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softing

PROFINET Diagnostics

Solutions for Installing, Commissioning and Maintaining PROFINET Networks

data CHECK®

PROFINET DIAGNOSTICS

While PROFINET has become an established communication standard in industrial automation, the diagnostics of PROFINET networks still is new territory for many users. Profound changes brought about by the shift from traditional fieldbus systems to PROFINET have led to new typical root causes for network problems and failures.

Network configuration has become more complex and changes in the network are more frequent. New tools and solutions are therefore needed which allow users to handle new network diagnostic and network management tasks across a plant's entire life cycle.

SOFTING EXPERTISE

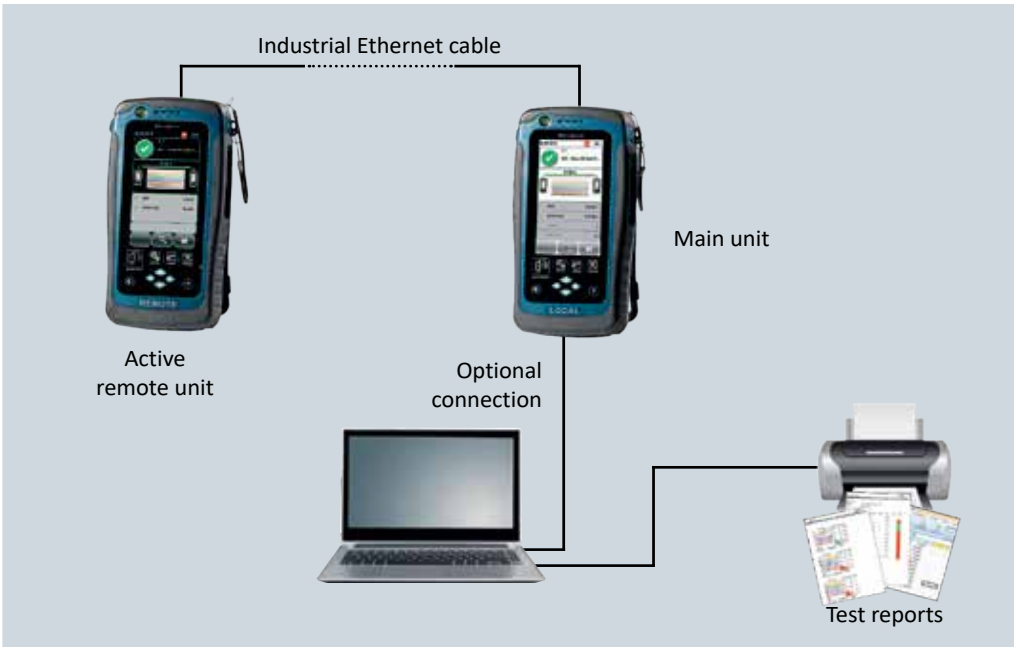
For more than 30 years, Softing Industrial has been a world leading expert for digital data exchange in industrial automation. Since the very early specification and development stages of this technology, Softing has offered PROFINET products, solutions and services.

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.

Cable Testing

During network installation, cable tests are recommended to reduce risks of failure during network operation. In particular, this applies to custom-tailored 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 certification can be performed.

WireXpert Industrial Ethernet is Softing's offering for the certification of Industrial Ethernet network cabling in the frequency range up to 500 MHz. This product is a complete solution for cable testing, performance analysis and troubleshooting in Industrial Ethernet networks. The functional capability of industry-standard cable connections with RJ45, M8 and M12 is easily checked and documented. The large touch screen and the intuitive user interface make the device very user-friendly.



Certification of Passive Network Components

- Support of 4-wire industrial network cables
- Certification according to industry standards –Class D / E / EA and Category 5e / 6 / 6A
- Meets precision requirements according to TIA and ISO Level IIIe
- Measurement according to end-to-end link method

Made for Industrial Use

- Solid housing for safe use in everyday tasks
- Testing of Industrial Ethernet with RJ45 and M12 connectivity, E2E connection tests

Easy to use

- Touch-sensitive 6-inch industrial LCD display on main unit and active remote station
- Start of measurement by tapping once
- Bypassing time-consuming distances by using the active remote station

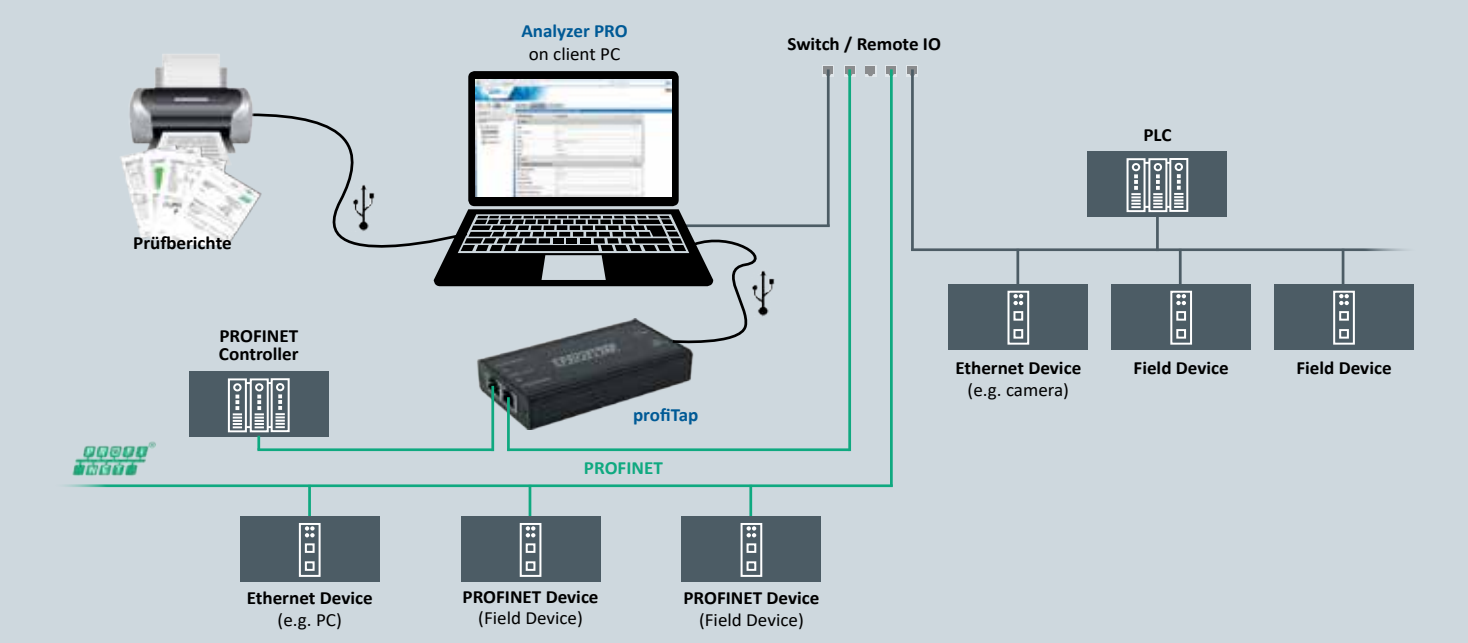
Detailed documentation of the measurements

- Optional professional reports created by eXport PC software

Commissioning 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.

dataCHECK Analyzer 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 PROFIBUS & PROFINET International (PI) recommendations. The product also automatically generates further network documents such as graphical network topologies, inventory lists and reference measurements. For troubleshooting, dataCHECK Analyzer helps to detect and fix a broad range of network errors, including unavailable network devices, large amounts of error packages on a particular switch port or the use of incorrect device names.



Comprehensive Functionality

- Diagnostics list, error statistics, network statistics
- Enhanced flexibility by supporting online as well as offline mode
- Generation, analysis and handling of diagnostic data such as graphical topology, inventory list and reference measurements, also for standard Ethernet components (eg PCs, camera systems)
- Presentation of all sizes in automated report
- Telegram analysis with measurement of the Jitter, refresh interval and load ratio

Automated Generation of Acceptance Test Documents

- Time saving by automatically created test reports
- Flexible definition of acceptance criteria
- Transparent reporting by following PI guidelines

Tool Addressing Complete Plant Lifecycle

- Data on network configuration, network communication and diagnostic messages
- Error identification for effective troubleshooting (e.g. based on inventory list of network devices)
- Chance to support exchange of general project information between end users, EPC contractors, system integrators and maintenance service providers
- Seamless integration with Softing diagnostics per-manent monitoring solutions TH SCOPE and TH LINK

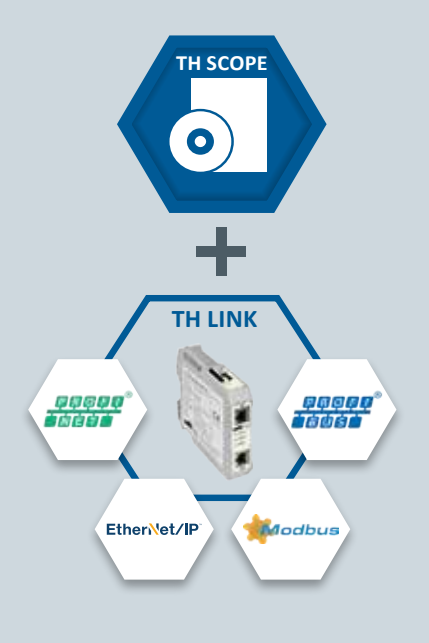
Telegram analysis and measuring important parameters

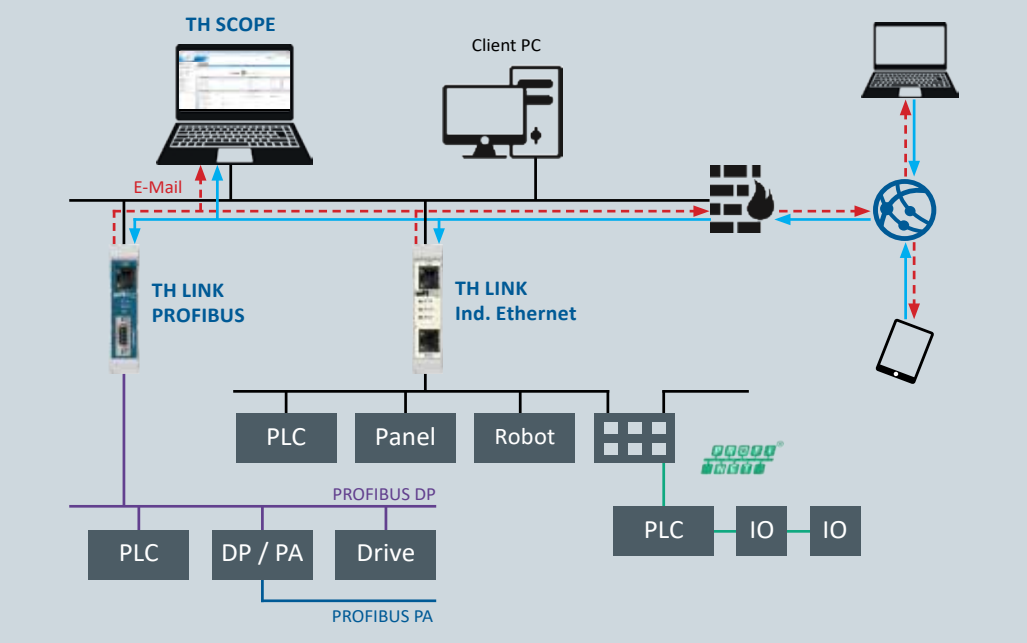
- Measurement of the Jitter, refresh interval and load ratio
- Including network tap to carry out the analysis

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, tasks 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 TH SCOPE diagnostic and supervision software combined with network interfaces of the TH 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 and status, support typical network management tasks such as device firmware checks and they provide hints for troubleshooting in case of problems.





Comprehensive Presentation and Evaluation of Diagnostic Data

- Provision of data on network communication, network configuration and diagnostic messages
- Preparation of standardized exports (e.g. for acceptance testing)
- Support for PROFIBUS, PROFINET, EtherNet/IP and Modbus TCP in combination with TH LINK components
- Data acquisition also from standard Ethernet devices (e.g. PCs or camera systems)

Versatile solution for a wide range of diagnostic applications

- Permanent monitoring and alerting
- Commissioning and acceptance
- Network documentation
- Network and Plant Asset Management
- Fault localization and identification

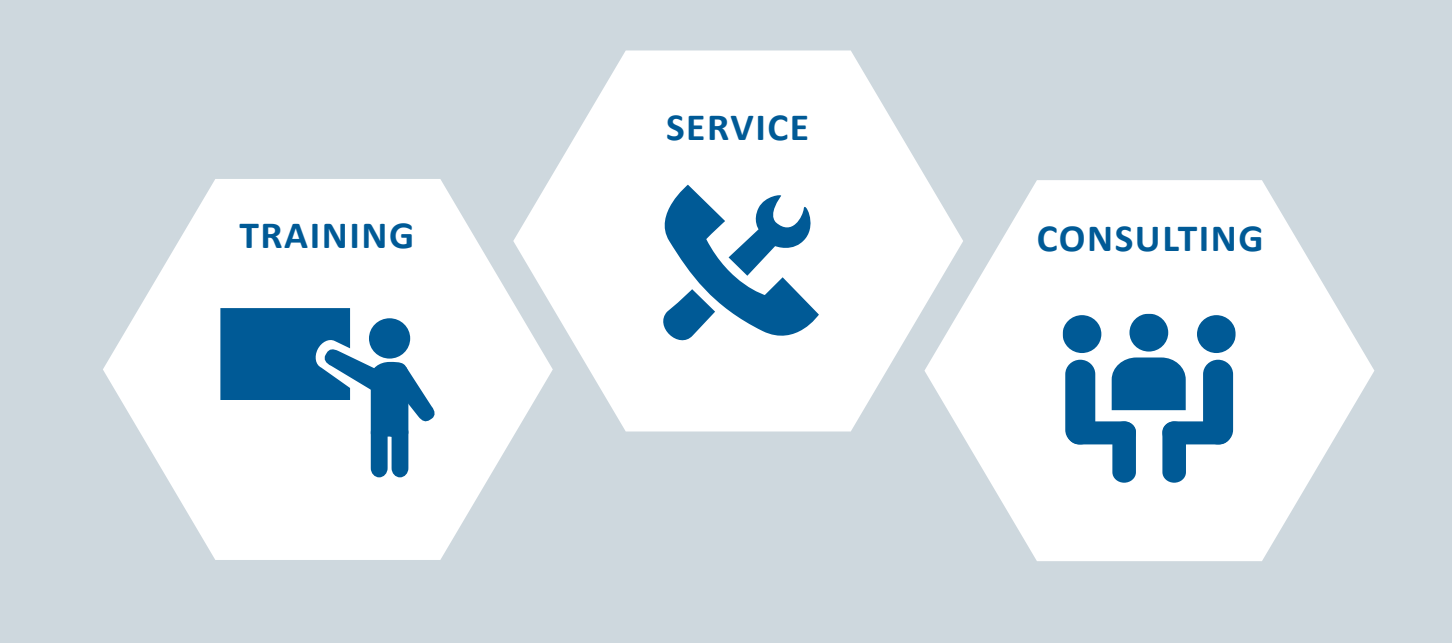
Flexible System and Process Integration

- Web-based access, local or remote
- Integration of inventory data into monitoring tools and process control systems via OPC UA
- Export of diagnostic data for further processing in other applications (e.g. MS Excel)
- Easy data exchange with Softing‘s Analyzer IE software (e.g. export of reference measurement)
- Intuitive handling and operation

Training and Services

To complement its product portfolio, Softing also offers training and services regarding PROFINET network diagnostics. As official PROFINET COMPETENCE CENTER and CERTIFIED TRAINING CENTER, Softing offers 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 a network acceptance test and provide a report of the results. On-site troubleshooting complements the Softing network diagnostic services.



Technology Training

- PROFINET overview
- Technological basics
- Details of specifications
- PROFINET implementation
- PI certificate upon successful passing of "Certified PROFINET Engineer" examination

Troubleshooting Training

- Practice-oriented introduction to Ethernet basics and PROFINET specification
- Focus on correct network installation and structured troubleshooting approach
- PI certificate at successful pass of "Certified PROFINET Installer" examination

On-Site Troubleshooting Services

- Determination of installation quality (e.g. for cables and connectors)
- Check of network configuration including available bandwidth and baudrates
- Network assessment regarding EMC, shield, etc.
- Report including proof of reliable communication or recommended problem solving measures

Network Acceptance Test Services and Consulting

- Creation of customer-specific acceptance test guidelines based on recommendations by PI organization
- Execution of PROFINET network acceptance tests
- Creation of test reports, inventory lists, reference measurements
- Advice on how to improve network performance and robustness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https://industrial.softing.com/en/solutions/network-diagnostics.html