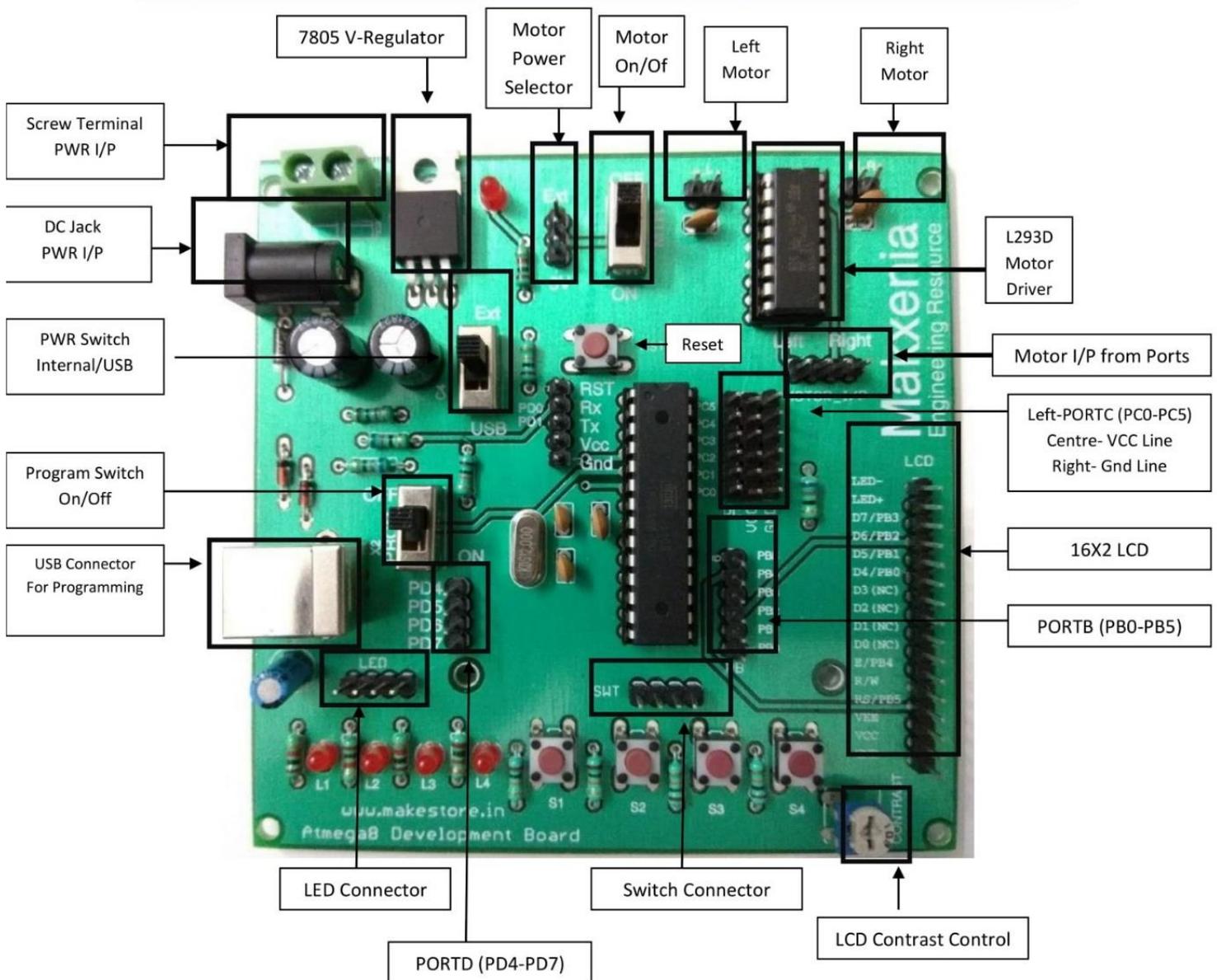# Atmega8 Development Board

AVR Atmega8 Development Board - is especially designed for the students having interest in electronics, embedded system, robotics and industrial-automation. This board is made in such a way that it becomes easier for anybody to learn about AVR micro controllers. This board can also be used in various applications and hobby projects.

Features:

- ✓ Includes Atmel's ATmega8 Microcontroller with 8kb flash memory working at 12MIPS.
- ✓ On-board LCD interface (it can also be used for any other general purpose application).
- ✓ On-board Motor Driver for connecting 2 DC motors or 1 Stepper motors
- ✓ On-board regulated power supply.
- ✓ PC interface through UART.
- ✓ Exposed all 18 I/O pins.
- ✓ Exposed 6 channel I/O pins for ADC
- ✓ Exposed 7 Power Pins for sensors and other peripherals with 5V/1A supply.
- ✓ Exposed 6 channel I/O pins for servo, sensors and other peripherals with dual power supply.
- ✓ Four tact switches for external input and one for reset.
- ✓ Four mounted LEDs for status and debugging purpose.
- ✓ Supply indicator LEDs.
- ✓ Dual power supply through DC source (7V to 16V) or USB powered.
- ✓ On board USB programmer (Bootloader)
- ✓ Exposed ISP pins for programming.

MICROCONTROLLER:

It is a microcontroller chip which stores our programs executes them and takes necessary action. The chip used here is Atmel popular AVR micro controller Atmega8.

7805 VOLTAGE REGULATOR:

It is a three terminal 5V voltage regulator IC used to provide a constant voltage supply of 5V to the micro controller and other peripherals (i.e. sensors etc.) attached in the main board.

L293D MOTOR DRIVER:

This is basically a motor driver IC which takes input from microcontroller and is able to drive the DC and stepper motors by using separate power supply.

16 X 2/16 X 1 LCD INTERFACEs:

The LCD interface can be use to interface any 16x2 or 16x1 character LCD display in 4 bit mode. The LCD display can be used to display any message, status or also can be used for debugging purpose. Contrast can be controlled using Contrast trimmer.

The pin connections for interfacing an LCD to the board are given below:

D0- D3	NOT CONNECTED
D4	PortB0
D5	PortB1
D6	PortB2
D7	PortB3
RS	PortB4
RW	Ground
EN	PortB5

SWITCHES:

Four tact switches along with a Reset switch are present on the board in order to provide an external input to the board. The switch o/p are brought out at SWT Pins.

RST (Reset switch):

The Reset switch is basically used to reset a running program right to the beginning it is same as the reset switch of a PC.

POWER (Power On Switch):

It is basically a toggle switch used to provide power supply to the main board. The power can be supplied either externally (Battery or Adapter) or can be USB powered. Thus, the POWER switch can be made to toggle between External or USB Power.

PROG (Programming Switch):

It is also a toggle switch for programming the microcontroller using on board USB programmer. For programming mode it should be ON then RESET button should be pressed for a small time period. For normal operation it should be off.

POWER SUPPLY:

Board can be powered externally by either DC female jack or by screw terminal. External supply passes through 7805 voltage regulator and provide the constant 5v to uC.

USB Connector socket:

It is basically used for USB communication with the PC. It also provides necessary logic supply to the motherboard. In order to use the USB supply the POWER switch should be toggled towards UP (USB power).

LED's:

Four general purpose active high 3mm red LED's on board and a red Power ON indicator LED.

ISP (IN-SYSTEM PROGRAMMING) INTERFACE:

It is the In-System Programming interface of the main board which can be used to connect any ISP programmer to download the programs in the microcontroller. It can also be used in SPI (Serial Peripheral Interface) communication. The pins provided for ISP are given below:

MOSI (Master Out Slave in Port)	B3
MISO (Master in Slave out Port)	B4
SCK (Serial clock Port)	B5
RST	Reset
GND	Ground