# TP-LINK®

# User Guide

**TC-7610**

**DOCSIS 3.0 Cable Modem**

# COPYRIGHT & TRADEMARKS

# 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<br><br>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.<br><br>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 Quick Installation Guide

➢ One RJ45 cable

☞ **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-7610 DOCSIS 3.0 Cable Modem** .

## 1.1 Product Overview

TP-LINK's DOCSIS 3.0 Cable Modem TC-7610 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 up to 343 Mbps downstream data rates, 143 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 8 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 8 downstream channels and 4 upstream channels provide data rates up to 343 Mbps for downstream, and 143 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-7610 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 The 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 |
|---|---|---|
| ⏻ <br> (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. |
| (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 The Back Panel



➢ **RESET**: With the modem powered on, use a pin to press and hold the Reset button for at least 8-10 seconds. And the modem will reboot 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.

➢ Make sure the cables and power cord are placed safely out of the way so they do not create a

# Chapter 3. Connecting the Modem

## 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.

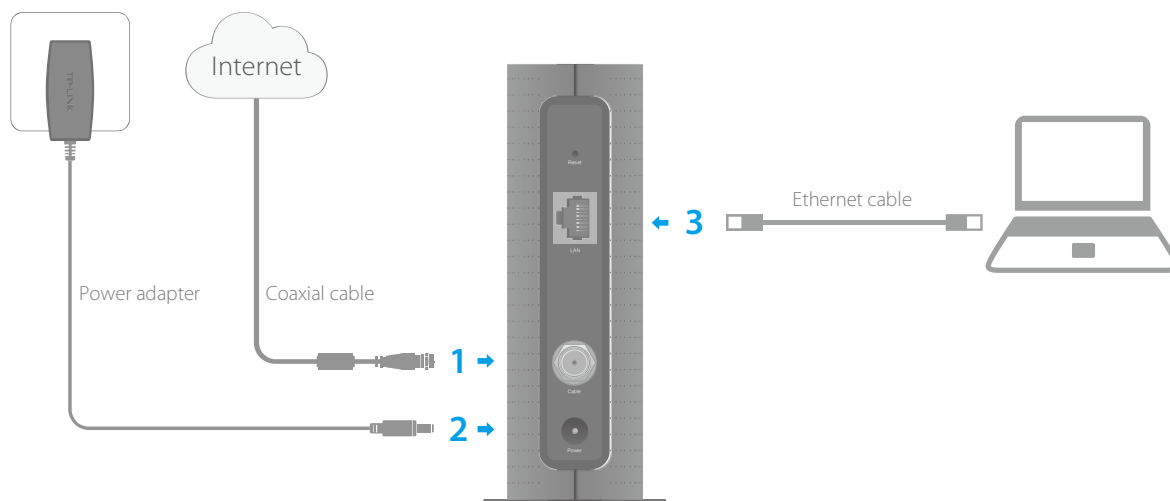➢ Web browser, such as Microsoft Internet Explorer, Mozilla Firefox or Apple Safari.

## 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.
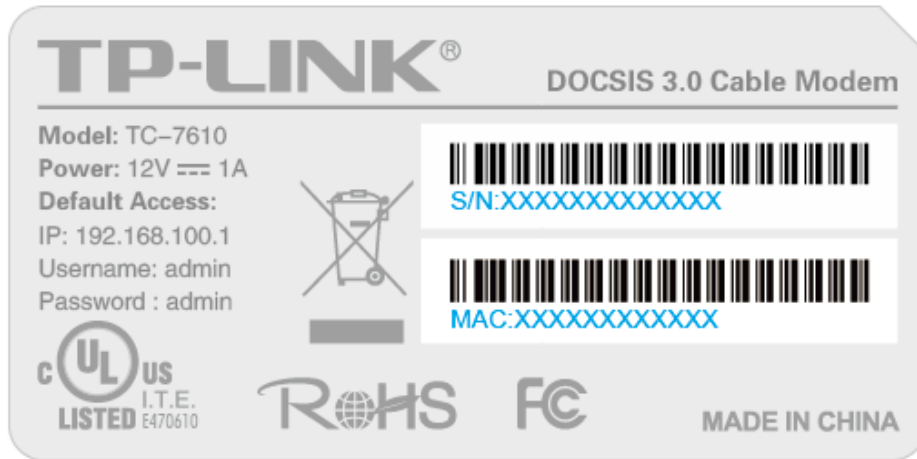
☞ **Note:**

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 ready, and find the serial number and MAC address on the product label at the bottom of the modem.



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.

```
Pinging 192.168.100.1 with 32 bytes of data:

Reply from 192.168.100.1: bytes=32 time<1ms TTL=64
Reply from 192.168.100.1: bytes=32 time<1ms TTL=64
Reply from 192.168.100.1: bytes=32 time<1ms TTL=64
Reply from 192.168.100.1: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.100.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

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

You can check it following the steps below:

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

The LEDs of LAN port which you link to the device and the LEDs on your PC's adapter should be lit.

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

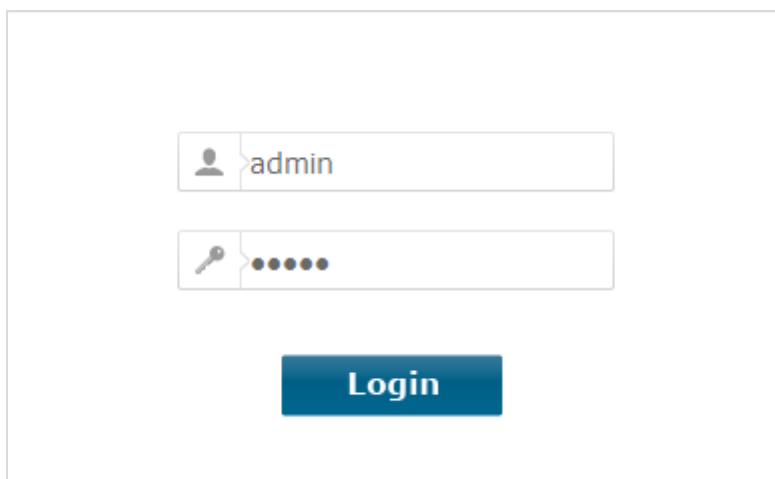Make sure the computer connected to the modem is set to dynamically obtain an IP address.

## 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.



Then you can see the current status information about the modem in this page.

## 4.3 Status

There are four submenus under the Status menu, **Connection, Software, Security** and **Event Log.** Click any of them, and you will be able to configure the corresponding function.

### 4.3.1 Connection

Choose menu "**Status → Connection**", you can see the information of startup procedure, downstream/upstream bonded channels and time information.

**Connection Information**

**Startup Procedure**

| Procedure | Status | Comment |
|---|---|---|
| Acquire Downstream Channel | 795000000 Hz | Locked |
| Connectivity State | OK | Operational |
| Boot State | OK | Operational |
| Configuration File | OK | default_sec.cfg |
| Security | Enabled | BPI+ |

**Downstream Bonded Channels**

| Channel | Lock Status | Modulation | Channel ID | Frequency | Power | SNR | Correctables | Uncorrectables |
|---|---|---|---|---|---|---|---|---|
| 1 | Locked | QAM256 | 1 | 753000000 Hz | 2.6 dBmV | 40.1 dB | 0 | 0 |
| 2 | Locked | QAM256 | 2 | 759000000 Hz | 1.1 dBmV | 39.4 dB | 0 | 0 |
| 3 | Locked | QAM256 | 3 | 765000000 Hz | 3.1 dBmV | 40.2 dB | 0 | 0 |
| 4 | Locked | QAM256 | 4 | 771000000 Hz | 1.2 dBmV | 41.1 dB | 0 | 0 |
| 5 | Locked | QAM256 | 5 | 777000000 Hz | 3.6 dBmV | 39.8 dB | 0 | 0 |
| 6 | Locked | QAM256 | 6 | 783000000 Hz | 1.7 dBmV | 41.1 dB | 0 | 0 |
| 7 | Locked | QAM256 | 7 | 789000000 Hz | 2.6 dBmV | 39.6 dB | 0 | 0 |
| 8 | Locked | QAM256 | 8 | 795000000 Hz | 1.4 dBmV | 38.1 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 | 5120 Ksym/sec | 23800000 Hz | 40.0 dBmV |
| 2 | Locked | ATDMA | 2 | 5120 Ksym/sec | 11000000 Hz | 40.1 dBmV |
| 3 | Locked | ATDMA | 3 | 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:**   113.65.67.94
**Duration:**   D: 00 H: 00 M: 02 S: 00
**Expires:**   Mon Dec 21 08:39:20 2015
**Current Systime Time:**   Mon Dec 21 08:38:18 2015

## 4.3.2  Software

Choose menu "**Status** → **Software**", you can see the device information and system information.

**Software Information**

This page displays information on the current system software.

**Device Information**

| Standard Specification Compliant | DOCSIS 3.0 |
|---|---|
| Hardware Version | 1.1 |
| Software Version | v1.0.3 Build 20151224 Rel378140 |
| Cable Modem MAC Address | 60:e3:27:b5:4c:12 |
| Cable Modem Serial Number | 2158002T00018 |
| CM certificate | Installed |

**System Information**

| System Up Time | 0 days 00h:27m:01s |
|---|---|
| Network Access | Allowed |
| Cable Modem IP Address | 113.65.67.94 |

### 4.3.3 Security

Choose menu "**Status → Security**", you can see the screen below. Here you can set a new password to log in the modem's web-based management page.

**Security**

This page allows configuration of administration access privileges.

Current Password
New Password
Re-Enter New Password

Apply

### 4.3.4 Event Log

Choose menu "**Status → Event Log**", you can view and clear the logs of the modem.

**SNMP Event Log**

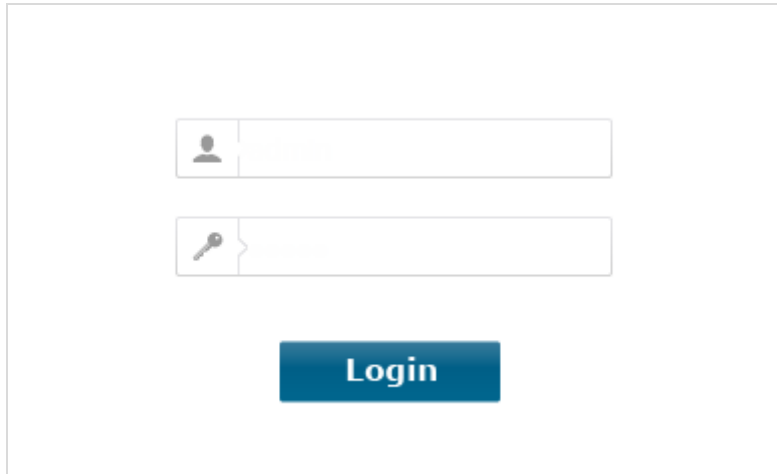This page displays the contents of the SNMP event log.

| Time | Priority | Description |
|---|---|---|

Clear Log

➢ **Clear Log –** Click to delete all the logs.

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# Chapter 5. Logout

Choose **Logout** and click **YES**, and you will back to the login screen.

# Appendix A: Specifications

| Product Description | DOCSIS 3.0 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 Binding** | Up to 8 | |
| **Modulation** | 64 or 256 QAM | |
| **Maximum Data Rate** | DOCSIS | Up to 343.072 Mbps |
| **Bandwidth** | DOCSIS | 48 MHz(8 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** | Level Tolerance | 10dBmV |
| | Input Impedance | 75 Ω |
| **Frequency Range** | DOCSIS | 108 to 1002 MHz (edge to edge) |
| **Frequency Plan** | DOCSIS | Annex B |
| **Security** | DOCSIS 3.0 Security (BPI+, EAE, SSD) | |
| **Upstream** | | |
| **Channel Binding** | Up to 4 | |
| **Modulation** | QPSK and 8, 16, 32, 64, 128 QAM, optional 256 QAM | |
| **Maximum Data Rate** | DOCSIS | Up to 143 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 | |
| | Cablabs | |
| | 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)  Check the device that is connected to the modem and make sure that the device is set to obtain an IP address automatically.

4)  Power cycle the cable modem by unplugging the power adapter from the electrical outlet and plugging it back in.

5)  Reset the cable modem. Please refer to Troubleshooting > 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 of the modem until all LEDs turn on momentarily, then release the button.

### T5. How can I reset the password to the cable modem's web interface?

If you have changed the password and have forgotten it, you must restore the cable modem to the factory defaults. This will reset the password back to admin.
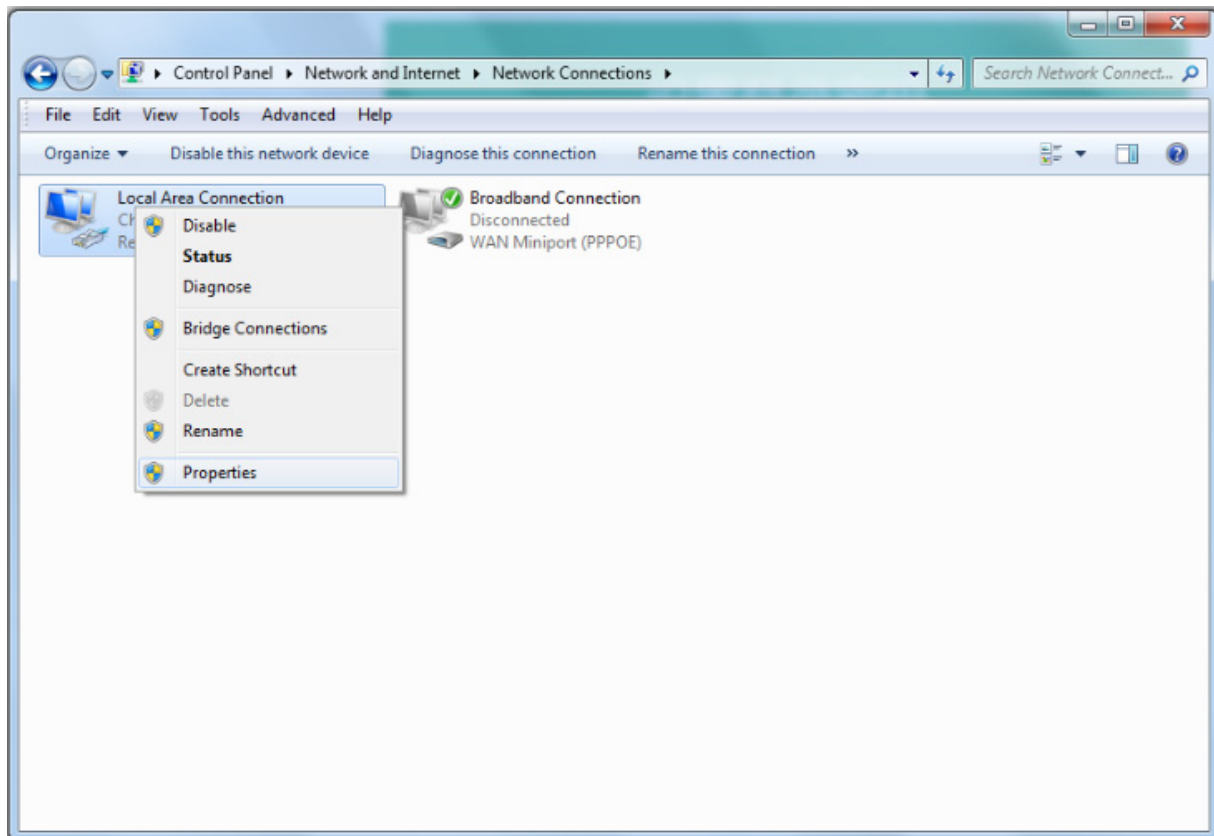
☞ **Note:**

For more details about Troubleshooting and Technical Support contact information, please log on to the support page at our official website: **http://www.tp-link.com**
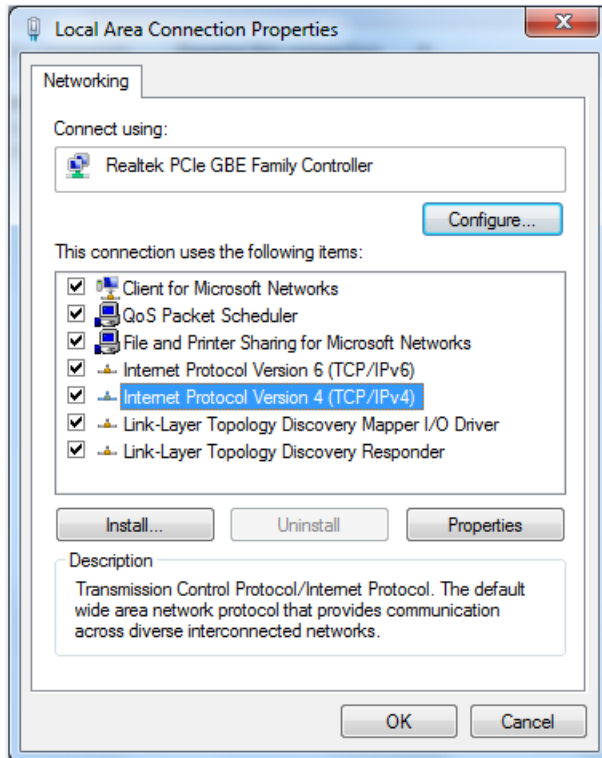
# Appendix C: Configure the PC

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.
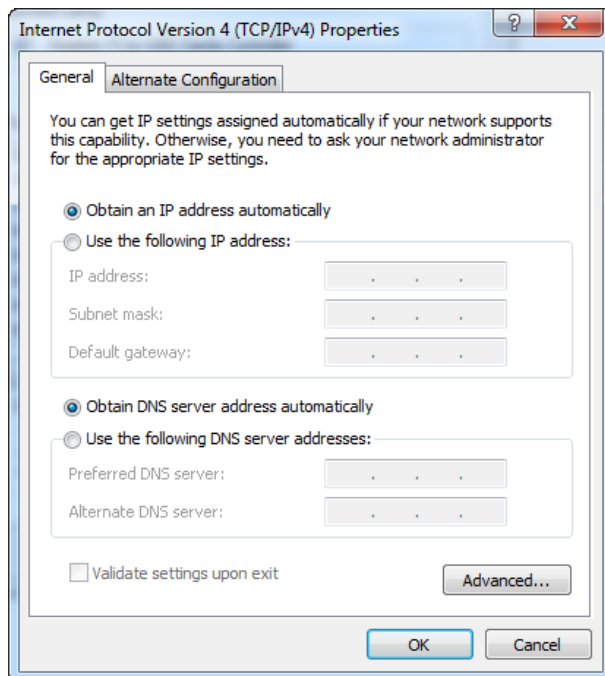
1.  On the Windows taskbar, Right-click Network icon, and select Open Network and Sharing Center > Change adapter settings.

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.