

# ERRATA SHEET

**Date:** 2009 August 14  
**Document Release:** Version 1.2  
**Device Affected:** LPC2420

This errata sheet describes both the known functional problems and any deviations from the electrical specifications known at the release date of this document.

Each deviation is assigned a number and its history is tracked in a table at the end of the document.

2009 August 14

**Document revision history**

| Rev | Date             | Description   |
|-----|------------------|---------------|
| 1.2 | August 14, 2009  | Added IRC.2   |
| 1.1 | May 11 2009      | Added Rev D   |
| 1.0 | November 26 2008 | First version |

**Identification**

The typical LPC2420 devices have the following top-side marking:

LPC2420xxx  
xxxxxxx  
xxYYWW R[x]

The last/second to last letter in the third line (field 'R') will identify the device revision. This Errata Sheet covers the following revisions of the LPC2420:

| Revision Identifier (R) | Comment                 |
|-------------------------|-------------------------|
| 'C'                     | Initial device revision |
| 'D'                     | Second device revision  |

Field 'YY' states the year the device was manufactured. Field 'WW' states the week the device was manufactured during that year.

**Errata Overview - Functional Problems**

| Functional Problem | Short Description  | Device Revision the problem occurs in |
|--------------------|--|---------------------------------------|
| Core.1             | Incorrect update of the Abort Link register in Thumb state | 'C', 'D'                              |

**Errata Overview - AC/DC Deviations**

| AC/DC Deviation | Short Description  | Device Revision the deviation occurs in |
|-----------------|--|---|
| IRC.1           | Accuracy of the Internal RC oscillator (IRC) frequency may be outside of the 4 MHz +/- 1 % specification only at extreme temperatures. | 'C'                                     |
| IRC.2           | Accuracy of the internal RC oscillator (IRC) frequency is out of spec between -20 °C and -40 °C  | 'D'                                     |

**Errata Notes**

| Notes  | Short Description   | Device Revision the note applies to |
|--------|---|-------------------------------------|
| Note 1 | When the input voltage is $V_i \geq V_{dd} I/O + 0.5 \text{ v}$ on each of the following port pins P0.23, P0.24, P0.25, P0.26, P1.30, P1.31, P0.12, and P0.13 (configured as general purpose input pin (s)), current must be limited to less than 4 mA by using a series limiting resistor. | 'C', 'D'                            |

## Functional Problems of LPC2420

### Core.1 Incorrect update of the Abort Link register in Thumb state

**Introduction:** If the processor is in Thumb state and executing the code sequence STR, STMIA or PUSH followed by a PC relative load, and the STR, STMIA or PUSH is aborted, the PC is saved to the abort link register.

**Problem:** In this situation the PC is saved to the abort link register in word resolution, instead of half-word resolution.

**Conditions:**

The processor must be in Thumb state, and the following sequence must occur:

<any instruction>

<STR, STMIA, PUSH> <---- data abort on this instruction

LDR rn, [pc,#offset]

In this case the PC is saved to the link register R14\_abt in only word resolution, not half-word resolution. The effect is that the link register holds an address that could be #2 less than it should be, so any abort handler could return to one instruction earlier than intended.

**Work around:** In a system that does not use Thumb state, there will be no problem.

In a system that uses Thumb state but does not use data aborts, or does not try to use data aborts in a recoverable manner, there will be no problem.

Otherwise the workaround is to ensure that a STR, STMIA or PUSH cannot precede a PC-relative load. One method for this is to add a NOP before any PC-relative load instruction. However this is would have to be done manually.

## AC/DC Deviations

### **IRC.1 Accuracy of the Internal RC oscillator (IRC) frequency may be outside of the 4 MHz +/- 1 % specification only at extreme temperatures.**

**Introduction:** The device has a 4 MHz internal RC oscillator (IRC) which can be optionally used as the clock source for the Watch Dog Timer (WDT), and/or as the clock that drives the PLL and subsequently the CPU. The IRC frequency spec is 4 MHz +/- 1 % accuracy over the entire voltage and temperature range. During In-System Programming (ISP), the auto-baud routine is expecting the IRC frequency to be 4 MHz +/- 1 % and is used to synchronize with the host via serial port 0.

**Problem:** On the LPC2420 Rev C device only, the accuracy of internal RC oscillator (IRC) frequency meets 4 MHz +/- 1 % specification only at room temperature however, at extreme temperatures, the accuracy of internal RC oscillator (IRC) frequency may be 4 MHz +/- 10 %. As a result, at extreme temperatures, this may affect the auto-baud routine's ability to synchronize with the host via serial port 0 during In-System Programming (ISP) at higher baud rates.

**Work around:** None

### **IRC.2 Accuracy of the Internal RC Oscillator (IRC) frequency is outside of the 4 MHz +/- 1 % specification only at temperatures between -20 °C and -40 °C.**

**Introduction:** The device has a 4 MHz internal RC oscillator (IRC) which can be optionally used as the clock source for the Watch Dog Timer (WDT), and/or as the clock that drives the PLL and subsequently the CPU. The IRC frequency spec is 4 MHz +/- 1 % accuracy over the entire voltage and temperature range. During In-System Programming (ISP), the auto-baud routine is expecting the IRC frequency to be 4 MHz +/- 1 % and is used to synchronize with the host via serial port 0.

**Problem:** On the LPC2420 Rev D device only, the accuracy of internal RC oscillator (IRC) frequency does not meet the 4 MHz +/- 1 % specification for temperatures between -20 °C and -40 °C and the accuracy of internal RC oscillator (IRC) frequency is 4 MHz +/- 5 % instead. As a result, only at these temperatures, this may affect the auto-baud routine's ability to synchronize with the host via serial port 0 during In-System Programming (ISP) at higher baud rates. For temperatures above -20 °C, the accuracy of internal RC oscillator (IRC) frequency meets the 4 MHz +/- 1 % specification.

**Work around:** None

## Errata Notes

Note 1: On each of the following port pins P0.23, P0.24, P0.25, P0.26, P1.30, P1.31, P0.12, and P0.13 (when configured as general purpose input pin (s)), leakage current increases when the input voltage is  $V_i \geq V_{dd\ I/O} + 0.5\text{ v}$ . Care must be taken to limit the current to less than 4 mA by using a series limiting resistor.