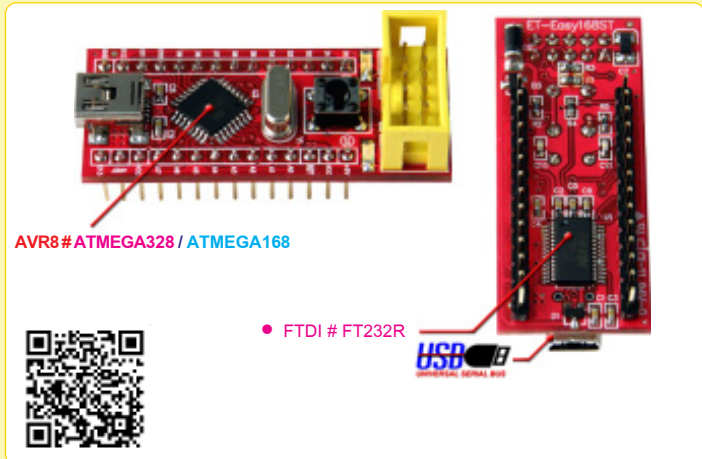


ET-EASY328 STAMP (P-ET-A-00493)

ET-EASY168 STAMP (P-ET-A-00381)



● ET-EASY168 STAMP is mini AVR Microcontroller Board that uses ATMEGA168 to be MCU on board; moreover, internal board consists of IC USB BRIDGE No.FT232R from FTDI. It is able to connect with computer PC through PORT USB directly, so it makes this Board ET-EASY168 STAMP to be mini board but perfect and full of basic resources. In this case, user only interfaces USB Cable from computer PC with Connector USB of Board ET-EASY168 STAMP, it makes user can write program and download Code into board to test operation instantly.

There are 2 methods to develop program of Board ET-EASY168 STAMP as follows;

1. ARDUINO PROJECT is the format of developing program by program and instruction set of C Language (C++) of ARDUINO PROJECT. It develops AVR Microcontroller in the format of OPEN SOURCE; user can use it free without any charge, see more information from <http://www.arduino.cc>. For MCU of ET-EASY168 STAMP Kit has already been installed Program BOOTLOADER, so user is able to directly download it through PORT USB.

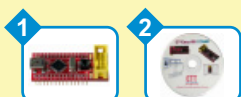
2. AVR MICROCONTROLLER is the format of developing program according to ordinary AVR, user can choose any language program that is compatible with the application of AVR NO.ATMEGA168 such as BASIC Language, BASCOM-AVE, C Language CODE VISION, or WIN AVR. It downloads data through BOOTLOADER or through Connector IDE 10PIN AVR ISP; in this case, user needs to have additional DOWNLOAD Kit such as ET-AVR PROG MINI, or ET-AVR ISP USB V1.

Specifications of Board ET-EASY168 STAMP:

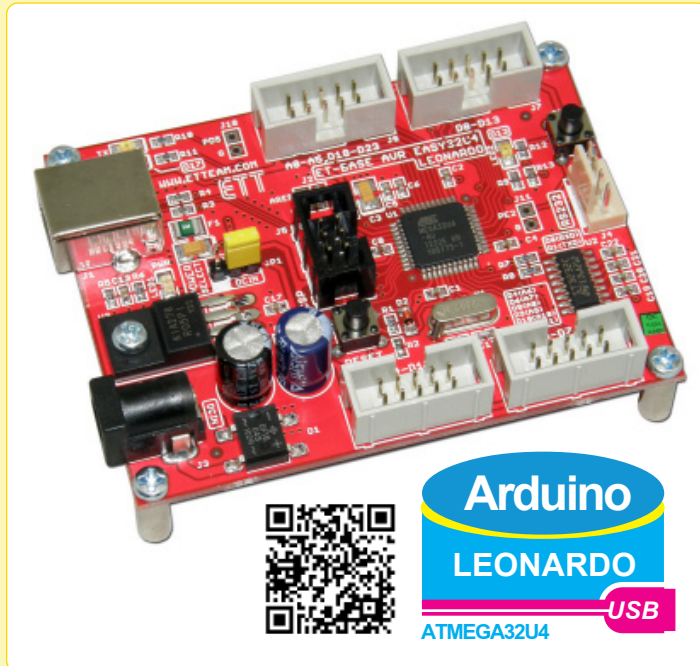
- Use AVR MCU No.ATMEGA168 from ATMEL and run at Frequency 16.00 MHz.
- Has 16 KBYTE FLASH, 1 KBYTE SRAM, 512 BYTE EEPROM.
- Has 22 BIT GPIO that is divided into 14 BIT for DIGITAL and 8BIT for 10BIT A TO D.
- Has 5VDC POWER SUPPLY that is able to use 5VDC from both PORT USB and external 5VDC POWER SUPPLY; moreover, there is LED POWER to display its status.
- Has EXTERNAL RESET Circuit in the format of RC RESET and SW SWITCH.
- Connector is place on PIN HEADER in the distance range of 2.54mm. and 28PIN in the distance range of 600MIL that is easy to apply and interface with Project Board.
- Board size is 2x5cm. that is as equal as IC 28PIN.
- Has Connector USB MINI and IC USB BRIDGE No.FT232R of FTDI on board.
- Connector IDE 10PIN AVR ISP is able to download data into MCU on board if not download through PORT USB.

● **ET-EASY168 STAMP** Kit includes;

1. Board ET-EASY168 STAMP
2. CD-ROM User's Manual



ET-BASE AVR EASY32U4 (P-ET-A-00472)



Board ET-BASE AVR EASY32U4 or Arduino LEONARDO is AVR Board, it can develop program by C or C++ Language of Arduino that is OPEN SOURCE. This board version uses AVR MCU No.ATMEGA32U4 that has USB PORT, so it can interface with Connector USB PORT of computer directly. It writes program by C Language on computer and DOWNLOAD from computer into board, it is ready to use.

How to develop program of Board ET-BASE AVR EASY32U4

1. Arduino PROJECT is the format of developing program by C or C++ Language, it is OPEN SOURCE and user can use it free. For Board ET-BASE AVR EASY32U4, ETT has installed Program BOOTLOADER internal MCU completely; so, user can write program and DOWNLOAD into the board through PORT USB directly.

2. AVR MICROCONTROLLER is a format of developing program according to the normal AVR; so, user can choose any language that supports the operation with AVR No.ATMEGA32U4 such as ASM, BASIC, C to write and develop program. In this case, it has to use with external Programmer such as ET-AVR ISP mkII, ET-AVR PROG MINI through Connector ICSP (6PIN) on board.

Specifications of Board ET-BASE AVR EASY32U4

- Use ET-MEGA32U4 44 PIN TQFP to be MCU on board; RUN by Frequency 16 MHz
- Has 32 KBYTE FLASH (reserve 4 KBYTE for BOOTLOADER), 2.5 KBYTE RAM, 1 KBYTE EEPROM
- Has USB CONTROLLER insides that is USB 2.0 FULL SPEED/ LOW SPEED
- Has 24 PIN DIGITAL I/O (D0-D23) in total, it can use this DIGITAL I/O to be ANALOG INPUT (ADC 10 BIT) 12-CH, PWM 7-CH, SPI1-CH, I²C 1-CH, USART 1-CH
- Has 4 of Connector 10 PIN ET
- Use IC REGULATOR No.KIA278R05 to be LOW DROPOUT to provide power into MCU 5V
- Connector USB TYPE B (be compatible with Cable USB TYPE A/B (OPTION))
- RS232 PORT 4 PIN ET with Circuit LINE DRIVER 1-CH
- Has Connector 6 PIN ICSP for programming by External Programmer
- When developing Program Arduino, user can do instantly through PORT USB without using any external Programmer. It runs under the operating system of Windows 98/XP/2000/VISTA/7/MAC OSX/ LINUX
- Use external POWER SUPPLYAC 7-12V, it is compatible with both AC and DC (it can be used with DC ADAPTER ETT 12V 0.5A TYPE J (OPTION) (A-AP-A-00057))
- PCB size: 8.12 x 6.09cm.

● **ET-BASE AVR EASY32U4** consists of ...

1. Board ET-BASE AVR EASY32U4
2. CD-ROM User's Manual and Program

