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- ◆ Power supply (except US)
- ◆ PC connection cable
- ◆ Target probe for 8-pin devices
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- ◆ Software on floppy disc or CD-ROM
- ◆ User's Manual

## DEVICE SUPPORT

- ◆ PIC12C508A
- ◆ PIC12C509A
- ◆ PIC16C54C/56A
- ◆ PIC16C58B
- ◆ PIC16C710
- ◆ PIC16C711
- ◆ PIC16C715
- ◆ PIC16F84/84A
- ◆ PIC16C554/558
- ◆ PIC16C620A
- ◆ PIC16C621A
- ◆ PIC16C622A
- ◆ PIC16F627
- ◆ PIC16F628
- ◆ Coming soon:
  - ◆ PIC12F629
  - ◆ PIC12F675

## OPERATING SYSTEMS

Windows  
95/98/ME/NT/  
2000/XP

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PIC-MU-BETA

# Mu-Beta PIC Emulator

## Overview

This emulator is based on state-of-the-art programmable gate arrays, which gives unique flexibility and functionality in comparison to systems using the emulation chips.

IDEA software (Integrated Development Environment for ASIX In-Circuit Emulators) is both powerful and easy to use and a DOS version is available.

## Operation

The target device type, clock options and many other parameters are set in software so there are no confusing jumper settings or interchangeable oscillator modules - just Plug and Go. You only need to connect the target probe for 18-pin or 8-pin devices.

All device resources are available for your application as nothing is blocked by the emulator hardware or software. Moreover Beta offers excellent device resource accessibility even when running at full application speed. You do not have to stop the real-time run to watch and modify device registers.

## Low Voltage Use

Low voltage applications? No problem with MU Beta. Target application supply voltage can be as low as 2V and your emulator still works fine. No obvious 5V only limitations.

## Clock Options

An Internal clock frequency synthesizer provides clocks in the range from 25 kHz to 20 MHz, which is the full speed of emulated devices.

The user can select the crystal mode or RC mode with CLKOUT equal to  $F_{osc}/4$ . An external clock up to 10 MHz and the external RC oscillator are the other clock options.



## Features

- ◆ Non-intrusive background debugging with all device resources available to user
- ◆ Target application power supply from 2 to 5.5V
- ◆ Software selectable oscillator frequency and other flexible clock frequency options
- ◆ Target application has independent functionality (hardware simulator mode)
- ◆ Extensive break logic possibilities
- ◆ Flexible reset options
- ◆ True HALT state
- ◆ Trigger In and Trigger Out
- ◆ 32-bit instruction stopwatch
- ◆ Flexible watchdog setting
- ◆ Off-line mode
- ◆ Clear LED mode indication
- ◆ Reconfigurable hardware
- ◆ Trace memory, conditional trace
- ◆ Compact mechanical construction
- ◆ Fast PC interface via parallel port

## Independent Operation

The target application has independent functionality. So, the Emulator can be used with or without the target system. This allows internal software routines to be tested independently of the application - like a "real-time software simulator".



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## Breakpoints

The MU Beta has extensive break logic capabilities. You can set an unlimited number of breakpoints anywhere in the code memory. These breakpoints are activated BEFORE instruction execution, which makes debugging much easier. Most other emulators have breakpoints which are activated after instruction execution which makes it harder to debug loops and conditional skips.

To make your life even easier, the MU Beta lets you use many types of breakpoint. These include file register breaks in data memory, break on overflows on any of the following which really helps you find those nasty bugs - Timer0 overflow, Trace buffer overflow, Watchdog timer overflow and Stack overflow or underflow.

Finally you can break on an external probe signal (Trigger In), which lets you control the emulation process to effectively debug your hardware.

## Stopwatch feature

The MU Beta includes a superb stopwatch feature. This is a 32-bit instruction cycle counter - stopwatch - that accurately counts active cycles both in Run or Step modes. The time is displayed both in cycles and in microseconds to let you effectively optimize your code.

The MU Beta also has a second - differential - counter available. This makes it very easy to produce accurate delays and define other time critical functions.



## Trace Memory

The MU Beta also includes a Trace Memory buffer, which you won't find on other emulators in this price range. The Trace Memory has a depth of 256 instructions. It is fully user selectable for arbitrary (even discontinuous) locations and areas, putting you in control.

## Upgrades

Because of the flexibility of the emulator circuitry, software upgrades of the emulator hardware are really simple, e.g. via the Internet. The software can even be modified to meet the needs of the individual user - please contact us with your requirements.

## Related Products

The default device socket type is DIP, SMD (SOIC) headers can be ordered as an option.

MU Alpha has less device support and is a low cost alternative if your PIC device is supported by it. EduKit84 and Protokit84 provide programming, training and circuit hardware support.

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