Substation automation products

MicroSCADA Pro
for substation automation

Power and productivity
for a better world™

ABB

Perfect control – anywhere, anytime

MicroSCADA Pro is an investment for today and tomorrow. Start, for instance, with monitoring or gateway functionality and integrate control, redundancy, reporting or other additional functionalities in response to your needs later on. With MicroSCADA Pro your investment is secured with every step you take.

Complete functionality

MicroSCADA Pro is designed for complete functionality for real-time monitoring and control of primary and secondary equipment in transmission and distribution substations. It allows you to easily and safely interact with protection and control IEDs (intelligent electronic device), as well as with the process via the operator's workplace. This way, it effectively promotes taking the right actions and achieving the maximized availability of your power system.

Secure operations and high availability

Right and reliable information is the basis for correct and safe operations. MicroSCADA Pro maximizes information availability by supporting redundant system servers and communication at any substation in every situation.

Personnel safety

MicroSCADA Pro increases personal safety in many ways and levels. The breakers and disconnectors are operated from a separate control room in the substation, which minimizes the risk for personnel injuries. It further prohibits operation of objects, for instance, in maintenance situations, thus ensuring personnel safety. Notification of the on-going maintenance work can be attached to the process views and a control dialog to inform operators accordingly. MicroSCADA Pro also permits the definition of authorization levels for different user categories to prevent unauthorized actions.

Intuitive and consistent icons with selectable and pre-defined color schemes enhance the visual comfort for the operator. This makes it easy to master the overall harmony of the various information displays in your interface, and get familiar with the system quickly.

Apparatus safety

MicroSCADA Pro prevents simultaneous operation of primary equipment. It reserves the device and verifies whether the selected object can be operated before executing the command. Additionally, stationwide interlocking schemes, which are complementary to the bay level interlocking, prevent dangerous operations that might otherwise damage primary equipment. Only authorized users can override interlocking and other locked operations.

Common safety procedures require that any mechanical or electrical equipment can be locked out and tagged out before being worked on. Responsible for meeting safety requirements, rules and regulations, MicroSCADA Pro includes a lock-out/tag-out function. The lock-out/tag-out function ensures that control of objects in the application or other operations are properly secured prior to and during, for example, maintenance or servicing work. An application object in tag-out state can easily be identified on the HMI by the intuitive tag-out display symbol.

MicroSCADA Pro's dynamic busbar coloring function provides the operator with a quick access to information about the powered, un-powered and earthed parts of the busbar. Also alarming objects are visualized. The busbar coloring combined with object control simulation of MicroSCADA Pro ensure the safe and correct operation of your primary equipment.

A large number of cyber security features that protect systems from abuse or vandalism are built into the MicroSCADA Pro portfolio. Features include, for example:
• user authentication
• flexible user authorization
• session expiration
• communication encryption
• event logging
• reporting

MicrosSCADA Pro-based systems can also be be equipped with industry-standard malware and intrusion protection solutions, like virus protection and application whitelisting. Cyber security is considered during the whole lifecycle of products starting from the requirements and development phases and throughout the operation phase. New cyber security features are designed to meet and exceed requirements from standards such as IEC 62351, IEEE 1686 and NERC-C.

MicroSCADA Pro – Top five to save costs and optimize asset utilization

1. Always correct actions

The MicroSCADA Pro substation automation system ef-ficiently utilizes and refines data from the process, enabling you to access important information. Advanced categorization and priorization of data ensures that your operators receive the right amount of relevant information in all situations. For instance, different colors for the various types of entries in the event and alarm lists draw the operator's attention, enabling right and timely corrective actions. This reduces outage time, power losses, and helps avoid possible penalties due to undelivered energy. The event list also permits verifying that actions taken have been successfully performed.

2. Disturbance analysis

Easy access to event list and disturbance information allows you to analyze different types of faults. Advanced event log-ging and analysis, including filtering, will help you find exactly the information you need, for instance, to optimize the se-lectivity scheme of your protection equipment. With accurate time synchronization and time-tagging of events in protection and control IEDs, MicroSCADA Pro creates a strong basis for

accurate disturbance analysis. You can utilize trends for ana-lyzing the process behavior and taking corrective measures in primary equipment.

3. Manual and automatic control

With MicroSCADA Pro you can control different types of ob-jects, such as breakers, disconnectors and tap changers. You can also easily create additional control functions, for example to create shortcuts for activating or de-activating functions, such as auto-recloser.

An automatic control of objects based on user-defined sequences helps avoid human mistakes. For instance, a line can be connected or disconnected from the busbar using an automatic sequence. These sequences can be used also for load shedding and automatic busbar transfer, which reduces outage time significantly.

4. Optimized maintenance

You can define automatic alarms to optimize the timing of maintenance through, for instance, monitoring of number of breaker operations, total circuit breaker wear or motor start-ups. This helps you save costs, as well as allows for an efficient utilization of the primary equipment – while avoiding environmental effects.

5. Power monitoring

MicroSCADA Pro helps optimize your power quality through, for instance, monitoring and presenting of harmonic distor-tions, voltage drops and peaks measured by the protection and control IEDs. As a result, your power system fulfills the requirements set for power quality.

All the important process information can be stored with MicroSCADA Pro and the data will be refined into meaning-ful information. This gives a clear view of the situation in the primary process and allows for optimized utilization of the power and primary equipment. Reports and statistics are easily produced.
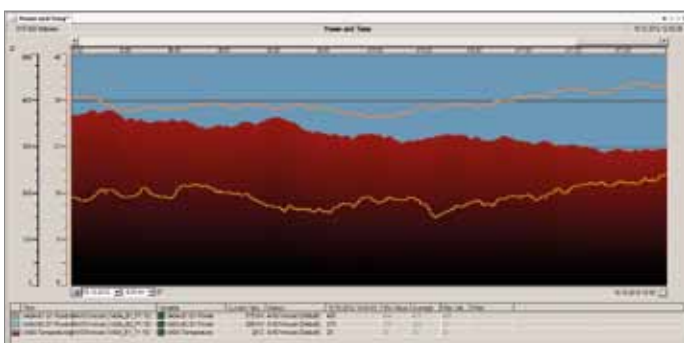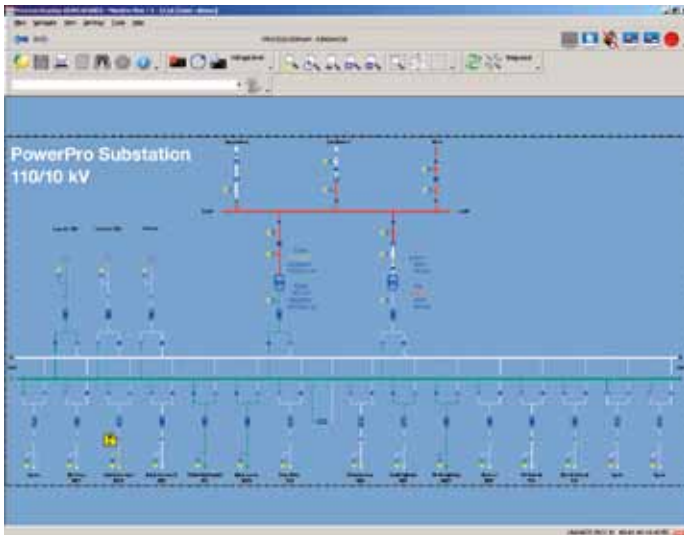
Easy to handle and expand

With thousands of systems delivered, MicroSCADA Pro has made user-friendliness a standard for substation automation. For instance, a Microsoft Windows® based user interface adds to operating comfort with familiar and easy-to-use functions.

From overview to detailed information

Versatile measurement reports enable the effective monitoring of primary equipment load. In addition to that, an alarm list presents the cause, time, object and status information for alarms. With efficient setting and filtering tools, you can customize the alarm and event lists and reports in order to make them meet your specified needs. The hierarchical summary alarms give a good overview of the situation in the process, reducing the information flow to the essential in all situations.

MicroSCADA Pro features several application views that you can easily access from the drop down menus for single line diagrams, process displays, system supervision, lists, reports and engineering tools. You can also access object specific details by mouse-clicking any object icon, after which a dialog will appear with information and control possibilities. Functions, such as zooming, panning and de-cluttering enable smooth adjusting of the amount of information needed in different situations.

Flexible adaptations

MicroSCADA Pro based substation automation systems can be easily customized for your specific needs. You can, for instance, harmonize the look and feel of your interfaces in accordance with your company guidelines. MicroSCADA Pro also serves you with tools for translating your application and the system can be operated in several languages simultaneously. Furthermore, you can efficiently execute modifications, add communication and automatic functions – while the system is in operation.

Extensive supervision

MicroSCADA Pro performs self-supervision to provide instant information about disturbances in system components. It also enables overall system supervision to detect failures in the secondary equipment, such as printers, which reduces the need for scheduled maintenance.

Application examples
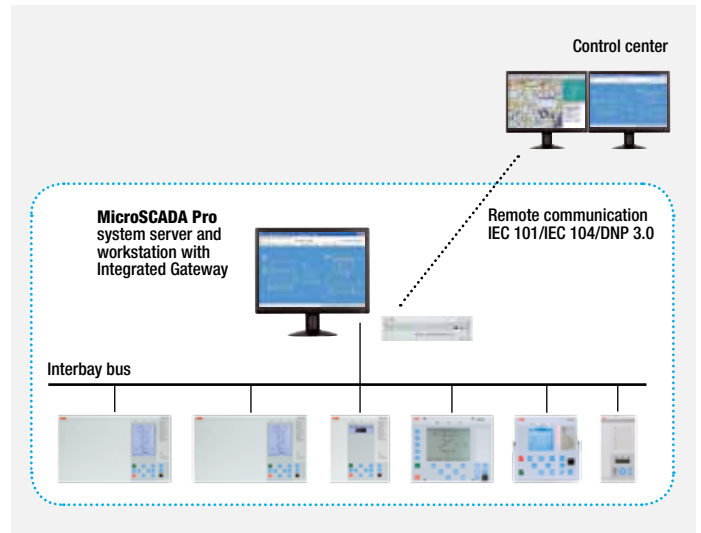
Substation automation system. Integrated substation control and gateway.
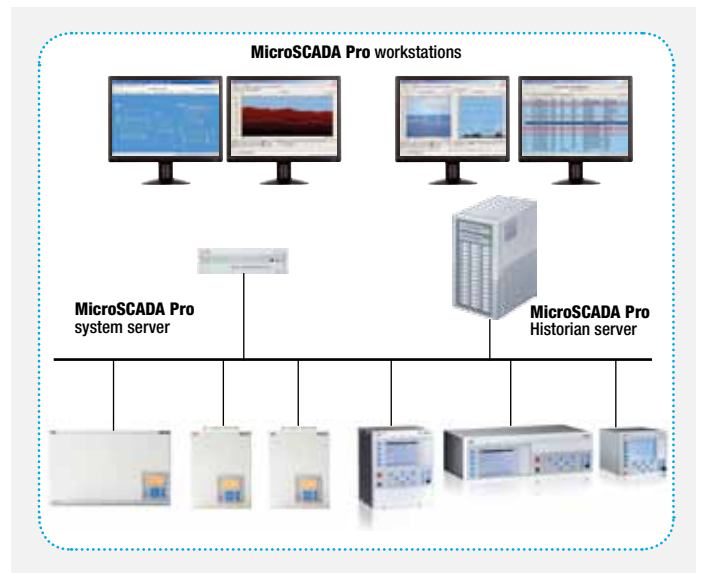
Substation automation system with Historian architecture.

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MicroSCADA Pro is a future-proof investment. Its modular design allows you to acquire the functionality you need. ABB's unique connectivity concept makes it easy for you to extend your existing MicroSCADA Pro system when you are extending the substation with new bays.

Easy upgrading

MicroSCADA Pro features complete backwards compatibility with earlier versions of MicroSCADA. Therefore any existing MicroSCADA system can be easily upgraded to the latest version of MicroSCADA Pro. This is possible due to the clear separation of MicroSCADA Pro software from your system specific application data. When an upgrade is done, all the system specific data and the application can be fully re-used without re-engineering. This means that your existing application will run as it is in the new product version. The re-use of the data minimizes the need for tests, which significantly shortens the engineering and commissioning time.

Reap the benefits from new technologies

MicroSCADA Pro runs on standard and industry grade PCs. This allows you to benefit from the latest PC technology and related equipment. It also supports the latest Windows® operating systems to allow easy integration of 3rd party applications, such as AutoCAD drawings, documentation and Excel sheets. These applications can be attached to objects and opened and edited directly via MicroSCADA Pro displays, for instance via the single line diagram. Additionally, MicroSCADA Pro supports remote access and mobile technologies to ensure easy control of your substations anywhere and anytime.

MicroSCADA Pro is available pre-installed and tested at the ABB factory on solid state industry-grade PC. This MicroSCADA Pro SYS 600C does not contain any moving or otherwise vulnerable parts. It features high scalability and modern architecture, and is easy to adapt and expand. You can enjoy its ease of use as a communication gateway, as a control system HMI, or as a communication server in both industrial and electrical utility applications. Robust and compact, it is also an ideal solution for harsh and demanding environments in different types of industries.

Application examples
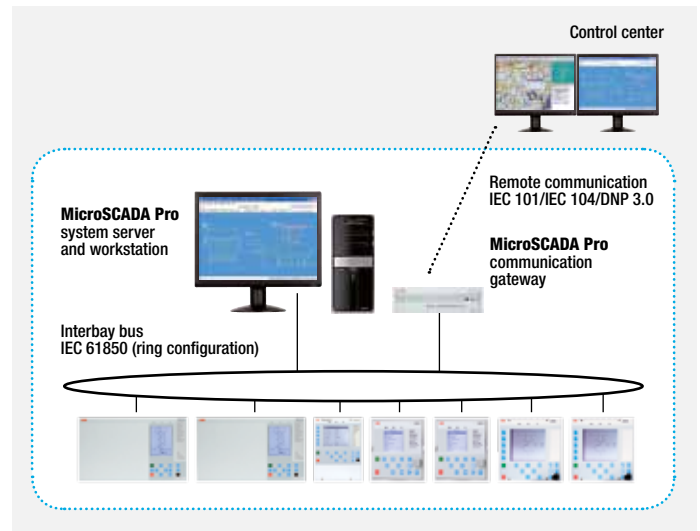
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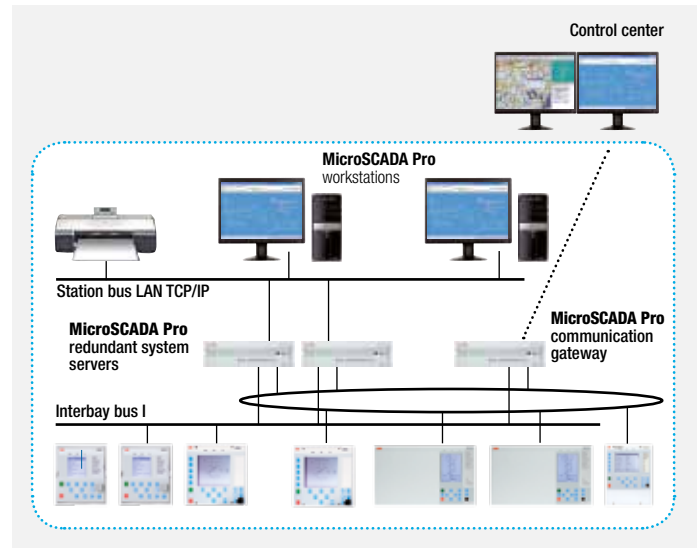
Substation automation system. Combined IEC 61850 and LON based system with redundant system servers, two workstations and separate gateway.

Designed to communicate and connect

MicroSCADA Pro ensures the optimized control and reliable operation of your switchyard through seamless integration and connectivity between different devices and systems. It supports an extensive range of standard and de-facto standard communication protocols and interfaces.

IEC 61850 compliant

MicroSCADA Pro is compliant with the IEC 61850 standard for substation automation including Edition 2. This means that it can operate together with IEC 61850 compliant IEDs, tools and systems, which simplifies system engineering. With IEC 61850 support, MicroSCADA Pro creates seamless communication and connectivity opportunities for its users.
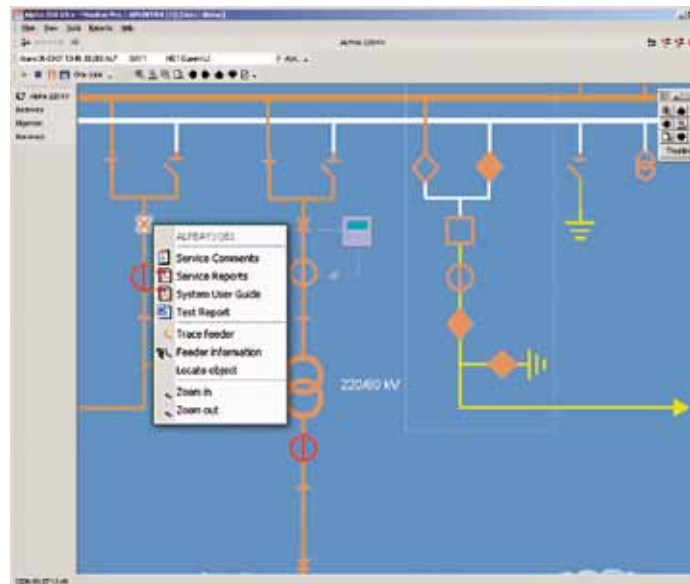
MicroSCADA Pro supports redundant communication on the station bus according to the IEC 62439 standard. The solution from ABB utilizes the IEC 62439-3 standardized Parallel Redundancy Protocol (PRP). PRP improves fault tolerance and communication system reliability. It also features a unique capability of zero seconds' recovery time in case of communication failure. This means that there will be no interruption in communication if one link fails as the other link instantaneously takes over the communication. As a result, there is no data lost when communication failures are detected.

Supervision of communication links provides on-line status information, and, if a failure occurs, an alarm is sent to the IED and the substation automation system. This also allows for maintenance of the system while it is in operation. Thus, redundant communication further improves personnel safety and ensures that the necessary information about the system is available for operators in all situations.

All included for engineering

MicroSCADA Pro supports ABB's unique connectivity package concept, which simplifies system engineering and reduces the risks of errors in system integration. The connectivity packages contain a complete description of the IEDs, consisting of data signals, parameters, addresses and IED documentation. MicroSCADA Pro automatically configures the signal data based on the information provided by the connectivity package, which significantly reduces engineering time.

The MicroSCADA Pro software package contains complete engineering tool set, connectivity packages and libraries including symbols and control dialogs. The copy and paste functions enable, for instance, easy system extension. Thus MicroSCADA Pro also offers a ready-to-use engineering environment for system integrators.

MicroSCADA Pro also offers facilities for communication diagnostic and troubleshooting purposes. All data transmitted on the communication line is recorded and can be displayed for problem analysis. This is useful especially in system testing and when building-up new projects.

Open to integration with tools and systems

The MicroSCADA Pro substation automation system allows you to directly access parameter setting and efficiently handle disturbance information. In addition, in hierarchical systems where MicroSCADA Pro is used both at the substation level and for network control, it provides a mirroring function. This function enables easy signal mapping, without the need for conventional gateway functionality. Furthermore, MicroSCADA Pro's standard and de-facto standard interfaces enable smooth connection to your other systems and tools. It also features both OPC server and client interfaces to enable easy integration with market and application specific systems and devices.

More than 20 years' experience in global substation automation in transmission and distribution applications allows ABB to serve you with world-class knowledge. With our comprehensive selection of services we can help you improve your power system performance under diverse operational and disturbance situations. As a result, you can reap the full benefits from your investment.

Local and remote support
More than 1,000 experienced MicroSCADA Pro engineers in more than 50 countries are prepared to serve and support you in your local language with local know-how.

Additionally, ABB provides fast and efficient troubleshooting service, for instance, through remote connection to the system. Your MicroSCADA Pro substation automation system can be analyzed in detail, and the required programming and software updates can be made immediately and remotely anytime during the life cycle of your substation automation system.

Training
Our versatile standard course offering and fully customized training programs enable your engineers and operators to fully utilize the MicroSCADA Pro substation automation system. Our training courses include extensive hands-on sessions and well-documented exercises. As a result, your personnel will be well prepared both for handling the system in daily operation, as well as for managing any type of disturbance situation.

Technology summary:

Power distribution monitoring
- Process displays with network coloring, zooming, panning and de-cluttering
- Event, alarm and blocking lists
- Trends
- Historian for high-performance data logging, refinement, analysis and reporting
- Power-quality monitoring
- Language support including several simultaneous operator-specific languages
- Uploading and analysis of disturbance record files
- Setting of relay parameters

System platform and architecture
- System supervision
- High performance and availability
- Process data mirroring for hierarchical systems
- Redundant hot standby system capability
- Solutions from compact to distributed system design
- Remote workstations – also web-based
- Standard PC hardware and Microsoft Windows® operating systems

Cyber security
- To answer to requirements from IEC 62351, IEEE 1686, NERC-CIP and more
- User authentication, authorization and session expiration based on roles
- Event logging and reporting
- Communication encryption such as DNP 3.0 Secure Authentication, VPN
- Malware and intrusion protection
- Product hardening, patch management and incident-handling processes

Communication and interfaces
- Solution libraries for efficient integration with protection and control IEDs
- Master protocols: IEC 61850, IEC 61107, IEC 60870-5-101/103/104, LON, SPA, RP 570/1, DNP 3.0 TCP/serial, Modbus TCP/RTU, ANSI X3.28, I35/P214, ADLP 180, etc
- Slave protocols: IEC 60870-5-101/104, IEC 60870-5-104, DNP 3.0 TCP/serial, Modbus RTU, RP 570/1, ADLP180, F4F, etc
- Ethernet redundancy according to IEC 62439/PRP
- Open interfaces: OPC, ODBC, Application programming interfaces for application and communication extensions
- Data concentration and signal grouping and control IEDs
- GPS time synchronization

Contact us

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