

**Product Name :**  
Sensors And Transducer Trainer- Didactic Equipment

**Product Code :**  
LIM-CAT-L0043-00005



**Description :**

Sensors And Transducer Trainer- Didactic Equipment

**Technical Specification :**

Sensors And Transducer Trainer- Didactic Equipment

This sensors and transducers trainer teach the operating principles of the sensors/transducers that are most widely used in industry. It is subdivided into two sections: in the lower section, there is all the input and output transducers, while in the upper side there is all the signal-conditioning systems as well as the instrumentation.

The trainer include the following input sensors/transducers:

Linear slide potentiometer, rotary potentiometer, precision servo potentiometer, Wheatstone bridge circuit, thermistors NTC, RTD platinum sensor, IC temperature sensor, thermocouple, phototransistor, PIN photodiode, photoconductive cell, photovoltaic cell, LVDT, extensometric transducer, linear position sensor, air flow sensor, air pressure sensor, humidity sensor, opto-electronic sensor, opto-reflecting sensor, inductive sensor, Hall effect sensor, dc tachogenerator, microphone; the following output sensors/transducers:

Electric resistance, incandescent lamp, buzzer, moving coil loudspeaker, ultrasonic transmitter, ultrasonic receiver, dc solenoid, dc relay, dc motor; and the following signal conditioning components:

Timer/counter, bar graphs, dc voltmeter, dc amplifiers, ac amplifiers, power amplifiers, current amplifiers, buffer amplifier, inverting amplifier, differential amplifier, V/F converter, F/V converter, I/V converter, V/I converter, complete wave rectifier, hysteresis switchable comparator, alarm oscillator.

Electronic switch, oscillator, filter, switchable low-pass filter, power supply, adding amplifier, integrator with switchable time constant, instrumentation

Amplifier, sample & hold circuit, gain and offset control amplifier.

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With this trainer it is possible to perform the following experiments:

Investigation about Practical Control System

Investigation of characteristics in a Proportional Control System

Characteristic of a Speed Control System

Application of Counter/Timer as a Time Meter

Application of Counter/Timer as a Simple Counter

The Characteristic of a LED bargraph display unit

The Moving Coil Meter Characteristic

Comparison between the Digital bargraph and Moving Coil Meters

To enlarge the voltages scale of the Moving Coil Meter

Variation of output voltage in a potentiometer used as a position transducer

Characteristics of the Continuous Current Amplifiers 1,2 and x 100

Characteristics of the power and Buffer Amplifier

Characteristics of a current amplifier and buffer amplifier application

Characteristics of an Inverter Amplifier

Characteristics of a Differential Amplifier

[16:33, 08/04/2023] Anandhasudhan Muthuswamy: Characteristics of a Voltage to Current Converter

Characteristics of a Current to Voltage Converter

Characteristics of a Voltage to Frequency Converter

Characteristics of a Frequency to Voltage Converter

Characteristics of a Full Wave Rectifier

Characteristics of a Comparator

Characteristics of an Alarm Oscillator Circuit

Characteristics of an Electronic Switch

Characteristics of a Summing Amplifier

Characteristics of an Integrator

Characteristics of a Differentiator Circuit

Characteristics of a Sample and Hold Circuit

The Buffer as a compensator of the load effect in the potentiometer output voltage

Servo Potentiometer. Variation of the output voltage as a function of its position

Measure of Resistance using a Wheatstone Bridge Circuit

Voltage Measurement using "Null Balance"

The Integrated Circuit LM35 and Temperature Characteristics

NTC Thermistor Characteristics

Characteristic of the NTC thermistor used in an alarm circuit (doble thermistor)

Type "K" thermocouple characteristics

Photovoltaic cell Characteristics

Phototransistor Characteristics

Light Intensity Detector

Characteristics of PIN Photodiode

Linear Variable Differential Transformer Characteristic (LVDT)

Strain Gauge Characteristics

Characteristic of a slotted Optoelectronic Transducer and its application for count and speed measurement

Characteristics of the reflective optotransducers and the Gray Code Disk

Characteristics of an Inductive Transducer

Characteristics of the Hall Effect Transducer

Characteristics of DC Permanent Magnet Tachogenerator

Characteristics of a Dynamic Microphone

Characteristics of the ultrasonic receiver

Characteristics of the Moving Coil Speaker

[16:34, 08/04/2023] Anandhasudhan Muthuswamy: Characteristic of a Buzzer

Characteristic of DC Relay

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Characteristic of a Permanent Magnet Motor

Diode temperature sensor

Characteristics of the humidity sensor

Characteristics of the flow sensor

Characteristics of the pressure sensor

INPUT SENSORS/TRANSDUCERS

Resistance transducers for applications in linear or angular position

Linear slide potentiometer 10 K?

Rotary potentiometer 100 K? linear

Conductive plastic potentiometer 1 K? linear

Precision servo potentiometer 20 K?

Wheatstone Bridge Circuit

Temperature applications

Thermistors NTC:

Resistance @25°?:400k?

Resistance @50°?:118k?

B-constant(B25/50(K)):4700±7%

RTD platinum sensor

Temperature range:-50°? to +600?

Nominal resistance @0°?:100?

IC temperature sensor

Scale factor:+10mV/C

Accuracy:±0.5?

Thermocouple: "K" type,260°C max. continuous

Light applications

Phototransistor

V(BR) ceo: 30 V; I(c) abs:25mA

P(D) max: 100mW;V(CE) sat:400mV max

Tresp.:5ms

PIN Photodiode,I=1nA/L

Photoconductive cell, R(dark)=10 M?

I=1 nA/Lux

Photovoltaic cell V(insulated)=3V

Linear position and force

LVDT,Linearly Variable Differential Transformer:

Primary:69?

Secondary:200?

Extensometric transducer:

Resistance.320?±20% linear

Linearity:±2%

Operating force: from 2 to 7.5 N

Linear Position Sensor, Resistance: 5k?±20% linear

Environmental measurements:

Air flow sensor,Flow Range +/-200sccm

Air pressure sensor, Pressure Range 30 psi, gauge type

Humidity sensor

Rotational velocity and position control:

Opto-electronic sensor

Slot width:3.15mm

Opto-reflecting sensor:

Diode (Vf: 1.8V max,Vr: 2V max, Pd: 50mV)

Transistor (Vceo: 15V max, Vceo: 5V max)

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Inductive sensor:

Diameter:6.35mm

Length:22mm

Coil resistance:130?

Coil inductance:12mH±10%

Output:10Vpp

Hall effect sensor:

Supply voltage: 25 Vmax.

Output:5V@5V supply and zero magnetic flow

Output current: 10mA

DC tachogenerator, DC motor 12 V

Pneumatics application:

Solenoid valve,3/2-way valve NC, 7 bar max

pneumatic cylinder, Stroke 10mm, 6 bar max.

pneumatic switch,3/2 valve NC,stem actuated

Sound measurements:

Microphone, 50Hz-10KHz

FOR OUTPUT SENSORS/ TRANSDUCERS

Electric resistance

Incandescent lamp

Sound output applications:

Buzzer, Frequency:2.5kHz

Moving coil loudspeaker, Impedance:8?

Rated power: 200mW

Bandwidth: 400Hz to 5kHz

Ultrasonic transmitter:

Frequency:40kHz

Bandwidth: 4kHz/112 dB

Sound pressure level: 119 dB/40

Ultrasonic receiver:

Frequency: 40kHz

Bandwidth:3.5kHz/71 dB

Sound pressure level: 65 dB/40

Linear or angular movement applications

DC solenoid, Rated power: 0.3W

Rated voltage:12Vdc

DC relay, SPDT 12V/10A

DC motor,12 Vdc

Visualization Devices:

Timer/counter with 3-digit LED display

Bar graphs with 10 segments

Moving coil DC voltmeter

Signal Conditioning:

DC amplifiers

AC amplifiers

Power amplifiers

Current amplifiers

Buffer,amplifier

Inverting amplifier

Differential amplifier

Voltage/Frequency converter

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Frequency/Voltage converter  
Current/Voltage converter  
Voltage/Current converter  
Complete Wave Rectifier  
Hysteresis switchable comparator  
Alarm Oscillator  
Electronic Switch  
40 KHz Oscillator  
40 KHz Filter  
Switchable low-pass filter with time constant  
Power supply Outputs: 15 Vdc-1A,5Vdc-1A  
Circuits with Mathematical Operations:  
Adding amplifier  
Integrator with switchable time constant  
Instrumentation amplifier  
SAMPLE & HOLD circuit  
Gain and offset control amplifier  
The trainer is supplied with manual.

Sensors And Transducer Trainer- Didactic Equipment, Sensors And Transducer Trainer- Didactic Equipment Bulk Suppliers, Sensors And Transducer Trainer- Didactic Equipment Tools, Sensors And Transducer Trainer- Didactic Equipment Sensors And Transducer Trainer- Didactic Equipments, Sensors And Transducer Trainer- Didactic Equipment Manufacturers, Sensors And Transducer Trainer- Didactic Equipment Suppliers from India, China, Kenya.



**Laboratory instruments manufacturers India**