

:: i.MX LITEKIT ::

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REVISION HISTORY

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	Jed Anderson	Initial Release	TED	11/27/06
B	Jed Anderson	-Updated the "Solution" Section in "PCN 341 Hardware Change" to reflect that the changes were made at Pilot; added item 4 to Solutions -Added "i.MX LITEKIT PCN Introduction" -Added "PCN 348 Pre-Production Hardware Changes"	MAA	06/01/07
C	Jed Anderson	-Added "PCN 369 Hardware Changes" -Added "PCN 370 Silicon Changes"	ME/ER	01/10/08

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1 i.MX LITEKIT PCN Introduction

1.1 Purpose of Document

The purpose of this document is to provide a single repository for explaining design changes to a specific product family. The changes described in this document relate to the LV-Baseboard included with the Zoom i.MX LITEKIT Development Kits and other changes to the i.MX LITEKIT Development Kit that require notification.

In some sections, other development kits may be referenced. The reason for this is that the same change took place across multiple product families at the same time, and the related text is applicable to more than just the i.MX LITEKIT Development Kits.

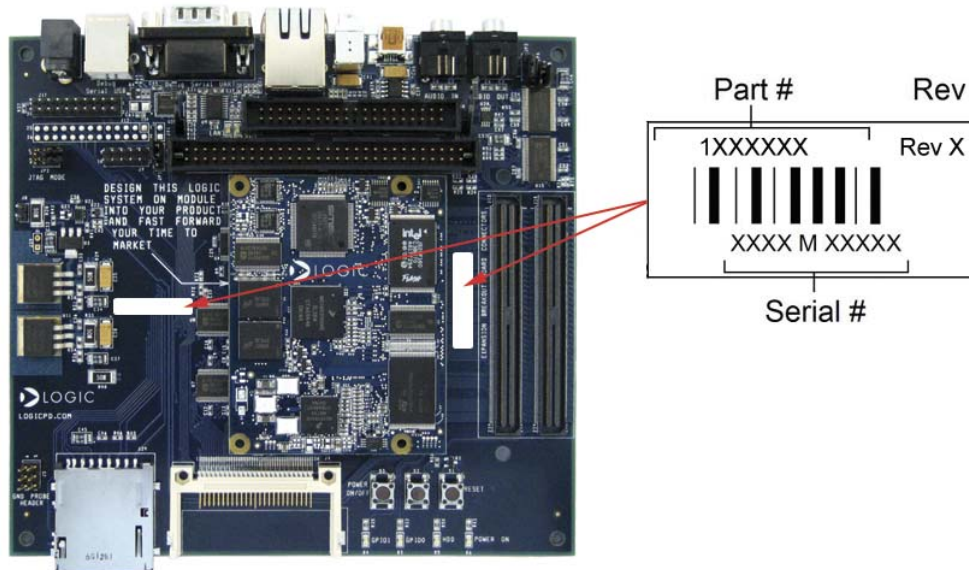
1.2 Pre-production Models

Systems that are manufactured before the development kit is released to full production status are sometimes sent to partners and targeted customers for evaluation. This section attempts to capture a history of these pre-production builds for reference. Any products listed in the table below are not meant for production use and are not actively supported by Logic Product Development. The part numbers below apply only to the LV-Baseboard and do not reflect the development kit as a whole.

Part Number	Description
1005423	Alpha 1, Alpha 2
1005994	Beta 1
1006268	Beta 2
1006671	Pilot
1007052	Pilot

1.3 Locate Part Number of Baseboard

To determine whether your baseboard is affected by a PCN, locate the part number sticker on your baseboard and compare the part number and revision with the “Affected Models” table for each PCN. (The figure below shows two possible locations for the part number sticker.)



1.4 Current Model in Production

The tables below lists the most current revision of the LV-Baseboard and Development Kit. It also specifies the PCN that details the changes prompting the model revision.

LV-Baseboard Part Number	PCN Detailing Revision
1008549	PCN 369 Hardware Changes

Development Kit Model Number	PCN Detailing Revision
MCIMX31LITEKITC	PCN 370 Silicon Changes

2 PCN 341 Hardware Change

Published: November 2006

PCN Classification:

- ☐ A - Recall
 - ☒ B - Customer Action Required
 - ☐ C - Product Upgrade/ No Customer Action Required
 - ☐ D - Change of Production Line
-

2.1 Products Affected

This PCN describes changes made to the i.MX LITEKIT LV-Baseboard to fix incorrect CompactFlash address signals. Part numbers and revisions shown below indicate LV-Baseboard assemblies that are affected and have already received rework.

Affected Part Numbers

1006268 Rev 2 with label D00253

2.2 Description of Change

1. The CompactFlash address lines are incorrectly connected on the CompactFlash connector. See Section 2.4 for the rework that occurred and Section 2.5 for the final solution.
2. The CompactFlash control signals are not asserted correctly when the PC_POE signal is de-asserted. See Section 2.4 for the rework that occurred and Section 2.5 for the final solution.

2.3 Applications Affected

The hardware changes in this PCN may affect software applications that use the CompactFlash interface. Please review the software code included in Section 2.4.1 to determine what software changes are required. LogicLoader has already been updated with these changes and the latest version is available on Logic's downloads page: <http://www.logicpd.com/auth/downloads/i.MX31/>.

2.4 Work Around

The affected LV-Baseboards have already been reworked for the hardware changes. The hardware rework instructions below are included for reference purposes only.

1. To work around the addressing issue, the uP_A1 signal has been disconnected from the CompactFlash connector A1 pin and uP_A11 has been connected in its place.
2. To work around the control signal assertion issue, the buffer output enable has been shorted to ground.

2.4.1 Hardware Rework Completed

1. U8 pins 48 and 47 are shorted together.
2. Two pads on the bottom side of the PCB that are shorted to connect uP_A11 to the trace that previously was uP_A1.

2.4.2 Software Work Around

NOTE: The software changes explained below have already been included in the latest version of the LogicLoader software, available on Logic's downloads page <http://www.logicpd.com/auth/downloads/i.MX31/>.

The BUFF_DIR_DATA pin must be inverted for proper control of the buffer. This can be accomplished by using software to configure the uP_PC_RnW pin to alternate function 1 and to configure the pad with a pull-up. The software code to perform this is below.

```
/* This inverts the uP_PC_RnW pin. The bits affected are called
sw_mux_ctl_pc_rw */

*(uint32_t*)(0x43fac0b4) &= ~0x00001000;
*(uint32_t*)(0x43fac0b4) |= 0x00002000;
```

Software must also be used to re-map the CompactFlash address lines before performing a read or a write. The hardware changes explained above are required for this software code to be effective.

```
/* This code is a work around to fix the CompactFlash. */

#define PCMCF_BASE_ADDR 0xBC000000
#define ATAOFFSET 0x00000000

static uint32_t
write_reg(uint16_t reg, uint16_t data)
{
    uint32_t busreg;
    uint32_t buswr;
    uint32_t datwr;

    busreg = reg >> 1;
    if (busreg & 1)
        busreg = (busreg | 0x0400) & 0xFFFFFFF;

    buswr = busreg + PCMCF_BASE_ADDR + ATAOFFSET;

    if (reg & 1)
        datwr = (data << 8) & 0xFF00;
    else
        datwr = data;
    *(uint16_t*)buswr = datwr;
    return(ERR_NO_ERROR);
}

static uint16_t
read_reg(uint16_t reg)
{
    uint16_t data;
    uint32_t busreg;
    uint32_t busrd;

    busreg = reg >> 1;
    if (busreg & 1)
        busreg = (busreg | 0x0400) & 0xFFFFFFF;
```

```

        busrd = busreg + PCMCF_BASE_ADDR + ATAOFFSET;
    if (reg & 1)
        data = ((*uint16_t*)busrd) & 0xFF00 >> 8;
    else
        data = *(uint16_t*)busrd;
    return(data);
}

```

2.5 Solution

1. Beginning with Pilot revisions of the LV-Baseboard, the address lines that connect to CompactFlash are shifted down one bit. Signal uP_A1 from the module connects to CompactFlash connector A0, uP_A2 connects to CompactFlash connector address line A1, etc. This allows the CompactFlash interface to work without requiring the software patch provided above.
2. The buffer output enable control is correct.
3. LogicLoader software includes the necessary code for these changes.
4. Pilot revisions include an additional power-control line from the SOM-LV.

2.6 Contact

For further information, please contact:

Logic Technical Support: e-mail: platformsupport@logicpd.com

Logic Sales: e-mail: product.sales@logicpd.com

3 PCN 348 Pre-Production Hardware Changes

Published: May 2007

PCN Classification:

- ☐ A - Recall
- ☐ B - Customer Action Required
- ☐ C - Product Upgrade / No Customer Action Required
- ☒ D - Change of Production Line

3.1 Products Affected

This hardware change PCN explains the changes or issues pertaining to pre-production builds of the LV-Baseboard used in Zoom i.MX LITEKIT Development Kits. The part numbers below represent hardware affected by these issues.

Affected Part Numbers	Build Phase
1005423 Rev 1-2	Alpha
10059954 Rev 1	Beta 1
1006268 Rev 1-2	Beta 2

For pre-production hardware changes specific to the i.MX31-10 SOM-LV module, please see the *i.MX31-10 SOM-LV PCN* document available from Logic's website: <http://logicpd.com/auth>.

NOTE: When using pre-production hardware, it is recommended to only use the module and baseboard combination that came with the development kit. Certain changes on the module may require associated changes on the baseboard to be operable. All descriptions of fixed issues assume use of the original module and baseboard combination that came with the development kit.

3.2 Description of Issues

1. The CompactFlash interface has the following issues:
 - ☐ uP_PC_RnW must be configured as ALT FUNC 2 with a pullup enabled to properly control buffer direction.
 - ☐ Address lines are incorrectly connected on the CompactFlash connector. This issue is described in detail in "PCN 341 Hardware Change" on page 3.
2. The lever arm on the LCD cable ejector interferes with the HDD connector.

3.3 Applications Affected

For CompactFlash to work correctly, certain versions of LogicLoader (LoLo) must be used.

- ☐ For Beta 2 hardware: LoLo 2.3.1 or 2.3.3 must be used.
- ☐ For Pilot hardware: LoLo 2.3.4 or later must be used.

Any hardware prior to Beta 2 builds does not have CompactFlash capabilities. (Please see Section 3.1, "Products Affected," above or Section 1.2, "Pre-production Models," in the Introduction to determine hardware build phase.)

3.4 Work Around

No work arounds are necessary.

3.5 Solution

All of these issues are fixed on Pilot hardware. Specifically,

1. The CompactFlash interface works properly.
2. The HDD connector is in a different location on the baseboard so as not to conflict with the LCD cable ejector.

3.6 Contact

For further information, please contact:

Logic Technical Support: e-mail: platformsupport@logicpd.com

Logic Sales: e-mail: product.sales@logicpd.com

4 PCN 369 Hardware Changes

Published: January 2008

PCN Classification:

- ☐ A - Recall
 - ☐ B - Customer Action Required
 - ☒ C - Product Upgrade / No Customer Action Required
 - ☐ D - Change of Production Line
-

4.1 Products Affected

This PCN describes hardware changes made to the LV-Baseboard included with i.MX27 and i.MX31 LITEKIT Development Kits. The changes described herein have been made to baseboards with the “new part number” as listed below.

Affected Part Number	New Part Number
1007052	1008549

4.2 Description of Change

1. Fixed the back drive issue on the USB-to-UART transceiver.
2. Added pull-ups to the MMC/SDIO data lines.
3. Added two 150 uF caps on 5V-in.

4.3 Applications Affected

1. No applications should be affected by the back drive issue. Though back driving was observed, no adverse effects were noticed.
2. Applications that use MMC/SDIO on the LV-Baseboard or used the schematics as reference for their specific application may be affected.
3. No applications should be affected by the addition of the 150 uF capacitors, as this is an enhancement and is specific to the LV-Baseboard.

4.4 Work Around

If using LV-Baseboards with the affected part number, the following work arounds are available:

1. To work around the back driving issue, remove U39 if USB-to-UART functionality is not needed.
2. To enhance reliability for the MMC/SDIO data lines, add 10k pull-ups to MMC signals CMD, D0-D3.
3. No work around is available for the additional capacitors on 5V-in.

4.5 Solution

The following hardware changes have been made to LV-Baseboards with the new part number:

1. Added a buffer to isolate the USB-to-UART transceiver from the SOM.

2. Added pull-ups to the MMC/SDIO data lines as a reliability enhancement.
3. Added two 150 uF caps on 5V-in as a reliability enhancement.

4.6 Contact

For further information, please contact:

Logic Technical Support: e-mail: platformsupport@logicpd.com

Logic Sales: e-mail: product.sales@logicpd.com

5 PCN 370 Silicon Changes

Published: January 2008

PCN Classification:

- ☐ A - Recall
 - ☐ B - Customer Action Required
 - ☒ C - Product Upgrade / No Customer Action Required
 - ☐ D - Change of Production Line
-

5.1 Products Affected

This PCN describes changes to the i.MX31 LITEKIT Development Kit that result from Freescale releasing Rev 2.0 silicon for the i.MX31 processor. The table below shows how the model number for the i.MX31 LITEKIT adds a "C" at the end of the number string to indicate the development kit includes an i.MX31 SOM-LV built with Rev 2.0 silicon.

Affected Model Numbers	New Model Number
MCIMX31LITEKIT	MCIMX31LITEKITC

5.2 Description of Change

Freescale has released a new revision of silicon for the i.MX31 processor, Rev 2.0. For detailed information of the differences between Rev 1.2 and Rev 2.0 silicon as pertaining to the i.MX31 SOM-LV, please see "PCN 351 Silicon Changes" in the *i.MX31-10 SOM-LV PCN* document. This document is available from Logic's website: <http://www.logicpd.com/auth/>.

5.3 Solution

All future i.MX31 LITEKIT Development Kits will contain an i.MX31 SOM-LV built with Rev 2.0 silicon. These development kits can be distinguished by the "C" at the end of the model number string: MCIMX31LITEKITC.

5.4 Contact

For further information, please contact:

Logic Technical Support: e-mail: platformsupport@logicpd.com
Logic Sales: e-mail: product.sales@logicpd.com