



Battery Characteristics Training System (Lead-Acid Battery)

Introduction

The Battery Characteristics Training System is an educational setup designed to demonstrate the working principles, operation, and performance characteristics of batteries. A battery is an energy storage device consisting of two or more electrochemical cells that convert stored chemical energy into electrical energy and serve as a reliable power source.

With the increasing use of batteries in applications such as automobiles, inverters, UPS systems, and off-grid renewable energy systems, this trainer provides essential practical knowledge for students. The system focuses on hands-on experiments to study the charging and discharging characteristics of lead-acid batteries.

Note: Shown image is for illustration purposes only. Actual product may vary.

Training Objectives

- To understand the construction and working of lead-acid batteries
- To study charging and discharging characteristics
- To analyze battery performance under different load conditions
- To observe voltage and current variations during operation
- To understand practical applications of energy storage systems

Key Features

- Integrated DC power source with charge controller
- LCD-based meter and battery level indicator for real-time monitoring
- Designed as per standard electrical safety norms
- Cascaded DC load bank for controlled loading conditions
- Clear diagrammatic circuit representation on panel
- Compact and user-friendly design for laboratory use

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



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IT-2013, Ramchandrapura Industrial Area,
Sitapura Extension, Jaipur-302022, India.



info@tesca.in
www.tescaglobal.com

System Components

Battery Unit

- Type : Lead-Acid Battery
- Voltage : 12 V
- Capacity : 7 Ah

Charging System

- DC Power Source : Integrated
- Charge Controller : PWM-based
- Function : Controlled charging of battery with protection

Measurement Section

- **DC Voltmeter** : 0 – 20 V
- **DC Ammeter** : 0 – 20 A
- **Battery Level Indicator** : LCD Display

Load Section

- Type : Cascaded DC Load Bank
- Load Rating : 12 V, approx. 4 A
- Function : Controlled discharging of battery

Technical Specifications

Battery Rating

- Voltage : 12 V
- Capacity : 7 Ah

Measurement Range

- DC Voltage : 0 – 20 V
- DC Current : 0 – 20 A

Charging System

- Type : PWM-based charge controller

Scope of Learning / Experiments

- Study of working principle of lead-acid battery
- Charging characteristics analysis
- Discharging characteristics analysis

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- Observation of voltage and current behavior under load
- Performance evaluation of battery system

Supporting Accessories Supplied

- Interconnection leads / patch cords
- DC power input cable
- Learning material manual (soft copy)

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