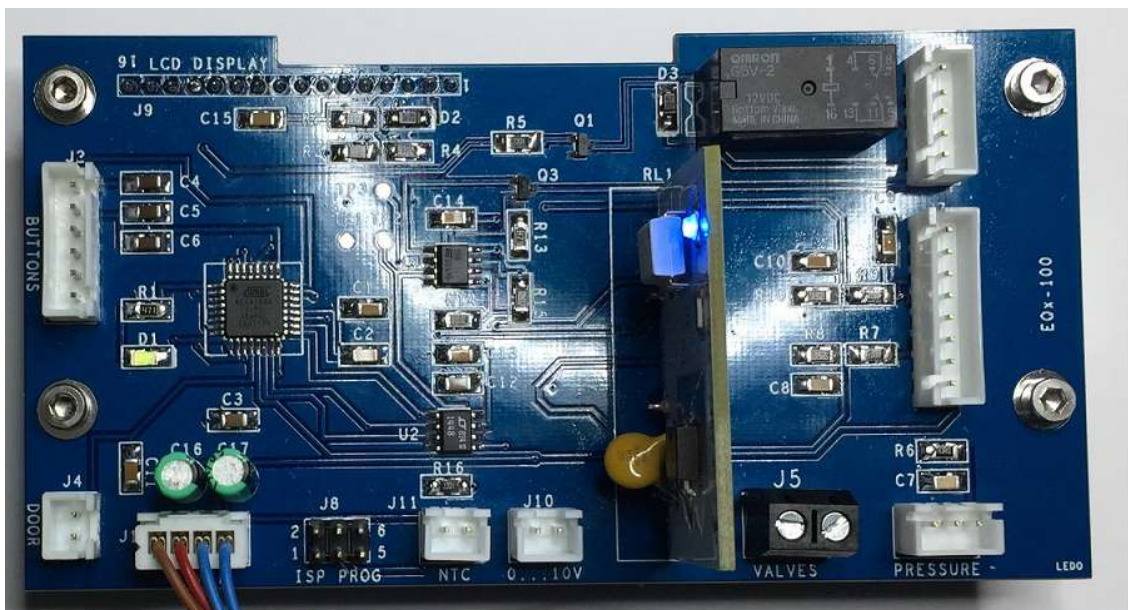


ATMEGA168A APPLICATION BOARD

Compact and multifunctional control system based on the Atmel microcontroller (now Microchip) ATmega168A.

It has the necessary resources for the control and monitoring of simple processes, in an elegant way, with everything in a single plate. Temperature control, Motor start, stop and speed regulation by means of an inverter. Reading of analog and digital signals, etc. The chip can be programmed in situ using a standard six-pin ISP connector.



- **Standard connection for 14/16-pin LCD display with or without Back Light**
- **Connector for two control buttons**
- **Connector for NTC temperature sensor**
- **Seventh 10 bits analog or digitals I / O**
- **One analog input 4-20 mA**
- **One analog output 4-20 mA**
- **One analog output 0...10V**
- **One output 240V / 3A AC for AC Load**
- **A potential free mechanical relay output. 100V / 1A**
- **Requires to be powered with +5.0V / 100 mA and +12V / 50 mA**
- **SPI and I2C Interfaces presents in connectors**
- **Libraries and sample code**
- **Custom programming**
- **ISP programming with AVRISP-MKii, Atmel ICE etc.**
- **On board Atmega168A CPU**

Applications

- **Temperature control (Incubators, Refrigerators).**
- **Programmed control of a motor with Inverter.**
- **Timer.**
- **Automatic pumping.**
- **Automation control.**
- **Ventilation system.**
- **Dosage.**
- **Wave generator in different ways, up to a frequency of 1 MHz.**
- **PWM control.**
- **PID control.**
- **Pulse counter**
- **Student training kit**

Schematics.

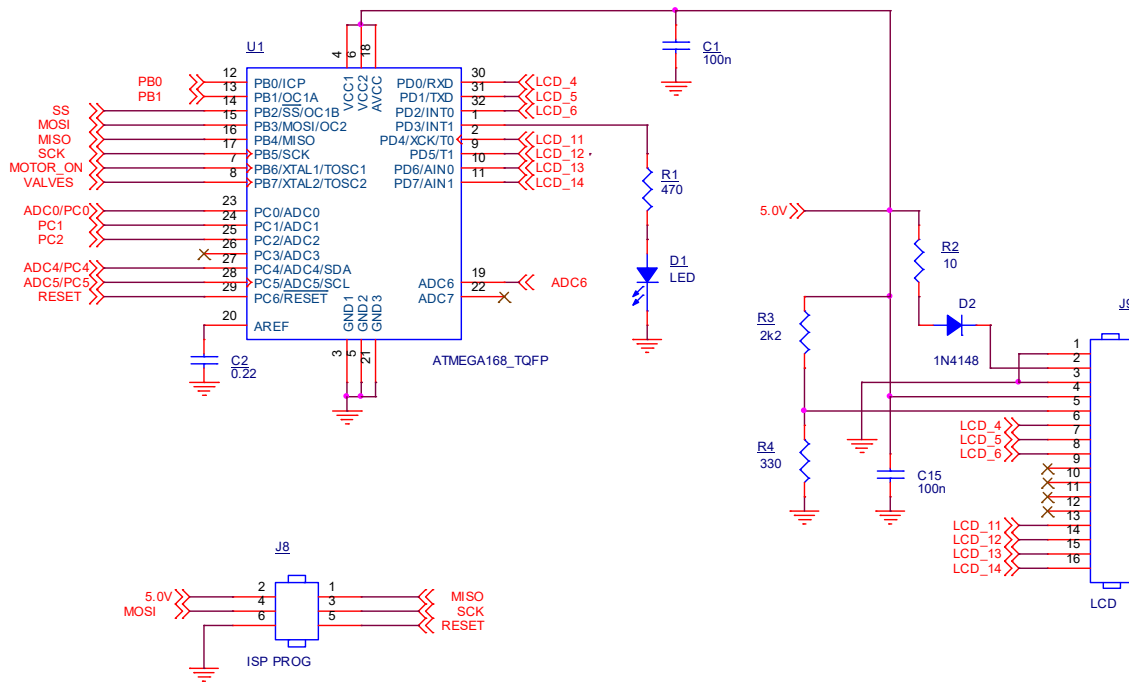


Fig.1. CPU y LCD.

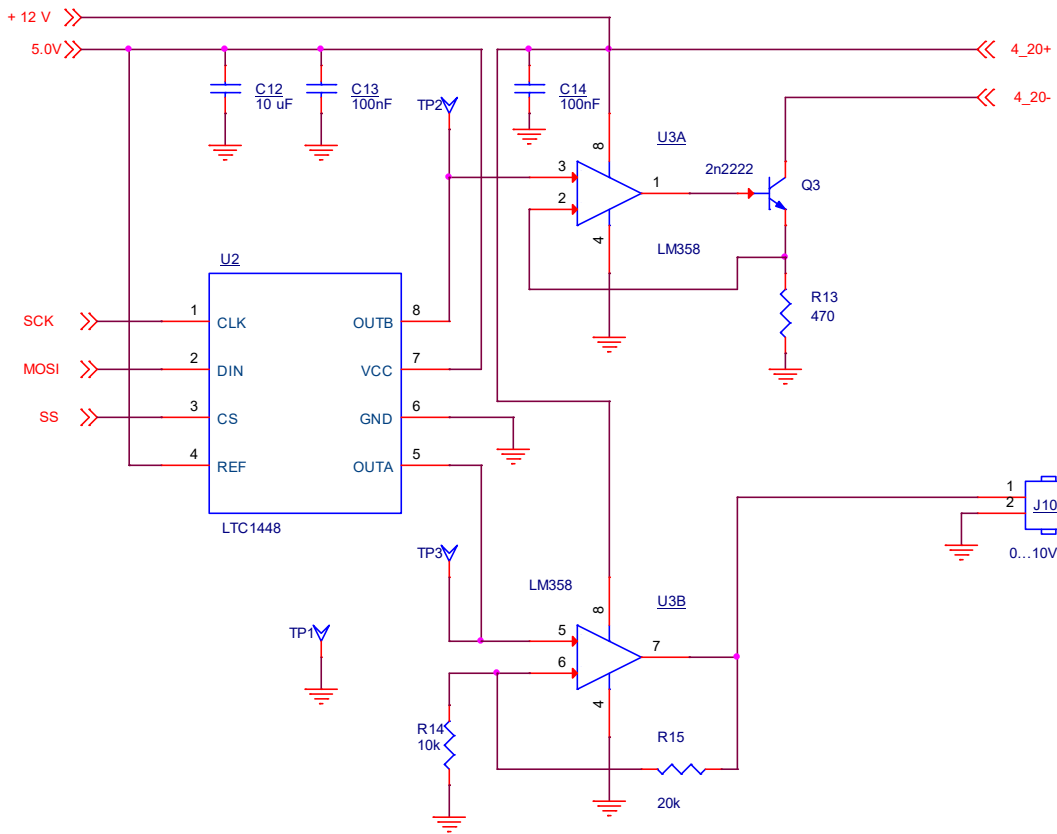


Fig.2. Analog Outputs.

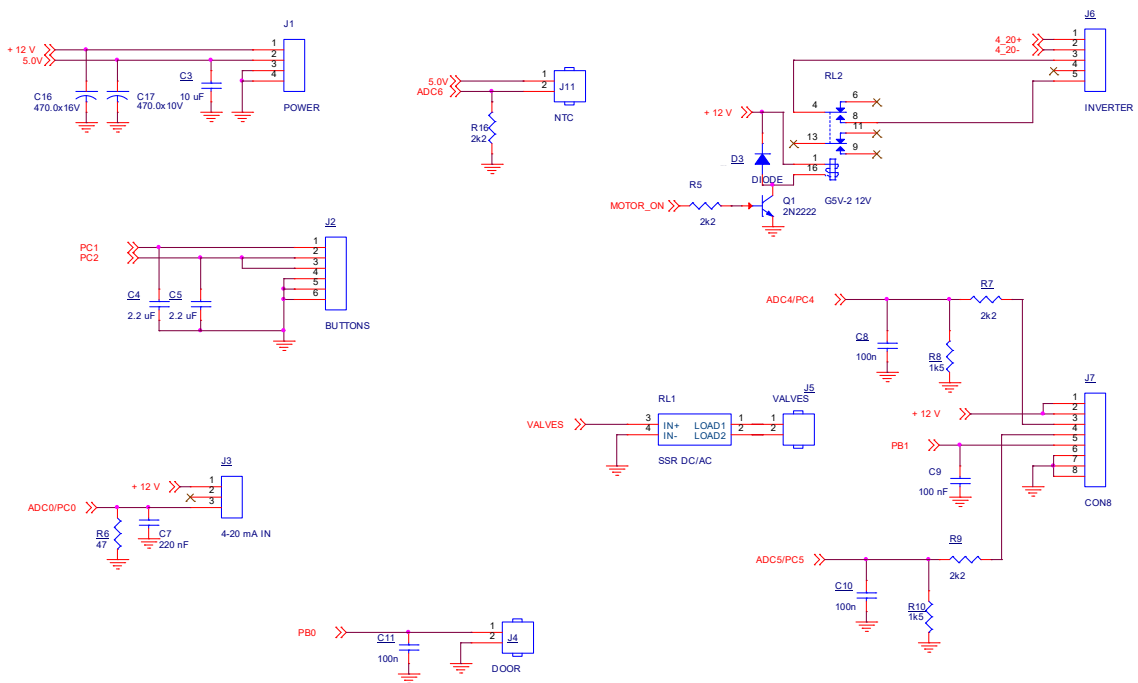


Fig.3. Connectors.

CONNECTOR	PORT	FUNCTION	ALTERNATIVE
J1			
J1-1		+12V	
J1-2		+5.0V	
J1-3		GND	
J1-4		GND	
J2			
J2-1	PC1	I / O	ADC1
J2-2	PC2	I / O	ADC2
J2-3		NC	
J2-4		GND	
J2-5		GND	
J2-6		GND	
J3			
J3-1		+12V	
J3-2		NC	
J3-3	PC0	I / O	ADC0
J4			
J4-1	PB0	I / O	ICP
J4-2		GND	
J5			
J5-1		SOLID AC1	
J5-2		SOLID AC2	
J6			
J6-1		4_20 mA I+	
J6-2		4_20 mA I-	
J6-3		RELE K1.1	
J6-4		NC	
J6-5		RELE K1.2	
J7			
J7-1		+12V	
J7-2		+12V	
J7-3	PC4	ADC4	I2C_SDA
J7-4	PC5	ADC5	I2C_SCL
J7-5	PB1		
J7-6		GND	
J7-7		GND	
J7-8		GND	
J8			
J8-1	PB4		MISO
J8-2		+5.0V	
J8-3	PB5	I / O	SCK
J8-4	PB3	I / O	MOSI

J8-5	PC6	I / O	RESET
J8-6		GND	
J9			
J9-1		GND	
J9-2		LED ANODE	
J9-3		GND	
J9-4		+5.0V	
J9-5		CONTRAST	
J9-6	PD0	LCD_RS	
J9-7	PD1	LCD_RW	
J9-8	PD2	LCD_EN	
J9-9		NC	
J9-10		NC	
J9-11		NC	
J9-12		NC	
J9-13	PD4	LCD_DATA4	
J9-14	PD5	LCD_DATA5	
J9-15	PD6	LCD_DATA6	
J9-16	PD7	LCD_DATA7	
J10			
J10-1		0...10V OUT	
J10-2		GND	

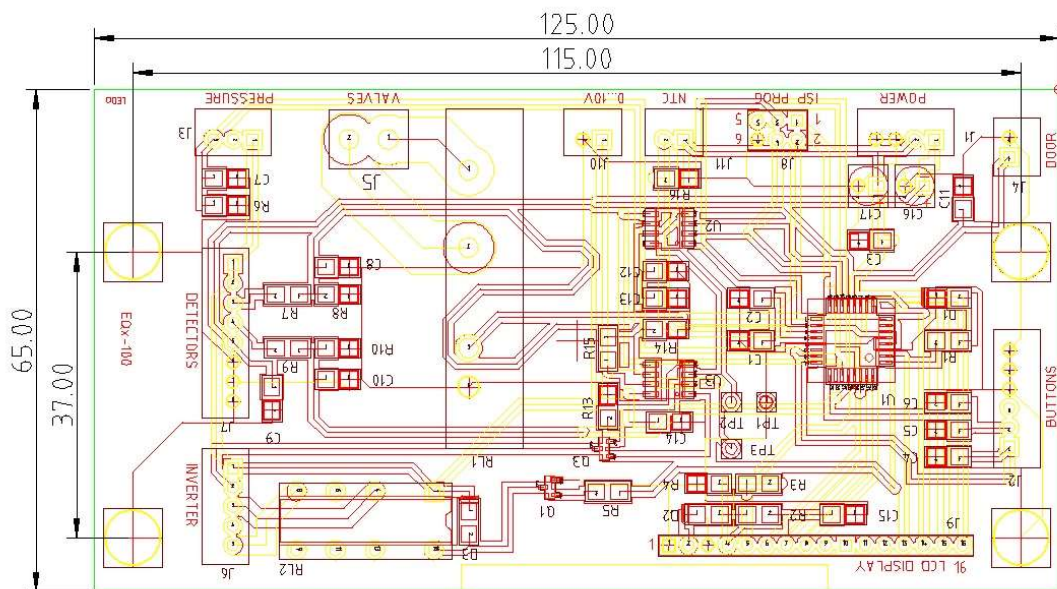


Fig.4. Board outline.