

Content of Training

Target Group

Persons from the departments planning, commissioning, maintenance and service

Content

■ Introduction

- The Organisation PI (PROFIBUS & PROFINET International)
- Overview of the PROFINET fieldbus technology

■ Transmission Methods

- Similarities and differences to classical fieldbus systems
- ISO/OSI seven-layer model
- Differential voltage signal / reflections
- Voltage signals / band width / bit rate / bit coding / transmission frequency
- Full duplex / half duplex

■ IP Address / Subnet Mask

- Network addresses: IP address, MAC address, subnet mask
- Calculation and usage of subnet masks

■ Characteristics of PROFINET

- Function and performance classes
- Refreshing time
- Requirements of industrial network structures
- Hardware configuration by using STEP 7
- GSD file
- PROFINET device change

■ EMC & Potential Equalisation

- Symmetrical data transmission
- Taking EMC interferences already into consideration during planning phase
- Detecting and eliminating EMC weak points in existing installations (functionality of a shield, functionality of potential equalisation, ways of coupling in case of disturbances)

■ Documentation

- Structure of a topology map
- Important parameters
- Means of automatic determination
- Live determination of topology on sample setup

■ Transmission Media

- PROFINET star quad
- Alternative Ethernet cabling

- Line categories: classification e.g. Cat5 / Cat5e
 - Connectors RJ45 / M12 / SCRJ
 - Assembly of RJ45 connectors incl. line test
 - Power over Ethernet
 - Advantages in using fibre-optic cable (POF)
 - Overview of common types of POF
 - Line test of POF
- **Network Components**
 - Repeater, router, gateways, proxy
 - Basic function and characteristics of hubs
 - Basic function and characteristics of switches
 - Configure switches by using a web interface
 - Redundancy options of switches
 - **PROFINET Diagnosis**
 - Most important diagnosis parameters
 - Handling of diagnostic tools
 - Simulation of several error scenarios
 - Troubleshooting on sample setup

Prerequisites

The training is structured so that all participants can be made acquainted with the subject of PROFINET in a straightforward manner. Basic knowledge of industrial automation is recommended.

General Remarks

Your training participation is confirmed by an Indu-Sol certificate.