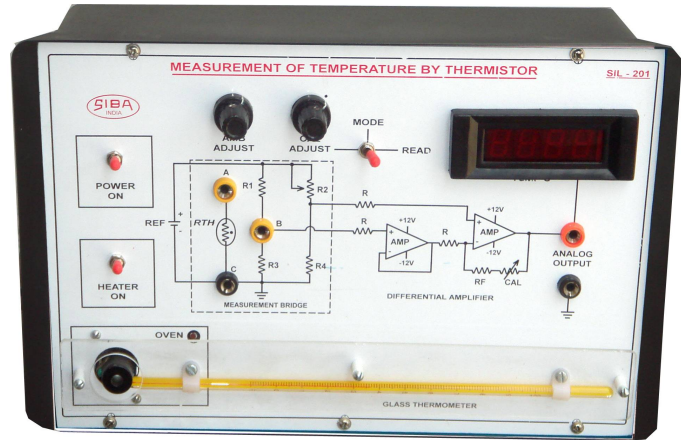


INTRODUCTION:

In industrial control systems, information about physical process should be known and transducers play vital role in it. A transducer is a device which convert one form of energy into other form. In other words it convert one's signal form into other signal form. In industrial application thermistors are used to control low temperature. The thermistors utilize the principal of change of electrical resistance of semiconductors versus change in temp. These are available in two type, NTC and PTC. In present set up NTC is used. The NTC thermistor characterized by resistance decrease with increase in temperature, having exponential nature. The non- linearity of characteristics in these devices make problem to use as temperature measurement sensor. In direct measurement circuits errors of + 50% is common. Manufacturers of thermistors advice to employ some kind of linearization circuits (present set up has two point linearization) to improve the linearity in useful range.



Features:

Thermister	: N.T.C bead mounted with oven.
Heating arrangement	: Electrically heated oven +90°C
Circuit	: Unbalanced bridge circuit with 1 st degree linearization
Amplifier	: Differential with feedback
Thermometer	: Glass(110 ⁰) for reference
Test points	: Sockets at different places for signals.
User controls	: Two potentiometers one to adjust ambient (room temp) & other to calibrate (span adjust)
Display	: 3.5 digit digital
Power supply	: Short circuit & overload Protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

- Study thermistor (resistance v/s temp.) char.
- Study of non-linear (exponential) characteristics.
- Study of thermistor as temperature measuring transducer.

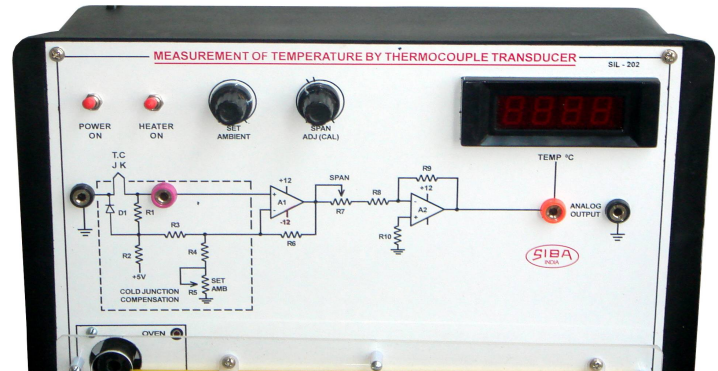
MANUFACTURED BY:

SATISH BROTHERS
 #4309/20, Marble house, Punjabi Mohalla,
 Ambala Cantt -133001 (hry.)
 Tel: 0171-2642617, 4008617
 E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

In industrial control systems, information about physical process should be known and transducers play vital role in it. A transducer is a device which convert one form of energy into other form. In other words it convert one's signal form into other signal form. To measure temperature in industries thermocouples are widely used. This set up is designed to study of temperature measurement using type j thermocouple .The basic of thermocouple is available in text books, but a brief is made here. When a temperature differential is maintained across a given metal, the motion of electrons is affected so that a difference in potential exists across the material. This potential difference is related to the fact that electrons in the hot end of the material have more thermal energy than those in the cool end and thus tend to drift towards the cool end. This drift varies for different metals for same temperature because of their thermal conductivity.



Features:

Thermocouple	: J or K
Heating arrangement	: Electrically heated oven +90°C
Circuit	: in built cold temperature junction compensation
Amplifier	: Differential with feedback
Thermometer	: Glass(110°) for reference
Test points	: Sockets at different places for signals.
User controls	: Two potentiometers one to adjust ambient (room temp) & other to calibrate (span adjust)
Display	: 3.5 digit digital
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

Study of thermocouple as temperature measuring transducer
To find out thermocouple temperature coefficient

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

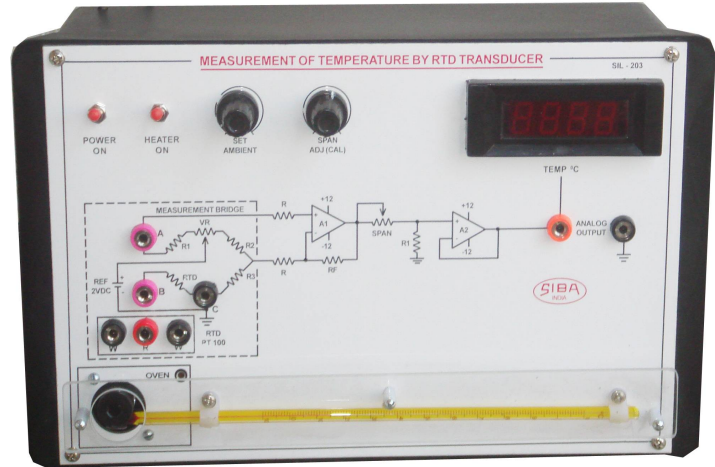
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

In industrial control systems, information about physical process should be known and transducers play vital role in it. A transducer is a device which convert one form of energy into other form. In other words it convert one's signal form into othe rsignal form. To measure temperature in industries thermocouples and RTD are widely used, whether thermistors are used to control low temperature. This set up is designed to study of temperature measurement using Platinum resistance transducer as sensor. **The RTD** : The property of change in electrical conductivity (say resistance) of certain metal versus change in temperature is utilize in resistance temperature detectors. The metals used in RTD's are Platinum, copper and nickel is common. In which Platinum RTD is very popular. The property of metal thermal detector is the linear fractional change in resistance with temperature. The present RTD sensor is made of Platinum film which is laser etched. The high sensitivity of PT - 100, sensor makes it very convenient for temperature measuring purpose.



Features:

R.T.D.	: PT-100
Heating arrangement	: Electrically heated oven +90°C
Circuit	: Wheatstone bridge circuit for transducer interface
Amplifier	: Differential with feedback
Thermometer	: Glass(110°) for reference
Test points	: Sockets at different places for signals.
User controls	: Two potentiometers one to adjust ambient (room temp) & other to calibrate (span adjust)
Display	: 3.5 digit digital
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

Measurement temperature using R.T.D.

To find out R.T.D. sensitivity (a temperature coefficient)

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

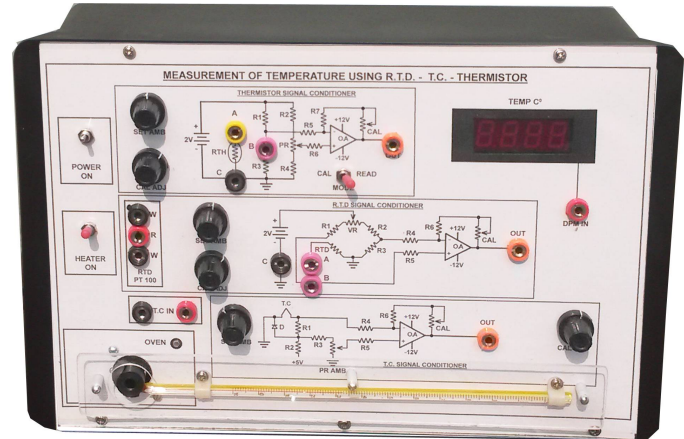
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

In industrial control systems, information about physical process should be known and transducers play vital role in it. A transducer is a device which convert one form of energy into other form. In other words it convert one's signal form into othe rsignal form. To measure temperature in industries thermocouples and RTD are widely used, whether thermistors are used to control low temperature. This set up is designed to study of temperature measurement using Platinum resistance transducer as sensor. **The RTD** : The property of change in electrical conductivity (say resistance) of certain metal versus change in temperature is utilize in resistance temperature detectors. The metals used in RTD's are Platinum, copper and nickel is common. In which Platinum RTD is very popular. The property of metal thermal detector is the linear fractional change in resistance with temperature. The present RTD sensor is made of Platinum film which is laser etched. The high sensitivity of PT - 100, sensor makes it very convenient for temperature measuring purpose.



Features:

R.T.D.	: PT-100
Thermocouple	: K-type
Therister	: Disc type
Heating arrangement	: Electrically heated oven +90°C
Circuit	: Individual for each transducer
Thermometer	: Glass(110°) for reference
Test points	: Sockets at different places for signals.
User controls	: Two potentiometers for each one to adjust ambient (room temp) & other to calibrate (span adjust)
Display	: 3.5 digit digital
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

Measurement temperature using R.T.D.

To find out R.T.D. sensitivity (a temperature coefficient)

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

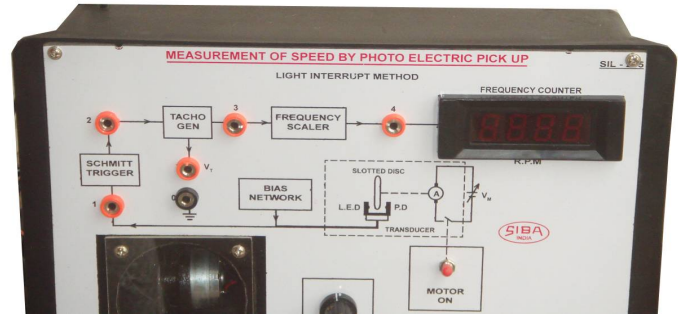
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

Speed measurement by photoelectric (optical) transducer is a convenient method, since many type of photon devices are available. In present set up a photo diode is used as transducer. *The transducer*: A photo diode (in reverse bias mode) is a device the resistance of which falls to great extent when it is exposed to light radiation. In actual we must describe the system before the transducer. A light emitting diode and a photo diode is mounted in such way that full radiated energy falls upon the diode. A disc is attached with the motor shaft which has ten uniformed holes (may said ten blockage) within its periphery. When motor runs the light is being passed through these holes or say the light is interrupted by these blockages. A proportional voltage in pulse form is developed across the diode when light get interrupted. In this way ten pulses are generated with one revolution of the motor.



Features:

Transducer	: Non-Contact type
Motor	: 12V,3000 RPM permanent magnet DC motor
Speed Control	: variable with {on/off switch}
Sensor	: Photo diode
Tachogenerator	: Electronic
Light Source	: H.G. LED
Interrupt	: Opto interrupt disc
Signal Conditioner	: Based on op amps.
Test points	: Sockets provided at each signal processing block i/p o/p
Display	: 4 digit digital counter for speed(RPM)
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

Study of speed measurement by Photoelectric pickup
(non-contact light interrupt measurement transducer)

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

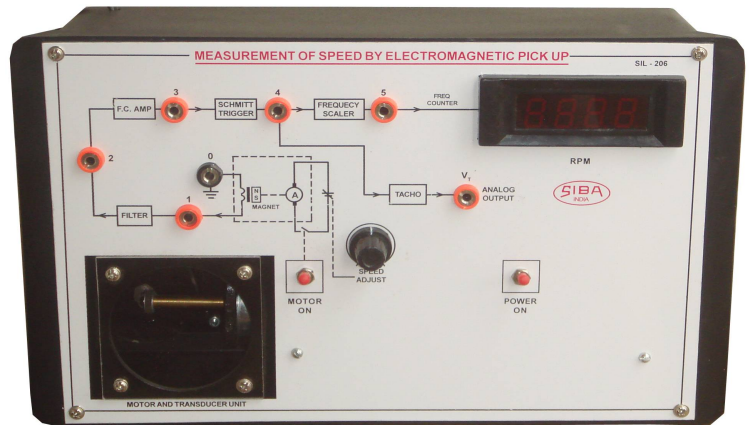
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

Speed measurement in process industry is very common in which shaft, pulley or gear rotation is measured by many techniques. This set up is designed to measure speed of a motor shaft by an electromagnetic transducer. The electromagnetic transducer is similar to an electromagnet system. It is an electro-magnet (the wounded coil) is energized with a magnetic substance which is kept outside the coil cause to flow mmf. It based upon Faraday electromagnetic principle that rotating flux of a magnetic field of such system cause to induce voltage in a coil surrounded. The present transducer is made upon this principal A thin wire coil of several hundred turn is wound around a Iron core which is made slightly magnetized.



Features:

- Transducer** : Non-Contact type
- Motor** : 12V,3000 RPM permanent magnet DC motor with a low power magnet attached with shaft of the motor.
- Speed Control** : variable with {on/off switch}
- Electromagnetic pick up dia.** : 30mm,Cu wound
- Signal Conditioner** : Based on op amps.
- Test points** : Sockets provided at each signal processing block i/p o/p
- Display** : 4 digit digital counter for speed(RPM)
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx).

EXPERIMENT COVERED

Study of speed measurement by Electromagnetic pickup
(non-contact electromagnetic speed measurement transducer)

MANUFACTURED BY:

SATISH BROTHERS

#4309/20,Marble house,Punjabi Mohalla,

Ambala Cantt -133001(hry.)

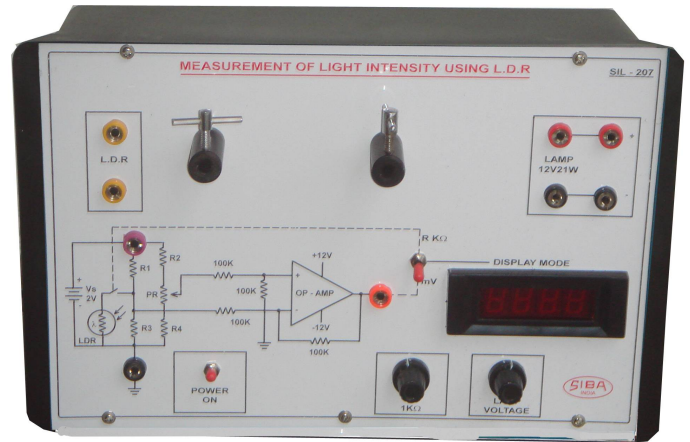
Tel: 0171-2642617,4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

A photo resistor consists of a device that change its electrical Ohmic resistance when light is applied. Thus it is also called as photo conductive cell or the Light Dependent Resistor abb. as L.D.R. The active region of photo resistor is a thin film of silicone, germanium, selenium, a metallic helide or a metallic sulphide. When these type of materials are exposed to the light radiation, free electrons are created as photon energy drives them from a valence band into the conduction band. As in a conductor the free electrons mean that current can flow through them if an e.m.f is applied. since illumination creates additional free electrons the resistance of such devices falls greatly with light intensity. The photo resistors show very non-linear chaacteristics, such within mega ohm resistance in dark to few ohm when exposed to strong light.



Features:

L.D.R.	: One
Circuit	: 1 st degree linearization
Interface	: Unbalance Bridge for LDR
Lamp	: 12V/21W tungston lamp with intensity control (continuously variable).
Resistance	: Direct in K ohm
Calibration	: Lamp voltage v/s Intensity
Test points	: Sockets at different places for signals.
Potentiometer	: One (Cal adjust)
Display	: 3.5 digit digital as KΩ/millivolt
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

- Study LDR (resistance v/s light intensity) char
- Study of non-linear (exponential) characteristics.
- Study of LDR as light intensity measuring transducer(mV v/s intensity).

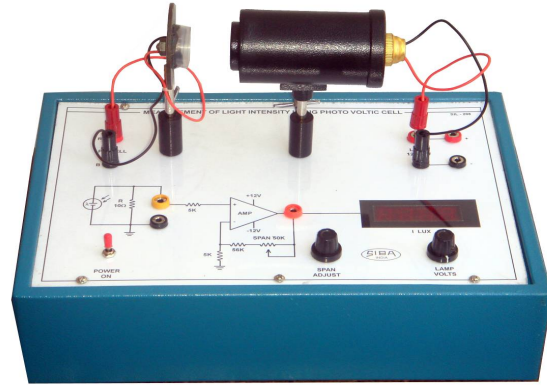
MANUFACTURED BY:

SATISH BROTHERS
 #4309/20, Marble house, Punjabi Mohalla,
 Ambala Cantt -133001 (hry.)
 Tel: 0171-2642617, 4008617
 E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

The photo voltaic cells generate electrical energy when exposed to light and does not require any external power. These are in commercial use as exposure meters, direct reading illumination meters and as electrical power sources in form of solar cells. The present set is based upon to study of such photo voltaic cell as transducer to measure illumination level. A silicon photo voltaic cell mounted in a bakelite housing is used as transducer which convert light radiation EM into proportional current as electrical energy. The construction of cell may be think as a big p - n junction made by appropriately doped semiconductors. Photons strikes the cell pass through a translucent layer (p type) with n - layer used as substrate. The depletion zone potential of p - n junction separates conduction electrons and holes which result in an emf produced across the junction. It is why these devices sometimes called as voltage generating device. The generated electrons and holes pair on both side of junction and their flow constitutes the current.



Features:

- Photovoltaic cell** : Silicone based mounted in bakelite mould.
- Signal conditioner** : OP-amp based
- Lamp** : 12V/21W tungston lamp with control (variable).
- User controls** : One potentiometers to calibrate (span adjust)
- Plot** : Lamp voltage v/s Intensity
- Test points** : Sockets at different places for signals.
- Display** : 3.5 digit digital in lux
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx).

EXPERIMENT COVERED

Study photovoltaic cell as light intensity measuring transducer.

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

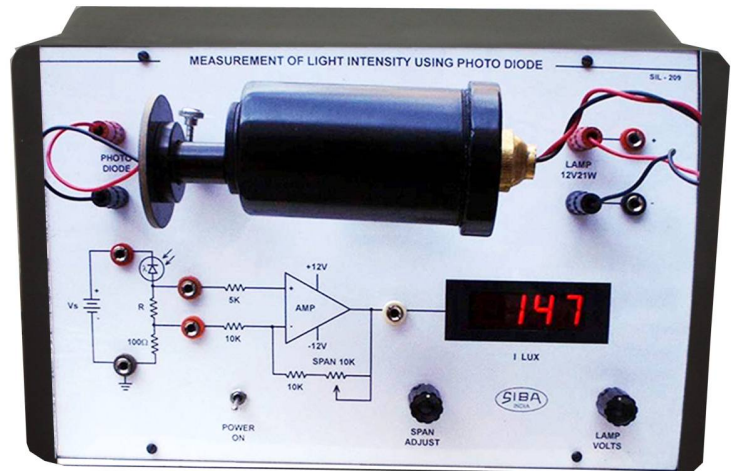
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

A photo diode consists of a p - n junction coated with translucent film . The light (radiation) is allowed to fall upon its surface, across the junction. The junction is made reverse - biased with an e.m.f source. A reverse current flows nearly linearly with the intensity of light flux. The reverse - biased current flows through diode is linear function of light intensity, thus to measure the light intensity level, this current is passed through a precision fixed resistance R. The reverse current develop proportional voltage across the R, which is than amplified to desired level by an amplifier. This set up has one 12V 21W tungsten lamp excited by 0 - 10V 3Amp dc source as light source, one photo diode housed in open aperture fixture, the reverse - bias source and op - amp to further process with its symmetrical regulated dc supplies.



Features:

- Photo diode** : PIN photo diode mounted in metallic housing .
- Signal conditioner** : OP-amp based
- Lamp** : 12V/21W tungsten lamp with control (variable).
- User controls** : One potentiometer to calibrate (span Adjust)
- Plot** : Lamp voltage v/s Intensity
- Test points** : Sockets at different places for signals
- Display** : 3.5 digit digital in lux
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx).

EXPERIMENT COVERED

Study photo diode as light intensity measuring transducer.

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

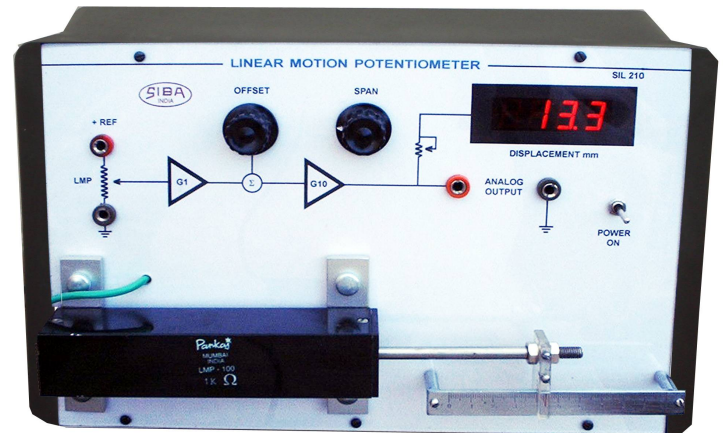
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

The measurement of displacement, position or say location is an important parameter in industries. The simplest and fairly accurate transducer used to measure displacement is potentiometer. It converts linear (or angular) displacement into electrical signals, by changing its resistance. A potentiometric transducer is an electro-mechanical device contains a resistive element which is kept fixed at two ends and a wiper arrangement is made as moveable slider. Motion of the wiper results in a change in resistance with reference to its ends. The change in electrical parameter (resistance) versus its mechanical parameter (displacement) is fairly linear in linear potentiometer. The device is passive in nature thus it is excited with dc voltage normally to obtain change in voltage or current as displacement signal. This set up is designed to study of such linear potentiometer as linear displacement transducer.



Features:

- L.M.P.** : 0-100mm with vernier
- Signal conditioner** : OP-amp based
- Test points** : Sockets at different places for signals(reverse current also)
- Display** : 3.5 digit digital(mm)
- Calibration**
- Constant** : V/mm
- Test points** : Sockets at different places for signals
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx).

EXPERIMENT COVERED

Study measurement of linear displacement by LMP.

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

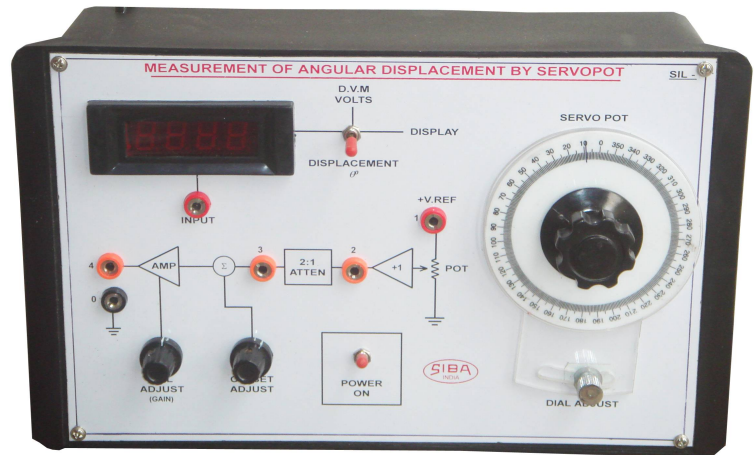
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

The measurement of displacement, position or say location is an important parameter in industries. The simplest and fairly accurate transducer (sensor) used to measure displacement is potentiometer. This sensor converts linear (or angular) displacement into electrical signals, by changing its resistance. A potentiometric transducer is an electro-mechanical device contains a resistive element which is kept fixed at two ends and a wiper arrangement is made as moveable slider. Motion of the wiper results in a change in resistance with reference to its ends. The change in electrical parameter (resistance) v/s its mechanical parameter (displacement) is fairly linear in servo potentiometer. The device is passive in nature thus it is excited with dc voltage to obtain change in voltage or current as displacement signal. This set up is designed to study of such servo potentiometer as angular displacement transducer.



Features:

- Potentiometer** : Servo having 360^o rotation as transducer
- Signal conditioner** : OP-amp based
- Dial** : Calibrated 1^o resolution
- Test points** : Sockets at different places for signals(reverse current also)
- Display** : 3.5 digit digital (volt/θ)
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx).

EXPERIMENT COVERED

Study measurement of angular displacement by SERVOPOT

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

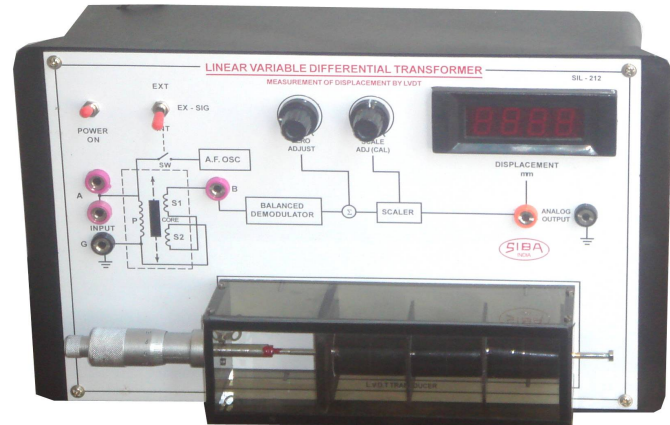
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

Position transducers are used widely in industrial and applications, among them the linear variable differential transformer (LVDT) is excellent in performance compared to potentiometric transducer to measure position and displacement. Displacement is the vector representing a change in position of a point with respect to a reference point. It can be either rotary or linear. The linear variable differential transformer type of displacement transducer particularly suitable as a short stroke, position measuring device. In given set up the open cage construction is provided to observe the basic construction of device. The LVDT consists of two identical secondaries (symmetrically placed on both sides of primary), one primary coil and a movable core called actuator. The displacement to being measured is transferred to the magnetic core in flux linkage. When the primary coil is connected to a sinusoidal excitation source, the amount of voltage on the secondary S1 and S2 depends on the position of the core



Features:

- Excitation source** : Built in AC source 2.5 KHz sine approx.
- L.V.D.T.** : in non metallic structure.
- Micrometer** : One (for displacement)
- Displacement range** : ± 15 mm.
- Test points** : Sockets at different places for signals.
- User controls** : Two potentiometers
one to adjust zero and other for calibrate (span adjust)
- Display** : 3.5 digit digital(mm)
- Power supply** : IC regulated
- Phase detection** : Balanced demodulator
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx).

EXPERIMENT COVERED

Study of L.V.D.T. as Linear displacement transducer

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

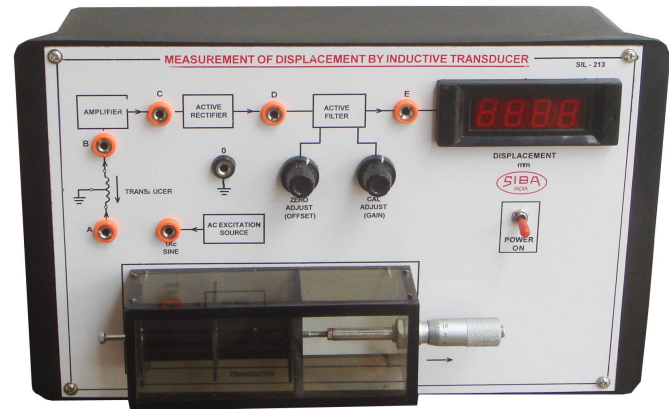
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

The provided set is designed to study of inductive transducer as measurement of linear displacement. It has inbuilt excitation source, signal processing circuitry and a digital panel meter which can be adjusted to read displacement in mm. The set up has an inductive transducer in shape of two coils the reluctance of which is varied by mean of an iron core. Complete process is well printed in blocks with test points in form of sockets to observe / measure waveforms. The measurement of displacement is an important subject in process industry such as orientation of an object in job machine. There are three basic transducers are used in industries. The inductive transducer is one of them. An inductance is formed by a coil wound upon non metallic former which has a uniform no. of turns spread through the entire former and a core is used to move inside / outside as subject of displacement to which the movable element is attached. The inductance of the coil depends upon the core position



Features:

- Excitation source** : Built in AC source 1 KHz sine approx.
- Inductive pickup** : in non metallic structure.
- Signal conditioner** : OP-amp based
- Micrometer** : One (for displacement)
- Displacement range** : 0-10mm.
- Test points** : Sockets at different places for signals.
- User controls** : Two potentiometers
one to adjust zero and other for calibrate (span adjust)
- Display** : 3.5 digit digital
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx).

EXPERIMENT COVERED

Study linear displacement by inductive pickup

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

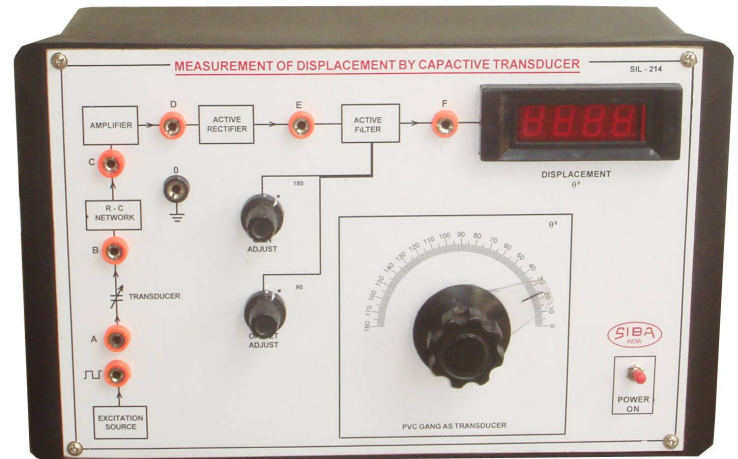
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

The provided set is designed to study of capacitive transducer. It has inbuilt excitation source, signal processing circuitry and a digital panel meter which can be adjusted to read displacement in θ . The set up has a ppc dielectric PVC ganged capacitor as transducer. Complete process is well printed in blocks with test points in form of sockets to observe / measure waveforms. The measurement of displacement is an important subject in process industry such as angular location / orientation of an object in job machine. There are three basic transducers are used in industries. The capacitive transducer is one of them. A capacitor is formed by two parallel plates which has a uniform distance d between them is used in angular displacement measurement.



Features:

- Excitation source** : Built in AC source 5 KHz sq. Wave approx.
- Gang Condenser** : Variable condenser as transducer
- Signal conditioner** : OP-amp based
- Test points** : Sockets at different places for signals.
- Potentiometer** : Two for zero(90°) & cal(180°) adjust
- Display** : 3.5 digit digital(θ°)
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx).

EXPERIMENT COVERED

Study angular displacement by capacitive pickup

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

A load cell is an electro mechanical device which converts force into an electrical signal and used for measurement of static and dynamic forces. The load cell has a load receiving element having highly tensile strength and strain gauges which convert this change in (de)formation of load receiving element into proportional change in electrical signal. Construction wise the load cell has three basic parts, the housing or mount (holding the cell), the load receiving element (Al bar with drilled holes) and strain gauges in bridge form. In the load cell four strain gauges are mounted from which two sense compressive strains at the bottom side, and tensile strains on the upper side. since both the compressive and tensile strains are equal the bridge output is twice. Connections are made to form four arm active bridge . The bridge is excited with a dc potential obtained from a band gap reference.



Features:

Load cell	: Strain gauge based 2.5kg
Excitation	: Stable DC voltage for strain gauge bridge
Signal conditioner	: OP-amp based
Amplifier	: Precision instrumentation amplifier with variable gain
Weight	: Five(each 500g)
Test points	: Sockets at different places for signals.
User controls	: Two potentiometers one to adjust zero and other for calibrate (span adjust)
Display	: 3.5 digit digital(Kg)
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

To study measurement of load by strain gauge based load cell
Study of Load cell characteristics

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

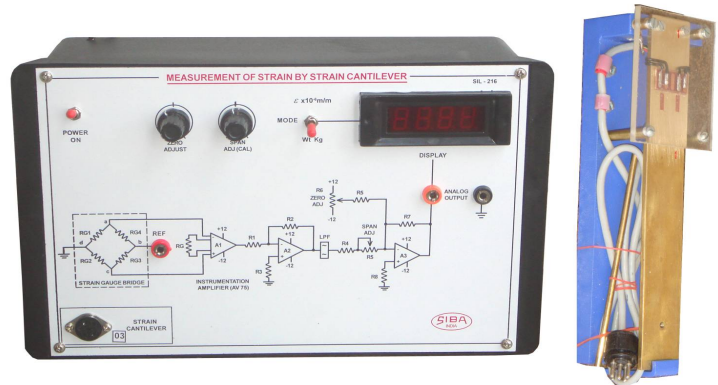
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

In the system cantilever beam having four strain gauges mounted such that on application of force gauge RG1 and RG3 is subjected to tension and RG2 and Rg4 subjected to compression. In this scheme these gauges constitute the four active arms of a measuring bridge and called a full bridge. The sensitivity of this bridge is x4 times of a single strain gauge system and since the gauges are located at same section of the beam the temperature compensation is made automatically. The bridge is excited with a dc potential obtained from a band gap reference. In normal condition some offset voltage is presented since there is dissimilarity in gauge resistance and a loading of weight holder wire is imposed. A offset correction is done by zero set control.



Features:

- Strain gauges** : Four mounted upon cantilever
150x35x3.5mm
- Excitation** : Stable DC voltage for strain gauge bridge
- Signal conditioner** : OP-amp based
- Amplifier** : Precision instrumentation amplifier with variable gain
- Weight** : Five(each 200g)
- Test points** : Sockets at different places for signals.
- User controls** : Two potentiometers
one to adjust zero and other for calibrate (span adjust)
- Display** : 3.5 digit digital for strain/weight
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One

EXPERIMENT COVERED

To study measurement of strain by strain gauge bridge cantilever
Study of strain gauge transfer characteristics

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

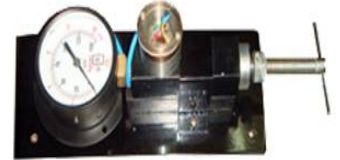
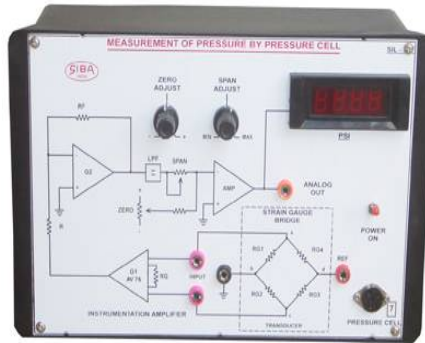
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

This set up is designed to study of pressure cell and its utilization as pressure measuring transducer. The set up consists a pressure cell, the signal conditioner circuit and a digital display calibrated for pressure measurement. The set up have its own inbuilt regulated dc supplies. Pressure cell is an electromechanical device which converts applied pressure into an electrical signal and used for measurement of static and dynamic forces. The pressure cell has a receiving element having highly tensile strength and strain gauges which convert this change in formation of pressure receiving element into proportional change in electrical signal. Construction wise the pressure cell has three basic parts, the housing, the receiving element (diaphragms & disc) and strain gauges. In the pressure cell four strain gauges are mounted to form four arm active bridge. The bridge is excited with a dc potential obtained from a band gap reference. For a clamped circular diaphragm of radius r , thickness t , and pressure p , the radial stress at the edges obtained. It cause to change the length of strain gauges mounted upon its surface.



Features:

- Pressure Cell** : Strain gauge mounted diaphragm type
- Pressure** : Hydraulic column type with break oil to apply pressure
- Gauge** : Bourdan gauge 0-150 psi for reference.
- Instrumentation Amplifier** : Precision with variable gain.
- Excitation** : Stable DC excitation voltage for strain gauge bridge.
- Test points** : Sockets at different places for signals.
- User controls** : Two potentiometers one to adjust zero and other for calibrate (span adjust)
- Display** : 3.5 digit digital(Psi)
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx)

EXPERIMENT COVERED

Measurement pressure using pressure cell

MANUFACTURED BY:

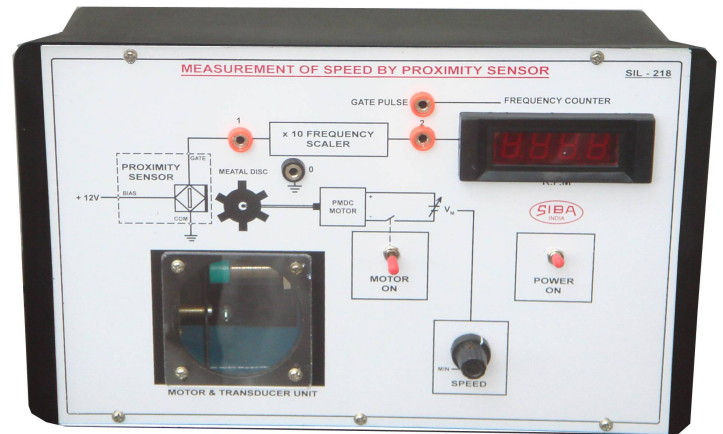
SATISH BROTHERS
 #4309/20, Marble house, Punjabi Mohalla,
 Ambala Cantt -133001 (hry.)
 Tel: 0171-2642617, 4008617
 E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

Speed measurement in process industry is very common in which shaft, pulley or gear rotation is measured by many techniques. This set up is designed to measure speed of a motor shaft by an electromagnetic transducer.

The electromagnetic transducer is similar to an electromagnet system. It is an electro-magnet (the wounded coil) is energized with a magnetic substance which is kept outside the coil cause to flow mmf. It based upon Faraday electromagnetic principle that rotating flux of a magnetic field of such system cause to induce voltage in a coil surrounded. The present transducer is made upon this principal A thin wire coil of several hundred turn is wound around a Iron core which is made slightly magnetized.



Features:

- Transducer** : Non-Contact type
- Motor** : 12V,3000 RPM permanent magnet DC motor with a low power magnet attached with shaft of the motor.
- Speed Control** : Variable with {on/off switch}
- Electromagnetic pick up dia.** : 15mm,proximity
- Signal Conditioner** : Based on op amps.
- Test points** : Sockets provided at each signal processing block input & output
- Display** : 4 digit digital counter for speed(RPM)
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx).

EXPERIMENT COVERED

To study of speed measurement by Proximity sensor

MANUFACTURED BY:

SATISH BROTHERS

#4309/20,Marble house,Punjabi Mohalla,

Ambala Cantt -133001(hry.)

Tel: 0171-2642617,4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

The provided set is designed to study of capacitive transducer as water level measurement. It has inbuilt excitation source, signal processing circuitry and a digital panel meter which can be adjusted to read displacement in mm of level. The set up has a metallic parallel plate capacitor as transducer. Complete process is well printed in blocks with test points in form of sockets to observe / measure waveforms. The measurement of level is an important subject in process industry such as level of liquid in a reservoir tank. There are three basic transducers used in industries. The capacitive transducer is one of them. A capacitor is formed by two parallel plates (using metallic rod to form two concentric cylinders) which has a uniform distance d and area A between them is used in measurement.



Features:

Transducer	: Capacitive Parallel plate cylindrical type
Range	: 0–200mm
Jar	: Acrylic jar with tap & scale
Excitation source	: Built in 5KHz(Sq.)
Test points	: Sockets at different places for signals.
User controls	: Two potentiometers one to adjust zero and other for calibrate (span adjust)
Display	: 3.5 digit digital
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

To study water level measurement using capacitive transducer.

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

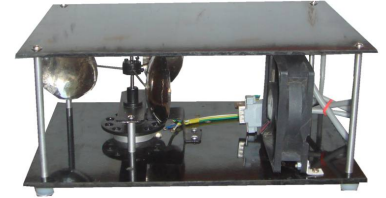
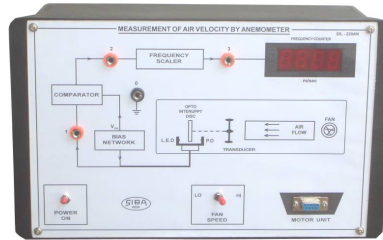
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

Velocity is a vector quantity and defined as the 'rate of change of displacement' and may be treated as 'air flow rate'. The velocity can be measured by optical techniques if the displacement is a linear function. One procedure called Anemometer method. The set up is based upon this technique. The present set up is built in two parts as (a) transducer unit and (b) the signal conditioner and measurement unit. *The Anemometer* : When an axially mounted freely rotating cups is placed in the path of air flow stream, impinging on the cups imparts a force on the rotor in motion with an angular velocity proportional to air velocity. When a steady rotational speed is reached, the rotor (disc) speed attained, is proportional to volumetric rate of air flow. The rotor (disc) diameter is 100 + 1 mm made of aluminium with 16 slots to interrupt light.



Features:

Transducer	: Axially mounted free rotating cups
Speed	
Sensor	: Photo diode
Measurement	: Through light interrupt method
Signal	
Conditioner	: Op-amp based
Test points	: Sockets at different places for signals.
Display	: 4 digit digital counter m/sec flow indicator
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

To study measurement of air velocity by Anemometer.

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

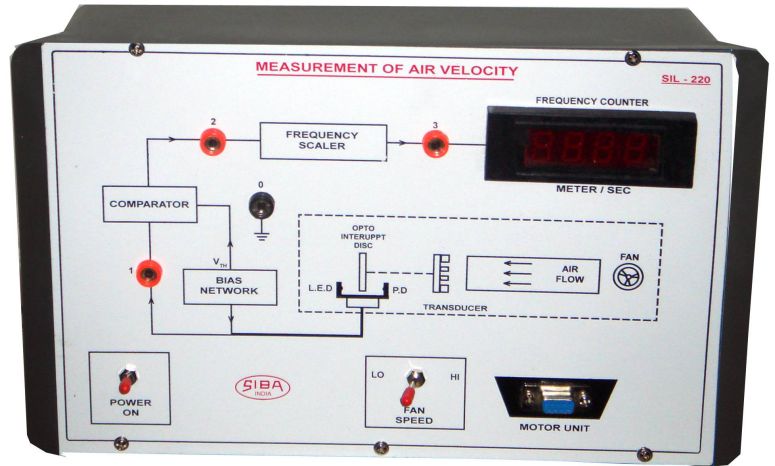
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

Velocity is a vector quantity and defined as the 'rate of change of displacement' and may be treated as 'air flow rate'. The velocity can be measured by optical techniques if the displacement is a linear function. In measurement of non - solids such air / gases thermo elements, moving coil generators and turbine transducer are used. In thermo elements the bases taken of change in temperature of two thermo elements placed at distinct distances. In moving coil generator motion of a coil in a magnetic field generates a voltage. The last procedure called turbine flow meter. The set up is based upon this technique.



Features:

Transducer	: Axle mounted turbine flow meter
Speed	
Measurement	: Through Photo transducer to convert angular speed into electrical signal
Fan	: Small AC fan for air flow
Signal	
Conditioner	: Op-amp based
Test points	: Sockets at different places for signals.
Display	: 4 digit digital counter m/sec flow indicator
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

To study measurement of air velocity by turbine transducer.

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

Tel: 0171-2642617, 4008617

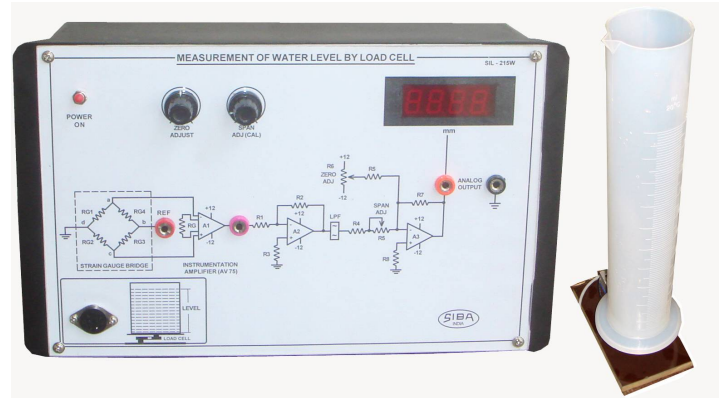
E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

This set up is designed to study of load cell utilization as level measuring transducer. The set up consists a load cell, water container, the signal conditioner circuit and a digital display calibrated for level measurement. The set up have its own inbuilt regulated dc supplies. The complete system can be described in following manners.

Principle : There are several electrical methods of measuring level. For example one may use float with potentiometer, capacitive transducer which use the dielectric principle and the ultrasonics. The latter system is non -contact type based on reflection time between transmitter - receiver. How-ever for liquid measurement, it is possible to make a non contact meas-urement of level, if the density of the liquid is known. This method is based on the well known relationship between pressure at the bottom of a uni-form tank, and the height and density of the liquid.



Features:

- Load cell** : Strain gauge based 2.5kg
- Excitation** : Stable DC voltage for strain gauge Bridge
- Water level** : Two litre jar with graduation
- Signal conditioner** : OP-amp based
- Amplifier** : Precision instrumentation amplifier with variable gain
- Test points** : Sockets at different places for signals
- User controls** : Two potentiometers
one to adjust zero and other for calibrate (span adjust)
- Display** : 3.5 digit digital(mm)
- Power supply** : Short circuit & overload protected
- Mains** : 230V/50Hz AC
- Instruction manual** : One
- Size** : 320x190x75mm(approx).

EXPERIMENT COVERED

Measurement of water level using strain gauge type load cell

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

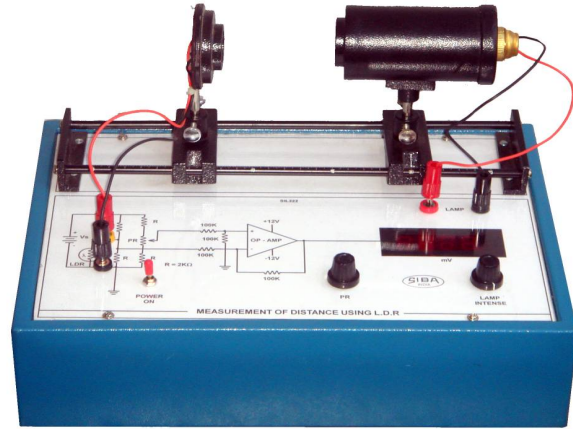
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

A photo resistor consists of a device that change its electrical Ohmic resistance when light is applied. Thus it is also called as photo conductive cell or the Light Dependent Resistor abb. L.D.R. The active region of photo resistor is a thin film of cadmium, selenium, a metallic helide or ametallic sulphide. When these type of materials are exposed to the light ra-diation, free electrons are created as photon energy drives them from a va-lence band into the conduction band. As in a conductor the free electrnsmean that current can flow through them if an e.m.f is applied. since illumina-tion creates additional free electrons the resistance of such devices fallsgreatly with light intensity. The photo resistors show very non - linear charac-teristics, such within megaOhm resistance in dark to few Ohm when exposedto strong light. This characteristics is useful to measure two distinct distances.



Features:

L.D.R.	: One
Circuit	: 1 st degree linearization
Interface	: Unbalance Bridge for LDR
Lamp	: 12V/21W tungston lamp with intensity control (continuously variable).
Fixture	: Small graduated optical bench for distance measurement with slides.
Potentiometer	: One (bridge adjustment)
Calibration	: Distance in mm
Test points	: Sockets at different places for signals.
Display	: 3.5 digit digital in mm
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

Measurement of distance using L.D.R.

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

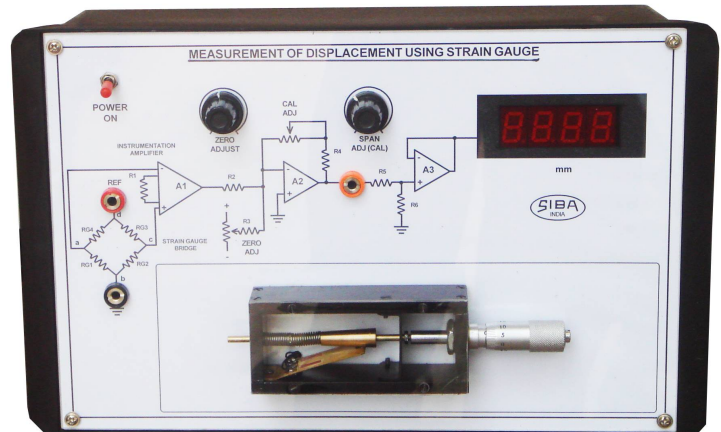
Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

In the system cantilever beam having four strain gauges mounted such that on application of force gauge RG1 and RG3 is subjected to tension and RG2 and Rg4 subjected to compression. In this scheme these gauges constitute the four active arms of a measuring bridge and called a full bridge. The sensitivity of this bridge is x4 times of a single strain gauge system and since the gauges are located at same section of the beam the temperature compensation is made automatically. The bridge is excited with a dc potential obtained from a band gap reference. In normal condition some offset voltage is presented since there is dissimilarity in gauge resistance and a loading of weight holder wire is imposed. A offset correction is done by zero set control.



Features:

Strain gauges	: Four mounted upon cantilever
Excitation	: Stable DC voltage for strain gauge bridge
Micrometer	: For displacement 0-10mm
Signal conditioner	: OP-amp based
Amplifier	: Precision instrumentation amplifier with variable gain
Test points	: Sockets at different places for signals.
Potentiometer	: Two for zero & cal adjust
Display	: 3.5 digit digital(in mm)
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

Measurement of displacement by strain gauge

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

The measurement of displacement, position or say location is an important parameter in industries. The simplest and fairly accurate transducer (sensor) used to measure displacement is potentiometer. This sensor converts linear (or angular) displacement into electrical signals, by changing its resistance. A potentiometric transducer is an electro-mechanical device contains a resistive element which is kept fixed at two ends and a wiper arrangement is made as moveable slider. Motion of the wiper results in a change in resistance with reference to its ends. The change in electrical parameter (resistance) v/s its mechanical parameter (displacement) is fairly linear in servo potentiometer. The device is passive in nature thus it is excited with dc voltage to obtain change in voltage or current as displacement signal. This set up is designed to study of such servo potentiometer as angular displacement transducer.

Features:

Potentiometer	: Servo having 360 ^o rotation as transducer
Signal conditioner	: OP-amp based
Dial	: Calibrated 1 ^o resolution
Test points	: Sockets at different places for signals(reverse current also)
Display	: 3.5 digit digital (volt/θ)
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 320x190x75mm(approx).

EXPERIMENT COVERED

Study characteristics of Resistive transducer

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001(hry.)

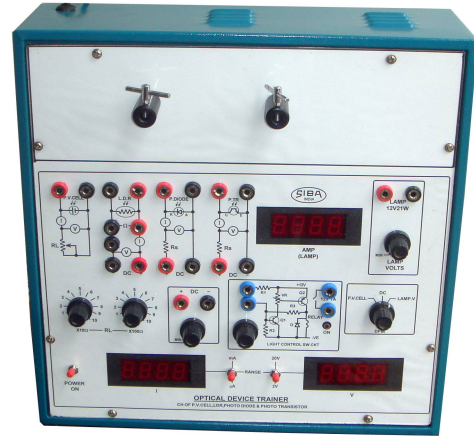
Tel: 0171-2642617,4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

A photo resistor consists of a device that change its electrical Ohmic resistance when light is applied. Thus it is also called as photo conductive cell or the Light Dependent Resistor abb. as L.D.R. The active region of photo resistor is a thin film of silicone, germanium, selenium, a metallic helide or a metallic sulphide. When these type of materials are exposed to the light radiation, free electrons are created as photon energy drives them from a valence band into the conduction band. As in a conductor the free electrons mean that current can flow through them if an e.m.f is applied. since illumination creates additional free electrons the resistance of such devices falls greatly with light intensity. The photo resistors show very non-linear chaacteristics, such within mega ohm resistance in dark to few ohm when exposed to strong light.



Features:

L.D.R.	: One
PHOTODIODE	: One
PHOTO TRANSISTOR	: One
PV CELL	: One
Lamp	: 12V/21W tungston lamp with intensity control (continuously variable).
DC supply	: Variable 0-20V
Circuit	: Photoelectric relay
Selector switch	: Three mode for display
Display	: Three 3.5 digit digital <ol style="list-style-type: none"> 1. Digital ammeter 0-2A 2. Dual range 0-2000uA & 0-20mA 3. Digital dual range 0-2V & 0-20V
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One

EXPERIMENT COVERED

Study characteristics of optical devices
 (LDR, Photodiode, Phototransister & Photovoltaic cell)

MANUFACTURED BY:

SATISH BROTHERS

#4309/20,Marble house,Punjabi Mohalla,

Ambala Cantt -133001(hry.)

Tel: 0171-2642617,4008617

E-mail: info@sibaindia.com

AUTH. DEALER

INTRODUCTION:

This set up is designed to study of strain gauged cell utilization as torque measuring transducer. The set up consists a strain gauge bridge, the signal conditioner circuit and a digital display calibrated for torque / angle measurement. The set up have its own inbuilt regulated dc supplies. The torque can be estimated by measurement of 'torsional shear strain', produced by application of force 'F' at both ends of a shaft. torque can be measured by coupling a universal strain gauged load cell to the shaft directly or by coupling to the shaft by another device such as gear, wheel or lever etc. In case of direct mounting of strain gauges (rosette gauge) to the shaft

Features:

Strain gauges	: Mounted upon rod and pulley
Excitation	: Stable DC voltage for strain gauge bridge
Signal conditioner	: OP-amp based
Amplifier	: Precision instrumentation amplifier with variable gain
Weight	: Five(each 500g)
Potentiometer	: Two for zero & cal adjust
Display	: 3.5 digit digital
Power supply	: Short circuit & overload protected
Mains	: 230V/50Hz AC
Instruction manual	: One
Size	: 310x210x80mm(approx).

EXPERIMENT COVERED

To measure static torque and angle of twist ' θ ' using strain gauge cell.

MANUFACTURED BY:

SATISH BROTHERS

#4309/20, Marble house, Punjabi Mohalla,

Ambala Cantt -133001 (hry.)

Tel: 0171-2642617, 4008617

E-mail: info@sibaindia.com

AUTH. DEALER