Scientech

Smart Solar Street Light Training System

Scientech 6205SSL

Solar Panel

(Monitor optional)

Street lights are a part of our everyday life. They play an important role in creating safe and more productive cities. Most people know that they only light our sidewalks and roads during the night and during the day they are shut off and unused. However, as innovation speeds up now new modern street lighting systems are being asked to do more than ever before. In addition to fulfilling their principal purpose of casting light onto dark roadways, parking areas, and public spaces, these lighting systems are increasingly evaluated for how well they reduce energy consumption, how using smart sensors they can be detect real-time changes in information such as lamp inclination, weather conditions, air pollution, availability of natural light and more.

Scientech 6205SSL Smart Solar Street Light Training Platform is designed for studying and understanding smart street lights. Scientech 6205SSL consists of temperature, humidity, LDR, PIR motion, air quality sensors. These sensors are connected with smart node which is mounted on smart pole and transfer data through zigbee to the main board for display and analysis. One can also explore charge controller and solar PV analyzer.

Scientech

Smart Solar Street Light Training System

Scientech 6205SSL

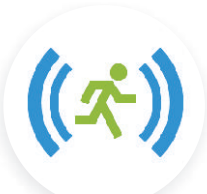
Features

- A friendly platform for experimenters to learn, explore and develop IoT based smart solar street light.
- Solar panel, LED light, solar charge controller, lead-acid battery.
- Battery level Indicator , DC voltmeter and ammeter.
- Smart pole with PIR, air quality (PM1, PM2.5 and PM10), temperature, humidity and ambient light sensors.
- On board charging and protection circuit for battery.
- Interactive SMART dashboard software for display information.
- Solar PV analyzer modules.
- Arduino software compatible hardware.
- Battery operated smart sensor gateway for sensor connectivity.
- USB and Zigbee connectivity for personal computer (PC) interface.
- Python, Arduino programming, embedded C and app development.
- Wi-Fi connectivity for cloud interface.
- Sensor gateway with color LCD display.
- Software to view sensor's real time graph analysis on PC and mobile.
- 10 din sockets for sensors and actuators interface.
- Signal test points and switch faults.
- Inbuilt voltmeter and ammeter.
- User friendly explanatory system.
- High grade FRP material enclosure.
- M.S. powder coated pole.

Sensors

Temperature & Humidity

LDR



PIR motion

Air quality

Scientech

Smart Solar Street Light Training System

Scientech 6205SSL

Scope of Learning

Study of:

- Various parameter of smart pole.
- Interconnection of various element of smart solar led street light.
- V-I characteristic of solar panel.
- Fill factor measurement of solar panel.
- Input and output voltages of solar charge controller.
- Sensor and actuator interfacing.
- Troubleshooting method of various section of smart street light.
- IoT applications.
- C programming and python.
- Arduino IDE software.

Interfacing of:

- LED blink program.
- ACD and UART programs.
- Color LCD.
- Wi-Fi and Zigbee module.

Testing and understanding of:

- Air temperature & humidity sensor.
- Air quality PM1, PM2.5 and PM10 sensor.
- PIR and LDR sensor.

Design and develop:

- Smart street light application programs.
- Program to control on street light remotely.
- Application to make energy efficient street light.
- Application to make smart environmental monitoring system using street light.
- Program to configure events and alarms.
- Interfacing of Wi-Fi and Zigbee modules.
- Implementation of python program to collect data and upload on cloud.

Technical Specifications

Main board:

Processor	:	64bit cortex A53 ARMv8 Quad core processor 1.4GHz
Connectivity	:	802.11 b/g/n Wireless LAN bluetooth 4.1, zigbee, USB & Ethernet
RAM	:	1GB LPDD2
Memory	:	32GB
OS	:	Linux
Ethernet	:	10/100 base T Ethernet socket
Video output	:	HDMI and composite RCA
USB port	:	4 nos.

Smart pole and node

Microcontroller	:	ATMega2560
Sensors and actuator connector	:	10 nos.
Digital input/output pins	:	34 nos.
Analog input pins	:	16 nos.
UART	:	2 nos.
I2C	:	1 no.
Switch faults	:	30 nos.
Test points	:	30 nos.
Power Supplies	:	5V and 3.3V
Variable potentiometer	:	1 no (10K)
Switches	:	3 nos.
Digital voltmeter and ammeter	:	0 - 25V/10A
Buzzer and LED	:	1 no. each

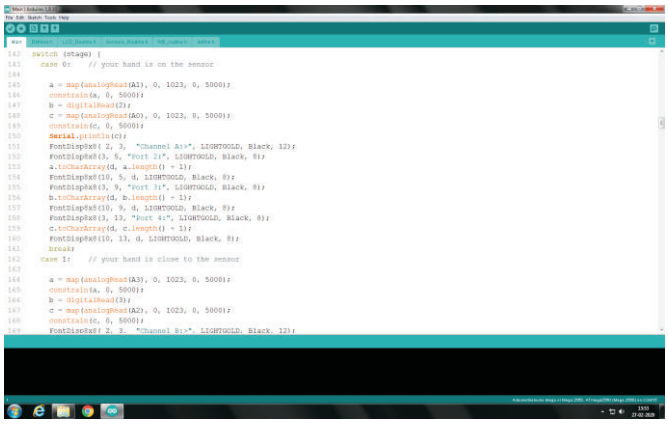
Smart Solar Street Light Training System

Scientech 6205SSL

Color LCD	:	1.77 inch
USB	:	2.0
Wi-Fi module	:	1no. (2.4GHz)
Zigbee transceiver	:	2nos. (2.4GHz/63mW)
Flash memory	:	256 kb of which 8 KB used by boot loader
SRAM	:	8 KB
EEPROM	:	4 KB
Clock speed	:	16 MHz
PIR sensor	:	TTL
Temperature sensor	:	0 - 100^{0}C
Humidity sensor	:	0 – 100 %RH
Air quality sensor	:	PM, PM2.5, PM10
Ambient light sensor	:	Analog output
Solar panel	:	40W
Battery	:	12V, 26 Ah
Charge controller	:	16-26V, 0.7A
LED light	:	10W
Rheostat	:	100 Ohm, 3A
MCB	:	16A
DC ammeter	:	5A
DC voltmeter	:	100V
Battery level indicator display	:	8-70V
Power Supply	:	110V - 260V AC, 50/60Hz
Operating conditions	:	0-40^{0}C, 85% RH

Package contains	Quantity (nos.)
• Scientech 6205SSL training platform	1
• Rheostat - 100 Ohm, 3A	1
• Solar panel (40W)	1
• MS powder coated pole with stand	1
• LED light (10W)	1
• Smart sensor gateway	1
• 4mm BS-10 banana patch cord	25
• Wireless keyboard & mouse	1
• PIR sensor	1
• Air quality sensor	1
• Temperature and humidity sensor	1
• Ambient light sensor	1

Software window



Sensor interfacing code

Dashboard

Software windows

Subject to change - Version 1.0

Designed and Manufactured in India by -

Scientech Technologies Pvt. Ltd.

94, Electronic Complex, Pardesipura, Indore-452010, India.

✆ +91-731-4211100, ✉ info@scientech.bz, www.ScientechWorld.com