

# How to program a PIC16F87x or PIC18F452



the term **programming** is used in this context for burning a hex file onto the chip. See [what\\_is\\_a\\_midibox](#) if you don't know the difference between MIOS, the bootstrap loader and a MIOS Application.

For the MIDIbox project it is **not** required to purchase an expensive, "ready-made" programmer in order to get the firmware into the PIC.

Instead you could buy a pre-programmed PIC from SmashTV or Mike, you could ask in the [MIDIbox Forum](#) for help, or you could build a PIC programmer by yourself. There are many schematics available on the web. The [MBHP\\_BURNER](#) module is one of such DIY programmers, and it works reliable.

**For PIC18F based projects, a PIC programmer is only required to program the MIOS bootloader firmware into the internal flash memory. Once this has been made, you can upload MIOS and applications via MIDI.** Details about this process are explained [here](#).

If you want to burn yourself, you need to build the PIC Burner:

- [PIC Burner](#) uCApps

If you have to burn PIC16 Chips, see [http://www.ucapps.de/mbhp\\_iic\\_midi.html](http://www.ucapps.de/mbhp_iic_midi.html) for a description of a PIC18→PIC16 Adapter for PIC Burner.

You need [PBrenner](#) for the PIC16 and [P18](#) for PIC18's. Both chips can be burned using the PIC Burner Module.



I experienced massive problems by using 2 9V Batteries (steady loss of Voltage, though I used fresh Batteries). 15V Power Adaptors are hard to find, and if you find some, they're quite expensive. So I checked all my 12V-Power Modules and finally found one that produces > 18 V. *It is worth trying and measuring all Power Adaptors you have, because some of them produce actually more Volts than said on the packaging :)*

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