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# 1 General Information

WCB-G03H is a special 802.11g and 802.11b CardBus Card, which design to enable the wireless connection of MT841. WCB-G03H is based on Conexant Javelin chipset that complied with IEEE 802.11g and IEEE 802.11b standard from 2.412~2.462GHz, and it can be used to provide up to 54Mbps for IEEE 802.11g, or 11Mbps for IEEE 802.11b to connect your wireless LAN.

With seamless roaming, fully interoperability and advanced security with WEP standard, WCB-G03H offers absolute interoperability with different vendors' 802.11g and 802.11b wireless Cardbus card through the wireless LAN.

## 1.1 Features

- Compatible with IEEE 802.11g high rate standard to provide wireless 54Mbps data rate
- Compatible with IEEE 802.11b high rate standard to provide wireless 11Mbps data rate
- Operation at 2.412~2.462GHz frequency band to meet worldwide regulations
- Dynamic data rate scaling at 6, 9, 12, 18, 24, 36, 48, 54Mbps for IEEE 802.11g
- Dynamic data rate scaling at 1, 2, 5.5, and 11Mbps for IEEE 802.11b
- Maximum reliability, throughput and connectivity with automatic data rate switching

- Supports wireless data encryption with 64/128-bit WEP for security
  - Supports infrastructure networks via Access Point and ad-hoc network via peer-to-peer communication
  - Integrated microstrip antenna
  - One-piece PC Card design to fully support PC Card type II defined mechanical and environmental stress conditions
  - Support
  - WPA enhanced security
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**Note:**

Environmental factors may negatively affect the wireless signal range and the performance of the WCB-G03H.

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## 1.2 WCB-G03H Appearance



Figure 1-1 WCB-G03H Appearance

The WCB-G03H Wireless Cardbus Adapter has two LEDs: POWER and ACTIVITY.

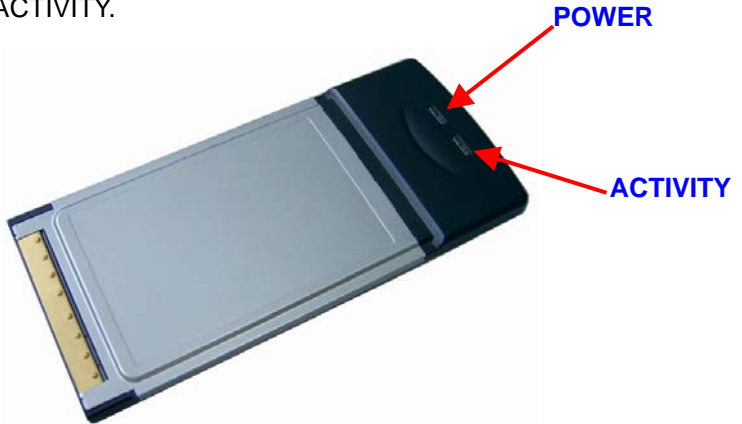


Figure 1-2 LDEs

| LED Activity                           | What that means   |
|--|---|
| LEDs are flashing alternatively        | The WCB-G03H is searching for a wireless network connection.  |
| LEDs are flashing in unison            | The WCB-G03H has made a valid wireless network connection, and there is activity on the link.   |
| LEDs are flashing in unison, but dimly | The WCB-G03H has made a valid wireless network connection, but there is no activity on the link. This could be caused by an Access Point that is functioning, but not connected to the wired network. |

## 2 Wireless Basics

Wireless products are based on industry standards to provide easy-to-use and compatible high-speed wireless connectivity within your home or business. Strictly adhering to the 802.11b and 802.11g standards, our wireless family of products will allow you to access the data you want, when and where you want it. No longer will you be limited to one location or forced to run new wiring through your home or office. You will be able to enjoy the freedom that wireless networking delivers.

A wireless local area network (WLAN) is a cellular computer network that transmits and receives data with radio signals instead of wires. Wireless LANs are used increasingly in both home and office environments, and public areas such as airports, coffee shops and universities. Innovative ways to utilize WLAN technology are helping people to work and communicate more efficiently. Increased mobility and the absence of cabling and other fixed infrastructure have proven to be beneficial for many users.

Wireless users can use the same applications they use on a wired network. Wireless adapter cards used on laptop and desktop systems, support the same protocols as Ethernet adapter cards.

Under many circumstances, it may be desirable for mobile network devices to link to a conventional Ethernet LAN in order to use servers, printers or an Internet connection supplied through the wired LAN. A Wireless Access Point (AP) is a device used to provide this link.

The advantages of Wireless LAN are many and varied and include:

- **Mobility** – Productivity increases when people have access to data in any location within the operating range of the WLAN. Management decisions based on real-time information can significantly improve worker efficiency.
- **Low Implementation Costs** – WLANs (Wireless Local Area Networks) are easy to set up, manage, change and relocate. Networks that frequently change, both physically and logically, can benefit from WLANs ease of implementation. WLANs can operate in locations where installation of wiring may be impractical.
- **Installation Speed and Simplicity** – Installing a wireless LAN system can be fast and easy and can eliminate the need to pull cable through walls and ceilings.
- **Network Expansion** – Wireless technology allows the network to go where wires cannot go.
- **Reduced Cost-of-Ownership** – While the initial investment required for wireless LAN hardware might be higher than the cost of wired LAN hardware, overall installation expenses and life-cycle costs will be significantly lower. Long-term cost benefits are greatest in dynamic environments requiring frequent moves, adds, and changes.
- **Scalability** – Wireless Local Area Networks (WLANs) can be configured in a variety of topologies to meet the needs of specific applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to full infrastructure

networks of thousands of users that allow roaming over a broad area.

# 3 Configuration

Insert WCB-G03H into the slot of MT841, and then enter the web-based configuration of MT841. The layout of MT841 configuring page shown as below when you first log in.

- The left part of the page is wizard column, and you can enter the web page of configuration or management through the hyperlink in wizard column.
- The right part of the page is the practical domain of configuration and management.



Figure 3-1 Layout of Web-based Configuration Manager

Click the **WLAN** of **Basic** in the Wizard Column to set the WLAN configuration.



## Wireless Configuration

| Wireless Configuration               |   |
|--------------------------------------|---|
| SSID                                 | <input type="text"/>  |
| Channel                              | 11  |
| Module                               | 802.11G   |
| WEP Method                           | <input checked="" type="radio"/> None <input type="radio"/> WEP <input type="radio"/> WPA-PSK |
| WEP                                  | 64bit   |
|                                      | WEP Key 1: <input type="text"/>   |
|                                      | WEP Key 2: <input type="text"/>   |
|                                      | WEP Key 3: <input type="text"/>   |
|                                      | WEP Key 4: <input type="text"/>   |
|                                      | WPA-PSK Key: <input type="text"/>   |
|                                      | PSK:TKIP  |
| WLAN Connections                     | <input checked="" type="radio"/> Enabled <input type="radio"/> Disabled                       |
| SSID Hidden                          | <input type="radio"/> Enabled <input checked="" type="radio"/> Disabled                       |
| <input type="button" value="Apply"/> |   |

Figure 3-2 Wireless Configuration

The illustration of this page as below:

- **SSID:** The SSID identifies members of Service Set. If the SSID is changed, all other devices on the wireless network must use the same SSID.
- **Channel:** The available channel for the MT841 is depending on the local regulatory environment. Remember that all devices communicating with the device must use the same channel (and use the same SSID). Use the drop down menu to select the channel used for your wireless LAN.
- **Module:** MT841 provides multiple wireless bands, select the suitable band from the drop-down menu.
- **WEP Method:** WEP (Wireless encryption Protocol) encryption can be enabled for security and privacy. WEP encrypts the data portion of each frame transmitted from

the wireless adapter using one of the predefined keys. If network Security is not used, click **None**, otherwise select **WEP** or **WPA-PSK**.

- **WEP Key:** The MT841 offers 64, 128, or 256-bit encryption with four keys available, select an encryption level from the drop-down menu on the right, and then enter the proper-length key.
- **WPA-PSK:** Wi-Fi Protected Access was designed to provide improved data encryption, perceived as weak in WEP, and to provide user authentication, largely nonexistent in WEP. There are two kinds of arithmetic: TKIP (Temporal Key Integrity Protocol) and AES (Advanced Encryption Standard), select arithmetic from the drop-down menu on the right, and then enter the proper-length key.
- **WLAN connections:** Select enable option, then the WLAN connection will be enabled with above settings, otherwise it will be disabled.
- **SSID Hidden:** Select enable option, and then the SSID will be hid and can not be viewed by WLAN clients. It is to enable or disable SSID Hidden.

Click the <Apply> button to save the settings while finished the modification.

## 4 WEP Glossary

The following WEP parameters are defined:

**Wireless Band** – Select the environment you are configuring.

**Authentication** – Select different authentication levels to manage the data transmission.

**Open System** – Using an open system with WEP enabled means the access point and wireless stations encrypt only the data in each packet. WEP is not used for the purpose of authentication, that is, encryption does not prevent any station from associating with the access point.

**Share Key** – With this setting only stations using a shared key encryption identified by the access point are allowed to associate with it. Shared key WEP prohibits non-WEP WLAN stations from associating with the access point. Shared key WEP uses encryption for both data and authentication.

**802.1X** – Authenticator – controls the physical access to the network based on the authentication status of the client. The authenticator acts as an intermediary (proxy) between the client and the authentication server, requesting identity information from the client, verifying that information with the authentication server, and relaying a response to the client.

**WPA** – A new security feature, Wi-Fi Protected Access authorizes and identifies users based on a secret key that changes automatically at a regular interval. WPA uses TKIP (Temporal Key

Integrity Protocol) to change the temporal key every 10,000 packets (a packet is a kind of message transmitted over a network.) This insures much greater security than the standard WEP security.

**WEP** – Wired Equivalent Privacy. You can select to [Enable] or [Disable] WEP.

**WEP Key Type** – Select *HexValue*, and use *Key Table for HexValue* to define a HexValue.

**WEP Key Size** – 64-bit, 128-bit, 152-bit length WEP encryption.

**Valid Key** – Provides 4 groups of options respectively.

**Key Table for HexValue** – A HexValue is strictly defined according to the WEP encryption level (WEP Key Size). The HexValue consists of the numbers from 0-9 and letters A-F. Each encryption level requires a different number of HexValues digits as follows:

- 64-bit encryption, type in 10 hexadecimal digits in the QuickKey String field
- 128-bit encryption, type in 26 hexadecimal digits
- 152-bit encryption, type in 58 hexadecimal digits

Type in 4 hexadecimal values in the spaces provided. Use the *Valid Index* drop-down menu to select the number of the HexValue key (Group Index) to activate the key.



Caution:

If you have made encryption operation in [Open System], you will have to change the password if you switch to [Share Key] mode. Otherwise the network adapter cannot access the AP.

## 5 Technical Specifications

| Item                               | Data  |
|------------------------------------|---|
| <b>Standard</b>                    | IEEE 802.11b (up to 11 Mbps)<br>IEEE 802.11g (up to 54 Mbps and the turbo mode of 108Mbps (For USA))  |
| <b>Supported Operating Systems</b> | Windows XP<br>Windows 2000<br>Windows ME<br>Windows 98SE  |
| <b>Data Rates</b>                  | IEEE 802.11b: 1, 2, 5.5, 11 Mbps<br>IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps   |
| <b>Modulation Technology</b>       | IEEE 802.11b:<br>DQPSK, DBPSK, DSSS, CCK<br>IEEE 802.11g:<br>BPSK, QPSK, 16 QAM, 64 QAM, OFDM   |
| <b>Wireless Frequency Range</b>    | IEEE 802.11b: 2400 ~ 2497 MHz ISM band<br>IEEE 802.11g: 2400 ~ 2483.5 MHz ISM band  |
| <b>Media Access Control</b>        | CSMA/CA with ACK  |
| <b>Network Constructions</b>       | Ad-Hoc Mode (Peer-to-Peer without Access Point)<br>Infrastructure Mode (Communications to wired networks via Access Points with Roaming)  |
| <b>Supported Channels</b>          | 11 channels for United States<br>13 channels for Europe Countries<br>13 channels for Japan<br>13 channels for China   |
| <b>Receiver Sensitivity</b>        | IEEE 802.11b:<br>Typical -84dBm for 11Mbps<br>Typical -90dBm for 2Mbps<br>IEEE 802.11g:<br>-87dBm at 6Mbps<br>-86dBm at 9Mbps<br>-85dBm at 12Mbps<br>-83dBm at 18Mbps<br>-80dBm at 24Mbps<br>-76dBm at 36Mbps<br>-71dBm at 48Mbps<br>-66dBm at 54Mbps |

| Item                            | Data   |
|---------------------------------|--|
| <b>Transmitter Output Power</b> | IEEE 802.11b:<br>Typical 18dBm at 11, 5.5, 2, and 1Mbps<br>IEEE 802.11g:<br>+10 ~ 14dBm at 54Mbps<br>+11 ~ 15dBm at 48Mbps<br>+13 ~ 15dBm at 36Mbps<br>+17 ~ 18dBm at 24, 18, 12, 9, and 6Mbps |
| <b>Antenna Type</b>             | Integrated Printed-PCB antennas with dual diversity function   |
| <b>Power Consumption</b>        | Sleep mode: 15mW<br>Transmit mode: 500mW<br>Receive mode: 365mW<br>Operating Voltage: 3.3V ± -10%  |
| <b>Data Security</b>            | 64, 128, 152-bit WEP (Wired Equivalent Privacy) Encryption   |
| <b>Regulatory Requirements</b>  | EMC:<br>EN 55022 Class B, IEC 61000-4-2/3/4/5/6/11,<br>EN 301 489<br>Radio:<br>FCC Part 15 (C), EN 300 328, ARIB STD33&T66<br>Safety:<br>EN 60950  |
| <b>LEDs</b>                     | Power<br>Activity  |
| <b>Card Type</b>                | Cardbus Type II  |
| <b>Physical Dimensions</b>      | L ~ 119 mm<br>W ~ 54 mm<br>H ~ 9 mm  |
| <b>Temperature</b>              | Temperature<br>Operating: 0°C to 40°C (32°F to 104°F)<br>Storing: -20°C to 75°C (-4°F to 167°F)  |
| <b>Humidity</b>                 | Operating: 10% to 90% (non-condensing)<br>Non-Operating: 5% to 95% (non-condensing)  |
| <b>MTBF</b>                     | 30,000 hours   |

## **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 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.

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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

**IMPORTANT NOTE:**

**FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Huawei Technologies Co., Ltd. declared that SmartAX MT841 Accessory / WCBG03H is limited in CH1~11 from 2400 to 2483.5 MHz by specified firmware controlled in USA.