



Zoom™ OMAP34x Mobile Development Kit (MDK) Battery Recharging

Application Note 395

Logic // Embedded Product Solutions
Published: October 2008

Abstract

This application note provides steps for recharging the Zoom™ MDK OMAP34x battery after it loses its charge.

This document contains valuable proprietary and confidential information and the attached file contains source code, ideas, and techniques that are owned by Logic Product Development Company (collectively "Logic's Proprietary Information"). Logic's Proprietary Information may not be used by or disclosed to any third party except under written license from Logic Product Development Company.

Logic Product Development Company makes no representation or warranties of any nature or kind regarding Logic's Proprietary Information or any products offered by Logic Product Development Company. Logic's Proprietary Information is disclosed herein pursuant and subject to the terms and conditions of a duly executed license or agreement to purchase or lease equipment. The only warranties made by Logic Product Development Company, if any, with respect to any products described in this document are set forth in such license or agreement. Logic Product Development Company shall have no liability of any kind, express or implied, arising out of the use of the Information in this document, including direct, indirect, special or consequential damages.

Logic Product Development Company may have patents, patent applications, trademarks, copyrights, trade secrets, or other intellectual property rights pertaining to Logic's Proprietary Information and products described in this document (collectively "Logic's Intellectual Property"). Except as expressly provided in any written license or agreement from Logic Product Development Company, this document and the information contained therein does not create any license to Logic's Intellectual Property.

The Information contained herein is subject to change without notice. Revisions may be issued regarding changes and/or additions.

© Copyright 2008, Logic Product Development Company. All Rights Reserved.

REVISION HISTORY

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	Glenn Jackson, Nathan Kro	Initial release	NJK	10/01/08

1 Introduction

Zoom™ OMAP34x Mobile Development Kits (MDK) running U-Boot versions with dates prior to May 22, 2008 do not activate the battery charge feature of the MDK. In these instances, the battery becomes completely discharged with use and the MDK becomes inoperable. For the OMAP34x MDK to operate properly the battery must have a charge; an external power supply cannot substitute for the battery supply.

This document provides instructions for recovering a completely discharged battery in a Zoom OMAP34x MDK.

2 Requirements for Procedure

The following items are required to complete this procedure:

- Zoom OMAP34x MDK
- microSD card that can be formatted
- Development PC with Internet access and the ability to write to an SD card
- DC power supply
- Optional: USB A to mini-B cable (required only if you wish to continue the charging via USB instead of DC)
- Optional: UART to serial adapter (required only if you wish to view the U-Boot output)

3 Procedure for Recharging the MDK Battery

Detailed instructions for recharging the OMAP34x MDK battery are described within this document. The following is an overview of the basic steps:

1. Create a bootable microSD card.
2. Insert the bootable microSD card into the microSD card slot on the MDK.
3. Apply DC power to the MDK.
4. Boot the MDK with the microSD software that will enable charging via DC or USB.
5. Keep the MDK connected to the charging source to charge the battery.

3.1 Create a Bootable microSD Card

3.1.1 Download Software for microSD Card

The U-Boot and X-Loader files for creating a bootable microSD card are available on Logic's website.

1. Go to the "OMAP34x Zoom Mobile Development Kit" downloads page: www.logicpd.com/auth/downloads/Zoom%20Mobile%20Development%20Kit/
2. Look under the section heading "Bootloader/Monitor" for the title "Bootable microSD Card for OMAP34x MDK". Click on the title to download the associated .zip file.
3. Locate the downloaded .zip file on your PC and unzip the file to access the folder "OMAP34x_MDK_Bootable_SD_Card".
4. The two files in the folder are "u-boot.bin" and "MLO". Do not change the file names or alter the files in any manner, otherwise the MDK will not boot from the microSD card.

3.1.2 Load Files to microSD Card

1. From the “OMAP34x_MDK_Bootable_SD_Card” folder, copy the files “u-boot.bin” and “MLO” to the microSD card.

Note: It may be necessary to format the microSD card before copying the files. Please see the following FAQ for information on formatting SD cards:

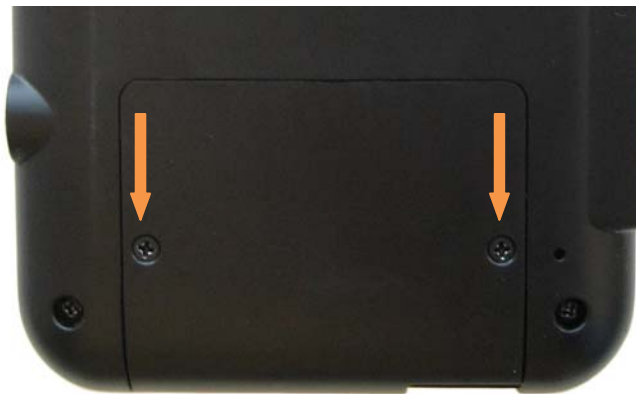
www.logicpd.com/support/faq/faq.php?faq_id=218

2. This microSD card can now be used to boot the MDK.

3.2 Boot OMAP34x MDK from microSD Card

3.2.1 Prepare the OMAP34x MDK

1. Unscrew the two screws holding the back battery panel in place and remove the panel from the MDK.



2. Insert the bootable microSD Card into the slot on the MDK.



3. Use a USB A to mini-B cable to connect the MDK to a development PC.
4. Connect a UART to serial adapter to the MDK UART header and a serial cable connected to a development PC. **Note:** Be sure to align pin 1 with designated pin 1 hole.



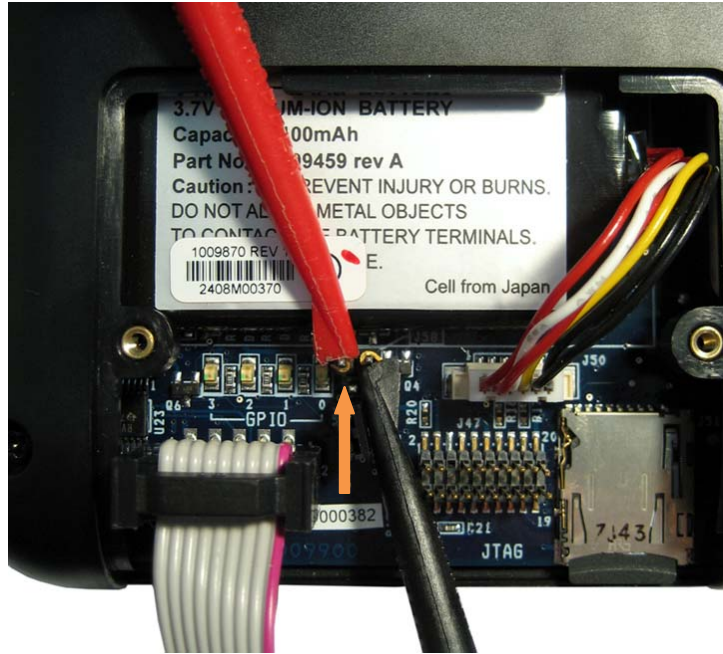
3.2.2 Apply Power to the OMAP34x MDK

Note: All steps within this section assume the microSD card is properly formatted for booting the MDK, the microSD card is inserted in the slot on the MDK, and the MDK is connected to a development PC via a USB A to mini-B cable.

1. Plug a ground (GND) onto the MDK J58.2 jumper pin. **Note:** The PCB silkscreen label pointing to J58 is located under the battery. In the picture below, J58 pin 2 is the right pin.



2. Plug a 5V source onto the MDK J58.1 jumper pin. **Note:** The PCB silkscreen label pointing to J58 is located under the battery. In the picture below, J58 pin 1 is the left pin.



3. Power on DC power supply.
4. The MDK will boot from the microSD card. This boot process may take 10–30 seconds to begin as the battery must first be pre-charged. This pre-charge process is why a DC power supply is required, as the USB connection cannot pre-charge the battery.
5. The boot software will enable the DC power supply for battery charging.
6. The resulting output should similar to the following:

```
Texas Instruments X-Loader 1.41
Starting OS Bootloader from MMC/SD1 ...

U-Boot 1.1.4 (Jul 18 2008 - 19:55:30)

OMAP3430-GP rev 2, CPU-OPP2 L3-165MHz
OMAP3430LAB 0.1 Version + mDDR (Boot NAND)
DRAM: 128 MB
NAND:256 MiB
In: serial
Out: serial
Err: serial
AC charger detected
Battery levels: main 3492 mV, backup 2152 mV
LAN9x18 (0x92110000) detected.
Read mac address: 00:08:EE:XX:XX:XX
start Auto negotiation... (take ~2sec)
Auto negotiation failed
OMAP34XX LAB #
```

7. Keep OMAP34x MDK connected to the charging source to charge the battery. This may take a couple of hours for a full charge.

Note: If you are not able to use the DC power supply for the entire duration of charging, charge the battery for a couple of minutes. Then, making sure the USB cable is

connected, power off and remove the DC power supply. Reset the MDK (by unplugging and plugging in the battery) and the USB cable will continue the charge.

4 Update Onboard U-Boot

In order for the OMAP34x MDK to automatically charge the battery in the future, the U-Boot software located in the onboard NAND flash must be updated to a version with a release date of May 22, 2008 or later.

U-Boot downloads and instructions for updating U-Boot are available on the omapzoom.org website.

5 Summary

The instructions within this document provided instructions for recovering a completely discharged battery in a Zoom OMAP34x MDK.