

- **MU Beta** is a **Real-Time In Circuit Hardware Emulator** for the most popular Microchip PIC® microcontrollers. It offers many professional level features for an extremely low price. It is designed to multiply your productivity and provide simple PIC application development.
- **MU Beta** is based on the state-of-the-art programmable gate arrays (FPGA Xilinx). This gives unique flexibility and functionality compared with systems using the emulation chips.
- **MU Beta** provides the user with full control of PIC including internal memories, SFR (special function registers), peripherals and many more in real time without stopping the application.

## • Main features •

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



## Breakpoints

Unlimited number of breakpoints anywhere in the code memory (activated BEFORE instruction execution). Many other break conditions: file register breaks in data memory, Timer0 overflow, Trace buffer overflow, Watchdog timer overflow, Stack overflow/under-flow, Break on external probe (Trigger In).

## Low voltage applications?

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

## Trace memory

with 256 instructions depth, tracing is fully user selectable for arbitrary (even discontinuous) locations and areas.

## Many optional add-ons

With MU Alpha can be ordered some other products like pin converters or verification, development and educational PIC kits (EduKit84, ProtoKit84, PVK40) designed to work with MU Alpha.

**EduKitBeta** – MU Beta controlled educational board for PIC MCUs containing many analog peripherals.



Examples of add-on products to MU Beta.



**PVK40** – Feature rich development board for the PIC Flash MCUs. Debugging the peripherals by MU Beta.

## Supported devices

- PIC16F84/84A
- PIC16C554/558
- PIC16C620A/1A/2A
- PIC16F627/628
- PIC16F630/676
- PIC12C508A/509A
- PIC16C54C/56A/58B
- PIC16C710/711/715
- PIC12F629/675
- PIC10F200/202/204/206

## Target device software selectable

The target device type, clock options and many other parameters are simply software selectable - no confusing jumper settings, no interchangeable oscillator modules are necessary. The user only has to connect the target probe for 18 or 8-pin devices.

## Internal clock frequency synthesizer

provides the clock in the range from 25 kHz to 20 MHz (full speed of emulated devices). The user can select the crystal mode or RC mode with CLKOUT equal to Fosc/4. The external clock up to 10 MHz and the external RC oscillator are the other clock options.

## • The Software •

**IDEA** (Integrated Development Environment by ASIX) is easy to use Windows application for all ASIX hardware emulators and debuggers. It doesn't require special training.

### Tool Bar

allows user to quickly select frequently used commands by a single mouse click to button. Also, some important system information is displayed here.

### Menu

is a common part of almost all Windows applications. It allows user to control all application functions.

### Source Window

displays all project source files, i.e. the main source file (projectname.ASM) and all other files which are included in main source file using the #include directive.

### Watch Window

shows all watches and allows modification of user definable watches. Individual watch properties can be set in Watch Setup Dialog and watch variable value can be modified in Watch Edit dialog.

### Program Memory

window displays microcontroller program memory contents in a convenient format.

### Data Memory

window displays microcontroller data memory contents in grid format with hexadecimal values.

### Status Bar

displays helpful information, i.e. Part Type, Zero and Carry Flags, Program Counter Value...

### Stack Window

displays the contents of the stack.

### Console Window

shows various useful information. Its advantage is that it does not ask user to confirm every message by mouse or keyboard.

### EEPROM Window

displays microcontroller EEPROM contents in grid format with hexadecimal values.

### Special Function Registers (SFR) Window

displays all SFRs available in given processor type.

### Chip Window

displays picture of chip (top view, in typical black color, soldered on green PCB) board with descriptive I/O information.

### Stopwatch Window

displays the special user's internal 32-bit hardware cycle counter (stopwatch).

## ITEMS SUPPLIED AS MU BETA STANDARD PACKAGE

- MU Beta
- Power supply – Euro adaptor
- PC connection cable
- Target probes for 8-pin, 14-pin and 18-pin devices
- Target I/O protector
- CD ROM with software

Supplied software IDEA contains detailed electronic (on-line) user manual.



## ORDERING INFORMATION

ITEM	DESCRIPTION
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MU-BETA	COMPLETE EMULATOR SYSTEM (NO OTHER MODULES, ADAPTORS OR DEVICES NEEDED)
XLT18SO	DIP TO SOIC18 PIN CONVERTER
XLT08SO	DIP TO SOIC8 PIN CONVERTER

**YOUR LOCAL DISTRIBUTOR:**

## OTHER INFORMATION

- INPUT POWER: 9 V DC / 300 mA
- DIMENSIONS: 13,5 × 6,5 × 3 cm
- WEIGHT: 100 g
- WARRANTY: 2 years
- PC REQUIREMENTS: Pentium 200 MHz or higher (500+ recommended), min. 32 MB RAM, Windows 95 or higher and standard parallel port

**ASIX®**

info@pic-tools.com (general information)  
support@pic-tools.com (technical support)  
www.pic-tools.com