

**Description:**

This is a fully modular digital protection relay training system purpose-built for electrical power laboratories. It provides hands-on experience with overcurrent, earth fault, and distance (impedance) protection relays, enabling students and researchers to perform relay setting, protection coordination, and fault simulation experiments in a safe and structured environment. The system complies with IEC 60255 and all relevant protection relay standards.

1. SYSTEM OVERVIEW

System Type : Modular power system protection relay training system
Application : Electrical power laboratory education and experiments

2. PROTECTION RELAY TYPES

Overcurrent Protection : Digital overcurrent relay with adjustable pickup and time delay
Earth Fault Protection : Earth fault relay for single line-to-ground and double line-to-ground faults

Distance Protection : Distance (impedance) relay with configurable protection zones

Relay Settings : Support for relay setting configuration and protection coordination experiments

3. SIMULATION CAPABILITIES

Voltage & Current Source : Three-phase voltage and current simulation for relay testing

Fault Types Simulated : Single line-to-ground, line-to-line, double line-to-ground, three-phase faults

Transmission Line Sim. : Transmission line simulation module for distance relay experiments

Interface : Integrated Current Transformer (CT)

4. MEASUREMENT & DISPLAY

Parameters Measured : Voltage, current, power, fault current, and relay trip time

Timing Accuracy : Relay operation timing accuracy ± 1 ms or better

5. RELAY CONFIGURATION

Adjustable Parameters : Relay pickup level, time delay, and protection zones

Relay Type : Industrial-grade digital relay

Communication Interface : USB / RS485

Software Interface : PC-based software for relay configuration and event monitoring

Event & Fault Logging : Event and fault record storage capability

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



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6. HARDWARE & CONSTRUCTION

Panel Design : Modular laboratory panel with clearly identified terminals

Switching Matrix : Experiment switching matrix for rapid configuration changes

Power Supply : 230V / 50 Hz

7. STANDARDS & COMPLIANCE

Standards : IEC 60255 and all relevant protection relay standards

Application : Electrical power engineering laboratory — undergraduate and postgraduate

8. EXPERIMENTAL APPLICATIONS**Protection Studies**

- Overcurrent relay characteristic curves
- Earth fault relay coordination
- Distance relay zone setting
- Protection coordination and grading
- Directional relay experiments

Fault Simulation Studies

- Single line-to-ground fault analysis
- Line-to-line fault simulation
- Double line-to-ground faults
- Three-phase fault experiments
- Relay trip timing and event logging

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