Connecting UART Pmod Interfaces

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1300 NE Henley Court, Suite 3
Pullman, WA 99163
(509) 334 6306 Voice | (509) 334 6300 Fax

Pmod Crossover Cable Needed to Connect Old and New UART Interfaces

There are two different signal pin assignment conventions for UART Pmod connectors on Digilent Pmod peripheral modules and microcontroller boards. They are known as the old and new UART interfaces, and are described below.

Connecting a Pmod with an old UART interface to a microcontroller board with a new UART interface, or vice-versa, requires using the Digilent Pmod Crossover Cable.

Which UART Interface Do I Have?

The following Digilent Microcontroller boards use the old interface on their UART Pmod connectors:

Cerebot 32MX4
Cerebot II
Cerebot Plus
Cerebot Nano
I/O Explorer

The following Digilent Pmods also use the old UART interface:

PmodRS232
PmodCLS

All other Digilent microcontroller boards and Pmods use the new interface on their UART Pmod connectors.

Understanding the UART Interfaces

At the time that the pin assignment for UART interfaces was originally designed, the microcontrollers had separate SPI controllers and UARTs, and there was no relationship between the signals on either.

Some newer microcontrollers (notably newer PIC32 parts) have serial interface controllers that can be used as either an SPI controller or as a UART. In order to take maximum advantage of these newer serial interface peripheral devices, it was necessary to change the signal pin assignments to make the Pmod UART pinout agree with the Pmod SPI pinouts.

The original design (the old UART interface) uses the following signal assignment:

Pin	Signal
1	CTS (Clear to Send)
2	RTS (Request to Send)
3	RXD (Receive Data)
4	TXD (Transmit Data)

The new UART interface uses the following signal assignment:

Pin	Signal
1	CTS (Clear to Send)
2	TXD (Transmit Data)
3	RXD (Receive Data)
4	RTS (Request to Send)

The difference between the old and new UART interfaces is that the signals on pins 2 and 4 are swapped. The Pmod Crossover Cable swaps pins 2 and 4.