

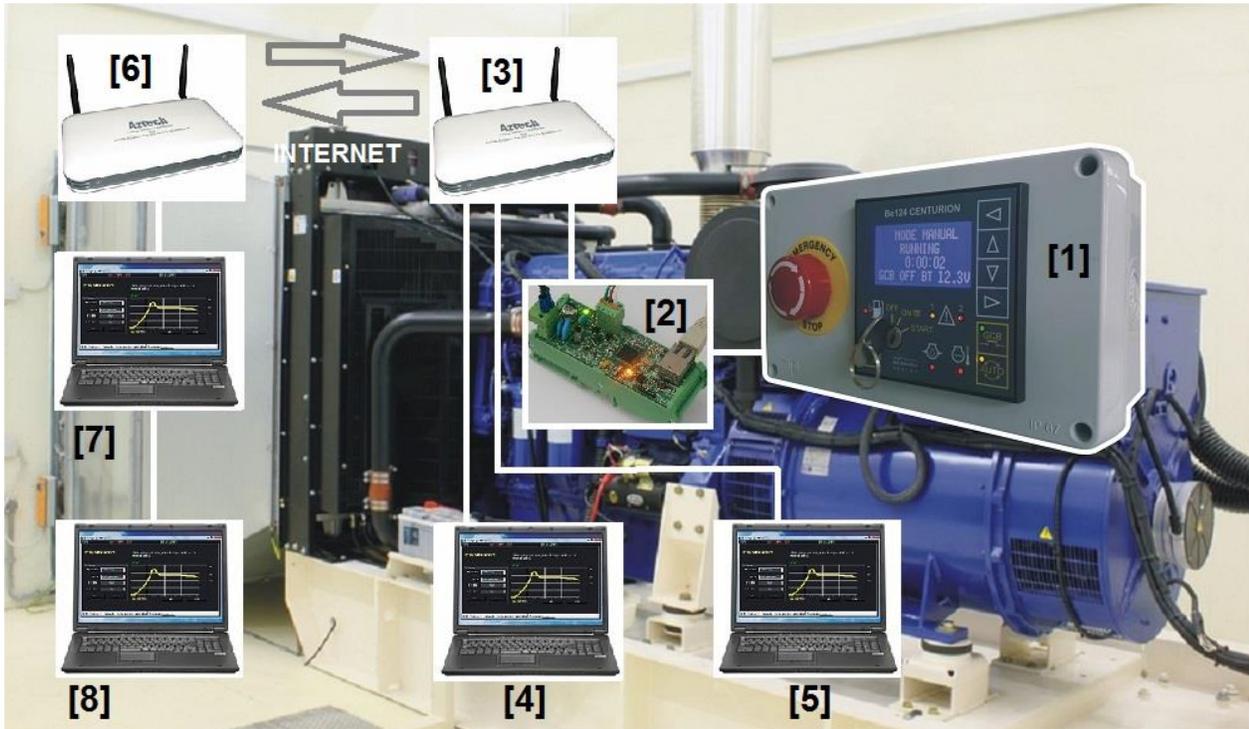
# MODBUS TCP-IP INTERNET CONNECTION MANUAL & TUTORIAL

**BERNINI  
DESIGN**

## Connecting a Bexxx generator controller to internet

The picture illustrates the configuration of the system. A Be124 Generator Controller [1] is connected to Internet via a **MODBUS TCP-IP SERVER** [2] and a router [3]. You can control the generator by using computers [4] & [5] in local area network. On the other side, a router [6] connected to internet allows other computers, or devices, [7] & [8] to run applications in real-time to control the generator as well. This manual is valid for all Bexxx generator controllers (e.g. Be28, Be42, Be142 etc.). To connect the **MODBUS TCP-IP SERVER** to the internet, you have to configure the router. Follow the step-by-step instructions.

**Figure 1** Generator TCP-IP monitoring block diagram



### STEP 1- HARDWARE SET UP

Connect the **MODBUS TCP-IP SERVER** to the **ROUTER** by using an **ETHERNET** cable and use a RS485 cable for the Bexxx generator controller. Supply (8-36VDC) the **MODBUS TCP-IP SERVER** and supply the Bexxx generator controller.

## STEP 2 - DHCP SETTINGS

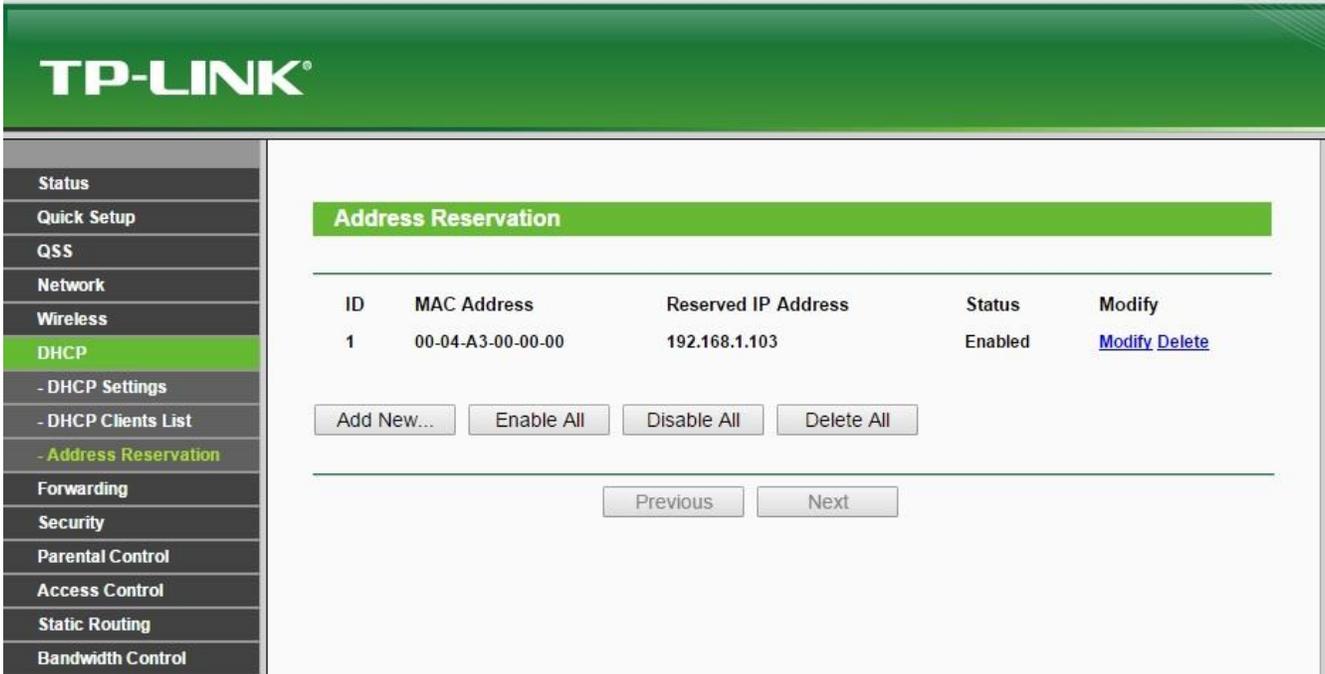
Open the **ROUTER** setup page and verify the **DHCP** client list. The **MODBUS TCP-IP SERVER** must be present in the list. Probably your router will associate a name like 'UNKNOWN' but it will indicate the assigned IP and MAC address. Copy the IP address and copy the MAC address.

**NOTE:** the default MAC address is 00-04-A3-00-00-00. In case you need to connect to the router an additional (or more) **MODBUS TCP-IP SERVER** module you are required to run the software TCP-IP communicator setup to configure a different MAC address for each device.

## STEP 3 - ADDRESS RESERVATION

Open the **ADDRESS RESERVATION** tool and add new entry. Specify the MAC address and 'Reserved IP' address that you previously copied. In this way the device will always receive the same IP address each time when it accesses the DHCP server. See the picture below.

**Figure 2** Address reservation programming



The screenshot shows the TP-LINK web interface for Address Reservation. The left sidebar contains a navigation menu with the following items: Status, Quick Setup, QSS, Network, Wireless, DHCP (highlighted), - DHCP Settings, - DHCP Clients List, - Address Reservation (highlighted), Forwarding, Security, Parental Control, Access Control, Static Routing, and Bandwidth Control. The main content area is titled 'Address Reservation' and contains a table with the following data:

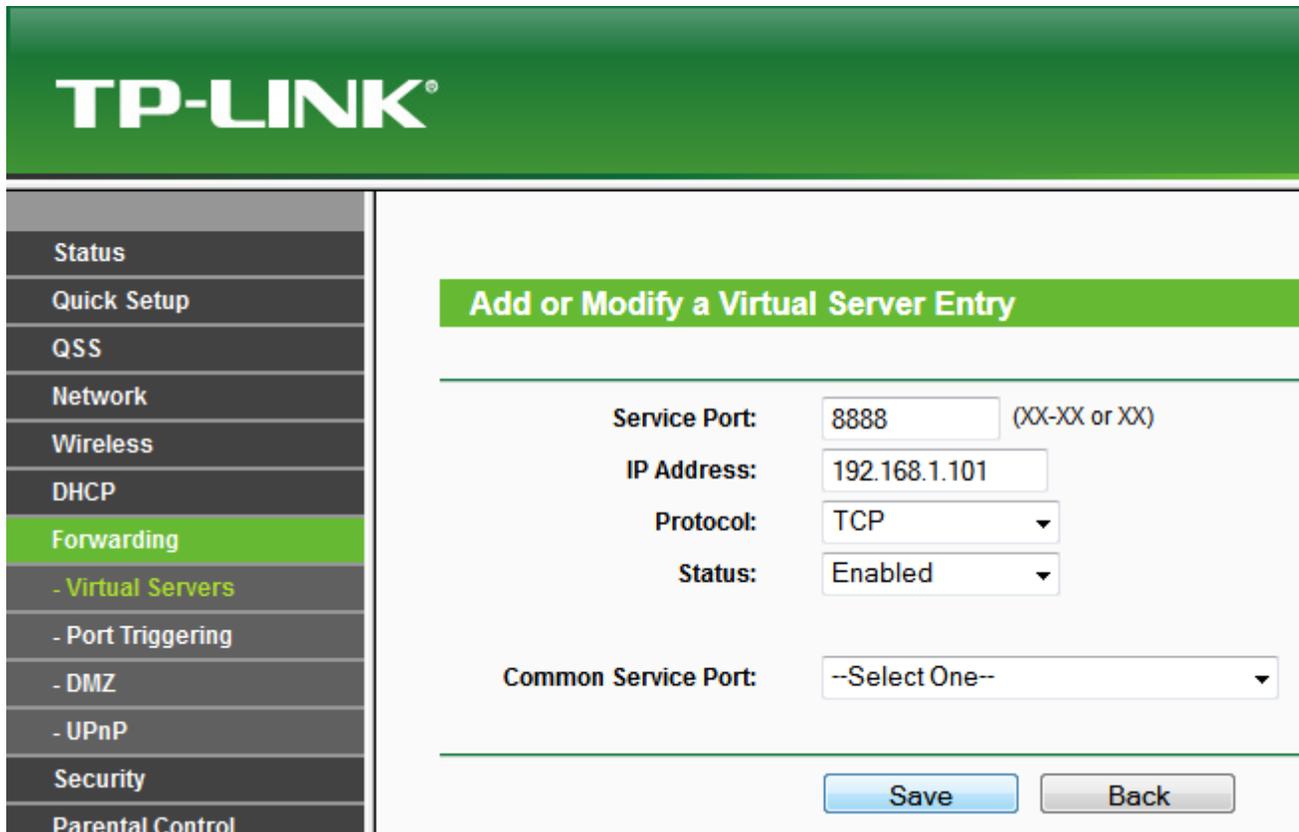
ID	MAC Address	Reserved IP Address	Status	Modify
1	00-04-A3-00-00	192.168.1.103	Enabled	<a href="#">Modify</a> <a href="#">Delete</a>

Below the table, there are four buttons: 'Add New...', 'Enable All', 'Disable All', and 'Delete All'. At the bottom of the page, there are two navigation buttons: 'Previous' and 'Next'.

## STEP 4 - SETTING UP THE FORWARDING

Open the **FORWARDING TOOL** and look for **VIRTUAL SERVER**. Add a new entry by specifying the 'Service port' (default '8888'), IP address and TCP protocol. Do not select a common service port. Push save.

**Figure 3** Adding a Virtual Server



The screenshot displays the TP-LINK web interface. On the left is a sidebar menu with the following items: Status, Quick Setup, QSS, Network, Wireless, DHCP, Forwarding (highlighted in green), - Virtual Servers, - Port Triggering, - DMZ, - UPnP, Security, and Parental Control. The main content area is titled 'Add or Modify a Virtual Server Entry' and contains the following configuration fields:

- Service Port:** 8888 (with a note '(XX-XX or XX)')
- IP Address:** 192.168.1.101
- Protocol:** TCP (dropdown menu)
- Status:** Enabled (dropdown menu)
- Common Service Port:** --Select One-- (dropdown menu)

At the bottom of the form are two buttons: 'Save' and 'Back'.

## STEP 5 - FINAL SET UP CHECK

Add a new entry by specifying the 'Service port' (default '8888'), IP address and TCP protocol. Do not select a common service port. Push save  
Disconnect the Ethernet cable from the **MODBUS TCP-IP SERVER** (or remove the supply) for a minute. Restart the router. Reconnect the cable (or apply the supply) to the **MODBUS TCP-IP SERVER**. Open the ROUTER DHCP CLIENTS LIST page. Verify that the assigned IP ADDRESS has a '**Permanent Lease time**'. If not, retry to set up the Address Reservation (see STEP3).

## STEP 6 - LAN CONNECTIVITY CHECK

You can run the generator control monitoring software on a computer connected to your ROUTER. See [1] [2] [3] [4] in figure 1. In this case, after opening the Be124 application, you are required to specify the IP address and port indicated in STEP 4. It is about a local connection. Please note that you can place the **MODBUS TCP-IP SERVER** as far as 1000 meters from the generator. You can place the ROUTER as far as 100 meters from the **MODBUS TCP-IP SERVER** .

## STEP 7 - INTERNET CONNECTIVITY CHECK

You can run the generator control monitoring software on a computer connected to **INTERNET** as indicated in figure 1([7] & [8]). This means a computer that is connected outside your local area network. In this case after opening the Be124 application (or any Bexxx application), you are required to specify the **PUBLIC IP** address of the **ROUTER [3]**. You have not to use the IP address specified in STEP 4 (that is the internal IP address of the Local Area Network). Without knowing the public IP address you will not be able to connect to the generator. We remind you that to find out the public IP address (or simply the IP address) you can connect a computer to the router [3] (see figure 1) and run a request of 'WHAT IS MY IP' on any search engine like Google or Yahoo. Please note that if the router is not associated to a public IP address, the internet provider may change the IP address time to time. So, in case you fail to connect to the generator, check the IP address.

Available software for control & monitoring (the list is subject to change without prior advice).

[BE142 DOWNLOAD PAGE](#)

[BEK3 DOWNLOAD PAGE](#)

[BE124 DOWNLOAD PAGE](#)

**Figure 4** MODBUS TCP-IP SERVER

