



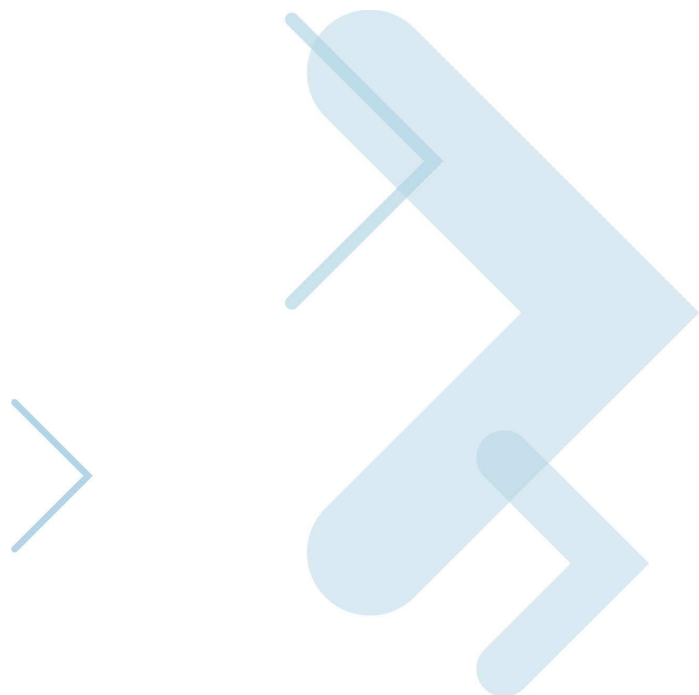
*Compal Broadband Networks*

CH7284E Wireless Gateway Series

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User Guide

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# Table of Contents

## Overview

Contact Information.....	4
Standard Features .....	4
CH7284E LAN Choices.....	5
Wireless LAN.....	5
Wired Ethernet LAN.....	6
Front Panel.....	7
Rear Panel.....	8
MAC Label.....	9

## Getting Started

Inside the Box.....	10
Before You Begin.....	11
System Requirements.....	11
Connecting the CH7284E.....	12
Setting Up Internet Access.....	13
Configuring TCP/IP in Windows XP.....	13
Configuring TCP/IP in Windows Vista .....	14
Verifying the IP Address in Windows XP .....	14
Verifying the IP Address in Windows Vista .....	15
Renewing Your IP Address .....	15
Setting Up a Wi-Fi Network .....	15

## Status

Starting the CH7284E Configuration Manager (CMGR) .....	16
Modem .....	17
WiFi.....	18
Voice .....	18
My Network .....	19

## Wireless Pages

Basic Settings .....	21
WPS .....	21
Access Control.....	22
WMM.....	23
Neighbor APs.....	23

## Router

Basic.....	25
LAN Settings.....	25
DHCP Server.....	25
WAN Settings .....	26
Network Map .....	26
Advanced.....	27
MAC Filtering.....	27

IP Filtering .....	27
Port Filtering .....	28
Port Forwarding .....	29
Port Triggering.....	30
URL Filtering.....	31
DMZ .....	32
DDNS .....	33
Firewall.....	33
Firewall Logs .....	34
Management.....	35
Admin Account .....	35
Remote Management .....	35
Event Log .....	36
Diagnostics.....	37
Backup Settings.....	39
Cable Modem .....	40
Device Information.....	40
Connection .....	40
Configuration .....	41
Telephony Status.....	42
<b>Troubleshooting</b>	
Solutions.....	43
Front-Panel LEDs and Error Conditions.....	44

# 1 Overview

With integrating beamforming into the CH7284E 802.11ac EuroDOCSIS 3.0 Voice Gateway, customers can enjoy benefits from significant performance improvement and more stable connection, and increase satisfaction with the reduction of WiFi dead areas. For notebook, mobile, and Tablet devices enhanced 802.11ac, this will bring in better throughput for faster downloads and more smooth video streaming.

The CBN CH7284E Wireless Gateway is the worldwide most compact EuroDOCSIS 3.0 Voice Gateway with stylish and elegant outlook, designed for your home, home office, or small business/enterprise. It can be used in households with one or more computers capable of wireless connectivity for remote access to the wireless gateway.

This user guide provides product overview and setup information for the CH7284E. It also provides instructions for installing the wireless gateway and configuring the wireless LAN, Ethernet, router, DHCP, and security settings.

## Contact Information

- For any questions or assistance with the CH7284E Wireless Gateway, contact your Internet Service provider.

## Standard Features

The CH7284E Wireless Gateway combines high-speed Internet access, networking, and computer security for a home or small-office LAN. It offers the following features:

- Combination of five separate products in one compact unit — an EURO DOCSIS® 3.0 cable modem, IEEE 802.11b/g/n/ac wireless access point, Ethernet 10/100/1000 Base-T connections, VoIP Internet telephone connections, and firewall.
- An integrated high-speed cable modem for continuous broadband access to the Internet and other online services with much faster data transfer than traditional dial-up or ISDN modems.
- Advanced firewall for enhanced network security from undesired attacks over the Internet. It supports stateful-inspection, intrusion detection, DMZ, denial-of-service attack prevention, and Network Address Translation (NAT).

- One broadband connection for up to 253 computers to surf the web; all computers on the LAN communicate as if they were connected to the same physical network.
- Two 10/100/1000Base-T Ethernet uplink ports supporting half- or full-duplex connections with auto-MDIX capability.
- An IEEE 802.11n/ac wireless access point to enable laptop users to remain connected while moving around the home or small office or to connect desktop computers without installing network wiring. Depending on distance, wireless connection speeds can vary.
- CH7284E wireless function supports Wi-Fi 2.4G/5G dual-band mode.
- A secure Wireless Fidelity (Wi-Fi) broadband connection for Wi-Fi enabled devices on your network, such as your mobile, laptops, tablet, printers, PDAs, and desktops.
- Routing for a wireless LAN (WLAN) or a wired Ethernet LAN; you can connect more than two computers using hubs and/or switches
- A built-in DHCP server to easily configure a combined wired and/or wireless Class C private LAN.
- Virtual private network (VPN) pass-through operation supporting IPSec, PPTP, or L2TP to securely connect remote computers over the Internet.
- CH7284E Configuration Manager (CMGR) which provides a graphical user interface (GUI) for easy configuration of necessary wireless, Ethernet, router, DHCP, and security settings.

## CH7284E LAN Choices

You can connect up to 253 client computers to the CH7284E using one or any combination of the following network connections:

- Wi-Fi wireless LAN (WLAN)
- Ethernet local area network (LAN)

## Wireless LAN

Wireless communication occurs over radio waves rather than a wire. Like a cordless telephone, a WLAN uses radio signals instead of wires to exchange data. A wireless network eliminates the need for expensive and intrusive wiring to connect computers throughout the home or office. Mobile users can remain connected to the network even when carrying their laptop to different locations in the home or office.

Each computer or other device on a WLAN must be Wi-Fi enabled with either a built-in or external wireless adapter.

Laptops — Use a built-in wireless notebook adapter, a wireless PCMCIA slot adapter, or a wireless USB adapter.

Desktops — Use a wireless PCI adapter, wireless USB adapter, or compatible product in the PCI slot or USB port, respectively.



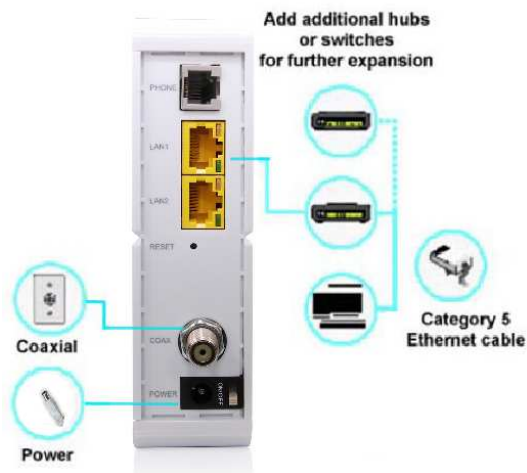
Sample Wireless Network Connections (CH7284E model shown)

Your maximum wireless operation distance depends on the type of materials through which the signal must pass and the location of your CH7284E and clients (stations). CBN cannot guarantee wireless operation for all supported distances in all environments.

*Note: To get better wireless coverage, please put your CH7284E wireless gateway vertically.*

## Wired Ethernet LAN

You can easily connect any PC with an Ethernet cable to the CH7284E Ethernet port. Because the CH7284E Ethernet port supports auto-MDIX, you can use a straight-through or cross-over cable to connect a hub, switch, or computer. Use category 5, or better, cabling for all Ethernet connections.



## Sample Ethernet to Computer Connection (CH7284E model shown)

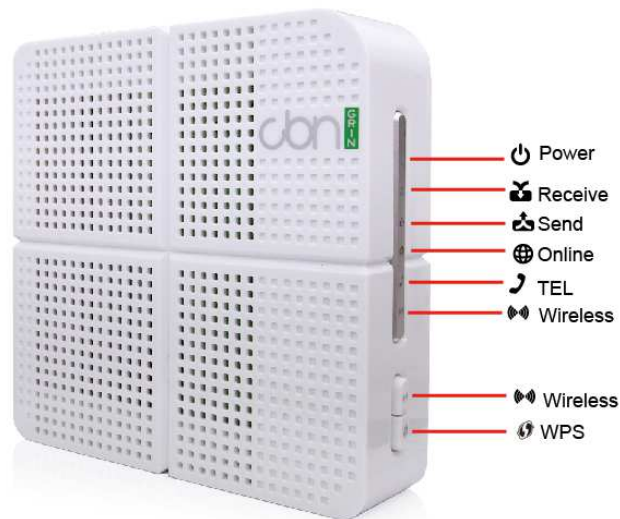
A wired Ethernet LAN with more than two computers requires one or more hubs, switches, or routers. You can:

- Connect a hub or switch to any Ethernet port on the CH7284E.
- Use Ethernet hubs, switches, or routers to connect up to any combination of 253 computers and wireless clients to the CH7284E.

More detailed information on Ethernet cabling is beyond the scope of this document.

## Front Panel

The CH7284E front panel contains indicator lights and the Wi-Fi / WPS button which is used to configure Wi-Fi Protected Security (WPS) on compatible clients connected to the CH7284E network.

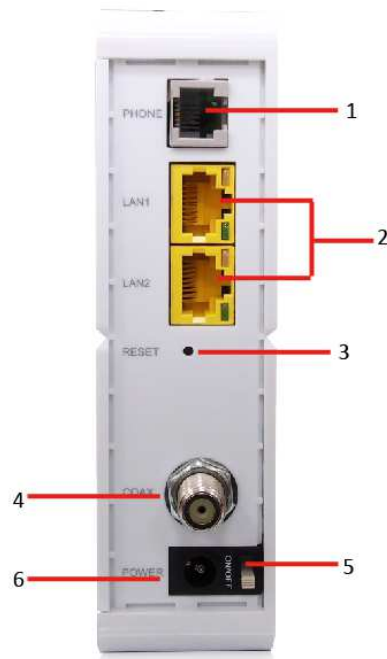


The CH7284E front panel LED indicators provide the following status information for power, communications, and errors:

	LED	Flashing	On
1	POWER	Not applicable — LED does not flash	Green: Power is properly connected
2	RECEIVE	Scanning for a downstream channel connection	Green: Downstream channel is connected Blue: Downstream channel is connected with bonded channels
3	SEND	Scanning for an upstream channel	Green: Upstream channel is

LED	Flashing	On
	connection	connected Blue: Upstream channel is connected with bonded channels
4 ONLINE	Scanning for Internet connection; transmitting or receiving data over the Internet	Green: Connected to Internet
5 TEL	Telephone is off-hook; dialing or call in progress	Green: Telephone is connected and activated; on-hook
6 WIRELESS	Amber: WPS function is enabled.	Green: Wi-Fi wireless interface is active now.

## Rear Panel



The CH7284E (shown above) rear panel contains the following cabling port and connectors:

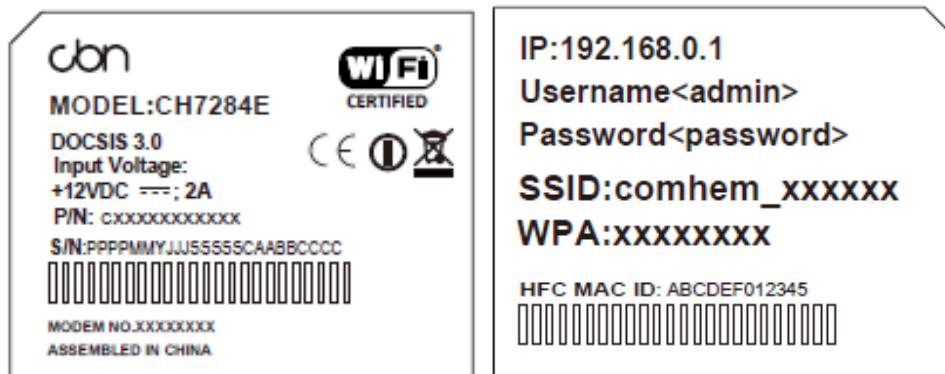
Item	Description
1 PHONE	VoIP connection for a single telephone.



Item	Description
2 LAN 1 2	<p>Use any Ethernet port to connect an Ethernet-equipped computer, hub, bridge, or switch using an RJ-45 cable.</p> <p>Activity LED - Green LED defines the activity of the Ethernet connector. When LED is ON, this indicates that there is no data traffic and a connection is stabilized. When LED is FLASHING, this indicates that there is data being transmitted upstream or downstream. When LED is OFF, this indicates that the unit is not powered or there is no Ethernet connection.</p>
3 RESET	<p>Press and hold the RESET button for five seconds or longer to restore CH7284E to factory default settings. After factory default settings are restored, the gateway will restart and may take 5 to 30 minutes to find and lock on the appropriate communication channels.</p>
4 COAX	<p>Connect the CH7284E to a cable wall outlet.</p>
5 POWER SWITCH	<p>Switch gear for power on/off the CH7284E.</p>
6 POWER	<p>Provide power to the CH7284E.</p>

## MAC Label

The CH7284E Media Access Control (MAC) label is located on the bottom of the CH7284E. The label contains the MAC address which is a unique, 48-bit value that identifies each Ethernet network device. To receive data service, you will need to provide the MAC address marked HFC MAC ID to your Internet Service provider.”

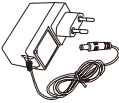





Note: Label may differ according to local settings or requirements.

## 2 Getting Started

### Inside the Box

Before you install the CH7284E Wireless Gateway, verify that the following items are included in the box with the CH7284E:

Item	Description
Power Adapter 	Connect the CH7284E to an AC electrical outlet
Ethernet Cable 	Connect the CH7284E to PC or Notebook
COAXIAL CABLE 	Connect the CH7284E to cable outlet
CH7284E Install Sheet 	Provide basic information for setting up the CH7284E

You must have the latest service packs and patches installed on your computer for your operating system.

You will need a 75-ohm coaxial cable with F-type connectors to connect the CH7284E to the nearest cable outlet. If a TV is connected to the cable outlet, you may need a 5 to 900 MHz RF splitter and two additional coaxial cables to use the TV and the CH7284E.

## Before You Begin

Take the following precautions before installing the CH7284E:

- Postpone installation until there is no risk of thunderstorm or lightning activity in the area.
- To avoid potential shock, always unplug the power cord from the wall outlet or other power source before disconnecting it from the CH7284E rear panel.
- To prevent overheating the CH7284E, do not block the ventilation holes on the sides of the unit. Do not open the unit. Refer all service to your Internet Service provider.

Check that you have the required cables, adapters, and adapter software. Verify that the proper drivers are installed for the Ethernet adapter on each networked computer. For information on WLAN setup, see [Setting Up Your Wireless LAN](#).

## System Requirements

Your computer must meet the following minimum requirements:

- Computer with Pentium<sup>®</sup> class or better processor
- Windows XP, Windows Vista, Macintosh, or UNIX operating system with available operating system CD-ROM
- Any web browser, such as Microsoft Internet Explorer, Netscape Navigator<sup>®</sup>, or Mozilla<sup>®</sup> Firefox<sup>®</sup>

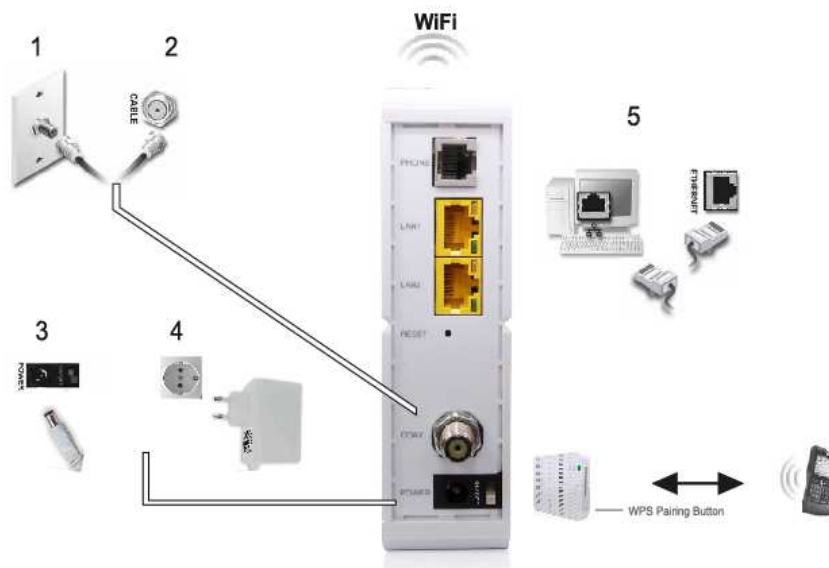
## Connecting the CH7284E

Before starting, be sure the computer is turned on and the CH7284E power cord is unplugged.

1. Connect one end of the coaxial cable to the cable outlet or splitter.
2. Connect the other end of the coaxial cable to the Cable connector on the CH7284E. Hand-tighten the connectors to avoid damaging them.
3. Plug the power cord into the Power port on the CH7284E.
4. Plug the other end of the power cord into an electrical wall outlet.

This automatically powers on the gateway. You do not need to unplug the gateway when it is not in use. The first time you plug in the CH7284E, allow it 5 to 30 minutes to find and lock on the appropriate communications channels.

5. Plug the other end of the telephone cord of a single or two-line telephone into the TEL 1/2 port on the rear of the CH7284E.
6. Plug the telephone cord of a single or two-line telephone into the telephone.
7. Connect the Ethernet cable to the Ethernet port on the computer, and connect the other end of the Ethernet cable to the Ethernet port on the gateway.



8. Check that the LEDs on the front panel cycle through the following sequence:

### CH7284E LED Activity During Startup

LED	Description
POWER	Turns on when AC power is connected to the CH7284E. Indicates that the power is connected properly.

LED	Description
RECEIVE	Flashes while scanning for the downstream receive channel. Changes to solid green when single downstream channel is locked. Changes to solid blue when multiple downstream channels are locked.
SEND	Flashes while scanning for the upstream send channel. Changes to solid green when single upstream channel is locked. Changes to solid blue when multiple upstream channels are locked.
ONLINE	Flashes during CH7284E registration and configuration. Changes to solid green when the CH7284E is registered successfully and ready for Internet access

## Setting Up Internet Access

After installing the CH7284E, check that you can connect to the Internet. You can retrieve an IP address for your computer's network interface using one of the following options:

- Retrieve the statically defined IP address and DNS address
- Automatically retrieve the IP address using the Network DHCP server

The CBN CH7284E Wireless Gateway provides a DHCP server on its LAN. It is recommended that you configure your LAN to obtain the IPs for the LAN and DNS server automatically.

Make sure all computers on your LAN are configured for TCP/IP. After configuring TCP/IP on your computer, you should verify the IP address.

*Note: For UNIX or Linux systems, follow the instructions in the applicable user documentation.*

## Configuring TCP/IP in Windows XP

1. Open the Control Panel.
2. Double-click Network Connections to list the Dial-up and LAN or High-Speed Internet connections.
3. Right-click the network connection for your network interface.
4. Select Properties from the drop-down menu to display the Local Area Connection Properties window. Be sure Internet Protocol (TCP/IP) is checked.
5. Select Internet Protocol (TCP/IP) and click Properties to display the Internet Protocol (TCP/IP) Properties window.

6. Select Obtain an IP address automatically and Obtain DNS server address automatically.
7. Click OK to save the TCP/IP settings and exit the TCP/IP Properties window.
8. Close the Local Area Connection Properties window and then exit the Control Panel.
9. When you complete the TCP/IP configuration, continue with Verifying [the IP Address in Windows XP](#).

## Configuring TCP/IP in Windows Vista

1. Open the Control Panel.
2. Click Network and Internet to display the Network and Internet window.
3. Click Network and Sharing Center to display the Network and Sharing Center window.
4. Click Manage network connections to display the LAN or High-Speed Internet connections window.
5. Right-click the network connection for the network interface you want to change.
6. Click Properties to display the Local Area Connection Properties window.  
Vista may prompt you for an administrator password or confirmation. Type the password or confirmation, then click Continue.
7. Click Networking tab, then select Internet Protocol Version 4 (IPv4).
8. Click Properties to display the Internet Protocol Version 4 (TCP/IPv4) Properties window.
9. Select Obtain an IP address automatically and Obtain DNS server address automatically.
10. Click OK to save the TCP/IP settings and close the Internet Protocol Version 4 (TCP/IPv4) Properties window.
11. Click OK to close the Local Area Connection Properties window.
12. Close the remaining windows and exit the Control Panel.
13. When you complete the TCP/IP configuration, continue with Verifying the IP Address in Windows Vista.

## Verifying the IP Address in Windows XP

To check the IP address:

1. On the Windows Desktop, click Start.
2. Select Run. The Run window is displayed.
3. Type cmd and click OK.
4. Type ipconfig and press ENTER to display your IP configuration.

If an Auto-configuration IP Address displays, this indicates possible cable network problems or an improper connection between your computer and the CH7284E.

Check the following:

- Your cable connections
- Whether you can see cable-TV channels on your television

After successfully verifying your cable connections and proper cable-TV operation, you can renew your IP address.

## Verifying the IP Address in Windows Vista

Do the following to verify the IP address:

1. On the Windows Desktop, click Start.
2. Click All Programs.
3. Click Accessories.
4. Click Command Prompt to open a command prompt window.
5. Type ipconfig and press Enter to display the IP address.

If an Auto-configuration IP Address displays, this indicates an improper connection between your computer and the CH7284E, or there are possible cable network problems.

## Renewing Your IP Address

To renew your IP address in Windows XP or Windows Vista:

1. Open a command prompt window.
2. At the command prompt, type ipconfig /renew and press ENTER to obtain a new IP address.
3. Type exit and press ENTER to close the command prompt window.

If after performing this procedure your computer still cannot access the Internet, call your cable service provider for assistance.

## Setting Up a Wi-Fi Network

Do the following to set up a Wi-Fi network using the WPS button on the CH7284E:

1. Power on the CH7284E.
2. Power on the WPS-enabled devices you want to have access to the network, such as a PC, router, or telephone.

The Wi-Fi network will automatically detect the WPS devices.

3. Press WPS button on the CH7284E.
4. If applicable, press WPS button on the other WPS devices.

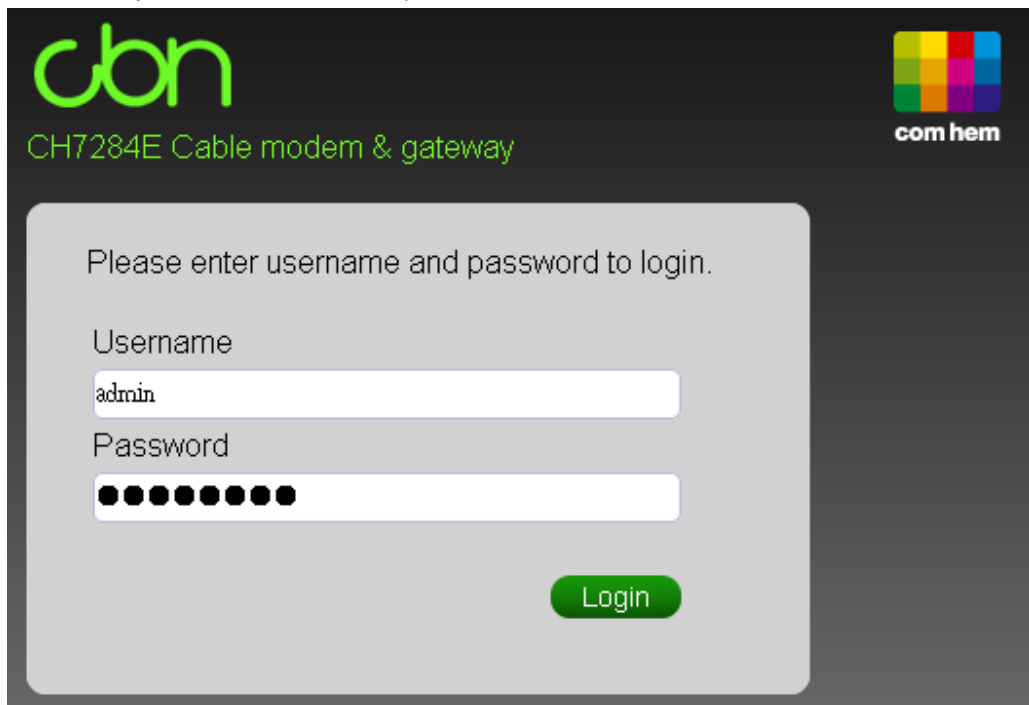
## 3 Status

For normal operation, you do not need to change most default settings. Carefully consider the following caution statements:

### Starting the CH7284E Configuration Manager (CMGR)

The CH7284E Configuration Manager (CMGR) allows you to change and view the settings on your CH7284E.

In order to login CMGR, you should key in the correct Username and Password. By default, they should be admin and password.



cbn  
CH7284E Cable modem & gateway

com hem

Please enter username and password to login.

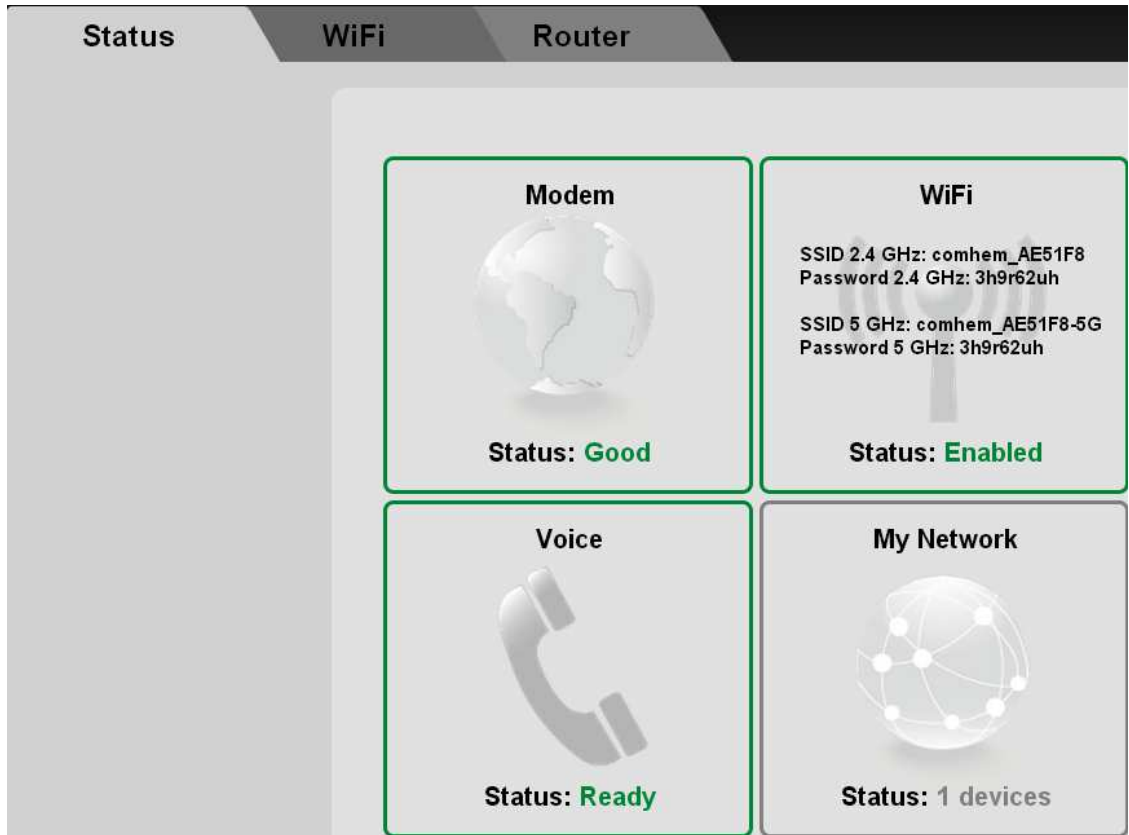
Username  
admin

Password  
●●●●●●●●●●

Login

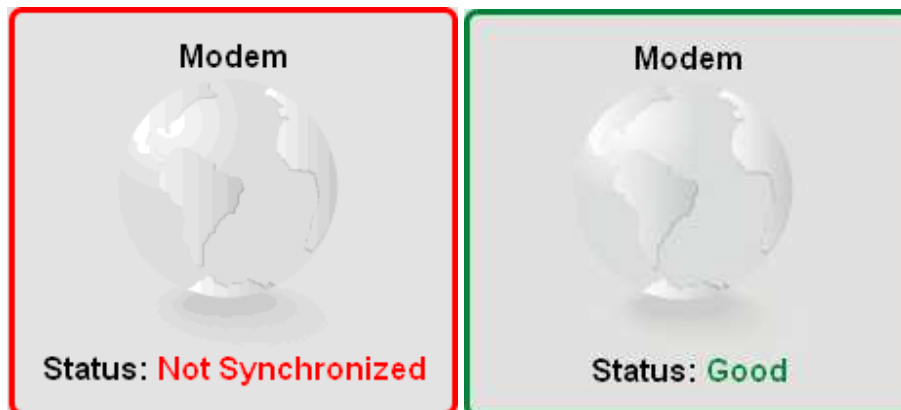


After login management system, the home page shows the current status of CH7284E.



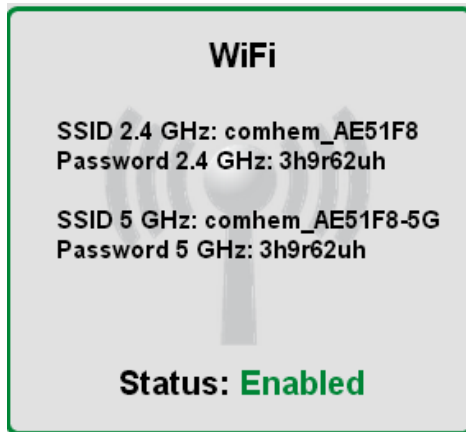
## Modem

This item displays the status of cable modem, the red block means off-line state and the green means on-line. Users can press it to connect to the next page for more details of the cable modem's HFC and IP network connectivity.



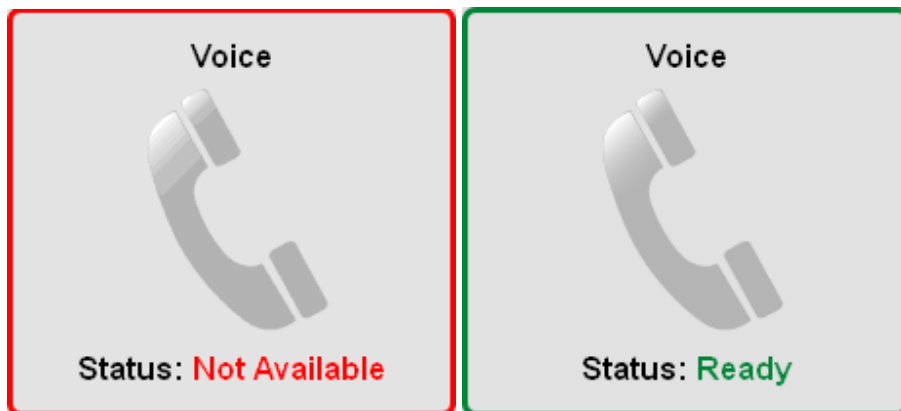
## WiFi

This item shows current WiFi status and you can press it to connect to the next page for more details.



## Voice

This item displays the status of voice, the red block means off-line state and the green means on-line. Users can press it to connect to the next page for more details of the telephony.



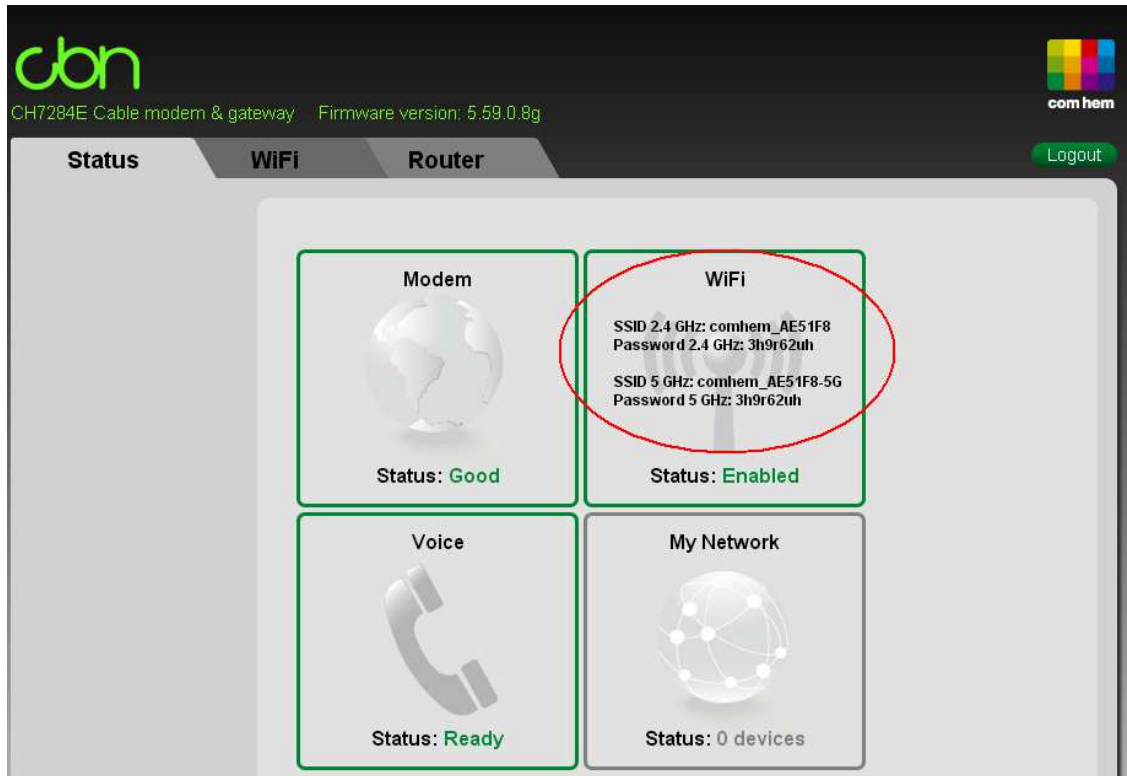
## My Network

This item shows how many CPEs connect to CH7284E.



## 4 Wireless Pages

The CH7284E Wireless Pages allow you to configure your wireless LAN (WLAN). You can click WIFI submenu option to view or change the configuration information for that option.



## Basic Settings

CH7284E is a dual band product and all the basic settings of 2.4GHz and 5GHz can be changed in this page. You can configure basic features of your Wi-Fi wireless network, including to enable or to disable the wireless interface, to hide the network from active scans, to set the wireless network name (also known as SSID), to change security key for wireless connection and to select the working channel.

Band Mode	2.4 GHz	5 GHz
Wireless Radio:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Network Name (SSID):	<input type="text" value="comhem_AE51F8"/>	<input type="text" value="comhem_AE51F8-5G"/>
Hide Network:	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input type="radio"/> Yes <input checked="" type="radio"/> No
Channel:	<input type="text" value="Auto"/> Current : 1	<input type="text" value="Auto"/> Current : 100/80
Bandwidth:	<input type="text" value="20 Mhz"/> Current : 20MHz	<input type="text" value="80 Mhz"/> Current : 80MHz
Transmission Mode:	<input type="text" value="802.11b/g/n mixed"/>	<input type="text" value="802.11a/n/ac mixed"/>
Transmission Rate:	<input type="text" value="Auto"/>	<input type="text" value="Auto"/>
Multicast Rate:	<input type="text" value="Auto"/>	<input type="text" value="Auto"/>
OBSS Coexistence:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Security:	<input type="text" value="WPA-PSK/WPA2-PSK"/> Encryption: TKIP+AES	<input type="text" value="WPA-PSK/WPA2-PSK"/> Encryption: TKIP+AES
Pre-Shared Key:	<input type="text" value="3h9r62uh"/>	<input type="text" value="3h9r62uh"/>
Group Rekey Interval:	<input type="text" value="0"/> seconds	<input type="text" value="0"/> seconds

## WPS

CH7284E provide WPS (Wi-Fi Protected Setup) function, with it enable will support WPS clients to join the network very easily. It is a standard for easy and secure establishment of a wireless network. With WPS you can setup and protect your wireless network in just a few easy steps.

We suggest users to press Add Client button to start WPS directly. By default, that will be PBC (Push Button Configuration) and easy for users.

**WiFi » WPS**

Wi-Fi Protected Setup allows users to setup secure wireless network easily.

WPS :  Enabled  Disabled

**AP Configuration**

AP Self-PIN number :

Configure by External Registrar :  Enabled  Disabled

**Client Configuration**

Method :  Push Button Configuration (PBC)  Personal Identification Number (PIN)

## Access Control

This page allows users to specify those wireless clients that are allowed to connect to this device. This offers additional protection against unwanted connections. You can choose Allow or Deny rule at first, and then fill in the client MAC to enable access control function.

Wireless Interface:  ▼

MAC Restrict Mode:  ▼

MAC Addresses:

<input type="text" value="Disabled"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="Allow"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="Deny"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

**Connected Clients:**

Host Name	MAC Address	IP Address	RSSI (dBm)	Mode	Speed (kbps)	Age (second)
No wireless clients are connected.						

## WMM

CH7284E provides WMM page to configure Wi-Fi Multimedia QoS. Actually, we suggest users to use default settings.

Band Mode	2.4G Hz	5G Hz
WMM Support:	<input checked="" type="radio"/> On <input type="radio"/> Off	<input checked="" type="radio"/> On <input type="radio"/> Off
No-Acknowledgement:	<input type="radio"/> On <input checked="" type="radio"/> Off	<input type="radio"/> On <input checked="" type="radio"/> Off
Power Save Support:	<input checked="" type="radio"/> On <input type="radio"/> Off	<input checked="" type="radio"/> On <input type="radio"/> Off

## Neighbor APs

CH7284E supports Neighbor APs function and this page shows the details of all the nearby APs.

Refresh

Nearby Wireless Access Points

Network Name	Security Mode	Mode	PHY Mode	RSSI	Channel	BSSID
comhem_8999F8	WPA2-PSK AES-CCMP TKIP	Managed	802.11n	-42 dBm	1	5c:35:3b:89:99:fe
cbn-E51D9111	WPA2-PSK AES-CCMP TKIP	Managed	802.11n	-48 dBm	1	10:50:80:08:05:01
524_11a	WEP	Managed	802.11b/g	-69 dBm	1	00:19:cb:2e:0f:4f



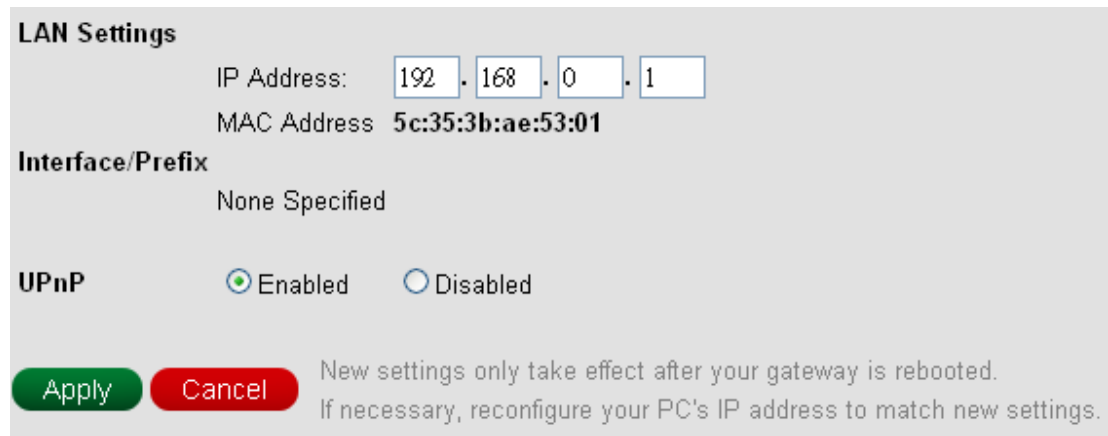
## 5 Router

The CABLE MODEM pages provide the information of cable connection status, channel signals and channel configuration during the establishment of cable connection to cable service provider's CMTS.

### Basic

#### LAN Settings

CH7284E allows users to configure private LAN IP for their home gateway.



**LAN Settings**

IP Address: 192 . 168 . 0 . 1

MAC Address 5c:35:3b:ae:53:01

**Interface/Prefix**

None Specified

**UPnP**  Enabled  Disabled

**Apply** **Cancel** New settings only take effect after your gateway is rebooted.  
If necessary, reconfigure your PC's IP address to match new settings.

#### DHCP Server

CH7284E provides DHCP server to manage IP addresses to CPEs and supports Reserved IP Address for users' private and static clients.

Starting Local Address: **192.168.0.**

Number of CPEs:

Lease Time:  seconds

**Reserved IP Addresses**

MAC Address (e.g. 11:22:33:aa:bb:cc)	IP Address	Action
<input type="text"/>	192.168.0. <input type="text"/>	<input type="button" value="Add"/>

## WAN Settings

This page displays WAN status after CH7284E gets online and provides users to change Operation Mode.

Operation Mode:  Bridging (NAT off)  Routing (NAT on)

The current settings of home gateway interface are displayed below.

IP Address: **172.16.180.205**

MAC Address: **5c:35:3b:ae:52:ff**

Duration: **D: 00 H: 03 M: 00 S: 00**

Expires: **Mon Aug 05 17:53:50 2013**

IPv4 DNS Servers: **172.16.3.30**

## Network Map

This page shows how many CPEs connect to CH7284E.

MAC Address	IP Address	Subnet Mask	Lease Time	Connected to
00:25:11:68:02:fe	192.168.100.101	255.255.255.000	permanent	 Ethernet

Users can browse here directly through the item at home index.



## Advanced

### MAC Filtering

This page allows configuration of MAC address filters in order to block Internet traffic to specific network devices on your local network.

MAC Addresses (example: 01:23:45:67:89:AB)

[Add MAC Address](#)

Addresses entered: 0/20

[Remove MAC Address](#) [Clear All](#)

### IP Filtering

This page allows you to specify the IP packet filtering rules to prevent the service accessed from the Internet hosts or limit the Internet access for local hosts.

IP Filtering		
Start Address	End Address	Enabled
192.168.0.0	192.168.0.0	<input type="checkbox"/>
192.168.0.0	192.168.0.0	<input type="checkbox"/>
192.168.0.0	192.168.0.0	<input type="checkbox"/>
192.168.0.0	192.168.0.0	<input type="checkbox"/>
192.168.0.0	192.168.0.0	<input type="checkbox"/>
192.168.0.0	192.168.0.0	<input type="checkbox"/>
192.168.0.0	192.168.0.0	<input type="checkbox"/>
192.168.0.0	192.168.0.0	<input type="checkbox"/>
192.168.0.0	192.168.0.0	<input type="checkbox"/>
192.168.0.0	192.168.0.0	<input type="checkbox"/>
192.168.0.0	192.168.0.0	<input type="checkbox"/>

## Port Filtering

This page allows you to specify the IP packet filtering rules to prevent the service accessed from the Internet hosts or limit the Internet access for local hosts.

Port Filtering			
Start Port	End Port	Protocol	Enabled
<input type="text" value="1"/>	<input type="text" value="65535"/>	Both <input type="button" value="v"/>	<input type="checkbox"/>
<input type="text" value="1"/>	<input type="text" value="65535"/>	Both <input type="button" value="v"/>	<input type="checkbox"/>
<input type="text" value="1"/>	<input type="text" value="65535"/>	Both <input type="button" value="v"/>	<input type="checkbox"/>
<input type="text" value="1"/>	<input type="text" value="65535"/>	Both <input type="button" value="v"/>	<input type="checkbox"/>
<input type="text" value="1"/>	<input type="text" value="65535"/>	Both <input type="button" value="v"/>	<input type="checkbox"/>
<input type="text" value="1"/>	<input type="text" value="65535"/>	Both <input type="button" value="v"/>	<input type="checkbox"/>
<input type="text" value="1"/>	<input type="text" value="65535"/>	Both <input type="button" value="v"/>	<input type="checkbox"/>
<input type="text" value="1"/>	<input type="text" value="65535"/>	Both <input type="button" value="v"/>	<input type="checkbox"/>
<input type="text" value="1"/>	<input type="text" value="65535"/>	Both <input type="button" value="v"/>	<input type="checkbox"/>
<input type="text" value="1"/>	<input type="text" value="65535"/>	Both <input type="button" value="v"/>	<input type="checkbox"/>

## Port Forwarding

This allows for incoming requests on specific port numbers to reach web servers, FTP servers, mail servers, etc. so they can be accessible from the public Internet.

1. Press Create IPv4 Rule button to add new rules.

Local			External					
IP Address	Start Port	End Port	Start Port	End Port	Prot	Description	Enabled	<input type="button" value="Delete All"/>

2. Fill in needed information, and then press Apply button.

Local IP:

Local Start Port:

Local End Port:

External Start Port:

External End Port:

Protocol:

Description:

Enabled:

3. One rule is created. And also, you can Modify or Delete the existed rules.

Local			External		Prot	Description	Enabled	<input type="button" value="Delete All"/>
IP Address	Start Port	End Port	Start Port	End Port				
192.168.100.101	21	23	21	23	TCP		No	<input type="button" value="Modify"/> <input type="button" value="Delete"/>

## Port Triggering

Port triggering function is a conditional port forwarding feature. When this device detects outbound traffic on a specific port (triggered ports), it will set up the port forwarding rules temporarily on the port ranges you specify to allow inbound traffic. This is supposed to increase the support for Internet gaming, video conferencing, and Internet telephony due to these applications require multiple connections.

1. Press Create Rule button to add Port Triggers.

Trigger		Target		Prot	Description	Enabled	<input type="button" value="Delete All"/>
Start Port	End Port	Start Port	End Port				

2. Fill in needed information and Apply.

Trigger Start Port:

Trigger End Port:

Target Start Port:

Target End Port:

Protocol:

Description:

Enabled:

3. One new Port Trigger is generated. And also, you can Modify or Delete the existed Port Trigger.

Trigger		Target						
Start Port	End Port	Start Port	End Port	Prot	Description	Enabled	<input type="button" value="Delete All"/>	
21	23	21	23	BOTH		No	<input type="button" value="Modify"/>	<input type="button" value="Delete"/>

## URL Filtering

This page is used to configure filtering of outbound connections and display configured filtering rule of firewall.

1. Press Create Rule button to add one filtering rule.

Description	MAC Address	URL	Days	Time Start	Time End	Allow/Block	Enabled	<input type="button" value="Delete All"/>	
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2. Configure outbound information and then press Apply button.

Description:

MAC Address:

URL:

Days:

Everyday  Sunday  Monday  Tuesday  
 Wednesday  Thursday  Friday  Saturday

Time:

All day

Start:  (hour)  (min)

End:  (hour)  (min)

Allow/Block:

Enabled:

3. One rule is created. And also, you can Modify or Delete the existed rules.

Description	MAC Address	URL	Days	Time Start	Time End	Allow/Block	Enabled	<input type="button" value="Delete All"/>	
CBN Test	00:11:22:33:44:55	http://www.google.com	ALL	12:00 AM	12:00 AM	Block	Yes	<input type="button" value="Modify"/>	<input type="button" value="Delete"/>

## DMZ

This page is for DMZ (Demilitarized Zone) configuration. You can fill in the exposed host and press Apply button.

DMZ Address:



## DDNS

This page is for DDNS (Dynamic DNS) configuration. You can fill in the registered DDNS information here, and then press Apply button to enable your DDNS function.

DDNS Service:

User Name:

Password:

Host Name:

IP Address: **172.16.180.201**

Status: *DDNS service is not enabled.*

## Firewall

This page is used to configure Firewall Protection level and display all allowed services.

IPv4 Firewall Protection

Block Fragmented IP Packets:  *Enable*

Port Scan Detection:  *Enable*

IP Flood Detection:  *Enable*

ICMP Blocking:  *Enable*

Allowed Services

AIM/ICQ	5190	5190	TCP
DHCPv6	546	547	UDP
DNS TCP	53	53	TCP
DNS UDP	53	53	UDP
FTP-S	989	990	TCP
HTTP	80	80	TCP
HTTP ALT	8080	8080	TCP
HTTP-S	443	443	TCP
IMAP	143	143	TCP
IMAP-S	993	993	TCP
IPSec NAT-T	4500	4500	UDP
NTP	123	123	UDP
POP3	110	110	TCP

## Firewall Logs

This page allows optional configuration of events to be sent to a local SysLog server.

Send selected events

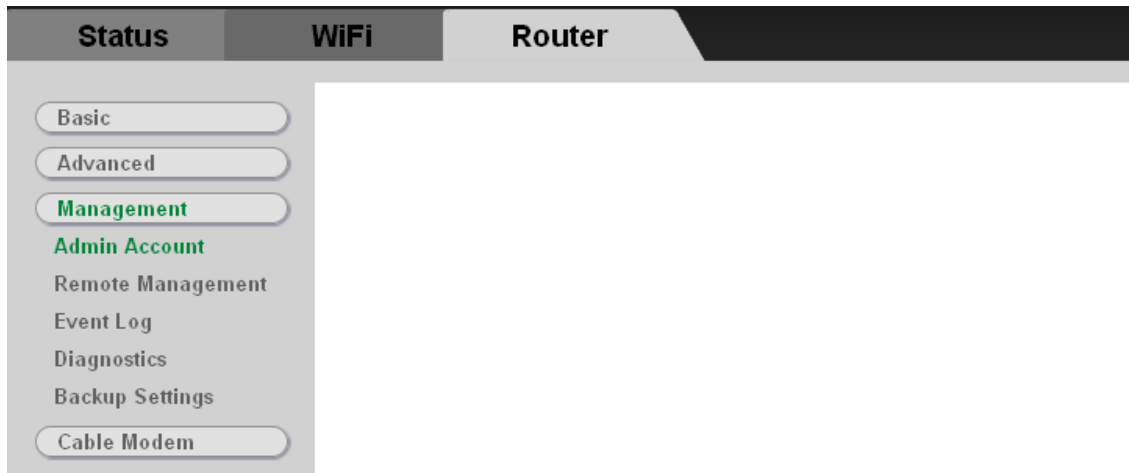
- Permitted Connections
- Blocked Connections
- Known Internet Attacks
- Product Configuration Events

to SysLog server at **192.168.0.**

Description	Count	Last Occurrence	Target	Source
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## Management

The CH7284E support management for web browser login password including change password, CM even log, diagnostic tests and backup device current settings.



## Admin Account

CH7284E allows changing admin password for web browser login. Configure Password and retype the Password again and then click Apply and when you login in next time, you must use this new password. For secure, we strongly suggest to change default password as soon as possible.

**Router » Management » Admin Account**

This page allows you to change the password of the admin account (used for logging in to the modem).

Old Password:

New Password:

Re-Enter New Password:

## Remote Management

Enable to allow remote management to home gateway interface via web browser (web server port is 8080).

Remote Management:  Enabled  Disabled

Apply

Cancel

## Event Log

CH7284E allows users to review critical system events in chronological order in the SNMP event log. Also, users can press Clear Log button to clean all records.

### Router » Management » Event Log

This page displays the contents of the SNMP event log.

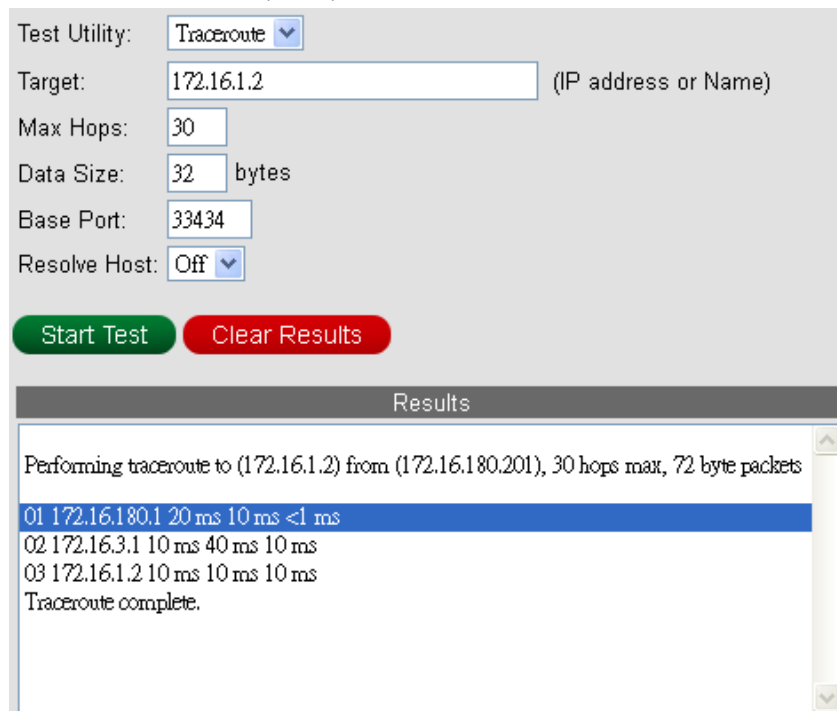
Clear Log

Time	Priority	Description
Mon Aug 05 18:47:00 2013	Error (4)	Missing BP Configuration Setting TLV Type: 17.9;CM-MAC=5c:35:3b:ae:51:e1;CMTS-MAC=68:ef:bd:86:42:3c;CM-QOS=1.1;CM-VER=3.0;
Mon Aug 05 18:47:00 2013	Error (4)	Missing BP Configuration Setting TLV Type: 17.8;CM-MAC=5c:35:3b:ae:51:e1;CMTS-MAC=68:ef:bd:86:42:3c;CM-QOS=1.1;CM-VER=3.0;
Mon Aug 05 18:47:00 2013	Error (4)	Missing BP Configuration Setting TLV Type: 17.7;CM-MAC=5c:35:3b:ae:51:e1;CMTS-MAC=68:ef:bd:86:42:3c;CM-QOS=1.1;CM-VER=3.0;
Mon Aug 05 18:47:00 2013	Error (4)	Missing BP Configuration Setting TLV Type: 17.6;CM-MAC=5c:35:3b:ae:51:e1;CMTS-MAC=68:ef:bd:86:42:3c;CM-QOS=1.1;CM-VER=3.0;
Mon Aug 05 18:47:00 2013	Error (4)	Missing BP Configuration Setting TLV Type: 17.5;CM-MAC=5c:35:3b:ae:51:e1;CMTS-MAC=68:ef:bd:86:42:3c;CM-QOS=1.1;CM-VER=3.0;

## Diagnostics

CH7284E allows users to ping diagnostics (LAN) and traceroute (WAN) to help with IP connectivity problems. And the FTP speed test tool can help to measure the bandwidth of your downstream Internet connection. You can fill in the IP to the Target and Start Test.

### ◆ Traceroute Test (WAN)



The screenshot shows a configuration window for a Traceroute Test (WAN). The fields are as follows:

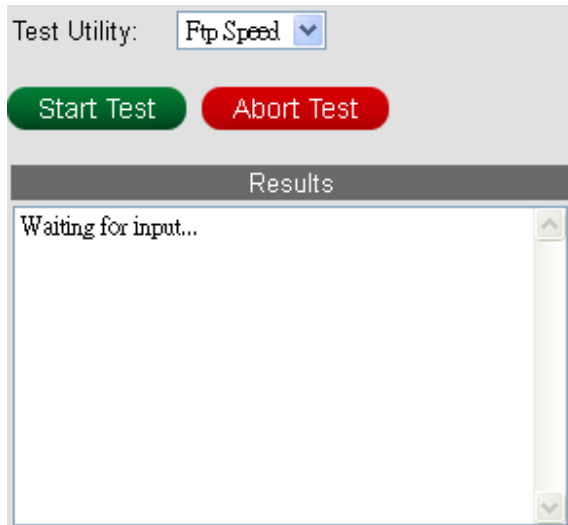
- Test Utility: Traceroute (dropdown)
- Target: 172.16.1.2 (IP address or Name)
- Max Hops: 30
- Data Size: 32 bytes
- Base Port: 33434
- Resolve Host: Off (dropdown)

Below the configuration fields are two buttons: "Start Test" (green) and "Clear Results" (red).

The Results section shows the following output:

```
Performing traceroute to (172.16.1.2) from (172.16.180.201), 30 hops max, 72 byte packets
01 172.16.180.1 20 ms 10 ms <1 ms
02 172.16.3.1 10 ms 40 ms 10 ms
03 172.16.1.2 10 ms 10 ms 10 ms
Traceroute complete.
```

### ◆ FTP Speed Test



◆ Ping Diagnostics Test (LAN)

Test Utility:

Target:

Ping Size:  bytes

No. of Pings:

Ping Interval:  ms

**Results**

Pinging 192.168.0.1 with 64 bytes of data: [Complete]

Reply from 192.168.0.1: bytes = 64, time = 0 ms

Reply from 192.168.0.1: bytes = 64, time = 0 ms

Reply from 192.168.0.1: bytes = 64, time = 0 ms

3/3 replies received.

min time=0 ms, max time=1 ms, avg time=0 ms

## Backup Settings

CH7284E allows users to save your current settings locally on your PC, or restore settings previously saved.

1. Press Backup button to save the current settings of CH7284E.

**Backup Configuration**

Use to save your gateway's current settings into the computer.

2. Browse button to select the valid configuration file and Restore button to restore the settings to CH7284E.

**Restore Configuration**

Use to reset your gateway with settings previously saved on the computer.

## Cable Modem

### Device Information

CH7284E allows a page to show current status of this home gateway.

Standard Specification Compliant	DOCSIS 3.0
Hardware Version	V1.0
Software Version	CH7284E-5.59.0.8d-SH
Cable Modem MAC Address	5c:35:3b:89:99:78
Cable Modem Serial Number	604099313000006701010000
System Up Time	0 days 01h:29m:36s
Network Access	Allowed

### Connection

This page shows information on the status of the cable modem's HFC and IP network connectivity.

Startup Procedure		
Procedure	Status	Comment
Acquire Downstream Channel	410000000 Hz	Locked
Connectivity State	OK	Operational
Boot State	OK	Operational

Downstream Bonded Channels								
Channel	Lock Status	Modulation	Channel ID	Frequency	Power	SNR	Correctables	Uncorrectables
1	Locked	QAM64	124	410000000 Hz	1.7 dBmV	49.3 dB	0	0
2		Unknown		0 Hz	0.0 dBmV	0.0 dB	0	0
3		Unknown		0 Hz	0.0 dBmV	0.0 dB	0	0
4		Unknown		0 Hz	0.0 dBmV	0.0 dB	0	0
5		Unknown		0 Hz	0.0 dBmV	0.0 dB	0	0



Total Correctables	Total Uncorrectables
0	0

Upstream Bonded Channels						
Channel	Lock Status	US Channel Type	Channel ID	Symbol Rate	Frequency	Power
1	Locked	ATDMA	1	1280 Ksym/sec	35000000 Hz	53.0 dBmV
2	Not Locked	Unknown	0	0 Ksym/sec	0 Hz	0.0 dBmV
3	Not Locked	Unknown	0	0 Ksym/sec	0 Hz	0.0 dBmV
4	Not Locked	Unknown	0	0 Ksym/sec	0 Hz	0.0 dBmV

## Configuration

This page provides information about the manually configurable settings of the Cable Modem.

Item	Value
Frequency Plan	European PAL I/B/G
Frequency (Hz)	410000000
<p><b>Note:</b> Resetting the cable modem to its factory default configuration will remove all stored parameters learned by the cable modem during prior initializations. The process to get back online from a factory default condition could take from 3 to 5 minutes. Please refer to the cable modem User Guide for details on the power up sequence.</p>	
<a href="#">Restore Factory Defaults</a>	
<a href="#">Restart Cable Modem</a>	

**Current System Time:** Mon Jul 22 16:41:12 2013

## Telephony Status

This page displays the initialization status of the MTA.

Basic

Advanced

Management

**Cable Modem**

Device Information

Connection

Configuration

**Telephony Status**

### Router » Cable Modem » Telephony Status

This page displays initial status of telephony function.

Startup Procedure	
Task	Status
Telephony DHCP	Completed
Telephony Security	Disabled
Telephony TFTP	Completed
Telephony Call Server Registration	L1: Operational
Telephony Registration Complete	Pass With Warnings

Telephony Line State		
Line Number	Registration Status	Hook Status
Line 1	Registered	On-hook

# 6

## Troubleshooting

If the solutions listed here do not solve your problem, contact your service provider.

Before calling your service provider, try pressing the Reset button on the rear panel of the CH7284E. Please note, if you press the Reset button, you will lose all your custom configuration settings, including Firewall and Advanced settings. Your service provider may ask for the front panel LED status; see Front-Panel LEDs and Error Conditions.

### Solutions

Table 1 – Troubleshooting Solutions

Problem	Possible Solution
Power light is off	Check that the CH7284E is properly plugged into the electrical outlet. Check that the electrical outlet is working.
Cannot send or receive data	On the front panel, note the status of the LEDs and refer to Front-Panel LEDs and Error Conditions to identify the error. If you have cable TV, check that the TV is working and the picture is clear. If you cannot receive regular TV channels, the data service will not function. Check the coaxial cable at the CH7284E and wall outlet. Hand-tighten, if necessary. Check the IP address. Check that the Ethernet cable is properly connected to the CH7284E and the computer. If a device is connected via the Ethernet port, verify connectivity by checking the LINK LEDs on the rear panel.
Wireless client(s) cannot send or receive data	Perform the first four checks in “Cannot send or receive data.” Check the Security Mode setting on the Wireless Security Page: <ul style="list-style-type: none"><li>• If you enabled WPA and configured a passphrase on the CH7284E, be sure each affected wireless client has the identical passphrase. If this does not solve the problem, check whether the wireless client supports WPA.</li><li>• If you enabled WEP and configured a key on the CH7284E, be sure each affected wireless client has the identical WEP key. If this does not solve the problem, check whether the client's wireless adapter supports the type of WEP key configured on the CH7284E.</li><li>• To temporarily eliminate the Security Mode as a potential issue, disable security.</li></ul> After resolving your problem, be sure to re-enable wireless security. <ul style="list-style-type: none"><li>• On the Wireless Access Control Page, be sure the MAC address for each affected wireless client is correctly listed.</li></ul>
Slow wireless transmission speed	On the Wireless Primary Network Page, check whether the WPA Encryption type is TKIP. If all of your wireless clients support AES,

Problem	Possible Solution
with WPA enabled	change the WPA Encryption to AES.

## Front-Panel LEDs and Error Conditions

The CH7284E front panel LEDs provide status information for the following error conditions:

Table 2 – Front-Panel LEDs and Error Conditions

LED	Status	if, During Startup:	if, During Normal Operation:
POWER	OFF	CH7284E is not properly plugged into the power outlet	The CH7284E is unplugged
RECEIVE	FLASHING	Downstream receive channel cannot be acquired	The downstream channel is lost
SEND	FLASHING	Upstream send channel cannot be acquired	The upstream channel is lost
ONLINE	FLASHING	IP registration is unsuccessful	The IP registration is lost