Migration Guide: Cerebot 32MX7 to Cerebot MX7cK

Introduction

Digilent has discontinued production of the Cerebot 32MX7 and replaced it with the Cerebot MX7cK. The Cerebot MX7cK is an improved version of the Cerebot 32MX7 and is substantially similar to and compatible with it. This document describes the differences between the two boards.

Description of Changes

chipKIT Compatibility
The Cerebot MX7cK has been enhanced to be compatible with the chipKIT/MPIDE development environment. ChipKIT and the MPIDE is a PIC32 based hardware and software system compatible with many existing Arduino™ code examples, reference materials and other resources. The MPIDE development platform was produced by modifying the Arduino™ IDE and is fully backward compatible with the Arduino IDE. The Cerebot MX7cK board is designed to be fully compatible with the chipKIT MPIDE system, version 20111221 or later.

The MPIDE uses a serial communications port to communicate with a boot loader running in the target board. The serial port on the MX7cK board is implemented using an FTDI FT232R USB serial converter. The USB serial converter is accessed using connector J8, labeled UART on the board. The appropriate USB driver must be installed to make use of the serial port. The chipKIT compatible boot loader is programmed into the board at the factory.

In addition to its use with the chipKIT MPIDE development environment, the USB serial converter can be used as a general purpose serial interface for communication between the Cerebot MX7cK and software running on a PC.

MPLAB IDE Compatibility
The on-board licensed debugger circuit requires MPLAB version 8.63 or later to operate. There is an incompatibility with MPLAB version 8.80 and the use of the chipKIT MPIDE. If the board is going to be used with both the MPIDE and MPLAB, use of version 8.76 or 8.83 or later is recommended.

Connector Pin Changes
A small number of changes have been made to the mapping of microcontroller signals to Pmod connectors. These changes were made to provide access to external interrupt signals at the Pmod connectors.

The following table describes the pin changes:

32MX7	MX7cK
PMOD JA	No change
PMOD JB	No change
PMOD JC	No change
PMOD JD	No change

---

2 pages

PMOD JE
  Pin 7   JE Pin 7   changed from RA6 to INT1/RF8

PMOD JF
  Pin 7   JF Pin 1   changed from RA0 to INT2/RF9

Other Pin Changes
  BTN3 (RD13)   now RA0   changed to free up INT1
  NRST (RE9)   now RA6   (phy enable pin) changed from RE9 to RA6

Power Select Jumper
The power select jumper (J3) now has four positions for selecting board power. The option of powering the board from the USB serial converter has been added.

I^{2}C Busses
The connection between the I^{2}C busses and the I^{2}C daisy chain connectors has been swapped. I2C1 now connects to J7 and I2C2 connects to J8. The on-board I^{2}C devices are now connected to I2C2. This was done to make external interrupts INT3 and INT4 more useable.

  J7 pin 1&2   changed from SCL2 to SCL 1/INT3
  J7 pin 3&4   changed from SDA2 to SDA 1 /INT4

  J8 pin 1&2   changed from SCL1 to SCL2 (EEprom is now on this port)
  J8 pin 3&4   changed from SDA1 to SDA2 (EEprom is now on this port)

USB Serial Converter
The FTDI USB serial converter shares signals with PMOD JE UART (UART 1). On the Cerebot MX7cK, JE pin 2 is also connected to FTDI RX and JE pin 3 is also connected to FTDI TX. These are decoupled via resistors to allow UART1 to still be used via the Pmod connector. Header J1 contains other FTDI UART function pins (CTS, DSR, DCD, RI).

Interaction Between MPIDE and Licensed Debugger
The licensed debugger circuit, and the USB serial converter circuit both have connections to the MCLR pin on the PIC32 microcontroller used to reset the microcontroller. In some cases, it is possible for these two uses of MCLR to conflict. Jumper JP11 can be used disconnected the USB serial converter from MCLR. Removing the shorting block will disconnect the USB serial converter if it is interfering with the operation of the MPLAB debugger. Reinstall the shorting block to use the board with the MPIDE.