



ICP02v2

USB PIC/EEPROM  
PROGRAMMER

- 3.3V/5.0V

## 1. Introduction and overview

iCP02v2 offers unprecedented level of performance, reliability and scalability for PIC programmer solution with low cost. By the same time, it allows users to program their hex code into the well-known Flash PIC MCU by using commonplace USB connection method.

The features of iCP02v2 are listed as followings.

- Low cost, small size , high performance and user friendly device
- Used for programming the popular Flash PIC MCU, includes PIC10F, PIC12F, PIC16F, PIC18F, PIC24F, dsPIC30 and dsPIC33 family
- Read and write operation for serial EEPROM 11LCXX, 24LCXX, 25LCXX, 93LCXX and HCSXX
- No external power supply is required
- Compatible with Microchip’s PICKit 2, MPLAB IDE and MPLAB X
- USB plug and play function with high speed programming
- Excellent flexibility that allows using in both PC desktop and laptop.
- 120mA current output at VDD pin with over-current and over-voltage protection
- Adjustable VDD source (2.5V to 5.0V) with auto detection and auto selection
- VPP First Program Entry (VDD control) and UART Mode features

### Dimension:

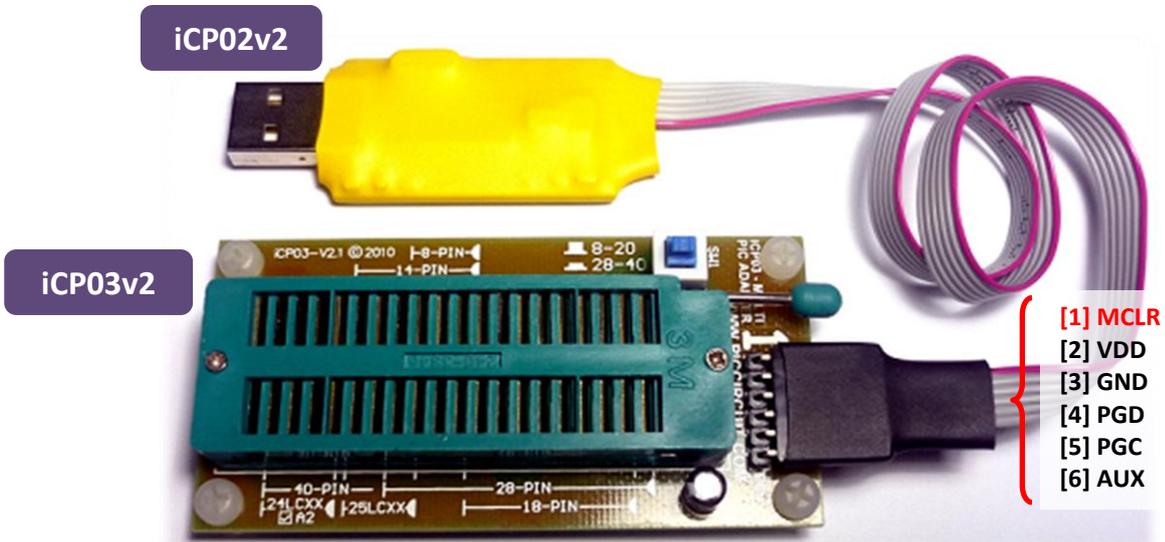
- Dimension: 6.2cm X 2.3cm X 0.5cm, easy to carry and store
- ICSP wire length: ~ 30cm
- Standard 6 x 2.54mm Pin Socket for ICSP connection

### 1.1 Programmer layout

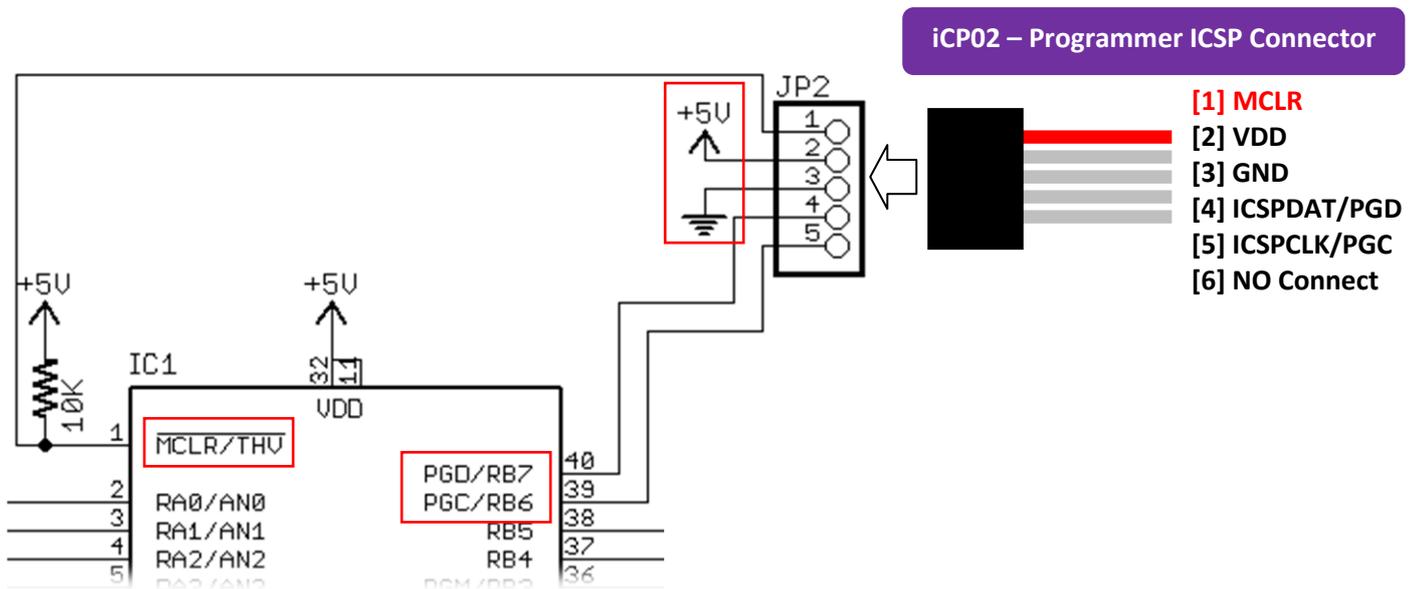


## 2. Programmer Connection

### 2.1 Programming Connector PIN



### 2.2 On-Board ICSP Connection



## 3. Hardware Installation

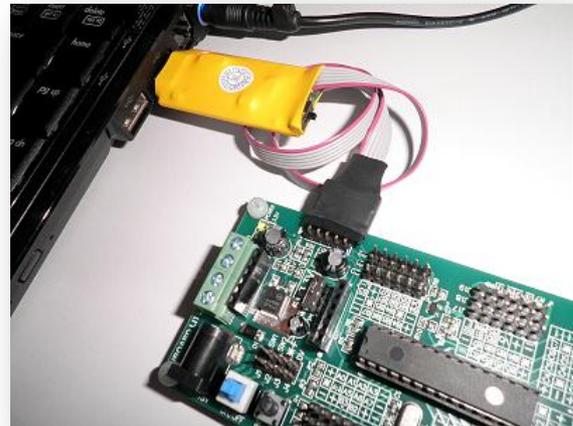
This section shows how to connect iCP02 to PIC MCU.

Please download the driver from the link below for the first time usage.

<http://www.piccircuit.com/ins/PICkit2v2.61.zip>

### 3.1 Direct connection between iCP02 and Development/Application Board

1. Connect the USB port on iCP02 to laptop or desktop.
2. Connect the ICSP port on iCP02 to target/application board
  - Target/application board is required an external power supply if the load is more than 120mA



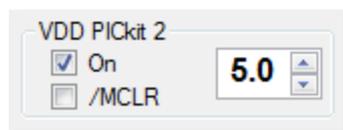
### 3.2 Connection between iCP02 and iCP03

1. Connect the USB port on iCP02 to laptop or desktop.
2. Connect the ICSP port on iCP02 to iCP03 PIC Adapter



### 3.3 Turn On VDD

Click the check box **[On]** to supply VDD to target device with the preset voltage on the right box



## 4. Software installation

For programming a microprocessor, programmer software is needed to transmit the machine code from PC to it. Here, our iCP02 can be used with the PICKit2 which is freeware provided by MICROCHIP and this software always been updated for better usage. So the following section will explain about how to install the PICKit 2 software into user computer.

### 4.1 Open the setup file

Select “**Setup.exe**” to install the PICKit software (Please download it from this link)

<http://www.piccircuit.com/ins/PICKit2v2.61.zip>

### 4.2 After the installation, update PICKit software with the latest PIC devices list

Apply the patch **PK2DeviceFile.dat** at: (Replace it)

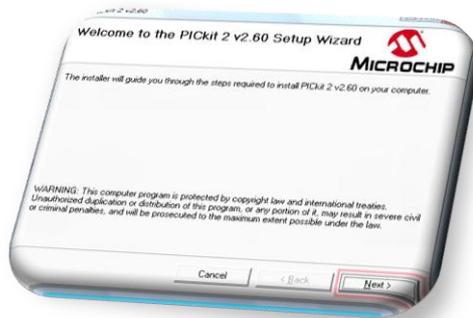
C:\Program Files\Microchip\PICKit 2 v2\PK2DeviceFile.dat (or)

C:\Program Files (x86)\Microchip\PICKit 2 v2\PK2DeviceFile.dat

## 4.3 Execute the PICKit setup process

Follow the guideline below to install the PICKit software.

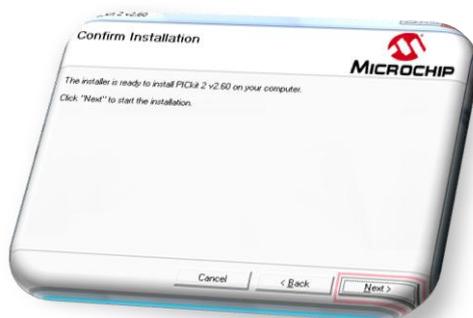
- i. Select [**Next**]



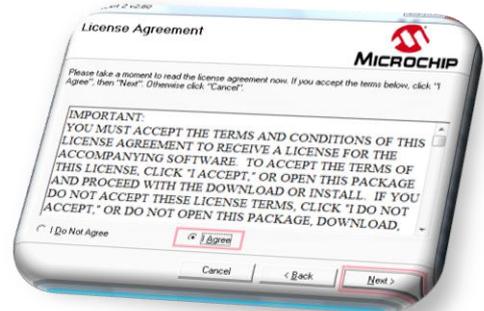
- ii. Change the installation destination if necessary and click [**Next**]



- iii. Click [**Next**] to confirm installation procedure



- iv. Click [**I Agree**] and select [**Next**] to start installation procedure



- v. Wait for installation process to finish.



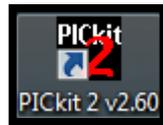
- vi. Select [**Close**] to end up after the installation is complete.



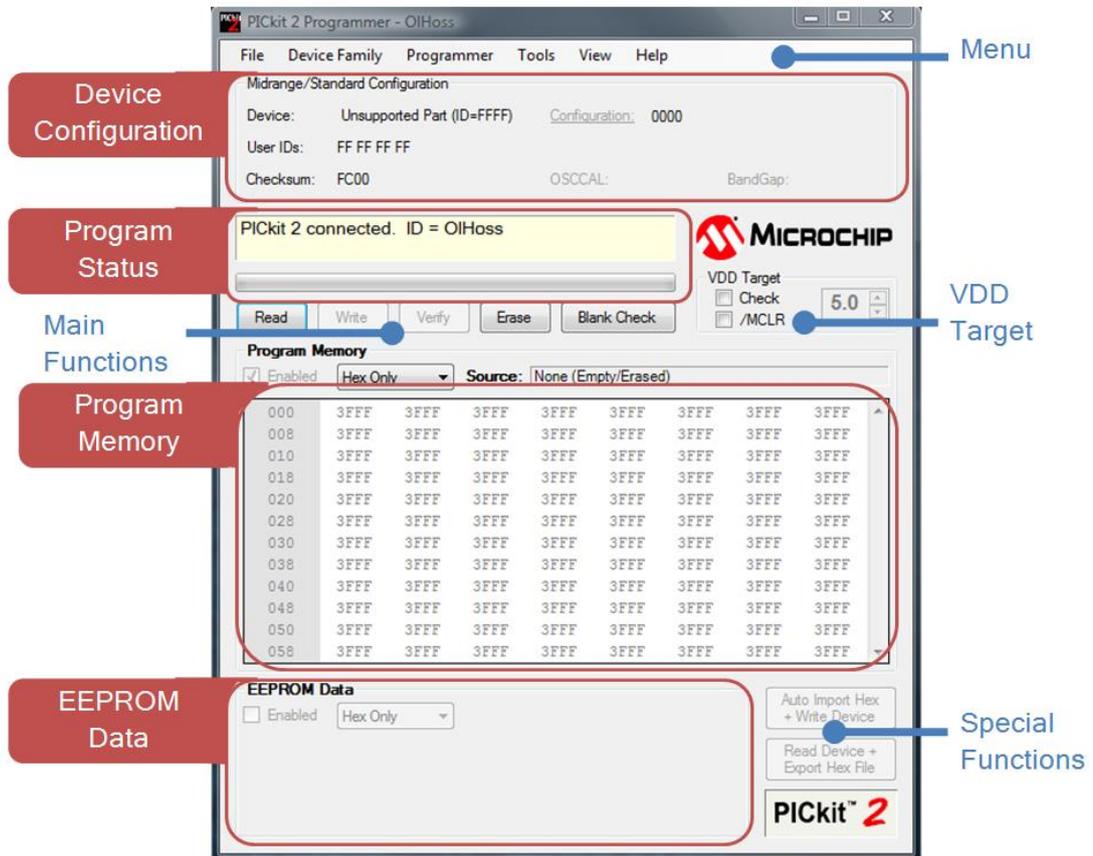
## 5. Programming MCU with PICKit 2

After previous hardware and software installation, user now is able to use iCP02 to program their PIC microcontroller. The following section illustrates the guidance steps for programming the MCU with PICKit programmer software.

- 5.1 First at all, ensure iCP02 is connected to PC desktop/laptop
  - Ensure power supply of target/application board is on if user is using the target/application board.
- 5.2 Open PICKit 2 program by choosing the PICKit icon as below on desktop.



- 5.3 Here, the description of each part for PICKit program are shown as below.



The screenshot shows the PICKit 2 Programmer software interface with several key components highlighted by red callouts:

- Menu:** Located at the top of the window, containing File, Device Family, Programmer, Tools, View, and Help.
- Device Configuration:** A section showing device details such as "Device: Unsupported Part (ID=FFFF)", "Configuration: 0000", "User IDs: FF FF FF FF", "Checksum: FC00", "OSCCAL:", and "BandGap:".
- Program Status:** A yellow box indicating "PICKit 2 connected. ID = OIHoss".
- Main Functions:** A row of buttons including Read, Write, Verify, Erase, and Blank Check.
- Program Memory:** A table showing memory addresses and their corresponding hex values. The source is set to "None (Empty/Erased)".
- EEPROM Data:** A section with an "Enabled" checkbox and a "Hex Only" dropdown menu.
- VDD Target:** A dropdown menu set to "5.0".
- Special Functions:** Buttons for "Auto Import Hex + Write Device" and "Read Device + Export Hex File".

- 5.4 If the program status box shows “PICKit 2 not found, ...”, then user is required to replug the iCP02 and to click [Tools] -> [Check Communication] for connecting the iCP02 with PICKit software.



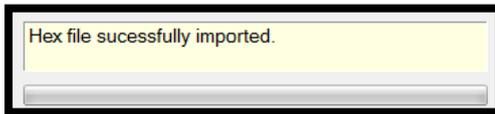
5.5 Now user can started either to download the machine code (hex file) into the MCU or to upload the hex code from MCU into PC after previous steps.

### Download the hex code

- i. Select [**File**] -> [**Import Hex**] and choose the needed hex file to download.



- ii. After selected hex file, user can see the imported message at program status.



- iii. Then, user can click [**Write**] to download the source code into MCU and



- iv. Finally complete message is shown at the end.



### Upload the hex code

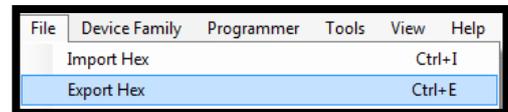
- i. First, user clicks the [**Read**] button to upload the source code in MCU into PICkit program.



- ii. Then user can see the done message at program status.



- iii. Now user can save the hex code into PC by selecting [**File**] -> [**Export Hex**].



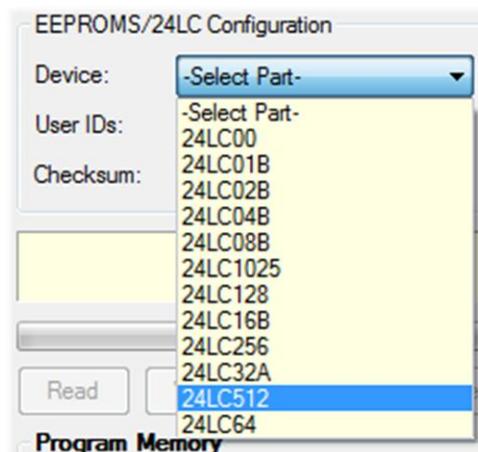
## 6. Read & Write EEPROM with iCP03-V2

User is able to use iCP02 to read and write their serial EEPROM (24LCXX and 25LCXX) with the iCP03-V2 PIC Adapter. The following section illustrates the guidance steps for connecting the EEPROM with PICKit programmer software.

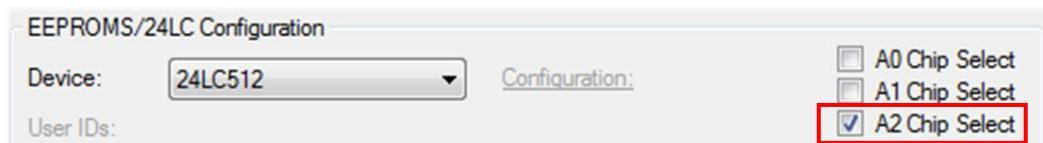
- 6.1 First at all, ensure iCP02 is connected to PC desktop/laptop and the iCP03-V2
- 6.2 Switch the iCP03-V2 to [8-20 Pin] mode
- 6.3 Place the EEPROM to desired location at the socket
- 6.4 At the PICKit2 menu bar, select [Device Family] -> [EEPROMS] -> [24LC] or [25LC]



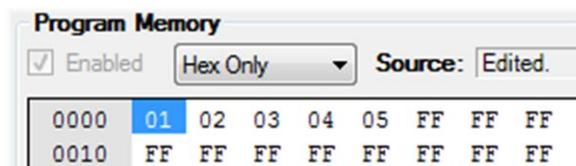
- 6.5 Choose the EEPROM model at the [Device] drop down menu



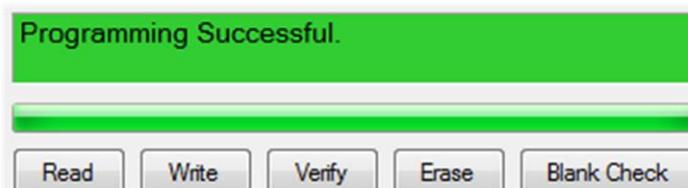
- 6.6 For the 24LCXX EEPROM, please check the [A2 Chip Select] to connect with EEPROM



- 6.7 User may edit the Program Memory or Import the EEPROM Hex/Bin file



- 6.8 Then, user can click [Write] button to write the data into EEPROM or [Read] button to read the data from EEPROM



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## CONTACT INFORMATION

For further information or technical assistance please contact:

Web: <http://www.piccircuit.com>

Email: [support@piccircuit.com](mailto:support@piccircuit.com)