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MODULES

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POWER SUPPLY DL 1013M2

ACCESSORIES

CONNECTING LEADS TL 2109TM
TWO-LEVEL FRAME DL 2100-2M
THREE-LEVEL FRAME DL 2100-3M
**ELECTRICAL MEASUREMENTS**

**Synchronoscope**
Indicator for phase comparison and parallel operation with bright-dark lamps. Rated voltage: 3 x 380 V/220 V

**Phase Sequence Indicator**
Indicator of the phases cycle through signalling lamps. Rated voltage: 3 x 380 V/220 V

**Static Rectifier**
Three-phase Graetz bridge. Power supply: 220 Vac Rectified output: 300 V, 24 A

**Variable Resistance**
Rheostat, 680 Ω, 0.47 A
**ELECTRICAL MEASUREMENTS**

**Double Change-Over Switch**
Two pole two-way commutator, 380 V, 16 A.

**Micro Ammeter**
Moving coil, zero centered, with sensitivity reducer. Range: 50/0/50 μA Reducer: 1/10 Scale amplitude: 240°

**Milliammeter**
Moving coil with rectifier. Range: 250/500 mA, DC and AC Scale amplitude: 240°

**Ammeter**
Moving coil with rectifier. Range: 2.5/5 A, DC and AC Scale amplitude: 240°
**ELECTRICAL MEASUREMENTS**

**Voltmeter**
- Moving coil with rectifier.
- Range: 25/50 V, DC and AC
- Scale amplitude: 240°

**Voltmeter**
- Moving coil with rectifier.
- Range: 250/500 V, DC and AC
- Scale amplitude: 240°

**Frequencymeter**
- Moving coil.
- Range: from 45 to 65 Hz
- Voltage: 250/500 V
- Scale amplitude: 240°

**Single-phase Wattmeter**
- Moving coil.
- Range: 2.5-5 A / 240-480 V
- Power supply: 24 Vac
ELECTRICAL MEASUREMENTS

**Single-phase Phasemeter**
DL 2109T18
Moving coil meter with transducer for single-phase ac.
Range: 1.5-6 A / 80-250 V
Scale amplitude: $240^\circ \times (0.5 \text{ cap} – 1 – 0.5 \text{ ind})$
Power supply: 24 Vac

**Transformer**
DL 2101T13
Primary: 127-220 V
Secondary: 2x12 V
Rated power: 100 VA

**Three-phase Phasemeter**
DL 2109T19
Moving coil meter with transducer for three-wire three-phase systems with balanced load.
Range: 1.5-6 A / 100-500 V
Scale amplitude: $240^\circ \times (0.5 \text{ cap} – 1 – 0.5 \text{ ind})$
Power supply: 24 Vac

**Resistive Load**
DL 1017R
Single or three-phase resistive step-variable load.
Max. power: 3 x 400 W
Max. voltage: 220/380 V Δ / Y
**Inductive Load**

**DL 1017L**

Single or three-phase inductive step-variable load.
Max. power: 3 x 300 VAR
Max. voltage: 220/380 V Δ / Y

**Capacitive Load**

**DL 1017C**

Single or three-phase capacitive step-variable load.
Max. power: 3 x 275 VAR
Max. voltage: 220/380 V Δ / Y.

**Direct Current Motor, Shunt Excitation**

**DL 1023P**

Power: 1.1 kW
Voltage: 220 V
Speed: 3000 rpm
Excitation: 160 V / 0.25 A

**Base**

**DL 1013A**

Duralumin alloy varnished structure mounted on anti-vibration rubber feet, provided with slide guides to fix one or two machines and with coupling guard.
Three-phase Synchronous Machine

**DL 1026A**

- Power (alternator): 1.1 kVA
- Power (motor): 1 kW
- Voltage: 220/380 V D/Y
- Current: 2.9/1.7 A D/Y
- Speed: 3000 rpm
- Excitation: 175 V / 0.4 A

Power Supply

**DL 1013M2**

Suitable for supplying fixed and variable alternating current and fixed and variable rectified direct current in order to easily carry out all the tests in an electrical measurements laboratory. Complete with start pushbutton with remote control switch, stop pushbutton, key-unlocked emergency mushroom head pushbutton and differential magneto-thermal protection on the mains sockets. Connector for the protection against the overspeed of the motors.

- Variable ac: 3x0-430 V, 5 A and 3x0-240 V, 8 A
- Fixed ac: 3x380 V + N, 16 A and 3x220 V, 8 A
- Standard fixed ac: 220 V, 10 A
- Variable dc: 0-240 V, 10 A and 0-225 V, 1 A
- Fixed dc: 220 V, 10 A

Power supply: three-phase from mains 220 V, 10 A.

Connecting Leads

**TL 2109TM**

Cable set for connecting modules experimentation DL 2109T.

Framework

**DL 2100-2M**
**DL 2100-3M**

Two or three level metal frame for mounting the modules of the laboratory.
**ELECTRICAL MEASUREMENTS**

**SUGGESTED CONFIGURATIONS**

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**Power supply** | **Resistive load** | **Inductive load** | **Capacitive load** | **Transformer** | **Phase sequence indicator** | **Bridge rectifier** | **Potentiometer** | **Double change-over switch** | **Moving coil microammeter** | **Moving coil milliammeter** | **Moving coil ammeter** | **Moving coil voltmeter** | **Moving coil voltmeter** | **Single-phase wattmeter** | **Single-phase wattmeter** | **Synchronoscope** | **Frequencymeter** | **Base for the machines** | **Short DC motor** | **Connecting leads** | **Supporting frame** | **Workbench** |

**DL 2109T** - Set of modules for the study of electrical measurements

**DL 2109TM** - Set of modules for the study of electrical measurements with alternator
The same DL 2109TM can also be provided in the version of 300 W, 1.1 kW instead of the version suggested by the substitution of the following modules:

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