BILLION™

Green Energy Management

Compact ZigBee Wireless-N 3.75G / Broadband Router

The Billion SG6200NXL is an all-in-one router designed for users to enjoy real-time power management and secured wireless Internet access. Integrated with ZigBee technology, the Billion SG6200NXL can communicate with ZigBee-based HAN (Home Area Network) devices such as smart meters, IHD (In-home display) devices, load-control devices, and PCT (Programmable Communicating Thermostat) devices. By Internet access, the users can remotely monitor energy consumption and manage event control on appliances that connect to Billion SG3010 ZigBee meter.

In addition, this device is a compact broadband router offering rich functions. Supported with 802.11n Wireless AP delivering a data rate up to 300Mbps, this router allows users to enjoy blistering Wireless LAN connection speed. Dual WAN design - Internet Access via broadband/DSL and/or back up through 3G network - keeps you always-on-line. With the Billion SG6200NXL, you can easily download photos, stream High Definition (HD) video files, run media-intensive applications, watch Internet movies or share files with your clients, team members, friends or family. The Billion SG6200NXL can even function as a printer server, Webcam or FTP server for network device sharing[*6].

Instant and Real-time Remote Management

The Billion SG6200NXL provides full featured connectivity and allows a greater diversity of devices and applications in a ZigBee HAN configuration. The ZigBee-based SG6200NXL can serve as data concentrator capable of collecting power data, managing, and controlling appliances that are connected to ZigBee-based meters and other ZigBee HAN devices. Its Graphic User Interface enables a monitoring configuration that delivers real-time power usage and instant switching on/off for specific home appliances that are connect to a ZigBee meter, ie. Billion's SG3010. Remote in-home energy management like switching on your air conditioner when you are on the way home can be easy using your 3G phone over the Internet.

Always-on Connectivity

With the built-in USB port, users can connect a 3G / HSDPA USB modem, enabling access to the Internet over a 3.5G / HSDPA, 3.75G / HSUPA, HSPA+, UMTS, EDGE, GPRS, or GSM networks, making downstream rates of up to 14.4 Mbps*1 possible! The built-in auto fail-over ensures maximum connectivity and minimum interruption by quickly and smoothly connecting to a 3G network in the event that your existing wire connection fails. It will also automatically reconnect to the wire connection when it's restored, reducing minimizing connection costs. These features are perfect for office situations where constant connection is paramount.

Wireless Mobility and Security

With an integrated 802.11n Wireless Access Point, the router delivers up to 3 times the wireless coverage of a 802.11b / g network device and supports a data rate of up to 300Mbps, so that wireless access is available everywhere in the house or office. The Billion SG6200NXL also supports the Wi-Fi Protected Setup (WPS) standard and allows users to establish a secure wireless network by simply pushing a button. If your network requires wider coverage, the built-in Wireless Distribution System (WDS) repeater function allows you to expand your wireless network without the need for any additional wires or cables. Multiple SSIDs allow users to access different networks through a single access point. Network managers can assign different policies and functions for each SSID, increasing the flexibility and efficiency of the network infrastructure.

3G Management Center

With the Billion SG6200NXL, monitoring your 3G connection status is a breeze. Billion's unique 3G Management Center is a utility tool visually displaying its current 3G-signal status for users to maximize their connection. You can monitor the bandwidth with current upload and download speed. This tool also calculates the total amount of hours or data traffic used per month, allowing you to manage your 3G monthly subscriptions.

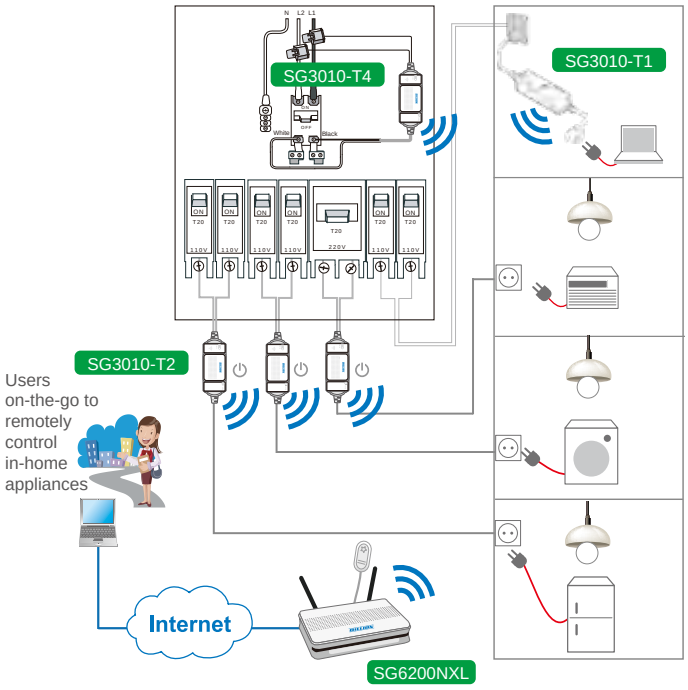
Ideal for
Residential, office users, and Utility

- ZigBee for reliable and flexible RF network
- Remote power monitoring and management with ZigBee meter
- Dual WAN interfaces for EWAN and 3.5G / 3.75G connections
- 802.11n Wireless AP
- High-speed wireless connection up to 300 Mbps data rate
- Wireless security supports WPA/WPA2 and WPS
- 2 x USB 2.0 ports to support 3G network and multiple functions
- Supports multiple SSIDs for flexibility of network infrastructure
- Quality of Service for traffic prioritization and bandwidth management
- Auto fail-over for always-on connection
- SOHO firewall security with DoS prevention and SPI
- Parental control with URL content filtering and packet filtering
- Dynamic Domain Name System (DDNS)
- Easy to Use with quick installation wizard
- 3G Management Center tool
- Ideal for:
  - Residential and office users
  - Utility companies
- Works as part of ZigBee-based Energy Management solution for business partners:
  - Systems integrators
  - Power utilities: solar power, wind power…etc.
  - Green house developers/engineers
  - Suppliers of Smart Energy devices in IHD, Load Control, and PCT

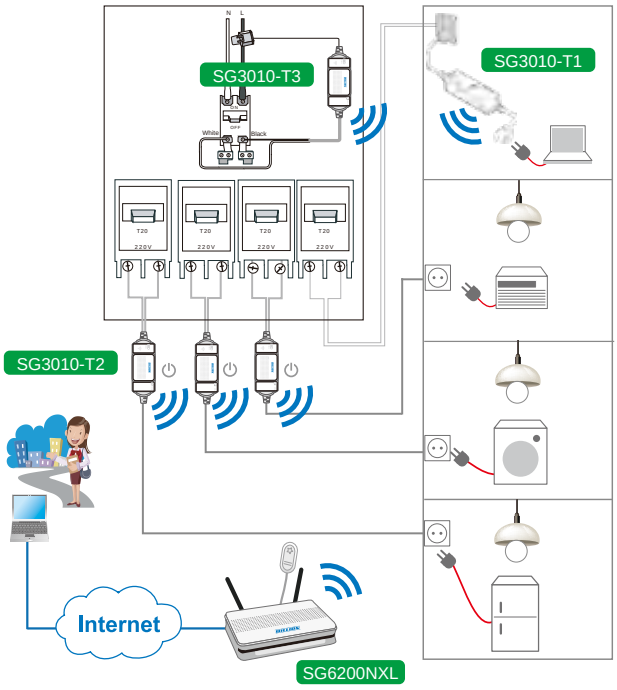
Application Scenario for Energy Management

Energy Management for Home Users

▶ **Single-phase 3-wire (e.g. USA and Taiwan)**

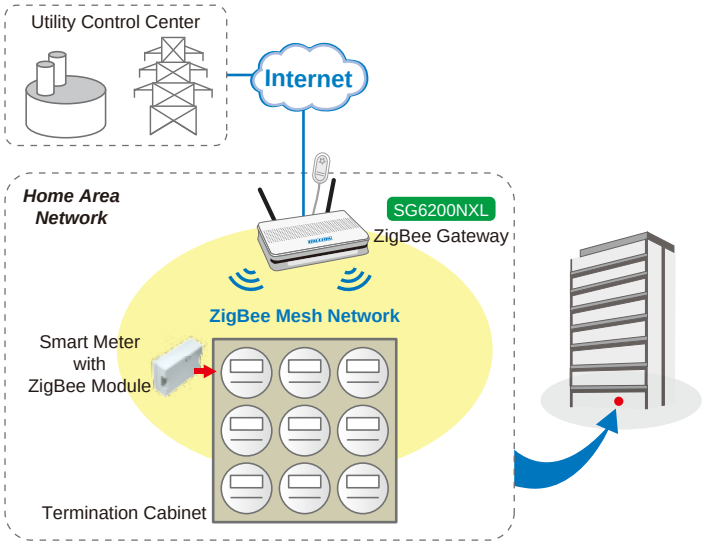


▶ **Single-phase 2-wire (e.g. Europe)**



Via Billion SG6200NXL customers can remotely control electrical devices that are connected with a Billion SG3010 ZigBee Meter in an in-home area network. Users can obtain power utilization information via ZigBee gateway automatically for downstream analysis and profiling.

Energy Management for Utilities

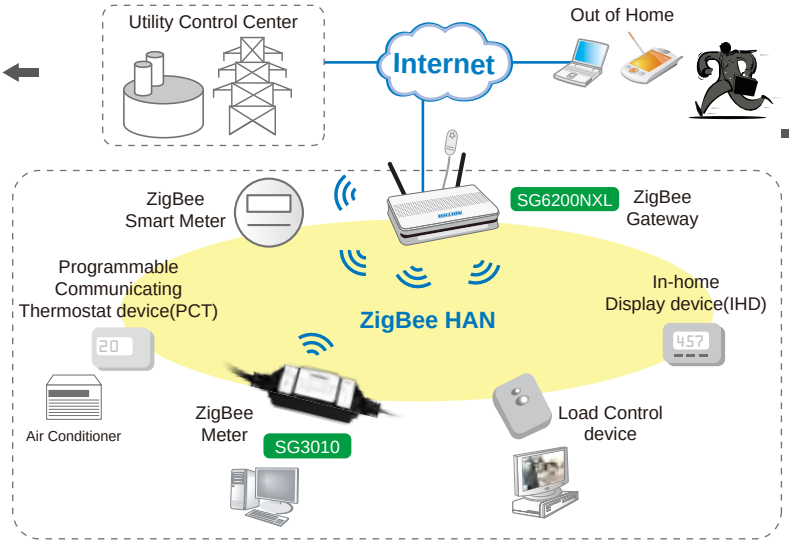


Utility companies can collect power usage data from a smart ZigBee meter via a ZigBee gateway located on the ground floor of a home/office building.

Application Scenario for Energy Management

Smart Energy (SE) for Utilities and Home Users

Utility energy efficiency program
- Utility collects home power data available in ZigBee Smart Meter using a ZigBee gateway over the Internet.
- Through a ZigBee gateway over the Internet, utility forwards power usage data and pricing info to ZigBee HAN devices that are Smart Energy certified.



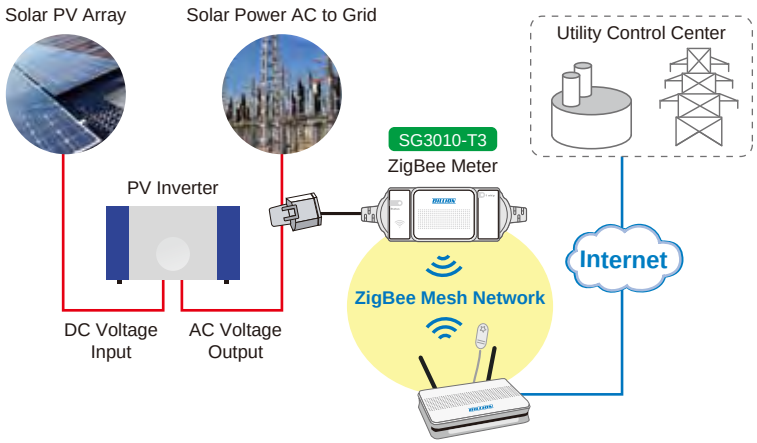
Remote control
- Via a ZigBee gateway, home users on-the-go can remotely access in-home power consumption and respond by controlling appliances that are connected with ZigBee HAN devices.

What a PCT device does?
Provides capability to control heating and cooling systems

What a Load Control device does?
- Receives demand response events sent from Utility via Gateway / Utility meter
- Controls home appliances based on real-time pricing

What an IHD device does?
- Receives pricing message from Utility via Gateway / Utility meter
- Displays pricing and energy usage information

Solar Power Management Application



- For Solar (or Wind) Utility, a ZigBee meter can measure voltage output before power is sent to the power grid
- Power data measured by a ZigBee meter can be collected by a ZigBee Gateway

Features & Specifications

Availability and Resilience
- Dual-WAN ports (3G & Ethernet WAN)
- Load balancing - Maximizing bandwidth of outbound traffic*6
- Auto fail-over/fail-back

3.5G / 3.75G Broadband Sharing
- Supports 3.5G / HSDPA, 3.75G / HSUPA, HSPA+, EVDO and TD-SCDMA
- True mobile broadband sharing (3.5G / 3.75G)
- Common 3.5G / 3.75G USB modem support
- 3.5G / 3.75G signal strength display
- 3.5G / 3.75G APN and PIN code support
- 3G time state monitor (Current connection time, Monthly total connection time & Monthly total traffic)

Network Protocols and Features
- NAT, static routing and RIP-1 / 2
- NAT supports PAT and multimedia applications
- Transparent bridging
- Virtual server and DMZ
- SNTP, DNS relay and DDNS
- IGMP snooping and IGMP proxy
- File sharing with SMB (Samba) / CIFS

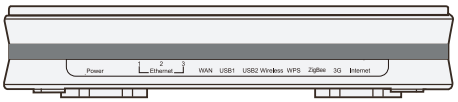
Firewall Management
- Built-in NAT Firewall
- Stateful Packet Inspection (SPI)
- Prevents DoS attacks including Land Attack, Ping of Death, etc.
- Remote access control for web base access
- Packet and URL filtering
- Password protection for system management
- VPN pass-through

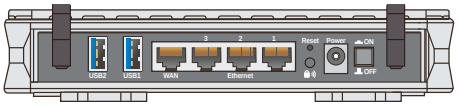
Quality of Service Control
- Supports the DiffServ approach
- Traffic prioritization based-on IP protocol, port number and address

Wireless LAN
- Compliant with IEEE 802.11n, 802.11g and 802.11b standards
- 2.4GHz - 2.484GHz frequency range
- Up to 300Mbps wireless operation rate
- 64 / 128 bits WEP supported for encryption
- WPS (Wi-Fi Protected Setup) for easy setup
- Wireless Security with WPA-PSK / WPA2-PSK support
- WDS repeater function support
- Multiple SSID

USB Applications Server
- 3.5G / 3.75G network sharing
- Printer server
- Storage: FTP server, Samba server, FTP client*6, BT client*6
- Webcam server

Management
- 3G Management Center
- Quick Installation Wizard
- Web-based for remote and local management
- Firmware upgrades and configuration data upload / download via web-based interface
- Embedded Telnet server for local management
- SNMP v1 / v2 / v3, MIB-I and MIB-II support
- Supports DHCP server / client / relay
- Mail Alert
- TR-069*5 supports remote management
- Multiple language support

Front Panel


Rear Panel


Hardware Specifications
Physical Interface
- USB: 2 x USB 2.0 ports
- WLAN: 2T2R antennas
- Ethernet: 3 x 10 / 100Mbps Auto-MDI / MDI-X RJ-45 Ethernet ports
- WAN: 1 x 10 / 100Mbps Auto-MDI / MDI-X RJ-45 Ethernet port
- Reset button
- WPS/ZigBee push button
- Power jack
- Power switch

Physical Specifications
- Dimensions: 7.28" x 4.86" x 1.38" (185mm x 123.5mm x 35mm)

Power Requirements
- Input: 12V DC, 1.2A

RF Specifications
- Fully IEEE 802.15.4 / ZigBee PRO compliant
- Operating Band: 2.400 - 2.483 GHz
- 16 channels in the 2.4GHz ISM band
- AES-128 hardware supported encryption

Operating Environment
- Operating temperature: 0 – 40°C
- Storage temperature: -20 – 70°C
- Humidity: 20 – 95% non-condensing

Compatible with 3G USB modems

Brand	Model
Huawei	E169, E172, E220, E270, E272
ZTE	MF622, MF626, MF636, MF638
NOVATEL	NOVATEL MC950D, MC 930D, MC950D
Sierra	Aircard 880U, 875U, 885U

This list is continuously updated at *http://www.billion.com/compatible-3G.html*

* Notes:
1. The 3G / HSDPA data rate is dependent on your local service provider and your 3G / HSDPA modem.
2. A car power cable can be made available as an optional accessory upon request.
3. IPTV applications may require subscribing to IPTV services from a Telco / ISP.
4. Specifications in this datasheet are subject to change without prior notice.
5. By request of the Telco/ISP projects
6. Future release

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Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RF Radiation Exposure and Hazard Statement:

To ensure compliance with FCC RF exposure requirements, this device must be installed in a location such that the antenna of the device will be greater than 20 cm (8 in.) away from all persons. Using higher gain antennas and types of antennas not covered under the FCC certification of this product is not allowed. Installers of the radio and end users of the product must adhere to the installation instructions provided in this manual. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Non-modification Statement:

Use only the integral antenna supplied by the manufacturer when operating this device. Unauthorized antennas, modifications, or attachments could damage the TI Navigator access point and violate FCC regulations. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Deployment Statement:

This product is certified for indoor deployment only. Do not install or use this product outdoors.