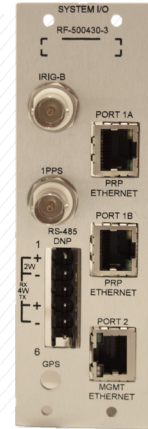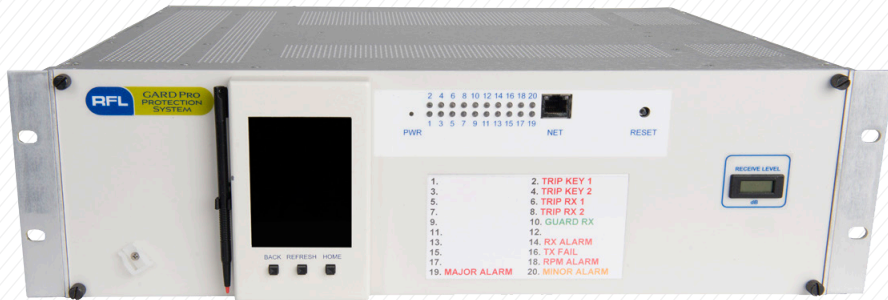# RFL™ GARD PRO™ IEC-61850 GATEWAY

HPS/RFL is proud to announce a major update to the GARD Pro protection communications platform to include support for IEC 61850 Edition 2. With this upgrade utilities can now utilize legacy communications channels, for protection applications, between digital IEC 61850 stations. As a result, there is no need to establish secure Ethernet channels between stations as existing digital networks or Powerline Carrier may be used. Other new features include; separate station bus and process bus ports, Parallel Redundancy Protocol (PRP) for redundant GOOSE communications, Manufacturing Message Specification (MMS) for system control and status management, Precision Time Protocol (PTP) for clock synchronization and IEC 61850 Edition 2 test and simulation modes.

FEATURES AND BENEFITS

Utilization of Existing Substation Comms
Leverage existing teleprotection channels between digital substations without the need for secure packet networks or dedicated fiber optic channels.

Separate Station Bus and Process Bus Ports
Provides separate interfaces for critical GOOSE functionality and less-critical management functions. Allows for the use of isolated LANs based on application requirements.

Parallel Redundancy Protocol (PRP)
Utilizes IEC 62439-3 PRP functionality for seamless path redundancy of critical GOOSE communications.

Manufacturing Message Specification (MMS)
Manage the system over the station bus with MMS for system control, status and reporting.

Precision Time Protocol (PTP) Clock Sync
Synchronize the system clock and Sequence of Events (SOE) using IEEE 1588v2 PTP slave protocol. Functions with PRP and uses the Best Master Clock Algorithm to determine the best source.

IEC 61850 Ed.2 Test and Simulation Support
Seamless testing capabilities with IEC 61850 Mode and Behavior functionality. Allows for the use of simulation devices for test purposes.

SCL File Configuration
Configuration of publishing and subscribe parameters through a single file. Customize configuration through integrated IED configurator and extract to SCL file.

TECHNICAL SPECIFICATIONS

Chassis
- 3RU or 6RU – 19" Rack Mount
- 3RU Dimensions (HxWxD): 5.25" x 19" x 14.5"
- 6RU Dimensions (HxWxD): 10.5" x 19" x 14.5"

System I/O Module
- Two PRP and One Management Ethernet Port
    - » Standard: Electrical 10/100Base-T
    - » Optional: SFP 100Base-FX
- BNC IRIG-B Port – Modulated/Unmodulated
- BNC 1PPS Port
- RS-485 2-wire/4-wire Serial DNP3
- Optional GPS interface – SMA Connector

Teleprotection Channel Interfaces
- Power Line Carrier – FSK and On/Off
- Digital Teleprotection
    - » E1/T1
    - » C37.94 MM/SM
    - » 1300nm/1550nm MM/SM Fiber Optic
    - » RS449/X.21/V.35
    - » G.703 64kbps Co-directional

CORE SYSTEM MODULES

System Type	Controller Module	System I/O – Electrical	System I/O - Fiber	Midplane
3RU Chassis	RF-500400-3	RF-500430-3	RF-500435-3	RF-500445-3
6RU Chassis		RF-500420-3	RF-500425-3	RF-500415-3

Plugin SFP for Fiber System I/O
- 100Base-FX Multimode – P/N: RF-104388

ORDERING INFORMATION

GARD Pro chassis configuration prefix: GPR6

See GARD Pro ordering information sheets for complete options list:

https://www.rflelect.com/images/products/pdfs/GARDProOrderingInfo3U.pdf

https://www.rflelect.com/images/products/pdfs/GARDProOrderingInfo6U.pdf

EXAMPLE SYSTEM

IEC 61850 Substation 1
RELAY 1
RELAY 2
STATION BUS
PROCESS BUS A
PROCESS BUS B

PLC
Leased Circuit
TDM Network
Direct Fiber Optic

IEC 61850 Substation 2
RELAY 1
RELAY 2
STATION BUS
PROCESS BUS A
PROCESS BUS B

Traditional Substation 3
RELAY 1
RELAY 2