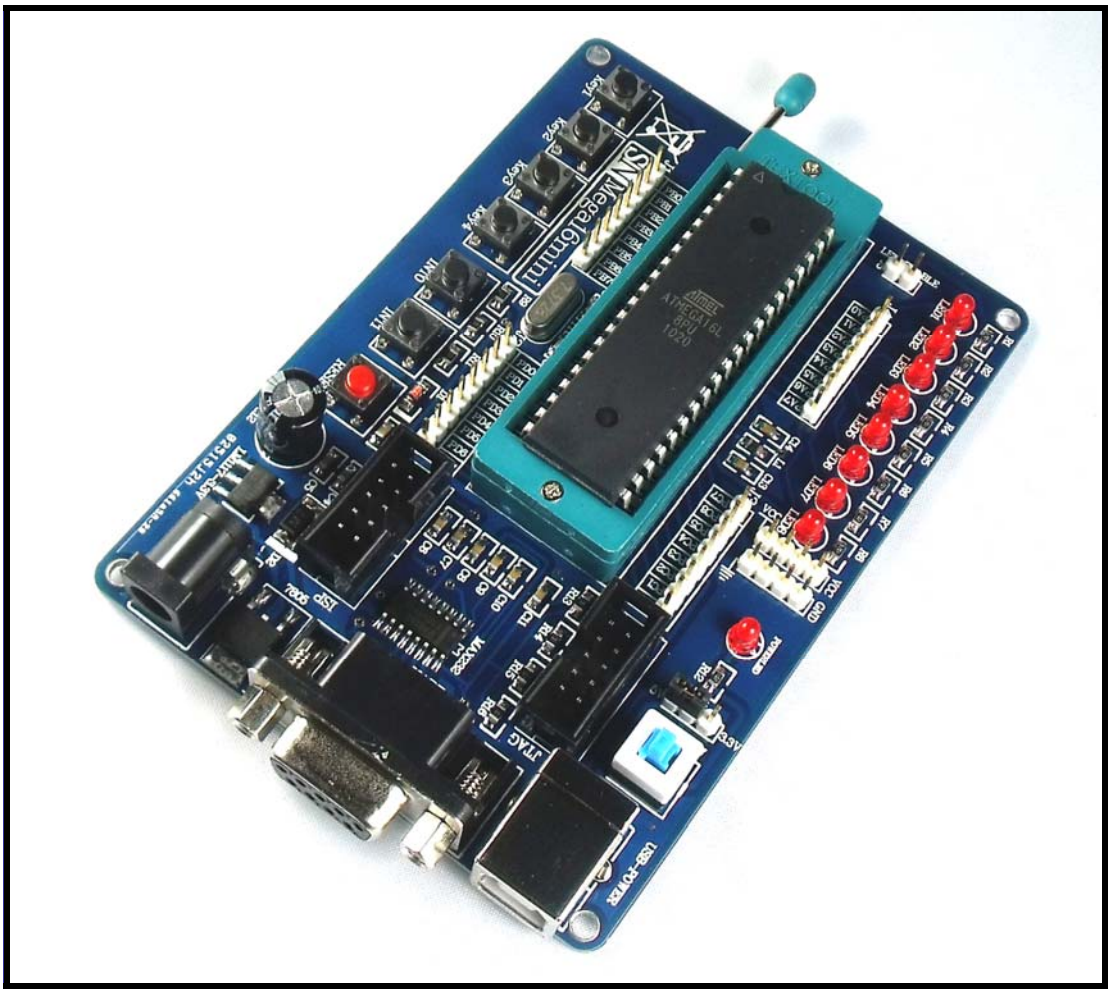
# AVR mega16/32 Mini development board

## Users Manual



Version 1.0

All boards produced by SINTECH STUDIO

Rev.A, Jully 2010

**CONTENT**

## 1. Getting Started

AVR mega16/32 Mini Development Board provides easy way for developing and prototyping with the new mega16/32 high-performance, microcontroller produced by ATMEL. AVR mega16/32 Mini Development Board has ISP and JTAG port for programming and debugging, UART, 8 status Leds, 4 user Buttons,INT0&INT1, and all of the GPIOs are taken out to make them available for further connections.

## 2. Devices Supported

AVR mega16/32 Mini Development Board is based on the ATMEL high-performance microcontrollers. Residing on this board is the mega16/32 microcontrollers.

## 3. Tools Requirement

An AVR programmer/dubugger is required to download code or debug the mega16/32.
Programmers/Debuggers you can use on this board such as:

⑴AVR ONE ⑵AVR ISP ⑶AVR ISP MKII ⑷AVR JTAGICE
⑸AVR JTAGICE MKII ⑹AVR DREGON ⑺AVR STK200 ⑻AVR STK500
⑼AVR STK600 ⑽AVR USBASP
…

If your Programmers/Debugger can power the board, ,the board will not need external power supply.

## 4. Power Requirement

⑴USB power Cables

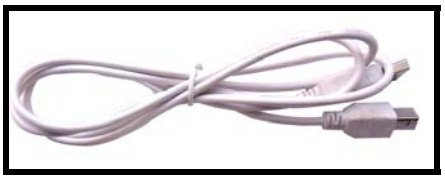


Figure4-1

⑵External 6—12VDC

Figure4-2

You can select one of them to power your board. If your programmer/debugger can power your board,it is no need to use USB power Cables or External 6—12VDC.

## 5. Softwares Requirement

⑴. AVR Studio + WinAVR free development IDE, AVRICC or other development IDE.
⑵. Programming software for loading.

## 6. Board Features

- CPU: mega16/32 microcontroller
⑴ISP 5x2 pin connector for in-circuit programming with AVR Programmers .
⑵ JTAG 5x2 pin connector for in-circuit programming and Simulating.
⑶ 7805,LM1117 and filtering capacitors.Two kinds of power supply: 6V-12V external power supply and 5.0V USB power supply.
⑷ System power supply selection:5V/3.3V.
⑸ Quartz crystal oscillator circuit 1-16Mhz.
⑹Reset circuit.
⑺ Status LED connected to I/O PA port via removable jumper.
⑻ RS232 DB-9 female connector.
⑼MAX232 circuit.
⑽ 4 independent keys
⑾ 2 External Interrupts:int0 and int1
⑿PCB, 1.6 mm , blue solder mask, white silkscreen component print .
⒀Dimensions: 77mmx109mm

## 7. Electrostatic Warning

AVR mega16/32 Mini Development Board is shipped in protective anti-static packaging. The board must

not be subject to high electrostatic potentials. General practice for working with static sensitive devices should be applied when working with this board.

## 8. Mega16/32 Processor Features

For detailed information of mega16/mega32 microcontroller, please refer to the datasheet named "Atmega16.pdf " or "Atmega32.pdf " included in the Product CD Rom.

## 9. Board layout，jumpers, ports and main modules description.

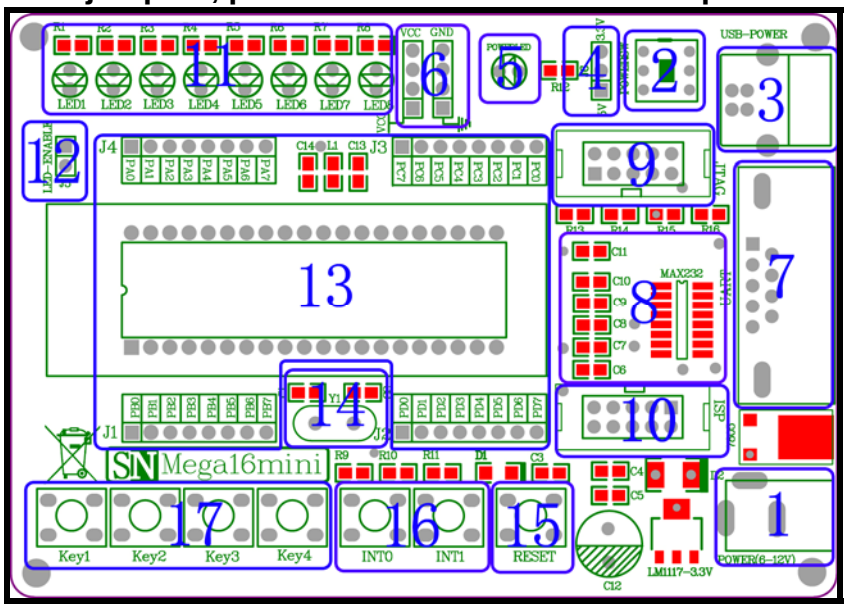



Figure9-1

| Area | Description | Area | Description |
|---|---|---|---|
| 1 | 6-12V Power Input | 10 | ISP Programming Port |
| 2 | Power Switch | 11 | 8 LEDs |
| 3 | USB Power Input | 12 | 8 LEDs Enable Jumper |
| 4 | 5V/3.3V Selection Jumper | 13 | mega16/mega32 core with pinouts |
| 5 | Power Led | 14 | System Clock (External Clock) |
| 6 | Power Output | 15 | System Reset Button |
| 7 | UART Port | 16 | INT0 & INT1 keys |
| 8 | MAX232 Circuit | 17 | 4 User keys |
| 9 | JTAG Debugging Port | 18 | |

## 10. Frequently Asked Questions

**1).I try to power the board, but the board does not power up, what's wrong?**

Make sure that the POWER LED has turned on. If the LED is not on, check to see that the external power supply(DC6-12V) or the USB power is properly connected, check to see that the J6 is properly connected .It is necessary to note that the external power supply(DC6-12V) and the USB power can not be connected Simultaneously.

**2) How is power supplied to the experimenter's board?**

Three supply options exist: USB power Cables, external 6—12VDC and programmer/debugger power supplies are supported. You are only allowed to choose one of them.

**3) The Mega16/32 is no longer accessible via programmer/debugger, is something wrong with the device?**

- Verify that the target device is powered properly.
- If the target is powered locally, verify your programmer/debugger is connected properly.
- If the programmer/debugger is connected properly, the Mega16/32 is possibly "dead". Well, it's not really dead, it's just that it can't be reprogrammed until the Mega16/32 is unlocked (for detailed method of unlocking an AVR device, please search for solution online).

**4) I have loaded the Mega16/32 sample code, but It seem to be working very slowly, what's wrong?**

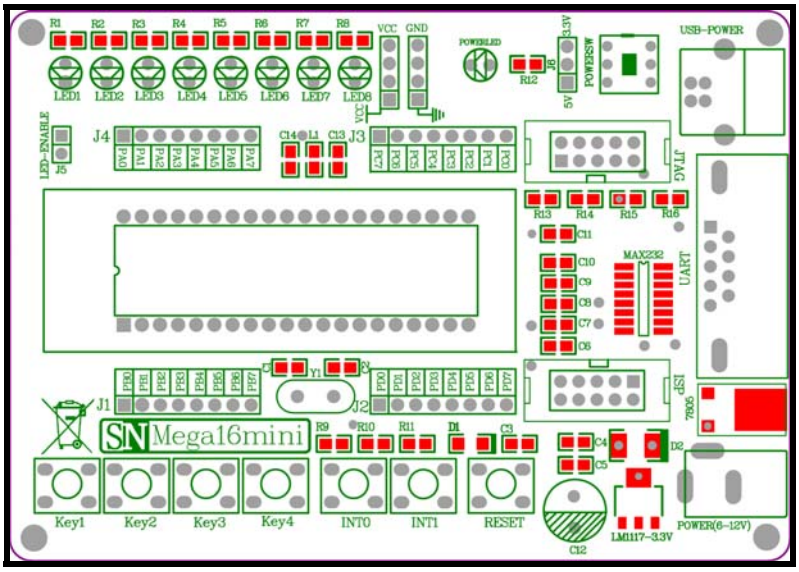
Make sure the system clock had been changed . The AVR mega mega16/mega32 Mini Development Board has a default system of internal RC 8MHz system clock,and the sample codes in product CD-ROM is based on this default system clock.If the system clock had been changed to lower one like 1MHz,the board will work slowly.

# Appendix A. Packing List

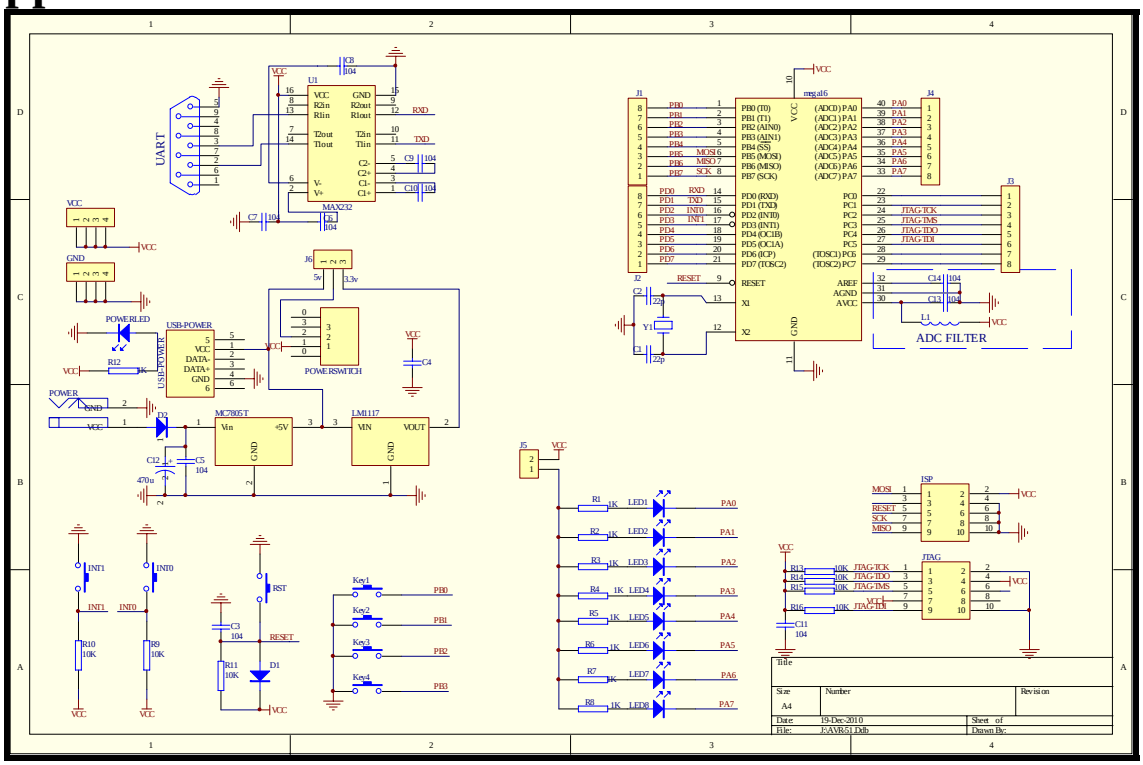
When you receive the products, please check the box to see if all accessories are complete. This product should include the following components:

- AVR mega mega16/mega32 Mini Development Board, 1 pcs;
- USB power supply cable, 1 pcs;
- CD-ROM or DVD-ROM, 1 pcs;

# Appendix B. Board PCB




# Appendix C. Board Schematic




# Appendix D. Contast Us

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