

2 kW Electromechanical Training Systems 8013

FESTO

LabVolt Series

Datasheet



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General Description

The 2 kW Electromechanical Training Systems, Series 8013, are a unique modular program in electric power technology. The series contains four training systems which deal with the different techniques associated with the generation and use of electrical energy.

The training systems simulates large power machines, yet are very safe for student experimentation. They incorporate heavy-duty components and machines that can be combined to create different configurations tailored to technical or university courses. The systems satisfy educational requirements for industrial applications of electric power technology, using industrial-like equipment to provide easy-to-understand laboratory results and easily observed data values.

All modules in the training systems can be inserted into a standard Mobile Workstation, Model 8110. The modules are constructed from heavy-gauge steel, finished in baked enamel. There are two standard module sizes: full size, 308 mm (12.1 in) high, and half size, 154 mm (6.0 in) high. Symbols and diagrams specific to each module are clearly silk-screened on the faceplates. Standard color-coded safety 4 mm jacks are used to interconnect all system components.

Each 2 kW rotating machine in the training systems is permanently mounted on a mobile cart, and includes a double-extension shaft terminated with geared-type flanges. Different machines may be joined with a hard rubber coupling device and patented locking fastener designed to eliminate vibrations. Any combination of machines may be studied simultaneously.

The rotating machines have a specifically high inertia to simulate large-power machines. The frame of each machine is equipped with transparent shatter-proof shields to better observe the machine interior. The insulation class of the machines is B (80° temperature rise), the service factor is continuous, and the construction is of the open type. In addition, all machines are equipped with search coils through which the magnetic flux distribution at various locations in the machine can be observed using an oscilloscope.

All machine windings are brought out to the faceplate of a connection module through a 3 m (10 ft) long, heavy-duty, interconnecting cable fitted with a keyed connector. This way, any particular machine can only be connected to its associated connection module. All windings are individually accessible on the faceplate of the connection module associated with that machine. Power windings are terminated by 4 mm color-coded safety jacks and search coils on 2 mm banana jacks. The different size of the jacks prevents accidental connections between power windings and search coils. The connection modules are fitted into half-size modules, and they must be placed at the bottom of a full height section in a workstation to allow connection.

Load Modules

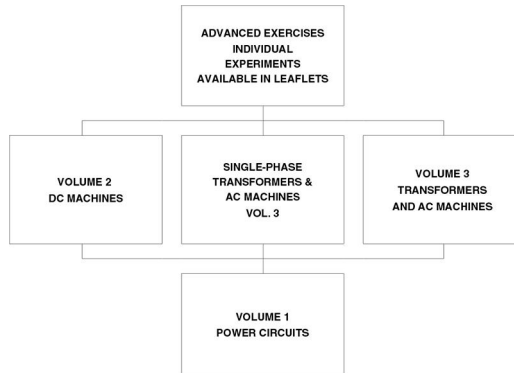
Resistive, inductive, and capacitive load modules are designed to provide equal load impedances for all three types of loads. Current increments and increment number are also the same for all modules. These characteristics simplify the calculations required during the learning process. The load impedance is set using switches mounted on the faceplate of the modules.

Metering Modules

The metering modules are designed to cover the complete range of measurements required with a minimum number of meters. The ac ammeter and voltmeter modules each contain three meters for simultaneously measuring all currents and voltages on a three-phase system. All meters are designed to sustain starting currents even when used on a low range. Wattmeters are internally connected to measure power directly when the input is connected to the source and the output to the load. Protection of vulnerable meter components is accomplished without fuses.

Courseware

The 2 kW Electromechanical Training System courseware consists of student manuals that guide students through the experiments and provide the necessary theoretical background to successfully complete the educational objectives. The instructor can select the experiments that will satisfy the objectives of technical courses or university programs. The flexibility of this system allows students to act on their own initiative during laboratory sessions.



Features & Benefits

- Extreme ease-of-use and durability, and manufactured to the highest quality standards
- Wide range of heavy-duty components
- Designed to ensure student safety
- Machine Motor frames equipped with transparent, shatter-proof shields for inspection of the interior
- Comprehensive, flexible curriculum
- Symbols and diagrams specific to each module are clearly silk-screened on the faceplates
- Standard color-coded safety 4 mm jacks are used to interconnect all system components
- Protection of vulnerable meter components is accomplished without fuses
- Metering modules cover the complete range of measurements required with a minimum number of meters
- Several combinations of machines can be studied simultaneously
- Machines may be joined with a hard rubber coupling device and patented locking fasteners designed to eliminate vibrations
- Machines have a specifically high inertia to simulate large-power machines
- Machines are equipped with search coils through which the magnetic flux distribution at various locations in the machine can be observed using an oscilloscope
- Estimated total program duration: 200 hours

Description

**Manual
number**

Reflecting the commitment of Festo Didactic to high quality standards in product, design, development, production, installation, and service, our manufacturing and distribution facility has received the ISO 9001 certification.

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