ET-BASE AVR ATmega64/128

ET-BASE AVR ATmega64/128 which is a Board Microcontroller AVR family from ATMEL uses MCU No.ATmega64 and ATmega128 64PIN. Board ET-BASE AVR ATmega64/128 uses MCU's resources on board mainly and arranges Pin I/O as Port PA, PB, PC, PD, PE, and PF, Port ET-CLCD, and including Port for downloading Program, it makes us more convenient to apply for various project works. Moreover, there's addition circuit Driver RS-232, so we can use RS-232 Serial Port Communication easily and conveniently.

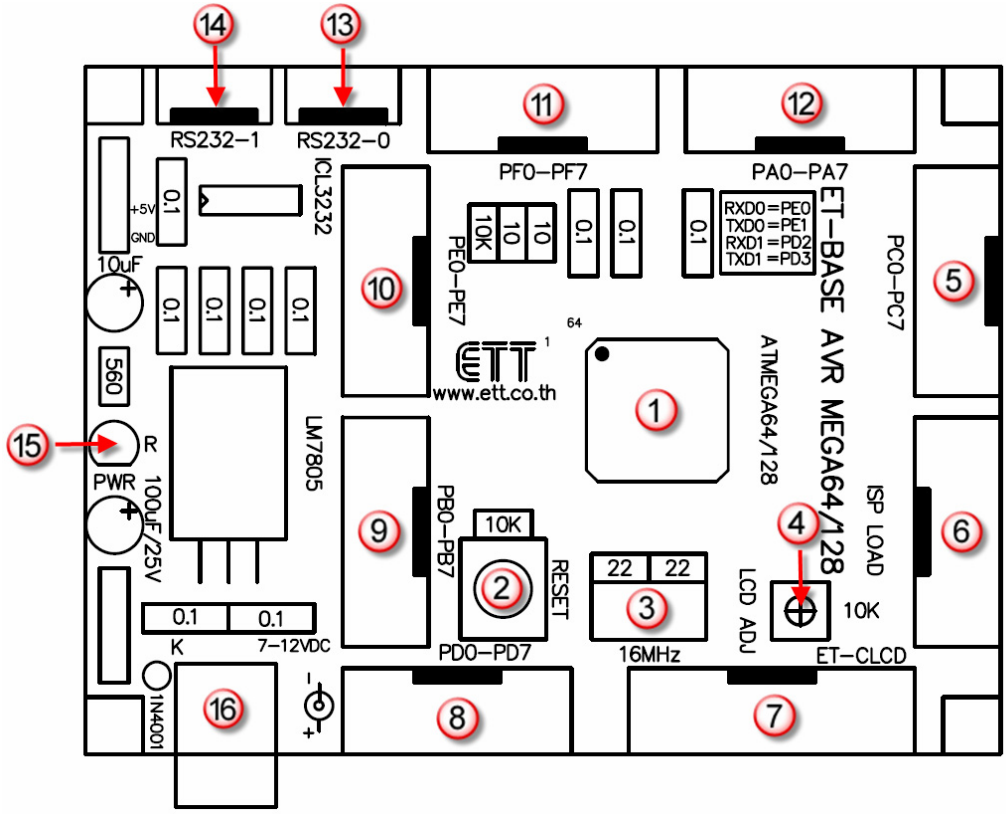
Specifications

- Use MCU AVR family No.ATmega64, ATmega128 from ATMEL 8BIT to be permanent MCU on board, and XTAL 16 MHz. Moreover, this MCU has other interesting specifications as following;
  - Flash Memory 64 K Bytes for ATmega64 and 128 K Bytes for ATmega128, and RAM 4 K Bytes
  - EEPROM 2K Bytes for ATmega64 and 4 K Bytes for ATmega128, in this case, we can erase and re-write data more than 100,000 times.
  - Maximum 53 I/O Pins
  - Circuit SPI Communication 1 Channel, I2C 1 Channel, Programmable Serial USARTs 2 Channel
  - ADC 10-Bit 8 channel
  - Timers/Counter 8-Bit 2 Channel, Timers/Counter 16-Bit 2 Channel, 8-Bit PWM 2 Channel, Watchdog Timer, Real Time Counter
- 6 I/O Port 10PIN; PA,PB,PC,PD,PE, and PF
- Port ISP LOAD for program MCU (must use with ET-AVR ISP or ISP Programmer that has the same type of Pin arrangement).
- Line Driver for RS232 Serial Port Communication 2 Channel; one Port for interfacing with Signal PE0(RXD0) and PE1(TXD0) and other one Port for interfacing with Signal PD2(RXD1) and PD3(TXD1), in this case, we can test connection of circuit RS232 Serial Port Communication easier.
- Circuit for connecting with Character LCD Display Monitor (ET-CLCD) and VR for contrasting brightness of LCD, in this case, it is

interfaced circuit with LCD as 4 Bit Interface type.

- Circuit Regulate +5V/1A for supplying power into circuit of LCD Display Monitor and I/O components for using with Power Supply that is not much than +5V and red LED.
- PCB Size 8 x 6 cm.

Structure of Board



- **No.1** is MCU No.ATmega64 or ATmega128 AVR family from ATMEL.
- **No.2** is Switch RESRT to reset operation of MCU.
- **No.3** is Crystal 16 MHz.
- **No.4** is Resistor to contrast brightness of LCD.
- **No.5** is PORTC 8 Bit; PC0-PC7.
- **No.6** is Port ISP LOAD to download Hex File into MCU.
- **No.7** is Port ET-CLCD to connect with Character LCD as 4 Bit type.

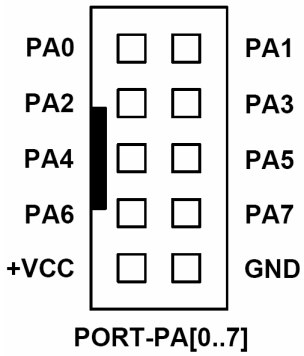
- **No.8 is** PORTD 8 Bit; PD0-PD7.
- **No.9 is** PORTB 8 Bit; PB0-PB7.
- **No.10 is** PORTE 8 Bit; PE0-PE7.
- **No.11 is** PORTF 8 Bit; PF0-PF7.
- **No.12 is** PORTA 8 Bit; PA0-PA7.
- **No.13** and **14** are Connector RS232 for general usage.
- **No.15** is LED Power to display status of Power Supply +5VDC.
- **No.16** is Connector Power Supply.

Connectors

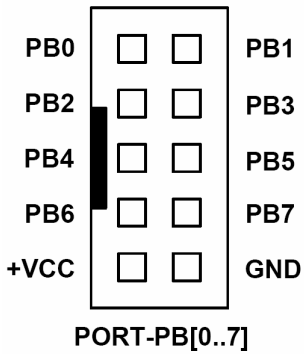
For Connector Port I/O from MCU, it is designed and is provided through 6 Connectors IDC-Header 10PIN (2X5); PA, PB, PC, PD, PE, and PF respectively. Each Connector consists of Signal I/O that is connected directly from Pin MCU. The external connecting point of board is shown as following;

- Connector Power Supply of Board
- Connector PORTA 8 Bit; PA0-PA7
- Connector PORTB 8 Bit; PB0-PB7
- Connector PORTC 8 Bit; PC0-PC7
- Connector PORTD 8 Bit; PD0-PD7
- Connector PORTE 8 Bit; PE0-PE7
- Connector PORTF 8 Bit; PF0-PF7
- Connector ET-CLCD for interfacing with LCD Character type
- Connector RS232 2 Channel; one channel for interfacing with Signal PE0(RXD0) and PE1(TXD0) and other one channel for interfacing with Signal PD2(RXD1)and PD3(TXD1), in this case, we can test connection of circuit RS232 Serial Port Communication easily.
- Connector ISP LOAD for downloading HEX File into MCU

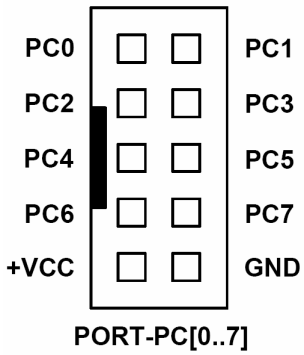
Port PA 8 Bit



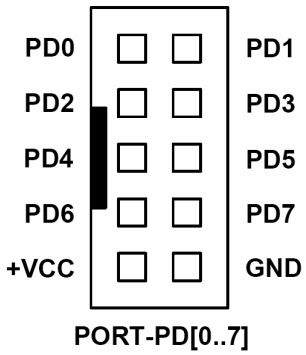
Port PB 8 Bit



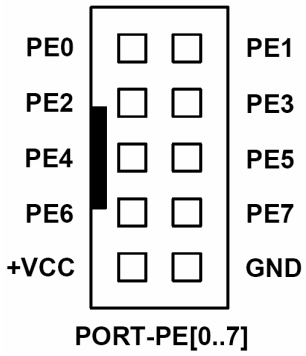
Port PC 8 Bit



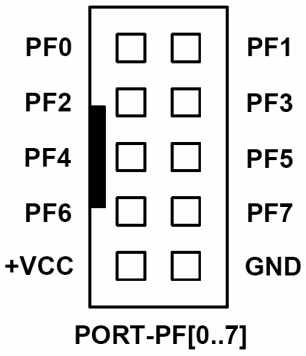
Port PD 8 Bit



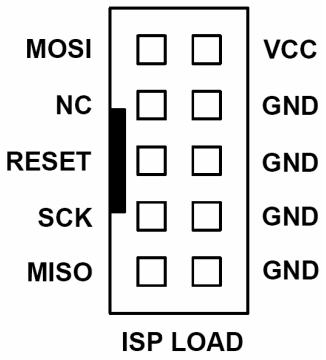
Port PE 8 Bit

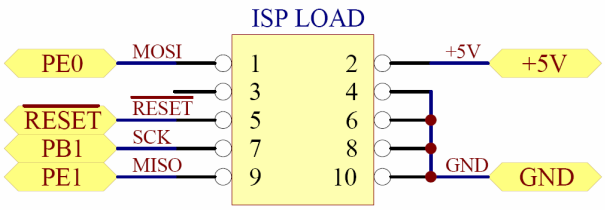


Port PF 8 Bit



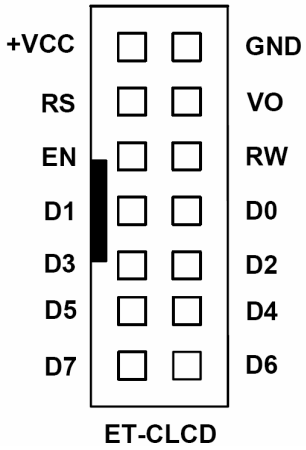
Port ISP LOAD

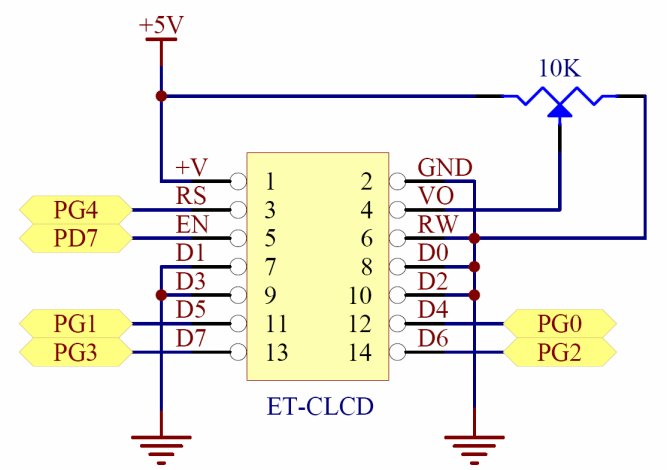




Picture displays **circuit for connecting with ISP LOAD.**

Port ET-CLCD: It is used with Character Type LCD for connecting as 4 Bit type. It uses signal from Port PG and PD (PD7) to connect with LCD. In this case, we must use the signal name to be reference and must interface all 14 cables corresponding with the truly name on the Connector.

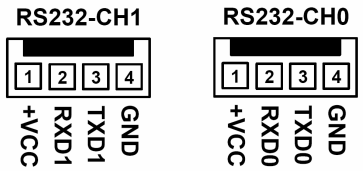


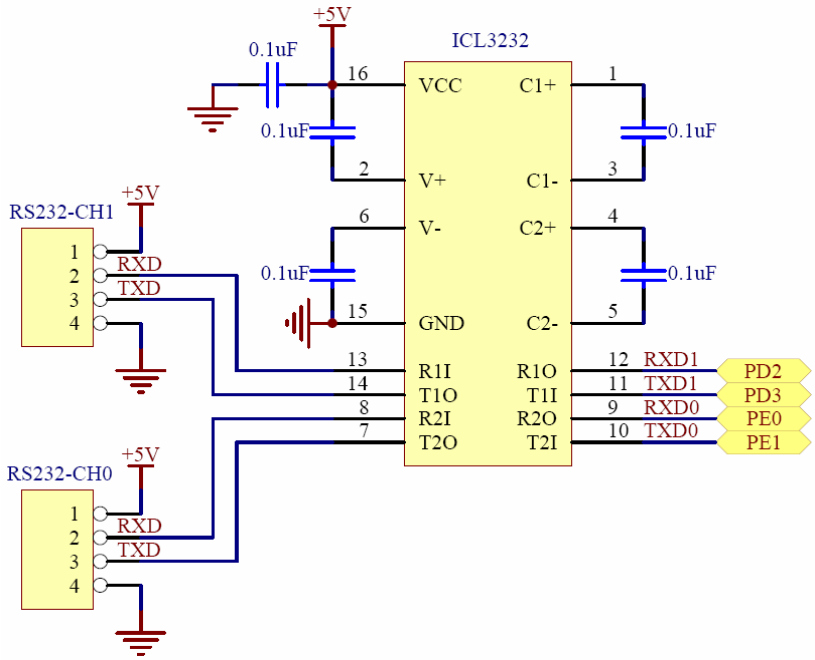


1	2	3	4	5	6	7	8	9	10	11	12	13	14
GND	+VCC	VO	RS	RW	EN	D0	D1	D2	D3	D4	D5	D6	D7

Picture displays **Pin Arrangement of Character LCD Standard.**

Port RS232 2 Channel: It is used 1 Channel to connect with Signal PE0(RXD0) and PE1(TXD0) and other one Channel for interfacing with Signal PD2(RXD1) and PD3(TXD1).



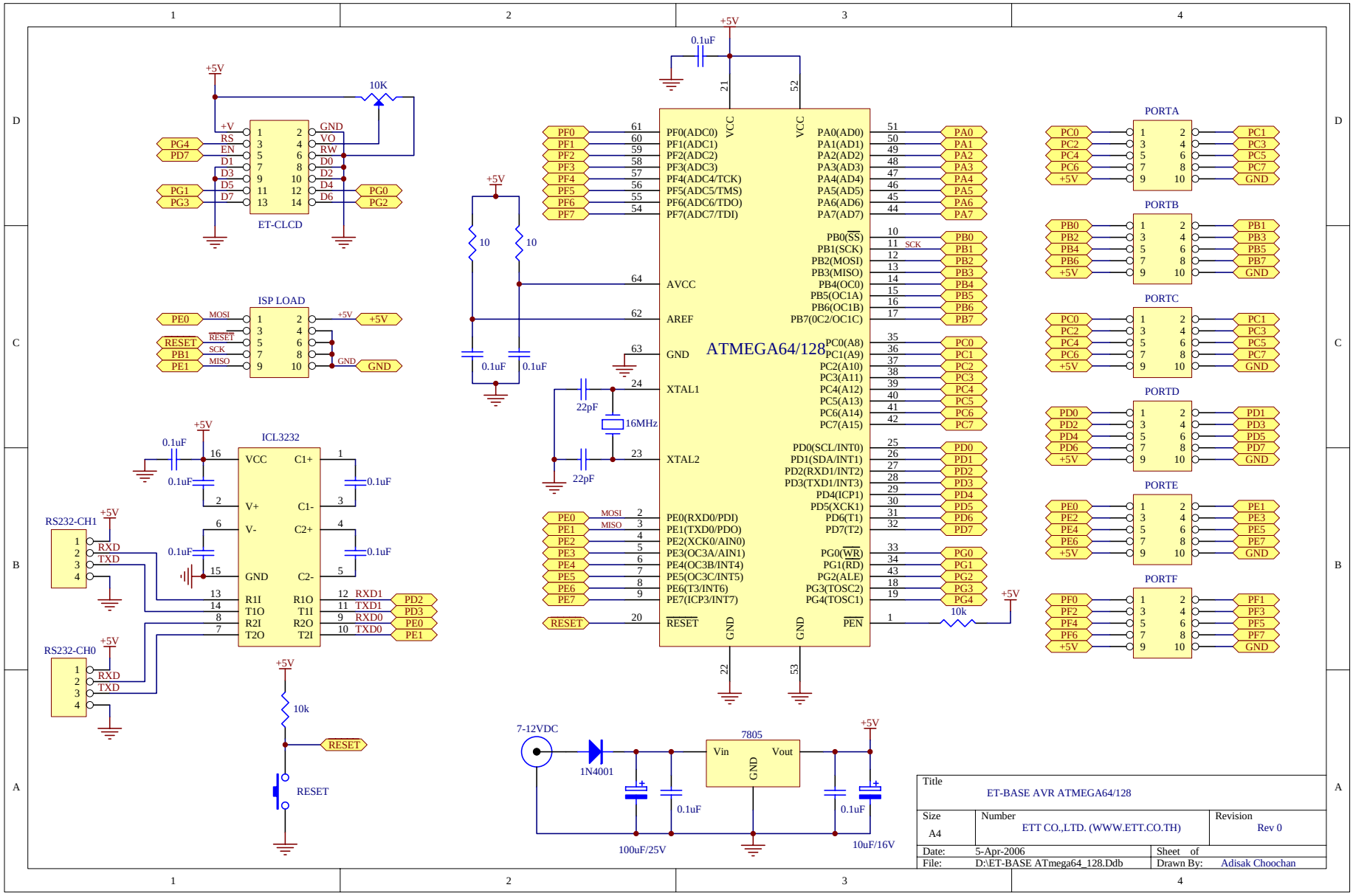


Picture displays **circuit for connecting with RS232.**

To Download Hex file into MCU

It is necessary to use ET-AVR ISP or other types of ISP Programmer such as AVRISP from ATMEL to download Hex File into MCU AVR family from ATMEL, especially procedure of Serial Programming Type.

If we use ET-AVR ISP, we must download Hex File through Parallel Port of computer and must use it with ET-CAP10P from ETT and Software PonyProg2000 program that can use with ETT Board well. User can learn general usage from menu HELP by self, in this case, we will only mention procedure to setup program PonyProg2000 for using with all versions Board AVR family from ETT.


ATMEGA64/128
ET-CLCD
ISP LOAD
ICL3232
RS232-CH1
RS232-CH0
PORTA
PORTB
PORTC
PORTD
PORTE
PORTF
7-12VDC
1N4001
7805
10K
10k
16MHz
22pF
0.1uF
100uF/25V
10uF/16V
Title
ET-BASE AVR ATMEGA64/128
Size
A4
Number
ETT CO.,LTD. (WWW.ETT.CO.TH)
Revision
Rev 0
Date:
5-Apr-2006
Sheet of
File:
D:\ET-BASE ATmega64_128.Ddb
Drawn By:
Adisak Choochan