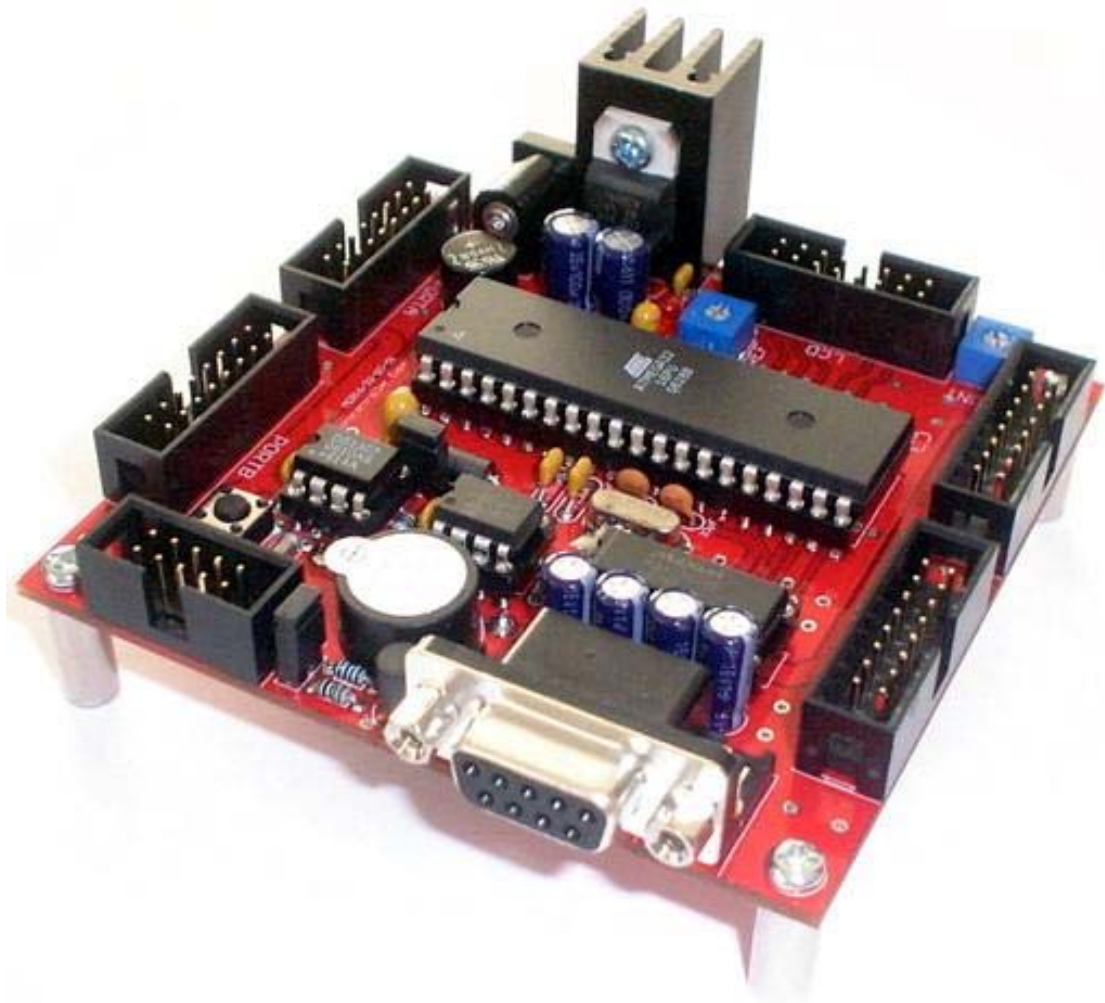


TMEG16

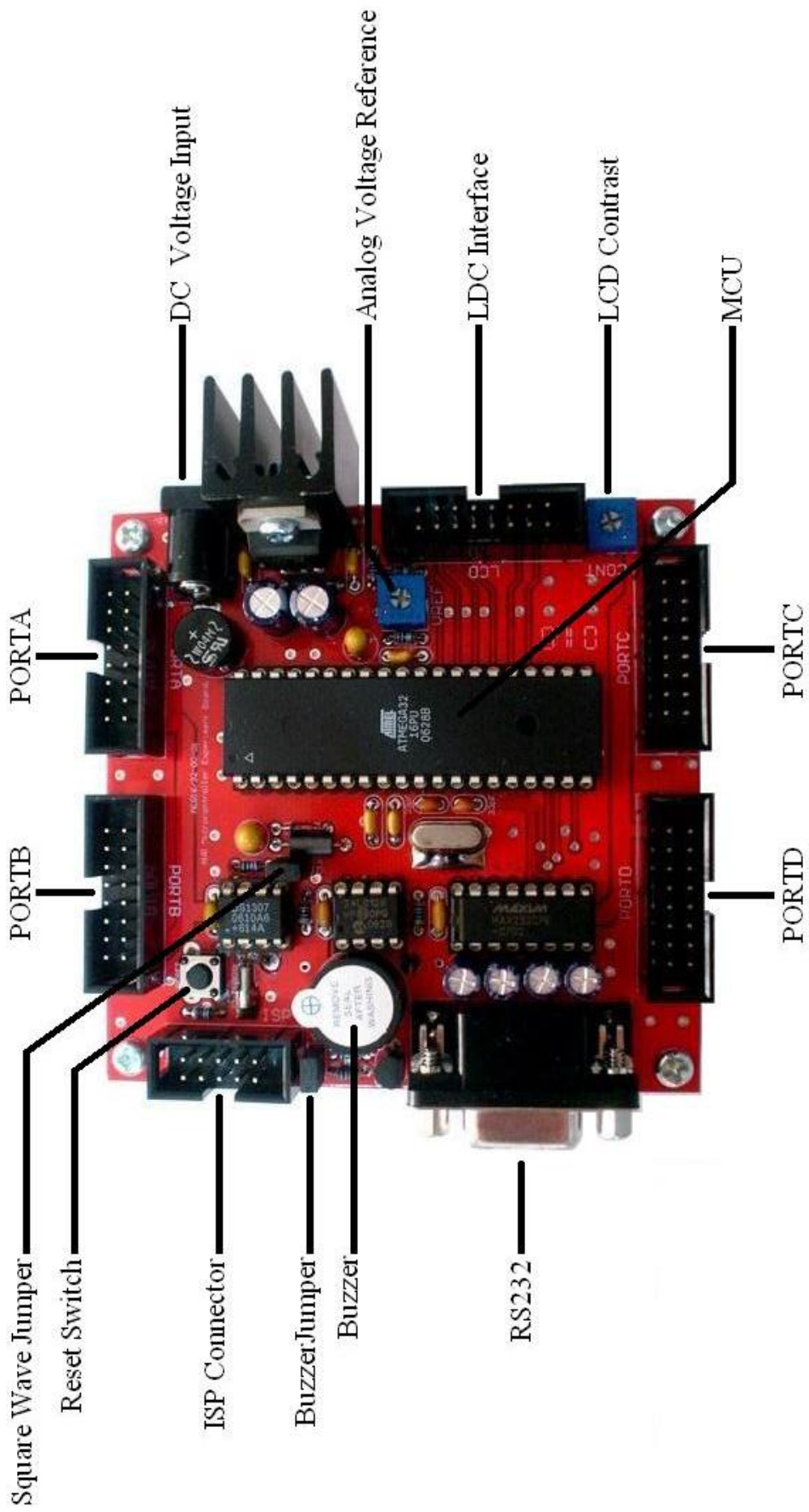
AVR Microcontroller Experiment Board



Specification

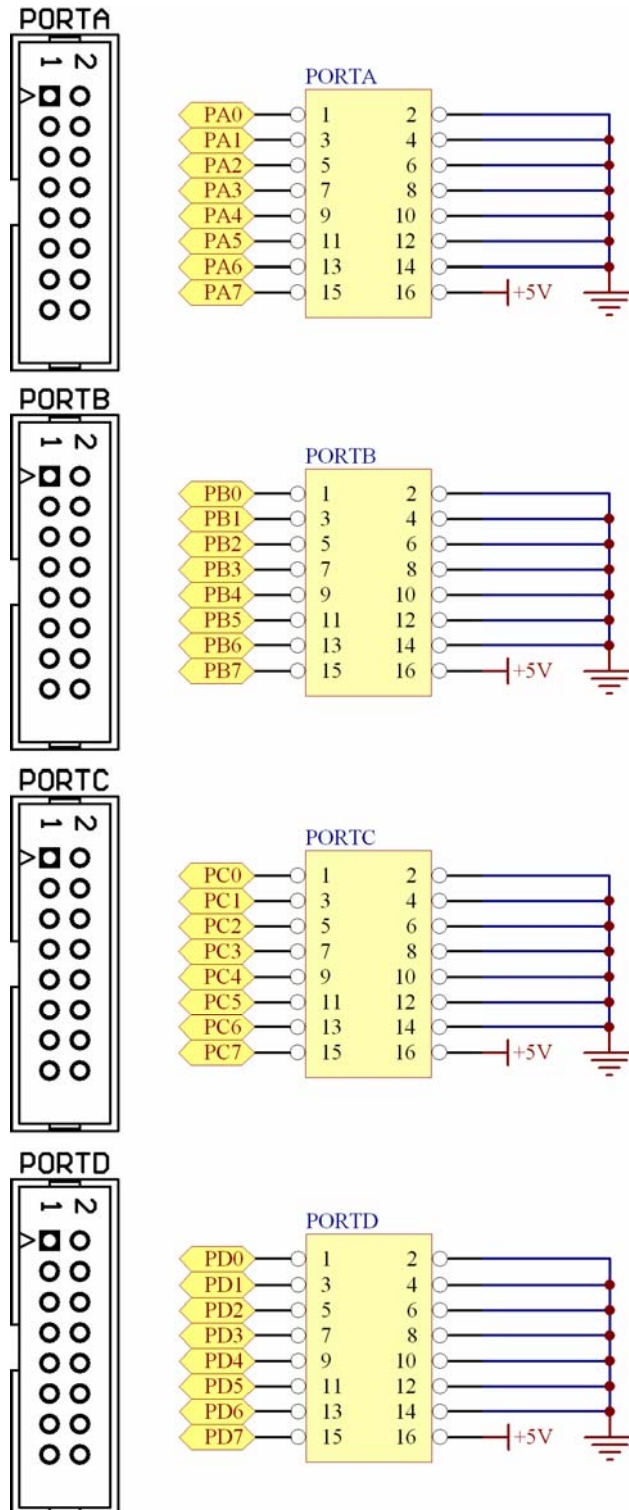
- ATMEGA16 Microcontroller with 8MHz Oscillator
- 8-channel, 10-bit Analog to Digital Converter, Built-in MCU
- 4-I/O PORT Interface, PORTA, PORTB, PORTC and PORTD
- LCD Interface with Contrast Adjustable
- Buzzer
- RTC, DS1307
- 128KB Serial EEPROM, 24LC128
- RS232 Line Driver, MAX232
- Reset Switch
- Support In-System Programming
- Built-in 5V DC Power Supply

BOARD PERIPHERAL



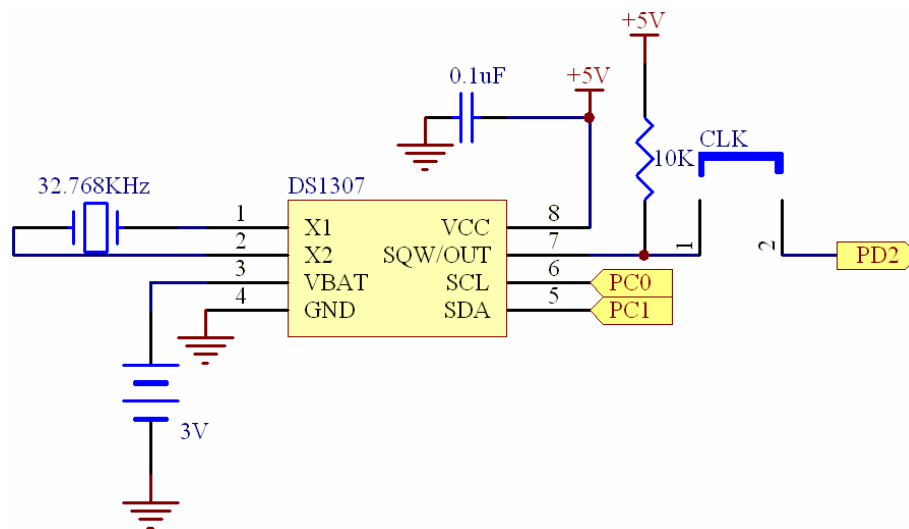
I/O PORT CONNECTOR

TMEG16 board provide 4-IDC connectors for peripheral boards. Each connector is 16-pin IDC connector. The below show the pin connection of each connector.



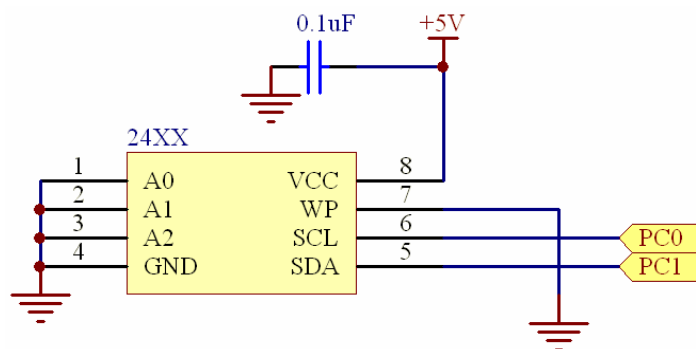
REAL TIME CLOCK (DS1307 RTC)

In the TMEG16 board, the TWI (Two Wire Interface) is the I2C bus that controls the Real Time Clock and the EEPROM. The Real Time Clock needs a 3Volt back-up battery. The jumper (CLK) is used SQW (Square Wave) signal to interrupt pin of MCU. The below is a circuit diagram of the Real Time Clock on the TMEG16 board.



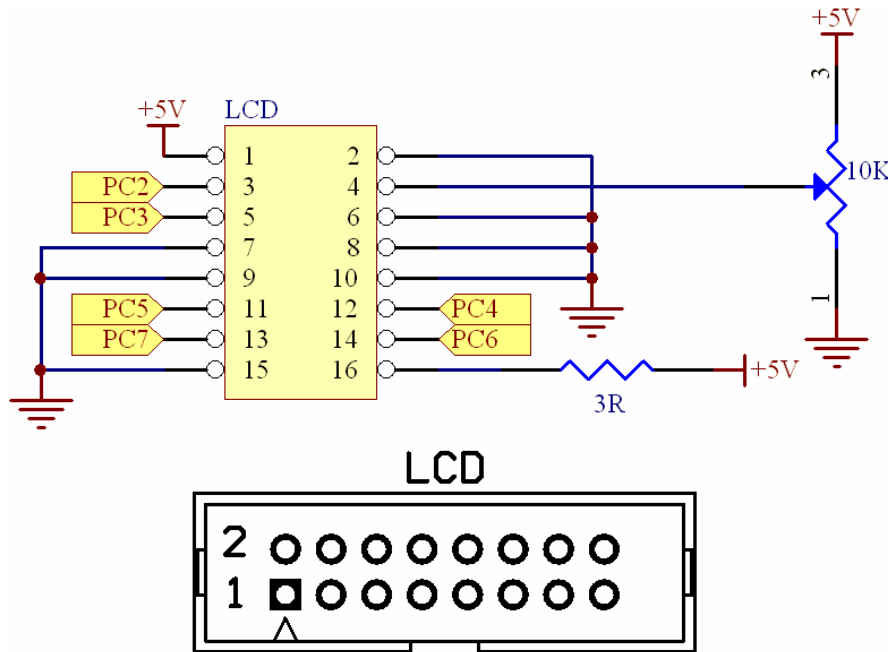
EEPROM

EEPROM in the TMEG16 board used by TWI (Two Wire Interface) port of MCU for read and write the EEPROM. The below is a circuit diagram of the EEPROM interface on the TMEG16 board.



LCD INTERFACE

LCD interface by 4-bit mode. You can adjustable the LCD contrast by potentiometer resistor 10K. If the LCD Module with LED black-light. LED black-light current limit by 3 ohm resistor. You can change the resistor for difference LED black-light current.

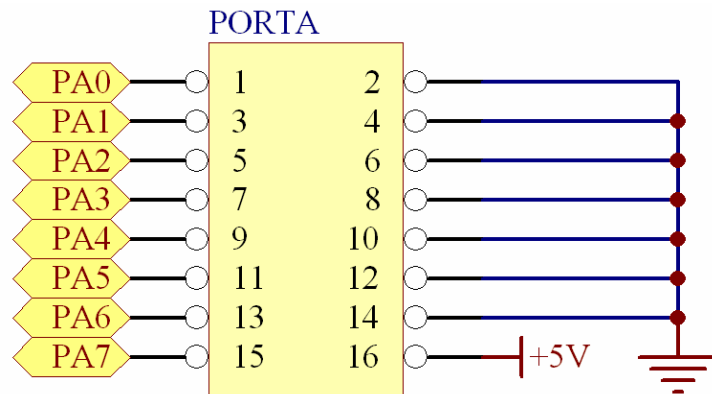


LCD IDC Connector Pin Assignment

IDC	Name	Connection
1	VDD	+5V
2	VSS	GND
3	RS	PC2
4	VO	POT 10K LCD Contrast
5	E	PC3
6	R/W	GND
7	D1	GND
8	D0	GND
9	D3	GND
10	D2	GND
11	D5	PC5
12	D4	PC4
13	D7	PC7
14	D6	PC6
15	BL-	GND
16	BL+	Current limit resistor

ANALOG TO DIGITAL CONVERTER

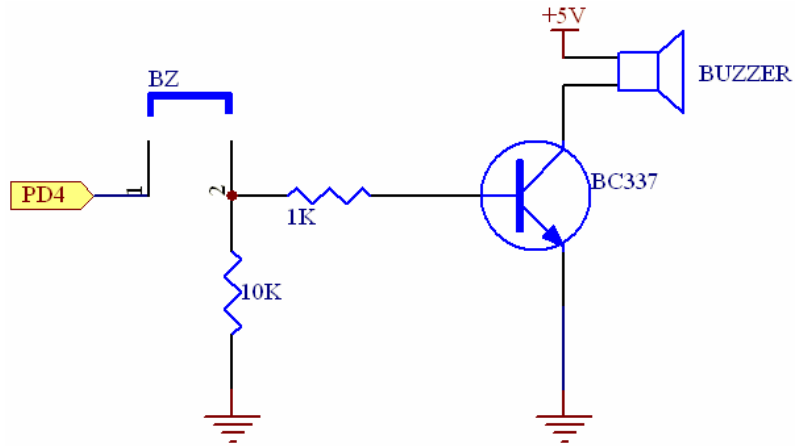
You can use Analog to Digital Converter from MCU PORTA. The Analog to Digital Converter is 10-bit 8-channel that you can select in single-end or difference mode. The ADC convert analog signal input to digital signal. The digital signal is 1024 value for 10-bit ADC. The voltage reference is selected between internal or external. If select external voltage reference, you can adjust the voltage reference by potentiometer 10K on the control from 0-5V (see board peripheral page)



MCU PORTA	ACD Channel
PA0	ADC0
PA1	ADC1
PA2	ADC2
PA3	ADC3
PA4	ADC4
PA5	ADC5
PA6	ADC6
PA7	ADC7

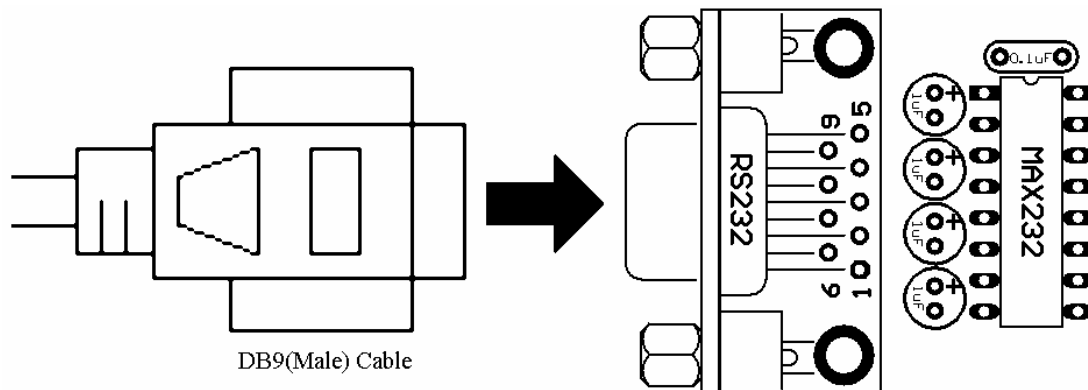
BUZZER

The buzzer is control by PD4. The buzzer need BZ jumper.



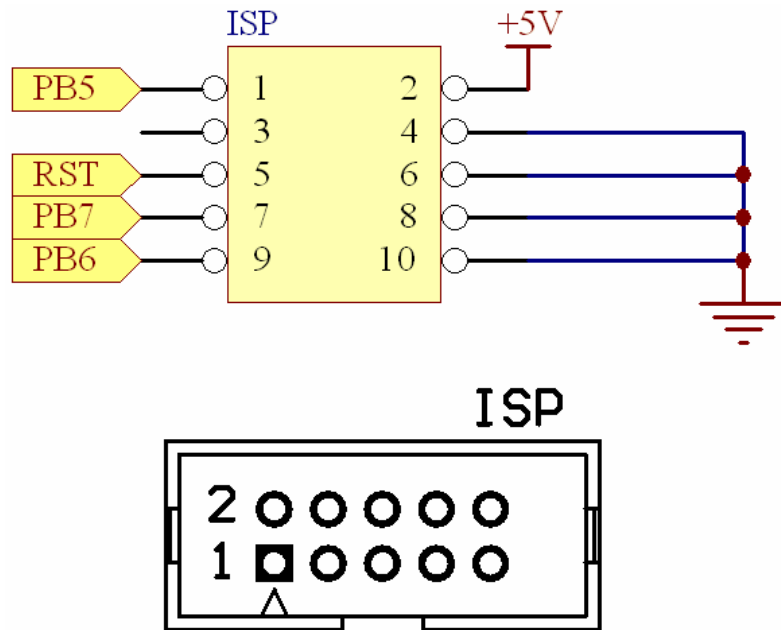
RS232

TMEG16 board provide the RS232 line driver and connector for serial communication. In the development can use connect between TMEG16 board and the computer.



ISP CONNECTOR

ISP 10-pin IDC connector use for programming software application in to the MCU. The below is a circuit diagram of the ISP interface on the TMEG16 board.



ISP Connector	MCU PORT(Name)
1	PB5(MOSI)
2	+5V
3	-
4	GND
5	RESET
6	GND
7	PB7(SCK)
8	GND
9	PB6(MISO)
10	GND

POWER SUPPLY

+5V power supply built-in TMEG16 board. Power supply circuit used 7805 linear regulator IC. TMEG16 board provide the DC-Jack connector for plug-in 9-12VDC and show the LED power. The below is a circuit diagram of the power supply on the TMEG16 board.

