

SERVICE OF MV, LV TECHNOLOGIES

Training course CZ021

Operation and maintenance of UniGear ZS1 with VD4 and REF 542*plus*



Goal:

The goal of the program is learning UniGear ZS1 switchgear with VD4 circuit breaker operation and maintenance and REF 542plus protection terminal setting and engineering.

Participant profile

Service engineers, operation and maintenance personnel and external consultants are the target audience for this training.

Prerequisites and Recommendations

The course is set up for beginners in the UniGear ZS1 switchgear maintenance, operation and servicing, technicians as well as maintenance engineers. Students shall have a basic knowledge of electrical switchgears and MV relays.

Learning Objectives

Upon completion students will be able to:

- operate UniGear ZS1 with VD4, understand switchgear interlocks and maintenance
- operate, set and configure the REF 542plus relays

Modules

The course is composed of following modules:

O401 - UniGear ZS1 switchgear introduction

O402 - UniGear ZS1 operation

O406 - UniGear ZS1 installation and maintenance

O407 - On site testing of UniGear ZS1 based on IEC standards

CZ001 - Operation and setting of REF 542plus in UniGear ZS1 switchgear

CZ005 - Programming of REF 542plus in UniGear ZS1 switchgear

Course duration

4 days

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SERVICE OF MV, LV TECHNOLOGIES

Training module O401

UniGear ZS1 switchgear introduction

**Goal:**

The goal of the course is to familiarize with UniGear ZS1 switchgear design variants and basic application constraints.

Participant profile

The training is targeted to ABB salesmen, external consultants and electrical engineers.

Prerequisites and Recommendations

The course is built for beginners in the primary air insulated switchgears engineering and sales. Students shall have a basic knowledge of electrical switchgears.

Learning Objectives

Upon completion students will be able to:

- understand the basics of design of UniGear ZS1 switchgear
- recognize the option/variant of UniGear ZS1 switchgear suitable for particular application

Main Topics

The course contains following topics:

- overview of UniGear ZS1 design variants
- UniGear ZS1 available parameter
- overview of metering and switching apparatus applicable in UniGear ZS1

Module duration

1/2 day

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Training module O402

UniGear ZS1 operation



Goal:

The course is aimed at learning UniGear ZS1 switchgear interlocks and basic operation of apparatus.

Participant profile

Service engineers, operation and maintenance personnel, ABB salesmen and external consultants are the target audience for this Training.

Prerequisites and Recommendations

The course is set up for beginners in the UniGear ZS1 switchgear maintenance, operation and servicing, technicians as well as maintenance engineers. Students shall have a basic knowledge of electrical switchgears.

Learning Objectives

Upon completion students will be able to:

- understand the standard interlocks in UniGear ZS1
- operate the switchgear, circuit breaker and earthing switch

Main Topics

The course contains following topics:

- interlocks in UniGear ZS1
- locking facilities in UniGear ZS1
- operation of UniGear ZS1 with VD4 circuit breaker
- practical exercise on panel sample

Module duration

1/2 day

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Training module O406

UniGear ZS1 installation and maintenance



Goal:

The aim of the course is to learn installation prerequisites, installation techniques and basic maintenance for UniGear ZS1 switchgear.

Participant profile

Training participants are usually service engineers, installation and maintenance personnel of electrical installation or operation companies.

Prerequisites and Recommendations

The course is set up for engineers experienced in UniGear ZS1 switchgear operation. Students shall be able to operate the switchgear and apparatus.

Learning Objectives

Upon completion students will be able to:

- evaluate site conditions prior to switchgear installation
- supervise and lead switchgear installation on site
- do the basic maintenance for switchgear and apparatus

Main Topics

The course contains following topics

- installation pre-requisites
- recommended methods for switchgear erection
- power and control cable installation
- manufacturer recommendation for maintenance of UniGear ZS1

Module duration

1/2 day

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Training module O407

On site testing of UniGear ZS1 based on IEC standards



Goal:

The goal of the course is to familiarize with IEC standards related to switchgear and learn the best practice for on site testing of UniGear ZS1.

Participant profile

Service engineers, testing and maintenance personnel of electrical installation and operation companies are the target audience for this training.

Prerequisites and Recommendations

The course is built for personnel experienced in UniGear ZS1 switchgear maintenance or installation. Students shall know the UniGear ZS1 operation and installation practice.

Learning Objectives

Upon completion students will be able to:

- identify the requirements for MV switchgears given by IEC
- understand IEC requirements for on site testing
- understand best practice for UniGear ZS1 on site testing

Main Topics

The course contains following topics

- IEC standards related to MV air insulated switchgear testing
- manufacturer recommendations for after installation and pre-commissioning testing of UniGear ZS1 panels

Module duration

1/2 day

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Training module CZ001

Operation and setting of REF 542plus in UniGear ZS1 switchgear



Goal:

The course is aimed at learning REF 542plus relay operation and setting via HMI in UniGear ZS1 switchgear.

Participant profile

Service engineers, operation and maintenance personnel are the target audience for this training.

Prerequisites and Recommendations

The course is built for beginners in the primary air insulated switchgears operation and maintenance. Students shall have a basic knowledge of electrical switchgears and protection relays.

Learning Objectives

Upon completion students will be able to:

- understand the basics of hardware of REF 542plus
- recognize the option/variant of REF 542plus suitable for particular application
- understand the operation of REF 542plus
- operate the circuit breaker via REF 542plus
- do the setting of REF 542plus via HMI

Main Topics

The course contains following topics

- REF 542plus introduction, hardware
- HMI operation of REF 542plus
- setting the parameters of REF 542plus via HMI

Module Duration

1 day

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Training module CZ005

Programming of REF 542plus in UniGear ZS1 switchgear



Goal:

The aim of the course is to learn REF 542plus relay operation, setting and configuration in UniGear ZS1 switchgear.

Participant profile

The training is targeted to service engineers, testing and maintenance personnel, external consultants and electrical engineers.

Prerequisites and Recommendations

The course is set up for personnel with basic experience in REF 542plus operation in UniGear ZS1 switchgear. Students shall know the REF 542plus feeder terminal human machine interface.

Learning Objectives

Upon completion students will be able to:

- understand the operation and setting of REF 542plus using configuration tool
- understand the configuration of REF 542plus in UniGear ZS1 application

Main Topics

The course contains following topics

- REF 542plus configuration tool introduction
- setting of REF 542plus via Configuration tool
- reading the configuration of REF 542plus
- working online and testing the configuration of REF 542plus

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Module Duration

1 day

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