

Smart Telecontrol Unit MGC

for Micro Grid Controller Applications

Intelligent control device for the local and autonomous control of micro grids



The change towards renewable energy leads to a constantly increasing number of small, decentralized producers, which feed-in energy on low voltage level. Mainly designed for centralized power feed-in on medium and high voltage level, current energy networks must adapt to guarantee stability. In order to avoid overload in the network and voltage intersections, balancing of producers and consumers must already begin within the local distribution networks (micro grids).

Decentralized Control

This balancing requires local control of producers and consumers. With sufficient network information based on measured values and defined

thresholds, intelligent network components autonomously manage the “smart balancing”. The Smart Telecontrol Unit MGC (STU MGC) makes autonomous control decisions within preset boundaries. The necessary interfaces and required protocols for connecting to meters, converters and storages are provided.

Feed-in Management

An important part of the network control is the feed-in management. The ability to switch individual energy producers on and off based on thresholds prevents grid overload. It guarantees a constant supply even in extreme feed-in conditions, e.g. strong winds.

Decentralized control of producers and consumers for stable supply networks

Storage Management

Using renewable energy, a constant energy supply can be achieved by buffering surplus energy locally in order to supply it during energy shortages. The STU MGC controls energy buffers, e. g. batteries or storage water heaters.

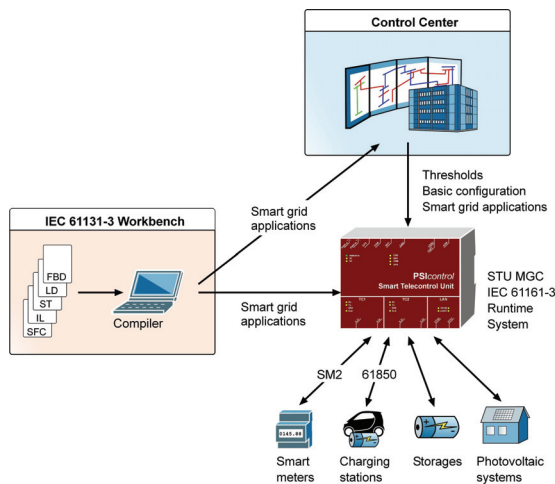
Charging Control

The charging of electrical vehicles is one of the use cases to be integrated into energy networks. A control component takes into account given network capacities, surplus and shortages, as well as the customer demands for time and cost optimization. The STU MGC is ready to incorporate intelligent control algorithms in order to meet these needs.

Substation Automation

Smart applications can be developed and integrated via an IEC 61131 engineering workbench. They are used for voltage adjustment, load reduction and shedding, control of decentralized power plants, and automatic voltage regulation in substations.

IEC 61131 Soft-PLC for controlling analog and digital signals



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System Details

Interfaces

- 2 Telecontrol (V.24, X.21, RS-485)
 - 2 LAN
 - 1 RS-232
 - 2 USB host
 - 1 CAN bus
 - 1 GPS module
 - 1 LTE/UMTS/GPRS module*
 - 1 WiFi module*
 - xDSL, TETRA, Powerline*
- *(option)

Protocols

- Telecontrol protocols:
IEC 61850, DNP3, IEC 60870-5-101/-104
- Proprietary telecontrol protocols
- Time synchronization protocols:
NTP, GPS, PTP, IEEE 1588
- Field bus protocols:
CANopen, Modbus (RTU/TCP)

Software

- Embedded Linux Distribution “NENUX”
- Telecontrol Gateway software
- Soft SPS complying to IEC 61131
- Reloadable smart applications

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