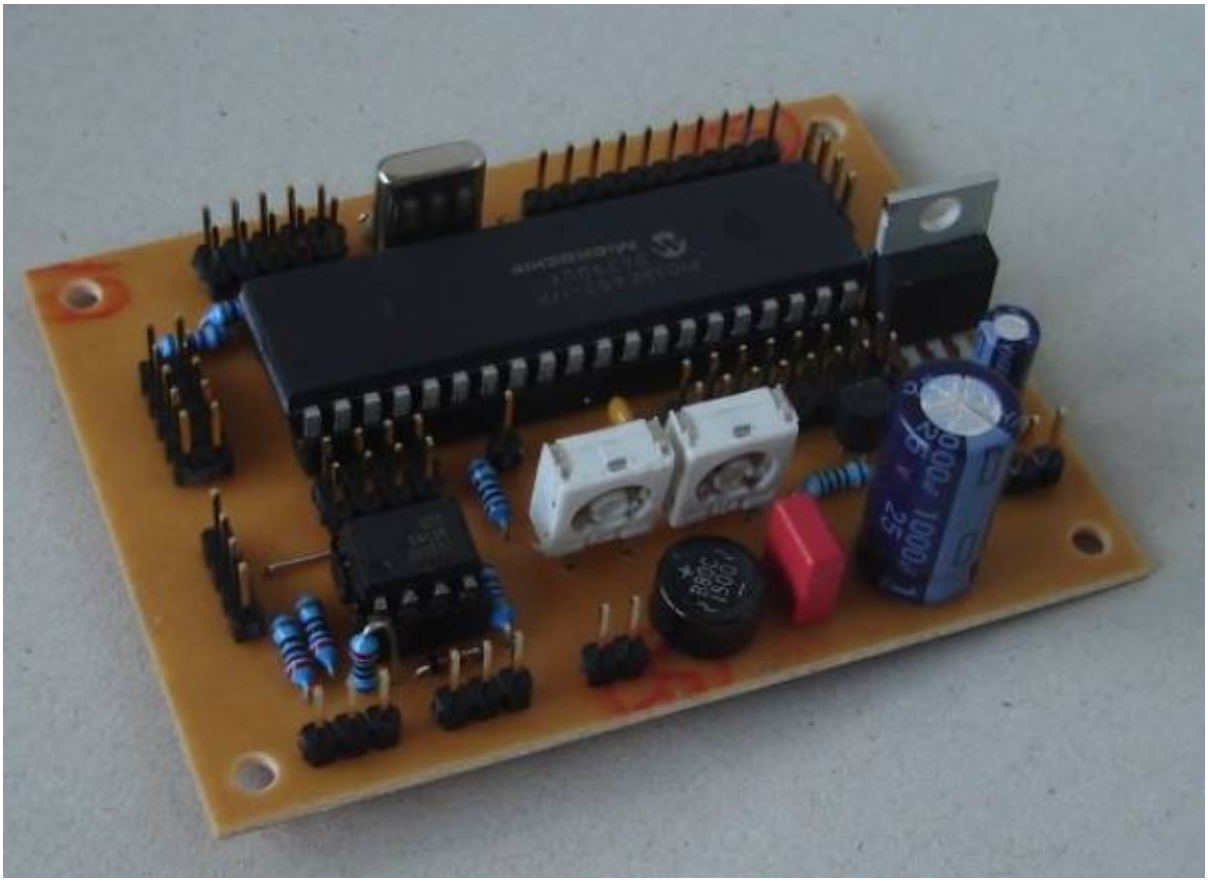
# MBHP Core8 Module

## Introduction

The **MBHP Core Module is the heart and brain of every MIDIbox**. It holds the *PIC microcontroller* which runs MIOS and your MIDIbox application. It handles ***MIDI communication, it drives an LCD (or two), and it connects to all the other modules***.

The PIC is a **"system on chip" (SoC)**, this means, it contains not only a CPU, but also an ***integrated 32k flash program memory, 1536 bytes data memory, 256 bytes data EEPROM, and a lot of usefull peripherals like AD-converter and UART (for MIDI)***. The low prices and worldwide availability for hobbyists makes it a good choice.



Main part of this module is the PIC, a microcontroller manufactured by Microchip. It is clocked at 40 MHz (externaly with a 10 MHz crystal) and offers enough performance to handle analog and digital modules with latencies below 1ms.

In distance to other (more modern) microcontrollers, the **PIC is easy to program, requires no external memories, is almost non-destroyable and comes in a handy DIP package**, so that also electronic beginners can work with this chip without the danger of damaging small SMD pins within some seconds with their soldering iron.

If you are planning to program your own application, it's recommended to use a PIC18F452 for highest

compatibility with existing MIDIboxes, a **PIC18F4620 for RAM intensive projects** (64k flash, 1k EEPROM, 3968 bytes RAM), or a **PIC18F4685 for code intensive projects** (96k flash, 1k EEPROM, but only 3328 bytes RAM - provides CAN interface

## Parts

- Core Board Parts List

## PIC Microcontrollers

The Core Module can be equipped with following microcontrollers:

- PIC18F4620 *required for MIDIbox SEQ V3, possible future default*
- PIC18F4685 *required for MIDIbox SID V2 due to the CAN peripheral*

## Multiple Cores

There are different possibilities to have multiple Cores.

- MIDIbox Link [uCApps] *Linking multiple Cores via MIDI (a special configured MIDI forwarding pipe)*
- MBNet [uCApps] *The new MIDIbox Network utilizing the CAN (Controller Area Network) Interface on the brandnew PIC18F4685 microcontrollers*

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