TP-LINK®

User Guide

TC-7620

DOCSIS 3.0 High Speed Cable Modem

REV1.0.2
1910011869

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http://www.tp-link.com

FCC 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.

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.
2) This device must accept any interference received, including interference that may cause undesired operation.

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

Safety Information

- When product has power button, the power button is one of the way to shut off the product; when there is no power button, the only way to completely shut off power is to disconnect the product or the power adapter from the power source.
- Don't disassemble the product, or make repairs yourself. You run the risk of electric shock and voiding the limited warranty. If you need service, please contact us.
- Avoid water and wet locations.
- Adapter shall be installed near the equipment and shall be easily accessible.
- The plug considered as disconnect device of adapter.

Explanation of the symbols on the product label

Symbol	Explanation
⎓	DC voltage
	RECYCLING This product bears the selective sorting symbol for Waste electrical and electronic equipment (WEEE). This means that this product must be handled pursuant to European directive 2012/19/EU in order to be recycled or dismantled to minimize its impact on the environment. User has the choice to give his product to a competent recycling organization or to the retailer when he buys a new electrical or electronic equipment.

CONTENTS

Package Contents

The following items should be found in your package:

- One cable modem
- One power adapter for the cable modem
- One RJ45 cable
- One Quick Installation Guide
- One Information Card

☞ Note:

Make sure that the package contains the above items. If any of the listed items are damaged or missing, please contact with your distributor.

Chapter 1. Introduction

Thank you for choosing the TC-7620 DOCSIS 3.0 High Speed Cable Modem.

1.1 Product Overview

TP-LINK's TC-7620 DOCSIS 3.0 High Speed Cable Modem is designed for delivers ultra-high speed data through coax used in HFC networks. It's an incredibly robust device allowing users to access Internet with over 600 Mbps downstream data rates, 120 Mbps upstream data rates and share it with a Gigabit Ethernet port.

This modem complies with DOCSIS 3.0, supports channel bonding of up to 16 downstream channels and 4 upstream, combined with Enhanced security of AES encryption, IPv4 and IPv6 dual stack, make it future-Proof.

1.2 Main Features

- Complies with DOCSIS 3.0 and backwards compatible to DOCSIS 1.0, 1.1 and 2.0 provides users comprehensive network compatibility
- Channel bonding of up to 16 downstream channels and 4 upstream channels provide data rates over 600 Mbps for downstream, and 120 Mbps for upstream
- IPv4 and IPv6 dual stack make it future-Proof
- Gigabit port ensure ultimate fast transfer speeds
- Remotely configurable and monitorable using TFTP
- Well-defined LEDs clearly display device and network status
- Quick and hassle free installation

1.3 Conventions

The modem or device mentioned in this User Guide stands for TC-7620 without any explanations. Parameters provided in the pictures are just references for setting up the product, which may differ from the actual situation.

Chapter 2. Hardware Installation

2.1 Front Panel

The modem's LEDs are located on the side panel (View from top to bottom). They indicate the device's working status. For details, please refer to LEDs Explanation.

LEDs Explanation:

Name	Status	Indication
(Power)	Off	The modem is powered off.
	On	The modem is powered on.
(Downstream)	Off	The initialization is not started, or has failed.
	White	The modem is synchronized with one channel.
	Green	The modem is synchronized with more than one channel.
	Flashing	The modem is scanning for downstream channels.
(Upstream)	Off	The initialization is not started, or has failed.
	White	The modem is synchronized with one channel.
	Green	The modem is synchronized with more than one channel.
	Flashing	The modem is scanning for upstream channels.

Name	Status	Indication
(Internet)	Off	Internet service is not available.
	On	Internet service is available.
	Flashing	The modem is initializing.
(LAN)	On	The LAN port is connected.
	Off	The LAN port is not connected.
	Flashing	The LAN port is sending or receiving data.

2.2 Back Panel

- **Reset**: With the modem powered on, use a pin to press and hold the Reset button until all LEDs turn on momentarily. And the modem will be reset to its factory default settings.
- **LAN:** Through this port, you can connect the modem to your PC or the other Ethernet network device.
- **Cable:** Through this port, you can connect the modem to coaxial cable.
- **Power**: The power plug where you will connect the power adapter.

2.3 Installation Environment

- The product should not be located where it will be exposed to moisture or excessive heat.
- Place the modem in a location where it can be connected to the various devices as well as to a power source.

- Make sure the cables and power cord are placed safely out of the way so they do not create a tripping hazard.
- The modem can be placed on a shelf or desktop.
- Keep away from the strong electromagnetic radiation and the device of electromagnetic sensitive.

Chapter 3. Quick Start

3.1 System Requirements

- Broadband Internet Access Service (Cable).
- PCs with a working Ethernet Adapter and an Ethernet cable with RJ45 connectors.
- TCP/IP protocol on each PC.
- Web browser, such as Microsoft Internet Explorer, Mozilla Firefox or Apple Safari.

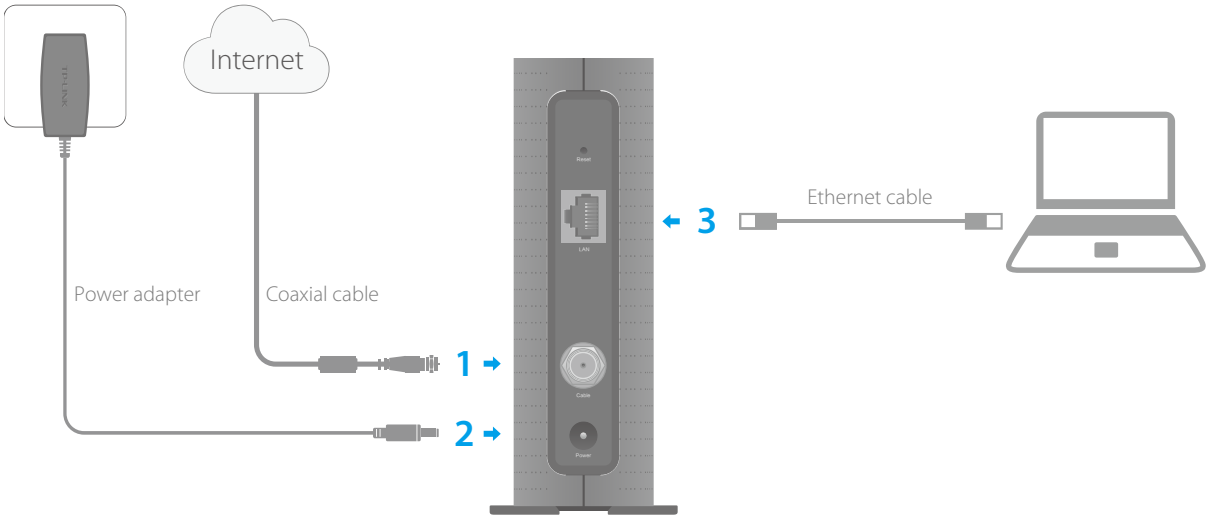
3.2 Connecting the Hardware

Before installing the device, please make sure your broadband cable service provided by your ISP is available. If there is any problem, please contact your ISP. Before cable connection, cut off the power supply and keep your hands dry. You can follow the steps below to install it.

1. Connect the coaxial cable to the modem.
2. Connect the power adapter to the modem.
3. Connect your computer to the modem using an Ethernet cable.
4. Wait until the Internet LED turns solid on. The modem has synchronized with your ISP's server.

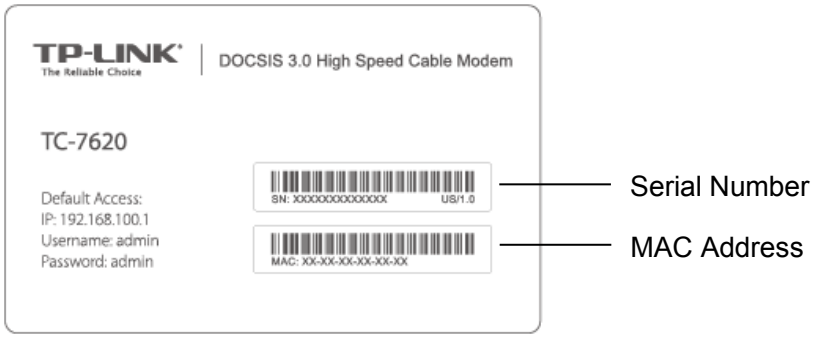
Note:

1. If the Internet LED is blinking or off after about 1 minute, call your ISP's customer service.
2. The product should be connected to cable distribution system that grounded (earthed) in accordance with ANSI/NFPA 70, the National Electrical Code (NEC), in particular Section 820.93 - Grounding of Outer Conductive Shield of a Coaxial Cable.



3.3 Activating the Cable Modem

1. Get your Internet service account information and the modem's Information Card ready.



2. Make sure your computer is set to dynamically obtain an IP address.

3. Launch a web browser, and visit any website. You will be automatically redirected to your ISP's self-activation page.

   If the self-activation page does not show up, call your ISP's customer service.

   For Comcast and Time Warner Cable (TWC):

Comcast Xfinity	1-800-934-6489	www.comcast.com
Time Warner Cable	1-855-704-4503	www.timewarnercable.com

   The contact information listed might change. You can also find the contact number in your monthly Internet service billing statement.

4. Follow the on-screen instructions to activate the modem, and wait for about 10 minutes till the LEDs become solid on.

5. Now you can use your computer to surf the Internet.

   If you want to share the Internet access, connect a router to the modem instead. You need to reboot the modem to get the router connected to the Internet.

Note:

1. If the Internet is not accessible, contact your ISP and make sure that the modem is activated.
2. For advanced configuration, log into the modem's web interface at **http://192.168.100.1**, and enter **admin** (all lowercase) for both username and password when prompted.

Chapter 4. Software Configuration

This User Guide recommends using the Quick Installation Guide for first-time installation. If you want to know more about this device, maybe you will get help from this chapter to configure the advanced settings through the Web-based Utility.

4.1 TCP/IP Configuration

The default IP address of the modem is 192.168.100.1. And the default subnet mask is 255.255.255.0. We use all the default values for description.

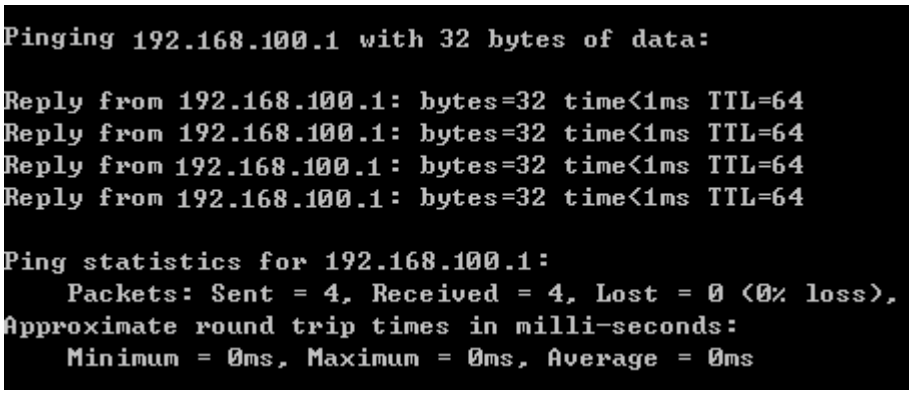
Connect the local PC to the LAN port of the modem. And then you can configure your PC in the following way.

1) Set up the TCP/IP Protocol in "**Obtain an IP address automatically**" mode on your PC. If you need instructions as to how to do this, please refer to Appendix C: Configure the PC.

2) Then the built-in DHCP server will assign IP address for the PC.

Now, you can run the Ping command in the command prompt to verify the network connection. Please click the **Start** menu on your desktop, select **run** tab, type **cmd** or **command** in the field and press **Enter**. Type ***ping 192.168.100.1*** on the next screen, and then press **Enter**.

If the result displayed is similar to the screen below, the connection between your PC and the modem has been established.



If the result displayed is similar to the screen shown below, it means that your PC has not connected to the modem.

```
Pinging 192.168.100.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.100.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

You can check it following the steps below:

1) **Is the connection between your PC and the modem correct?**

   The LAN LED on the modem and the LED on your PC's adapter should be lit.

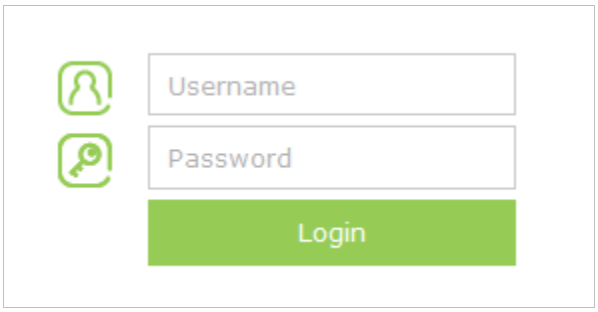
2) **Is the TCP/IP configuration for your PC correct?**

   Make sure the computer connected to the modem is set to dynamically obtain an IP address.

4.2 Login

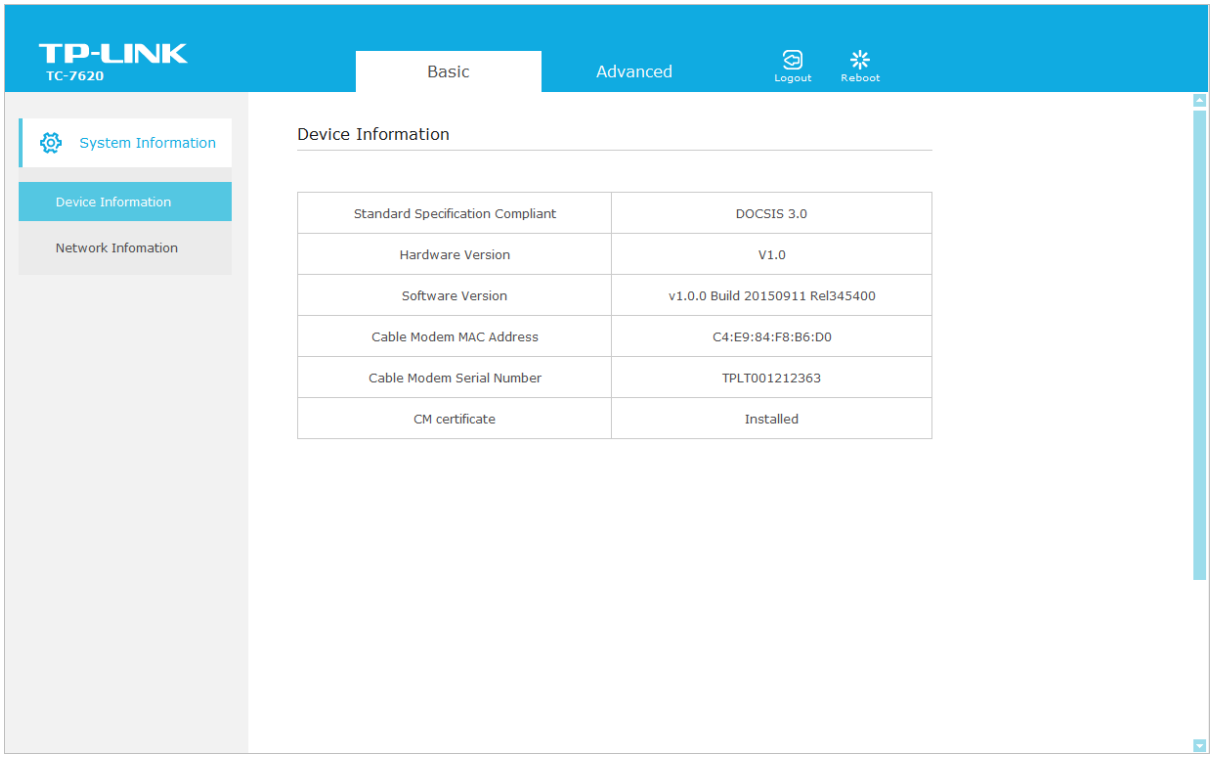
To access the configuration utility, open a web-browser and type the default address **192.168.100.1** in the address field of the browser.

After a moment, a login window will appear. Enter **admin** for the Username and Password, both in lower case letters. Then click the **Login** button or press the Enter key.



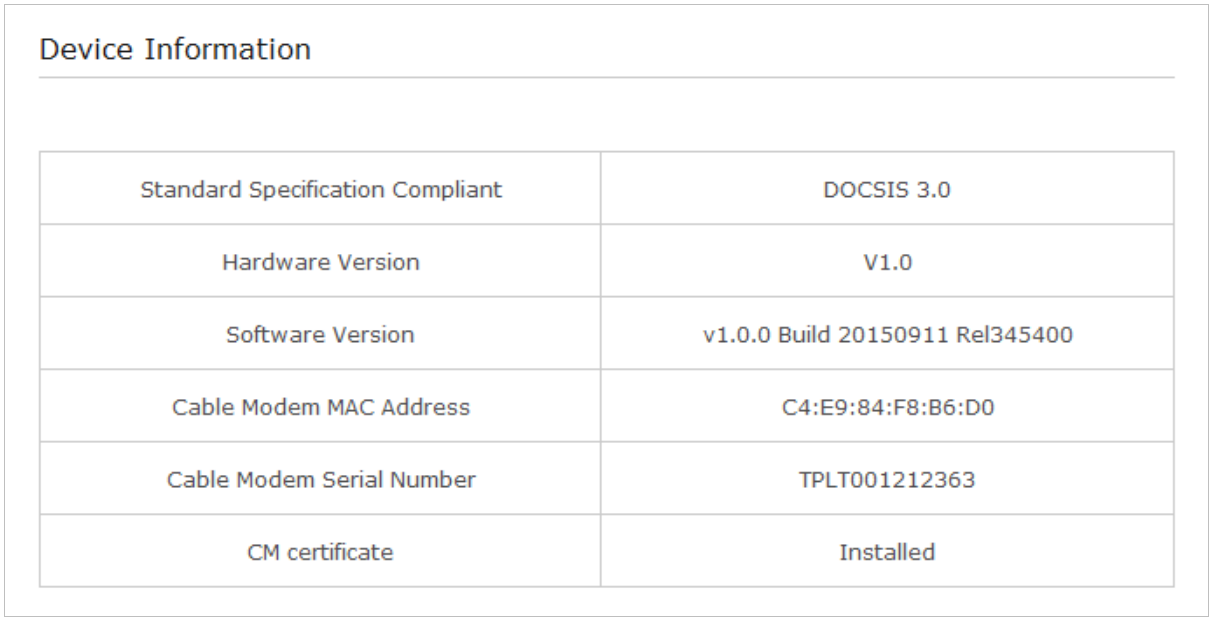
4.3 Basic

Under the **Basic** menu, you can see the system information, including the device information and network information.



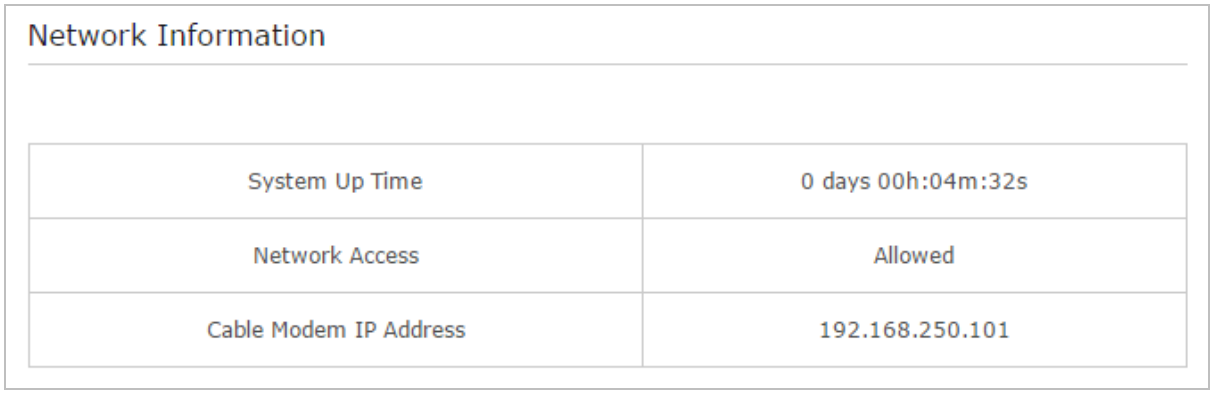
4.3.1 Device Information

Choose menu "**Basic > Device Information**", you can view the device information.



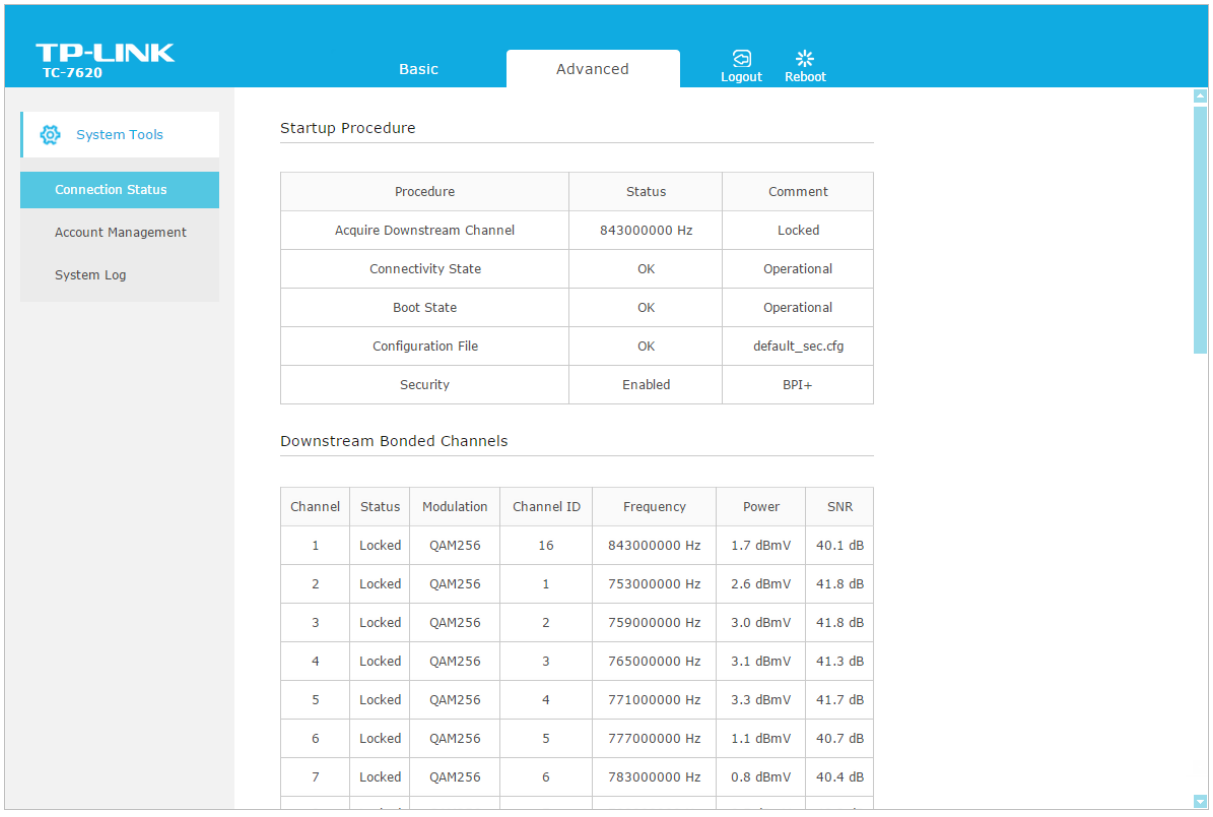
4.3.2 Network Information

Choose menu "**Basic > Network Information**", you can view the network information.



4.4 Advanced

Under the **Advanced** menu, you can see the system tools, including the connection status, account management, and system log.



4.4.1 Connection Status

Choose menu "**Advanced > Connection Status**", you can view the information of startup procedure, downstream bonded channels, upstream bonded channels, and time information.

Startup Procedure

Procedure	Status	Comment
Acquire Downstream Channel	843000000 Hz	Locked
Connectivity State	OK	Operational
Boot State	OK	Operational
Configuration File	OK	default_sec.cfg
Security	Enabled	BPI+

Downstream Bonded Channels

Channel	Status	Modulation	Channel ID	Frequency	Power	SNR
1	Locked	QAM256	16	843000000 Hz	1.7 dBmV	40.1 dB
2	Locked	QAM256	1	753000000 Hz	2.6 dBmV	41.8 dB
3	Locked	QAM256	2	759000000 Hz	3.0 dBmV	41.8 dB
4	Locked	QAM256	3	765000000 Hz	3.1 dBmV	41.3 dB
5	Locked	QAM256	4	771000000 Hz	3.3 dBmV	41.7 dB
6	Locked	QAM256	5	777000000 Hz	1.1 dBmV	40.7 dB
7	Locked	QAM256	6	783000000 Hz	0.8 dBmV	40.4 dB
8	Locked	QAM256	7	789000000 Hz	0.3 dBmV	40.2 dB
9	Locked	QAM256	8	795000000 Hz	-0.1 dBmV	39.2 dB
10	Locked	QAM256	9	801000000 Hz	-1.1 dBmV	37.7 dB
11	Locked	QAM256	10	807000000 Hz	-0.7 dBmV	39.6 dB
12	Locked	QAM256	11	813000000 Hz	-0.3 dBmV	39.6 dB
13	Locked	QAM256	12	819000000 Hz	0.3 dBmV	40.0 dB
14	Locked	QAM256	13	825000000 Hz	1.7 dBmV	37.6 dB
15	Locked	QAM256	14	831000000 Hz	1.7 dBmV	39.4 dB
16	Locked	QAM256	15	837000000 Hz	1.6 dBmV	40.0 dB

Upstream Bonded Channels

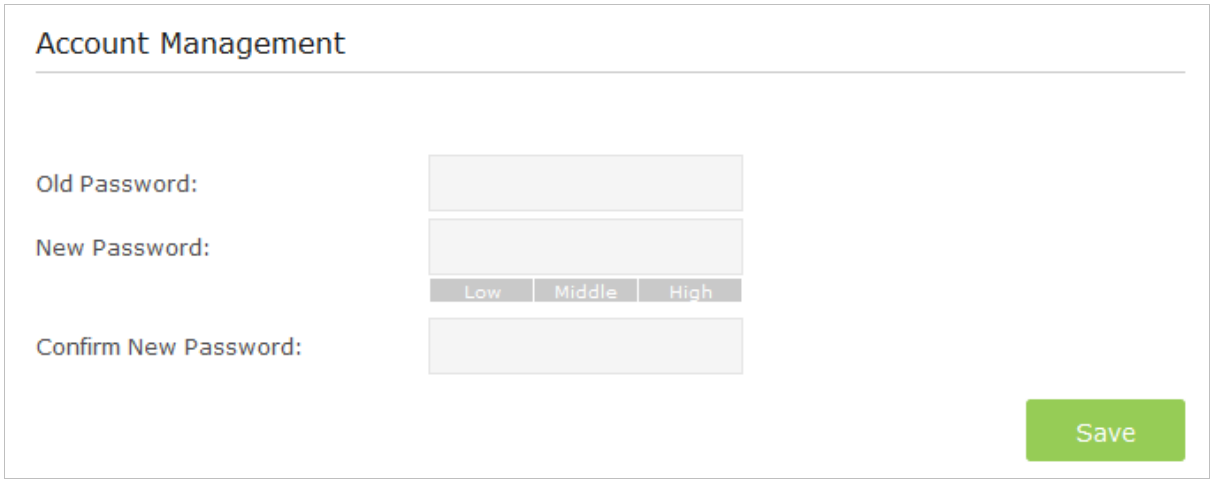
Channel	Status	Channel Type	Channel ID	Symbol Rate	Frequency	Power
1	Locked	ATDMA	3	5120 ksym/sec	23800000 Hz	40.0 dBmV
2	Locked	ATDMA	1	5120 ksym/sec	11000000 Hz	40.0 dBmV
3	Locked	ATDMA	2	5120 ksym/sec	17400000 Hz	39.8 dBmV
4	Locked	ATDMA	4	5120 ksym/sec	30200000 Hz	40.3 dBmV

Time Information

CM IP Address	192.168.250.100
Duration	D: 00 H: 00 M: 02 S: 00
Expires	Mon Nov 02 01:48:56 2015
Current System Time	Mon Nov 02 01:48:30 2015

4.4.2 Account Management

Choose menu "**Advanced > Account Management**", you can see the screen below. Here you can set a new login password for the modem's web-based management page.



4.4.3 System Log

Choose menu “**Advanced > System Log**”, you can view and clear the logs of the modem.

System Log

Time	Priority	Description
Time Not Established	Critical (3)	SYNC Timing Synchronization failure - Failed to acquire QAM/QPSK symbol timing;;CM-MAC=c4:e9:84:f8:b6:d0;CMTS-MAC=00:00:00:00...
Time Not Established	Critical (3)	SYNC Timing Synchronization failure - Failed to acquire FEC framing;CM-MAC=c4:e9:84:f8:b6:d0;CMTS-MAC=00:00:00:00:00:00;CM-QO...
Time Not Established	Critical (3)	SYNC Timing Synchronization failure - Failed to acquire QAM/QPSK symbol timing;;CM-MAC=c4:e9:84:f8:b6:d0;CMTS-MAC=00:00:00:00...
Time Not Established	Critical (3)	SYNC Timing Synchronization failure - Failed to acquire FEC framing;CM-MAC=c4:e9:84:f8:b6:d0;CMTS-MAC=00:00:00:00:00:00;CM-QO...
Time Not Established	Critical (3)	SYNC Timing Synchronization failure - Failed to acquire QAM/QPSK symbol timing;;CM-MAC=c4:e9:84:f8:b6:d0;CMTS-MAC=00:00:00:00...
Time Not Established	Critical (3)	SYNC Timing Synchronization failure - Failed to acquire FEC framing;CM-MAC=c4:e9:84:f8:b6:d0;CMTS-MAC=00:00:00:00:00:00;CM-QO...
Time Not Established	Critical (3)	SYNC Timing Synchronization failure - Failed to acquire QAM/QPSK symbol timing;;CM-MAC=c4:e9:84:f8:b6:d0;CMTS-MAC=00:00:00:00...

Clear Log

4.5 Logout and Reboot

Click the **Logout** icon  to log out of the web management page.

Click the **Reboot** icon  to reboot the modem.

Appendix A: Specifications

Product Description	DOCSIS 3.0 High Speed Cable Modem	
Physical Specifications		
Interface	1 F-Connector (female 75 Ω)	
	1 10/100/1000 Mbps Ethernet Interface (RJ45)	
	1 Power Jack	
Button	1 Reset Button	
DOCSIS Features		
Standards	DOCSIS 3.0	
Capture Bandwidth	Full Band Capture windows	
MoCA Reject Filter	Internal MoCA Reject Filter	
Downstream		
Channel Bonding	Up to 16	
Modulation	64 or 256 QAM	
Maximum Data Rate	DOCSIS	Up to 686 Mbps
Bandwidth	DOCSIS	96 MHz(16 channels) / 6MHz (single channel)
Symbol Rate	DOCSIS	64 QAM 5.057 Msym/s; 256 QAM 5.361 Msym/s
Operating Level Range	–15 to 15 dBmV	
Bonded Channel RF	Input Impedance	75 Ω
Frequency Range	DOCSIS	88 to 1002 MHz (edge to edge)
Frequency Plan	DOCSIS	Annex B
Security	DOCSIS 3.0 Security (BPI+, EAE, SSD)	
Upstream		
Channel Bonding	Up to 4	
Modulation	QPSK and 8, 16, 32, 64, 128 QAM, optional 256 QAM	
Maximum Data Rate	DOCSIS	Up to 131.072 Mbps
Channel Width	200 kHz, 400 kHz, 800 kHz, 1.6 MHz,3.2 MHz, 6.4 MHz	
Symbol Rate	160, 320, 640, 1280, 2560, 5120 ksym/s	
Level range	TDMA	Pmin to +57 dBmV (32 QAM, 64 QAM) Pmin to +58 dBmV (8 QAM, 16 QAM) Pmin to +61 dBmV (QPSK)
	Note: A - TDMA max output power reduced 3dB when transmitting two channels and 6dB when transmitting 3 or 4 channels	
	S-CDMA	Pmin to +56 dBmV (all modulations), where: Pmin=+17 dBmV, 1280 kHz modulation rate Pmin=+20 dBmV, 2560 kHz modulation rate Pmin=+23 dBmV, 5120 kHz modulation rate
	Note: S-CDMA max output reduced 3dB when transmitting 2 or more channels	

Output Impedance	75 Ω	
Frequency Range	DOCSIS	5-42 MHz (edge to edge),
Network Function		
IP Stack	Supports IPv4 and IPv6 dual stack	
DHCP	DHCP Client	
VPN Passthrough	PPTP, L2TP, IPSec	
Multicast	Support IGMP v1/v2/v3	
Flow Control	802.3x flow control at the UNI	
Management and Maintance		
Managed by Web and TFTP		
Reset to Factory default by Reset button		
Real-time statistics、System Log		
Others		
Safety, Emission and others	FCC, UL	
	Cablelabs	
	RoHS compliant	
Protocol Support	**Network:** IP, ICMP, ARP **Transport:** TCP, UDP **Application:** TFTP,DHCP, ToD	
Power	**Input**	12VDC/1A
Environment	**Operating Temperature**	32 °F to 104 °F (0 °C to 40 °C)
	Storage Temperature	–22 °F to 158 °F (–30 °C to 70 °C)
	Operating Humidity	5 to 95% R.H. (non-condensing
	Storage Humidity	5%~95% non-condensing

Appendix B: Troubleshooting

T1. What can I do if I cannot access the Internet?

1) Make sure that all cables are connected properly and securely to the modem.
2) Contact your ISP to verify the modem is activated. If the modem is not activated, your ISP will activate it for you.
3) Make sure that your computer is set to obtain an IP address automatically.
4) Power cycle the modem by unplugging the power adapter from the electrical outlet and plugging it back in.
5) Reset the modem. Please refer to T4 for instruction.
6) Contact our Technical Support if the problem persists.

T2. What can I do if the login page of the modem's web interface does not appear?

1) Check if the computer is set to a static for fixed IP address. If so, change the setting to obtain an IP address automatically.
2) Make sure http://192.168.100.1 is correctly entered in the web browser.
3) Use another web browser.
4) Unplug and reconnect both ends of the Ethernet cable.

T3. How can I reset the password to the modem's web interface?

If you have changed the password and have forgotten it, refer to T4 to reset the modem. This will reset the password back to **admin**.

T4. How do I restore the modem to its factory default settings?

With the modem powered on, press and hold the **Reset** button on the rear panel until all LEDs turn on momentarily, then release the button.

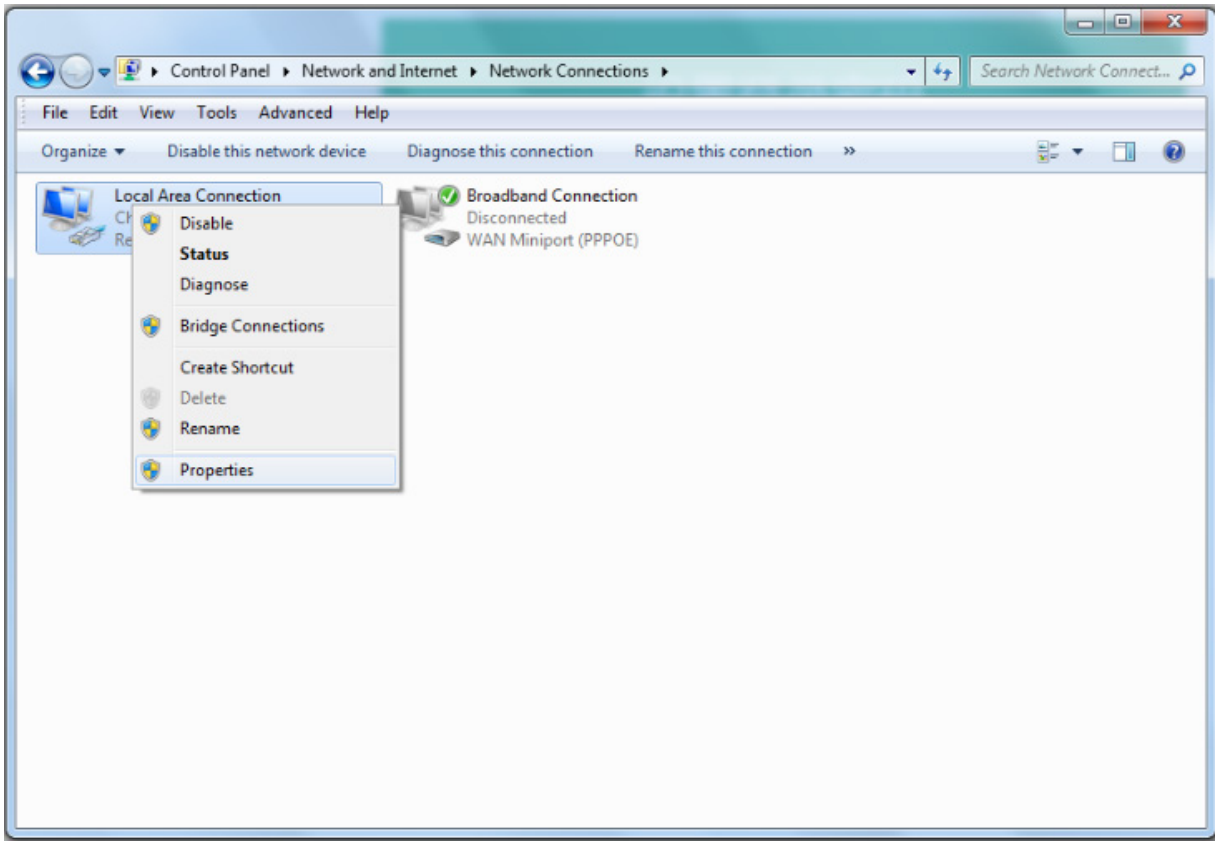
☞ Note:

For more details about Troubleshooting and Technical Support contact information, please visit the support page at our official website: **http://www.tp-link.com**

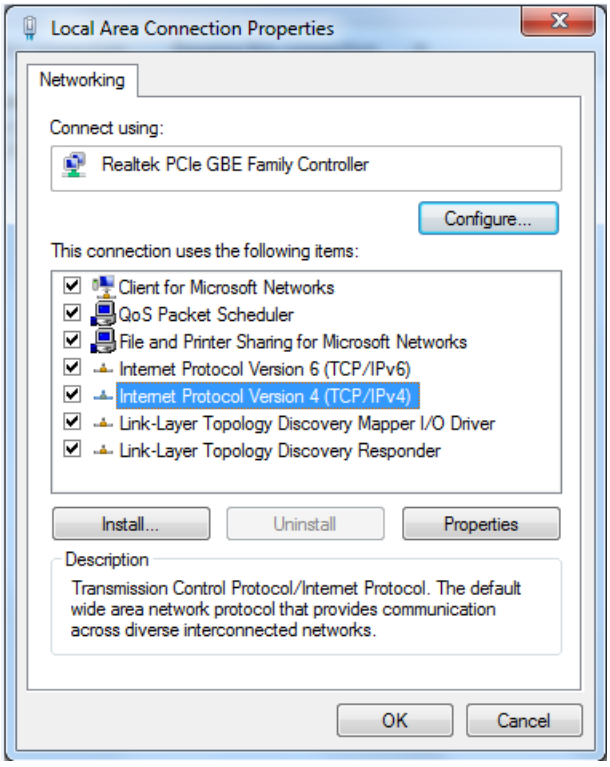
Appendix C: Configure the PC

In this section, we'll introduce how to install and configure the TCP/IP correctly in Windows 7. First make sure your Ethernet Adapter is working, refer to the adapter's manual if needed.

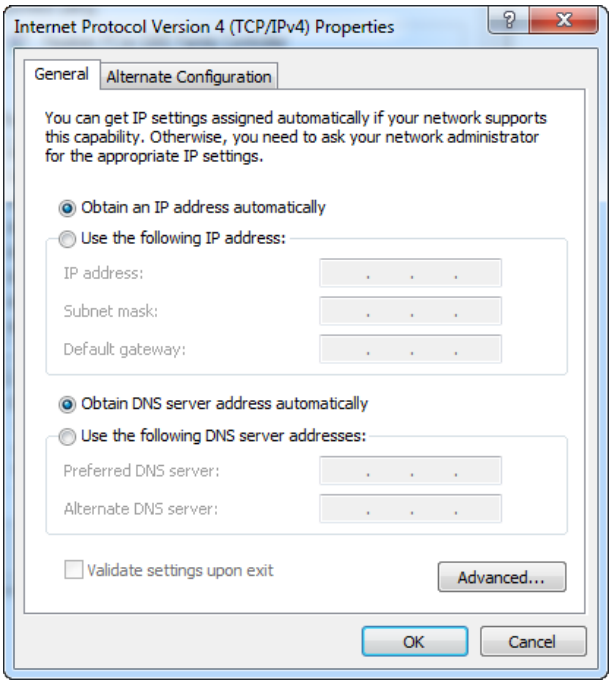
1. On the Windows taskbar, right-click the Network icon  , and select **Open Network and Sharing Center** > **Change adapter settings**.
2. Right-click your wired network connection (**Local Area Connection** or **Ethernet** by default), and select **Properties**.



3. Double-click **Internet Protocol Version 4 (TCP/IPv4)**.



4. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**.



5. Click **OK** to save the settings.