

Enabling Industrial Protocols with PowerQUICC® Processors

Communication, control and processing on one device

Leveraging industry leading successes in traditional networking applications, Freescale's PowerQUICC® devices now expand support for industrial protocols as they provide both control and communication processing in one device. Industrial network protocols, including EtherNet/IP™, ETHERNET Powerlink, PROFINET®, time sync protocol IEEE® 1588 and field buses, such as PROFIBUS, provide deterministic, reliable network operations in industrial manufacturing, power systems, health care facilities, transportation systems and other harsh environments.

Industrial Development Platform

The MPC8360E-RDK integrates EtherNet/IP, DeviceNet™, ETHERNET Powerlink and IEEE 1588, with more to follow, and provides a flexible framework for designing solutions built on Power Architecture™ technology. This platform solution offers more choices, greater flexibility and a comprehensive partner ecosystem that helps designers initiate new product development quickly and more efficiently.

The platform highlights the capabilities of the MPC83xx PowerQUICC processor for applications that require high-performance connectivity and determinism. Additionally, it supports 2-D and 3-D graphics rendering and touch screen capabilities. The development kit ships with software tools, including Linux® OS board support package (BSP), Linux Target Image Builder (LTIB), u-boot and USB tap. Wind River's VxWorks® real-time operating system (RTOS), Linux, Green Hills Integrity® and Freescale's CodeWarrior® development tools support this platform, and time-limited copies are available with this system.

Enabling Industrial Protocols

Freescale's MPC8360E PowerQUICC processor integrates an e300 core, built on Power Architecture technology, with the latest programmable QUICC Engine™ communications processor. The QUICC Engine controller supports a wide range of networking protocols across dual 32-bit RISC controllers. Its programmable microcode allows easier product implementation and enables future revisions to industrial deterministic protocols, similar to the process used for field programmable gate arrays (FPGAs). It also provides more flexibility than an application-specific integrated circuit (ASIC) approach.

MPC8360E-RDK development system allows you to evaluate all the QUICC Engine technology features with easy migration to the lower cost MPC8358 and MPC832x families.

Production-Ready Solution

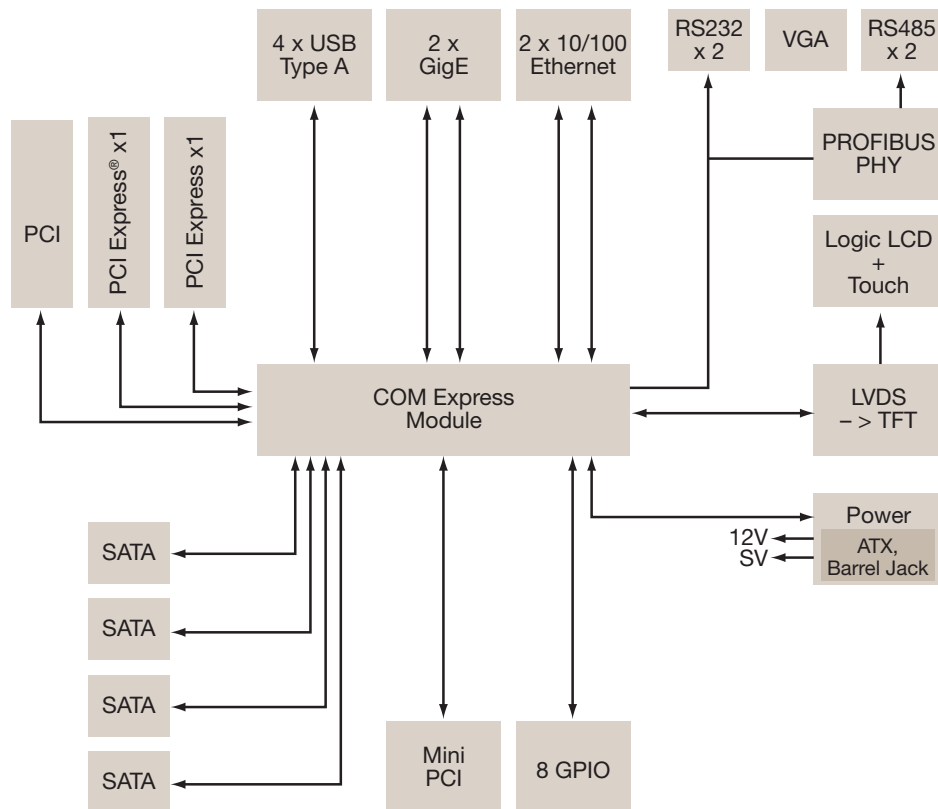
This industrial development platform uses a module based on the industry-standard COM Express form factor, which is flexible enough for various end-customer applications. Pre-integrated, pre-tested, application-ready platforms and protocol stacks from leading vendors LogicPD, RTA and IXXAT ease development and cut costs and time to market, enabling developers and manufacturers to focus on differentiating their products through application-focused functionality.

Part Number	Description
MPC8360E-RDK (Freescale)	CPU (667 MHz), DDR (223 MHz)
COMMPC8360-10-1652LCR (LogicPD)	CPU (400 MHz)
COMMPC8360E-10-2752FCR (LogicPD)	CPU (667 MHz) with graphics and touch screen

Industrial Market Requirements	What We Provide
Industrial protocol support	IEEE® 1588 (nanosecond level accuracy), EtherNet/IP™, DeviceNet™, ETHERNET Powerlink
Industrial temperature rate	<ul style="list-style-type: none"> Development board 0°C to +70°C Comm module -40°C to +85°C
Cost competitive solutions	Lowers overall system cost by providing both control and communication processing in one device
Touch screen/graphics capability	<ul style="list-style-type: none"> Integrated 4-wire touch screen controller Color Fujitsu (MB86277) controller supports 1024 x 768 LVDS interface
Fully tested and certified production platform	Industry-standard production-ready form factor: COM Express
Low power	Starts at six watts for the PowerQUICC® processor at 400 MHz

MPC8360E-RDK Platform	
Feature	Benefit
Uses the MPC8360E PowerQUICC® device with e300 core running from 400 MHz to 667 MHz	Delivers high MIPS/MHz ratio providing ample processing headroom for value-added software features
QUICC Engine™ technology running from 200 MHz to 500 MHz	<ul style="list-style-type: none"> Allows multi-protocol support on one device Supports EtherNet/IP™, DeviceNet™ Enables hardware assist version of IEEE® 1588 implementation giving ns accuracy Best-in-class EPL latency performance for managed nodes I/O flexibility
Integrated security engine (E-Version) DES, 3DES, MD-5, SHA-1, AES and ARC-4 encryption, as well as a public key accelerator and an on-chip random number generator	<ul style="list-style-type: none"> Increases system throughput by offloading algorithms and security features from the processor Capable of single-pass encryption and authentication for security protocols
Graphics and touch screen capable Display resolutions up to 1024 x 768 RGB digital output (3 x 8-bit) RGB analog output 2-D and 3-D graphic acceleration functions	Easy integration of graphics and touch screen into applications such as: <ul style="list-style-type: none"> Transportation Marine instrumentation and navigation Health care Point of sale Flight instrumentation
FlexATX form factor for the carrier board	Standard chassis, full design files available
Common I/O 4 x USB 2.0 supports low-speed and full-speed modes	Industry-standard interface for connection to a wide array of devices
Carried board has 4 x SATA, and 2 x PCI Express® (x1 type)	Move seamlessly to future PowerQUICC COM Express modules
MiniPCI	Enable wireless connectivity through 802.11 or ZigBee® plug-in cards
PCI slot (32-bit/66 MHz or 33 MHz)	Enable additional PCI peripherals such as graphics card, CAN peripheral
4 x Ethernet 2 x 10/100 2 x Gigabit Ethernet	Multiple Fast Ethernet and Gigabit Ethernet support
4 x full functional UART 2 x RS485 2 x RS232	<ul style="list-style-type: none"> RS485 can be used as PROFIBUS interface among other applications RS232 can be used for debugging or connectivity to legacy devices
Dual integrated I²C and SPI interfaces	Provides serial interfaces for common embedded and communications applications
Ships with 256 MB of DDR2 SDRAM w/ECC scalable up to 1 GB and down to 128 MB	Flexibility to upgrade memory size according to application requirements without layout change

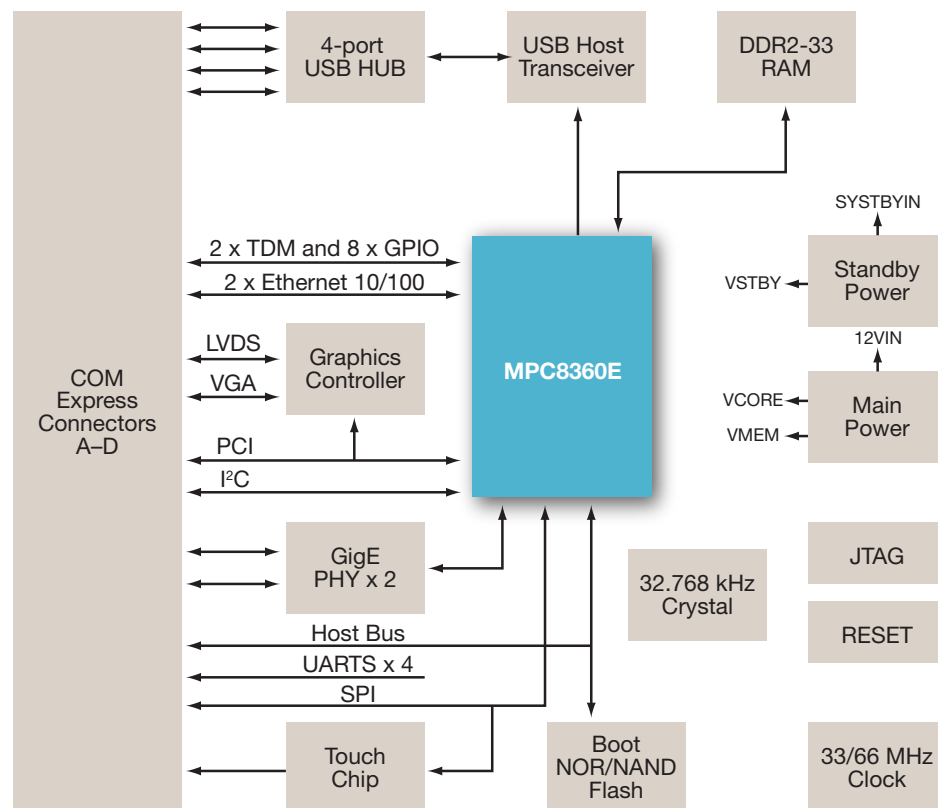
MPC83xxE-CBB COM Express Carrier Board



Features

- MPC83xx development carrier board
- FlexATX form factor
 - Standard chassis
- 2 x PCI Express® (x1 type)
- PCI slots (32-bit/66 MHz or 33 MHz)
- Common I/O routed to back panel
 - 4 x USB 2.0
 - 4 x Ethernet
 - RS485
 - RS232
 - 4 x SATA
- Wireless connectivity through MiniPCI
 - 802.11 or ZigBee®

MPC8360E-COM Express Module (COM)



Features

- COM Express Module
 - Type 3 module
- 256 MB of DDR2 SDRAM with ECC
- 8 MB boot NOR flash
- Graphics and touch screen capable
- 2 x 10/100
- 2 x Gigabit Ethernet
- 4 x full functional UART
- 32-bit PCI connection
- SPI
- I²C
- 4-port USB HUB
- 8-pin, general purpose I/O
- Standard IEEE 1149.1 JTAG test access point
- VGA and LVDS connections

Learn More: For more information about the industrial development platform,
please visit www.freescale.com/industrialEthernet.

Freescale® and the Freescale logo are trademarks of Freescale Semiconductor, Inc. All other product or service names are the property of their respective owners. The Power Architecture and Power.org word marks and the Power and Power.org logos and related marks are trademarks and service marks licensed by Power.org.

© Freescale Semiconductor, Inc. 2007

Document Number: BRPQPRTCLDEVSYS

REV 2

