

About The New MSP432 LaunchPad

Texas Instruments had been shipping the MSP432 LaunchPad with XMS432P401R Rev B MCU. Early this year (April 2016), TI announced that the MCU on the MSP432 LaunchPad would be replaced by production MSP432P401R Rev C chips. At the same time, the LaunchPad physical design was redone and the color of the board was changed from black to red.

The Rev C MCU fixed many issues in Rev B (see errata¹) but it also introduced some changes. TI has an application report² documenting the process of migrating from Rev B to Rev C and a website³ about the future support of the XMS432P401R devices.

The range of the system clock frequency has not changed but the default number of wait state reading flash memory has changed. The Rev B MCU has the default setting of three wait states inserted for each flash memory read while the Rev C MCU has zero wait state coming out of reset. When running at 3 MHz system clock as our default setting, there is no need for any wait state. Because of the added unnecessary wait states with the Rev B MCU, they slow down the program execution. It shows in the delay loop of the example programs in the book. All the programs in this book were written and tested on the Rev B MCU. When executing these programs on a Rev C MCU, the delay loop will finish in only one-third of the time and `delayMs(1);` will delay only 1/3 millisecond.

If you intend to run these example programs on the Rev C MCU (the red board), you need to triple the loop count of the `delayMs()` function as:

```
/* delay milliseconds when system clock is at 3 MHz */
void delayMs(int n) {
    int i, j;

    for (j = 0; j < n; j++)
        for (i = 750; i > 0; i--);    /* Delay 1 ms*/
}
```

Notice that the loop count was changed from 250 to 750.

Since the change is to flash read time, not the system clock frequency, all other program timings such as timers or UART, SPI, I2C frequencies are not affected.

¹ "MSP432P401R Device Errata sheet" <http://www.ti.com/lit/er/slaz610g/slaz610g.pdf>

² "Moving From Evaluation to Production With MSP432P401x MCUs" <http://www.ti.com/lit/an/slaa700/slaa700.pdf>

³ "XMS432 Support" http://processors.wiki.ti.com/index.php/XMS432_Support