

ICP05V1.2

- iBoard Lite

## 1. Introduction and overview

iCP05 offers unprecedented level of performance, reliability and scalability for Microchip PIC IO Kit solution. By the same time, it allows users to program their hex code into the well-known 28-Pin Flash PIC MCU by using commonplace ICSP (In-Circuit Serial Programming) connection method. The features of iCP05 are listed as followings.

- Easy interfacing, high performance and user friendly device
- Used for programming the popular 28-Pin Flash PIC MCU, includes PIC16F and PIC18F family
- Excellent flexibility that allows user to expand the board with plug and play modules

### iBoard Features:

- **NCP1117** - provide **+5V or +3.3V Mode** voltage selection to PIC Microcontroller
- **20MHz crystal** - allow PIC run at maximum speed
- **Tact Switch** - PIC reset circuit
- **On/Off button** - power on off switch
- **Green LED** - power on indicator
- **Red LED** - 3.3V mode
- **Screw Terminal** - direct wiring connection (battery connection)
- **VS1 and VS2** - different input power supply (PIC supply and external module supply)
- **ICSP Connector** - on-board PIC programming
- **LCD Display Port** - direct LCD connection with LED backlight control  
(LCD Module is not provided)
- **28-Pin IC Socket** - board-mounted female connectors
- **Supply Measurement** - detect input voltage level

### Peripheral Features:

- **IO Port** (VDD - IO1 - IO2 - IO3 - IO4 - GND) - 5 channels
- **IO Port** (VSS - IO1 - IO2 - IO3 - IO4 - GND) - 3 channels
- **Analog Port** (GND - VDD - ADC) - 8 channels
- **Servo Motor Port** (GND - VSS - IO) - 4 channels
- **SPI/I2C/USART/PS2/USB Port:**  
(VDD - IO1 - IO2 - IO3 - IO4 - GND) + (VSS - IO5 - IO6 - IO7 - IO8 - GND) - 1 channel
- **Stepper Motor Port** (ULN2003A – 500mA Darlington driver):  
(VDD - O1 - O2 - O3 - O4 - GND) + (VSS - O5 - O6 - O7 - IO8 - GND) - 1 channel
- **DC Motor Port** (L293D – with speed and direction (forward/reverse) control):  
(VDD - O1 - PWM2 - PWM1 - O2 - GND) + (VSS - IO3 - IO4 - IO7 - IO8 - GND) - 1 channel
- **Boost/Buck Converter** (VS1 - VS1 - GND - GND - VS2 - VS2) - 1 channel

- **Off-board On/Off Switch** - SW1 (VS1 Power Supply), SW2 (VS2 Power Supply)

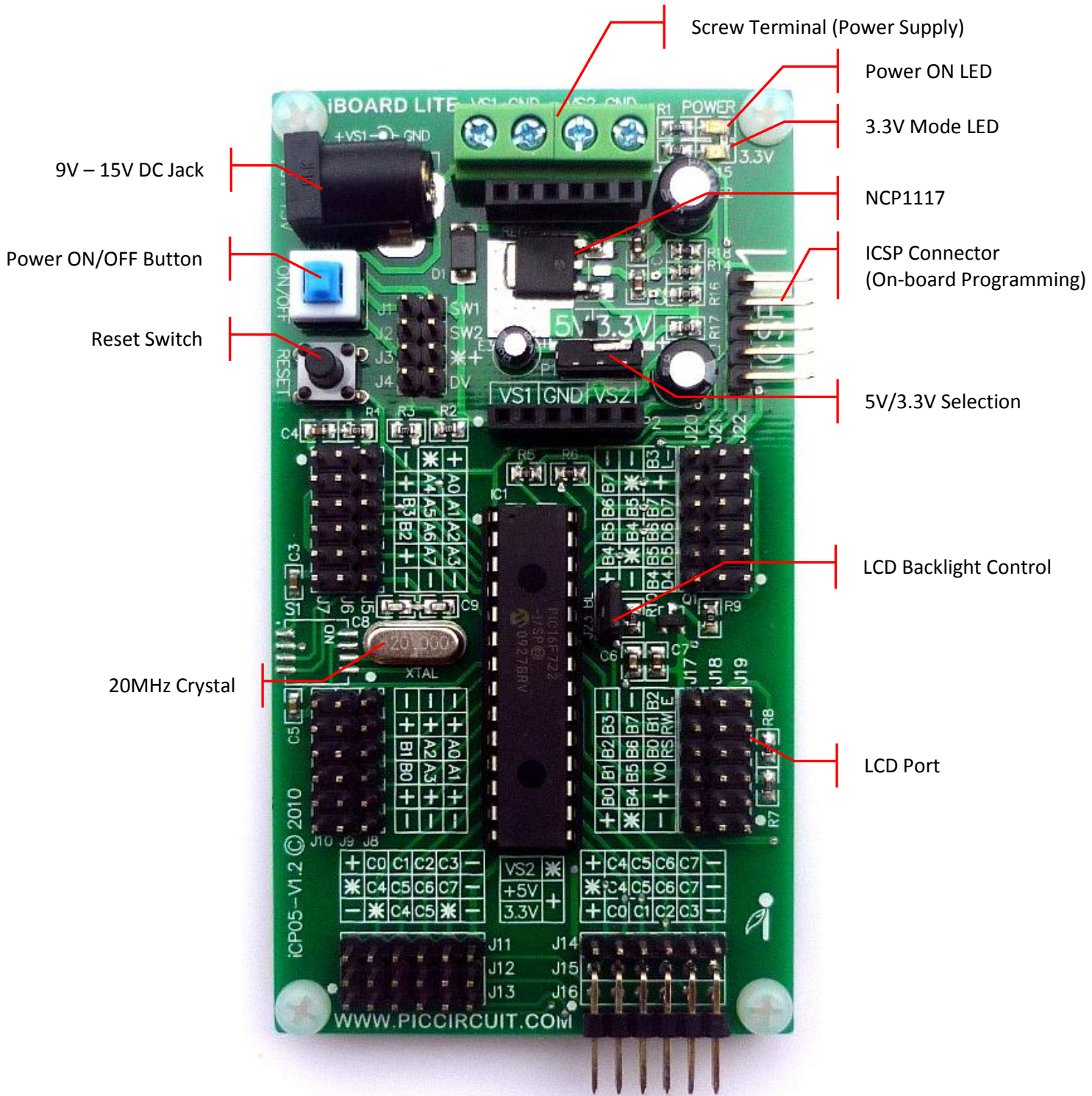
## Dimension:

- Dimension: 10cm X 5.5cm
- Standard 2.54mm Pin Socket for ICSP connection

## Support Devices:

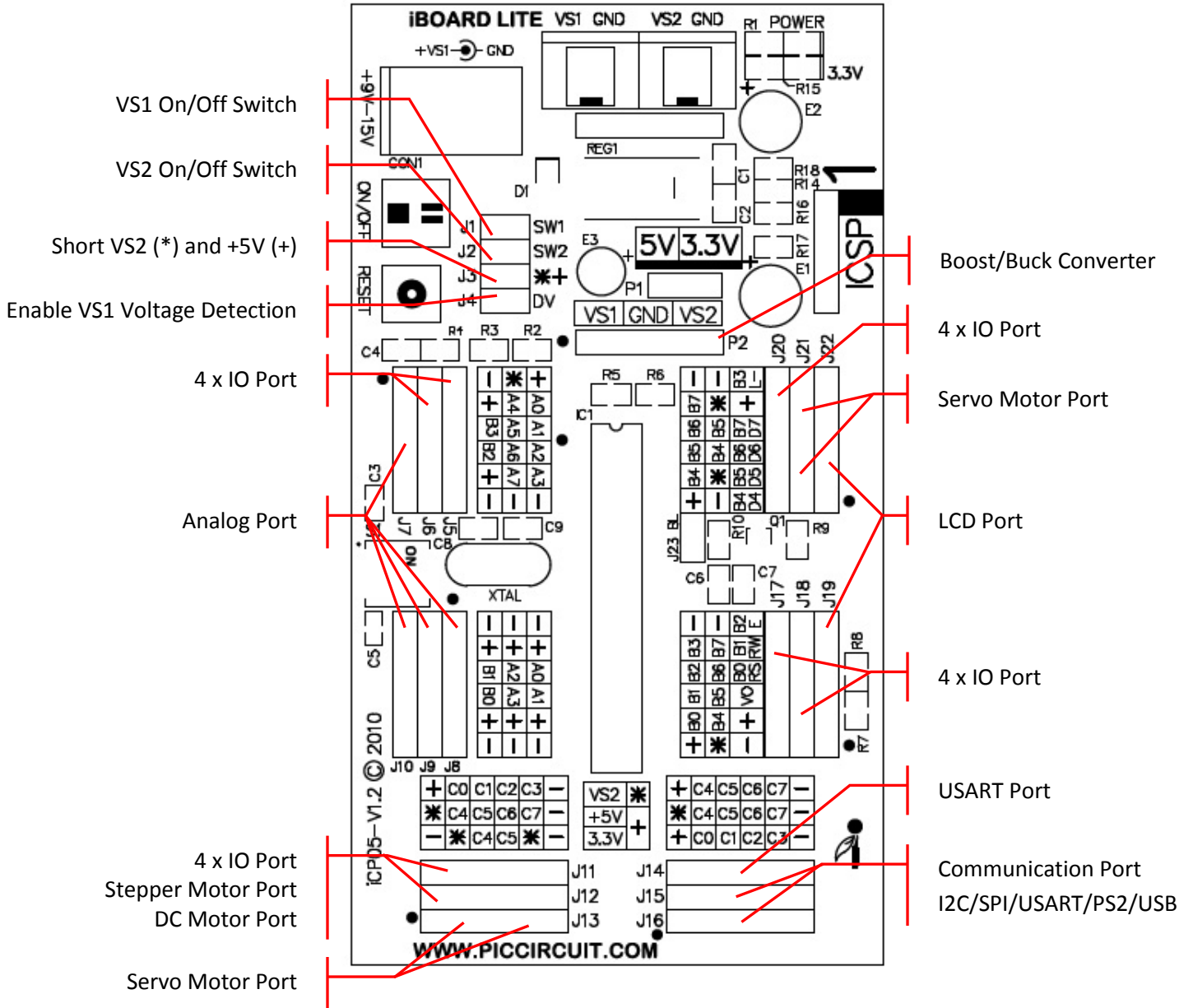
- **28-Pin PIC MCU:** PIC16F57, PIC16F72, PIC16F73, PIC16F722, PIC16F723, PIC16F726, PIC16F737, PIC16F767, PIC16F870, PIC16F872, PIC16F873A, PIC16F882, PIC16F883, PIC16F886, PIC16F913, PIC16F916, PIC16F1933, PIC16F1936, PIC16F1938, PIC18F2220, PIC18F2221, PIC18F2320, PIC18F2321, PIC18F2331, PIC18F2410, PIC18F2420, PIC18F2423, PIC18F2431, PIC18F2450, PIC18F2455, PIC18F2458, PIC18F2480, PIC18F2510, PIC18F2515, PIC18F2520, PIC18F2523, PIC18F2525, PIC18F2550, PIC18F2553, PIC18F2580, PIC18F2585, PIC18F2610, PIC18F2620, PIC18F2680, PIC18F2682, PIC18F2685

## 1.1 iBoard layout

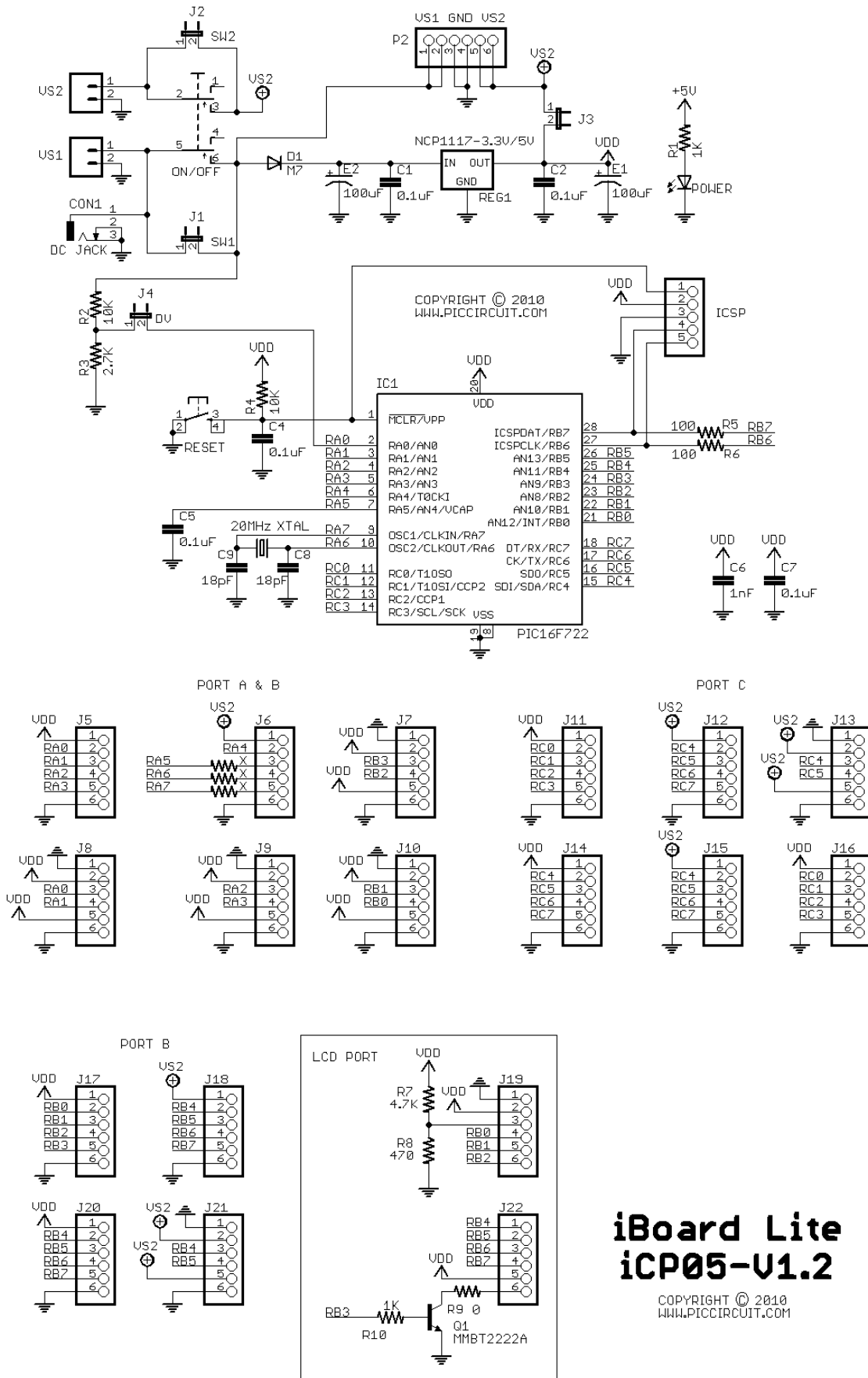




## 1.2 Peripheral layout



## 2. Schematic Diagram



## iBoard Lite ICP05-U1.2

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### 3. Peripheral Connection

Port	Label	Description
J1	SW1	Off board On/Off Switch for supply VS1
J2	SW2	Off board On/Off Switch for supply VS2
J3	*+	Connect VS2(*) to +5V(+) <b>Do not short it if VS2 is connected to external supply</b>
J4	DV	Enable VS1 Voltage Detection

#### IO Port

Port	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Description
J5	+	A0	A1	A2	A3	-	Digital I/O
J6	*	A4	A5	A6	A7	-	Digital I/O
J11	+	C0	C1	C2	C3	-	Digital I/O
J12	*	C4	C5	C6	C7	-	Digital I/O
J14	+	C4	C5	C6	C7	-	Digital I/O
J17	+	B0	B1	B2	B3	-	Digital I/O
J18	*	B4	B5	B6	B7	-	Digital I/O
J20	+	B4	B5	B6	B7	-	Digital I/O

#### Sensor/Analog Port

Port	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Description
J7A	-	+	B3				AN9
J7B				B2	+	-	AN8
J8A	-	+	A0				AN0
J8B				A1	+	-	AN1
J9A	-	+	A2				AN2
J9B				A3	+	-	AN3
J10A	-	+	B1				AN10
J10B				B0	+	-	AN12

#### Servo Motor Port

Port	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Description
J13A	-	*	C4				Servo Motor Port
J13B				C5	*	-	Servo Motor Port
J21A	-	*	B4				Servo Motor Port
J21B				B5	*	-	Servo Motor Port

#### Communication Port

Port	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Description
J14	+	C4	C5	C6/TX	C7/RX	-	USART Port
J15	*	C4/SDA	C5/SDO	C6/TX	C7/RX	-	SPI/I2C/PS2/USART/USB Port
J16	+	C0	C1	C2/SS	C3/SCL	-	

#### Motor Driver Port

Port	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Description
J11	+	C0	C1	C2	C3	-	Stepper Motor
J12	*	C4	C5	C6	C7	-	
J11	+	C0	C1/PWM2	C2/PWM1	C3	-	DC Motor
J12	*	C4	C5	C6	C7	-	

## LCD Port

Port	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Description
<b>J19</b>	-	+	<b>VO</b>	<b>B0/RS</b>	<b>B1/RW</b>	<b>B2/E</b>	LCD Command Port
<b>J22</b>	<b>B4/D4</b>	<b>B5/D5</b>	<b>B6/D6</b>	<b>B7/D7</b>	+	<b>B3/L-</b>	LCD Data Port



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