

**Billion SG5021****Broadband PLC AMI Medium Voltage Node**

The Billion SG5021 is a broadband PLC communication unit, which connects and transfers data over the electric grid from the backbone to the customer's endpoints. It bridges medium voltage grids to low voltage grids. The Billion SG5021 MV node can serve as a back haul channel responsible for collecting and transmitting all data signals to and from the MV head-end device located in the utilities control center. The Billion SG5021 enables multiple broadband power line applications such as Smart Grid, power outage notification, dynamic routing and intelligent repetition, SCADA extension, and surveillance over the medium voltage grid, as well as additional future services including Internet, telephony, security alarm, intelligent home control, and video services.

Advantages of Billion AMI Broadband PLC Solutions**Significant cost saving**

The initial cost of implementation of Billion BPL as the AMI communication network technology may be higher compared with narrow-band based PLC or other wireless technologies. However, high bandwidth and scalable functionalities of BPL add significant cost savings to the maintenance of AMI and implementation of future smart grid applications. BPL also provides a cost-effective alternative solution for last mile broadband access to home and office buildings.

Supports wide range of applications and future extension

Bi-directional broadband bandwidth offered by BPL supports wide range applications such as real time monitoring, video surveillance, SCADA, tele-protection and other consumer services, which all aim at improving customer satisfaction.

Ease of central control and remote management

The system supports standard-based SNMP network management protocol which reduces maintenance cost tremendously.

Secure transmission

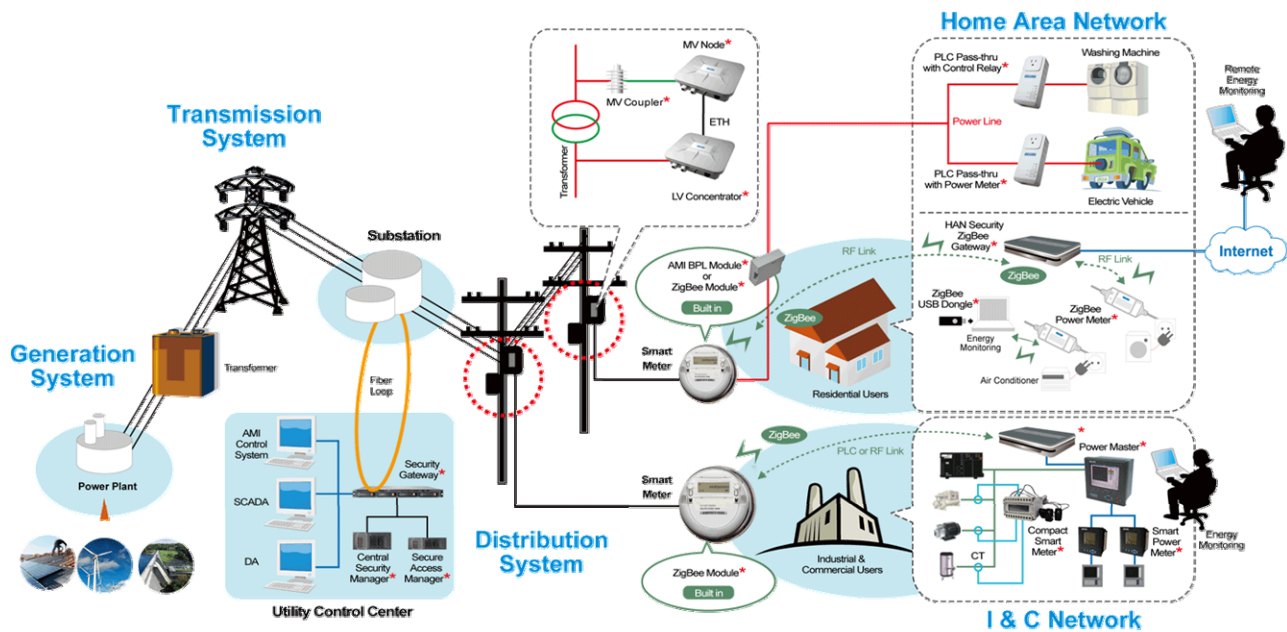
Like all IP based networks, there are many potential threats and vulnerabilities within an AMI network. Utilities are now moving from a world of offline meters to a network of smart meters communicating on 7x24 basis. Security measurement is an important task in the planning of AMI. BPL provides enhanced security by leveraging standard based DES/3DES encryption to ensure the protection of consumer data and AMI infrastructure.

Economical and flexible solutions for low density rural areas

In most rural areas, cellular signal are not easily accessible as wireless coverage is much lower. Narrowband PLC system provide an economical AMR solution but often lacks the real-time communication capability and critical reliability as it takes longer to collect data and failure rates are higher. Infrastructures built with BPL technology can solve many of the issues described above and provide economical and flexible solutions for data collecting for low density rural communities.

- 200Mbps physical connection bandwidth
- 10/100 Ethernet x2
- RS485/RS232 interface (optional)
- AC power: 90-250VAC, 50/60Hz
- Ability to configure as head-end master, repeater, or slave
- Traffic control and isolation: VLAN/OVLAN
- 802.1D bridging protocol
- Up to 1024 MACs table size for connecting with multiple devices
- Up to 64 direct PLC connection
- DES and 3DES encryption
- QoS with 8 level priority queues
- 802.1P traffic priority classification
- Power mask management
- SNMP and web network management protocol
- Configurable bandwidth from 2 to 30MHz
- Configurable spectral location from 1 to 34 MHz
- Up to 1536 carriers for better noise immunity
- IP67 compliant rugged design for high level of protection against dust and water
- FCC part 15, class A certification

Billion Smart Grid Product Portfolios



* Billion's Products

Comparison Table

► Billion Broadband PLC solutions have unsurpassed advantages for a Smart Grid.

Technology Advantages	Billion Broadband PLC Solutions	Narrowband PLC Solutions	Radio Frequency (900MHz)	Mobile Networks (GPRS etc)
Performance 2-way real time communication	***	*	*	**
Scalability Bandwidth for present and future applications	***	*	*	**
Complete solution for DA (Distribution Automation) and AMI (Advanced Metering Infrastructure)	***	*	**	*
Self healing mechanisms	***	*	*	*
Standards based End-to-end IP connectivity	***	*	*	**

Note: All the specifications are subject to change without prior notice.
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