



**MICROCHIP**

**PICKit™ 2**

**Development Tool Overview**



# PICkit™ 2 Debug Express

- In-Circuit-Debugging with MPLAB® IDE
- Debug in the application circuit
- Supported Device Families:
  - PIC10F
  - PIC12F
  - PIC16F
  - PIC18F
  - PIC24
  - dsPIC30, dsPIC33
- All PICkit 2 units are Debug Express Capable



# PICkit™ 2 Debug Express

- 1- 4 Breakpoints, depending on MCU
- Run, Halt, Step In, Step Over
- Watch Special Function Register & File Register values when halted or stepping
- Modify register values
- Advanced Breakpoints for PIC18F, PIC24, & dsPIC® devices
  - Break on File Register read or write
  - Set breakpoint pass counts



# PICkit™ 2 Programmer

Program with PICkit 2 using these software programs:



MPLAB IDE

## MPLAB® IDE

- Program all devices supported for debug directly from the IDE



PICkit 2

## PICkit 2 Programmer Application

- Additional device support, including PIC32 and Microchip serial EEPROM products
- Exposes more PICkit 2 features
- PICkit 2 Programmer-To-Go setup



## PK2CMD Command Line Utility

- Use with batch files, custom GUI software in Visual Basic, C++, C#, Labview, and others
- Call from 3<sup>rd</sup> party development environments
- Available for Linux and Mac OS X platforms



# PICKit™ 2 Programmer Application



Windows PC application provides a simplified, feature rich interface for PICKit 2.

The screenshot displays the PICKit 2 Programmer application interface, which is divided into three main windows:

- PICKit 2 Programmer (Main Window):** This window contains a menu bar (File, Device Family, Programmer, Tools, View, Help) and a configuration section for a PIC18F device. The configuration shows: Device: PIC18F4520, Configuration: 0700 1F1F 8300 0085, User IDs: FF FF FF FF FF FF FF FF, Checksum: 835A, OSCCAL, and BandGap. A status message indicates "PIC18F device found." Below this, there are buttons for Read, Write, Verify, Erase, and Blank Check. A VDD PICKit 2 section has checkboxes for On and /MCLR, with a dropdown set to 5.0. At the bottom, there are checkboxes for Program Memory Enabled and EEPROM Data Enabled, along with buttons for "Auto Import Hex + Write Device" and "Read Device + Export Hex File".
- PICKit 2 EEPROM Data:** This window shows a table of EEPROM data in Hex Only format. The data is displayed in a grid with addresses on the left and hex values in the main area. The values shown are all FF FF FF FF.
- PICKit 2 Program Memory:** This window shows a table of program memory data in Hex Only format. The source is listed as "None (Empty/Erased)". The data is displayed in a grid with addresses on the left and hex values in the main area. The values shown are all FFFF FFFF FFFF FFFF.



# PICkit™ 2 Programmer Application

- Programs all current 8-, 16-, and 32-bit Flash PIC® microcontrollers.
- Easy to use with MPLAB® IDE and other development environments.
- Programmer-To-Go: Set up a PICkit 2 to program a device without the need for a PC.
- Includes the UART Tool and Logic Tool microcontroller development utilities



# PICkit 2™ Programmer-To-Go

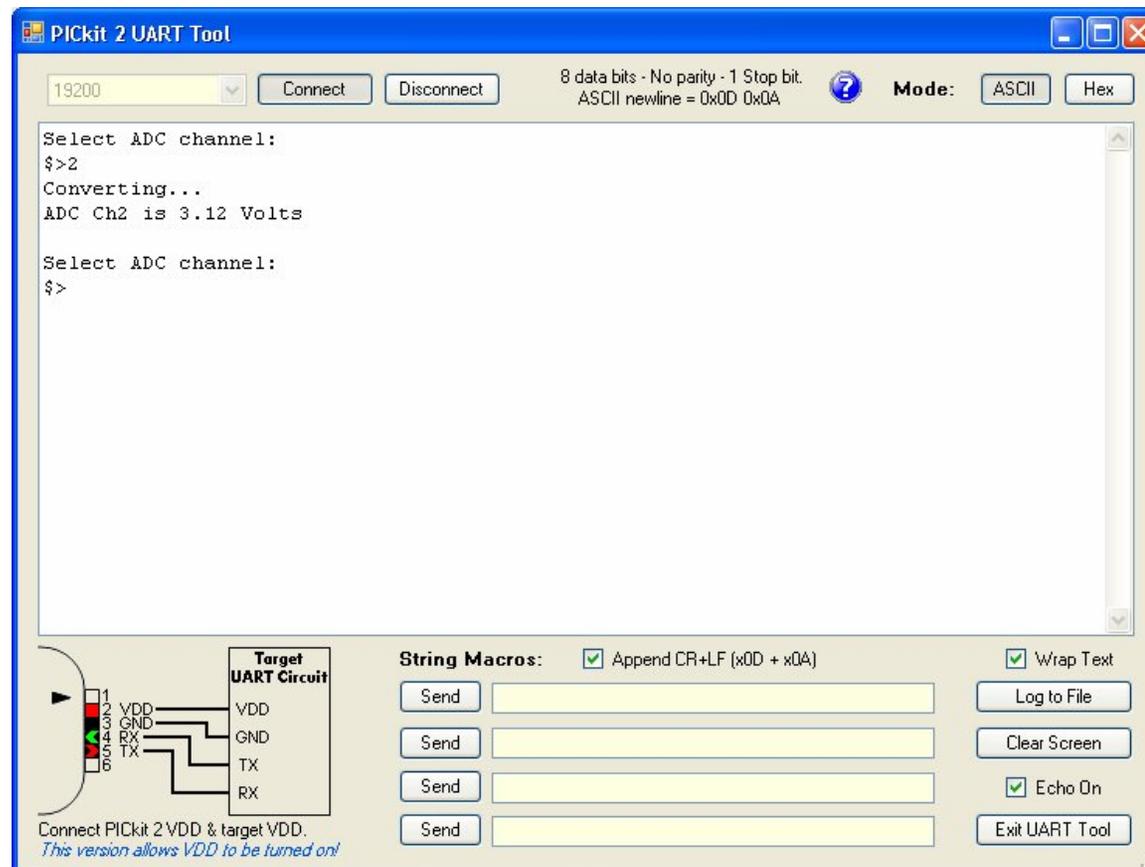


- Download program code to a PICkit 2 unit from the Programmer application.
- With a portable USB power source, PICkit 2 will program the downloaded code into a PIC Microcontroller, without using a PC.
- Full documentation and setup Wizard included in the PICkit 2 Programmer application.



# PICKit 2 UART Tool

The UART Tool provides a terminal-like UART interface for microcontroller development.





# PICkit 2 Logic Tool

The Logic Tool provides basic pin stimulus and logic analyzer functions via the PICkit 2 unit.

The screenshot displays the PICkit 2 Logic Tool software interface, which is divided into two main windows.

**Left Window (Pin Configuration):**

- Mode:** Logic I/O (selected), Analyzer
- Inputs:** Pin 4 (Input, 0), Pin 5 (Input, 0), Pin 6 (Input, 0)
- Outputs:** Pin 1 (Output Only, 0), Pin 4 (Output, 0), Pin 5 (Output, 0), Pin 6 (Output, 0)
- Notes:** "PICkit 2 VDD pin MUST have a valid voltage (either sourced from PICkit 2 or the target) or pins 4, 5, & 6 will not function."

**Right Window (Logic Analyzer):**

- Mode:** Logic I/O (selected), Analyzer
- Scale:** 50 us / Div
- Trigger:** Trigger when Ch 1 = / and Ch 2 = \* and Ch 3 = \* occurs 1 times.
- Acquisition:** Sample Rate: 1 MHz · 1 ms Window
- Trigger Position:** Start of Data (selected), Center of Data, End of Data, Delay 1 Window, Delay 2 Windows, Delay 3 Windows
- Zoom:** 0.5x, 1x (selected), 2x, 4x



# Multiple PICkit 2 units on 1 PC

---

- **MPLAB IDE v8.15 and later and the PICkit 2 Programmer applications support multiple PICkit 2 units on 1 PC.**
- **Simultaneously debug 2 microcontrollers with 2 PICkit 2 units using 2 instances of the MPLAB IDE on 1 PC.**
- **At the same time, use a 3<sup>rd</sup> PICkit 2 unit with the Logic Tool to capture I2C peripheral bus waveforms, and a 4<sup>th</sup> PICkit 2 unit with the UART Tool to log application data to a text file. All on the same PC.**



# PICKit CDROM

All PICKit 2 units ship with the PICKit CDROM, which includes a wealth of information:

- Tutorials on getting started in the MPLAB IDE and the PICKit 2 Programmer.
- A 12 Lesson series on Midrange PIC assembly programming.
- A tutorial on debugging with the PICKit 2.
- Demo C compilers, example C projects, and tutorials on C language development and debugging.
- Demo Basic compiler with example project and tutorial.
- Documentation on the MPLAB IDE and PICKit 2 software and hardware.
- Datasheets and application notes on a wide range of PIC microcontrollers and topics.
- Code examples in assembly and the C language.
- Information on third-party tools and learning resources.



# PICKit 2 Demo Boards

---

A wide variety of demo boards compatible with PICKit 2 are available from Microchip. Please contact your local Microchip sales office or FAE for more information.

**PICKit 2 on the Web:**  
**[www.microchip.com/pickit2](http://www.microchip.com/pickit2)**