



Digital Energy

Gridcom DIP.net

Prompt, dependable and secure transmission of commands and control signals across the grid

IEC 61850 TELEPROTECTION FOR TRANSMISSION AND DISTRIBUTION GRIDS

Teleprotection channels have a decisive role in ensuring uninterrupted power supply, requiring to be fast, dependable and secure. Gridcom DIP.net is an efficient, modern and reliable communication solution for transferring critical messages and commands for managing the grid to prevent failure and network damage

Ready for Future Network

The flexible I/O cross-connect and multiple configuration capabilities provide protection engineers with extensive flexibility and numerous design possibilities without external relaying cubicle logics. Transmission of critical information over an area becomes easier to design, deploy and maintain.

Smooth Migration

The transition toward the digital substation can be performed smoothly with a modular teleprotection. Gridcom DIP.net not only provides IEC 61850 MMS and GOOSE interfaces for your future substation, but also optional I/O modules for wiring to your legacy protection and control devices.

Highlights

- Modular teleprotection to stick with your substation migration plan
- User oriented design for more efficient operations
- Comprehensive GUI to get the best of the product capabilities

Overview

Gridcom DIP.net is the optimal software solution for ensuring critical communications in evolving power system automation architecture for advanced substation-to-substation exchanges.

Designed upon proven teleprotection principles while hosting advanced automation technologies, the Gridcom DIP.net is a versatile interface between the electrical substation and the telecom network.

Assessing Performance

Gridcom DIP.net provides a dedicated set of link and network quality monitoring features according to protection service requirements in order to detect communication impairments and assess the acceptability of the communication.

Interface Modularity

Gridcom DIP.net bridges the gap between conventional protection communications and the emerging packet network environment in the electrical substation. The product's interface modularity both at substation side and at communication network side facilitates grid transition whichever be the path and pace adopted for the power network.

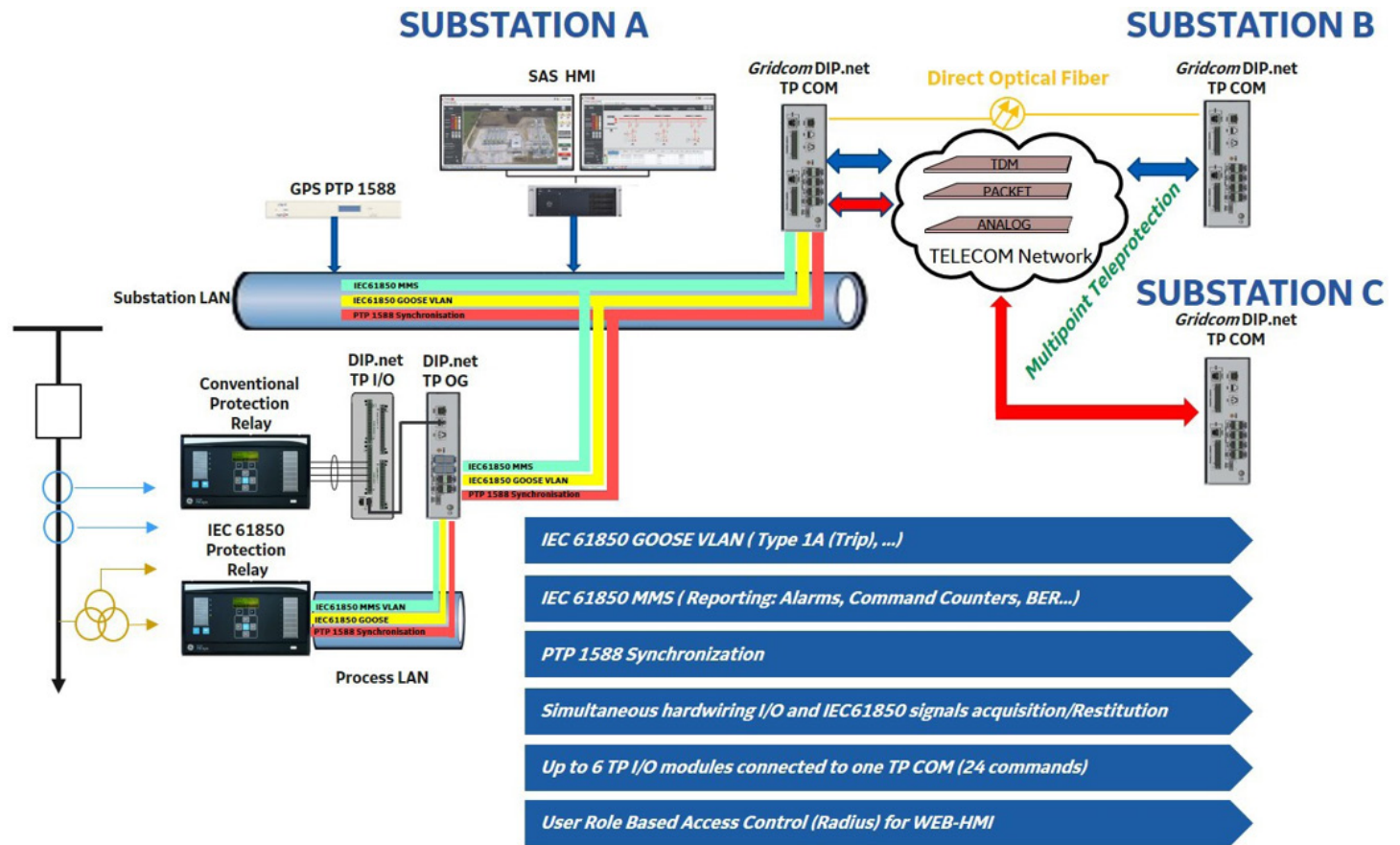


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Example of transition towards IEC 61850 substation



Cyber Security

Bringing remote management capability into the substation may introduce vulnerability in the system. Powerful authentication and encryption protocols incorporated into Gridcom DIP.net provide secure remote access for operations.

Easy to Use

Deployment and maintenance interventions are substantially facilitated through an adapted mechanical design as well as an advanced set of functional tools embedded in the firmware of the device.

Interoperability

Taking into account the evolution of IEC 61850 in time, Gridcom DIP.net assures interoperability with earlier versions of the standard already deployed in substations, as well as the present edition and provides for easy upgrades in the future.

Protection Specific Metrics

The performance criteria expected by protection engineering can be set more easily with a comprehensive set of thresholds and alarm settings.



Technical Specifications
Hardware Specification



TP COM COMMUNICATIONS INTERFACE

- Six (6) IEC61850 Fast ETH 10/100 Mbps RJ45 SFP ports
- Two (2) direct OF and/or IEEE C37.94 SFP ports
- One or two V11, E1/T1, analog extension boards with RJ45 connector and 3 Alarm Output Relays 8 Pin Connector
- CAN BUS Electrical Interface RJ45 port for connection between modules
- RJ 45 Management port
- Five (5) LED indicating system status
- IRIG-B Synchronization interface



TP I/O INPUT-OUTPUT INTERFACE MODULE

- Four (4) digital acquisition inputs
- Four (4) NO restitution heavy duty outputs
- Six (6) restitution heavy duty outputs (4 NO/NC, 2 NO)
- CAN BUS Electrical Interface RJ45 port for connection between modules
- Five (5) LED indicating system status



TP OG OPTICAL INTERFACE MODULE

- Two (2) IEC61850 Fast ETH 10/100 Mbps RJ45 SFP ports
- Two (2) direct OF and/or IEEE C37.94 SFP ports
- CAN BUS Electrical Interface RJ45 port for connection between modules
- Five (5) LED indicating system status
- IRIG-B Synchronization interface



PS-1, PS-2 POWER SUPPLY MODULE

- PS-1 Range : 30 - 60 VDC
- PS-2 Range : 80 - 370 VDC; 85 - 277 VAC (50/60 Hz)
- CAN BUS Electrical Interface RJ45 port for connection between modules
- Two (2) LED indicating system status
- One (1) NO/NC alarm output contact

* when power supply >48VDC and redundancy is required

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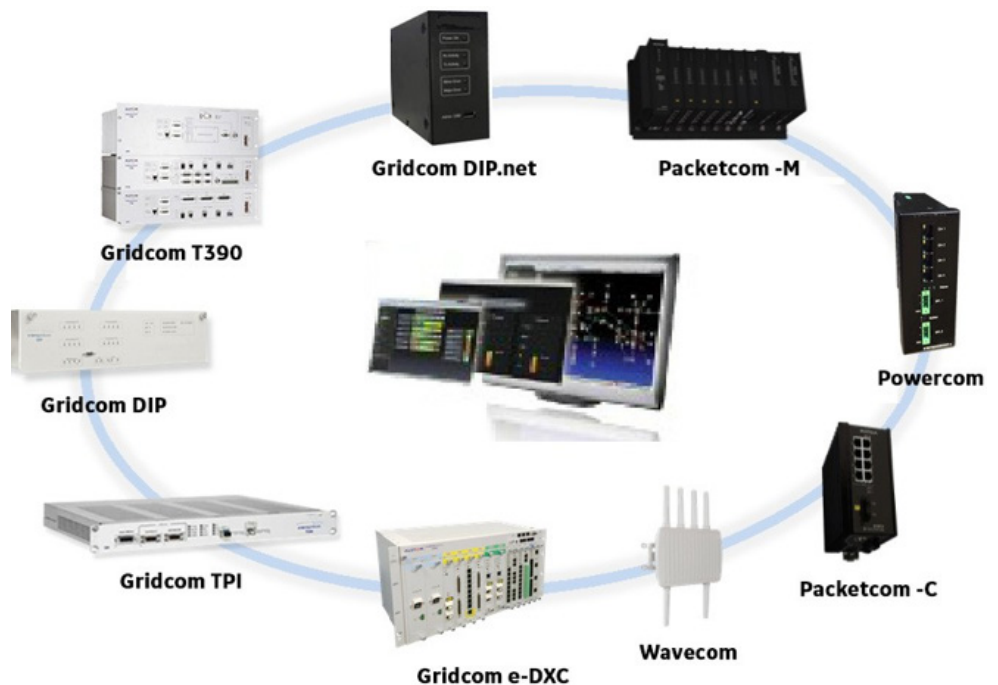
Technical Specifications Cont

Power Supply	
Built-in TP COM, TP I/O and TP OG	
Nominal input voltage	48 VDC
Input Voltage Range	30 V DC - 60 V DC
Inrush Current	< 5A
Minimum Output Voltage	24 VDC
Dimensions	
TP COM, TP I/O	H148mm x W70mm x D204mm
TP OG, PS-1, PS-2	H148mm x W50mm x D204mm
Mounting	Standard DIN Rail (mountable on 19" rack using additional U-support)
Degree of protection	IP40
Weight	
TP COM, TP I/O	2,5 Kg
TP OG, PS-1, PS-2	2 Kg
Digital I/O (TP I/O)	
Inputs:	
Number	4 independent inputs
Rating	24 - 300 VDC, 10 mA for < 60 VDC, 3 mA for > 60 VDC
Type	Heavy duty & high speed input
Outputs:	
Number	4 NO/NC outputs, 6 NO outputs
Rating	24 - 300 VDC, 250 VAC max, 5A carry
Type	Heavy duty, high speed & Relay Outputs
Total number of commands	24 commands through 6 x TP I/O connected to one TP COM
Communication interface	
Optical	Direct FO (Up to 250 Km), IEEE C37.94
Electrical	Ethernet, V11, E1/T1, Analog
Packet-switched-service	ETHERNET Pseudowire or VLAN
Management	
Management port	1 x RJ45 port (10/100 Mbps)
Local & remote	TCP/IP, NMS or SNMP
Events recorder	> 1500
Real time clock synchronization	IRIG-B, SNTP, PTP 1588
Cyber security	By external RADIUS server and embedded in each TP COM module, SSH and SSL encryption
Type Tests	
Safety	
EN 60255-27, EN 60950 Part1	Measuring Relays and Information Technology Equipment respectively
IEC/EN 60834-1	Teleprotection equipment for Power Systems

Environmental	
Operating temperature range	-25°C to +55°C
Limit temperature range	-40°C to +55°C
Max relative humidity at 23°C	90%
IEC-60068-2-1	Environmental Testing Cold (0C)
IEC-60068-2-2	Environmental Testing Dry Heat (70C)
IEC-60068-2-14	Change of temperature
IEC-60068-2-30	Damp heat, cyclic (12 h + 12 h cycle)
IEC-60068-2-31	Rough handling shocks, primarily for equipment-type specimens
IEC-60068-2-78	Damp heat, steady state
IEC-60255-21-1	Environmental Testing Vibration, Vibration Test (sinusoidal)
IEC-60255-21-2	Shock and Bump Tests
IEC-60255-21-3	Seismic Tests
EMC	
IEC61000-6-2	Generic standards - Immunity standard for industrial environments
IEC61000-6-5	Generic standards - Immunity for equipment used in power station and substation environment
IEC61000-6-4	Generic standards - Emission standard for industrial environments
IEEE C37.90-2001, 2002, 2004, 2005	EMC, Surge, Electrostatic Discharge

A Complete Portfolio for Mission Critical Telecommunications

From power line carrier to optical fiber, wireless and access products, GE provides the most comprehensive portfolio for building any telecommunication network for critical applications in both distribution and transmission grids.



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