# PROTECTION RELAY EXPERIMENT TRAINER

Model Number : GOTT-PRE-11

## DESCRIPTION

Protection relay experimental device can conduct experimental operation including power plants, substations and factory relay, relay, secondary electrical control circuit teaching experiment, which is applicable in the electrical category, the electrical category related to the professional courses teaching experiment.

## FEATURES

- Experiment projects are complete, experiment content is rich, design is reasonable, which are beneficial to broaden the students' knowledge.
- Experimental device has excellent compatibility and scalability. Experimental installations adopt platform design, laboratory modules using component design School can based on teaching demand choose experimental module freely. If need to add depth and breadth of experiments, user simply need to add components.
- Experimental Device has strong intuitionist. Each relays is the abdomen - installed on the panel surface, students can clearly see the action of every relay, and are convenient to set relay values. At the same time, the relays and other components electrical diagrams of are painting on each panel, which are complete and consistent teaching materials, can help students understand the book knowledge, improve the experimental results.
- The experiments are strong package, the AC-DC power supply, instrumentation, relay and experimental connecting wire in experiment all fully equipped, school do not need to add any equipment to complete the experimental content.
- Experiment has authenticity. The relays used in experiment are relays which are currently using on-site power system, and better reflect the status of the power system, and lay a good foundation to engage in design, installation, debugging, maintenance and other work to for students after graduation for protection system.
- Structure is reasonable. The whole structure adopt a three-tier structure, panel ranking according to the actual line with the flow, experimental function block is clarity, carefully designing improve experimenter's understanding of the system, wiring facilitate and the efficiency of the experiment.
- The experiment device has perfect protection measures. The device provide leakage circuit breakers and other physical security protection measures, Experimental lead adopts fully enclosed plastic wire to ensure the students' operation safety. Various instruments and power supplies all have a perfect protection function.

## PRODUCT MODULES

### SIGNAL RELAY — CODE 191-119

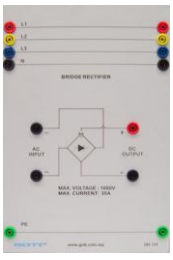
Voltage: 220VDC
NO Contact: 2 sets

### ADJUSTABLE SINGLE PHASE — CODE 191-110

Voltage: 0 ~ 240VAC
Current: 1A

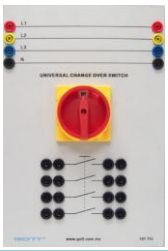
### BRIDGE RECTIFIER — CODE 191-111

Voltage: 1000V
Current: 35A



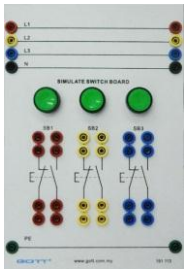
### UNIVERSAL CHANGE OVER SWITCH — CODE 191-112

Rated Current 20A
NO Contacts: 4 sets



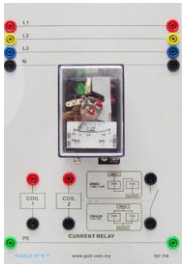
### SIMULATE SWITCH BOARD — CODE 191-113

Rated voltage: 240VAC
Push Button X 3 units



### CURRENT RELAY — CODE 191-114

Current: 1.25A to 5A
NO Contact: 1 set

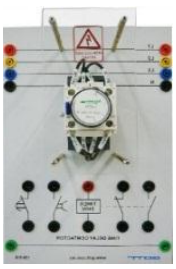


### NEGATIVE SEQUENCE RELAY — CODE 191-121

Input Voltage: L1, L2 & L3
Voltage: 220VDC

### TIME DELAY CONTRACTOR — CODE 159-016

Coil Voltage: 240VAC
Contact: NO & NC
Time : 0…60seconds



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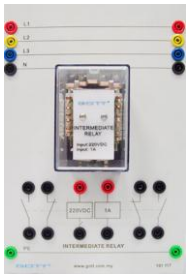
## INTERMEDIATE RELAY — CODE 191-117

Voltage: 220VDC
Trigger Current: 1A
NO Contact: 2 sets
NC Contact: 2 sets

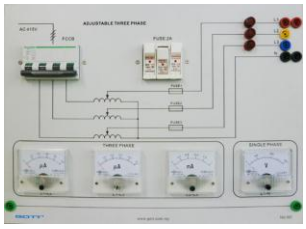


## PHASE ANALYZER — CODE 191-128

Input: L1, L2 & L3
To check phase voltage in correct / incorrect sequence

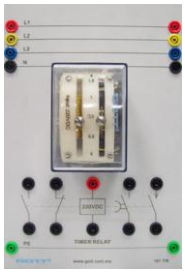
## ADJUSTABLE THREE PHASE — CODE 191-109

Protection Fuse 2A x 3 units
Pilot Lamps L1 , L2 & L3
Fault Current Circuit Breaker 3 Poles
Output: 0…240VAC x 3 units
0…415VAC
Input: AC 415V, 50Hz 3-Phase



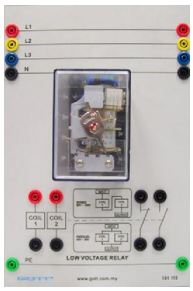
## TIMER RELAY — CODE 191-116

Voltage: 220VDC
Time: 0.1s to 1.5s
NO Contact: 2 sets
NC Contact: 2 sets



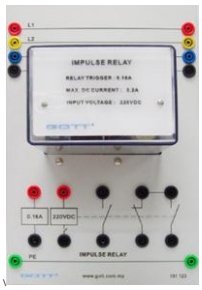
## LOW VOLTAGE RELAY — CODE 191-115

Voltage: 40V to 160V
NO Contact: 1 set
NC Contact: 1 set



## IMPULSE RELAY — CODE 191-123

Voltage: 220VDC
Current: 0.16A
NO Contact: 1 set
NC Contact: 1 set



## SYNCHRONOUS DETECTOR — CODE 191-124

Voltage: 220VDC
Voltage: Compare: 110VAC
NO Contact: 1 set
NC Contact: 1 set

## FLASHING RELAY — CODE 191-125

Voltage: 220VDC
NO Contac: 2 sets

## OVERLOAD RELAY — CODE 191-018

Current: 8A to 16A
NO Contact: 2 sets

## ELECTRONIC TIMER — CODE 191-127

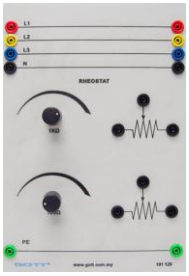
Start, stop and reset function

## CONTACTOR — CODE 191-118

Voltage: 220VDC
NO Contact: 2 sets
NC Contact: 2 sets

## RHEOSTAT 100Ω / 1KΩ — CODE 191-129

Rheostat 1kΩ / 100W
Rheostat 100Ω / 100W



## INDICATOR AND BUZZER — CODE 191-130

Lamp Voltage: 240VAC
Buzzer Voltage: 240VAC

## ALARM INDICATOR — CODE 191-131

Voltage: 240VAC

## AC VOLTMETER — CODE 191-132

Range: 300V & 500V

## AC AMMETER — CODE 191-133

Range: 5A & 20A

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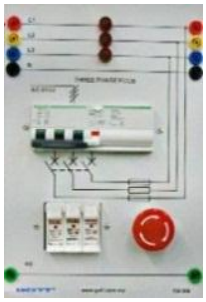
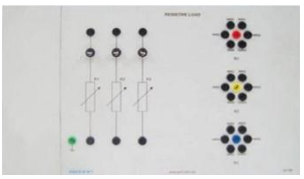
| DC CURRENT & VOLMETER | CODE 191-134 | THREE PHASE BRIDGE RECTIFIER | CODE 610-308 | FAULT CURRENT CIRCUIT BREAKER | CODE 159-009 | RESISTIVE LOAD | CODE 157-897 |
|---|---|---|---|---|---|---|---|
| Voltage Range: 300V<br>Current Range: 10A<br>  | | Three phase rectifier bridge<br>Maximum Voltage: 400VAC<br>Maximum current: 10A<br>  | | Protection Fuse 2A x 3 units<br>Pilot Lamps L1 , L2 & L3<br>Fault Current Circuit Breaker 3Poles<br>Input: AC 415V, 50Hz 3-Phase<br>  | | Compose of three resistances with possibility to connect in star/delta or parallel, controlled by three switches with 7 steps variable per phase<br>Max Power : 1200 watt<br>Voltage : 380/220 Volt (Star/Delta)<br>  | |
| **U-LINK** | **CODE 159-019** | **SAFETY CONNECTING LEAD** | **CODE 237-001** | **VERTICAL FRAME** | **CODE 297-000** | **EXPERIMENT MANUAL** | **CODE 191-137** |
| For connecting junction point<br>  | | 4mm connecting leads<br>  | | High level : DIN standard A4 with two shelves<br>Material: Aluminium<br>Side Frame: T shape<br>Size: 3-Layer 1450mm Length<br>  | |  | |

## EXPERIMENT PROJECTS

### RELAY SPECIALTY

- Current relay specialty experiment
- Voltage relay specialty experiment
- Electromagnetic time relay experiment
- Intermediate relay specialty experiment
- Signal relay specialty experiment
- Transistors negative sequence voltage relay experiment
- Impact relay specialty experiment
- Flashlight Relay specialty experiment
- Three-phase reclosing device experiment
- Rectifier direction characteristic impedance Relay experiment.
- Differential relay experiment.
- Power direction relay experiment
- Anti-time over current relays characteristics experiment

### LINE PROTECTION

- 67-10KV Over-current protection circuit experiment
- Low voltage start over-current protection and overload protection experiment
- Repeat action of manual revert to central signal device experimental
- Repeat action of manual revert to central audio signal device experimental
- Break control loop experiment with lighting surveillance
- Automatic reclosing accelerated protection experiment
- Automatic reclosing after accelerate protection circuit
- Power direction over current protection experiment
- Anti-time over current protection moves specialty experimental
- Distance protection and direction stage-protection setting experiment
- Unilateral power line Rd radiation-current protection experiments

### INTEGRATED EXPERIMENTS AND EXPERIMENTAL EVALUATION (EXAMINE DEPEND ON CIRCUITS DESIGNED BY STUDENTS)

- Overcurrent protection and automatic reclosing of three-phase experiment and evaluation
- Low voltage start over-current protection and automatic reclosing (after accelerating) integrative experiment and evaluation
- Current and Voltage instantaneous protection and automatic re-closing (after accelerating) integrative experiment and evaluation
- Overvoltage protection and automatic reclosing (after accelerating) integrative experiment and evaluation
- Three-phase current protection and automatic re-closing (after accelerating) integrative experiment and evaluation
- Over-current protection and automatic reclosing (accelerated) integrative experiment and evaluation
- Low voltage start over-current protection and automatic reclosing (accelerated) integrative experiment and evaluation
- Current at resia Voltage Protection and automatic reclosing (accelerated) integrative experiment and evaluation
- Overvoltage protection and automatic reclosing (accelerated) integrative experiment and evaluation
- Three-phase current protection and automatic reclosing (accelerated) integrated with the experimental evaluation

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## EXPERIMENTAL BENCH CONFIGURATION NOTE

- Main Control Screen
  - GOTT-PRE-17A Three-phase power supply
  - GOTT-PRE-01C Breaker and control circuit
  - GOTT-PRE-41 resistance disk
  - GOTT-PRE-42 resistance disk
  - GOTT-PRE-43 resistance disk
  - GOTT-PRE-11 AC voltage meter, AC current meter, DC current meter, DC power supply and generatrix
  - GOTT-PRE-12 electrical second meter, phase meter, optical character brand, signal indication
- Experimental Component
  - Current relay
  - Time relay
  - Intermediate relay
  - Signal relay
  - Automatic reclosing
  - Differential relay
  - Power direction relay
  - Negative sequence voltage relays
  - Impact relay
  - Impedance relay
  - Overcurrent relay
  - Flash relay
  - Relay
  - Universal change-over switch
  - Button and Resistance Disk
  - Computer Protection
- Phase Shifter
- High reliability safety experimental cable and accessories

## PERFORMANCE EXPLAIN OF EXPERIMENTAL DEVICE

The device control panel adopt three-tier framework of aluminum alloy, the panel is divided into three layers: the lower is first system, which is made up of three-phase AC power, circuit breakers, adjustable resistance plate (analog transmission lines), load composition, the middle layer is the activities module, which is formed by the secondary circuit relay and automatic device component, users can choose or expand depend on need. The upper module is activities module, which is made up of the second circuit by the AC-DC instrumentation, optical character licensing, audio and lighting components. The whole system structure's design is rational, and system structure's function is clear.

- Safety Protection Function
  - Control panel's power is controlled by start, stop contactor buttons.
  - With current leakage protection devices, if there is electric leakage from control panel or high voltage output, system immediately alarm and cut off total power to ensure experiment safety.
  - Booster output has a high sensitivity electronic overcurrent protection, at the same time, system can automatically direct protect in the situation of over-current between line or short-circuit
  - Each meter, power supply has perfect protection function.
  - Experimental leads adopt closed plastic to ensure students' safety.

**Manuals:**
(1) All manuals are written in English
(2) Model Answer
(3) Teaching Manuals

**General Terms:**
(1) Accessories will be provided where applicable.
(2) Manuals & Training will be provided where applicable.
(3) Designs & Specifications are subject to change without notice.
(4) We reserve the right to discontinue the manufacturing of any product.

**Warranty:**
2 Years

**ORDERING INFORMATION :**

| ITEM | MODEL NUMBER | CODE |
|---|---|---|
| PROTECTION RELAY EXPERIMENT TRAINER | GOTT-PRE-11 | 191-000 |

*Proposed design only, subject to changes without any prior notice.