

MOD-IO2

1. Description

Build with MPLAB X 1.10 with C18 version 3.40 compiler for the host and HI-TECH PICC compiler version 9.83 for the slave devices.

This demo shows how to control several MOD-IO2 boards via I2C communication protocol. The host board is PIC-P2xJ50.

The format of the protocol is:

S | AAAAAAAAA | ACK | AAAAAAAAA | ACK | AAAAAAAAA | ACK | CCCCCCCC | ACK | DDDDDDDD | ACK | P

Where:

S – Start bit

AAAAAAAA – Address: The first byte should be 0x90, the second – 0x02. The third byte is device ID and can be changed.

ACK – Acknowledge bit – should be low if there is a slave device on the bus

CCCCCCCC – Command byte;

DDDDDDDD – Data byte: Can be both ways and depends of the command

By default the address of the slave device is 0xA0. To change the address the jumper should be closed and after that the device must be reset. After that command for changing the address can be send. The new address range is set from 0xB0 to 0xB9. This can be changed.

The host device create virtual COM port. After you connect it with mini USB you can open the appropriate port and baud rate of 9600. Press any key and the demo menu should show. After that press one of the menu keys (“1”, “2”, “3”, “4”, “5”, “6”) and the commands should be executed.

1 – Scan for devices on the bus (The scan is from addresses 0xB0 to 0xB9).

2 – Set new address – The host send the first free address in the rang of 0xB0 to 0xB9.

3 – Set the relays of the device at address 0xB0

4 – Turn off the relays

5 – Set the relays of the device at address 0xB0

6 – Turn off the relays

The are the following built-in command:

SET_TRIS – Set the direction of the GPIO pins. The format of this command is:

S | AAAAAAAAA | ACK | AAAAAAAAA | ACK | AAAAAAAAA | ACK | CCCCCCCC | ACK | DDDDDDDD | ACK | P

For example:

S | 0x90 | ACK | 0x02 | ACK | 0x01 | ACK | 0x01 | ACK | 0xFF | ACK | P

This will set all GPIO as inputs.

SET_LAT – Set the value of the latch register. The format of this command is:

S | AAAAAAAAA | ACK | AAAAAAAAA | ACK | AAAAAAAAA | ACK | CCCCCCCC | ACK | DDDDDDDD | ACK | P

For example:

S | 0x90 | ACK | 0x02 | ACK | 0x01 | ACK | 0x02 | ACK | 0xFF | ACK | P

This will set all latch registers as logical “1”.

GET_PORT – Get the value of the port register. The format of this command is:

S | AAAAAAAAA | ACK | AAAAAAAAA | ACK | AAAAAAAAA | ACK | CCCCCCCC | ACK | DDDDDDDD | P

For example:

S | 0x90 | ACK | 0x02 | ACK | 0x01 | ACK | 0x03 | ACK | ddddddd | P

After the command is send, the host must receive 8-bits of information. The first received bit is the MSB and the last is LSB.

SET_PU – Set the internal weak pullup resistors. The format of this command is:

S | AAAAAAAAA | ACK | AAAAAAAAA | ACK | AAAAAAAAA | ACK | CCCCCCCC | ACK | DDDDDDDD | ACK | P

For example:

S | 0x90 | ACK | 0x02 | ACK | 0x01 | ACK | 0x04 | ACK | 0xFF | ACK | P

This will set all pullups on the GPIOs.

NOTE: Only PORTA have internal pullups.

SET_ADDRESS – Set new address of desired device. The format of this command is:

S | AAAAAAAAA | ACK | AAAAAAAAA | ACK | AAAAAAAAA | ACK | CCCCCCCC | ACK | DDDDDDDD | ACK | P

For example:

S | 0x90 | ACK | 0x02 | ACK | 0x01 | ACK | 0xB0 | ACK | 0xC0 | ACK | P

After that a device with address 0x01 will get a new one with value 0xC0.

VERY IMPORTANT NOTE: To program device with new address PROG jumper **MUST** be closed. After that it should be opened again.

2. Support - <https://www.olimex.com/dev/>

3. Release Notes - 12 July 2012 – Initial release