HSPA Cellular Router BC-3GM User Manual

3G Wireless Internet Access Device via HSPA
with secure HTTPS environment

BEACON GLOBAL TECHNOLOGY
VERSION: v1.1.49

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Purpose

This manual includes how to use and configure the BC-3GM (Model name).

Revision History

This user manual is based on firmware version v1.1.49

Trademarks

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1. INTRODUCTION

1.1. OVERVIEW

- BC-3GM is a 3G wireless internet access device with Ethernet interface, it performs wireless internet service between PC and wireless WAN via HSPA Cellular station.

- BC-3GM integrates a HSPA modem, a 32-bit MCU, system memories, a 10/100 Ethernet, Embedded OS, various network protocols for wireless internet.

- BC-3GM has some additional functionalities which include Always On-line; HTTP Log-On for security environment; IP Filtering and MAC filtering for high security application.

- BC-3GM also supports configuration change whenever/wherever necessary through Internet.

- BC-3GM supports Keep-Alive function to ensure 7*24 hours online service.

- BC-3GM is the best choice for industrial application.

1.2. MAIN FEATURE

- 3G Wireless internet access device
- Integrated 3G wireless HSPA modem
- A 10/100Mbps Ethernet interface
- Embedded Operating System
- User friendly Web-based Management Tool
- 6-Status LED indicates real-time status of the device
- An external power switch
- Support various Network Protocols
- Support sending both English and Chinese SMS messages through EtherNet/IP services from Rockwell Automation devices
- Support sending both English and Chinese SMS messages through Modbus TCP command
- DHCP Server
- NAT(Network Address Translation)
- Configuration change whenever/wherever necessary through Internet
- HTTPS security access to avoid hackers attack
- IP filtering, MAC filtering to ensure access for high security
- Keep-Alive function to make sure system are 7*24 hours on-line.
- Allow up to 3 registered cellular phones to send SMS messages to reboot router and change settings.

2. BRIEF INFORMATION

2.1. APPEARANCE

Below picture shows the appearance and structure of BC-3GM.

[Picture 2.1: BC-3GM Appearance]

2.2. COMPONENT

2.2.1. MiniDCJack

Must connect the given power adapter DC 12V/1.5A on this jack.It can accept wide range 6V-30VDC for industrial purpose.

2.2.2. Power S/W

Turn the power on or off.

2.2.3. Reset S/W

Reset the BC-3GM.

2.2.4. LAN

LED	State	Description
Green	ON	Indicates that 10Mbps LAN is connected.

	BLINK	Indicates that data exists via 10Mbps LAN.
	OFF	Indicates that 10M LAN is disconnected.
Orange	ON	Indicates that 100Mbps LAN is connected.
	BLINK	Indicates that data exists via 100Mbps LAN.
	OFF	Indicates that 100M LAN is disconnected.

[Table 2.1 : LED indicator description on LAN port]

User can connect BC-3GM with Host PC, HUB, Router etc, via 10/100 LAN port. The RJ-45 connector (LAN port) has two Link-LED. Table below lists out description for each LED indicator.

2.2.5. Console

This port is for manufacturer use only. The console is designed mainly for diagnostic data reading. Normally this port is for debugging.

2.2.6. Antenna Connector

This connector should be connected to an antenna.

2.2.7. HSPA Module

This Router supports 3G 800/850/900/1700/1900/2100MHz with upload 384Kbps, downlink 21.1Mbps and uplink 7.2Mbps. 2G 850/900/1800/1900MHz

2.2.8. 6-Status LED

BC-3GM has 6-Status LED to indicate real-time status.

** The LED position are from left to right on top view*

LED	Display	Description
Power	ON	Indicates that main power is on
	OFF	Indicates that main power is off
Modem	ON	Recognizes the HSPA modem
	OFF	Does not recognize the HSPA modem.
Net	BLINK	Indicates that data exists on 3G wireless network
	OFF	Indicates that data does not exist on 3G wireless network
IP	ON	Indicates that cellular IP is received from ISP
	OFF	Indicates that cellular IP is not achieved from ISP.

SIM	ON	Indicates that U-SIM card is ready
	OFF	Indicates that U-SIM card is not ready
RSSI	ON	Indicates that RF signal sensitivity is perfect (Over 30)
	BLINK	RF signal sensitivity has low, fair, good, excellent Excellent: RSSI >= -79dbm On Off with 0.25s Good:-90dBM <= RSSI <= -80dBm Off 1.5s On 0.25s Fair:-103dBM <= RSSI <= -91dBm Off 1s On 0.25s Low and None:RSSI< -103dBm Off 0.5s On 0.25s This is based on CSQ level None (99) Low(from 0 to 4) Fair(from 5 to 7) Good(from 8 to 11) Excellent(from 12 to 31)
	OFF	Indicates that RF signal sensitivity is poor.

[Table 2.2: 6-Status LED indication]

2.2.9. U-SIM Socket

For metal housing, it shows location of SIM card on the CASE.

[Picture 2.2: 6-Status LED indication]

2.3. PACKAGES

BC-3GM full package includes:

1. BC-3GM

2. UTP Cable (Direct)

3. DC 12V/1.5A Adapter

2.4. SOFTWARE COMPOSITION

BC-3GM software includes:

2.4.1. Web-based configuration page

BC-3GM has a web-based configuration page that user can access and make changes on configurations.

2.4.2. Firmware

Firmware is the program operating the BC-3GM.

Firmware: Version BC-3GM- v1.1.49*

* *This version name will be changed whenever this is updated.*

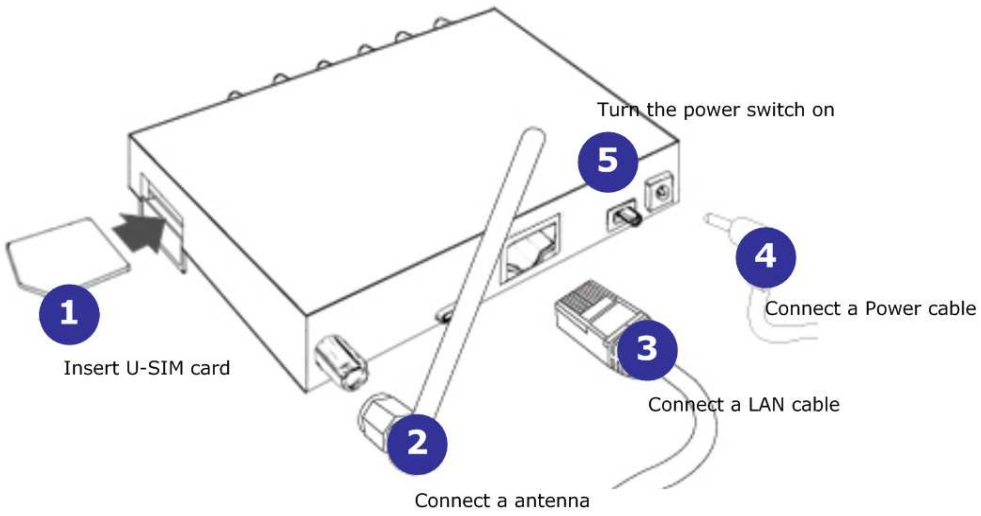
3. PREPARE DEVICE

3.1. Installation

BC-3GM is a 3G wireless internet access device with PC or other LAN devices via HSPA mobile station.

To install this device, please follow 5 steps below (corresponding position is marked in picture 3) to complete installation.

1. Insert U-SIM card into the slot named "SIM"
2. Connect the proper antenna.
3. Connect the LAN cable between PC and LAN port of this device.
4. Connect the power adapter.
5. Turn on the power switch.



[Picture 3.1: Installation of BC-3GM]

3.2. Checking Device

BC-3GM initial status is set as PPP (NAT Router) and Always On-line mode. When you get this device for the first time, it is suggested to perform device check following below steps.

1. Install BC-3GM referring to "3.1 Installation."
   ** Be sure the LAN cable must be connected between PC and BC-3GM.*

2. When you turn on the power switch, the LED named "POWER" is on.

3. The LED named "MODEM" is on.
   ** You would see this LED on in 20 seconds. Should you met any problems please contact us*

4. The LED named "SIM" is on.
   ** If this "SIM" LED is not on in 60 seconds, please check the whether the U-SIM card is correctly inserted.*

5. The LED named "NET" is asynchronously blinking.
   ** Whenever data are transferred or received from/to 3G wireless network, this "NET" LED will be blinking asynchronously.*

6. The LED named "RSSI" is on or blinking.
   ** When this "RSSI" LED is off, please check whether the antenna is correctly connected*

7. The LED named "IP" is on.
   ** When you use wireless internet, this "IP" LED must be on. It might take a little while to get cellular IP because it depends on the current mobile network status. If this LED is not on, please check the configuration of **[WAN]** menu.*
   *(Refer to "6.1.1 Accessing WSU, 3) Select **[Network]** page then Click **[WAN]** menu." for more details)*

3.3. Understanding Modem Router Mode

On Modem router mode, BC-3GM gets an IP from ISP (Internet Service Provider) then BC-3GM keeps the IP and shares the IP with connected Host PC via NAT.

The main feature is that BC-3GM gets the mobile IP from ISP and your PC connected with BC-3GM has a private IP from DHCP of BC-3GM.

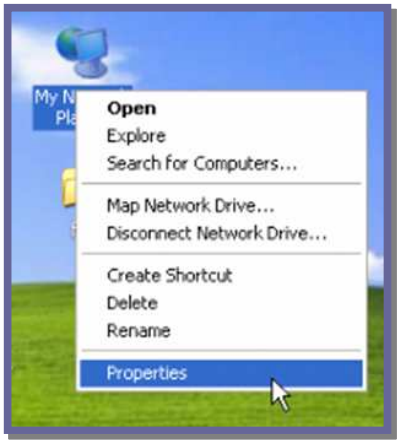
On Modem Router mode, there are two kinds of options, one is always On-line and the other one is Demand On-line under Manual mode. For these options, please refer to [**WAN**] settings.

4. SETTING UP YOUR PC ENVIRONMENT

4.1. Setting up host PC

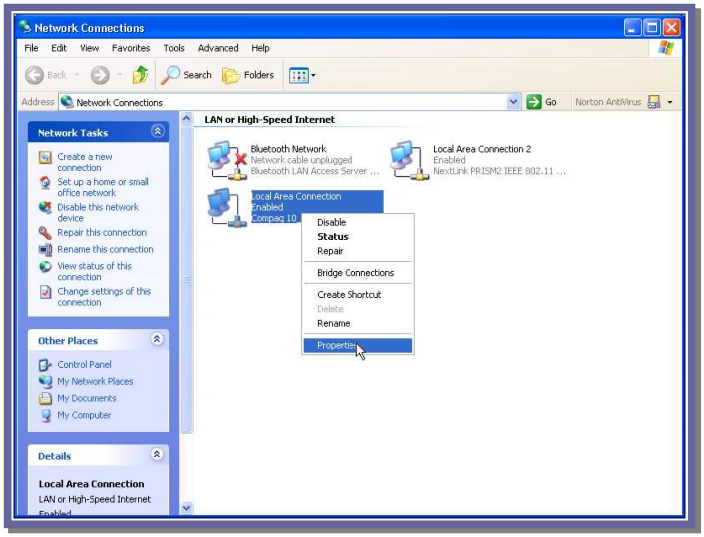
BC-3GM initial status is set as Modem router mode/Always On-line for the first time. Therefore the first step is to connect a LAN cable (Direct) between your PC and LAN port of BC-3GM. Set the network environment of your PC as automatically.

1. Take Windows XP as an example, to connect between PC and BC-3GM, point cursor over "My Network Places" and click right button on your mouse, then select [properties] in the menu.



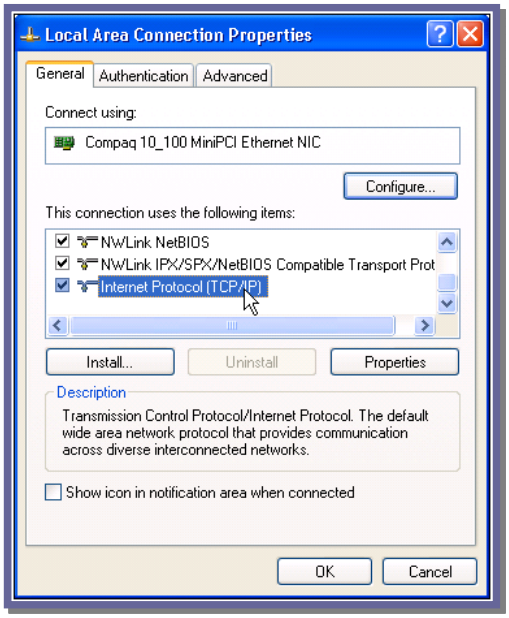
[Picture 4.1: Step 1 of setting up your PC's network environment]

2. Check the "Local Area Connection" then click the right button on your mouse then select [Properties] in the menu.



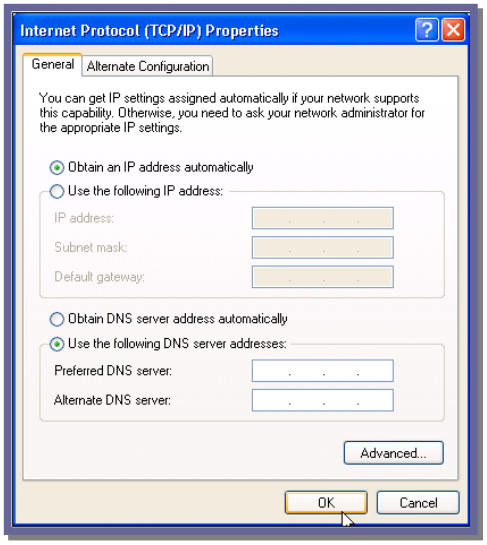
[Picture 4.2: Step 2 of setting up your PC's network environment]

3. Go to "General" Tab, scroll down the right hand side bar until you see "Internet Protocol [TCP/IP]", then double click it.



[Picture4.3: Step 3 of setting up your PC's network environment]

4. Check "Obtain an IP address automatically" then click the [OK] button.



[Picture 4.4: Step 4 of setting up your PC's network environment]

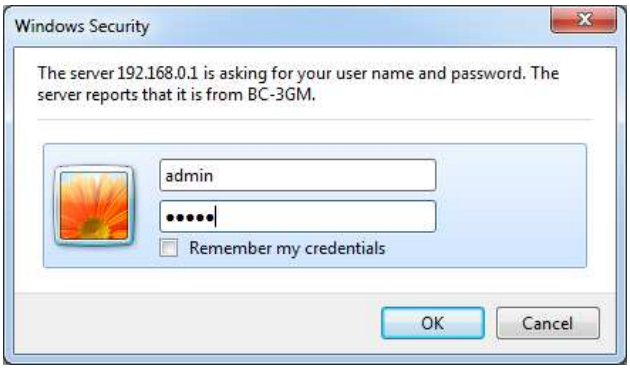
5. After setting up Host PC, please connect a LAN cable between PC and BC-3GM, then connect power cable between BC-3GM to power supply. Turn the power switch on then you will be able to see LED "IP" is on soon.

5. ACCESSING WSU (WEB-BASED SETTING UTILITY)

5.1. How to access WSU

WSU (Web-based Setting Utility) will provide a web-based interface for users to access and make configuration. This web-based configuration page just needs a couple simple steps to setup.

1) Set up your PC's network environment as automatically referring to "4. SETTING UP YOUR PC ENVIRONMENT"
2) Connect the LAN and power cable on BC-3GM.
3) Launch the web browser on your PC then write IP address, https://192.168.0.1:443/home.asp (Set by default). This router is designed for Security HTTP environments. Port 443 accepts IE, Opera, Firebox.etc to access data under secure environment.
4) The pop-up window of login page appears.



[Picture5.1: Log-in window]

** Default setting is*

User name: ***admin***

Password: ***admin***

You can change this option on ***[System config] .1****page ->****[SYSTEM]****menu.*

5) When you enter the correct information, you will access WSU.

5.2. How to configure WSU

When you finish configuration please click [**Apply Changes**] button, then please reboot BC-3GM to make new setting effective.

Rebooting BC-3GM is a must. Click [**REBOOT**] menu, which will make new settings effective.

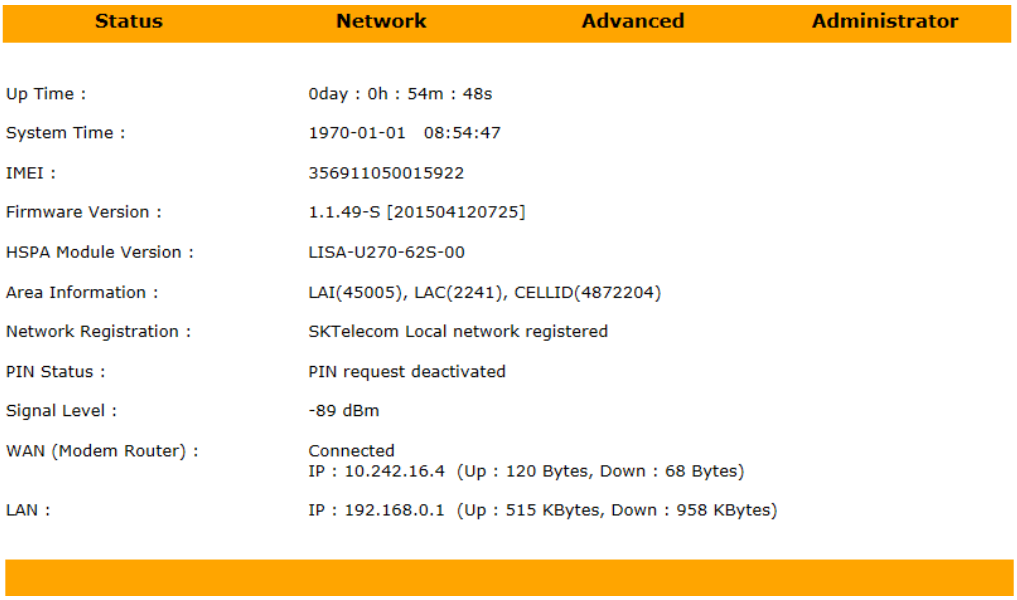
6. CONFIGURATION OF INTERNET CONNECTION

6.1. Setting up your cellular environment

6.1.1. Accessing WSU

1) Access WSU referring to 5.1.1 How to access WSU

2) **[Home]** page will be shown as below picture.



[Picture 6.1: Home page of WSU]

Up Time: The time period that router has been ON.

IMEI: ID Number of router.

Firmware version: It shows which firmware version that router is running.

Area Information: It shows to which cell station that router is connecting.

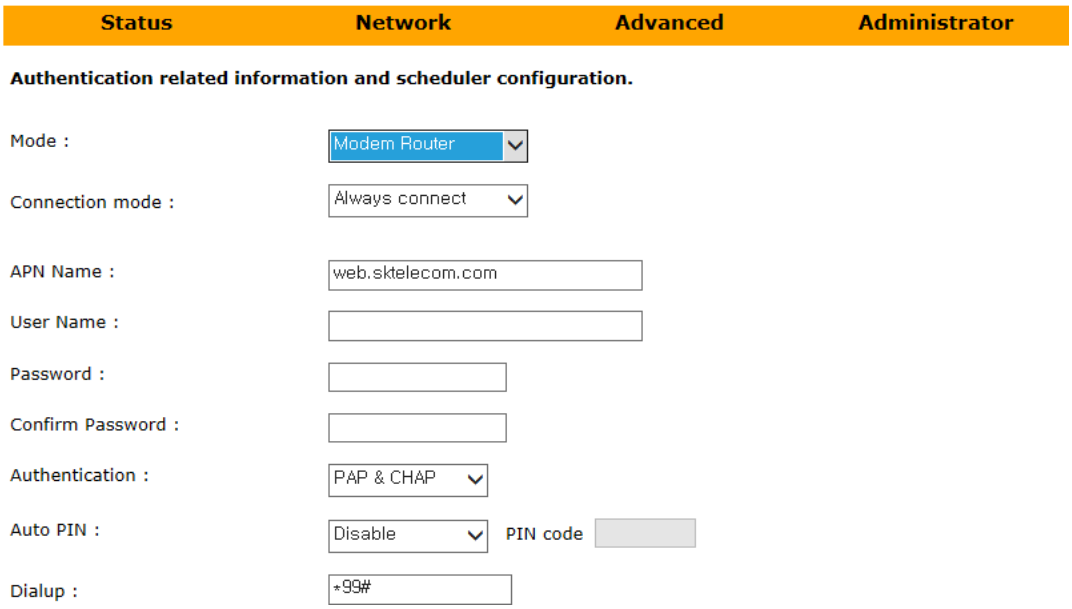
PIN Status: It shows PIN status.

Signal level: This shows the signal strength. The higher value shows stronger signal. For example -65dbM is better than -80dbm.

WAN: It indicates whether router is connected to network. If connected, it will show IP address that has been assigned to this router. It also associates with volume of data that has been uploaded or downloaded.

LAN: It shows IP address of this router within local network.

3) Select **[Network]** page then click the **[WAN]** menu.



[Picture6.2: Setting up WAN menu]

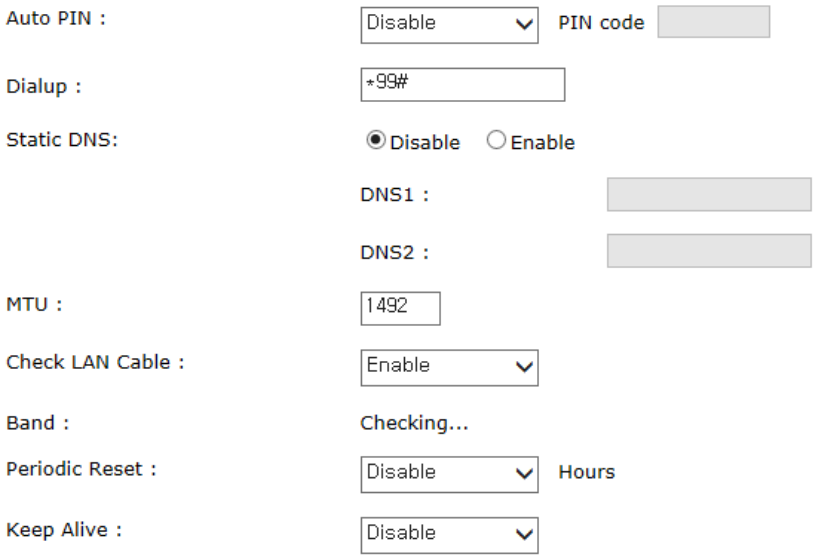
Mode: **Modem router** and **Disabled** are available to select. Default value is **Modem router**

APN Name: It is provided by service provider to link to internet. For example, in Australia, Telstra has a few different APN names. Please use correct one for your service. Default value will be set as "**internet**"

Username: Username for your account if any.

Password: Password for your account if any.

Authentication: To choose **PAP** or **CHAP** or **PAP & CHAP**. Default is PAP & CHAP.



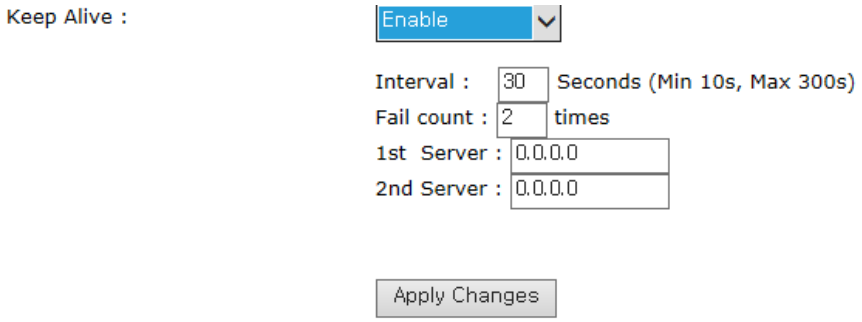
[Picture 6.3: Setting up WAN menu]

Auto PIN: To choose from **Disable** or **enable**. If you choose **enable**, Router will enter PIN code automatically each time router is powered on.

Please keep your PIN code in safe place. If wrong code is entered for 3 times, SIM card will be locked by user. By this case, you will need to ask service provider to provide PUK code to unlock your SIM.

Periodic Reset: Router will be reset according to preset timer. Value is from 1-24 hours. Default is Disable.

Keep Alive: This is to make sure that router is on-line all the time. If **enable** is chosen, router will ping to private server with **interval** time and IP set by user on **1st** or **2nd** or both server. When it fails, it will be counted as 1 time. If **count** reaches preset times, router will be reset and re-connect again.



[Picture 6.4: Keep alive menu]

4) Select [**LAN**]

Gateway IP: Choose from **Static** or **DHCP Client**. If Static is chose, Router will use static IP address shown on "IP address". If choose DHCP Client, Router IP address will be assigned by connecting host. Default to static.

IP Address: To assign IP address for Router. Default to 192.168.0.1

Subnet Mask: Default to 255.255.255.0

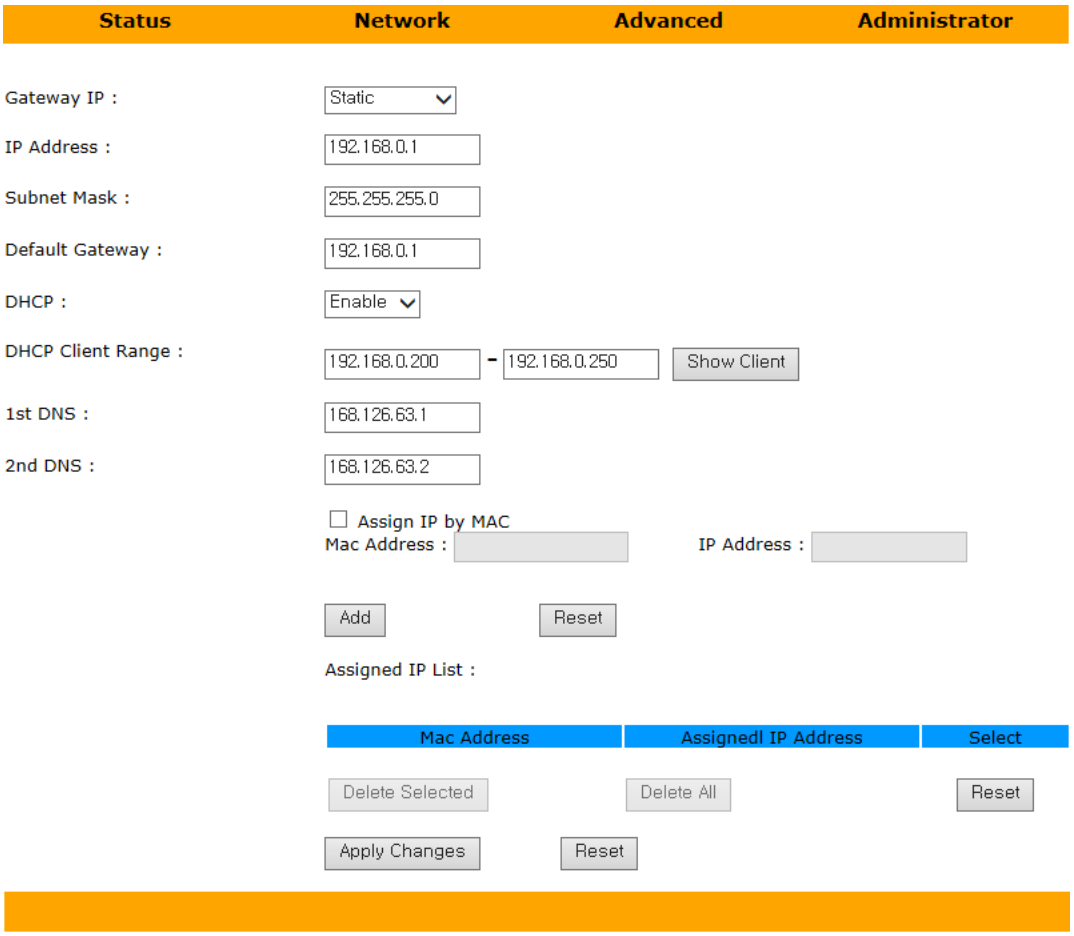
DHCP Client Range: This is the range that Router will assign IP address to device which connects to this router. Default is **192.168.0.200-192.168.0.250**

1st DNS: To set up DNS address. Default is 168.126.63.1

2ndDNS: To set up DNS address. Default is 168.126.63.2

Assign IP by MAC: This is to prevent that devices link to router which may be assigned by different IP address every time router power on or reboot. It can be added up to 10 MAC address. The same MAC address cannot be assign to different IP address.You can enter MAC address format as both 00-00-00-00-00-00 and 00:00:00:00:00:00. And if router has entered MAC address format as 00:00:00:00:00:00, it will change format to 00-00-00-00-00-00. So you can see format as 00-00-00-00-00-00 only in list.

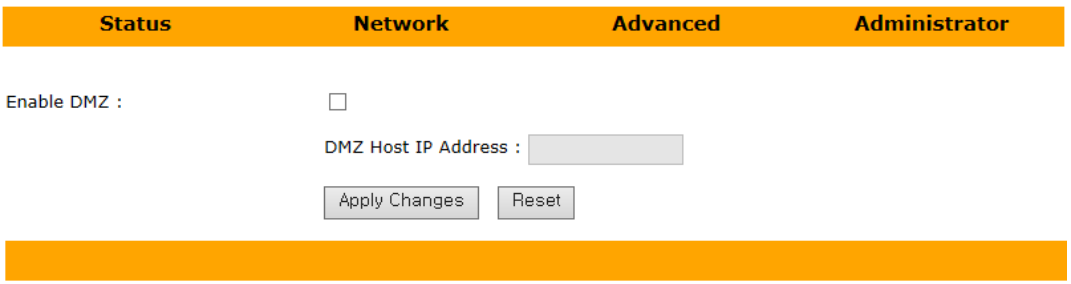
When you finish this setting, you must click [**Apply change**] button



[Picture 6.5: Setting up LAN menu]

5) Click [**Advanced**] then [**DMZ**]

This is to enable or disable DMZ function. If **DMZ** is **Enabled**, please enter **DMZ Host IP address**. Default is disabled.



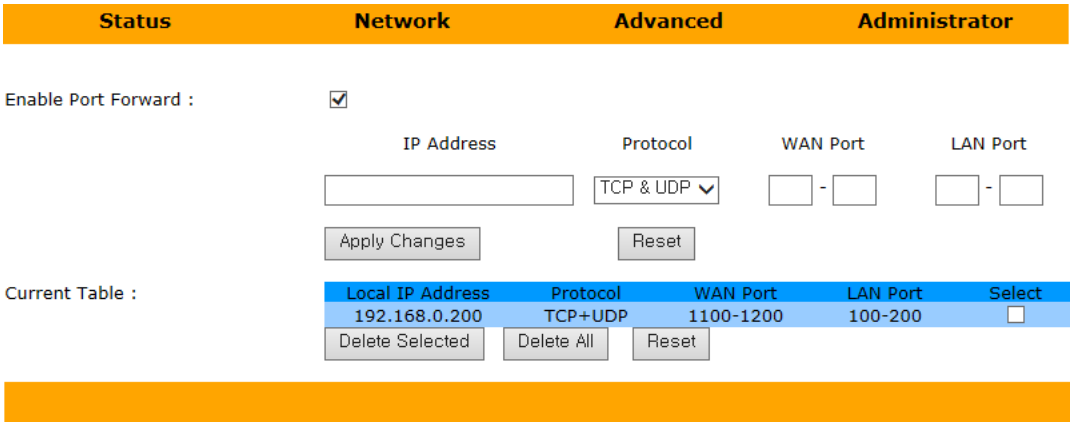
[Picture 6.6: Setting up DMZ menu]

6) Click [**Advanced**] then **[Port Forwarding**]

If **Port Forwarding** is **enabled**, user can connect to device through Router.
For example, there are 2 pieces of network devices, Device A with IP address 1 92.168.0.200 with port 2010 and device B with IP address 192.168.0.211.
It can be set as picture below.

IP address: Type in device IP address.
Protocol: To choose from TCP, UDP or both.
Port Range: To enter port number or range.
Apply Changes: After Apply Changes is clicked, the setting will be added to **Cu rrent Port Forwarding Table**.

After setup is done, since user is offering Dynamic IP most of the time, if you have DDNS service, for example http://bc3gm.dyndns.org:1110 to see device A and http://bc3gm.dyndns.com:1111 to see device B, you also can check the **Select** checkbox then click **Delete Selected** or **Delete All**.



[Picture 6.7: Setting port Forwarding menu]

7) Click [**Advanced**] then [**IP Filter**].

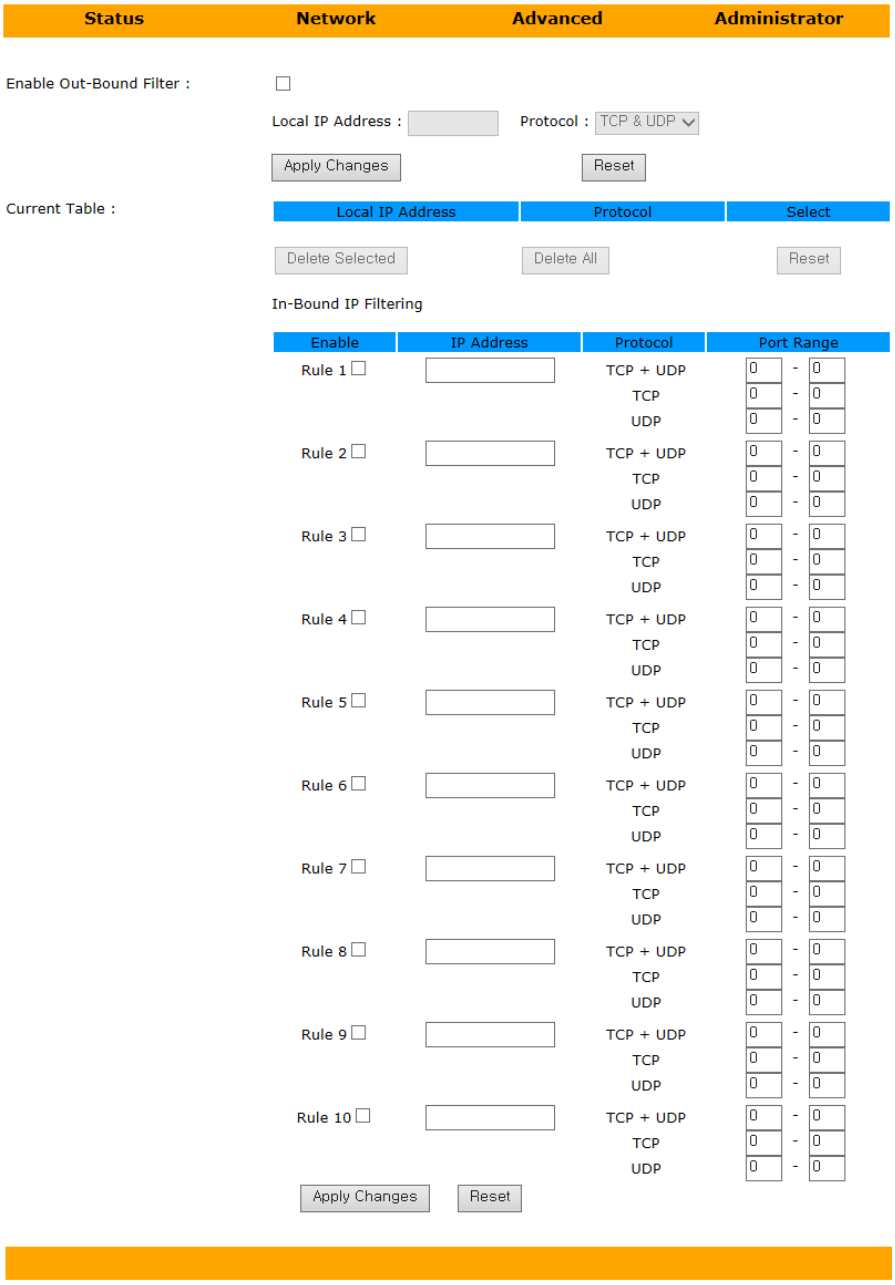
IP filtering is to block un-wanted user either from local or remote side.
Out-bound IP Filtering: Enable this function will block all registered IP address on Local network.

In-Bound IP Filtering: Enable this function will block all unregistered IP address to send in packet. Only registered IP address can send in packet under rule's restriction.

Rule: If Rule is click, the IP address can send it packet.

Protocol: It can define to allow TCP, UDP or both to communicate.

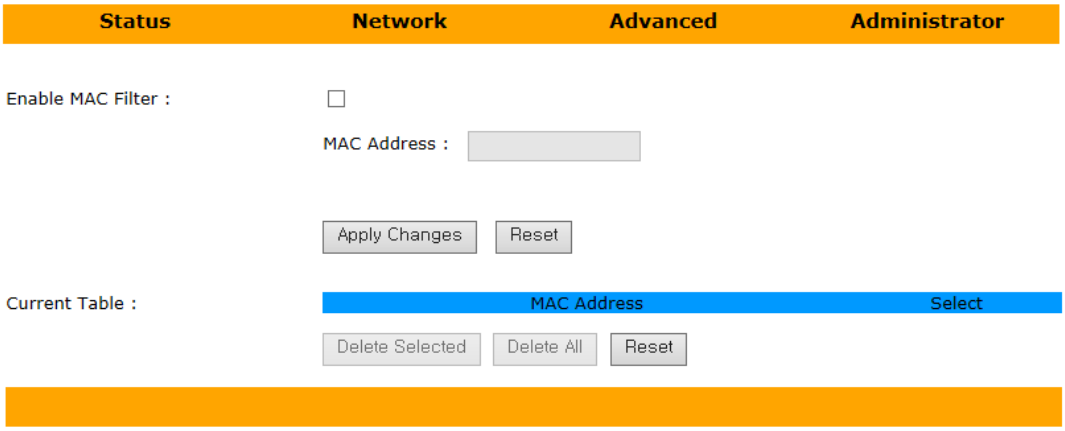
Port Range: It specifies port number or range to accept.



[Picture 6.8: Setting up IP filtering menu]

8) Click [**Advanced**] then [**MAC Filter**].

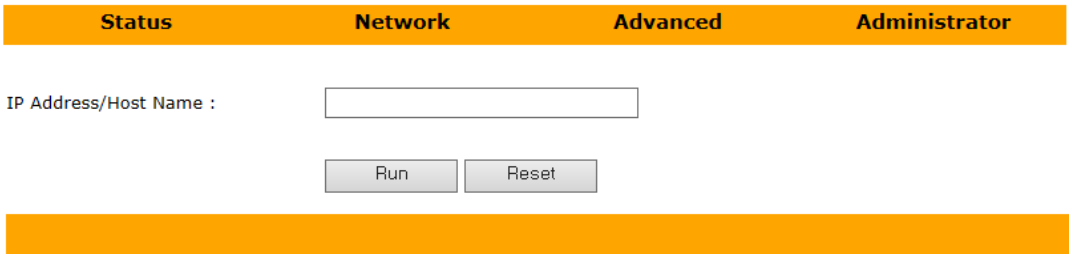
MAC Filtering: This is to block all un-wanted user if their equipment's MAC address is not registered.
If MAC Filtering is enabled, please enter MAC address and apply changes. Only registered MAC address can access to this router.



[Picture 6.9: Setting up MAC Filtering menu]

9) Click [**Advanced**] then [**Ping**].

Ping: Enter IP address and click [Run], Router will ping this IP address and show result.



[Picture6.10: Setting up Ping menu]

10) Click [**Advanced**] then [**NTP**].

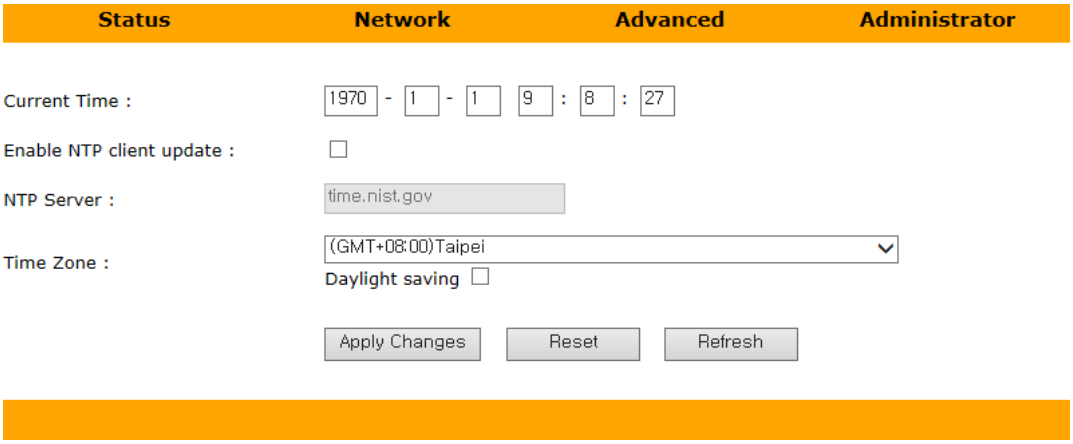
This is to synchronize router timer with public time server.

Enter current time in the text box.

Enable NTP client update will synchronize to public time server. When router is power on, it will link to NTP server and update the timer.

Time zone: To selection which time zone to use.

Daylight saving: Click if Daylight saving is in use.



[Picture6.11: Setting up NTP menu]

11) Click [**Advanced**] then [**DDNS**].

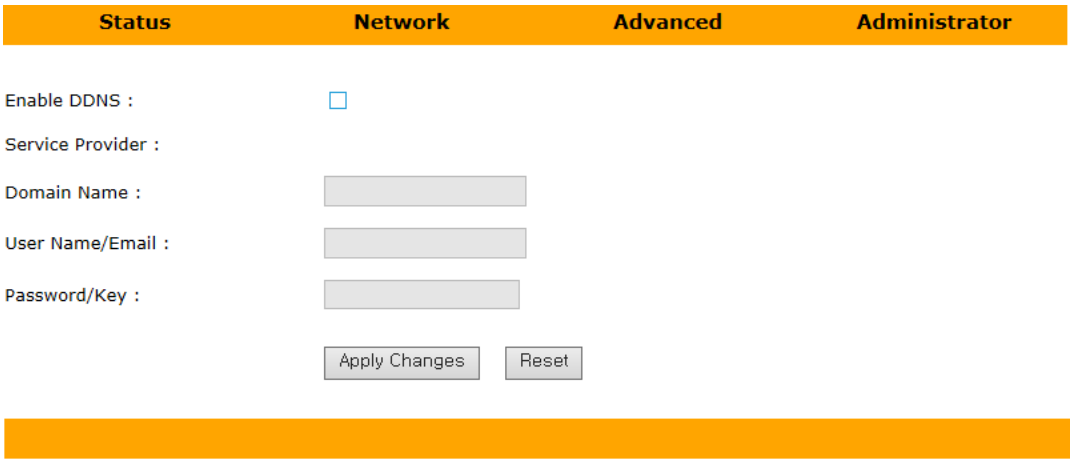
In most of case, user will assign Dynamic IP address to Router after it is connected. This IP address changes all the time. To avoid tracing IP, Router can link to DDNS service. For example, if you have applied a service from www.dyndns.com and registered address is bc3gm.dyndns.com. Then each time when Router powers on, it will register to www.dyndns.com. All you need is to type-in bc3gm.dyndns.com to login this router.

When DDNS is enabled:

Domain name: Enter the name has been applied.

Username/E-mail: Enter user name or e-mail. This depends on your DDNS service requirement. If it needs e-mail to login, then type-in e-mail address only.

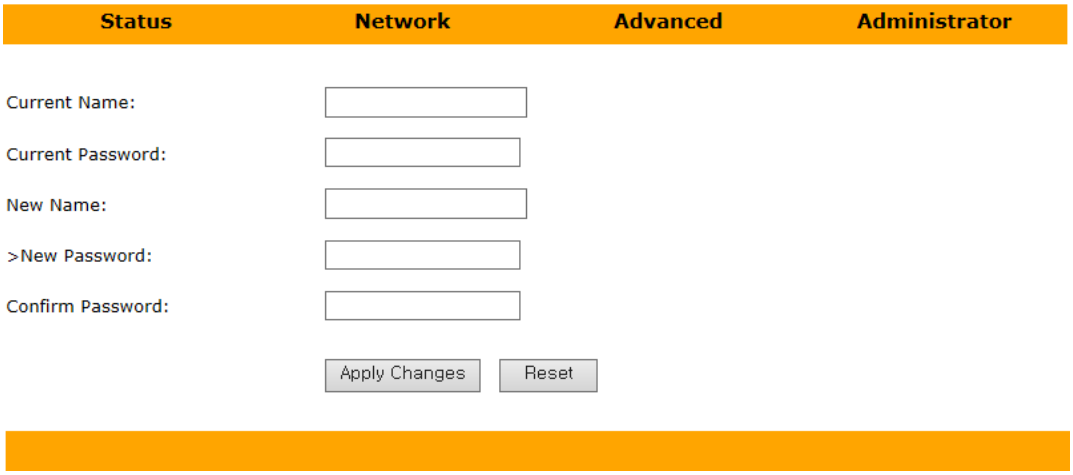
Password/key: Enter password or key



[Picture6.12: Setting up DDNS menu]

12) Click [**Administrator**] then [**Password**].

This section is for you to change name and password. When you login to Router, you need to enter exactly the same information as you have entered.



[Picture 6.13: Setting up Password menu]

13) Click [**Administrator**] then [**Password**].

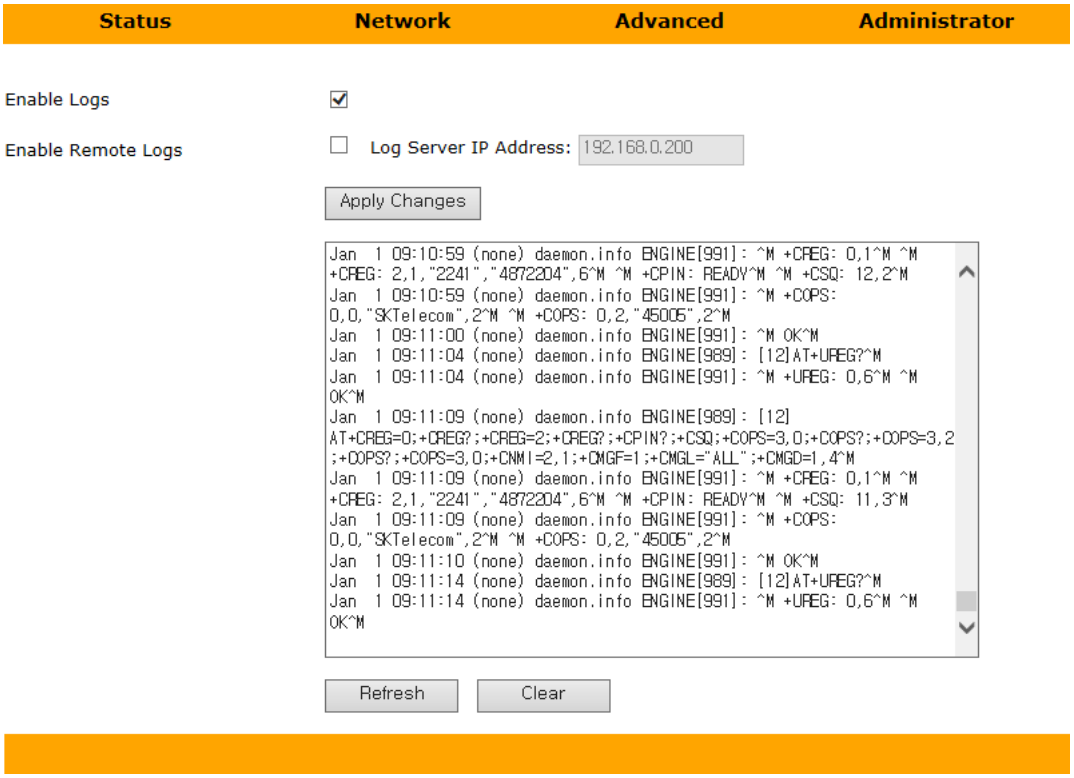
Save: Click Save, it will save current setting as file.
Load settings from File: Point to file location, click upload will load the settings which has been saved

[Picture 6.14: Setting up Backup menu]

14) Click [**Administrator**] then [**System Logs**].

Enable log: Log file will shows on log screen.

Enable Remote Logs: Log file will send to remote address which shows on **Log Server IP Address.**



[Picture6.15: System Logs menu]

The logs will be kept in flash but the maximum size is 1MB. If log file exceeds maximum size, router will write a new log after deleting the old one.

You can see the old log in the system log page. If you enable remote log You can see logs on the PC for remote troubleshooting or administration.

15) Click [**Administrator**] then [**System**].

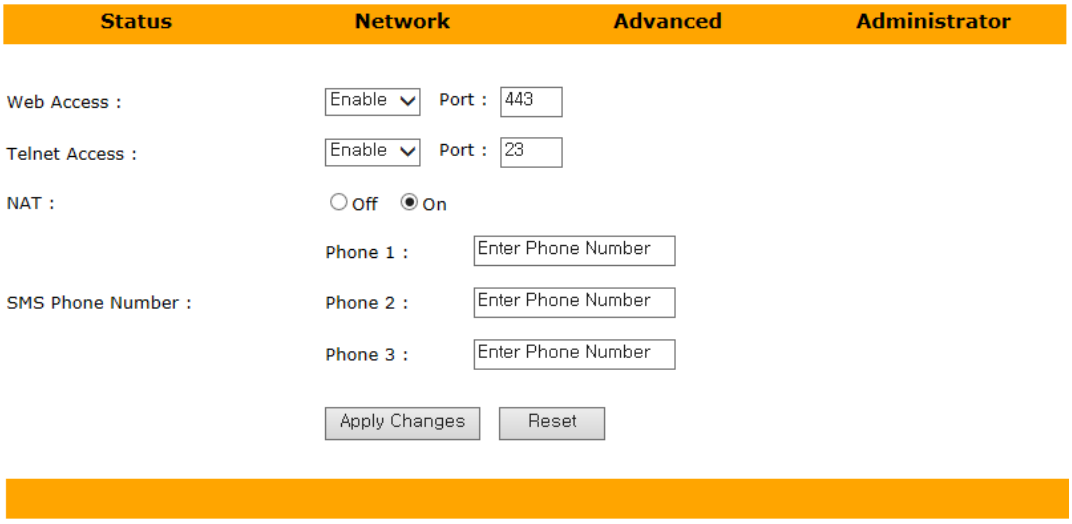
This section is to setup Router system.

Web Access: Enable web access on port 443. When user needs to login, Web address should be https://192.168.0.1/home.asp

Telnet Access: If Telnet Access is enabled, please specify which port is used for Telnet. Default is port 23.

NAT: It is default as NAT router.

SMS Phone Number: If router received SMS "REBOOT" from registered phone Numbers, Router will make reboot. It allows to register 3 different cellular phone numbers.



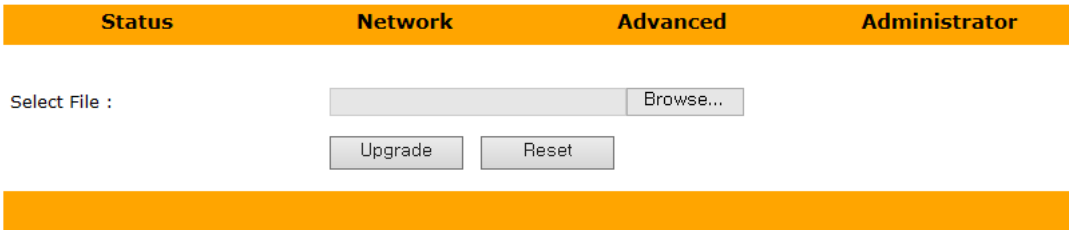
[Picture 6.16: Setting up System menu]

16) Click [**Administrator**] then [**Upgrade**].

Router can be updated either from local network or remote PC.

Select file: Point to new firmware location, then click [**Upgrade**].

Router will upgrade to new firmware. During upgrade procedure, please remain power on all the time until upgrade is complete finished.



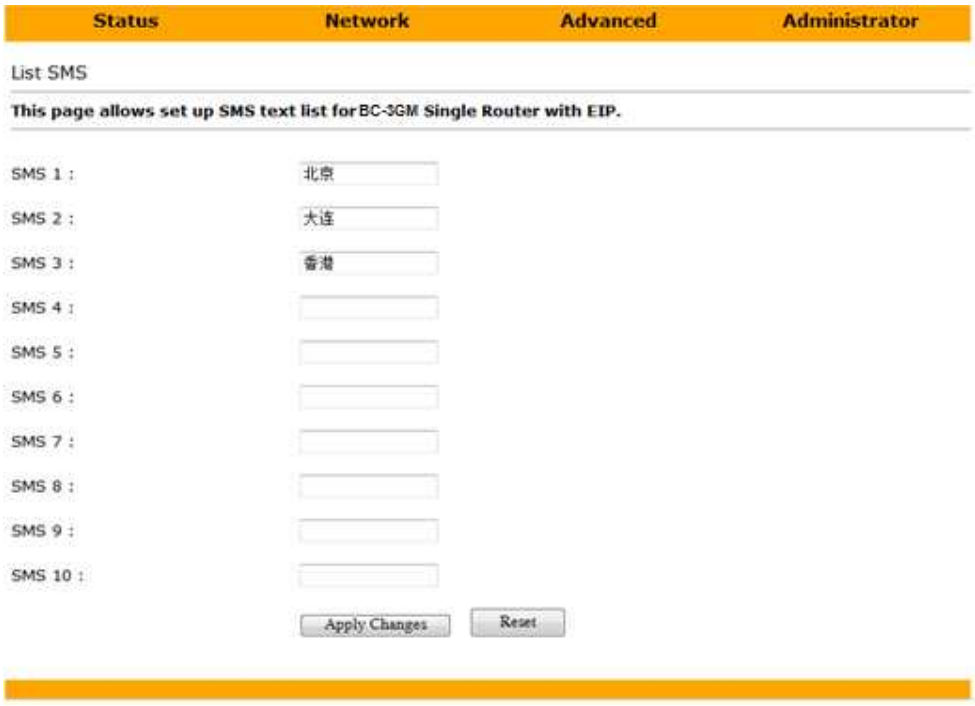
[Picture 6.17: Setting up Update menu]

17) Click [**Reboot**].

Reboot: When Reboot is clicked, it will pops up a dialog box for **Save current setting and reboot.** Click OK, router will save settings and reboot.

[Picture 6.18: Setting up Update menu]

18) Click [**Administrator**] then select [**EtherNet/IP SMS**].You can define up to 30 SMS messages in Chinese on this web page. These predefined SMS messages can be sent to the specified phone number through EtherNet/IP service or Modbus TCP command. This chapter will describe how to configure EtherNet/IP parameters and RSLogix5000 tags for SMS text messaging.



[Picture 6.19: EIP SMS configuration menu]

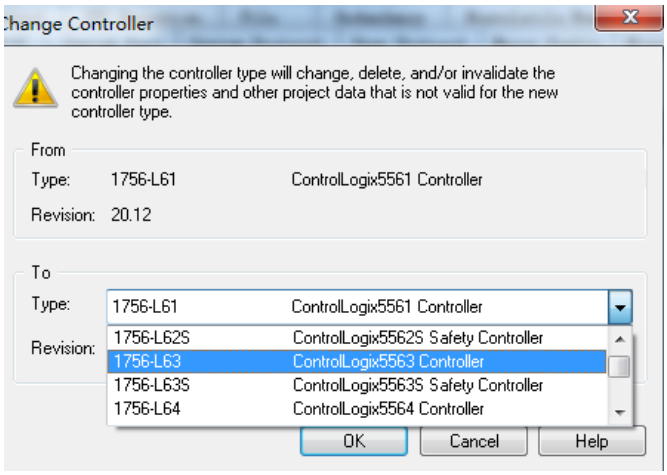
*Please be noted that each Chinese SMS messages contains up to 80 Chinese characters, each English SMS messages contains up to 160 ASCII characters.

7. CONFIGURATION GUIDE For PLC

7.1. Rockwell/Allen-Bradley PLC Configuration

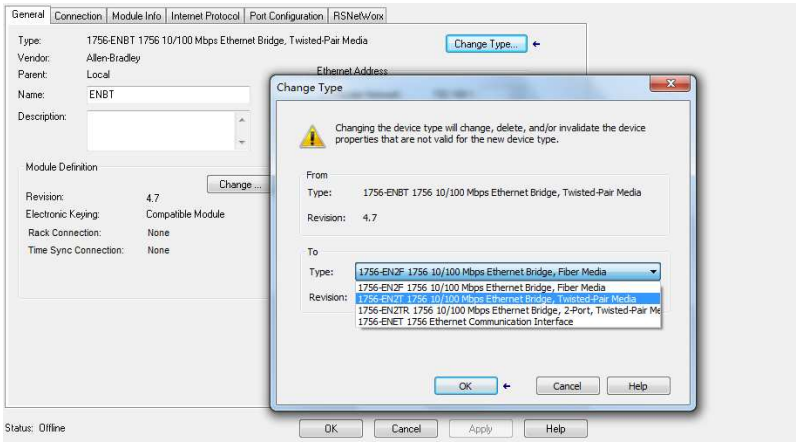
7.1.1. Configuration Guide

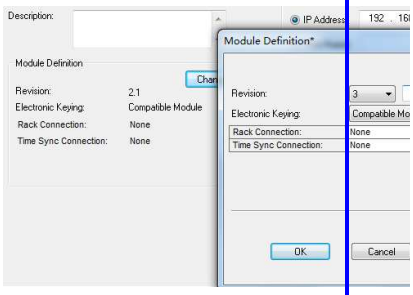
1) Create a new RSLogix5000 project, select controller type from drop-down list.



[Picture7.1: Change Controller]

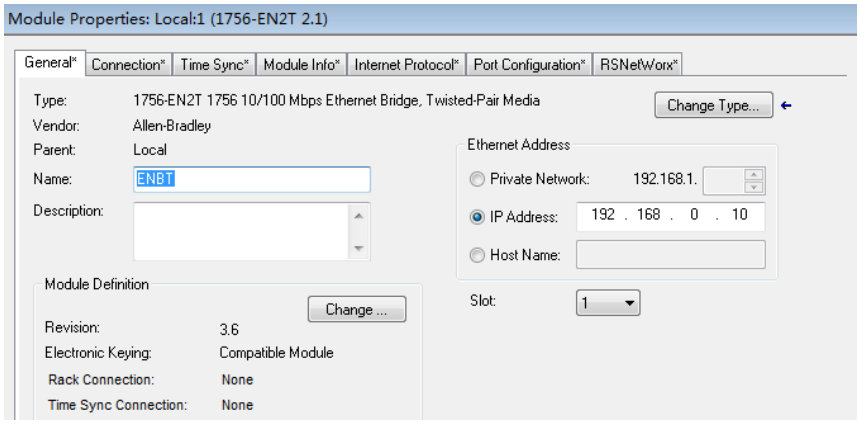
2) Create an Ethernet module and edit device type and revision information.





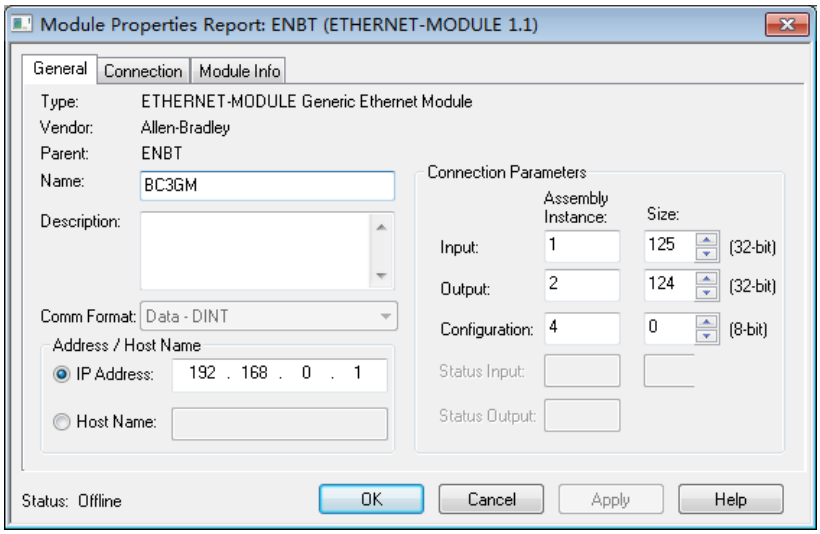
[Picture7.2:Change device type and revision]

3) Under Module Properties, General tab, change IP Address as shown below.



[Picture7.3: Change IP Address]

4) Create a module named BC-3GM,select module type as Ethernet-Module Generic Ethernet Module, modify IP address as 192.168.0.1。



[Picture7.4: Create BC-3GM module]

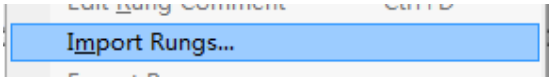
5) Import an Add-on program for BC-3GM_AddOn_Rung_v1_1.L5X

a) In the Controller Organization window, expand the Tasksfolder and subfolder until you reach the MainProgram folder.

b) In the MainProgram folder, double-click to open the MainRoutine folder.

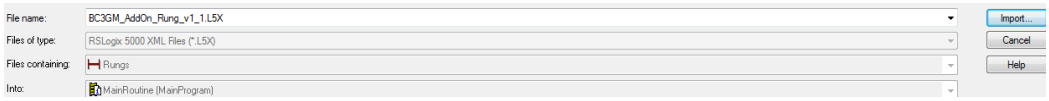
[Picture7.5: Open MainRoutine folder]

c) Select an empty rung in the routine, and right click to open a shortcut me nu. On the shortcut menu, choose Import Rungs.



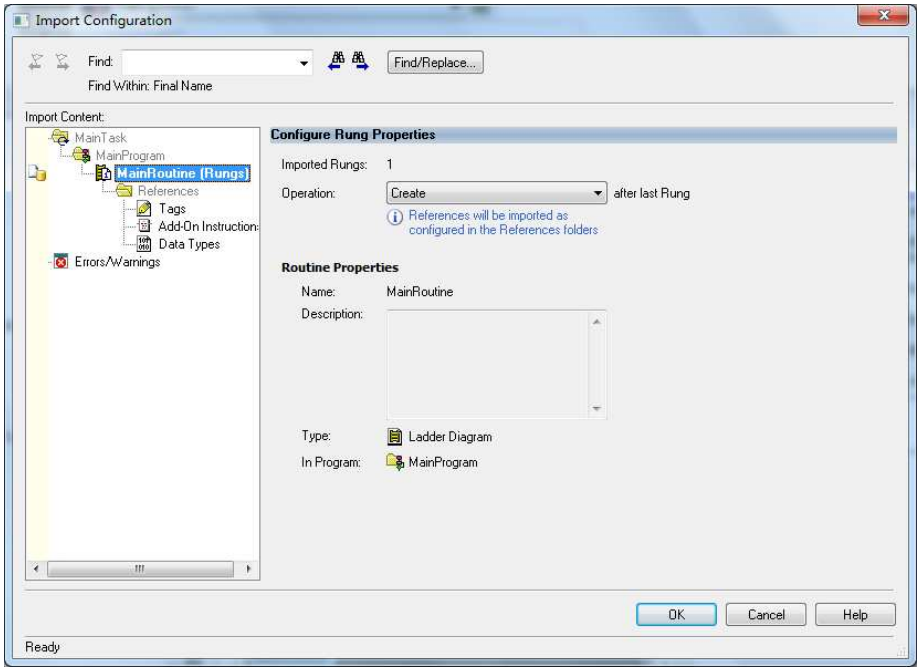
[Picture7.6: Import Rungs]

d) Navigate to the location where you save the BC-3GM_AddOn_Rung_v1_1.L 5X, select it and click Import.



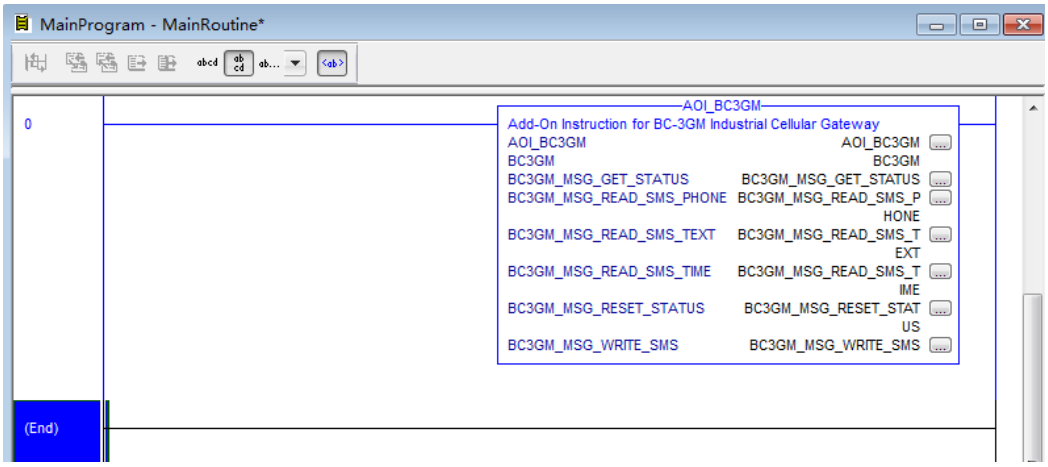
[Picture7.7: Locate rungs]

e) Click OK to confirm the import.



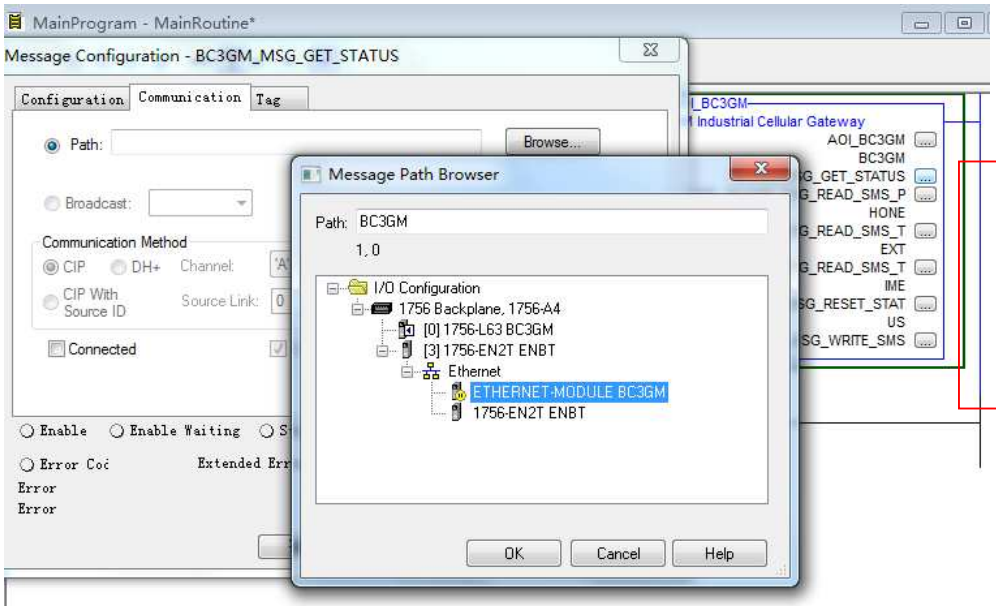
[Picture7.8: Complete the configuration]

6) Modify pointer for all MSG (except AOI_BC 3GM) as illustrated below.



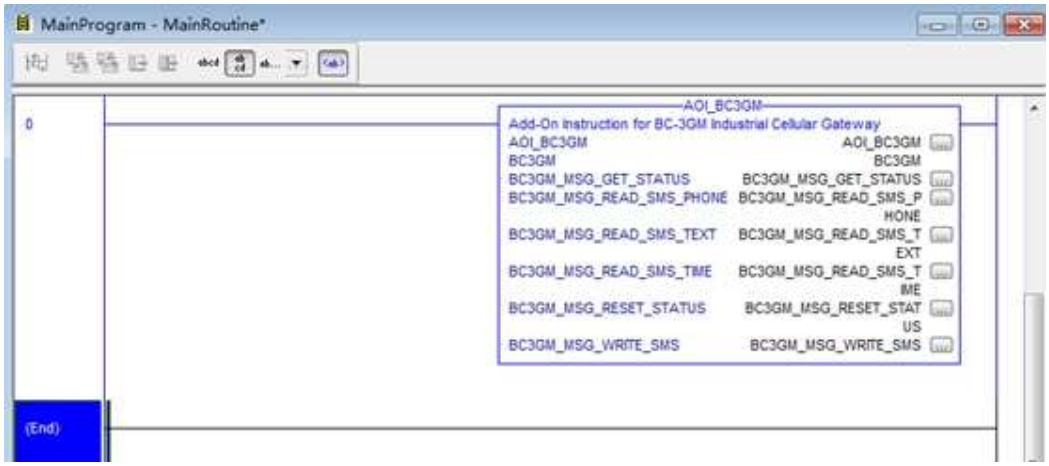
[Picture7.8: Modify Pointer]

* Please be noted that ETHERNET-MODULE BC3GM is the BC-3GM module.



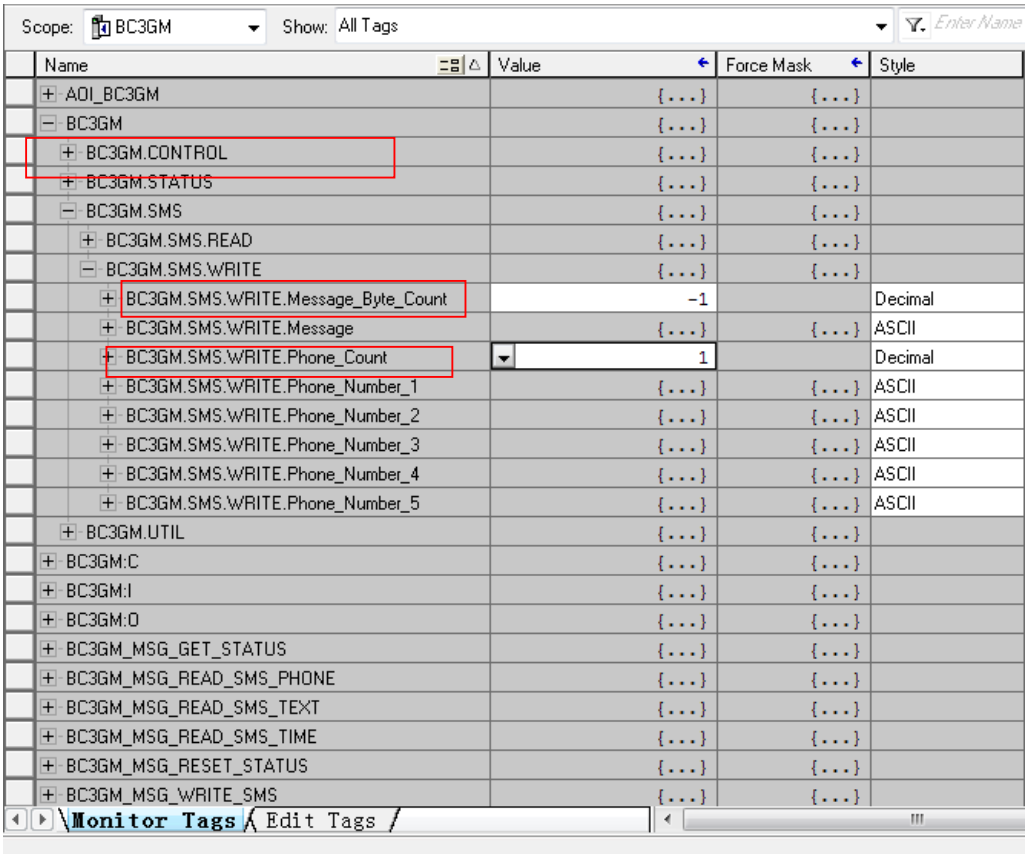
[Picture7.9: Ethernet Module BC3GM]

7) Setup the communication paths for the AOI_BC3GM instruction after imp ort the sample rungs. The AOI_BC3GM instruction implements 6 function s. Setup the communication path for each function by clicking the button '...' of the AOI_BC3GM instruction.



[Picture7.10: Message Configuration]

8) Set up the number of phones to receive SMS messages by writing a value t o the tag BC3GM.SMS.WRITE.Phone_Count. The default value is 1. The maxi mum value is 5.



[Picture7.11: Setup cellphone count]

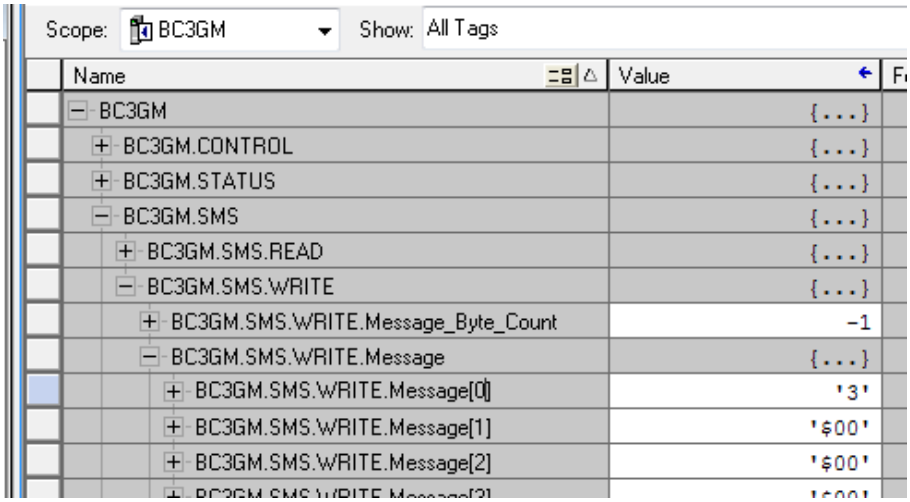
9) Set up the cellphone number in the tag BC3GM.SMS.WRITE.Phone_Number_x, ended by R$00.P

Name	Value	Force Mask	Style
BC3GM.SMS.READ	{...}	{...}	
BC3GM.SMS.WRITE	{...}	{...}	
BC3GM.SMS.WRITE.Message_Byte_Count	-1		Decimal
BC3GM.SMS.WRITE.Message	{...}	{...}	ASCII
BC3GM.SMS.WRITE.Phone_Count	1		Decimal
BC3GM.SMS.WRITE.Phone_Number_1	{...}	{...}	ASCII
BC3GM.SMS.WRITE.Phone_Number_1[0]	'1'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[1]	'5'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[2]	'9'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[3]	'1'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[4]	'1'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[5]	'8'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[6]	'9'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[7]	'5'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[8]	'5'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[9]	'8'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[10]	'8'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[11]	'$00'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[12]	'$00'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[13]	'$00'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[14]	'$00'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[15]	'$00'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[16]	'$00'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[17]	'$00'		ASCII
BC3GM.SMS.WRITE.Phone_Number_1[18]	'$00'		ASCII

[Picture7.12: Setup cellphone number]

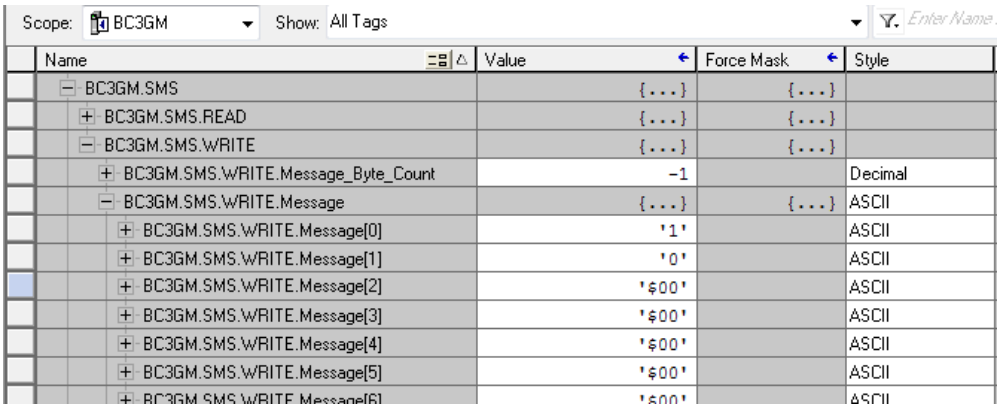
10) Send SMS text in Chinese using EtherNet/IP

- Below are the steps how to send the predefined SMS messages.
- Set BC3GM.SMS.Write.Message_Byte_Count as -1.
- Fill BC3GM.SMS.Write.Message with the sequence number of predefine SMS messages. The sequence number is stored as a null-terminated string format. a null-terminated string is a character string stored as an array containing the characters and terminated with a null character (‘$00’).



[Picture7.13: Predefine SMS messages]

11) If you would like to send the predefined SMS 10, the data of the BC3GM.SMS.Write.Message tag will be filled with a null-terminated string "10" (BC3GM.SMS.Write.Message[0] = '1', BC3GM.SMS.Write.Message[1] = '0', BC3GM.SMS.Write.Message[2] = '$00')

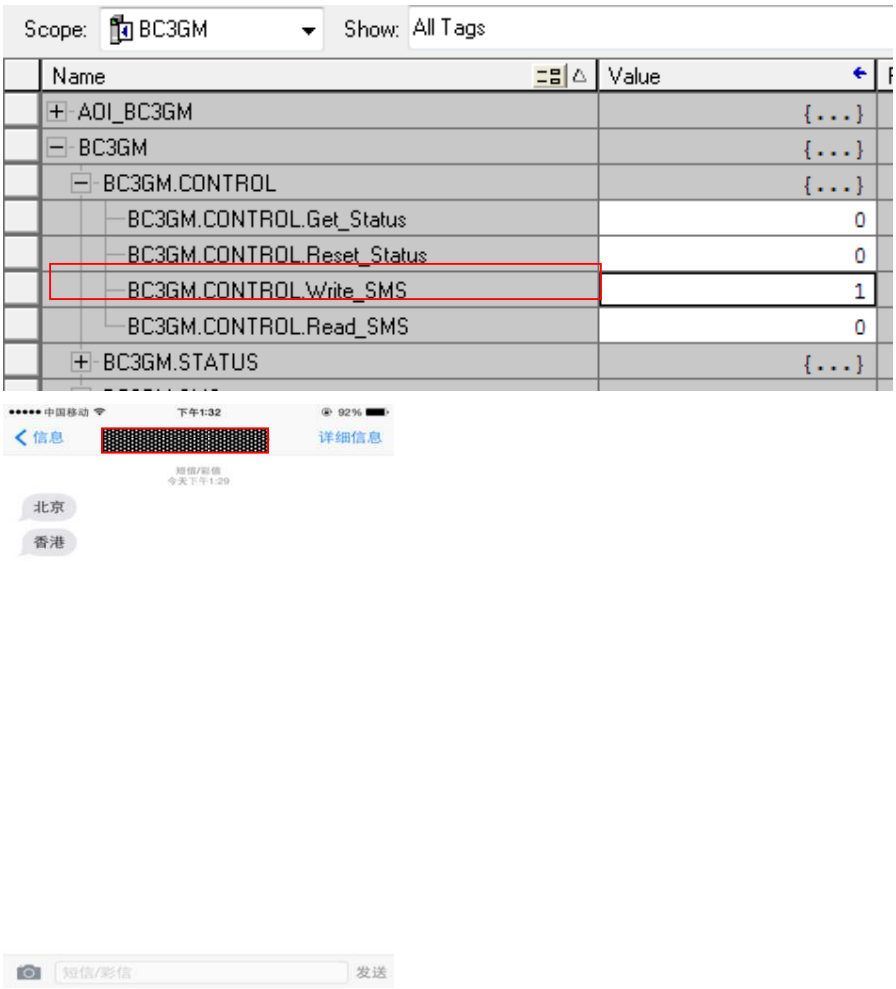


[Picture7.14: Send predefine SMS messages]

12) Send English SMS text using EtherNet/IP

If you would like to send an English SMS message directly, please write the message content into the BC3GM.SMS.Write.Message tag and set the tagBC3GM.SMS.Write.Message_Byte_Count as the SMS message length.

13) Set CONTROL.WIRTE_SMS as 1, message will be sent to targeted cellphone.



[Picture7.15: Send predefine SMS messages]

7.2. Using MODBUS TCP command Send SMS

7.2.1. Overview

This port is for manufacturer use only. The console is designed mainly for diagnostic data reading. Normally this port is for debugging.

- The BC-3GM supports 5 concurrent Modbus TCP/IP connections to read/write radio diagnostic and generic SMS data.
- BC-3GM supports sending both English and Chinese SMS messages through MODBUS TCP command to specified phone number
- BC-3GM supports Modbus function FC6 and FC16 used by Siemens and Schneider users to send 142 SMS transit messages, however totally 2

commands FC16 will be necessary to complete this since Modbus itself allows the data access to up to 125 registers for each command.

7.2.2. SMS message parameter

- The Modbus TCP server listens to 502 port and 2000 port. It can support the following Modbus functions.
  FC6= Preset (Write) Single Register (4X)
- FC16= Preset(Write) Multiple Register(4X)

SMS Message Parameters

Name	**Data Type**	**Access**	**Modbus Register**	**Description**
Out_Str_Size	INT	Read/Write	40011	Number of bytes in the Output String
Num_To Send	INT	Read/Write	40012	Number of phone numbers that the SMS will be sent to
Output_Str	SINT[160]	Read/Write	40013-40092	Message to be transmitted (Max 160 Bytes)
Ph_Number_1	SINT[24]	Read/Write	40093-40104	full number including prefixes country code etc..
Ph_Number_2	SINT[24]	Read/Write	40105-40116	full number including prefixes country code etc..
Ph_Number_3	SINT[24]	Read/Write	40117-40128	full number including prefixes country code etc..
Ph_Number_4	SINT[24]	Read/Write	40129-40140	full number including prefixes country code etc..
Ph_Number_5	SINT[24]	Read/Write	40141-40152	full number including prefixes country code etc..

[Table7.1: Modbus TCP SMS message parameters]

Please be noted that it is very critical to predefine Chinese SMS messages ahead to enable sending Chinese SMS messages. In this brochure, Page28, it describes how to setup up to 30 Chinese SMS messages and each text message contains up to 80 characters. The predefined content will be the final received message in cellphone. Output_Str parameter sent by Modbus command is actually the sequence number

of predefined Chinese SMS messages.

8. INFORMATION OF SMS FUNCTION IN HSPA ROUTER

8.1. DSR.REBOOT

If router receives this message **DSR.REBOOT**, router will reboot and display "**Router will reboot now. Please wait...**".

8.2. DSR. NETINFO

If router receives this message **DSR.NETINFO,** router will display network information following format as:

<**SIM No.**><**IP**>,<**APN**>,<**ID**>,<**Password**>,<**Authentication**>,<**Signal**>

Example:

Received Message: **DSR.NETINFO**

Responded Message: **SIM:1,192.168.0.1,internet,meter,meter, PAP and CHAP,55**

8.3. DSR.PPP = (ON or OFF)

If router receives this message **DSR.PPP = (ON or OFF)**, it will get router get online or offline. "SMS connection" option must be enabled in WAN page before using PPP connection

Example 1 Send Message: **DSR.PPP=ON**

Receive Message: **PPP Connection: Trying to make a PPP connection**

Example 2 Send Message: **DSR.PPP=OFF**

Receive Message: **PPP Connection: Disconnected**