

CK1301
VERSION 1.0

Mini USB PIC Programmer

The CK1301 is a professional yet compact USB PIC Programmer offering a 20-pin ZIF (Zero Insertion Force) socket for easy programming of most Microchip PIC Flash devices that do not require Low-Voltage Programming.

This PIC Programmer uses a convenient USB port for connection to the computer as opposed to the traditional Serial port, therefore eliminating the need for a separate power supply as power is taken directly from the USB port.

The PIC Programmer also offers In-circuit programming through a standard 6-pin ICSP connector as well as a built-in 20-pin ZIF socket for easy programming of any PIC of up to 20-pins right on the programmer.

The PIC Programmer is 100% compatible with PICKIT 2 interface, with the added advantage that it incorporates a ZIF socket for easy insertion and removal of the PIC and therefore can be used as a production programmer as well as an experimental programmer. It is also fully compatible with Microchip's MPLAB IDE software and therefore can program practically any PIC Microcontroller such as the popular PIC16F84, PIC16F628, PIC18F458, and many more.

The firmware of this USB PIC Programmer is also fully upgradeable as new devices are released and updates to the firmware can be easily downloaded via Microchip's official website.

For your convenience, we have compiled links to the latest necessary Microchip software and they can be downloaded at:

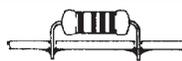
<http://www.canakit.com/uk1301>

Step-by-step Assembly

Refer to the General Assembly Guide included with the kit for detailed instructions on installation of each component.

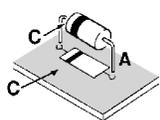
1 Resistors:

<input type="checkbox"/> R1, R10, R12, R16	4.7 K Ω	Yellow, Violet, Red
<input type="checkbox"/> R2	2.7 K Ω	Red, Violet, Red
<input type="checkbox"/> R3	220 Ω	Red, Red, Brown
<input type="checkbox"/> R4, R5	470 Ω	Yellow, Violet, Brown
<input type="checkbox"/> R6, R14	12 K Ω	Brown, Red, Orange
<input type="checkbox"/> R7	8.2 K Ω	Gray, Red, Red
<input type="checkbox"/> R8	75 Ω	Violet, Green, Black
<input type="checkbox"/> R9, R11, R13	33 Ω	Orange, Orange, Black
<input type="checkbox"/> R15	1 K Ω	Brown, Black, Red
<input type="checkbox"/> R17	680 Ω	Blue, Gray, Brown



2 Schottky Diodes:

<input type="checkbox"/> D1	BAT85
<input type="checkbox"/> D2	1N5817



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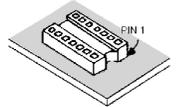
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3 Crystal:

- XTAL 20 MHZ

4 IC Socket:

- Install the 28-pin IC socket at the location marked "U1". It is recommended to line up the notch on the socket with the notch on the PC board to facilitate the installation of the IC later.



5 6-Pin Right Angle Header

- Install the 6-pin right-angle header at location marked "ICSP" on the edge of the PC board.

6 Ceramic & Polyester Capacitors:

- C2 334 / 0.33 μ F / 330nF
- C4, C5 22 pF
- C6, C7, C8 104 / 0.1 μ F / 100nF



7 Inductor:

- L1 270 μ H

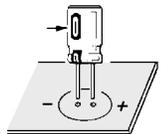
8 MOSFETs & Transistors:

- Q1, Q3, Q4, Q6 BS170
- Q2 BS250
- Q5 BC328



9 Electrolytic Capacitors:

- C1 10 μ F / 50V
- C3 47 μ F / 25V



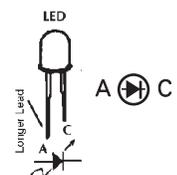
Remember that the electrolytic capacitors are polarized and they must be oriented properly prior to being soldered.

10 Push Button Switch:

- PROG Push Button Tact Switch

11 Light Emitting Diodes (LEDs):

- Install the Green, Yellow and Red LEDs at locations marked "POWER", "TARGET" and "BUSY" respectively. Note that the anode (A) lead of the LED is longer than its cathode (C) lead. Make sure you insert each LED lead through the appropriate hole in the PC board.



12 USB Connector:

- Install the USB connector at location marked "USB".

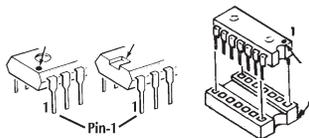
13 ZIF Socket:

- Install the 20-pin ZIF socket at the location marked "ZIF". Make sure you line up the ZIF socket lever with the outline of the lever on the PC board.

While installing the ZIF socket, take extra care that none of the ZIF socket pins are bent over underneath the ZIF socket. Before soldering the ZIF socket, carefully check and make sure all 20-pins are protruding from the PC board bottom side and correct if necessary.

14 Microchip Microcontroller:

- Insert the pre-programmed PIC18F2550 Microchip Flash Microcontroller into the socket at location marked "U1" by orienting the IC so that the notch is lined up with the notch on the PC board and the socket. Carefully, make sure every pin is lined up with its corresponding hole in the socket. Then, press down firmly and gently on the IC.



Note that Microchip Flash Microcontrollers are sensitive to static electricity and can be damaged by a sudden discharge of static electricity from your body while touching the pins. Please touch something metal before handling the chip to discharge any built up static electricity in your body and avoid touching the pins as much as possible.

Testing

Before testing the kit, It is highly recommended to inspect the PC board carefully as explained below:

- Check for proper placement of all components.
- Check for proper orientation of the LEDs, diodes, electrolytic capacitors, transistors, MOSFETs and the integrated circuits.
- Check IC pins to see that they are not folded under.
- Check for protruding leads which could touch other leads or adjacent pads.
- Check all solder connections for cold solder joints.
- Examine the PC board solder side to see that there are no solder bridges causing shorts between tracks.

Once you are satisfied that everything is correct, proceed to do the test as follows:

Using a standard USB cable (not included), connect the PIC Programmer to your computer. Under Windows, the system should automatically recognize the device as a "USB Human Interface Device" and install the necessary drivers automatically. At this time, the Green "POWER" LED should also light up

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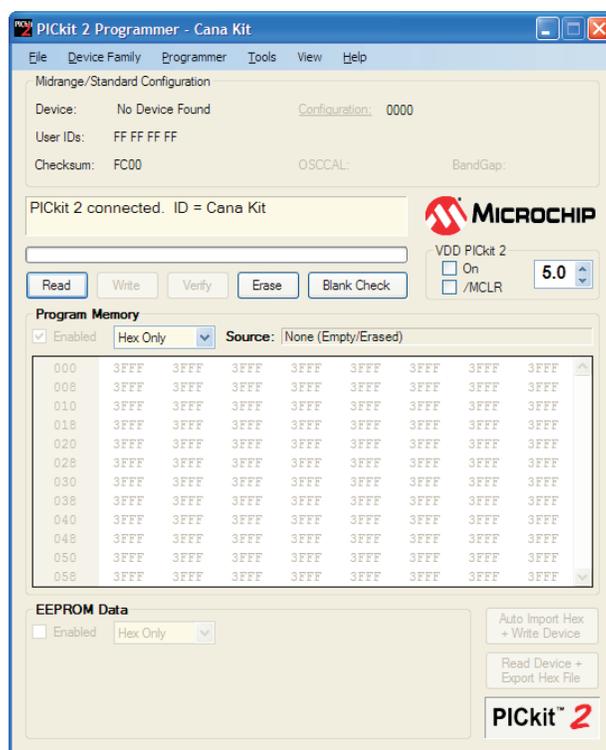
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Installing the Stand-Alone Programming Software

1. Download and extract the PICkit 2 software into a directory on your hard drive and run "Setup.exe" to install the stand alone programming software. The link to the PICkit 2 software can be found at:

<http://www.canakit.com/uk1301>

2. Once installed, make sure the programmer is connected to your computer and start the PICkit 2 programming software by going to "Start -> All Programs -> Microchip -> PICkit 2 v2.61". You should then see the following:



3. For additional help, please refer to the PICkit 2 User's Guide for additional information. The PICkit 2 User's Guide can be found under the "Help" menu.

Note: If you experience any problems programming PICs that have been already programmed at least once, select the "Use VPP First Program Entry" option under the "Tools" menu. See page 52 of the PICkit2 User's Guide for more information.

Manufactured by:

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Web Site: www.canakit.com

Installing the MPLAB IDE Software

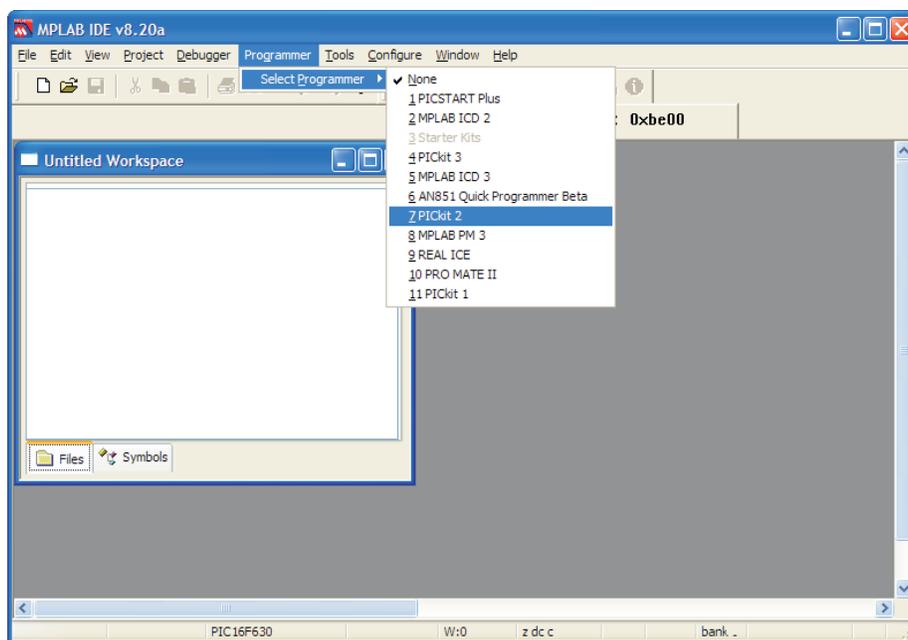
MPLAB Integrated Development Environment (IDE) is a free, integrated gcc-based toolset for the development of embedded applications employing Microchip's PIC and dsPIC microcontrollers. The MPLAB IDE runs as a 32-bit application on Microsoft Windows, and includes several free software components for application development, hardware simulation and debugging. MPLAB IDE also serves as a single, unified graphical user interface for additional Microchip and third-party software and hardware development tools.

Both Assembly and C programming languages can be used with MPLAB IDE. Others may be supported through the use of third party programs.

1. Download and extract the MPLAB IDE software into a directory on your hard drive and run "Setup.exe" to install the MPLAB IDE software. The link to the MPLAB IDE software can be found at:

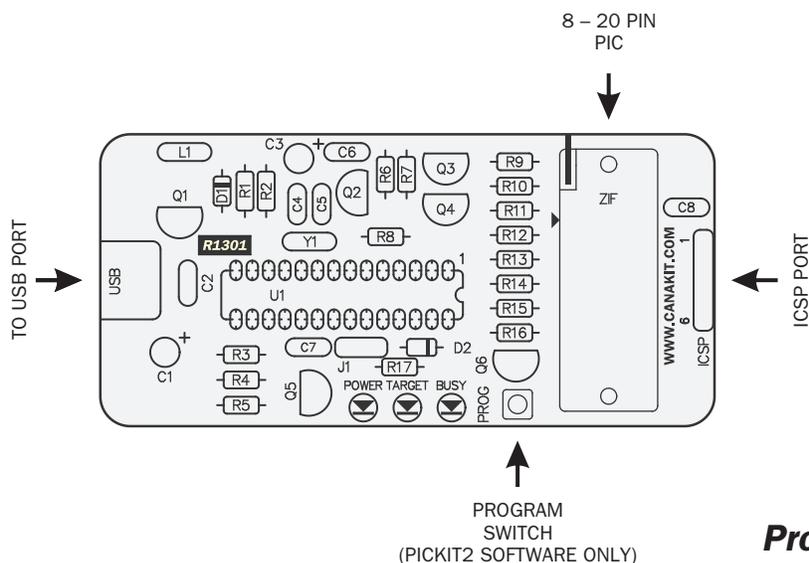
<http://www.canakit.com/uk1301>

2. Follow the installation steps to install your required components.
3. You can now start the MPLAB IDE software by going to Start -> All Programs -> Microchip -> MPLAB IDE v8.40 -> MPLAB IDE.
4. To enable the programmer within your project, make sure the programmer is connected to your computer and select "PICkit 2" as your active programmer.



5. For additional help, please refer to the MPLAB User's Guide available for download from the link above.

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Schematic Diagram

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