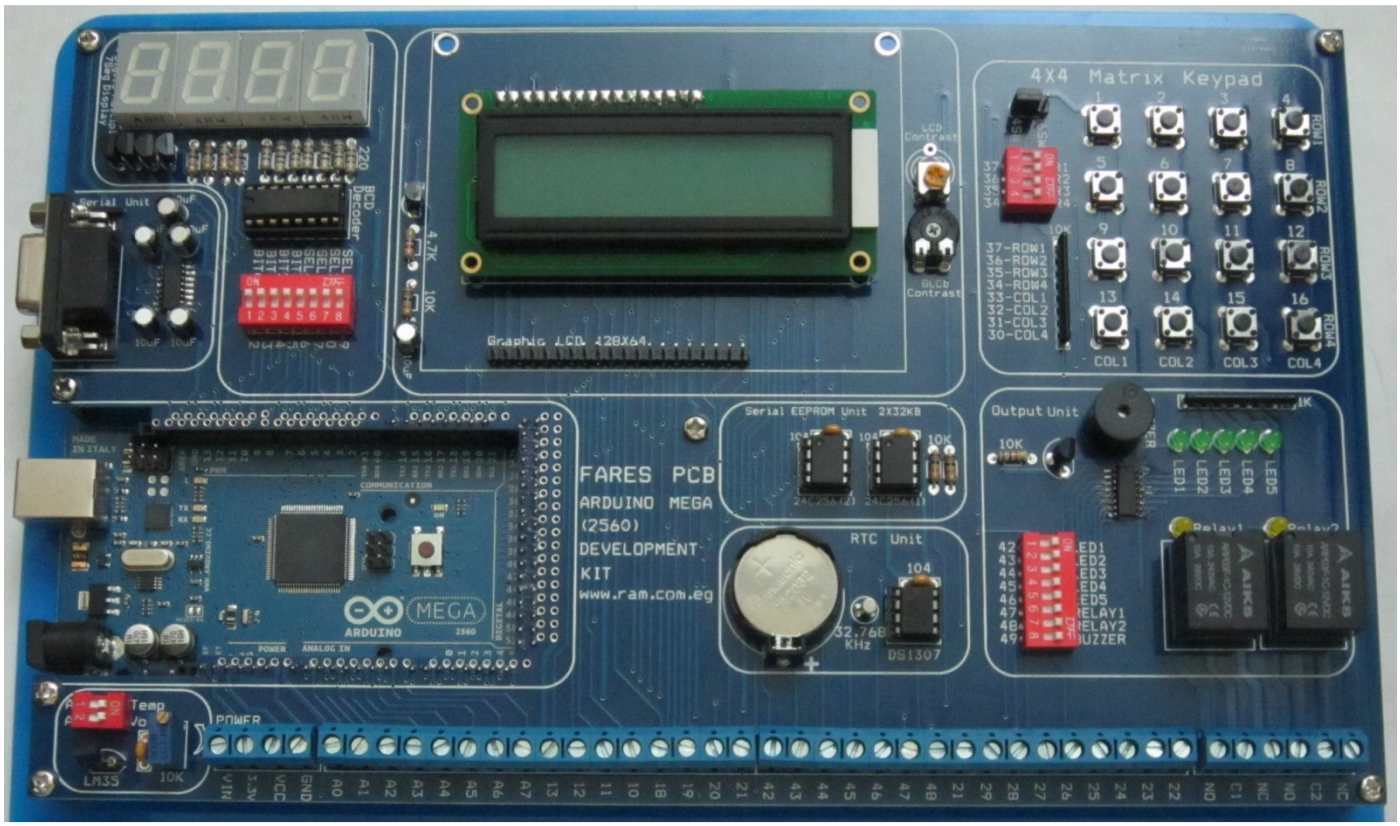
The Arduino Mega 2560 board is a microcontroller board based on the ATmega2560 microcontroller. It has 54 digital input/output pins (of which 14 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with AC-to-DC adapter or battery to get started.

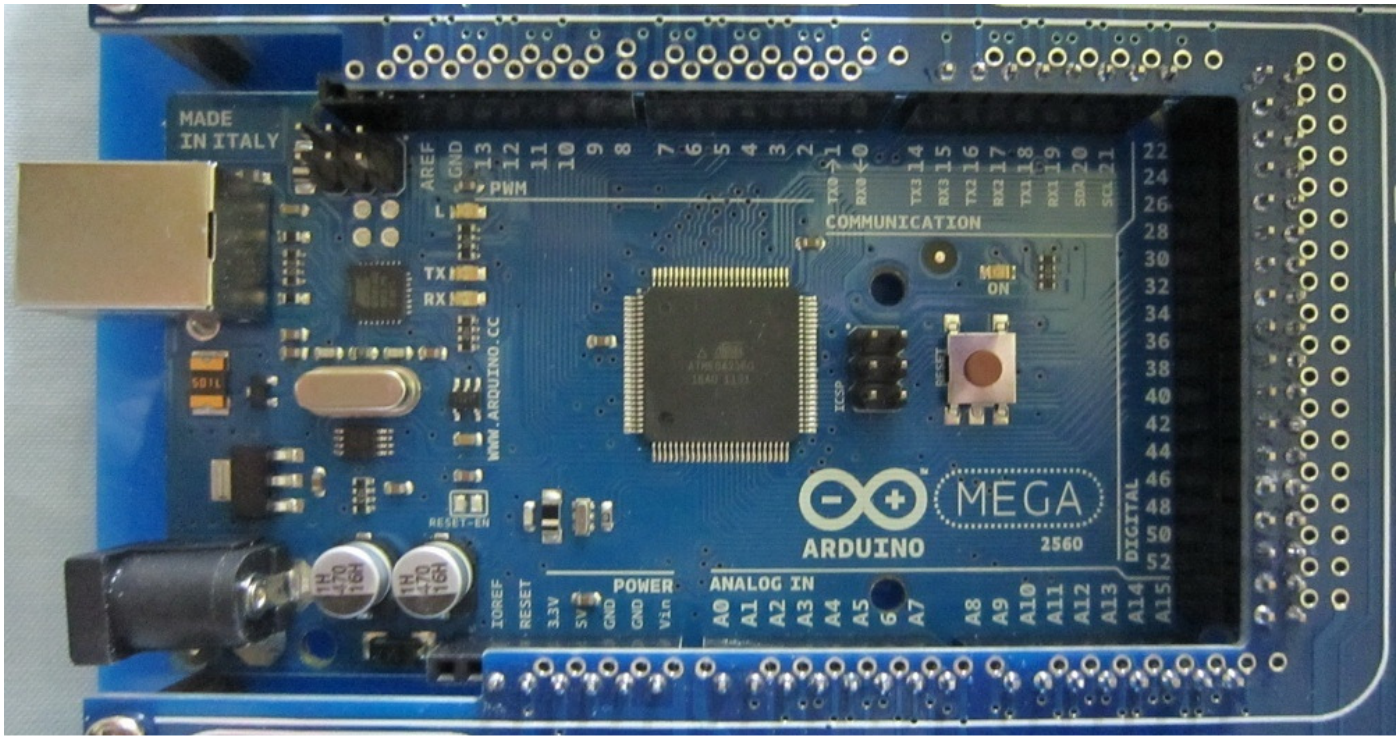
Arduino Mega 2560 Kit is a comprehensive development kit that enables easy interfacing many devices to Mega2560 board. Mega 2560 Kit contains 16 switches, LCD , graphic LCD , Seven segments , RS232 serial interface, 64KB(2x32KB) Serial EEPROM , RTC(DS1307) , Relays , LEDs , Buzzer , Analog Input ,Temperature sensor.



Arduino Mega 2560 Kit Specifications

1 – Arduino Mega 2560 Board

- ATMEGA2560 Microcontroller.
- Input power supply (12 – 17 volt / 1A).
- USB connector for microcontroller Programming and serial communication.
- 16MHz crystal speed.
- Push button reset switch.



2 – Keypad Module

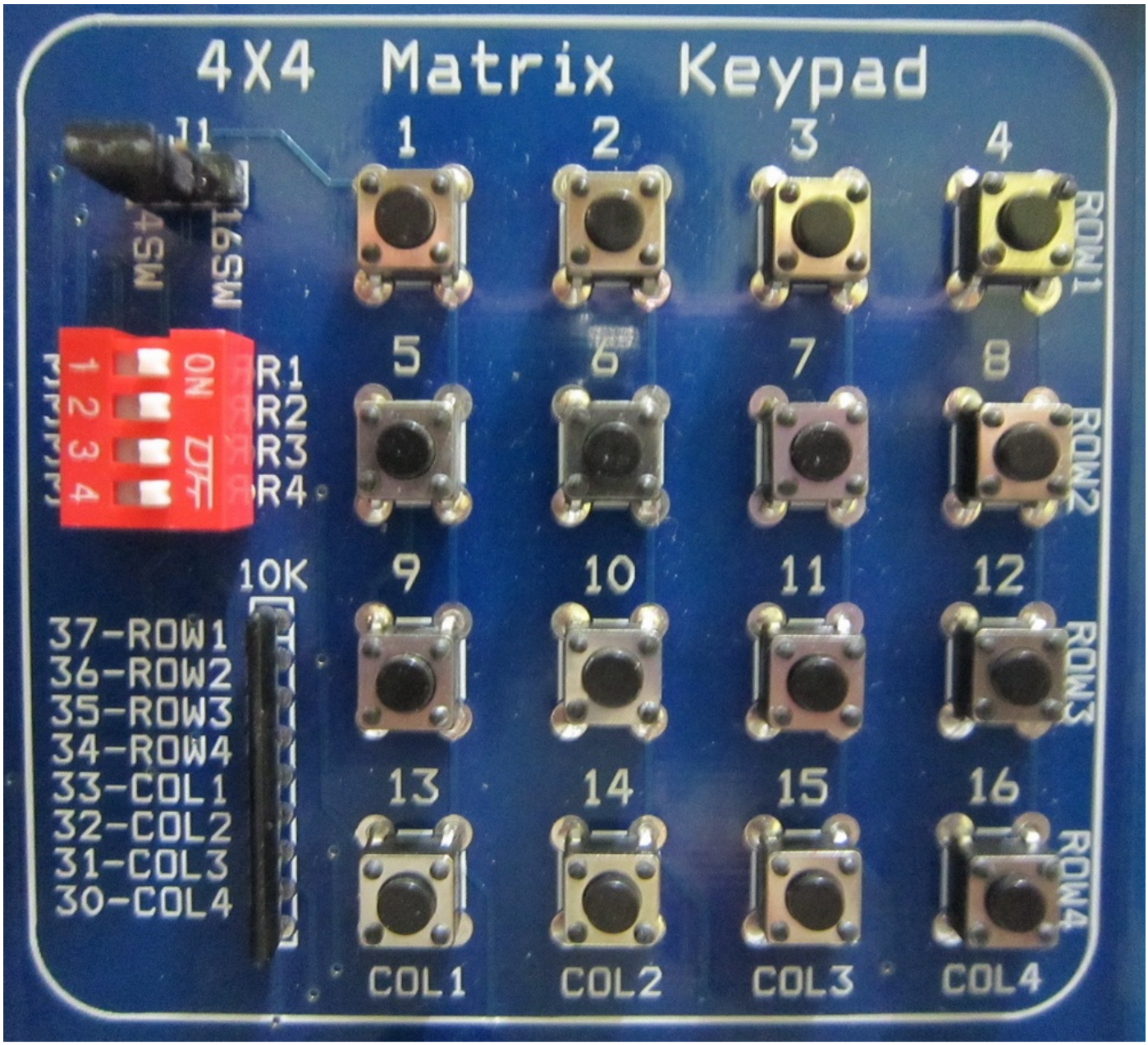
16 push button switches configured as 4X4 matrix keypad or just four direct input switches by setting header J1.

Matrix Configuration (J1 Set to 16SW)	
Pin name	Function
37	Row1
36	Row2
35	Row3
34	Row4
33	Col 1
32	Col 2
31	Col 3
30	Col 4

Direct Configuration (J1 Set to 4SW)	
Pin name	Function
33	SW1
32	SW2
31	SW3
30	SW4

Note

- All input switches are pulled up by 10KΩ.
- Key pad can be partially or completely enabled via DIP switch.



2 – LCD Module

2X16 character LCD with backlight and contrast control configured in 8-bit mode is connected as following

2X16 Character LCD Connections	
Pin name	Function
41	LCD (RS)
40	LCD (EN)
22	LCD (D0)
23	LCD (D1)
24	LCD (D2)
25	LCD (D3)
26	LCD (D4)
27	LCD (D5)
28	LCD (D6)
29	LCD (D7)
53	LCD (BL)

Note

LCD (BL) is the backlight control input of LCD. This input is active high i.e. a high output to this pin turns on LCD backlight.

3 – GLCD Module

128X64 Graphic LCD with backlight and contrast control is connected as following

128X64 Graphic LCD Connections	
Pin name	Function
41	GLCD (RS)
40	GLCD (EN)
22	GLCD (D0)
23	GLCD (D1)
24	GLCD (D2)
25	GLCD (D3)
26	GLCD (D4)
27	GLCD (D5)
28	GLCD (D6)
29	GLCD (D7)
53	GLCD (BL)
39	GLCD (CS1)
38	GLCD (CS2)

Note

Graphic LCD is Optional on the kit.

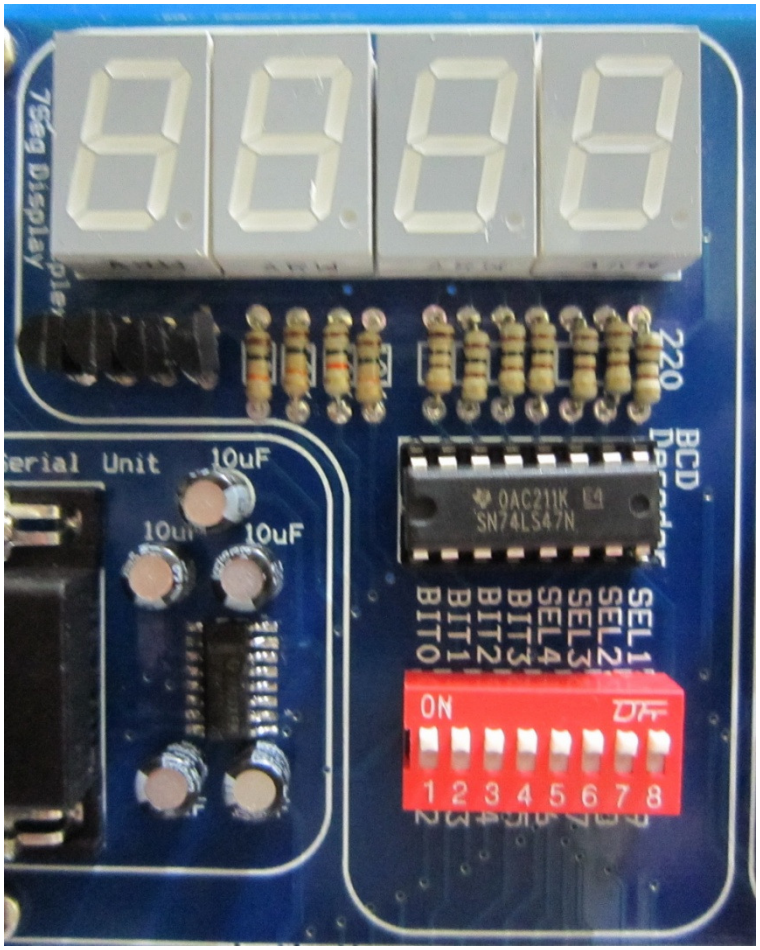
4 – Seven-Segments Display

This unit contains four 7seg digits connected in multiplexed mode in addition to BCD decoder to save outputs and code size.

Multiplexed 7seg Display	
Pin name	Function
2	BIT 0
3	BIT 1
4	BIT 2
5	BIT 3
9	SEL 1
8	SEL 2
7	SEL 3
6	SEL 4

Note

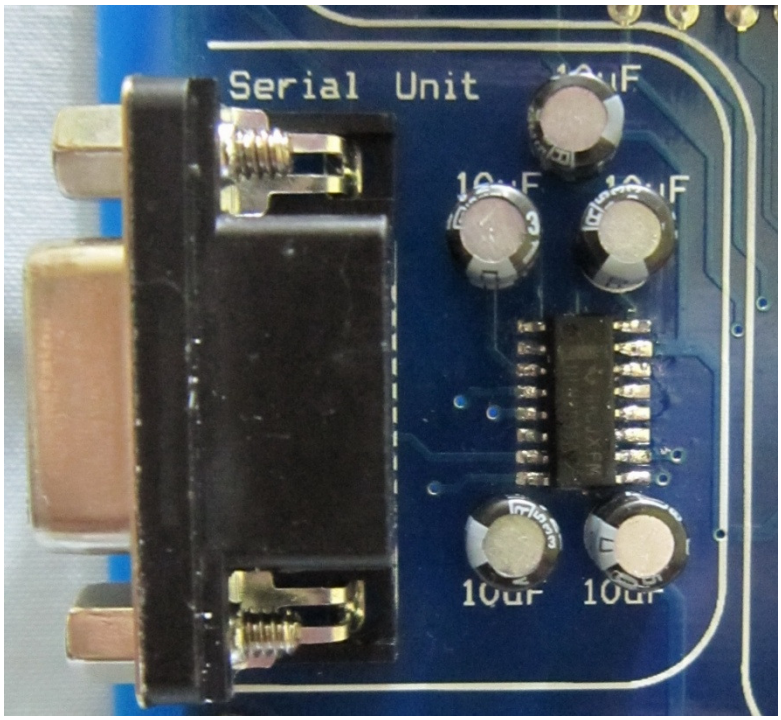
This unit can be enabled / disabled partially or completely using a DIP switch.



5 – RS232 Serial Communication

Despite of availability of communicate serially via USB socket which is interfaced to PC as virtual serial port .Arduino Mega 2560 involves Real Serial Port using RS232/TTL converter (MAX232).

RS232 Serial Communication	
Pin name	Function
14	Rx
15	Tx



6 – Serial EEPROM Memory

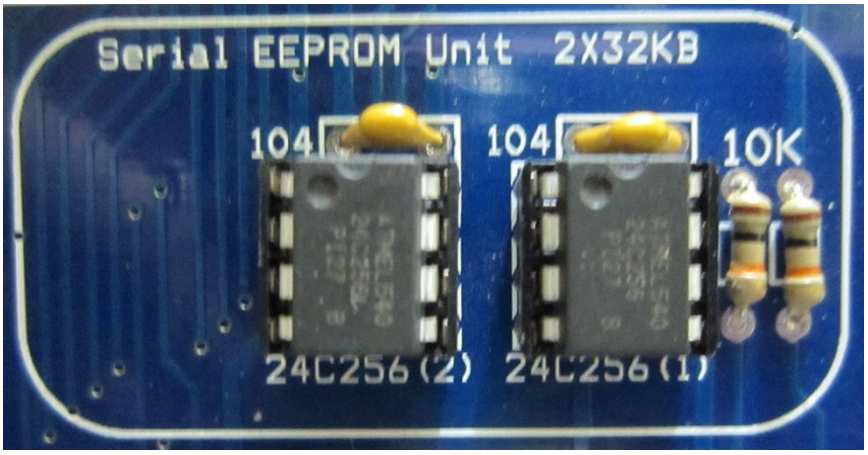
This unit consists of 64KB memory configured as two 32KB I²C Serial EEPROM chips "AT24C256". This memory is accessed via two lines, one dedicated for data and other for clock.

Serial EEPROM	
Pin name	Function
20	SDA
21	SCL

The address of the first chip is "1010000X"
The address of the first chip is "1010001X"

Note

For more information about AT24C256 chip and its operation please refer to the datasheet included in the CD in package.

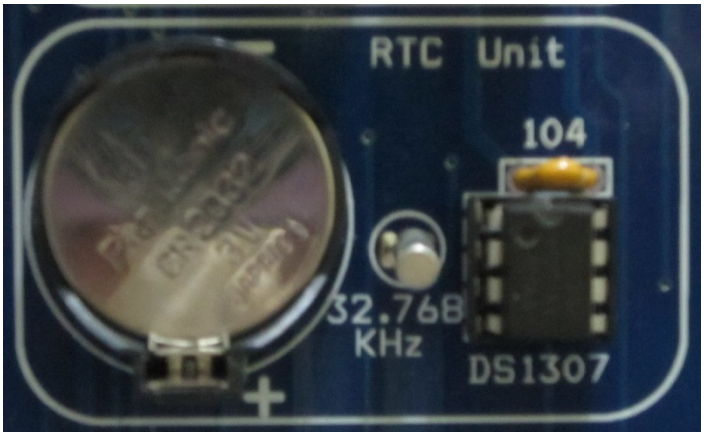


7 – Real Time Clock (RTC)

This unit based on the RTC chip DS1307 in addition to backup battery to preserve continuous operation during power off. Accessing of the chip - whether to read time or set it – requires two lines, one for data and other for clock. The same two lines are used for exchanging data with RTC and serial EEPROM, and each chip has its own specific address
The address of RTC chip is "1101000X"

Note

For more information about DS1307 chip and its operation please refer to the datasheet included in the CD in package.

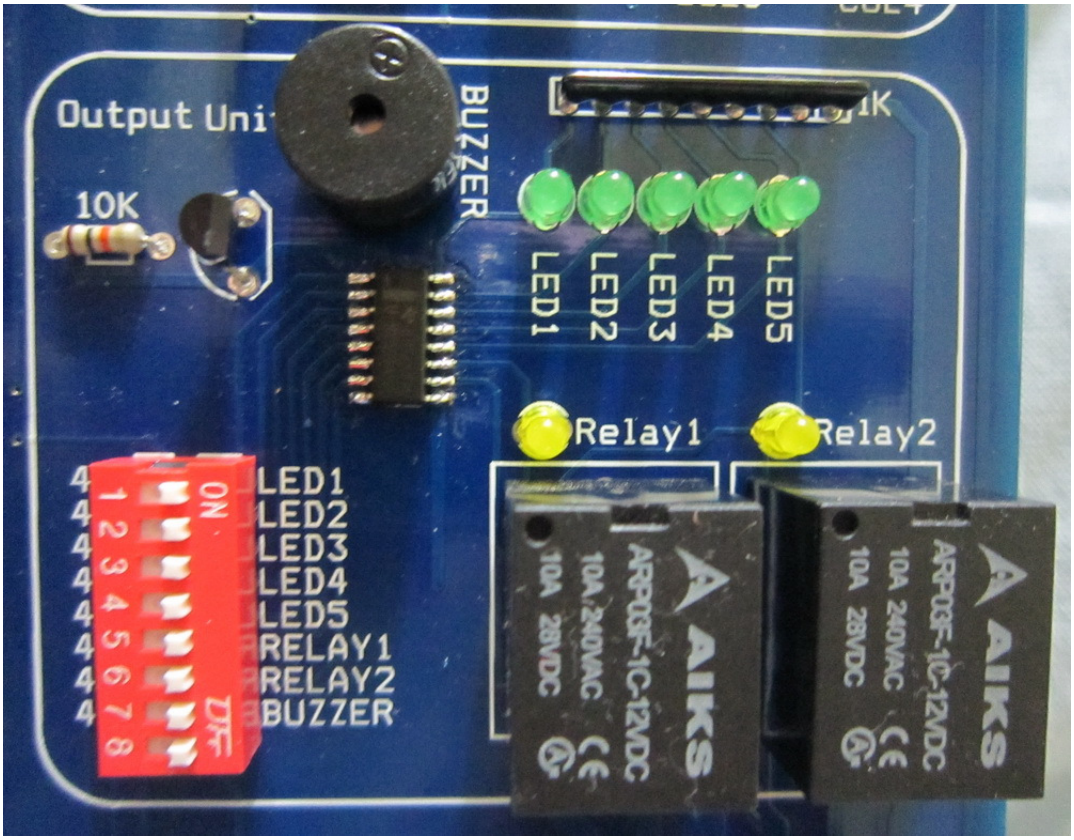


8 – Output unit

This unit contains

- Five output LEDs.
- Two output relays 12V coil / 3A contacts (resistive load) with LED indicator for each output relay. Both normally opened and normally closed contacts are available.
- One output Buzzer.

Output Unit	
Pin name	Function
42	LED 1
43	LED 2
44	LED 3
45	LED 4
46	LED 5
47	Relay 1
48	Relay 2
49	Buzzer



8 – Analog Input unit

This unit contains two analog sources

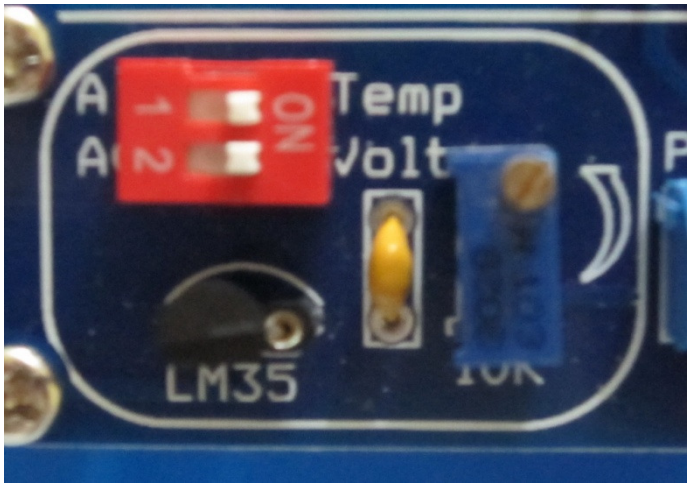
- Variable voltage input from simple voltage divider using high precise multi-turn variable resistor. The fixed terminals excited with (0V and 5V) while the output is taken from variable terminal.
- Temperature sensor LM35. This sensor is biased with 5V. The sensor output voltage is directly proportional to temperature in Celsius degree according to this relation

  Temperature = Output voltage in (mV) / 10
- The measured temperature is ranged from 0˚C to 150˚C.

Analog Unit	
Pin name	Function
A1	Variable voltage (Voltage divider)
A0	Variable voltage (Temperature sensor)

Note

For more information about LM35 and its operation please refer to the datasheet included in the CD in package.



All modules embedded in Arduino Mega2560 kit may be Tested using free sample codes included in CD package.

Pin	ATMEGA2560 Pin Name	Arduino 2560 Board Name	Arduino 2560 Kit Function
1	PG5 (OC0B)	Digital pin 4 (PWM)	7Seg (Bit2)
2	(RXD0/PCINT8) PE0	Digital pin 0 (PWM) (RX0)	---
3	(TXD0) PE1	Digital pin 1 (PWM) (TX0)	---
4	(XCK0/AIN0) PE2	---	---
5	(OC3A/AIN1) PE3	Digital pin 5 (PWM)	7Seg (Bit3)
6	(OC3B/INT4) PE4	Digital pin 2 (PWM)	7Seg (Bit0)
7	(OC3C/INT5) PE5	Digital pin 3 (PWM)	7Seg (Bit1)
8	(T3/INT6) PE6	---	---
9	(CLKO/ICP3/INT7) PE7	---	---
10	VCC	VCC	VCC
11	GND	GND	GND
12	(RXD2) PH0	Digital pin 17 (PWM)	---
13	(TXD2) PH1	Digital pin 16 (PWM)	---
14	(XCK2) PH2	TX3	---
15	(OC4A) PH3	Digital pin 6 (PWM) (RX3)	7Seg (SEL4)
16	(OC4B) PH4	Digital pin 7 (PWM) (TX2)	7Seg (SEL3)
17	(OC4C) PH5	Digital pin 8 (PWM) (RX2)	7Seg (SEL2)
18	(OC2B) PH6	Digital pin 9 (PWM) (TX1)	7Seg (SEL1)
19	(SS/PCINT0) PB0	Digital pin 53 (PWM) (RX1)	GLCD (BL) / LCD (BL)
20	(SCK/PCINT1) PB1	Digital pin 52 (PWM) (SDA)	---
21	(MOSI/PCINT2) PB2	Digital pin 51 (PWM) (SCL)	---
22	(MISO/PCINT3) PB3	Digital pin 50	---
23	(OC2A/PCINT4) PB4	Digital pin 10 (PWM)	External Connector
24	(OC1A/PCINT5) PB5	Digital pin 11 (PWM)	External Connector
25	(OC1B/PCINT6) PB6	Digital pin 12 (PWM)	External Connector
26	(OC0A/OC1C/PCINT7) PB7	Digital pin 13 (PWM)	External Connector
27	(T4) PH7	---	---
28	(TOSC2) PG3	---	---
29	(TOSC1) PG4	---	---
30	RESET	RESET	---
31	VCC	VCC	VCC
32	GND	GND	GND
33	XTAL2	XTAL2	---
34	XTAL1	XTAL1	---
35	(ICP4) PL0	Digital pin 49	Output (Buzzer) / External Connector
36	(ICP5) PL1	Digital pin 48	Output (Relay2) / External Connector
37	(T5) PL2	Digital pin 47	Output (Relay1) / External Connector
38	(OC5A) PL3	Digital pin 46 (PWM)	Output (LED5) / External Connector
39	(OC5B) PL4	Digital pin 45 (PWM)	Output (LED4) / External Connector
40	(OC5C) PL5	Digital pin 44 (PWM)	Output (LED3) / External Connector
41	PL6	Digital pin 43	Output (LED2) / External Connector
42	PL7	Digital pin 42	Output (LED1) / External Connector
43	(SCL/INT0) PD0	Digital pin 21(SCL)	SCL / External Connector
44	(SDA/INT1) PD1	Digital pin 20(SDA)	SDA / External Connector
45	(RXD1/INT2) PD2	Digital pin 19	External Connector
46	(TXD1/INT3) PD3	Digital pin 18	External Connector
47	(ICP1) PD4		---
48	(XCK1) PD5	---	---
49	(T1) PD6	---	---
50	(T0) PD7	Digital pin 38	GLCD (CS2)
51	PG0 (WR)	Digital pin 41	GLCD (RS) / LCD (RS)
52	PG1 (RD)	Digital pin 40	GLCD (EN) / LCD (EN)
53	PC0 (A8)	Digital pin 37	Keypad (ROW1)
54	PC1 (A9)	Digital pin 36	Keypad (ROW2)
55	PC2 (A10)	Digital pin 35	Keypad (ROW3)

56	PC3 (A11)	Digital pin 34	Keypad (ROW4)
57	PC4 (A12)	Digital pin 33	Keypad (COL1)
58	PC5 (A13)	Digital pin 32	Keypad (COL2)
59	PC6 (A14)	Digital pin 31	Keypad (COL3)
60	PC7 (A15)	Digital pin 30	Keypad (COL4)
61	VCC	VCC	VCC
62	GND	GND	GND
63	PJ0 (RXD3/PCINT9)	Digital pin 15	RS232 (Rx)
64	PJ1 (TXD3/PCINT10)	Digital pin 14	RS232 (Tx)
65	PJ2 (XCK3/PCINT11)	---	---
66	PJ3 (PCINT12)	---	---
67	PJ4 (PCINT13)	---	---
68	PJ5 (PCINT14)	---	---
69	PJ6 (PCINT15)	---	---
70	PG2 (ALE)	Digital pin 39	GLCD (CS1)
71	PA7 (AD7)	Digital pin 29	GLCD (D7) / LCD (D7) / External Connector
72	PA6 (AD6)	Digital pin 28	GLCD (D6) / LCD (D6) / External Connector
73	PA5 (AD5)	Digital pin 27	GLCD (D5) / LCD (D5) / External Connector
74	PA4 (AD4)	Digital pin 26	GLCD (D4) / LCD (D4) / External Connector
75	PA3 (AD3)	Digital pin 25	GLCD (D3) / LCD (D3) / External Connector
76	PA2 (AD2)	Digital pin 24	GLCD (D2) / LCD (D2) / External Connector
77	PA1 (AD1)	Digital pin 23	GLCD (D1) / LCD (D1) / External Connector
78	PA0 (AD0)	Digital pin 22	GLCD (D0) / LCD (D0) / External Connector
79	PJ7	---	---
80	VCC	VCC	VCC
81	GND	GND	GND
82	PK7 (ADC15/PCINT23)	Analog pin 15	---
83	PK6 (ADC14/PCINT22)	Analog pin 14	---
84	PK5 (ADC13/PCINT21)	Analog pin 13	---
85	PK4 (ADC12/PCINT20)	Analog pin 12	---
86	PK3 (ADC11/PCINT19)	Analog pin 11	---
87	PK2 (ADC10/PCINT18)	Analog pin 10	---
88	PK1 (ADC9/PCINT17)	Analog pin 9	---
89	PK0 (ADC8/PCINT16)	Analog pin 8	---
90	PF7 (ADC7/TDI)	Analog pin 7	External Connector
91	PF6 (ADC6/TDO)	Analog pin 6	External Connector
92	PF5 (ADC5/TMS)	Analog pin 5	External Connector
93	PF4 (ADC4/TCK)	Analog pin 4	External Connector
94	PF3 (ADC3)	Analog pin 3	External Connector
95	PF2 (ADC2)	Analog pin 2	External Connector
96	PF1 (ADC1)	Analog pin 1	External Connector
97	PF0 (ADC0)	Analog pin 0	External Connector
98	AREF	AREF	---
99	GND	GND	GND
100	AVCC	VCC	VCC