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1 Introduction

Congratulations on your purchase of the Zoom™ PowerQUICC™ Development Kit. The Zoom PowerQUICC Development Kit provides a product-ready hardware and software platform for evaluating the functionality of the Freescale™ PowerQUICC processor and COM Express module. Logic's embedded solutions fast forward product development and helps you stay focused on your high-value core technologies.

1.1 Zoom PowerQUICC Development Kit Features

Common Features

- +System on Module (SOM)
 - +COM Express Compact form factor
 - +256 MB DDR2 SDRAM, 8 MB NOR flash, 64 MB NAND flash, 10/100 & 10/100/1000 Ethernet, graphics, touch
- +Display Connectors
 - +VGA
 - +LVDS
 - +Integrated LCD, touch, and backlight connector for Zoom Display Kits
- +PC Card Expansion
 - +One standard 3.3V PCI connector
 - +One Mini PCI Type IIIA connector
- +Serial Ports
 - +Two RS-232 connectors (one DB-9 serial port and one 100 mil header)
 - +Two RS-485 connectors (one DB-9 serial port and one 100 mil header)
- +Expansion Headers
 - +Access to all COM Express signals via standard 100 mil pitch headers
- +USB
 - +Four USB 2.0 full-speed hosts
- +Network Support
 - +Two RJ45 10/100/1000 Ethernet jack connectors
 - +Two RJ45 10/100 Ethernet jack connectors

Cables

- +Serial cable (null-modem)
- +Ethernet crossover cable
- +Two IDC10 to DB-9 cables (one with a DB-9 male connector and one with a DB-9 female connector)
- +12 volt power supply with power adapters (Europe, Japan, UK, and US)

Software

- +U-Boot bootloader installed in the COM Express SOM flash
- +Linux BSP available for download

Application Development Tools

- +Tera Term

Mechanical

- +FlexATX form factor baseboard
 - +190.5 mm (7.5") long x 228.6 mm (9") wide x 38.3 mm (1.51") high
- +COM Express Compact form factor SOM
 - +95 mm (3.74") long x 95 mm (3.74") wide x 14.5 mm (0.57") high

2 Getting Started

2.1 Unpacking the System

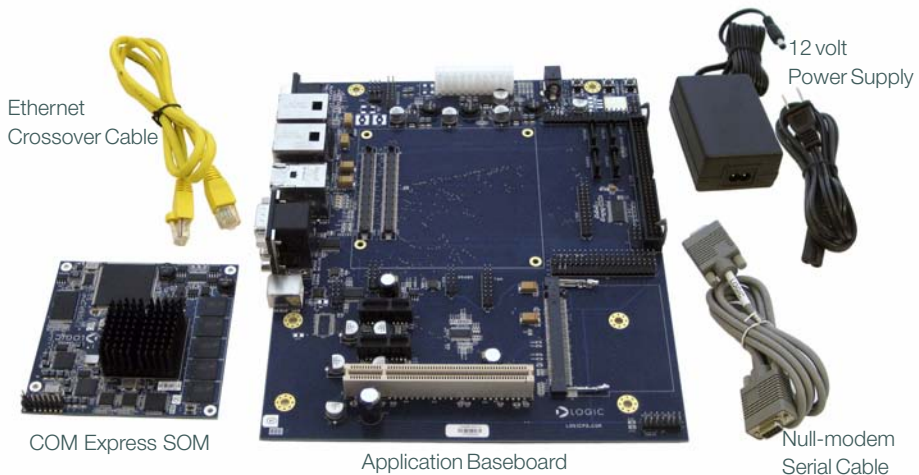
The Zoom PowerQUICC Development Kit includes the following items:

- +Application baseboard
- +COM Express SOM
- +Null-modem serial cable
- +Ethernet crossover cable
- +12 volt power supply with power adapters (Europe, Japan, UK, and US)
- +Two IDC10 to DB-9 cables (not shown in picture below)
- +QuickStart Guide
- +CD-ROM
- +Freescale warranty card
- +Freescale End-User License Agreement
- +Freescale TIC card

Note: Avoid touching the MOS devices. Static discharge can and will damage these devices.

Once you have verified that all the items are present, remove the baseboard and COM Express SOM from their protective anti-static bags. Check the boards for any visible damage and ensure that there are no broken, damaged, or missing parts.

Figure 2.1 – Kit Hardware Contents



2.2 Documentation and Resources

Logic offers documentation, software, and other resources as downloadables from our website. Please create an account and register your product to access these documents and software tools: <https://www.logicpd.com/auth/>.

Product Documentation

- +COM Express SOM and PowerQUICC Development Kit product briefs
- +Bill of Materials (.pdf format) for COM Express SOM and application baseboard
- +Schematics for COM Express SOM (.pdf format) and application baseboard (.pdf and .DSN formats)
- +Layouts for COM Express SOM (.pdf format) and application baseboard (.pdf and .MAX formats)
- +COM Express SOM Hardware Specification
- +Linux BSP User Manual

Application Development Tools (Refer to the tool's readme file for instructions)

- +Tera Term

Software

- +Linux BSP

References, Resources, and Support

- +FAQ
- +Technical Discussion Group (TDG)¹
- +How to get technical support (Ask a Question)
- +Support Packages

2.3 Development PC Requirements

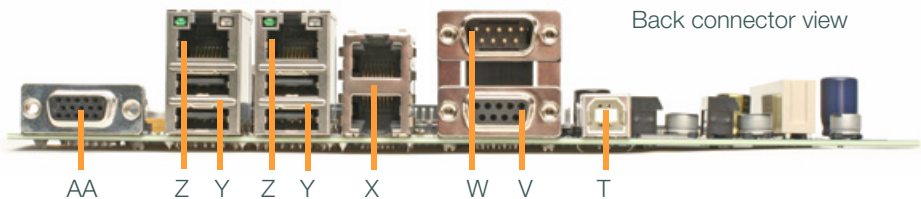
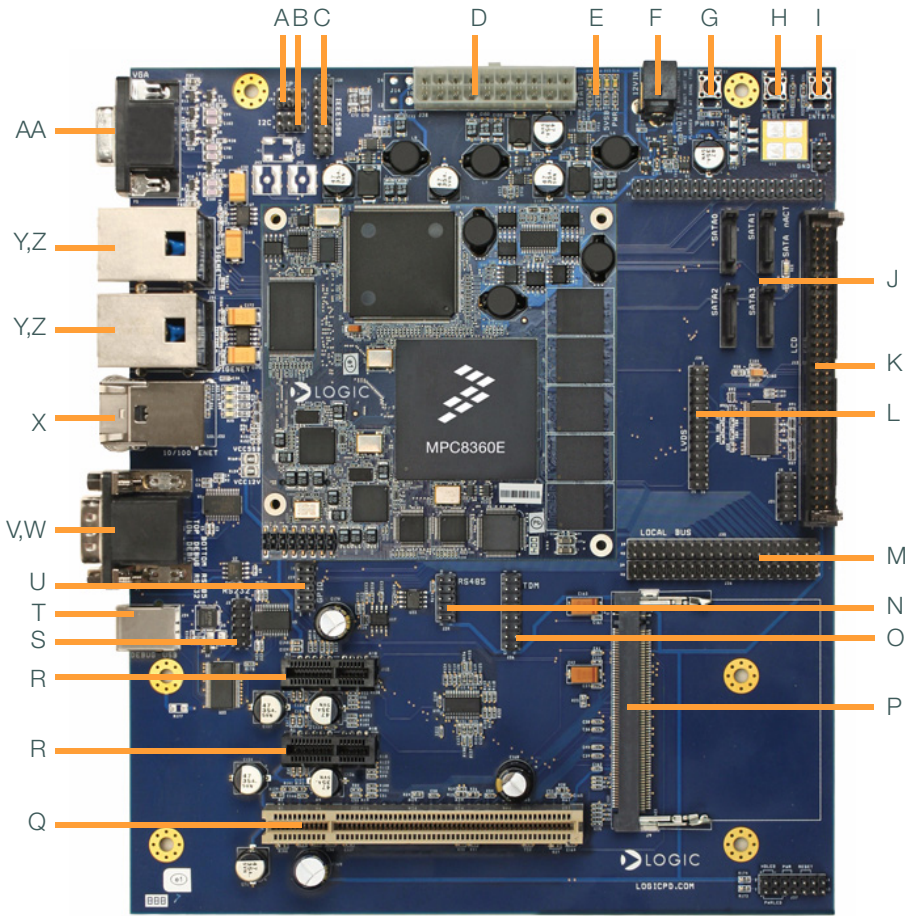
General

- +Windows® 2000 or later host PC with access to the Internet
- +Pentium® processor or equivalent
- +64 MB RAM minimum
- +115200 baud capable RS-232 port (COM port) or USB port (see "Connecting the Baseboard to your PC" Section)
- +Tera Term serial emulation program (or equivalent)

1. Please note that the TDG site requires its own account creation that is separate from the account used for the main Logic website.

2.4 Baseboard Connection Diagram

Figure 2.2 – Connection Diagram for the Baseboard



Back connector view

Connection Diagram Details

- A – SPI connector
- B – I2C connector
- C – IEEE1588 connector
- D – ATX power connector
- E – Status LEDs
- F – 12V power connector
- G – Power on button
- H – Reset button
- I – Interrupt button
- J – Four SATA connectors (not supported on the MPC8360 COM Express SOM)
- K – LCD connector
- L – LVDS video connector
- M – Local bus connectors
- N – RS485 header connector
- O – TDM header
- P – Mini PCI Type IIIA connector
- Q – PCI 3.3V 32-bit connector
- R – PCI Express connector (not supported on the MPC8360 COM Express SOM)
- S – RS232 header connector
- T – USB B debug device
- U – GPIO header
- V – Serial port—RS485 DB-9 debug serial port
- W – Serial port—RS232 DB-9 debug serial port
- X – Two 10/100 Ethernet RJ45 ports
- Y – Four USB hosts
- Z – Two 10/100/1000 Ethernet RJ45 ports
- AA – VGA connector

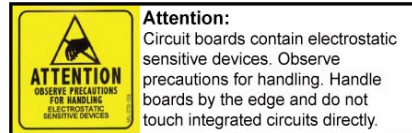
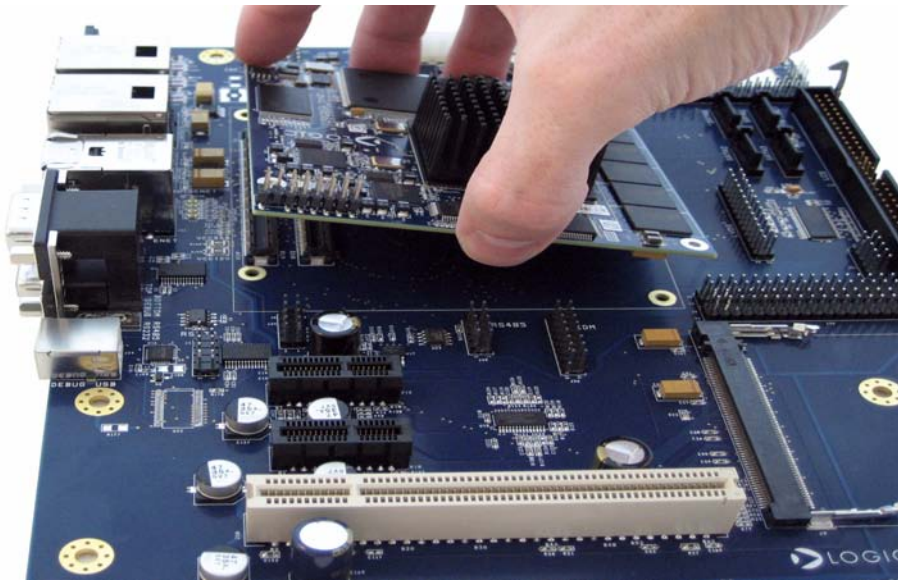
3 Connecting Hardware

3.1 Connecting the COM Express SOM to the Baseboard

The COM Express SOM connects to the baseboard via two BTB socket connectors.

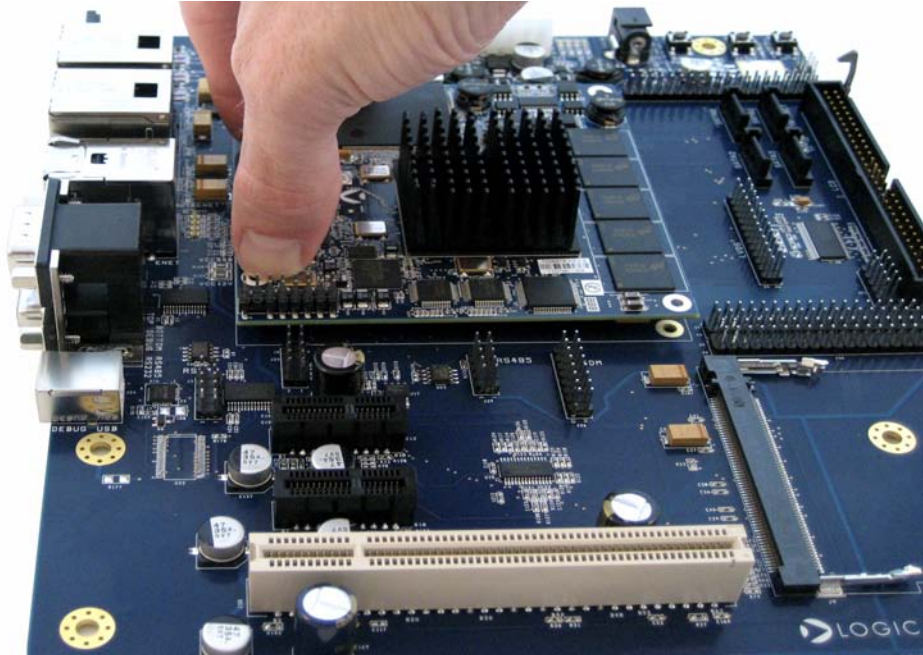
1. Align the COM Express module over the two baseboard connectors. See Figure 3.1. (There is an outline of the SOM on the baseboard silkscreen to show proper placement.)

Figure 3.1 – Aligning the COM Express SOM over the Baseboard



2. Press the COM Express SOM straight down, applying even pressure, onto the baseboard socket connectors. See Figure 3.2.

Figure 3.2 – Connecting the COM Express SOM to the Baseboard



3. Verify that the socket connectors on the COM Express module and baseboard have mated correctly. Improper connection may result in poor performance or inoperability.
4. To remove the COM Express module, pull up on the board above the socket connectors. Attempt to pull straight up and refrain from flexing the printed circuit board (PCB) to avoid damaging the COM Express SOM.

3.2 Connecting the Baseboard to your PC

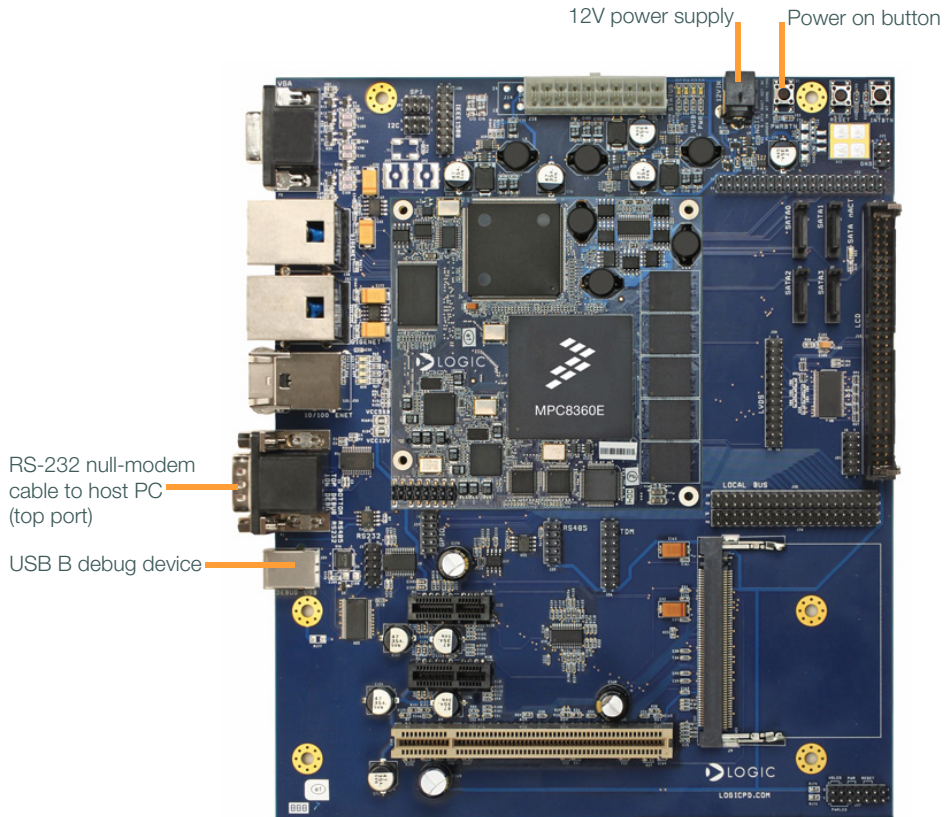
1. Connect the null-modem serial cable (supplied in the kit) to the serial port connector on the baseboard and to a COM port on the host PC. See Figure 3.3.

Note: If your computer does not contain a serial port, you can use the USB B device on the baseboard to connect to the USB port on your computer. See Figure 3.3. The application baseboard is equipped with an FTDI virtual COM port (VCP) chip that causes the USB device to appear to your computer as an additional COM port. Settings for the terminal emulation program will remain the same; however, a driver must be installed on your computer and a USB A-to-B cable must be

purchased separately for proper operation. A link to the driver and instructions for using the FT232R VCP chip can be found at <http://www.logicpd.com/auth/>.

2. Connect the regulated 12V power supply to the appropriate power adapter. Plug the power adapter into an electrical outlet and the 12V line output connector into the power connector on the baseboard.
3. Press the power on button to boot the PowerQUICC Kit. See Figure 3.3.

Figure 3.3 – Connecting the Baseboard to your PC



4 Communicating with the Development Kit

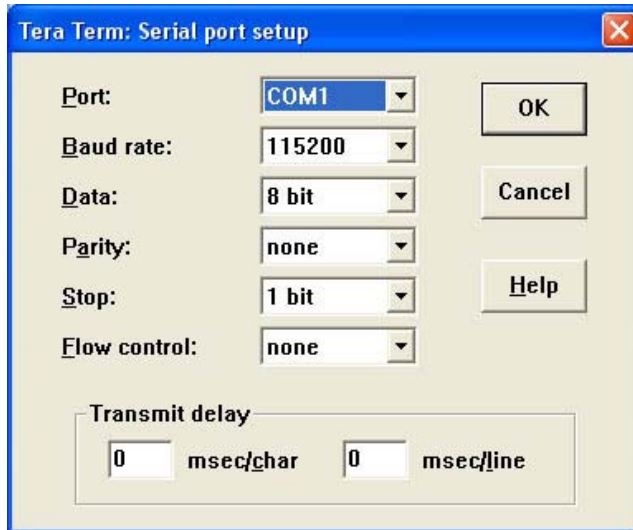
4.1 Terminal Emulation Installation

The Zoom PowerQUICC Development Kit is designed to communicate with terminal emulation programs using the included null-modem serial cable and the following settings: 115200 baud, 8-data-bits, no-parity, 1-stop-bit, and no-flow-control. The terminal emulation program must support binary transfers in order to download software to the kit.

Although Logic Product Development does not support any particular terminal emulation program, we suggest using Tera Term Pro for host PCs running Windows 2000 or Windows XP operating systems. Tera Term Pro can be downloaded for free from Logic's website: <https://www.logicpd.com/auth/>. Tera Term Pro is not available for Linux operating systems. Logic Product Development does not guarantee or support any terminal emulation programs.

Once the terminal emulation program has been installed, open a new serial port connection using the COM port where the null-modem serial cable is connected to the host PC. Set the 'baud-rate' to 115200, 'data' to 8-bit, 'parity' to none, 'stop' to 1-bit, and 'flow control' to none. (**Hint:** In Tera Term, you can save these serial port settings by selecting 'Setup -> Save setup...' from the file menu. After saving, these serial port settings will be in place every time you launch the Tera Term application.)

Figure 4.1 – Tera Term: Serial Port Set-up Window



4.2 Power-up the PowerQUICC Development Kit

The Zoom PowerQUICC Development Kit is shipped with the U-Boot bootloader installed in resident flash. U-Boot provides capability for loading operating systems and applications. In addition, it provides a full suite of commands for interfacing to the COM Express SOM. These commands load operating systems, configure hardware platforms, bring up hardware, customize applications, perform tests, and manage in-field devices.

4.2.1 U-Boot Bootloader Power-up

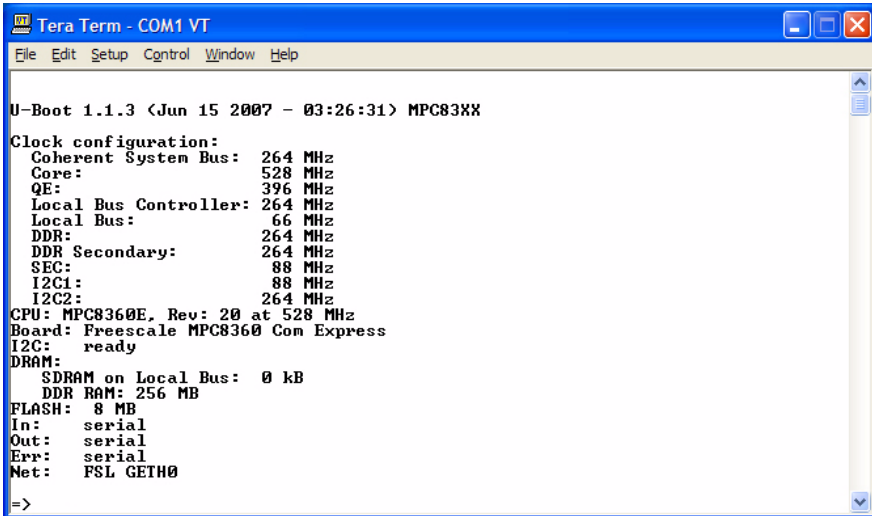
The COM Express SOM is shipped with a version of U-Boot bootloader programmed into the boot flash device.

Accessing U-Boot

After installation and setup of the terminal emulation program is complete, access the U-Boot bootloader by following these steps:

1. Start a terminal program on the host PC.
2. Connect a serial cable to the host PC and to the serial port on the baseboard.
3. Connect the power supply to the PowerQUICC Kit.
4. Press the power on button (see Figure 2.2 for button location).
5. In the terminal program window you should see a U-Boot prompt screen similar to that below (version numbers, dates, and speeds may differ from what you see).

Figure 4.2 – U-Boot Prompt Screen



```
Tera Term - COM1 VT
File Edit Setup Control Window Help

U-Boot 1.1.3 <Jun 15 2007 - 03:26:31> MPC83XX

Clock configuration:
Coherent System Bus: 264 MHz
Core: 528 MHz
QE: 396 MHz
Local Bus Controller: 264 MHz
Local Bus: 66 MHz
DDR: 264 MHz
DDR Secondary: 264 MHz
SEC: 88 MHz
I2C1: 88 MHz
I2C2: 264 MHz
CPU: MPC8360E. Rev: 20 at 528 MHz
Board: Freescale MPC8360 Com Express
I2C: ready
DRAM:
  SDRAM on Local Bus: 0 kB
  DDR RAM: 256 MB
FLASH: 8 MB
In: serial
Out: serial
Err: serial
Net: FSL GETH0

=>
```


5 Product Notices

The Zoom PowerQUICC Development Kit being sold by Logic and Freescale is intended for ENGINEERING DEVELOPMENT OR EVALUATION PURPOSES ONLY. As such, the goods being provided may not be complete in terms of required design, marketing, and/or manufacturing related protective considerations, including product safety measures typically found in the end product incorporating the goods. The user assumes all responsibility and liability for proper and safe handling of the Zoom PowerQUICC Development Kit.

ESD

Due to the open construction of the product, it is the user's responsibility to take any and all appropriate precautions with regard to electrostatic discharge. The various debug header pins are tied to actual lines on the SOM and baseboard. Some of the pins will reset the board if they are touched directly. Be aware of this situation. Logic's warranty does not cover products damaged by ESD.

Heat Precaution

During normal operation of this product, some parts may get hot. Avoid direct contact with those parts and take all necessary safety measures to protect against possible burns.

Approvals



This product is compliant with radiated emissions standard EN55022 level A and may be operated in industrial areas as defined by national regulations. This product may require a special permit for operation at other locations. Cases of interference at such locations need to be handled according to the requirements of the national EMC legislation.

FCC Compliance



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Product: Zoom PowerQUICC™ Development Kit
Model number: MPC8360E-RDK
Responsible party: Logic Product Development
411 Washington Ave N Suite 400
Minneapolis, MN 55401
612.672.9495

6 Product Registration

In order to access the latest revision of this manual, as well as other documentation and software tools, please register your product online with a recent version of Internet Explorer or Mozilla Firefox. In addition to downloads access, registration provides future notifications when Logic releases documentation and software updates for your product.

Go to the “Create Account” section on the Logic Support website at <http://www.logicpd.com/support/>, and create a user account. You will receive an e-mail with your new username, password, and additional instructions. At this point, log in and complete the product registration form to gain access to the product download files.

7 Product Ordering Information

Zoom PowerQUICC Development Kits and COM Express SOMs are available direct from Freescale or their worldwide distributors. Please visit Logic's website for configuration options and ordering information: <http://www.logicpd.com/eps/som/freescale/MPC8360/>.

7.1 Zoom Display Kits

Display Kits are ideal for embedded solutions requiring a graphical user interface. Logic offers different display sizes (e.g., 3.6", 6.4") and resolutions (e.g., QVGA, VGA). Zoom Display Kits are sold separately. Please verify the selected development board/processor supports the Display Kits. Contact Logic for other display requirements. Visit Logic's website at <http://www.logicpd.com/eps/displaykits/> for a complete listing of Display Kits and specifications.

8 Support

The Zoom PowerQUICC Development Kit is a Freescale part number. Technical support should be handled as follows:

1. First, contact your local Freescale sales office if there are any issues or questions.
2. Second, use Freescale's Technical Information Center. See enclosed information card in box.
3. Third, Logic has created an FAQ and Technical Discussion Group section on the Logic website to make it easier for our customers to find answers to their questions. For additional technical support, please see support packages below.

What support comes with the Zoom PowerQUICC Development Kit?

- +Freescale local FAEs and online support forum at <http://www.freescale.com>
- +Unlimited access to Logic's Technical Discussion Group and FAQs available at <http://www.logicpd.com/support/>

What is supported in the Zoom PowerQUICC Development Kit?

- +Zoom PowerQUICC Development Kit hardware

What does Logic Product Development NOT support?

See respective third-party solutions for technical support.

- +Tera Term
- +IC Components (contact appropriate IC vendor)

Additional Support Services Available for Purchase

Support Packages for Dedicated Technical Support

Visit <http://www.logicpd.com/support/> for complete descriptions, price, and purchase.

- +Platinum Support Package
- +Gold Support Package
- +Silver Support Package
- +Bronze Support Package
- +Windows CE Binary BSP Build Support Package

Product Development Services

Logic offers product development and manufacturing services from initial product concept and design to volume production and fulfillment.

- +Industrial Design
- +Mechanical Engineering
- +Electrical Engineering
- +Systems & Software Engineering
- +PCB Design & Layout
- +FPGA/DSP Design
- +Manufacturing Services

8.1 Frequently Asked Questions

Visit <http://www.logicpd.com/support/> for a complete list of FAQs for the Zoom PowerQUICC Development Kit and MPC8360 COM Express SOM.

8.2 Technical Discussion Group

Visit <http://www.logicpd.com/support/> to join our Technical Discussion Group (TDG) and share valuable information with other designers. Please note that the TDG site requires its own account creation that is separate from the account for the main Logic website.

Revision History

REV	EDITOR	REVISION DESCRIPTION	APPROVAL	DATE
A PN 1008126	Jed Anderson	Initial Beta release	ME	07/20/07
B PN 1008410	Jed Anderson	Removed Preliminary watermark and Beta notification; Updated Kit Contents list and section; Added Linux BSP to "Documentation and Resources" Section;	JCA	09/20/07
C PN 1008799	Jed Anderson	Added Heat Precaution notice; Added CE and FCC compliance notices	JCA	10/31/07

Please check www.logicpd.com for the latest revision of this manual, as well as other documentation and software downloads.



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