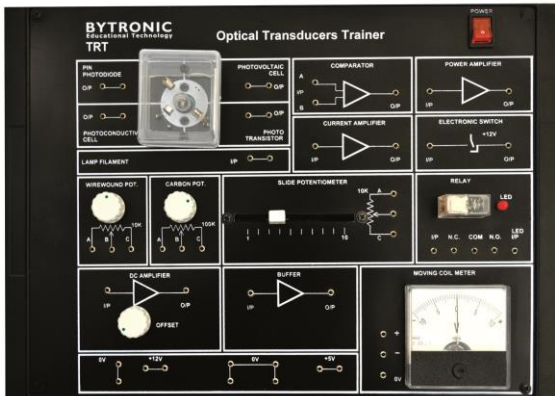


TRT – Transducer Trainer



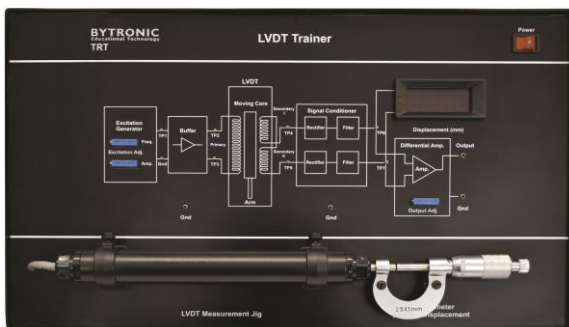
Optical Transducer Trainer

- Four different optical Transducers
- Study of Transducer controlled switching
- Functional blocks indicated by on-board mimics



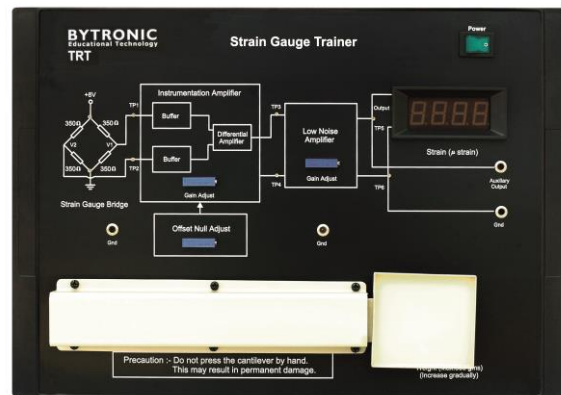
Temperature Transducer Trainer

- Four different temperature Transducers
- Study of Transducer controlled switching/alarm systems
- On-board signal conditioning circuitry



LVDT Trainer

- Sensitive, Linear, Stable and Accurate
- 3½ digit LED display with polarity indicator
- LVDT displacement measurement jig with micrometer
- On-board excitation generator
- Amplitude adjustment for excitation generator



Strain Gauge Trainer

- Test points to observe inputs and outputs
- Onboard gain adjustment
- Offset null adjustment
- 3½ digits LED display
- On-board cantilever arrangement

The TRT is a collection of four transducer trainers which include Optical, Temperature, Strain gauge and LVDT. The four different trainers help teach students an introduction into various elements of transducers. The strain gauge trainer uses a cantilever beam arrangement to produce strain on the strain gauge with weights placed on the free end of the cantilever. The seven-segment LED display shows strain in micro strain units. Different weights are provided to perform linearity and sensitivity experiments.

The Optical Transducer comprises of various sensors and transducers which provides the basic knowledge for sensing light and signal conditioning of the signals received from the sensors and transducers. The Temperature Transducer trainer covers four different types of transducers. Experiments covering fundamental characteristics of transducers and the study of transducer controlled switching/alarm systems can be performed.

The LVDT (Linear Variable Differential Transformer) is the most widely used inductive transducer for displacement measurement. LVDT is a secondary transducer which converts the displacement directly into an electrical output proportional to the displacement. The trainer's seven-segment LED display shows displacement in mm with a sensitivity of 10mV/mm in the range of 10mm.

Experiments

Optical Transducer Experiments

- Characteristics of Filament Lamp
- Characteristics of Photovoltaic Cell
- Characteristics of Photoconductive Cell
- Characteristics of PIN Photodiode
- Characteristics of Phototransistor
- Optically Controlled Switching System

Temperature Transducer Experiments

- Characteristics of IC Temperature Sensor
- Characteristics of Platinum RTD
- Characteristics of NTC Thermistor
- Characteristics of NTC Bridge Circuit
- Characteristics of K type Thermocouple
- Temperature controlled Alarm System (1 NTC)
- Temperature controlled Alarm System (2 NTC)

LVDT Transducer Experiments

- Study of Input Output Characteristics of LVDT
- Determination of Linear Range of Operation of LVDT
- Determination of Sensitivity of LVDT
- Measurement of Phase Difference between LVDT Secondary Winding

Strain Gauge Experiments

- Study of Strain Measurement using Strain Gauges and Cantilever Assembly
- Determination of Linear Range of operation of Strain Measurement
- Determination Sensitivity of Trainer

Specification

Optical Transducer

Transducers:	Photoconductive Cell, Photovoltaic Cell, Phototransistor, PIN Photodiode
Light Source:	Filament Lamp
Signal Conditioning Circuitry:	Power Amplifier, Current Amplifier, DC Amplifier, Comparator, Electronic Switch and Buffer
Input Circuits:	Rotary and Slide Potentiometers
Output Circuits:	Relay and LED
Power:	100-240V AC, 50/60Hz
Dimensions	W326, D252, H52
Weight:	1.5Kg approx.

Temperature Transducer

Transducer:	N.T.C. Thermistor, Platinum R.T.D, K Type Thermocouple, IC Temperature Sensor
Heating Element:	Wirewound resistance 47 Ω , 10W
Signal Conditioning Circuitry:	Instrumentation amplifier, X100 amplifier, DC amplifier, comparator and electronic switch
Input Circuits:	Rotary and slide potentiometers
Output Circuits:	Relay and buzzer
Power:	100-240V AC, 50/60Hz
Dimension:	W326, D252, H52
Weight:	1.5Kg approx.

LVDT

Measurement Range:	20mm (\pm 10mm)
Excitation Frequency:	4KHz approx.
Excitation Voltage:	4V _{pp} approx.
Sensitivity:	10mV DC/mm
Linear Range:	Full scale
Signal conditioner output:	0.1V DC or maximum displacement
Display:	3½ digit LED with polarity indicator
Micrometer scale:	25mm
Micrometer least count:	0.01mm
Power:	110-260V AC, 50/60Hz
Dimensions:	W326, D252, H52
Weight:	1.5Kg

Strain Gauge

Strain Gauge (350 Ω):	4 nos.
Gauge factor:	2.1
Maximum bearable weight:	500gm
Cantilever material:	Stainless steel
Cantilever Width:	2.5cm
Cantilever thickness:	0.16cm
Cantilever length:	20cm
Bridge voltage:	+8V DC
Bridge configuration:	Full bridge
Display:	3½ digit LED
Power:	230V \pm 10%, 50Hz
Dimension:	W340, D240, H105
Weight:	3.5Kg approx.

Ordering Information

Model Number:

Consists of:

TRT

Optical Transducer Trainer
Temperature Transducer Trainer
LVDT Trainer
Strain Gauge Trainer
Manual
Set of cables

Notes.

1. *Specification is subject to change without notice.*
2. *All dimensions are in mm unless otherwise stated*

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