WLAN 802.11g Cardbus Adapter
Users Manual V1.0

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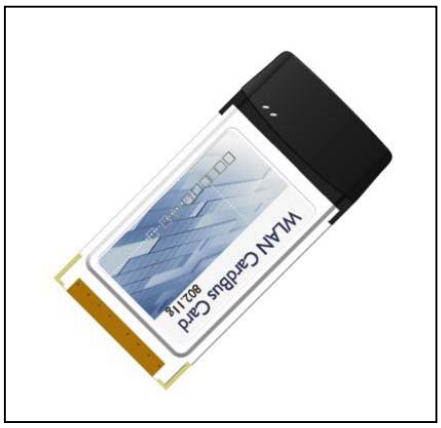
1. Introduction



Welcome to the world of wireless computer networks. This document is a short reference guide that will show you how you can:

• Use WLAN Cardbus adapters to connect the mobile computers to a wireless network.

• Use mobile computers to roam between different locations without losing the wireless connection.

• Use the wireless network to share files and printers with other computer users.

In a Local Area Network (LAN), you can connect two or more computers to each other. You can use a network to share files or common equipment such as a printer or a modem. In a wired network, you need special cables and networking equipment to connect the computers, but in a wireless network, computers communicate via radio technology that can pass through walls and ceilings.

Users connect the wireless computers by assigning a shared Network Name value to each Wireless Client Adapter that belongs to your network.

To secure your WLAN Cardbus adapter supports Data Encryption when you transmit data, we recommend that you always enable this feature to protect your network against unauthorized access to your files and communications.

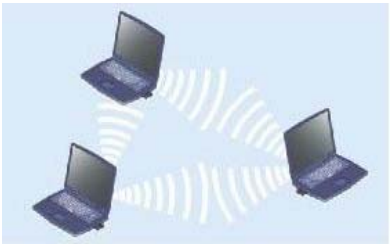
The WLAN Cardbus adapter support different network modes such as Peer-to-Peer Group, Act as Base Station, and Base Station Network that allow users to connect to an existing network or start the network.

For instructions to install your WLAN Cardbus adapter, please consult the documentation that is included with the hardware.

1.1 The Network Type

Peer-to-Peer Group

Network where Wireless Client devices communicate directly with each other as the following figure shows.

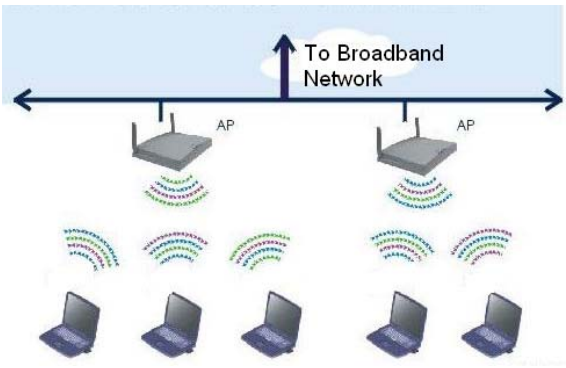


Act as Base Station

Network where you assign one computer to act as the central point of communication for all wireless computers. The computer in this mode will start it's own wireless network. This type of network for SOHO or small offices provides a larger wireless range than a Peer-to-Peer Group. However you can assign only one computer to act as Base Station.

Base Station Network

Network where Wireless Client devices communicate with each other through a dedicated Base Station.



With this type of network for medium to large enterprises, you can add as many Base Station devices as you like to extend the wireless range. Most Base Station devices also allow you to connect your wireless network to a wired network infrastructure.

Network Type Overview

Network Type	Peer-to-Peer Group	Act As Base Station	Base Station
Characteristics	• Ideal for home and small offices users. • Ability to share files, printers or Internet connection. • All computers communicate directly with each other	• Ideal for small offices and business networks. • Just one computer assigned as the central point of wireless communicate for all computers. • All computers communicate only via the Base Station. • Ability to share files, printers or Internet connection.	• Ideal for larger companies, organizations or enterprises. • Addition of a special Base Station device that acts as the central point of wireless communications for all computers. • Able to connect to wired networks and access to central file servers, office printers and corporate email or Internet.
Advantages	• Easy to setup. • Cost Efficient. • Network remains active as long as two or more wireless computers are operational.	• Fairly easy to setup. • Cost efficient. • Extended range.	• Extended range. • Scalability for more Base Station devices to extend the range. • Roaming of wireless computers between different locations is supported. • Allow connections to a wired infrastructure or Internet connection.
Disadvantages	• Limited range.	• When the Base Station shuts down, the wireless network disappears. • Does not allow expansion of wireless network with other Base Station devices. • Requires more expertise to install additional features.	• Additional cables and networking equipment are required. • Requires more expertise and time to install additional features.

1.2 Using your Wireless LAN

This section provides general information about:
• Configuration Profile to save network settings
• Roaming
• File and Printer Sharing
• Internet Connection Sharing

Using Configuration Profiles
If you plan to use your wireless Client Station in multiple wireless networks, you can use network configuration profiles to save the settings for each wireless network.

For example you can create a Configuration Profile for:
• Your office head quarters.
• A branch-office.
• The private home network.
You can use the Configuration Profile to quickly switch between these networks.

Roaming

Roaming is a key feature of wireless computer networks that you can use to move with a mobile computer between different locations without losing your network connection.

In networks that include two or more Base Station devices, the wireless computer will automatically connect to the Base Station that provides the best quality of wireless communications.

If users travel between different network environments, they can create a Configuration Profile for each network and quickly select the right profile to connect to the other network.

File and Printer Sharing

File and Printer Sharing is a Microsoft Networks feature that allows you to:
• Access files on other computers.
• Print documents on a printer that is connected to another computer.

To use these options, you must enable File and Printer Sharing on the computer that contains the files or printer connection that you wish to share.

For more information consult the Microsoft Windows Help:
1. Click the Start button.
2. Click Help.

3. Use the Help Search to look for "File and Printer sharing".

Internet Connection Sharing

Internet Connection Sharing is a Microsoft Networks feature that allows multiple computers to access the Internet via the connection of one computer in your network. For example, your wireless mobile computer could share the broadband or dial-up connection of a desktop computer.

To share this connection, you must enable Internet Connection Sharing on the computer that connects to the Internet.

For more information consult the Microsoft Windows Help:
1. Click the Start button.
2. Click Help.
3. Use the Help Search to look for "Internet Connection Sharing".

1.3 About Client Manager

The Client Manager is a tool that starts automatically every time users boot the computer. Use the Client Manager to:

• Diagnose the Link Quality of your wireless connection to the network.
• Run Card Diagnostics to verify the operation of the hardware.
• Create or select a wireless Configuration Profile.
• Disable the radio of your Wireless Client Adapter in situations where local safety guidelines require users to switch of wireless equipment.

To access these functions, click the Client Manager icon  on the taskbar. You can find the icon at the low-right side of your screen.

> Note: The color of the Client Manager icon may differ according to the quality of your wireless connection. Green means that you have an excellent wireless connection.

For more information about color states of the icon or the functions listed above, please consult the online help of the Client Manager.

1.4 Glossary

Base Station
Base Station devices are also referred to as access points, which allow you to connect the wireless client to wired computer networks.

Card Diagnostics
Card Diagnostics is a Client Manager option that allows you to perform a hardware test on your wireless LAN adapter. It allows you to:

• Obtain an online advice on the status of your adapter.
• Generate a report which you can send to your technical support representative in case you encounter problems using your wireless adapter.

Client Manager
Software tool for Wireless Client Adapter to:

• Manage wireless Configuration Profile settings
• Diagnose wireless Link Quality
• Run Card Diagnostics

Configuration Profile
The set of wireless parameters that allows users to connect to a specific wireless network. The parameters include Profile Name and Encryption Key. You can give each profile a name to allow easy recognition.

Encryption Key
The Encryption Key is a security option that encodes all wireless communications to avoid unauthorized access to your network and communications.

To allow communication, all wireless devices in your network must use the same Encryption Key.

Default value: Encryption disabled

Valid values: 40/64-bit WEP Network Interface:
• 5-digit Alphanumeric Value.
Example: Alpha
• 10-digit Hexadecimal Value.
Example: 416C706861

104/128-bit WEP Network Interface:
• 13-digit Alphanumeric Value
Example: AlphaNumKey01
• 26-digit Hexadecimal Value.
Example:

416C7068614E756D4B65793031

The encryption key is case-sensitive.

Alphanumeric Value
An alphanumeric value is a value that can include both:
• Numeric values in the range of "0-9".
• Alphabetical characters in the range of "a-z" or "A-Z".
Example: AlphaNumKey01

Use both alphabetical and numerical characters to expand the flexibility to enter a name or value of your choice.

Hexadecimal Value
Numeric value that can include both numeric and a limited number of alphabetical characters:
• Numeric values in the range of "0-9".
• Alphabetical characters in the range of "a-f" or "A-F".
Example: 416C7068614E756D4B65793031

Hexadecimal values are often written as:
• 0x416C7068614E756D4B65793031, or
• h416C7068614E756D4B65793031

When users need to enter a hexadecimal value, consult the quick installation guide or the network administrator for the correct notation.

IEEE
Institute of Electrical & Electronics engineers, Inc.

The IEEE is an organization that develops Standards for electrical and electronic equipment. IEEE Standards documents are developed within the Technical Committees of the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Board.

For more information, consult the IEEE website http://standards.ieee.org

IEEE 802.11
IEEE 802.xx Standards define the access technologies for local and metropolitan area networks.

The IEEE 802.11 Standard is an inter operability standard for wireless LAN devices, that identifies different technologies for wireless data communication:
• Radio Technology
• Infrared Technology

IEEE 802.11 compliant networking products are interoperable when they are based on the same type of technology, regardless of their manufacturer.

Link Test
The Link Test is a Client Manager option that allows you to test the quality of your wireless link with the Base Station or your Peer-to-Peer Group partner.

Users can use this option to:

• Determine the cause of poor wireless performance, such as radio interference or heavy network traffic.
• Determine where the problem occurs in the signal path between your computer and the Link Test partner .

Link Quality
Quality of the wireless network connection primarily indicated by the Signal-to-Noise Ratio (SNR). You can test the Link Quality with the Client Manager Link Test.

Network Name
The Network Name is a value that logically connects wireless devices to the same network, and distinguishes your wireless network from neighboring networks.

To allow communication, each wireless device within your network must use the same Network Name value.

• To connect to a Peer-to-Peer Group, consult one of the workgroup participants for the correct value.
• To connect to a Base Station, consult your networking administrator for the correct value.

When users use the Client Manager to create a Configuration Profile, they can click the **Scan** button to retrieve a list of Network Name values of all open wireless networks in the vicinity of your computer.

The Network Name (also referred to as SSID) is a case-sensitive text string with a maximum of 32 characters.

Noise Level
Noise Level indicates the strength of in-band radio interference. Sources of interference can be:

• Theft Protection Devices
• Cordless Phones
• Microwave Ovens

Interference has a negative impact on the quality of the wireless connection. Use the Client Manager Link Test to determine the source of interference.

Local Noise
The level of radio interference as measured in the areas nearby the wireless computer.

Remote Noise
The level of radio interference as measured in the vicinity of the remote station (for example your Link Test Partner).

Signal Level
Signal Level indicates the strength of the wireless signal as received by the WLAN Cardbus adapter .

Site Monitor
The Site Monitor is a Client Manager option that allows users to test the quality of the wireless link with all Base Station devices within range of the computer. Users can use this option to perform a site survey to optimize the placement of Base Station devices within the network.

SNR
The Signal-to-Noise Ratio (SNR) is the primary quality indicator of your wireless communications. The SNR indicates the relative strength of the Signal Level compared to the Noise Level.

A high SNR indicates an excellent wireless link. A low SNR indicates poor communications quality that might be caused by a low Signal Level or high Noise Level in the wireless link path.

Users can read the SNR from the Client Manager icon in the Windows taskbar and find the icon at the low-right side of the screen.

SOHO (Small Office / Home Office)
Small network that includes up to 10 wireless and/or wired computers. Sometimes a SOHO network uses a shared connection to an Internet Service Provider to provide Internet access to individual computers.

WEP (Wired Equivalent Privacy)
IEEE 802.11 compliant encryption scheme based on the RC4 algorithm that is used to secure wireless data.

WEP is an encryption technology that will secure (encode) all wireless data.

40/64-bit WEP Network Interface

WLAN Cardbus adaptors that support 40/64-bit WEP data encryption.
This type of interface allows you to enter encryption keys as:
• 5-digit Alphanumeric Value.
• 10-digit Hexadecimal Value.

104/128-bit WEP Network Interface
WLAN Cardbus adapter that supports both 40/64-bit WEP and 104/128-bit data encryption based on the RC4 algorithm.

This type of interface allows you to enter encryption keys as:
• 5-digit Alphanumeric Value.
• 13-digit Alphanumeric Value.
• 10-digit Hexadecimal Value.
• 26-digit Hexadecimal Value.

Wireless Client
Device with WLAN Cardbus adapter that users can connect to a computer network.

Wireless Client Adapter
Network adapter that users can use to connect to a computer device to a wireless network, such as a Peer-to-Peer Group or a Base Station Network. The wireless client adapter uses radio technology to communicate.

2. Install and Configure a Wireless Network

2.1 Before You Start

Please verify the contents of the Cardbus adapter Kit:

- A WLAN Cardbus adapter
- A Software driver CD
- A quick install guide
-

If any of the items appear to be damaged or missing, please contact your supplier.

2.2 Software Installation for Windows

The complete installation of your Cardbus adapter and the necessary drivers (for Windows 98/ME/2000/XP) consist of the following steps:

(a) Insert the software driver CD into the CD or DVD drive.
(b) Click the icon to run setup.exe.
(c) For Windows 98SE/ME/2000 users, follow the instructions to install the driver.
(d) For Windows XP users, just click ‘’Continue Anyway” to continue the installation.

After the software installation, Insert the CardBus adapter into slot of the notebook.The system will detect the new device

2.3 Insert the Cardbus Adapter

Insert the WLAN Cardbus adapter into the Cardbus slot as the following picture shows.

Note: If you want to install the WLAN PC Card in to a desktop computer, please use a PCI adapter.

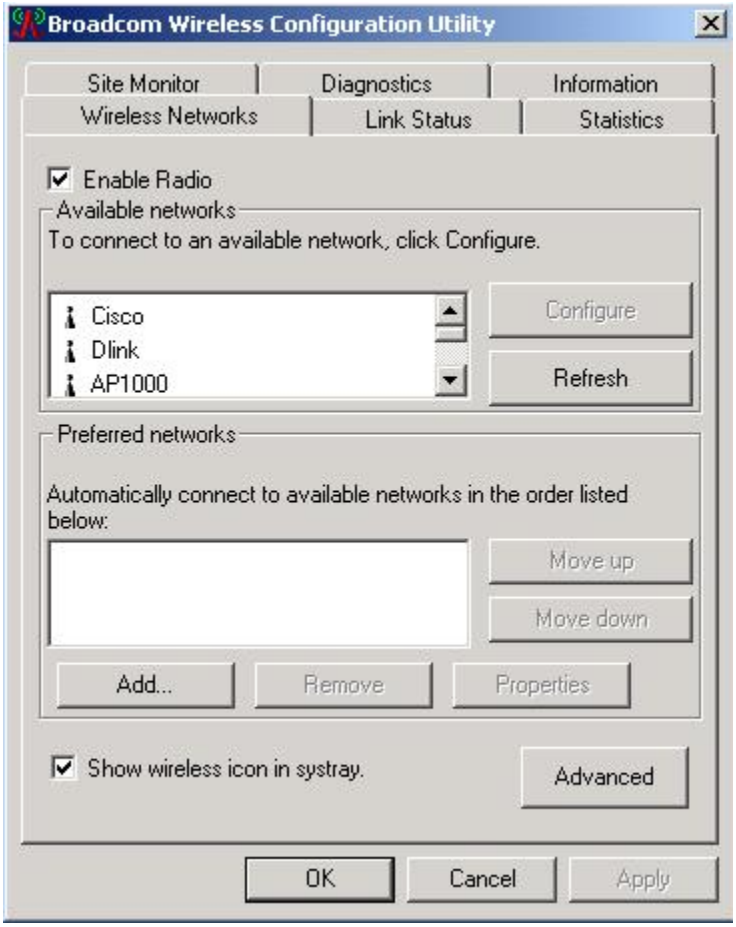
2.4 Configure the Networks

Basic Settings for Enterprise Networks

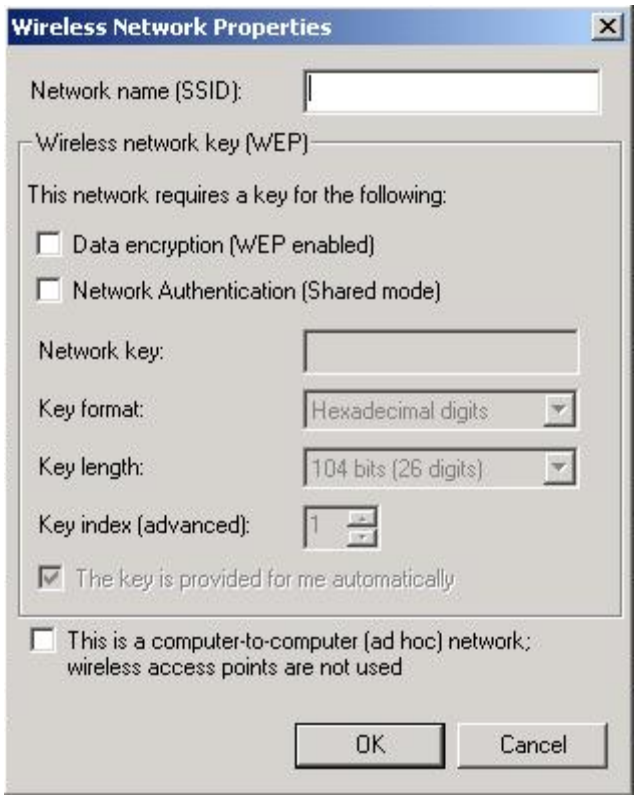
If you connect to an enterprise network, please follow the steps to configure the profile:

(1)Move your cursor to  .Right click your mouse and select **Open Ulitity**.

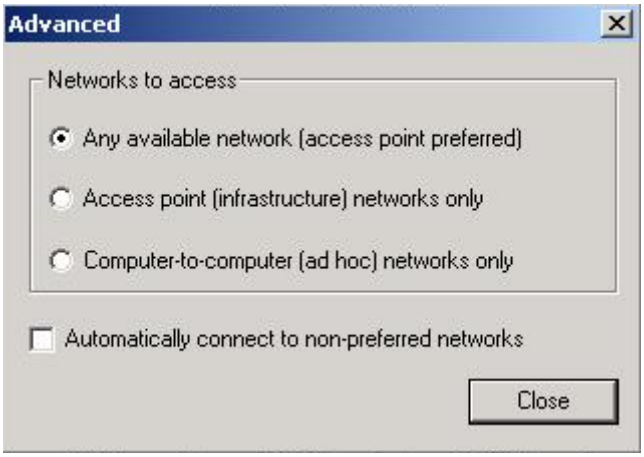
(2)Switch to **Wireless Network** page and tick Enable Radio. Select an Available network and click **Configure** to configure the AP.



Enter the **Profile Name(SSID)** and then click **OK.**



(2) Tick **Show Wireless Icon** in sytray and click **Advanced.** Select **"Any available network"** and click **Close.**



(3)To set security, tick **Data encryption (WEP enabled)**.

Click **OK to finish the configuration.**

3. Basic TroubleShooting

Power LED on, Link LED off

This LED status indicates normal operations:

- The Wireless Client Adapter is powered on
- The Link LED indicates there is no activity on the wireless network.

The absence of activity on the Wireless Network Interface might be related to the fact that:

- You moved out of Wireless Range of the Base Station(s) that could provide access to the selected network.
- There are no Wireless Client Stations in the Wireless Range of your computer to participate in the selected Peer-to-Peer Group.
- The Base Station(s) that could provide access to the selected network has (have) a problem (e.g. the power is off).

Power LED on, Link LED flickering

This LED status indicates normal operations:

- The Wireless Client Adapter is powered on
- The Link LED indicates activity on the wireless network.

If the radio of your WLAN Cardbus adapter seems to communicate with other radio devices, but it does not succeed in the network connection (i.e. Both the power and radio LED show normal activity), you may need to verify if the Network Protocol Settings are correct.

Both LEDs blink once every 10 seconds

This LED indicates that the power of CB-G-BR Cardbus adapter is on and the card is working properly, but it is not able to establish a wireless connection to the wireless network.

Possible reasons might be:

- Your wireless station is outside the Wireless Range of the Base Station(s) that could provide you access to the selected network.
- The Wireless Network Interface of your station has been configured with a wrong Network Name and/or Encryption Key settings.

- you mis-selected a configuration profile on your wireless station and the profile does not belong to the wireless network that you want to connect to.
- The Base Station(s) that provide(s) access to the selected network has/have been configured to deny access to stations that use the value **ANY** as their Network Name.

Contact your LAN Administrator for information about the correct values of the parameter settings.

No LED Activity

If there is no LED activity on the Power LED and Link LED of the CB-G-BR Cardbus adapter , this may be due to one of the following reasons:

- The CB-G-BR Cardbus device is not properly connected to your computer.
- No driver was installed to allow communication between your computer and the wireless network interface.
- You are using a wireless network interface in combination with a CB-G-BR WLAN Cardbus Tools, but you did not yet **introduce** the device to your computer using the **Add New Hardware** option on the Control Panel.

Power LED is Flickering

A flickering Power LED identifies that you enabled the Card Power Management option for the Wireless Client Adapter of a Wireless Client Station (Advanced Settings).

Network Protocol Settings

Subject to the type and version of your Windows operating system, the correct protocol may or may not be installed automatically when users install the wireless network interface. Network protocols includes TCP/IP,NetBEUI and IPX/SPX.

To verify your network protocol settings, please follow the steps:

1. Click **Start** and then select **Settings**. Please select **Control Panel**.
2. Double-click the Network icon to open the Network properties window.
3. Display the list of network components. Install protocols for your wireless network interface.

- When using Windows 98, scroll down the list of items in the tab Configuration.

4. Contact your network administrator for the following information:
    - Which protocols should be included in the list.
    - What property settings should apply for each of these protocols.
5. (Optional) Click the:
    - Add button to add a missing protocol.
    - Properties button to view/modify the protocol settings.

Another Device Does No Longer Work

In case another device does not work after you installed the CB-G-BR Cardbus adapter , uses may have run into a Hardware Conflict. Please verify whether this is caused by the wireless network interface, or simply by removing the interface. Reboot the computer:

- When the problem exists. (The problem is not caused by the wireless network interface.)
- When the other device functions properly again after removing the wireless network interface, one of the two causes below may apply:

  The resources were already claimed upon booting the device, by a resource setting in the BIOS or CMOS of your computer, or

This means if you select resources that appeared to be available according to the Windows Diagnostics program, these settings are already claimed by the conflicting device.

In both cases, you are encouraged to try alternative values for your wireless network interface to see whether these new values might help solving your problem. Upon doing so, you are advised to change only one parameter at a time.

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.

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.

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.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This device complies with FCC RF Exposure limits set forth for an uncontrolled environment, under 47 CFR 2.1093 paragraph (d)(2).

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

4.Technical Support

The identification of the product :

Product Name : 802.11g Wireless LAN CardBus Adapter

Model Name : CB-G-BR-02

Technical Contact :

Universal Scientific Industrial Co., Ltd. (Headquarters)

Address : 135, Lane 351, Taiping Rd., Sec. 1, Tsao Tuen, Nan Tou, Taiwan

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