ETMAN
Electrical Maintenance

exxer Skills for the Future

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THE UNION OF EXPERTISE AND SKILLS A NEW LEVEL OF EXCELLENCE IN EDUCATION!

EXXER was born from the merger of two companies passionate **about technology, innovation, and education.**

With the purpose of offering more and more excellence tools to assist in technological education, we believe the union of practical and theoretical learning is what makes the difference in accelerating human and world development!

TECHNOLOGY ● **INNOVATION** ● **EDUCATION**

ETMAN
Electrical Maintenance

An important competency in professional training is the ability to analyze, identify and correct faults. The ETMAN series of kits for maintenance of electrical systems was created to exercise these skills in a practical way and addressing the main technologies and applications. In addition to failure analysis, these kits allow studying the application and configuration of typical applications in industrial electrical systems.

The kits in this series allows the diagnosis of faults in electrical systems such as:

– Electric command panel;
– Speed control by Frequency Inverter;
– Direct, star–delta, and compensation starters for three–phase induction motors;
– Starting three–phase induction motors by static starter (soft starter);
– Automatic power factor correction;
– Level and temperature control plant.

All kits in this series have a fault simulator, which allows the instructor to introduce faults without the students knowing, so that they can identify by themselves and correct them by analyzing the system's operation and taking measurements.

All kits in this series have a comprehensive courseware, focused on teaching by skills and easy to use by instructors.

We have complete solutions for training and updating teachers, ensuring the best use of the kit's resources.

Ask our experts for more information and the detailed technical features of each equipment in the series.

MAIN SKILLS AND COMPETENCIES

– Perform measurements and diagnostics on electrical systems;
– Develop testing and diagnostic strategies for electrical systems;
– Evaluate and repair electrical control panel;
– Parameterize Frequency Inverters;
– Evaluate and repair speed control systems with Frequency Inverters;
– Evaluate and repair direct, star–delta, and trim starter systems;
– Parameterize static starter (SoftStarter);
– Evaluate and repair static starter motor starting systems (SoftStarter);
– Parameterize power factor controllers;
– Evaluate and repair automatic power factor correction systems;
– Evaluate and repair level and temperature control systems.

TECHNOLOGY
HIGHLIGHTS

Frequency inverters are a technology increasingly used for motor drives and industrial automation.

The use of SoftStarters (static starters) with a controlled motor starting method brings several benefits in terms of efficiency and protection.

Automatic power factor correction systems use specialized controllers to dynamically control the power factor of an installation, by including and removing capacitor banks based on measured and configured values.

Process control system uses PID loops for level and temperature control.

PRODUCTS

The usability and learning process of each student are extremely important, so we developed learning solutions to provide benefits and differentials for users.

KEY BENEFITS

– Protected components;
– Industrial devices;
– Complete system.

KEY DIFFERENTIALS

– Safety;
– No tools required;
– Courseware;
– Simulator;
– Includes NR–12 safety report.

⚙ DEVICE CONFIGURATIONS

PARTHNUMBER	DESCRIPTION	OPTIONS	APPLICATION
ETMAN2000–Lxx–001	Speed Control Maintenance Workbench	Schneider	QCSim and Exxer App
ETMAN2000–Lxx–002	Speed Control Maintenance Workbench	WEG	QCSim and Exxer App

⚙ FEATURES

With modular configuration, safety with NR–12, development software included, protection of main components and courseware included.

ETMAN2000

Control and Speed Maintenance Workbench

Settings

– Metallic rack with electrostatic coating;
– Modules with silk–screen (serigraph) printing with indelible engraving;
– Powered parts protected from contact;
– Comes with QCSim simulator software;
– Simulation with eddy–type magnetic brake load.

DIMENSIONS	
Height	1850mm
Width	700mm
Depth	700mm
Weight	150Kg

ELECTRICAL FEATURES	
Power	Three–phase 220V – 50/60Hz Three–phase 380V – 50/60Hz
Connections	4mm safety terminals

⚙ DEVICE CONFIGURATIONS

PARTHNUMBER	DESCRIPTION	OPTIONS	APPLICATION
ETMAN3000–Lxx–001	Engine start maintenance Wrokbench	Schneider	QCSim and Exxer App
ETMAN3000–Lxx–002	Engine start maintenance Wrokbench	WEG	QCSim and Exxer App

⚙ FEATURES

With modular configuration, safety with NR–12, development software included, protection of main components and courseware included.

ETMAN3000

Engine Starting Maintenance Workbench

Settings

– Metallic rack with electrostatic coating;
– Modules with silk–screen (serigraph) printing with indelible engraving;
– Powered parts protected from contact;
– Comes with QCSim simulator software;
– Simulation with engine load.

DIMENSIONS	
Height	1850mm
Width	700mm
Depth	700mm
Weight	150Kg

ELECTRICAL FEATURES	
Power	Three–phase 220V – 50/60Hz Three–phase 380V – 50/60Hz
Connections	4mm safety terminals

DEVICE CONFIGURATIONS

PARTHNUMBER	DESCRIPTION	OPTIONS	APPLICATION
ETMAN4000–Lxx–001	Bancada de manutenção chave de partida estática	Schneider	QCSim and Exxer App
ETMAN4000–Lxx–002	Bancada de manutenção chave de partida estática	WEG	QCSim and Exxer App

⚙ FEATURES

With modular configuration, safety with NR–12, development software included, protection of main components and courseware included.

ETMAN4000

Static Starter Maintenance Workbench

Settings

– Metallic rack with electrostatic coating;
– Modules with silk–screen (serigraph) printing with indelible engraving;
– Powered parts protected from contact;
– Comes with QCSim simulator software;
– Simulation with ciroco fan load.

DIMENSIONS	
Height	1850mm
Width	700mm
Depth	700mm
Weight	160Kg

ELECTRICAL FEATURES	
Power	Three–phase 220V – 50/60Hz Three–phase 380V – 50/60Hz
Connections	4mm safety terminals

⚙ DEVICE CONFIGURATIONS

PARTHNUMBER	DESCRIPTION	OPTIONS	APPLICATION
ETMAN5000–Lxx–001	Bancada de manutenção correção de fator de potência	Schneider	QCSim and Exxer App
ETMAN5000–Lxx–002	Bancada de manutenção correção de fator de potência	WEG	QCSim and Exxer App

⚙ FEATURES

With modular configuration, safety with NR–12, development software included, protection of main components and courseware included.

ETMAN5000

Maintenance Workbench
for Power Factor Correction

Settings

– Metallic rack with electrostatic coating;
– Modules with silk–screen (serigraph) printing with indelible engraving;
– Powered parts protected from contact;
– Comes with QCSim simulator software;
– Simulation with motor load and electrical resistances.

DIMENSIONS	
Height	1850mm
Width	700mm
Depth	700mm
Weight	200Kg

ELECTRICAL FEATURES	
Power	Three–phase 220V 60Hz Three–phase 380V 60Hz
Connections	4mm safety terminals

DEVICE CONFIGURATIONS

PARTHNUMBER	DESCRIPTION	OPTIONS	APPLICATION
ETMAN6000–Lxx–001	Bancada de manutenção de controle nível e temperatura	Schneider	QCSim and Exxer App
ETMAN6000–Lxx–002	Bancada de manutenção de controle nível e temperatura	WEG	QCSim and Exxer App

FEATURES

With modular configuration, safety with NR–12, development software included, protection of main components and courseware included.

ETMAN6000

Level / Temperature Control Maintenance Workbench
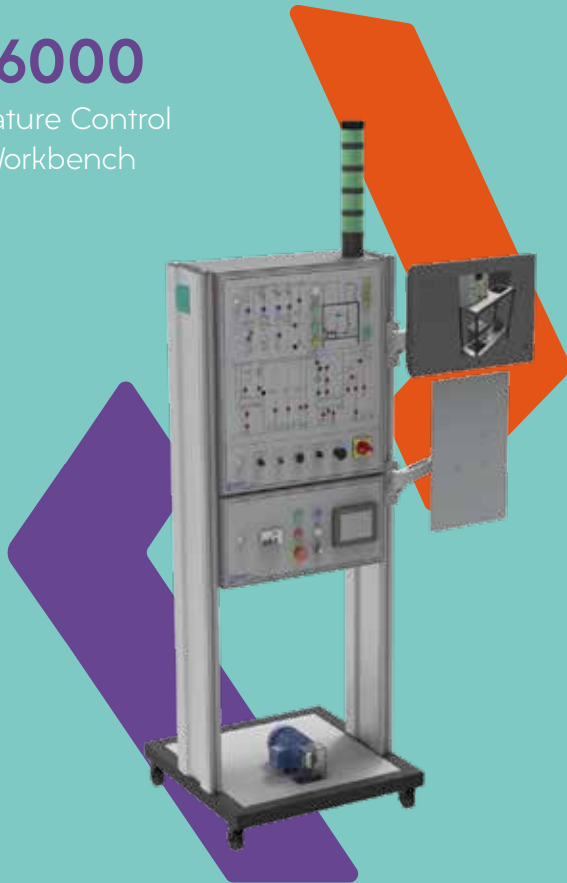
Settings

– Metallic rack with electrostatic coating;
– Modules with silk–screen (serigraph) printing with indelible engraving;
– Powered parts protected from contact;
– Comes with SimMaq3D simulator software;
– Process simulation with NVPT.

DIMENSIONS

Height	1800mm
Width	700mm
Depth	700mm
Weight	80Kg

ELECTRICAL FEATURES

Power	Three–phase 220V 60Hz Three–phase 380V 60Hz
Connections	4mm safety terminals

DEVICE CONFIGURATIONS

PARTHNUMBER	DESCRIPTION	OPTIONS	APPLICATION
ETMAN7000–Lxx–001	Bancada de manutenção de quadro de comando	Schneider	QCSim and Exxer App
ETMAN7000–Lxx–002	Bancada de manutenção de controle nível e temperatura	WEG	QCSim and Exxer App

⚙ FEATURES

With modular configuration, safety with NR–12, development software included, protection of main components and courseware included.

ETMAN7000

Command Panel Maintenance Workbench

Settings

– Metallic rack with electrostatic coating;
– Modules with silk–screen (serigraph) printing with indelible engraving;
– Powered parts protected from contact;
– Comes with QCSim simulator software;
– Simulation with motor bank load and electrical resistance.

DIMENSIONS	
Height	1830mm
Width	1300mm
Depth	700mm
Weight	270Kg

ELECTRICAL FEATURES	
Power	Three–phase 220V – 50/60Hz Three–phase 380V – 50/60Hz
Connections	4mm safety terminals

USE

Guidelines on the recommended use of the Kit!

We suggest this configuration for better use in class. Kits and activities are designed according to the team sizes listed on the side.

The minimum necessary infrastructure is a prerequisite to fully use all functionalities of the training kits.

We recommend the computing and connectivity requirements below for using the software and applications provided with the kit.

Part number	Use	Team(student/kit)	Use
ETMAN2000	Control and speed maintenance workbench	3 to 4	Eventual 1 kit for 3 teams
ETMAN3000	Engine starting maintenance workbench	3 to 4	Eventual 1 kit for 3 teams
ETMAN4000	Static starter maintenance workbench	3 to 4	Eventual 1 kit for 3 teams
ETMAN5000	Maintenance workbench for power factor correction	3 to 4	Eventual 1 kit for 3 teams
ETMAN6000	Level / temperature control maintenance workbench	3 to 4	Eventual 1 kit for 3 teams
ETMAN7000	Command panel maintenance workbench.	3 to 4	Eventual 1 kit for 3 teams

Infrastructure		
	ETMAN2000 / ETMAN3000 / ETMAN4000 / ETMAN5000 / ETMAN7000	ETMAN6000
electrical	1 three–phase plug	single phase plug

Connectivity	
ethernet connections by season work	1 ethernet port (recommended for computers)
WiFi	There's no need
Internet access	Recomendado
Computer	Recommended, according to minimum software configuration

COURSEWARE

The training kits have a rich courseware with a pratical focus, containing pratical proposals aimed at training skills and competencies.

In addition to the **User Manual,** wich contains information on operation and maintenance, the **Student Guide** is also provided, with proposals for pratical activities to be carried out using the kit, and the **Facilitator Guide,** with answers to the proposed activities and guidelines to use the kit in a didactic way. In addition, **Video tutorials** are available to help you easily master the development tools and use the kit.

All of this content is available on our website at the **Facilitator Portal.**

SKILLS AND COMPETENCIES

Command Panels

– Perform measurements and diagnostics on electrical systems;
– Use electrical command simulators;
– Develop testing and diagnostic strategies for electrical systems;
– Evaluate and repair electrical control panel;
– Evaluate and repair level and temperature control systems.

Electronic speed control

– Understand the operation;
– Parameterization;
– Carry out starts and speed control;
– Evaluate and repair speed control systems.

Three-phase induction motor starting

– Understand and conduct direct start;
– Understand and conduct star-delta start;
– Understand and conduct start through compensation starter switch;
– Evaluate and repair direct, star-delta, and trim starter systems.

Static Starter Switch (SoftStarter)

– Understand how static starters work;
– Parameterize static starter (soft starter);
– Conduct starts;
– Evaluate and repair static starter motor starting systems (SoftStarter).

Power Factor Control

– Understand the concept and perform power factor measurements;
– Parameterize power factor controllers;
– Evaluate and repair automatic power factor correction systems.

MOBILE APPLICATIONS

A current learning solution is not complete without software and applications. Along with the kits of this series, exclusive licenses are provided for applications on computer and mobile devices that complement and enhance the use of the kits.

Exxer App

AUGMENTED REALITY KITS

The solutions can be visualized in 3D through augmented reality, allowing the student to have a first contact with such technology and identify their main characteristics.

DESKTOP APPLICATIONS

A current learning solution is not complete without software and applications. Along with the kits of this series, exclusive licenses are provided for applications on computer and mobile devices that complement and enhance the use of the kits.

QCSIM

– QCsim is a didactic software for simulating industrial electrical circuit assemblies. QCsim virtually displays the training system in a command panel, where the user can assemble electrical circuits in a three–dimensional (3D) environment. The QCSIM component library presents the main components of industrial electrical circuits such as contactors, timers, buttons, signals and motors.

– Through the web licensing system, the user can use the softwa–re anywhere, making it perfect for blended and e–learning courses.

TRAINING

As important as teaching resources and tools is teacher training. We have a complete package of solutions for your training and upgrading needs.

Quick Start and Tutorials
Quick start is a quick video guide to learn, test and put the product into operation. Tutorials are videos that teach common procedures needed in classes using the kit.

Technical Delivery
In the technical delivery, our experts present the product, its features, as well as maintenance and safety precautions, and put it into operation together with the customers.

Operational Training
The purpose of operational training is to teach facilitators on how to use the kit. The kit courseware is presented and some proposed practices are carried out. It also includes all technical delivery activities.

Technological Training
Technological training is a deeper learning of technology and applied concepts. These courses are not focused on kits but on topics and tech–nical skills to update trainers.

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Skills for the Future

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