POWER TRANSMISSION AND DISTRIBUTION EXPERIMENT SYSTEM

Model Number : GOTT-TML-1

DESCRIPTION

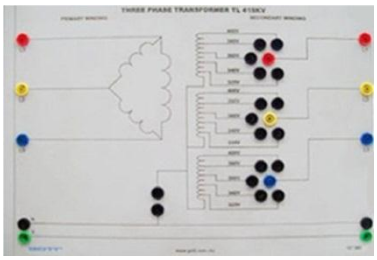
Using the Power Transmission Line trainer set it will be possible to assemble an absolute power transmission system. From a transformer with tapping switch to the power circuit breaker and 415V power transmission line model, including line termination with surge impedance.

Various experiments can be are carried out on this power transmission system, no load operation with natural load, asymmetrical and asymmetrical short circuit, parallel and series compensation of the transmission line as well as neutral-point connection.

PRODUCT MODULE

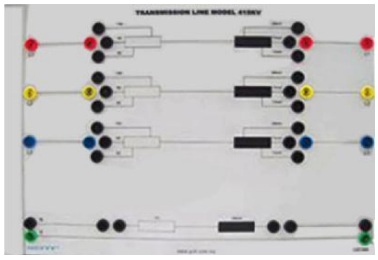
THREE PHASE TRANSFORMER TL415KV — CODE 157-889

Transformer for feeding the transmission line model 415V.
Scale factor 1:1000 for secondary current and voltage.
Nominal Power: 800VA
Primary: 3 x 400 V winding with tapping at 230V, can be switched to star or delta connection
Delta stabilizing winding can be connected.
Secondary: 3 x 380 V winding with tap-pings at +5%, -5%, -10%, -15% in star connection, various star Point connections possible



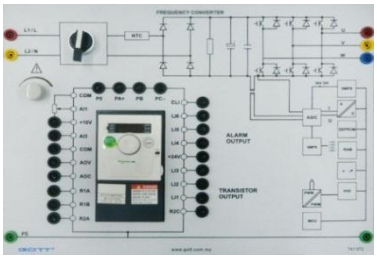
TRANSMISSION LINE MODEL 415V — CODE 157-891

Measuring steady state operating conditions.
Quad bundle 4 x 240/40, with surge impedance 240 and natural load 600 MW, length 360 km.
Resistance: 13 Ohm, 8 Ohm, 5 Ohm
Inductance: 290 mH, 174 mH, 116 mH Open
Capacity: 5 µ F, 3 µ F, 2 µ F



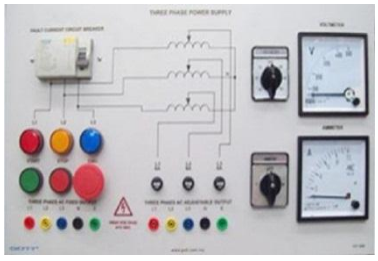
INVERTER UNIT — CODE 157-895

3Ø asynchronous motor speed control by PWM technique.
The Torque and Speed are able to be constant via the unit to easy control in testing operation during loads change.
Input Voltage: 380V, 50Hz
Output Voltage: 0-380V
Out Frequency: 1-300Hz
Max Power: 1.5 kW



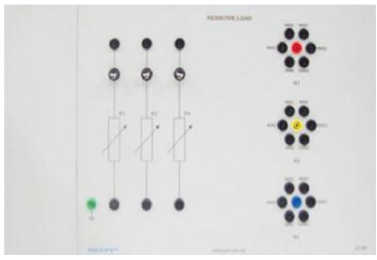
THREE PHASE POWER SUPPLY — CODE 157-896

Fixed and variable AC supplies.
Provided with start stop/stop push bottom EMO.
Three Phase AC Adjustable Output : 3x0-380V: 6A
Three Phase AC Fixed Output: 240/415V: 10A
Power Requirement: 240/415V, 50Hz



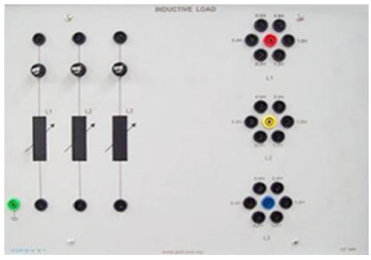
RESISTIVE LOAD — CODE 157-897

Compose of three resistances with possibility to connect in star/delta or parallel, controlled by three switches with 7 steps variable per phase.
Max Power: 1200 watt
Voltage: 415/240Volt (Star/Delta)



INDUCTIVE LOAD — CODE 157-898

Compose of three inductances with possibility to connect in star/delta or parallel, controlled by three switches with 7 steps variable per phase.
Max Power: 900VAR
Voltage: 415/240Volt (Star/Delta)

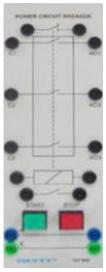


POWER TRANSMISSION AND DISTRIBUTION EXPERIMENT SYSTEM

Model Number : GOTT-TML-1

POWER CIRCUIT BREAKER MODULE — CODE 157-892

3-phase ON-OFF switch with auxiliary contact (NC) for transmission line model 380 kV.
Can be controlled manually using ON/OFF pushbutton or externally via switching contact, 4-mm sockets.

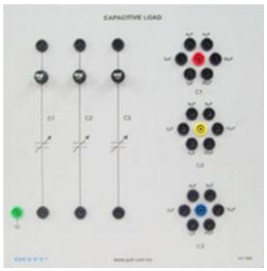


EARTH FAULT COMPENSATION — CODE 157-893

Inductance with 20 tappings for earth fault compensation in the 415 kV transmission line model (Petersen coil).
Inductance L: 0.005....2 H
Rated voltage: 240V, 50 Hz
Rated current: 0.5 A

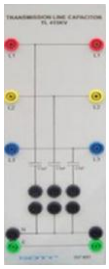
CAPACITIVE LOAD — CODE 157-899

Compose of three capacitances with possibility to connect in star/delta or parallel, controlled by three switches with 7 steps variable per phase.
Max Power: 900VAR
Voltage : 415/240Volt (Star/Delta)



TRANSMISSION LINE CAPACITOR TL 415 KV — CODE 157-891

3-phase in star connection, 2.5 µF each, corresponds to 50 % of the operating capacitance of transmission line model 415 Kv.

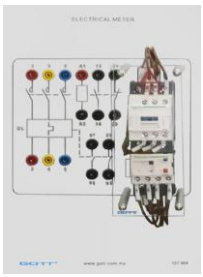


EXCITATION VOLTAGE CONTROLLER — CODE 157-894

DC power supply unit suitable to supply 0-240VDC, 0-2A adjustable for excitation voltage in synchronous as generator operation.

THREE PHASE CONTACTOR WITH OVERLOAD RELAY — CODE 157-900

Voltage: 415VAC
Range: 0-4A
Coil: 240VAC

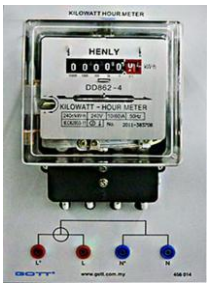


ELECTRICAL METER — CODE 157-901

Measurement: V, KV, Hz, A, KA, S, KW, KVAR, KVA, KWH, KVRH

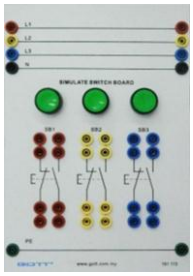
KILOWATT HOUR METER — CODE 456-014

Speed: 1200 turn/ 1kW/Hour
Accuracy : Class 1.5



SIMULATE SWITCH BOARD — CODE 191-113

Rated voltage: 240VAC
Push Button X 3 units



AC VOLMETER & AC AMMETER — CODE 588-027

Measurement Mode: AC
Voltage Ranges : 5V, 50V, 250V, 1000V
Current Ranges : 1A, 5A, 25A

THREE PHASE INDUCTION MOTOR — CODE 159-004

Power: 170W
Voltage: 415VAC
Current: 0.45A
Speed: 1500rpm
Connection: Δ & Y

SINGLE PHASE SYNCHRONIZATION GENERTOR — CODE 159-006

Power: 250W
Voltage: 240VAC
Current: 2A
Speed: 1400rpm

POWER TRANSMISSION AND DISTRIBUTION EXPERIMENT SYSTEM

Model Number : GOTT-TML-1

THREE PHASE SYNCHRONOUS GENERATOR	CODE 159-005

Power: 170W
Voltage: 415VAC
Current: 0.43A
Excitation Voltage: 12VDC
Excitation Current: 14A
Speed: 1500rpm
Connection: Y

PULLEY AND RUBBER COUPLING	CODE 431-000

U-LINK	CODE 159-019

A unit which is wed to link the unit together

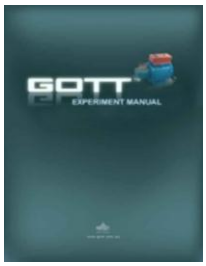
SAFETY CONNECTING LEAD	CODE 237-001

4mm connecting leads

VERTICAL FRAME	CODE 297-000

High level: DIN standard A4 with two shelves
Material: Aluminium
Side Frame: T shape
Size: 3-Layer 1450mm Length

EXPERIMENT MANUAL	CODE 157-902



EXPERIMENT TOPICS :

- Symmetrical load and unsymmetrical load connection
- Voltage and frequency control by inverter unit
- Characteristic of transformer feeder
- RL circuits in transmission line
- RC circuits in transmission line
- RLC circuits in transmission line
- Earth fault compensation and its characteristic
- Excitation voltage controller with motor generator
- Characteristic of generating voltage
- Measuring power in each line

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
POWER TRANSMISSION AND DISTRIBUTION EXPERIMENT SYSTEM	GOTT-TML-1	157-888

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