MAKING THE GRID SMARTER

Griffin SG-1000 Gateway

The Griffin SG-1000 is Amperion's ruggedized network gateway device designed to operate in the harsh environment of a substation switch yard or outdoors on a transmission or distribution pole. For tap stations with no control room and for distance extension with signal repeating, the Griffin is the ideal solution providing secure connectivity for substations communications and smart grid applications.

Smart Grid Application Support

The Griffin SG-1000 supports smart grid applications requiring a robust network gateway for outdoor environments.

The B-PLC coupler was uniquely designed to support distribution communications applications.

Line Protection
B-PLC technology is ideal for extending line protection schemes, like Direct Transfer Trip over MV distribution lines.

SCADA Communications
B-PLC communications can collect SCADA data from devices and substations and send it back to the control center saving the utility the cost of manual readings on site and improving reliability.

Data Backhaul
B-PLC can attach to collectors and data concentrators to backhaul AMI/AMR data, sensing and synchrophasor data, or any other data from devices on the grid and in the substation.

Security
B-PLC is a low cost way to meet NERC-CIP requirements for security using video surveillance to protect your assets against

Features and Benefits

Redundancy and High Availability
The Griffin SG-1000 provides high system availability when using redundant communications paths. The B-PLC system can utilize two phases of the three phase transmission line to maximize performance in harsh EMI environments and continued operation during a single line to ground failure.

Cyber Secure and Tamper Proof
The Griffin employs hardware based 256 bit AES advanced encryption and access to configuration and performance data is protected by unique user account and password via SSH and HTTPS protocols. It operates on utilities' own managed and maintained power lines providing full control and physical security to the utility.

Ruggedized
The Griffin SG-1000, uses an outdoor pole mountable system, is ruggedized to handle extreme weather conditions ranging from -40C to 85C. The Griffin is also designed to meet IEC 61850-3 and the IEEE1613 standards for electrical power substations.

Manageability
The Griffin is managed and monitored by the Amperion-NMS. The NMS provides continuous monitoring and reporting with historical reports on hourly, daily, monthly, and yearly basis. Reports include a graphical representation of throughput, temperature, uptime and availability. The Amperion-NMS can be integrated with Google Earth providing geo-mapping in real-time. The Amperion-NMS can be remotely accessed through a secured cellular connection (optional service).

Complete B-PLC Smart Grid Solution
The B-PLC coupler together with an Amperion Griffin gateway and the Amperion NMS, make up a complete solution set for B-PLC communications on distribution lines from 10kV to 36kV.

Technical Specification:

Protocols:

- TCP/IP, IPsec, IPv4, IPv6 ready
- IEEE 802.1D Spanning Tree
- NAT, FTP, DHCP
- Serial over IP (SLIP, PPP)

Management:

- SNMP v2c, v3
- CLI: Serial, SSH
- WEB: HTTPS
- Syslog

Cyber Security:

- SSH for Serial Traffic
- HTTPS for Web Access
- Secure File Transfer (SFTP)
- IEEE 802.1X Authentication
- IPsec VPNs
- DES/3DES, AES, PSK, X.509,TKIP
- Multilevel Accounts, RADIUS
- IEEE 1686-2007 (IED Security Standard)
- IEC 62351 1-8 SCADA (Data & Comm. Security)

Broadband Power Line Carrier:

- 200Mbps OFDM Modem — 2 Units
- Connector — 50 ohm N
- Forward Error Correction
- Dynamic Rate Adaption based on detected BER
- TX Power (Programmable) — normal: -50 dBm/Hz; high setting: -38 dBm/Hz
- TX Mask (Programmable)
- RX Dynamic Range — 90dB min
- Sensitivity — max > --50dBm/Hz; min < -140dBm/Hz
- Repeater-Less Distance IP Data Rate (5MHz Channel) up to 138KV — 10Mbps @ 8km
- Channel, Phy Rates, Bandwidth, Frequencies

1	42Mbps	5MHz	2.0 - 7.0MHz
2	42Mbps	5MHz	7.0 - 12.0MHz
3	42Mbps	5MHz	13.0 - 18.0MHz
4	42Mbps	5MHz	18.0 - 23.0MHz
5	42Mbps	5MHz	24.0 - 29.0MHz
6	42Mbps	5MHz	29.0 - 34.0MHz

Ethernet Port:

- 10/100 BASE-TX — 1 Port
- Connector RJ45
- Auto-Negotiating IEEE 802.3u

Serial Port:

- RS-232 — 1 Port
- Connector DB9 Female
- Data Rates: 300 to 115.2kbps

Data Switching:

- MAC Entries — 1024 MAC Addresses
- 1.7Gbps Non-Blocking
- BPLC to Ethernet Latency — 3mS
- QoS Support
  8 Priority Levels, IEEE 802.1Q 256 VLANs
- Repeater Operation
  BPLC to BPLC Latency — 3mS @ 10Mbps

Packaging:

- Dimensions — 40cm x 23cm x 17cm (15.76" x 9.05" x 6.69")
- Weight — 10.1Kg (22.3lbs)
- Mounting — Overhead Pole Mount
- NEMA 4 — water proof to 12ft.

Environmental:

- Operating Temperature — -40° to 85°C
- Storage Temperature — -40° to 85°C
- Humidity — 10% to 80% non-condensing

Electrical:

- Operating Voltage — 90VAC to 136VAC (60Hz); 180VAC to 264VAC (50Hz)
- Power Consumption — 40Watts
- Battery Voltage — 12 VDC
  Charging Voltage — max 13.9 VDC
  Charging Rate — max 2.5 Amp
  25AH SLA Battery — 8 Hours of operation

Compliance:

- Emissions/Immunity — EU R&TTE LV Directives; ETSI EN 301 489-1; ESTI EN 301 489-17; FCC Part 15 Class A; EN55024, EN61000
- Safety — CENELEC EN 60950-1; ANSI/UL 60950-1; CSA C22.2 60950-1

Ordering Information:

- Griffin -

120 - 1000 - xxx - 00		Base Unit
xxx	110	110 V AC
	220	220 V AC

- Battery Backup -

120 - 1010 - xxx - 00		Base Unit
xxx	008	8 AH
	025	25 AH