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For more than 30 years, Softing Industrial has been a world leading expert for digital data exchange in industrial automation. From the very early specification and development stages of this technology, Softing has offered PROFINET products, solutions and services. Softing products cover diagnostic needs during the entire network lifecycle, including installation, commissioning and network operation. As a result, users can operate and maintain their PROFINET networks more efficiently, reduce the risk of network failures, and thus increase the availability of their plants as well as reduce overall downtime.

PROFINET Diagnostics
Solutions for Installing, Commissioning and Maintaining PROFINET Networks

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Cable Testing

During network installation, cable tests are required to reduce risks of failure during network operation. In particular, this applies to custom-made cables or cables which are hard to replace after installation (e.g. backbone connections). Depending on individual requirements, either cable-qualification or even more rigorous cable certifications can be performed.

Netreport Softkey is Softkey’s offer for cable-qualification. The product provides a complete solution for cable testing, performance analysis and troubleshooting of industrial Ethernet networks, enabling rapid, simple verification and documentation of the quality of the cable net with EtherCAT® or EtherCAT® connections. WireXpert® software meets all requirements for cable verification, if full cable qualification is not sufficient.

Network Acceptance Testing and Troubleshooting

Network acceptance testing cannot be done in isolation. At Softing, a specific network test procedure based on clear criteria is defined and executed, so that all results are documented in a clear and unambiguous way allowing network errors or potential defects to be identified and eliminated efficiently.

SoftCHECK Analyze IE is a software product for network acceptance testing and troubleshooting of PROFINET networks. For network acceptance testing, users can automatically execute test procedures and create test reports based on PROFINET & PI (International) recommendations. The product also automatically generates further network documents such as graphical network topologies, inventory lists and reference measurements for troubleshooting. SoftCHECK Analyze IE helps to detect all potential sources of network errors, including avoidable network device failures, large amounts of error packages on a particular network path or the use of incorrect device names.

Network Monitoring and Management

During plant operation, maintenance personnel needs to know the status and health of the communication network at all times. In addition, costs like firmware updates for network devices or the replacement of a defect device have to be performed. Also early indicators for emerging problems are of interest, allowing to address them before they lead to major failures or even plant downtime.

The 5 SCORING diagnostic and supervision software combines with network interfaces from the IV LINK family mobile permanent network monitoring and management, targeted to the needs and requirements of plant operators and maintenance personnel. They automatically monitor network health and status, highlight typical network management tasks such as device firmware checks and provide hints for troubleshooting in case of problems.

Training and Services

To complement its product portfolio, Softing also offers training and services regarding PROFINET network diagnostics, its official PROFINET COMPETENCE CENTER and CERTIFIED TRAINING CENTER, Softing offers further training addressing the basics of PROFINET technology and the standard-compliant installation and reliable operation of PROFINET networks.

Softing services include consultancy on network acceptance testing, e.g. how to apply the commissioning guideline of the PI organization to a specific situation (upon request). Softing engineers can execute network acceptance test and provide a report of the results. On-site troubleshooting complements the testing network diagnostic services.
Network Acceptance Testing and Troubleshooting

Network acceptance testing is a critical step during plant commissioning. At this phase, a specific network test procedure based on clear criteria is defined and executed and its results are documented. In case of unexpected network errors during the commissioning phase, root causes of network problems have to be identified and eliminated efficiently.

busCHECK Analyzer IE is a software product for network acceptance testing and troubleshooting of PROFINET networks. For network acceptance testing, use cases automatically execute test procedures and create test reports based on PROFINET & PROFINET (PI) recommendations. The product also automatically generates further network documents such as graphical network topologies, inventory lists and reference measurements. For troubleshooting, busCHECK Analyzer IE helps to detect the cause of network errors. Accordingly, installable network device, large number of error packages on a particular switch port or the use of incorrect device names.

Network Monitoring and Management

During plant operation, maintenance personnel needs to know the status and health of the communication network at all times. In addition, faults like firmware updates for network devices or the replacement of a defective device have to be performed. Also early indications for emerging problems are of interest, allowing to address this before it leads to major failures in even planned downtimes.

The TR SCORE diagnostic and supervision software combined with network interfaces of the TR LINK family enable permanent network monitoring and management, targeted to the needs and requirements of plant operators and maintenance personnel. They automatically monitor network health, support typical network management tasks such as device firmware checks and they provide hints for predictive maintenance.

Functionality for Network Management and Predictive Maintenance

- Full diagnostics of Ethernet communication: Network performance and network management: Network system, network health, network status, network configuration including topology, number of error frames, attenuation reserve, maintenance schedule, e.g. based on network load, network maintenance and device exchange, e.g. firmware updates.
- Flexible integration into existing systems and workflows

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**Networking Solutions**

- **Testing and Verification**: Ensuring the reliability and performance of network infrastructure.
- **Monitoring and Management**: Continuous monitoring for network health.
- **Training and Services**: Offering training and consulting for network professionals.

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**Network Acceptance Testing and Troubleshooting**

During plant operation, maintenance personnel needs to locate the root cause and health of the communication network at all times. In addition, to the offline analysis for network devices or the replacement of a defective device has to be performed. Also early indicators for emerging problems are of interest, allowing to address them before they lead to major failures or even plant downtime.

The TH SCOPE diagnostic and supervision software combines with network interfaces of the TH LINK family mobile permanent network monitoring and management, targeted to the needs and requirements of plant operators and maintenance personnel. They automatically monitor network health status, support typical network management tasks such as device firmware checks and they provide hints for troubleshooting in case of problem.

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**Cable Testing**

During network installations, cable tests are recommended to reduce risks of failure during network operation. In particular, this applies to untested cables or cables which have been replaced after installation (e.g. backbone connections). Depending on individual requirements, either cable qualification or even more rigorous cable certification can be performed.

**Network Acceptance Testing**

Network acceptance testing is a critical step during plant commissioning. At this phase, a specific network test procedure based on clear criteria is defined and accepted as test results are documented in case of unmet network error rates during the commissioning phase, root causes of network problems have to be identified and eliminated efficiently.

**State-of-the-Art Cable Qualification Tests**

The TH LINK product line is a software platform for testing and troubleshooting of PROFINET networks. For network acceptance testing, our customized software test procedures and test result reports based on PROFINET & PROFINET International (PI) recommendations. The product also automatically generates further network documents such as graphical network topologies, inventory lists and reference measurements for troubleshooting.

**Network Monitors and Performance Analysis**

Verification (simple test of network structure and performance analysis) or even more rigorous cable certification can be performed. Also early indicators for emerging problems are of interest, allowing to address them before they lead to major failures or even plant downtime.

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**Mobile PC Software**

- **Functionality**
  - Functionality for acceptance tests
  - Support for various standards (proprietary and network statistics)
  - Enhanced flexibility by supporting various, as well as offline mode
  - Fast and reliable analysis of acceptance results

**Automatic Generation of Acceptance Test Documents**

- Test documents can be generated automatically
- USB connection for alternative transfer of measurement data
- 6" interface for mobile measurements with a single tap

**Supporting Collaboration Between End Users and Their Suppliers**

- Their Suppliers can use TH SCOPE for device acceptance
- TH SCOPE provides comprehensive data to test project configuration data
- Exchange of test project configuration data

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**Mobile Ethernet**

- Extensive Certification Functionality
- Verification and documentation of the capability of cabling links with RJ45 and M12 connectors
- Complete state of set Cable Test Functionality
- Extensive Certification Functionality (WireXpert 500 IE only)

**Unit Test**

- Complete state of set Cable Test Functionality
- Extensive Certification Functionality (WireXpert 500 IE only)

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Training services include consultancy on network acceptance testing, e.g. how to apply the commissioning guideline of the PI organization to a specific situation. Upon request, Softing engineers can execute a network acceptance test and provide a report of the results. On-site troubleshooting complements the offline network diagnostic services.
Cable Testing

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Netreport® SEKOL is Softing’s offer for cable-qualification. The product provides a complete solution for cable testing, performance analysis and troubleshooting of industrial Ethernet networks, enabling reliable, simple verification and documentation of the functionality of PROFINET® cables. WorkReport® SEKOL meets all requirements for cable verification, if full cable qualification is insufficient.

- State-of-the-Art Cable Qualification Tests
  - Complete Set of Cable Test Functionality
  - Extensive Certification Functionality
  - Remote Test Functionality

Network Acceptance Testing and Troubleshooting

Network acceptance testing shall be established and commissioned. Attachment-specific, network test procedures based on clear criteria are defined and executed. Results are documented in a clear, unambiguous way. The commissioning phase, root causes of network problems have to be identified and eliminated efficiently.

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During plant operation, monitoring is necessary to identify the root causes of network problems at an early stage. Network devices, large amounts of error packages on a particular switch port or the use of incorrect device names. Troubleshooting, based on clear criteria is defined and executed and its results are documented. In case of unexpected network errors or irregularities, Softing engineers can execute a network acceptance test and provide a report of the results. On-site troubleshooting complements the testing network diagnostic services.

- Training and Services
  - Engineering Services
  - Technical Training
  - Consulting Services

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