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QorIQ



QorIQ LS1 Processor Family

TWR-LS1021A: Tower System Module

Rapid Prototyping Platform for IoT and Industrial Control Applications

Overview

The QorIQ TWR-LS1021A Tower system module is the most feature-rich and high-performance Tower system offered by Freescale. It enables compatibility and interoperability with the growing list of Tower expansion modules, providing an easily accessible and interchangeable suite of capabilities and features to support rapid prototyping as well as software development programs. The TWR-LS1021A module is engineered to enable a wide range of applications, from IoT gateways to industrial controllers, secure access points and asset management systems. Customers benefit from the high level of integration, excellent balance of performance to power, and robust reliability.

Setting the TWR-LS1021A module apart is its outstanding level of performance delivered by the QorIQ LS1021A processor incorporating dual ARM® Cortex®-A7 cores running up to 1 GHz and delivering more than 5,000 Coremarks of performance. The module offers higher integration levels than any prior Tower main processor board, which enables true single board designs to be supported. As a result, both design effort and complexity are reduced. In addition, the TWR-LS1021A module offers HDMI, SATA3 and USB3 connectors and a complete Linux software developers package.

The TWR-LS1021A module provides a comprehensive level of security that includes support for secure boot, Trust Architecture and tamper detection, in both standby and active power modes. Together, these features safeguard the device from the point of manufacture to the point of deployment. This ensures the device is protected from malicious hacking and guarantees end products can support highly secure nodes.

Ready-to-Use Design

The QorIQ TWR-LS1021A module, as well as the TWR-LCD and TWR-IND-IO expansion modules can be ordered from Freescale Direct or our authorized distributors. The kit includes a fully tested TWR-LS1021A main processor module, Quick Start Guide, User Manual, power cord and connector cables. Freescale also makes available the complete board design files including schematics, bill of materials and GERBER files at no charge.

Ordering Information

Orderable Part Number	Price ($USD Suggested Resale)
TWR-LS1021A	$269

Target Applications

- Secure access point
- Secure hot spot
- Secure IoT gateways
- HMI enabled Programmable Logic Controller
- Secure network attached storage (NAS)
- Asset management and tracking
- HMI enabled controller
- Robotics



Figure 1. TWR-LS1021A module (TWR-LS1021A, TWR-SER-IO and TWR-ELEV)

Key Features:

- QorIQ LS1021A processor, featuring dual ARM Cortex-A7 cores, 32 KB I/D L1 cache with ECC protection, 512 KB coherent L2 cache with ECC protection
- 1 Gb Parallel NOR Flash
- 128 Mb Quad SPI Flash
- 1 GB DDR3L
- Full-size SDHC slot—up to 32 GB
- 4 Kb EEPROM
- 2x 10/100/1000 Ethernet (SGMII)
- 1x 10/100/1000 Ethernet (RGMII)
- 2x mini PCIe (x1) connectors (802.11ac/n/g, combo 802.11/Bluetooth, 802.15.4, 6Lowpan as well as 4G/LTE cards)
- 1x mSATA 3.0 slot
- Muxed LCD/QE interface
  - 24-bit LVDS LCD interface
  - 1x HDMI connector
  - 2x QE UART to TWR-ELEV for PROFIBUS or RS485 (external transceiver needed)
- Audio
  - Audio OUT via HDMI or Jack plug
  - Audio IN via onboard mic
- USB 3.0
  - 2x ports—USB-type A
  - 2x ports to mini PCIe slots (LTE/4G cellular radios)
- 2x SPI bus and 3x I^2C bus
- OpenSDA debug support
  - Run-control debug
  - Flash programmer
  - UART to USB converter
- Certification: FCC Class B and CE
- Expansion Options:
  - Tower Boards supported via TWR-EVEL
  - TWR-IND-IO
    - 2 x CAN, RS485, RS232 (up to two boards supported)
  - TWR-LCD
  - TWR-LCD-RGB
  - TWR-ETHERCAT-SLV
- Included in Kit:
  - Linux and CodeWarrior ARM toolchain software included
  - Reference design (schematics, layout and BOM available)
  - Hardware Quick Start Guide and User Guide

CodeWarrior Development Suites for Networked Applications

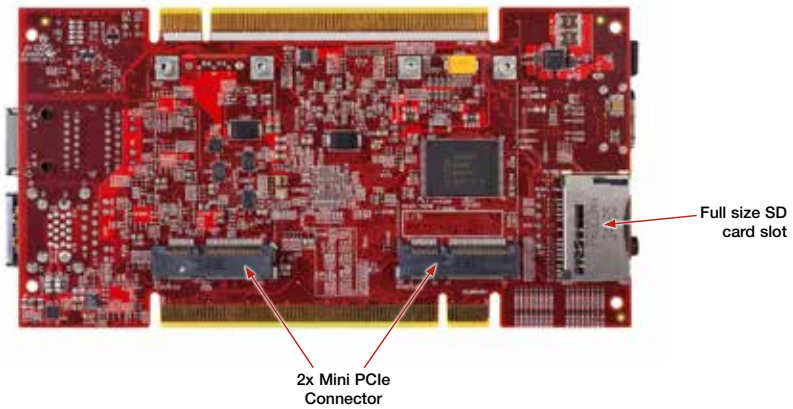
CodeWarrior Development Studio for QorIQ LS series featuring ARM®v7 is a development software tool created by Freescale and is based on award-winning CodeWarrior IDE technology. This software is one of the first software tools used and developed in lockstep with the Freescale QorIQ LS series of communications processors. The software can be obtained by purchasing any of the CodeWarrior Development Suites for Networked Applications.

The Tower Edition suite contains the complete CodeWarrior Development Studio for QorIQ LS Series for ARMv7 ISA. It is optimized to provide an economic development platform for the Tower System modules only. It is an easy upgrade to extend the Tower Edition to the Suite Edition and works with any QorIQ LS series-based boards. For more information please visit **freescale.com/CWARM7**

Top of Board



Bottom of Board



To learn more, visit freescale.com/TowerSystem

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