



### Introduction

This system studies the topics related with the signalling in the electrical civil installation. It has a modular structure and it consists of didactic panels installed on a vertical frame. The modularity of this didactic system grants to the students a direct and immediate approach to the topics, offering the opportunity to study various subjects performing several experiments.

### Features

- 01 Facilitates easy and safe wiring by students due to use of 4mm sturdy Shrouded banana path cords & shrouded socket arrangements.
- 02 All Panels are mounted on finely painted sturdy base frame with easy Panels interchangeability.

### Panels Provided

SN.	Name of Panel	Order Code	Qty.
01	Aluminum signalling with Arduino trainer Rack	69700	01
02	Bell/Door Opener Push Button	69506	01
03	Signaling with Arduino Board	69537	01
04	Electric Door Lock	69538	01

### Accessories Provided

SN.	Description	Qty.
01	Shrouded connecting leads 4mm 50cm Red	05
02	Shrouded connecting leads 4mm 100cm Red	05
03	Shrouded connecting leads 4mm 50cm Black	05
04	Shrouded connecting leads 4mm 100cm Black	05

### List of Experiments

SN.	Name of Experiment	Panels Required
01	To develop Arduino program for blinking of LED	69537
02	To develop Arduino program for controlling LED Arrays.	69537
03	To Develop Arduino Program for Interfacing TM1637 4 Digit 7 Segment Display with Arduino UNO.	69537
04	To develop Arduino program for designing Real time clock using DS1307 IC	69537
05	To develop Arduino Display Clock without using DS1307 IC	69537
06	Electric Lock Installation	69505, 69538, 69537

Note: Specifications are subject to change.

## DETAILS OF MODULES



### 1. BELL/DOOR OPENER PUSH BUTTON

**Order Code- 69506**

Switch modules come in a wide variety and are designed to familiarize students with various methods of switching voltages, currents and loads. They have been made with safety and protection in mind and with strong insulation. This

module is supplied with 2 switches.

#### Procedure

- 01 When we push the right-side button than make / connect the contact of right-side terminal.
- 02 When we push the Left side button than make / connect the contact of Left side terminal



### 2. ELECTRIC DOOR LOCK

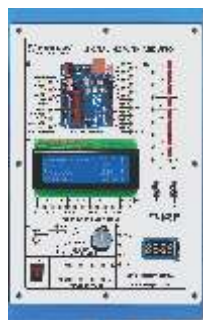
**Order Code - 69538**

Electric Lock can be used for locking sell-machine, storage shelf, file cabinet and etc. The hidden way of unlocking can be used for an emergency. The lock works as the circuits disconnects, and it will unlock as the instant power-on. It is steady, durable, and energy-saving and had a long lifespan. In the anti-theft and shockproof design, the lock is better than

other kinds of locks. After connecting the wires and when the current is available, the electric lock can control the doors opening and closing. This module is supplied with 1 Push Button.

#### Procedure

- 01 Connect the 12V at input terminal of electric door lock..



### 3. SIGNALLING WITH ARDUINO

**Order Code – 69537**

These following items providing on board

- 01 Arduino Board
- 02 LED interface
- 03 Alpha numeric LCD Module
- 04 Push Switches Interface
- 05 Real time Clock
- 06 Seven Segment Display
- 07 Power Supplies

More details available below-

#### 01 Arduino Board

It is the most popular board in the Arduino board family. In addition, it is the best board to get started with electronics and coding.

The Arduino UNO board has 14 digital I/O pins (of which 6 provide PWM (Pulse Width Modulation) output. These pins can be configured to work as input digital pins to read logic values (0 or 1) or as digital output pins to drive different modules like LEDs, relays, etc. The pins labeled can be used to generate PWM.

The Arduino UNO board has five analog input pins A0 through A5. These pins can read the signal from an analog sensor like the humidity sensor or temperature sensor and convert it into a digital value that can be read by the microprocessor.

#### 02 LED Interface

8 LEDs are given on the board which are used as output LEDs while interfacing sensors or any device using Arduino

#### 03 Alpha Numeric LCD Module

A 20 x 4 character LCD display with white text on a vivid blue backlit LCD It displays 4 lines of 20 characters. It has inbuilt standard Hitachi HD44780 compatible interface for easy connection to microcontrollers.

Pin No	Symbol	Level	Description
1	VSS	0V	Ground
2	VDD	5V	Supply voltage for logic
3	VO	ariable	Operating voltage for LCD
4	RS	H/L	H:DATA, L: Instruction Code
5	R/W	H/L	H: Read (MPU?Module), L: Write (MPU?Module)

Continue....

Note: Specifications are subject to change.

**DETAILS OF MODULES**

Pin No	Symbol	Level	Description
6	E	H, H>L	Chip enable signal
7	DB0	H/L	Data bus line
8	DB1	H/L	Data bus line
9	DB2	H/L	Data bus line
10	DB3	H/L	Data bus line
11	DB4	H/L	Data bus line
12	DB5	H/L	Data bus line
13	DB6	H/L	Data bus line
14	DB7	H/L	Data bus line
15	A	5V	LED+
16	K	0V	LED-

**04 Push Switches Interface**

It consists 2 push buttons.

Connect Hrs. pushbutton to A0 pin of Arduino. Connect min pushbutton to A1 pin of Arduino. Connect other Hrs. and min Pushbutton terminal to ground.

**05 Real Time Clock**

Real time clocks (RTC), as the name recommends are clock modules The DS1307 real time clock (RTC) IC is an 8 pin device using an 12C interface. The DS1307 is a low-power clock/calendar with 56 bytes of battery backup SRAM. The clock/calendar provides seconds, minutes, hours, day, date, month and year qualified data. The end date of each month is automatically adjusted, especially for months with less than 31 days.

**06 Seven segment LED**

The TM1637 module includes four 0.36 segment 7-segment displays to display sensor data or temperature. In addition to the four 7-segments, the module has a 'colon' at the center which makes it very easy to create clock or time-based projects.

**TM1637 Module Pinout**

There is a 4-pin right angle male header on the module for making connections.

CLK is a clock input pin. Connect to any digital pin on Arduino.

DIO is a Data I/O pin. Connect to any digital pin on Arduino.

VCC pin supplies power to the module. Connect it to the 3.3V to 5V power supply.

GND is a ground pin.

**07 Power Supplies**

It consists 2 power supplies which are +5V and +12V.

**4. ALUMINUM FRAME - MODULAR PANELS**

**Order Code - 69700.**



Aluminum Signaling with Arduino Rack madeup aluminium profile size 40×40mm, foldable and light in weight 10 panel setup can be interchange conveniently to perform experiments. Dimention Length 1100 × Hieght 1000×Depth 350mm.

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