

*Smart Telecontrol Unit –
the Communication Solution
for Secure Smart Grids*

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Smart Telecontrol Unit – the Communication Solution for Secure Smart Grids

Intelligent grid components meeting new energy market requirements

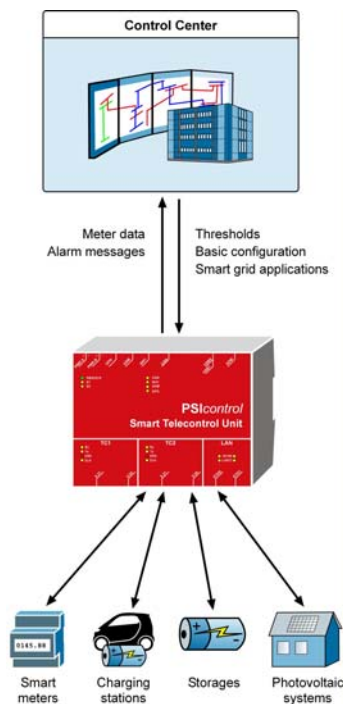
The power grid of the future requires flexible and intelligent control of all electricity producers and consumers to guarantee safe and secure operation.

The key feature of this “Smart Grid” is bidirectional communication between the control center, grid components, and power generators and consumers. A Smart Grid requires intelligent components performing decentralized control functions independently from the control center. The control system of the future coordinates multiple micro-grids and optimizes their cooperation using intelligent algorithms and processes running on the grid components.

These innovative, intelligent grid components are needed in the areas of conventional telecontrol applications, micro grid controlling, feed-in management, substation automation, and smart metering.

Secure Process Interfacing

The Smart Telecontrol Unit (STU) is part of the Telecontrol Gateway product family which is used in the power grids of major electricity suppliers. It enables redundant connection of remote terminal units to the control center and provides extensive security features for sensitive operating data.



Micro Grid Control

Operating as micro grid controller, the STU takes over tasks from the control center. For feed-in management it controls consumers and producers to avoid overload in the network. The STU also regulates the buffering of surplus energy as well as demands coming from charging stations for electric vehicles. This guarantees a stable power supply for networks depending more and more on volatile parameters.

Autonomous and local control of decentralized power networks



Feed-in management

To prevent overload, individual energy producers are switched on and off based on certain thresholds. With its flexible interfaces and supported protocols the Smart Telecontrol Unit MGC supports the communication with all consumers and producers for “smart balancing”.

Substation Automation

In addition to secure process interfacing, the STU contains an IEC 61131 Soft-PLC for controlling analog and digital signals. Thus, the STU can support smart applications such as voltage adjustment, load reduction and shedding, control of decentralized power plants, and automatic voltage regulation in substations.

Smart Metering

As a data concentrator, the Smart Telecontrol Unit transmits network information from smart meters to the control system for monitoring the low voltage level supply quality and the PLC network functions as well as generation of status and alarm messages (e. g. counter values or communication failures).

The Smart Telecontrol Unit functions as a WAN communication gateway for transmission of meter data via the SML protocol and for substation measured values via IEC 60870-5-104.

Security for Your Network

For system and data security, the Smart Telecontrol Unit offers an extensive security concept in compliance with international security standards:

- Hardened system
- Secure start-up
- Encrypted communication
- Integrated firewall
- VPN support (IPSec)
- Role-based concept and multi-client capability
- User authentication via RADIUS/LDAP
- Centralized patch management

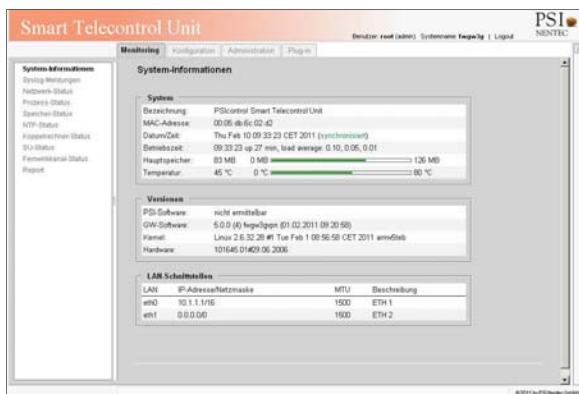
NERC-CIP and
BDEW compliant
security features

The Flexible Solution

The Smart Telecontrol Unit reduces network expansion costs caused by the reorganization of the energy market. With its strong focus on new communication requirements and the capability to load new intelligent algorithms as they become available, the Smart Telecontrol Unit is a sustainable investment for the future.

Feature Overview

- Telecontrol Gateway
Data preprocessing, protocol conversion and data transmission via IP networks
- Micro Grid Controller
Autonomous and local control of consumers and producers in low voltage networks
- Feed-in Controller
Balancing between producers and consumers for stable supply networks
- Smart Metering Gateway
Data concentrator for acquisition, storage and transmission of smart metering values
- NERC-CIP and BDEW compliant security features with integrated monitoring and alarm functions



PSI Nentec – Communication Solutions for the Future

For more than 10 years, we have successfully implemented intelligent communication solutions for MV and HV networks in cooperation with the PSI AG. In the Smart Grid area, we support you by customized solutions and state-of-the-art grid components which use IP-based fixed or wireless overlay networks. Our Smart Grid components meet the stringent requirements of power grids concerning high availability, reliability and security.

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