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1 Introduction

Congratulations on your purchase of the Zoom™ Starter Development Kit (SDK). The Zoom Starter Development Kit provides a product-ready software and hardware platform for evaluating the functionality of Logic's Card Engine module and the associated processor. Logic's embedded solutions fast forward product development and helps your company stay focused on your high-value core technologies.

1.1 Zoom Starter Development Kit Features

Common Features

- +Card Engine
 - +MCU and System on Chip (SoC) features specific to Card Engine model
- +LCD display interface
 - +Integrated LCD, touch, and backlight connector
- +Network support
 - +RJ45 Ethernet jack with magnetics
- +Audio
 - +Stereo input and output jacks (refer to specific Card Engine for support)
- +PC card expansion
 - +CompactFlash® Type 1 card (memory-mode only)
- +Serial port
 - +115.2kbps RS-232 debug serial port
- +Expansion headers
 - +Access to all Card Engine signals
 - +Standard 100 mil pitch

Cables & Tools

- +Serial cable (null-modem)
- +5 volt power supply with power adapters
- +Ethernet cross-over cable (dependent upon the Zoom Starter Development Kit purchased)
- +Card Engine extractor tool

Software

- +Logic provides sample downloadable Windows® Embedded CE and Linux Board Support Packages (BSPs), dependent upon the Card Engine model purchased with the Zoom Starter Development Kit
- +LogicLoader™ (bootloader/monitor) installed in the Card Engine flash

Application Development Tools

- +Cygwin¹, Tera Term, and GNU cross development toolchain¹
- +Card Engine-specific Software Development Tools¹ for use with Microsoft® Embedded Visual Tools on Windows Embedded CE supported Development Kits

Mechanical

- +102 mm long x 152 mm wide x 16.8 mm high

1. Available as downloads from Logic's website. Please create an account and register your product to access these software tools:
<http://www.logicpd.com/auth/>.

2 Getting Started

2.1 Unpacking the System

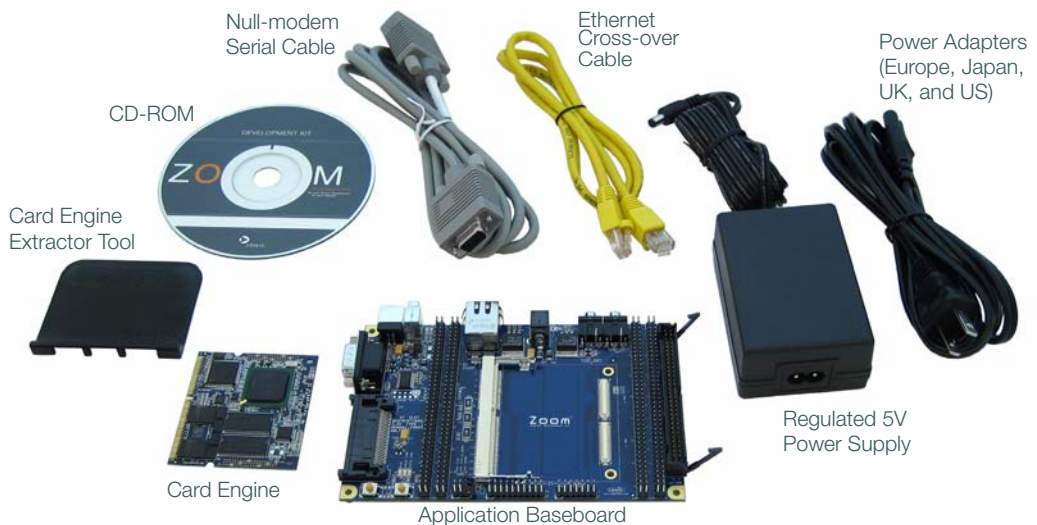
The Zoom Starter Development Kit is comprised of the following items:

- +Application baseboard
- +Card Engine
- +CD-ROM (see "CD-ROM Contents" Section)
- +Ethernet cross-over cable (dependent upon the Zoom Starter Development Kit purchased)
- +Null-modem serial cable (use only the null-modem cable provided with the kit)
- +Regulated 5V power supply with power adapters (Europe, Japan, UK, and US)
- +Card Engine extractor tool
- +End-User License Agreement
- +Warranty card
- +QuickStart Guide

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 Card Engine and application baseboard from their 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 Contents



2.2 CD-ROM Contents

Product Documentation¹

- +Card Engine and Development Kit product briefs
- +Bill of Materials (.pdf format) for Card Engine and application baseboard²
- +Schematics for Card Engine (.pdf format) and application baseboard (.pdf and .DSN formats)²
- +Layouts for Card Engine (.pdf format) and application baseboard (.pdf and .MAX formats)²
- +Card Engine Hardware Specification
- +Card Engine I/O Controller Specification
- +SDK QuickStart Guide
- +SDK User's Manual
- +LogicLoader User's Manual
- +Card Engine-specific LogicLoader User's Manual Addendum

Software Development Tools¹ (Refer to tool-specific readme files for instructions)

- +Tera Term
- +Cygwin²
- +GNU cross development toolchain²
- +Sample application²

References, Resources, and Support

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

Product Registration & Software Downloads

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
- +1 GB free hard disk space
- +115200 baud capable RS-232 port (COM port)
- +Tera Term serial emulation program (or equivalent)

1. May vary across Development Kits.
2. Available as downloads from Logic's website. Please create an account and register your product to access and be notified of the latest updates to these documents: <http://www.logicpd.com/auth/>.

For Windows Embedded CE development (sold separately, contact Microsoft)

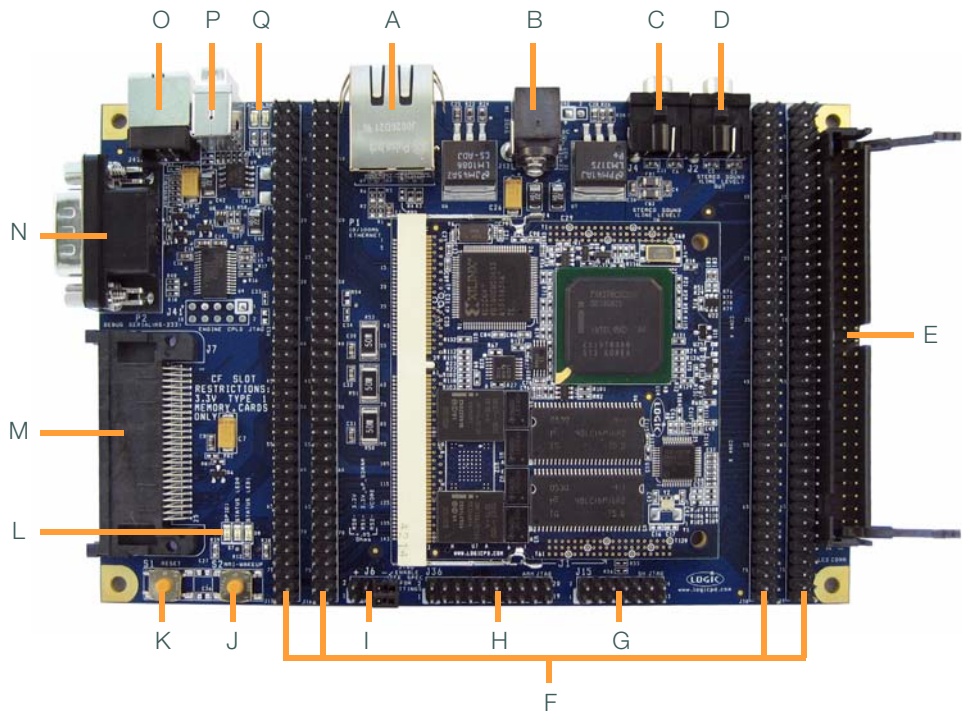
- +Host PC running Windows 2000 or Windows XP
- +Windows CE Platform Builder for creating Windows Embedded CE images
- +Microsoft Embedded Visual Tools for application development
- +Ethernet cross-over cable

For Linux development

- +Host PC running Windows 2000 or Windows XP / Cygwin or Linux
- +GNU cross development toolchain

2.4 Application Baseboard Connection Diagram

Figure 2.2 – Connection Diagram for the Application Baseboard



Connection Diagram Descriptions:

- A – RJ45 Ethernet jack with magnetics
- B – Power-in from 5 volt regulated power supply—use appropriate power adapter
- C – Stereo line-in 3.5 mm diameter jack¹
- D – Stereo line-out 3.5 mm diameter jack
- E – 60-pin integrated LCD, touch, and backlight connector power
- F – Expansion headers—access to all the Card Engine signals via 100 mil pitch header
- G – SH processor JTAG header¹
- H – ARM processor JTAG header¹
- I – JTAG jumper configuration
- J – Processor wake-up¹
- K – System reset
- L – GPIO and status LEDs
- M – CompactFlash Type 1 card (memory-mode only)
- N – Serial port—115.2 kbps RS-232 debug serial port
- O – USB function¹
- P – USB host¹
- Q – Ethernet LEDs (activity LED on the left and link LED on the right, in this view)

1. **Important Note:** The application baseboard is a common assembly board for all Starter Development Kits and may contain peripheral connectors and features that are not supported by the Card Engine purchased.

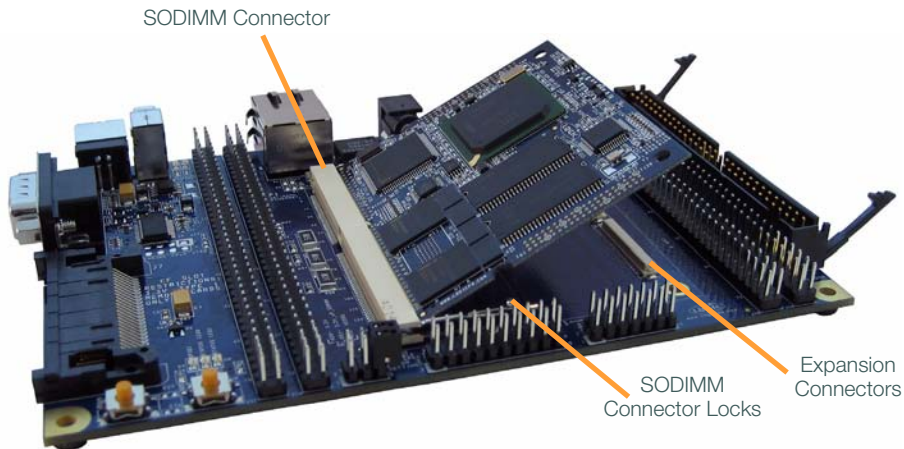
3 QuickStart

3.1 Inserting the Card Engine into the Baseboard

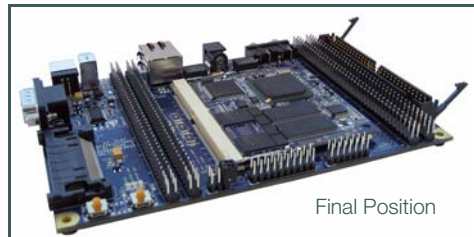
Insert the Card Engine connector into the SODIMM connector on the application baseboard (see Figure 3.1).

1. Firmly press the Card Engine into the SODIMM connector until it is fully seated.
2. Using equal, downward pressure directly over the expansion connectors, press down on the Card Engine so the expansion connectors mate correctly with the baseboard.
3. Verify that the expansion connectors on the Card Engine and baseboard have mated completely and the SODIMM connector locks have locked with the Card Engine down.

Figure 3.1 – Inserting the Card Engine into the Baseboard



Attention:
Circuit boards contain
electrostatic sensitive devices.
Observe precautions for handling.
Handle boards by the edge and
do not touch integrated circuits
directly.

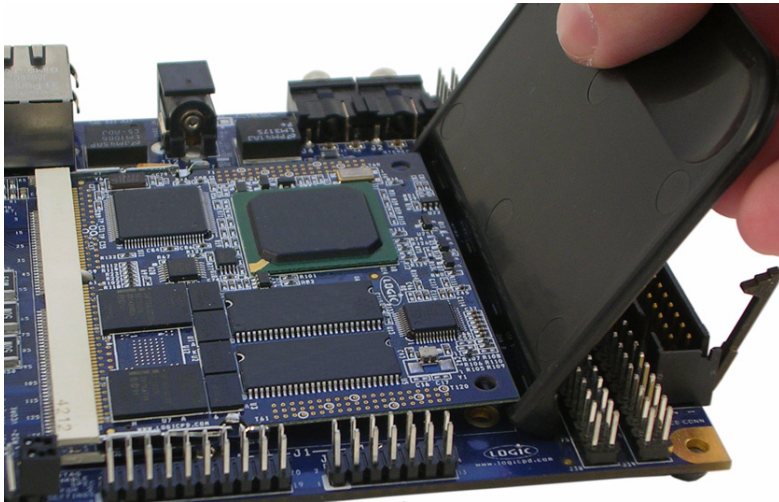


3.2 Removing the Card Engine from the Baseboard

If your Starter Development Kit did not include a Logic extractor tool with its contents, please contact Logic Sales for information on obtaining the tool.

1. To remove the Card Engine, place the Logic extractor tool behind the Card Engine with the prongs of the tool inserted under the back edge of the Card Engine (see Figure 3.2).
2. Gently pull back on the tool (away from the Card Engine) to disconnect the expansion connectors.
3. Release the SODIMM connector locks on both sides and lift up on the back edge of the Card Engine. Then remove the Card Engine from the SODIMM connector.

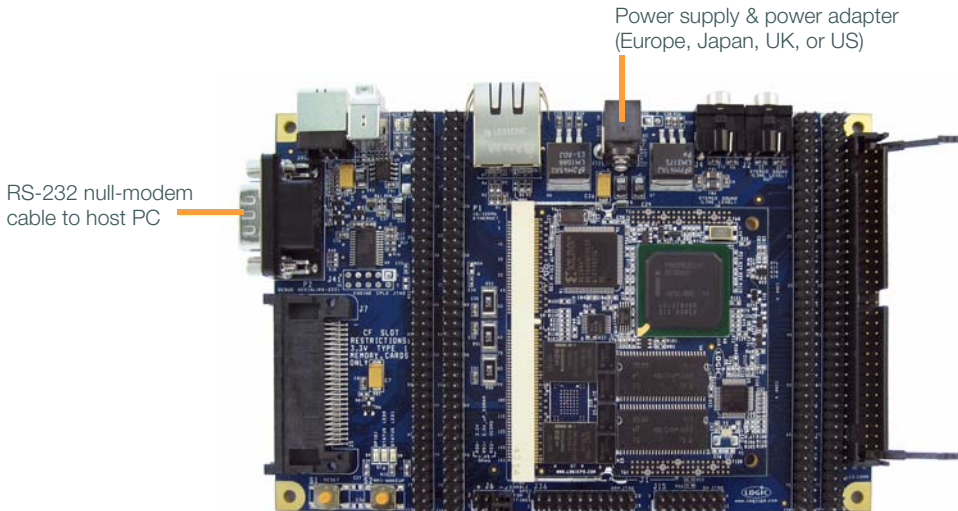
Figure 3.2 – Using the Logic Card Engine Extractor Tool



Note: Please refer to Logic's White Paper 318 *Card Engine Insertion and Extraction Procedure* for more detailed directions on how to avoid damaging the Card Engine when inserting and removing it from the application baseboard.

3.3 Connecting the Zoom Starter Development Kit to your PC

Figure 3.3 – 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).
2. Confirm JTAG settings for use with your specific Card Engine as shown in Table 3.4.

Note: Do not enable JTAG unless you intend to use the JTAG with an emulation tool.

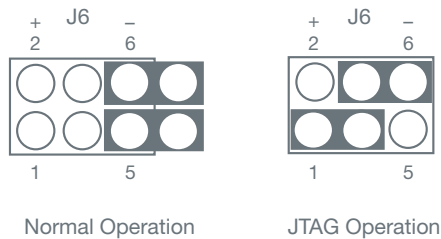
3. Connect the regulated 5 volt power supply to the appropriate power adapter. Plug the power adapter into a power outlet and the 5 volt line-output connector into the power connector on the application baseboard as shown above in Figure 3.3.

Note: The Japan power adapter is labeled; the US adapter is not.

Table 3.4 – JTAG Jumper Settings

Silicon Vendor	Card Engine	J6 Jumper Settings for Normal Operation	J6 Jumper Settings for JTAG Operation
Sharp	LH79520-10	Jump pin 5 Jump pin 6	Jump pins 1–3 Jump pins 4–6
	LH75401-10/11	Jump pin 5 Jump pin 6	Jump pins 1–3 Jump pins 4–6
	LH7A400-10	Jump pin 5 Jump pin 6	Jump pins 1–3 Jump pins 4–6
	LH7A404-10/11	Jump pin 5 Jump pin 6	Jump pins 1–3 Jump pins 4–6
Renesas	SH7727-20	na	na
	SH7760-10	na	na
Marvell	PXA270-10	na	na

Figure 3.5 – Example JTAG Settings for Sharp LH79520



4 Test Drive the Zoom Starter Development Kit

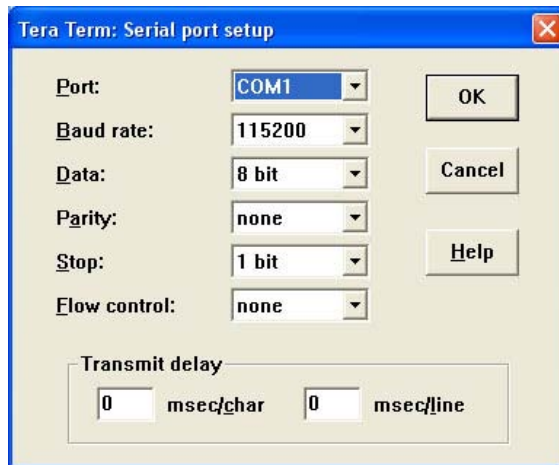
4.1 Software Installation

The Zoom Starter Developer Kit is designed to communicate with terminal emulation programs via the included null-modem serial cable using 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 Windows 2000 or Windows XP. Tera Term Pro is provided on the CD-ROM or can be downloaded for free from Logic's website at: <https://www.logicpd.com/auth/>. Tera Term Pro is not available for Linux users. Logic Product Development does not guarantee or support any terminal emulation programs under Linux or Windows platforms.

After installing a terminal emulation program, open a new serial port connection with the null-modem serial cable. In the example below, Tera Term is configured correctly with the 'baud-rate' set to 115200, 'data' to 8-bit, 'parity' to none, 'stop' to 1-bit, and 'flow control' to none.

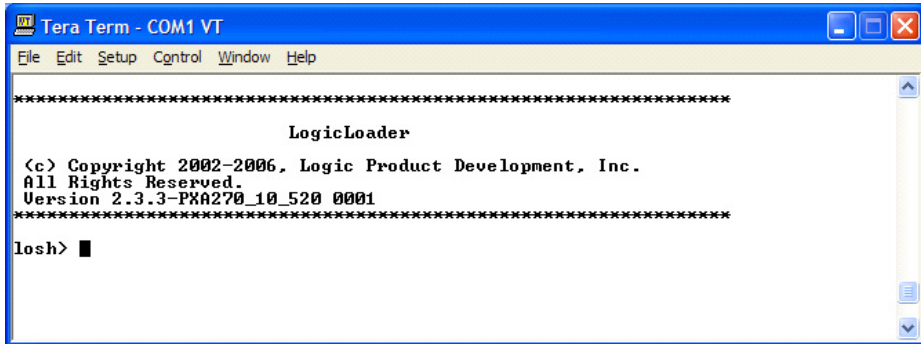
Figure 4.1 – Tera Term: Serial Port Setup Window



4.2 Power-up the Development Kit

Connect the power to the application baseboard. The LogicLoader (bootloader/monitor) menu screen will appear.

Figure 4.2 – LogicLoader (Bootloader/Monitor) Menu



Note: The LogicLoader version you see may differ from the one in the figure above.

LogicLoader provides the capability for loading operating systems and applications. In addition, LogicLoader provides a full suite of commands for interfacing to the Card Engine. These commands load operating systems, configure hardware platforms, bring up hardware, customize applications, perform tests, and manage in-field devices.

Note: If the LogicLoader menu screen does not appear, please check the Tera Term serial settings, all cable connections, application baseboard and Card Engine connections, and then press system reset.

4.3 Software Development Tools

Refer to the tool-specific readme files and the *Zoom SDK User's Manual* for installation instructions and directions for using the software development tools.

4.4 Sample Application

The Zoom Starter Development Kit comes with a sample application that can be downloaded from Logic's website. For instructions on loading and running the sample application on the Development Kit, see the *Zoom SDK User's Manual* and the readme file that accompanies the downloaded sample application.

4.5 Board Support Packages (BSPs)

Logic offers product-ready Board Support Packages (BSPs) in binary format for Zoom Starter Development Kits, available for various operating systems (Windows Embedded CE, Linux, etc.) and dependent on the Card Engine purchased with the Development Kit.

Logic provides sample downloadable evaluation Windows Embedded CE images (NK.bins) to evaluate the Windows Embedded CE operating system on Logic's line of Development Kits. These sample images are provided as part of the Microsoft Windows Embedded CE Hardware Kitting Program. Logic packages a 120-day evaluation version of Windows Embedded CE Platform Builder in the Development Kit and posts downloadable sample images on the Logic website. These images are licensed for evaluation purposes only and are not intended for commercial use. Please reference Application Note 296 *When to Use an NK.bin* for information about the capabilities of the binary OS images.

If your development effort requires the use of a BSP, Logic provides a binary BSP as a downloadable item from the website. In order to obtain Logic's Windows Embedded CE BSP, please read and sign the Windows Embedded CE BSP License Agreement located at: <http://www.logicpd.com/downloads/406/>.

5 Product Notices

Evaluation Purposes Only

The Zoom Starter Development Kit being sold by Logic is intended for ENGINEERING DEVELOPMENT OR EVALUATION PURPOSES ONLY and is not considered by Logic to be fit for commercial use. 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 Starter 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 Card Engine and application baseboard. Some of them will reset the board if they are touched directly. Be aware of this situation. Logic's warranty does not cover products damaged by ESD.

Speakers

A normal pair of desktop computer speakers plugged into the audio jack will work fine. Use a set with an amplifier and volume control for best results.

Approvals

This product is compliant with 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.

6 Product Registration

In order to access the latest revision of this manual, product change notifications, application notes, software, hardware design files, and hardware specifications, please register your product online with a recent version of Internet Explorer or Firefox.

In addition, you will be notified when Logic releases updates to your product.

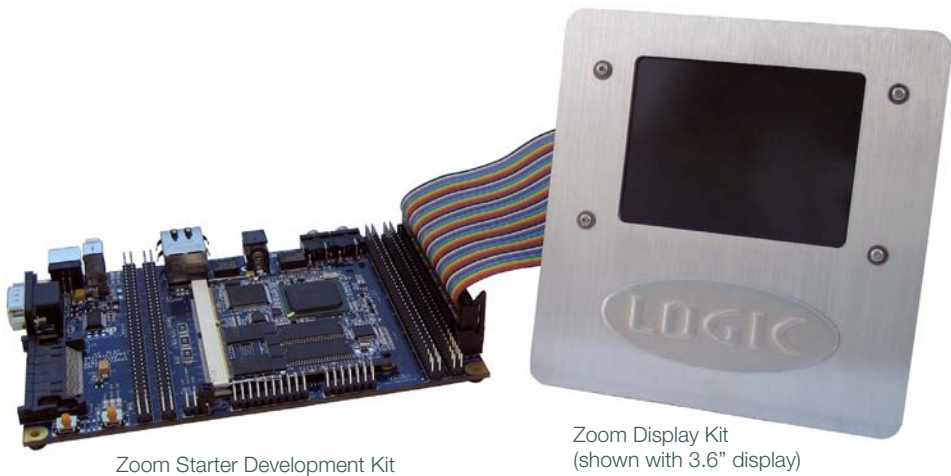
Go to the “Create Account” section on the Logic Support website at <http://www.logicpd.com/support/>, and create a user account. You will receive an e-mail with your new username, password, and additional instructions. At this point, log in and complete the product registration form to gain access to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

7 Zoom Display Kits

Display Kits are ideal for embedded solutions requiring a graphical user interface. Logic offers a variety of display sizes (3.5", 3.6", 5.7", 6.4", 10.4", 12.1"), resolutions (QVGA, VGA, SVGA), and types (TFT, AD-TFT). Zoom Display Kits are sold separately. Please verify the selected Development Kit and Card Engine support the desired Display Kit. Contact Logic for other display requirements.

Visit Logic's website at <http://www.logicpd.com/eps/displaykits/> for a complete listing of Display Kits.

Figure 7.1 – Zoom Display Kit plugged into a Zoom Starter Development Kit



7.1 Zoom Display Kit Features

Logic model	Sharp LCD P/N	Display size	Display format	LCD interface	Key features
LCD-3.5-QVGA-10	LQ035Q7DB02	3.5"	QVGA 240 x 320	AD-TFT	Color, transreflective
LCD-3.5-QVGA-20	LQ035Q7DB02	3.5"	QVGA 240 x 320	TFT	Color, transreflective w/HRTFT ASIC
LCD-3.6-QVGA-10R	LQ036Q1DA01	3.6"	QVGA 320 x 240	TFT	Color, transmissive w/HRTFT ASIC
LCD-5.7-QVGA-10	LQ057Q3DC02	5.7"	QVGA 320 x 240	TFT	Color, transmissive
LCD-6.4-VGA-10R	LQ64D343	6.4"	VGA 640 x 480	TFT	Color, transmissive
LCD-10.4-VGA-10	LQ104V1DG51 or LQ10D368	10.4"	VGA 640 x 480	TFT	Color, transmissive
LCD-12.1-SVGA-10	LQ121S1DG41	12.1"	SVGA 800 x 600	TFT	Color, transmissive

Important Notices:

- +LCD-3.5-QVGA-10 is only compatible with LCD controllers that support Advanced TFT LCD displays (AD-TFT). Please refer to the respective Card Engine processor product brief for display controller support.
- +Please verify the selected processor supports the Display Kits.
- +(R) An R in the model number denotes a RoHS compliant configuration.
- +Please contact Logic with other display requirements.

8 Support

The Zoom SDK is a low cost Development Kit. Logic has created a self-service (FAQ, Technical Discussion Groups, Ask A Question) technical support process to make it easier for our customers to find answers to their questions, and this helps Logic provide low cost Development Kits. For additional technical support, please see support packages below.

What support comes with the Zoom Starter Development Kit?

- +Unlimited access to our Technical Discussion Group and FAQs available at <http://www.logicpd.com/support/>
- +One incident up to one hour of engineering support via e-mail (Ask A Question) at <http://www.logicpd.com/support/>

What is supported in the Starter Development Kit?

- +Zoom Starter Development Kit hardware
- +LogicLoader (Bootloader/Monitor)
- +BSPs developed by Logic Product Development

What does Logic Product Development NOT support?

See respective third-party solutions for technical support.

- +GNU cross development toolchain (<http://www.gnu.org/>)
- +Tera Term
- +Cygwin (<http://www.cygwin.com/>)
- +Microsoft Embedded Visual Tools and Platform Builder (contact Microsoft)
- +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

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 Starter Development Kit.

8.2 Technical Discussion Group

Visit <http://www.logicpd.com/support/> to join our Technical Discussion Group and share valuable information with other designers.

9 Warranty Statement

Refer to warranty card enclosed in development kit.

REVISION HISTORY

REV	EDITOR	REVISION DESCRIPTION	APPROVAL	DATE
A PN 1001990	James Wicks	Release	ELH	04/22/05
B PN 1001990	Jed Anderson	General document edits; Updated "CD-ROM Contents"; Updated Section 4 images; Added 3.6", 5.7" Display Kit info; Added "Product Registration"; Updated and moved Support info to Section 8; Updated for LogicLoader 2.0; Updated BSPs, Software Tools, and Sample App Sections; Added reference to WP318 in Section 3.1	ELH	03/30/06
C PN 1007458	Jed Anderson	Updated format to follow new design; Update pictures; Reformatted Table 3.4; Added information for extractor tool; Updated list of available Support Packages in Section 8; General grammatical and formatting changes throughout	RGL	04/23/07

Please check www.logicpd.com for the latest revision of this manual and additional Zoom SDK and Card Engine documentation and software.



embedded product solutions

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