

# SIPROTEC 5 Protection Engineering with DIGSI 5 Training Course

4 – 8 October 2027
Berlin

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## Overview

SIPROTEC 5 Protection Engineering with DIGSI 5 Training Course is a one-week course for protection engineers, relay engineers, commissioning engineers, and substation technicians who need a controlled device project and commissioning record. Participants connect SIPROTEC 5 hardware, protection functions, DIGSI 5 engineering, IEC 61850 communication, logic, tests, and disturbance evidence. The course resolves inconsistent configuration and handover through traceable workflows. Agile Leaders Training Center delivers this SIPROTEC 5 protection engineering course.

## Who Should Attend

- Protection engineering teams responsible for SIPROTEC 5 application and settings
- Relay engineering teams responsible for device logic, I/O mapping, and interlocking
- Commissioning teams responsible for configuration transfer, testing, and energization evidence
- Substation maintenance teams responsible for diagnostics, replacement, and controlled changes
- Automation teams responsible for IEC 61850 data and GOOSE communication

The course assumes participants can interpret protection diagrams and basic relay settings; it leaves out primary-system design, protection study approval, and manufacturer authorization.

## Departments and Industries

The course supports protection-device engineering across electric utilities and power-intensive industrial facilities.

- Power transmission and distribution
- Industrial substations and manufacturing plants
- Renewable generation and grid interconnection
- Protection, control, and automation engineering
- Commissioning and electrical maintenance

## Learning Objectives

By the end of this course, participants will be able to:

- Build a SIPROTEC 5 device project in DIGSI 5
- Apply protection functions, settings groups, and function groups
- Configure I/O matrices, CFC logic, and interlocking
- Use IEC 61850 data models and GOOSE mappings
- Diagnose events and disturbance records with SIGRA
- Evaluate commissioning tests and controlled maintenance changes

## Course Agenda

### Day 1: Device Architecture and Project Setup

- SIPROTEC 5 Hardware Structure and Modular Device Model
- DIGSI 5 Project Tree and Device Configurator Workflow
- Protection Function Group and Application Template Selection
- Measured-Value, Transformer, and Nominal Data Configuration
- Engineering File Control and Baseline Configuration Record

### Day 2: Protection Functions and Device Logic

- Protection Function Parameterization and Settings Group Method
- I/O Matrix Mapping for Binary Inputs, Outputs, and LEDs
- CFC Logic Design for Interlocking and Control
- Function Mode and Blocking State Management
- Protection Setting Review and Change-Control Checklist

### Day 3: IEC 61850 and Communication Engineering

- IEC 61850 Logical Device and Data Object Mapping
- GOOSE Message Configuration and Signal Subscription
- IEC 61850 System Configurator Exchange Workflow
- Communication Module and Protocol Mapping in DIGSI 5
- Time Synchronization and Communication Diagnostic Record

### Day 4: Testing, Commissioning, and Diagnostics

- DIGSI 5 Test Sequence and Signal Simulation Method
- Device Connection, Configuration Download, and Comparison
- SIPROTEC 5 Web UI Testing and Commissioning Checks
- Event Log, Fault Record, and Disturbance Retrieval
- SIGRA Disturbance Record Analysis and Diagnostic Report

## Day 5: SIPROTEC 5 Engineering Practice and Capstone

- Exercise: Build and Validate a SIPROTEC 5 Project Baseline
- Exercise: Configure Function Logic and I/O Interlocking
- Exercise: Map and Verify IEC 61850 GOOSE Signals
- Exercise: Diagnose a Disturbance Record and Commissioning Exception
- Capstone Exercise: Produce a SIPROTEC 5 Configuration and Commissioning Record

## Practical Exercises

Suggested activities turn device requirements and test evidence into controlled SIPROTEC 5 engineering outputs.

- Suggested activity: assemble a device project with hardware, functions, settings, and I/O assignments
- Suggested activity: configure and verify a GOOSE signal path using engineering records
- Suggested activity: compare device and project configurations before a controlled download
- Suggested activity: analyze a fault record and document diagnostic findings in SIGRA

## FAQs

### Who suits the SIPROTEC 5 Protection Engineering with DIGSI 5 Training Course and what does it assume?

It suits protection, relay, commissioning, maintenance, and substation automation personnel. Participants should already interpret protection diagrams and basic relay settings; the course does not approve protection studies or confer manufacturer authorization.

### How does SIPROTEC 5 protection engineering differ from general relay coordination training?

SIPROTEC 5 protection engineering focuses on product-specific device projects, functions, communication, logic, testing, records, and controlled maintenance, while general relay coordination training focuses on system selectivity and setting calculations.

### What is DIGSI 5 used for in SIPROTEC 5 protection engineering?

DIGSI 5 is used to create device projects, configure hardware and functions, manage settings and logic, map communication, connect to devices, transfer configurations, run tests, and retrieve operational records.

### How is IEC 61850 applied in a SIPROTEC 5 project?

IEC 61850 is applied through logical-device data, communication settings, GOOSE publishing and subscription, and configuration exchange between device and system engineering tools.

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## How are SIPROTEC 5 disturbance records analyzed?

Disturbance records are retrieved from the device, checked against event and configuration context, and examined in SIGRA to measure signals, locate anomalies, and document diagnostic conclusions.

## Conclusion

Participants take back a SIPROTEC 5 Configuration and Commissioning Record containing the project baseline, settings, logic, communication mapping, test evidence, and diagnostic findings. The record improves traceability between protection engineering, commissioning, and maintenance. It supports controlled device changes without replacing approved protection studies or operational authority.