

EV BMS FIRE PROTECTION AND CHARGE MONITIRNG

AIM:

Design and development of EV BMS fire protection and charge monitoring system.

PURPOSE:

Electrical vehicles are future of auto mobile industry. Lot of conversion happen form ICE vehicles to electric vehicles since few years. IC engine are well proven and still running without any fails. But electric vehicles face lot of problems especially from battery fire accidents. EV batteries have density energy storage chemicals and causes fire while charge and discharge. Some kind of EV batteries getting fire when external environment is high temperature. Also there are several reasons to cause battery getting fire. To avoid and suppress this problem, we suggest smart BMS that will protect battery from fire and charge monitoring. The proposed project title is EV BMS fire protection and charge monitoring.

DESCRIPTION:

Three buttons and three relays connected with Arduino digital pins. Voltage, Current sensors and temperature sensors (DS18B20) interface with Arduino analog pins.

WORKING:

Two buttons for selecting fast and slow charging of battery. Based on selection, battery will charge fast and slow by current control. If more current allow then battery will charge fast and vice versa. Third button is for discharging battery by enabling load. Here we used motor as load. If battery gets fully charged then charging will disconnected automatically. While charging or discharging if battery temperature increased then load will disconnect automatically. All this operation information like voltage, current and temperature values will be displayed on 16x4 LCD display.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16x4 LCD display
Relay	:	12vDC
Buzzer	:	5v DC
Fire/Temp Sensor	:	DS18B20
Voltage sensor	:	Resistor based voltage divider
Current sensor	:	Shunt resistor
Battery	:	12V DC 1amp
Power Source	:	12-20v 1 amp AC transformer

SOFTWARE:

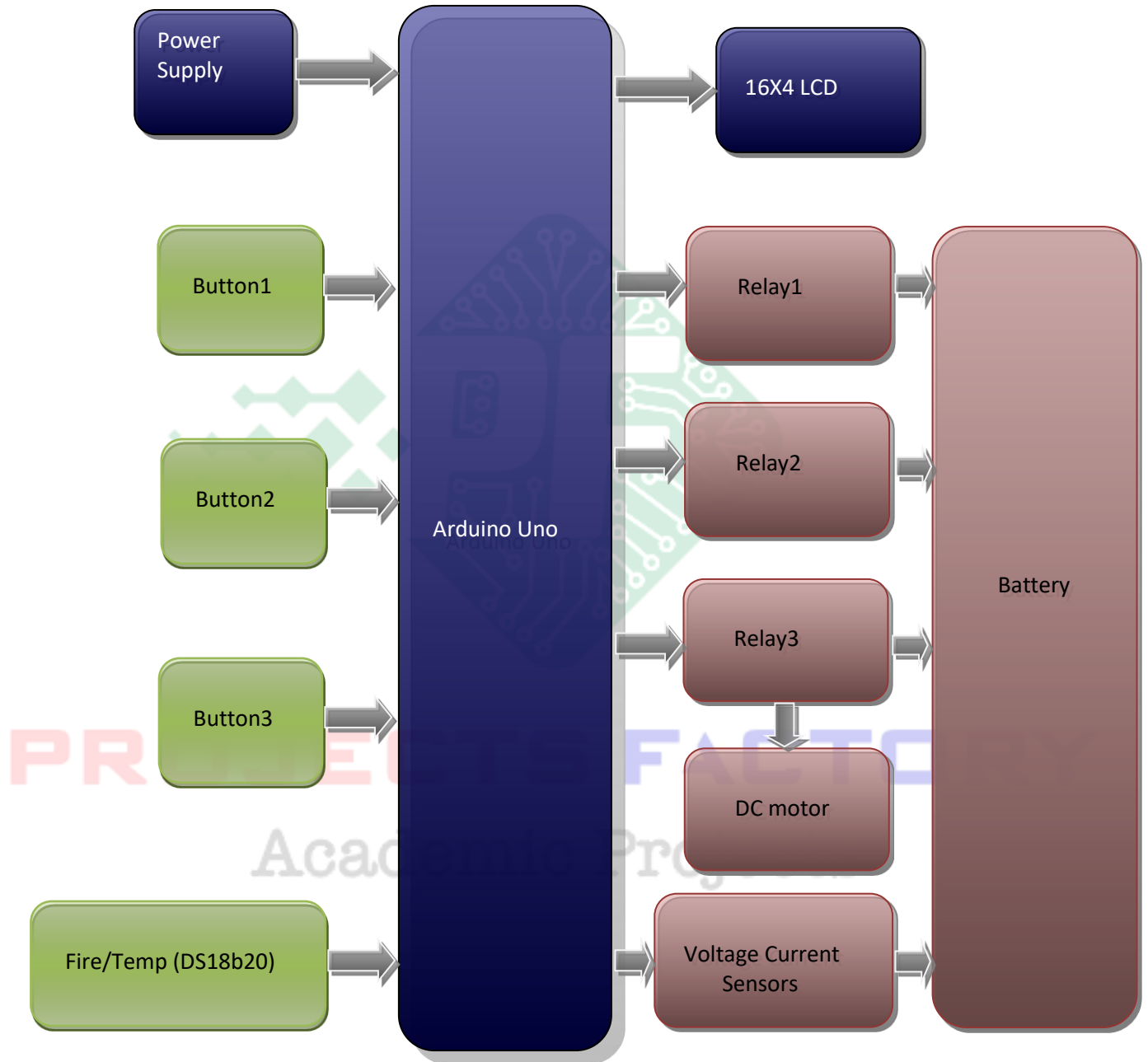
Arduino IDE

Proteus based circuit diagram

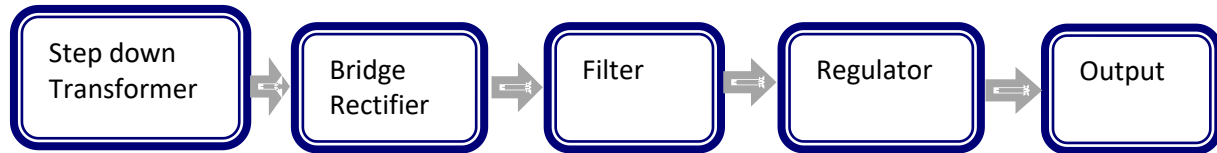
APPLICATIONS:

- Electric vehicle charger station protection
- Fire safety system for battery stations
- Battery management system applications
- EV battery fire protection system
- EV battery safety system

BLOCK DIAGRAM:



POWER SUPPLY BLOCKDIAGRAM:



INTERFACES COVERED:

- We have covered Arduino interface and programming
- Battery charging and discharging applications
- Battery voltage and current sensors interface
- Fire sensor interface with Arduino

PROJECTS FACTORY
Academic Projects