

Sciencetech TechBooks are compact and user friendly learning platforms to provide a modern, portable, comprehensive and practical way to learn Technology. Each TechBook is provided with detailed Multimedia learning material which covers basic theory, step by step procedure to conduct the experiment and other useful information.

Sciencetech 2311 SensorLab comprises of Sensors and Transducers which provide the fundamental knowledge of sensing Light, Pressure, Temperature, IR and many more non electrical entities.

Since, most of the sensors give signal which show small variation and are of low level output, these signals need to be converted into a form that is measurable and could be used efficiently. The lab consists of various signal conditioning blocks which perform amplification, filtration, signal conditioning and all the required operations which are acceptable to the input devices.

7" capacitive touch screen LCD is inbuilt for output device with easy to use instructions and graphical user interface, to display waveforms, to plot characteristics with the help of graphs, for reading operating manual and watching tutorials. SensorLab is a stand alone TechBook. It does not require external Oscilloscope for measuring, or observing the output and characteristics of the Sensors interfaced.

Scope of Learning

- Learn the detailed fundamentals of signal conditioning.
- Learn in-depth study of sensors and it's circuit diagram.
- Learn how automation can implement using sensors and actuators.
- Characteristics of various Sensors for Light Intensity like Photo-Diode, Photo Transistor, Photo Voltaic Cell and LDR.
- Study of output blocks like LED, Buzzer and LED bar graph.
- Electronics Circuits Simulation
- Characteristics of various Sensors for Temperature like NTC Thermistor, Platinum RTD, K type Thermocouple and Lm35.
- Characteristics of IR Sensor like L14G1 and TSOP1738.
- Characteristics of other Sensor modules.
- Study of Signal conditioning blocks likes Amplifiers, Filters and Converters.
- Industrial Application Design

Features

- 7" capacitive touch screen LCD with inbuilt processor for viewing the output waveforms, reading the operating manual, tutorial videos etc.
- Inbuilt DAQ
- User can design any circuit on bread board and test
- Stand alone TechBook
- USB Port for Keyboard and Pendrive interface
- Ethernet Port to connect with real world
- Ethernet connectivity for remote view application (supported operating system : windows / Linux)
- Online update / USB update
- On board Graph capture and store
- Office tools are inbuilt to view PDF and doc files
- Inverting Amplifier
- Non – Inverting Amplifier
- Power Amplifier
- Current Amplifier
- Instrumentation Amplifier
- Differential Amplifier
- Frequency to Voltage and Voltage to Frequency Converter
- Current to Voltage and Voltage to Current Converter
- High Pass & Low Pass Filter
- Unity Gain Buffer
- LED, LED Bar Graph & Buzzer Interface
- Scientific calculator
- On Board Circuit Simulation

Included Sensors

Temperature Sensors (SS-01)

- RTD
- NTC Thermistor
- LM35
- Thermocouple

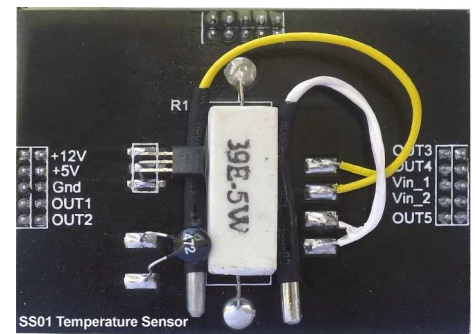
Optical Sensors (SS-02)

- Photo Voltaic Cell
- LDR (Light Dependent Resistor)
- Photo Transistor
- PIN Photo Diode

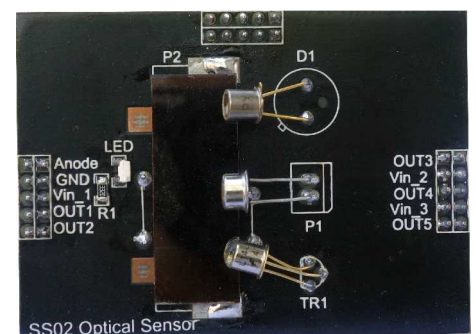
IR Sensors (SS-03)

- TSOP 1738
- IR LED

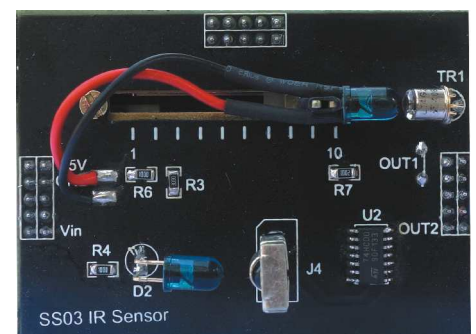
Included Sensors



Temperature Sensors (SS-01)



Optical Sensors (SS-02)



IR Sensors (SS-03)



Optional Sensors
Pressure Sensor

- SX100DN (SS-04)

Displacement Sensors

- LVDT (SS-05)
- Potentiometric Sensor (SS-48)
- Capacitive displacement sensor (SS-58)

Force Sensors

- Load Cell (SS-06)
- Strain Gauge (SS-07)
- Piezoelectric Sensor (SS-08)

Environment Sensors

- Gas Sensor (SS-09)
- Alcohol Sensor (SS-10)
- Humidity Sensor (SS-12)
- Fire Sensor (SS-32)
- Smoke Detector (SS-36)

Switches

- Limit Switch (SS-15)
- Magnetic Reed Switch (SS-22)
- Thumbwheel Switch (SS-23)

Proximity Sensors

- Capacitive proximity Sensor (SS-16)
- Inductive proximity Sensor (SS-17)
- Optical proximity Sensor (SS-47)
- Magnetic proximity Sensor (SS-51)

Speed Sensor

- Slotted opto Sensor + Tachogenerator (SS-29)

Biomedical Sensors

- Galvanic skin response (GSR) SS-53
- Phonocardiograph (SS-60)
- Electrocardiograph (SS-43)
- Heartrate Sensor (SS-39)

Other Sensors

- PIR Sensor (SS-11)
- Hall effect Sensor (SS-13)
- Color Sensor (SS-14)
- Level Sensor (SS-24)
- Metal Sensor (SS-25)
- Sound Sensor (SS-26)
- Optocoupler Sensor (SS-18)
- Touch Sensor (SS-59)
- Air flow Sensor (SS-63)
- **Types of temperature Sensors (SS-52)**
 - J type thermocouple
 - K type thermocouple
 - IC AD590
 - Diode (1n4007)
- **Vibration Sensor (SS-28)**
- **Current Sensor (SS-64)**
- **Flow Sensor (SS-33)**
- **Accelerometer Sensor (SS-37)**
- **Relay (SS-54)**
- **Heater (SS-55)**



PIR Sensor (SS-11)



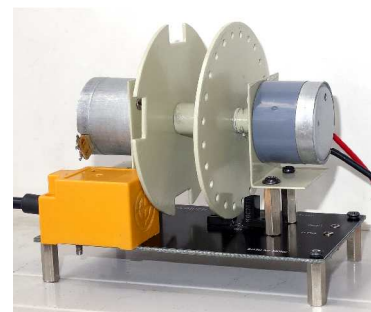
Pressure Sensor (SS-04)



Skin Galavanic Response (SS-53)



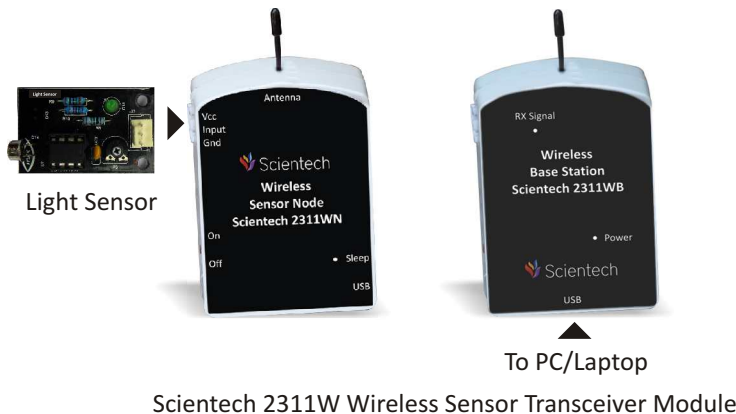
LVDT (SS-05)



Slotted Opto Sensor + Tachogenerator (SS-29)

Technical Specifications

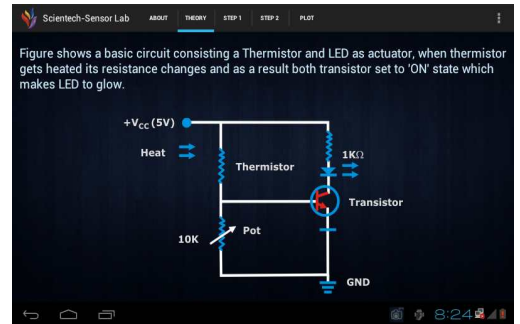
On board display	: 7" capacitive
Connectivity	: USB & Ethernet
Square Wave Generator	: up to 40KHz
Low Pass Filter	: up to 30KHz
High Pass Filter	: after 40KHz
Inverting Amplifier	: Variable Gain 1-10
Non Inverting Amplifier	: Variable Gain 2-10
Differential Amplifier	: Variable Gain 1-10
Instrumentation Amplifier	: Variable Gain 10-20
F/V converter	: 1KHz –1V 10 KHz –10V
V/F Converter	: 1V – 1KHz 10V – 10 KHz
A/D Converter	: 4 Channel (0-5V)
D/A Converter	: 1 Channel (0-3.3V)
Input/Output Ports	: 4-IP / 4-OP Operating Voltage Range 0 – 3.3V
LM35	: 10mV/ °C
Platinum RTD	: 100Ω at 0°C (Temp. coefficient 0.385 Ω /°C)
K Type Thermocouple	: -200°C to 1250°C
NTC Thermistor	: 4.7KΩ
BPX65 Photo Diode	: 500nm – 1100nm
L14G1 Photo Transistor	: 500nm – 1100nm
Photovoltaic Cell	: 500mV – 580mV
2mm interconnection sockets:	85 nos
Dimensions (mm)	: W 326 x D 252 x H 52
Power Supply	: 100V - 240V AC, 50/60Hz
Weight	: 1.5Kg (approximately)
Operating Conditions	: 0-40°C, 85% RH
Product Tutorial	: Online (on www.SciencetechLearning.com)
Included Accessories	: Mains cord & TechBook Power Supply -1no. Patch cords 16" (2mm) -10nos
Optional accessories	: Sciencetech 2311WN Wireless Sensor Node Sciencetech 2311WB Wireless Base Station



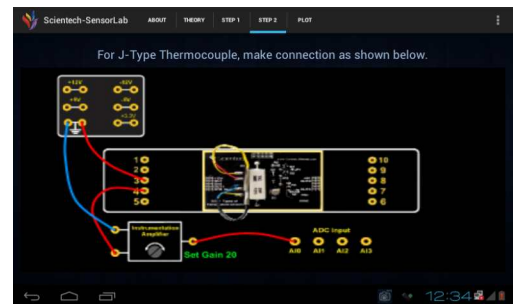
Sciencetech 2311W Wireless Sensor Transceiver Module



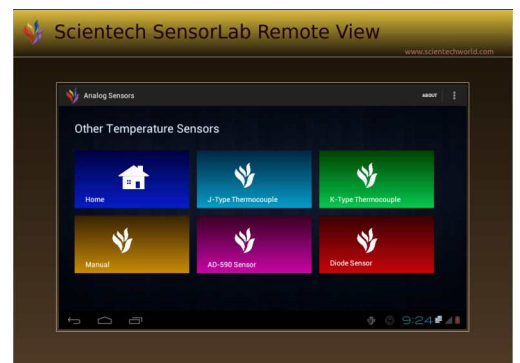
Home Page



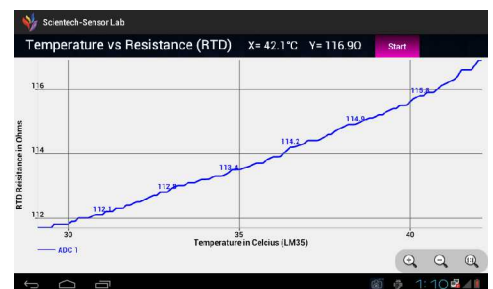
SensorLab Theory



Connection Diagram



SensorLab Remote View



Characteristics Plot

