Introduction

Ardunio is Open Platform, which can check the result of Control without studying Electronic engineering or Computer engineering , because this makes various Hardwares with so easy language. This provides own Software so we do not need other information. We can compile and download at a time if connecting Hardware with patch codes, programming with Block building program and pushing a button. And we do not need to know the function of Compile and Download. We can see the result immediately and we have increased interests so this will help us use other system. From the process to solve questions of operation one by one continuously, we can study how to control various devices. We can use this to various fields after studying how to use various sensors. This provides Bread board and Ext. Power so user can make other circuit by themselves.

Features

1. Ardunio IDE provided
2. Completely compatible with Arduino Standard Shield
3. Programmable immediately to block program just with basic circuit without wiring
4. Designed for wiring to desired pin
5. The latest version Ardunio 1.0.5.
6. Bread broad and various Powers usable for application
7. 20 kinds of I/O device
8. Available to controlled by Smart phone with built-in Bluetooth and Wireless LAN.

(Note : Android App is not provided)

Specifications

MCU Board

Type	Specification	Remark
MCU	ATmega2560	
Operating Voltage	5V	
Input Voltage	7-12VDC	
Max. Input Voltage	6-20V	
GPIO	70 pin, current 50mA	Including PWM pin
ADC	16Ch	
Flash Memory	256KByte	Bootloader 8KByte
SRAM	8KByte	
EEPROM	4KByte	
Clock	16Mhz	External Crystar
Compatible Shield	Compatible with Arduino Shield	

Note: Specifications are subject to change.

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Sensor Board

NO	Type	Description	Interface
1	PIR	PIR motion sensing sensor, adjustable Sensitivity and Response Time	GPIO
2	3-axis Gyro	Analog output included, measurable of Tilt	ADC
3	Sound	Sensing after amplifying noisy around. Microphone	ADC
4	LED	SPi RED LED SEA. Controlled with l C chip	GPIO
5	Gas	LNG, LPG, Propane, Butane measurable.2,000-10,000 PPM measurable	ADC
6	Wi-Fi	Chip Antenna IEEE 802.11 b/g 2.4GHz	SPI
7	Ultrasonic	NT-TS601 20cm -400cm distance measurable	GPIO
8	Bluetooth	Connectable directly with Chip Antenna, Smart phone	UART
9	RFID	13.56MHz Read Range SCm,RFID card 2EA. UART type	UART
10	Push Button	4x4 Push Button (16EA button)	GPIO
11	Segment	4Digit, Anode	I^2C
12	Text LCD	16x2 Line	GPIO
13	Piezo Sensor	Used as Buzzer or Speaker. Responded to Shock and Sound waves ADCaround Capacitance 10nF ± 30%	GPIO ADC
14	RGB LED	Various colors displayable with adjusting brightness of each Red, Green, Blue	GPIO
15	Humidity Sensor	Measuring Analog output value by Humidity, 0-100% humidity measured	GPIO
16	Buzzer	Operating voltage :5VDC / Frequency: 2400 ±50Hz, Current consumption: Max. 35mA / SPL: Min. 90dB	ADC PWM
17	Light Sensor	Analog output by brightness, 20 Ix - 100 Ix, connected with ADC	ADC
18	Temp. Sensor	Digital Temperature Measurement sensor, error 40°C-125°C (±0.5°C)	I^2C
19	Step Motor	1.8°/pulse, Wheel provided	PWM
20	DC Motor	Output avg. Current 1.2A, max. 3.2A, Wheel provided	PWM

Main Configuration

Circuit in Arduino-Mega Development Board is composed enough to make us understand the system basically. And this provides Bread board and various Voltages. We can use Bread board to make application circuit and test it.

1. PIR sensor
2. Humidity sensor
3. Step motor
4. DC motor
5. Sound sensor
6. Temperature sensor
7. Light sensor
8. Gas sensor
9. 3 axis Gyro sensor
10. Buzzer
11. LED 8EA
12. RGB LED 1EA
13. Seven Segment Display
14. TEXT LCD
15. Piezo sensor
16. Ultrasonic Distance sensor
17. Bluetooth module
18. Wi-Fi Module
19. Red/Green LED
20. DC voltage(+12V, +5V, +3.3V)
21. Bread board
22. Wiring port(corresponded to no.21 port)
23. Adruno-Mega
24. 13.56MHz RFID reader
25. 16EA Buttons

Note: Specifications are subject to change.

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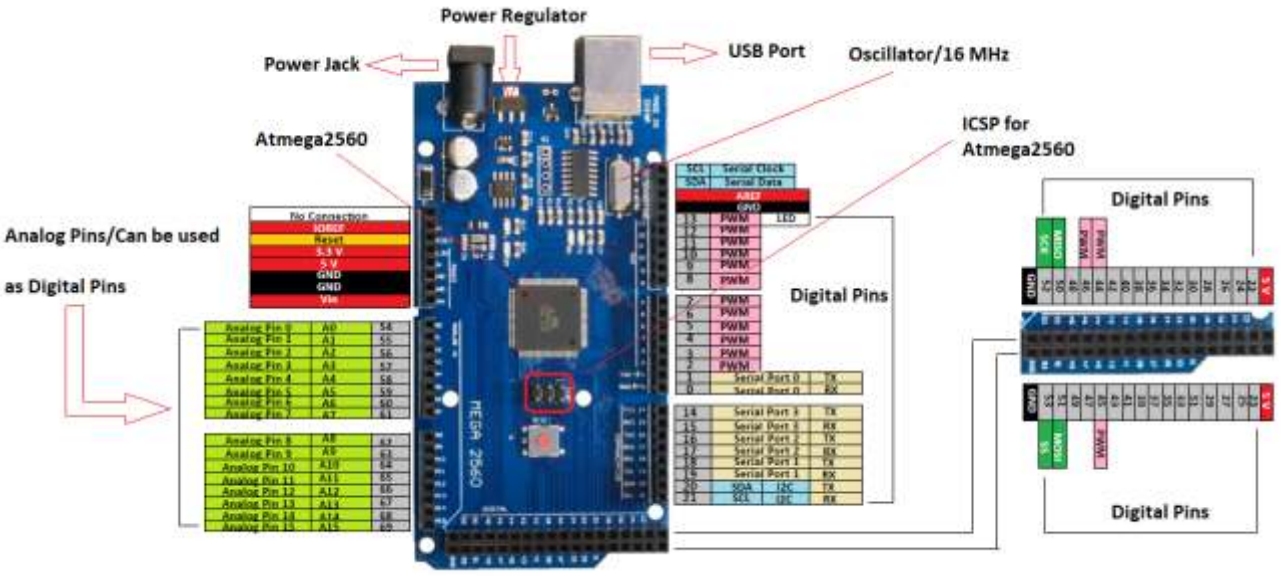
Block Diagram



List of Experiments

Educational Contents

Learning Arduino-Mega Development Board Arduino programming

- 1st Week – AVR Microcontroller
- 2nd Week – Arduino Development Environment
- 3rd Week – Basic Structure of Arduino Program
- 4th Week – LED and Buzzer Control
- 5th Week – 7 Segment Display
- 6th Week – LCD Display
- 7th Week – Push Button (4x4 Matrix) Control
- 8th Week – DC Motor and Stepper Motor Control
- 9th Week – Humidity and Temperature Sensor Control
- 10th Week – LDR and PIR Sensor Control
- 11th Week – Sound Sensor and Piezo Sensor Control
- 12th Week – Gyro Sensor and Smoke Sensor Control
- 13th Week - Ultra Sonic Sensor Control
- 14th Week – RFID Reader Test
- 15th Week – Bluetooth Test
- 16th Week – Wi-Fi Test

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