

Home Energy Gateway Reference Platform

i.MX28 ARM9™ processor and ZigBee® MC13224V Platform in Package solution

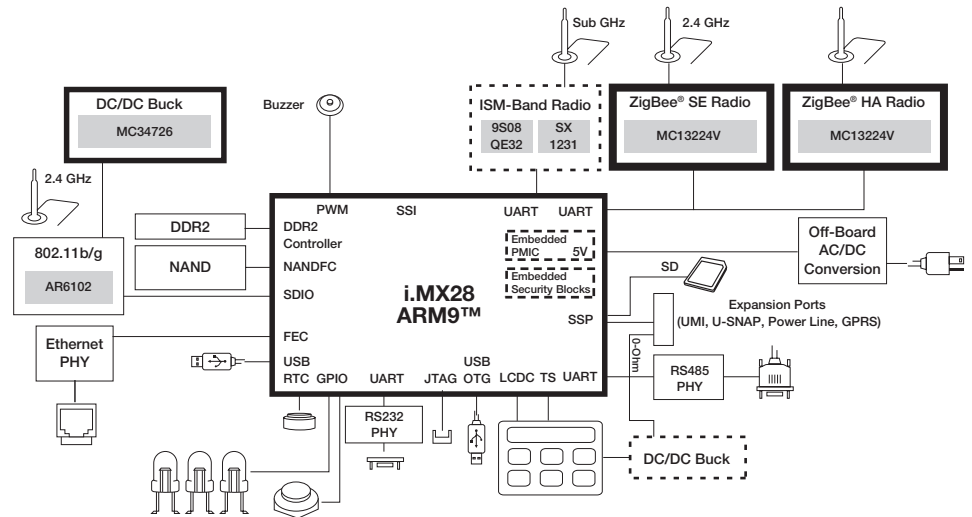
Overview

Current energy transmission methods create a demand for a more intelligent interface between the utility-controlled smart grid and the consumer. The Freescale home energy gateway (HEG) reference platform meets that challenge. Acting as the interface between the smart grid and energy-consuming in-house objects, the HEG allows every point of the smart home to be connected and controlled from a central location, enabling power efficiency and energy optimization.

Benefits

- Provides value to the consumer by allowing power configuration, predefined control management (HVAC) and energy production checks (solar panels, wind turbines)
- Provides value to the utility provider by performing granular real-time demand control, delivering alerts (tariff, peak) and designing consumer profiles for accurate energy reduction automation
- Provides a friendly user interface to encourage user interaction and long-term use
- Provides a highly integrated and flexible platform to help shorten development time and reduce time to market
- Dedicated hardware support for AES128-based authenticated boot, signed/authenticated firmware and dedicated hardware acceleration for AES, 3DES, SHA, MD5 encryption/decryption/hash algorithms and secure off-chip storage to address security, safety and privacy concerns
- Based on the low-power Freescale ARM926™ based i.MX28 system-on-chip (SoC) solution with power management unit, Ethernet, LCD controller and dual High-Speed USB with embedded PHY

HEG Reference Design Block Diagram



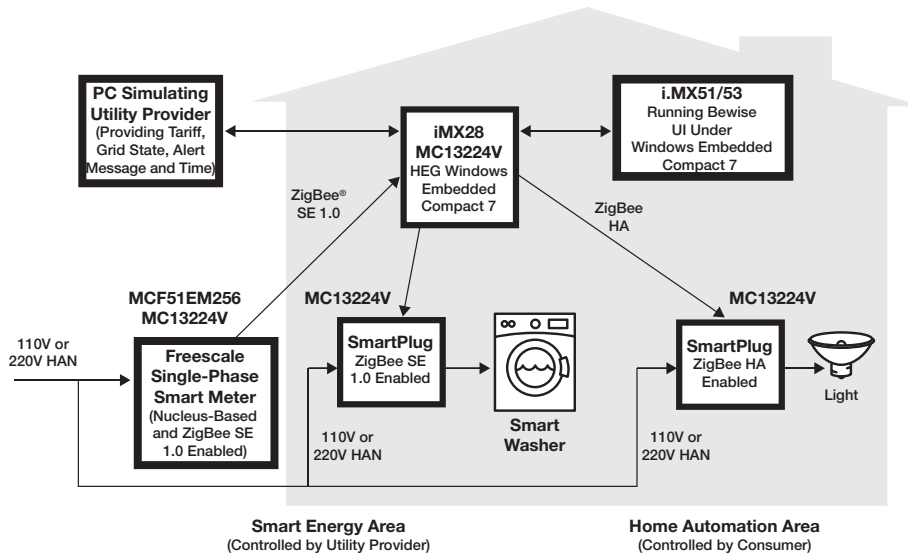
■ Freescale IC ▭ Optional

- Part of the Freescale Product Longevity Program. Learn more at freescale.com/ProductLongevity
- Pre-validated connectivity with Wi-Fi®, ZigBee® and Ethernet
- Complete ecosystem of Linux® and Windows® Embedded Compact 7 OS available
- OSGi/ProSyst mBS Smart Home option providing a multi-services and multi-application execution environment with sophisticated remote management capabilities, such as software and firmware life cycle management, provisioning, remote configuration and remote monitoring
- Completely tested and validated in two different final application demos (figure 1 and figure 2)
- Hardware schematics, Gerber files, ZigBee certified stacks and software BSP are available
- HEG reference platform kit contains software support BSP optimization can be contracted with Adeneo Embedded

Features

- 454 MHz ARM926EJ-S™ core based i.MX28 application processor w/32 KB cache
- 128 MB SLC NAND flash + 64 MB (or 128 MB) DDR2 DRAM (on board)
- Connectivity interfaces, including ZigBee SE 1.0 and HA profiles (based on Freescale ZigBee certified MC13224 PiP), Sub-GHz radio (based on Freescale 9S08QE32 8-bit MCU), Wi-Fi 802.11b/g, 10/100 Ethernet, RS-232, RS485, USB with on-chip PHY, SD/MMC card reader and UMI connector
- Optional Matrix LCD (flex connector) or 4"3 WVGA touch screen LCD (daughter card)
- RTC with coin battery (on board) backup
- AC-DC power supply (off board)
- Linux 2.6.31 and Windows Embedded Compact 7 OS

HEG Windows® Embedded Compact 7



Freescale Technology

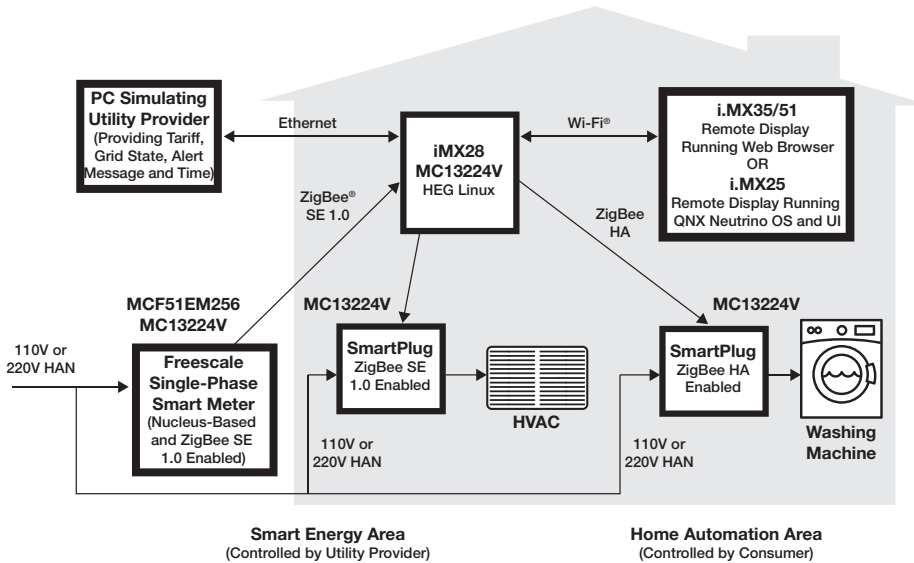
Ecosystem of Partners

Freescale has an ecosystem of third-party partners, including Adeneo, Bewise, MicroDoc, Microsoft, ProSyst®, and QNX®, who offer Linux, Windows Embedded Compact 7.0 and Neutrino BSPs, embedded Java™ runtime environments, application frameworks, demo applications and user interface frameworks.

Availability

The Freescale HEG reference platform is available from systems integrator Adeneo Embedded, who provides hardware manufacturing and BSP customization and support. Please visit adeneo-embedded.com/heg for more information.

HEG Linux®



Freescale Technology

Learn More: For current information about Freescale products and documentation, please visit freescale.com/HEG.