Switch options				
Ref Design	Name	Setting		Description
SJ[2:3]	Boot mode selection	SJ2	SJ3	
		disconnected	***disconnected***	Boot from NAND (default)
		connected	disconnected	Recovery mode: boot from USB OTG
		-	-	For other boot mode settings, refer to the schematics and i.MX28 reference manual (available on freescale.com)

Table 2

NOTE:
In ***default*** case (boot from NAND), if the content of the NAND is not valid, the boot ROM code will try to boot from USB.

Setting Up the Board

STEP 1 Check Jumpers

Ensure the jumpers and switches are in their default positions by comparing them to the jumper and switch settings in table 2 in this Quick Start Guide.

STEP 2 Flash and Insert SD Card (not provided)

Flash the SD card with the appropriate Windows Embedded Compact 7 or Linux demo setup depending on the content of the NAND and then insert the SD card into the SD card socket 0 (on the bottom side of the board).

STEP 3 Connect Ethernet Cable

Connect the Ethernet cable from a PC to the Ethernet jack.

STEP 4 Connect RS232 Cable

Connect the RS232 cable from a PC to the debug UART port (optional). Serial port configuration: 115.2 kbaud, 8 data bits, 1 stop bit, no parity.

STEP 5 Connect Power Supply

Connect the 5V power supply cable to the 5V DC power jack (J5). The unit will power up automatically.

Note: Reset of the board (if needed)
Press the power button (SW3).

Setting Up the Board

For Windows Embedded Compact 7

During the boot process, there will be operating system status information scrolling on the terminal window of the PC and the Freescale logo will be shown on the 4.3” WVGA display daughtercard if connected.

The Windows Embedded Compact 7 GUI will now be displayed.

For Linux

During the boot process, there will be operating system status information scrolling on the terminal window of the PC and a penguin image in the upper left corner of the 4.3” WVGA display if connected.

After the boot process completes, the Freescale login prompt will be displayed on the terminal window. Defaut login and password are « **root** » and « **root** ».

HEG Adeneo Embedded Website Content

adeneo-embedded.com/heg

Type	Description		
HEG Documentation	• i.MX28 Windows Embedded Compact 7 BSP User Guide • HEG Linux Software User Guide • HEG Hardware User Guide • HEG Schematics, layout and Gerber files • HEG Windows Embedded Compact 7 demo tutorial • HEG Linux 2.6/Prosyst mBS OSGI/MicroDoc JVM demo tutorial • HEG Linux 2.6/QNX demo tutorial		
BSPs	**OS**	**Delivery**	**Comment**
	Windows Embedded Compact 7	Source Code	
	Linux	Source Code	• i.MX28 LTIB ver L2.6.35_10.12.01_ER • HEG Patch for LTIB ver10.05 • ZigBee firmware loader (KB_Load)
Software Demo	**Demo**	**HEG Application**	**Remote UI**
	Windows Embedded Compact 7	Delivered in Source Code with embedded Web server	Any Web Browsers (supporting Microsoft® Silverlight® plug-in)
	Linux–Linux 2.6/ Prosyst mBS OSGI/ MicroDoc JVM	Delivered in Binary Object with embedded Web server	Google Chrome™ browser, Firefox® or Safari Web® Browsers
	Linux–QNX	Delivered in Source Code	Running on i.MX25pdk delivered in Source Code

Table 3

QNX SOFTWARE SYSTEMS ProSyst® MICRODOC Windows Embedded

Useful Links

Description	URL
HEG-specific documentation, BSP and demo software	**adeneo-embedded.com/HEG**
Freescale HEG home page	**freescale.com/HEG**
Freescale LTIB Linux distribution	**freescale.com/webapp/sps/site/prod_summary.jsp?code=i.MX283&nodeId=018rH3ZrDRA24A&fpsp=1&tab=Design_Tools_Tab#**
Freescale i.MX28 home page (data sheet, user guide, user manual)	**freescale.com/imx28**
Freescale ZigBee Beekit home page	**freescale.com/webapp/sps/site/prod_summary.jsp?code=BEEKIT_WIRELESS_CONNECTIVITY_TOOLKIT**
Freescale required HW ZigBee kit for demo (P/N 1322xNSK-DBG or 1322xDSK-DBG)	**freescale.com/webapp/sps/site/prod_summary.jsp?code=1322x_Dev_Kits**
Prosyst mBS home page	**prosyst.com**
QNX smart energy home page	**qnx.com/download/feature.html?programid=20811**
Windows Embedded Compact 7 home page	**microsoft.com/windowsembedded/en-us/products/windowsce/default.mspx**

adeneo Embedded

For more information, visit **freescale.com/heg**.

Doc Number: HMENRGYGTWYQSG / REV 1

freescale™ semiconductor