SIEMENS

Distance and transformer differential protections special SIPROTEC 4 & 5 (H-SIP45DT)

Objectives

In this 2-day course, you will learn how to use DIGSI 4 (and DIGSI 5) to implement classical distance protection as a protection function for lines and cables for the SIPROTEC 4 protections. You will also learn how to program transformer differential protection for the protection of a transformer in the SIPROTEC 4 range. For the SIPROTEC 5 range, the differences between these protections will be indicated. This course focuses on the protection functions themselves, the settings that can be made, and their significance. Additionally, it covers how to practically test these functions with a test case and how to handle the online display of the measurements.

Target Group

This course is intended for individuals involved in the engineering process, determining settings, programming, and reading distance protections and transformer differential protections, especially of the SIPROTEC 4 series, and recognizing the differences with the SIPROTEC 5 range. Engineers, commissioning engineers, and maintenance technicians.

Content

Day 1.

- The principle of SIPROTEC version 4.
- DIGSI 4 in general.
- Theory of distance protection.
- Basic requirements, set values, nominal and short-circuit measurements within distance protection, disadvantages, arc resistances, earth fault factors, triggering, zones, recognizing earth faults, direction determination, additional points, oscillation, signal transmission, transfer of carryover.
- Settings of distance protection.
- Settings of distance protection SIPROTEC 4.
- Creating relays, CT and VT connections, linking outputs and inputs, function keys and LEDs.
- Power system data.
- Settings of distance protection functions.
- RIO – OMICRON.
- Tolerances of the distance module.
- Transfer reactions within the working communication port.
- Ground impedance matching.
- The saturation indicator on parameter A1140 I. Testing using the OMICRON test equipment. Example.
- Settings of distance protection ANSI 21 SIPROTEC 5 example.

Day 2.

- The capabilities of the 7UT protection.
- The theory of transformer differential protection.
- The structure of classical differential protection, stabilization and differential forces, characteristic structure, saturation indicator and CT dimensioning, inrush stabilization and other HH stabilization, I0 elimination, set values.
- Engineering presentation with examples.
- Vector group presentation, I0 elimination and correction.
- Testing with interpretation of SIGRA files.
- Fault analysis from the past.
- REF differential or earth fault differential protection.
- CT saturation presentation.
- Testing of transformer differential protections SIPROTEC 4 and SIPROTEC 5.

Prerequisites

Basic knowledge of the different types of protections as covered in the H-BM or H-BI course.
Knowledge of SIPROTEC 4 and DIGSI 4 as covered in the SIPROTEC 4 Basic Course with DIGSI 4. (Knowledge of SIPROTEC 5 and DIGSI 5 as covered in the SIPROTEC 5 Basic Course with DIGSI 5 is less important for this course as the focus is on SIPROTEC 4).

Note

This course is based on the specific distance protection and transformer differential protection functions within the SIPROTEC 4 and contains a lot of theory. Therefore, it is more about following along rather than actively participating on your own or a training PC.
If you want to actively program yourself, we can add a separate practical day where you can work with a transformer differential protection and a training PC or your own PC, provided the correct software is installed.
For testing the distance protection and transformer differential protection, the advanced course of the OMICRON course is recommended. This course is dedicated to these protections.
This course can be scheduled for groups of 4 or more people. For more information or special requests, please contact the Power Academy.

Type

Face-to-face training

Duration

2 days

Language

nl

Fee

1,600 EUR