Networking your world NV-720S

Neis

ADSL2+/VDSL2 Wi-Fi

USER'S MANUAL

Http://www.netsys.com.tw

Copyright

Copyright © 2017 by National Enhance Technology Corp. All rights reserved.

Trademarks

NETSYS is a trademark of National Enhance Technology Corp. Other brand and product names are registered trademarks or trademarks of their respective holders.

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, National Enhance Technology Corp. hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, NETSYS reserves the right to make changes to the products described in this document without notice. NETSYS does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

Maximum signal rate derived from IEEE Standard specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate. Netsys does not warrant that the hardware will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability, or fitness for a particular purpose. Make sure you follow in line with the environmental conditions to use this product.

Foreword: VDSL2 Router solution

Attention:

Be sure to read this manual carefully before using this product. Especially Legal Disclaimer, Statement of Conditions and Safety Warnings.

Netsys' NV-720S is a managed wireless VDSL2 router that leverages the extraordinary bandwidth promise of VDSL2 technology and compliant with the IEEE 802.11b/g/n standard. It can enhance wireless speeds up to 300 Mbps* and extend the coverage. NV-720S also supports one-touch Wi-Fi Protected Setup (WPS) with the push button that only takes a few seconds to setup a secured wireless network.

In recent years, the market for wireless communications has enjoyed tremendous growth. Wireless technology now reaches or is capable of reaching virtually every location on the surface of the earth. Hundreds of millions of people exchange information every day via wireless communication products. Anyone can bring a built-in WLAN client smart phone, tablet or notebook into a meeting room for a conference without laying a clot of LAN cable or drilling holes everywhere. Wireless LAN enables high mobility so WLAN users can simultaneously access all LAN facilities just like on a wired LAN as well as Internet access. The NV-720S is equipped with a wireless LAN interface compliant with the standard IEEE 802.11b/g/n protocol. To boost its performance even further, the NV-720S is also loaded with an advanced wireless technology to lift up the data rate up to 300 Mbps*. You can finally smoothly enjoy a wide range of apps on your smart phone, tablet or smart TV.

(*). The maximum wireless data transfer rate is derived from IEEE Standard 802.11 specifications. Actual data transfer rate will vary from network environment including: distance, network traffic, building site materials/construction, interference from other wireless devices, and other adverse conditions.

Caution:

The NV-720S is for **indoor** applications only. This product does not have waterproof protection, please do not use in outdoor applications.

Safety Warnings

For your safety, be sure to read and follow all warning notices and instructions before using the device.

- **DO NOT** open the device or unit. Opening or removing the cover may expose you to dangerous high voltage points or other risks. ONLY qualified service personnel can service the device. Please contact your vendor for further information.
- Use ONLY the dedicated power supply for your device. Connect the power to the right supply voltage (110V AC used for North America and 230V AC used for Europe. NV-720S supports 12 VDC power input).
- Place connecting cables carefully so that no one will step on them or stumble over them. DO NOT allow anything to rest on the power cord and do NOT locate the product where anyone can work on the power cord.
- DO NOT install nor use your device during a thunderstorm. There may be a remote risk of electric shock from lightning.
- **DO NOT** expose your device to dampness, dust or corrosive liquids.
- **DO NOT** use this product near water, for example, in a wet basement or near a swimming pool.
- Connect ONLY suitable accessories to the device.
- Make sure to connect the cables to the correct ports.
- **DO NOT** obstruct the device ventilation slots, as insufficient air flow may harm your device.
- **DO NOT** place items on the device.
- DO NOT use the device for outdoor applications directly, and make sure all the connections are indoors or have waterproof protection place.
- **Be careful** when unplugging the power, because it may produce sparks.
- **Keep** the device and all its parts and accessories out of the reach of children.
- Clean the device using a soft and dry cloth rather than liquid or atomizers. Power off the equipment before cleaning it.
- This product is **recyclable**. Dispose of it properly.



TABLE OF CONTENTS

COPYRIGHT	1
FOREWORD: VDSL2 ROUTER SOLUTION	2
SAFETY WARNINGS	3
1.1 Check List	7
CHAPTER 2. INSTALLING THE ROUTER	8
2.1 Hardware Installation	8
2.2 Pre-installation Requirements	8
2.3 General Rules	9
2.4 Connecting the Router	10
2.5 Connecting the RJ-11 / RJ-45 Ports	11
2.6 VDSL2 Application	12
CHAPTER 3. HARDWARE DESCRIPTION	16

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

3.1 Front Panel	17
3.2 Front Indicators	
3.3 Rear Panel	
CHAPTER 4. CONFIGURING THE NV-720S VIA WEB BROWSER	
4.1 BASIC Setup	23
4.1.1 Login Webpage	23
4.2 Status	24
4.2.1 WAN	
4.2.2 LAN	
4.2.3 Statistics	27
4.3 WAN Setup	
4.3.1 WAN Interface	
4.3.2 TR-069 settings	
4.3.3 xDSL Configuration	35
4.4 System	
4.4.1 Update Software	
4.4.2 Restore Default Settings	
4.5 Wireless (Wi-Fi) Setup	

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.5.1 Basic Configuration 2.4GHz	
4.5.2 Security Setting	
4.6 Applications	45
4.6.1 IGMP Settings	
4.6.2 USB setup	
4.6.3 FTP Server	47
4.6.4 FTP Client	
4.6.5 TFTP Server	
4.7 SNMP Setup	50
APPENDIX A: CABLE REQUIREMENTS	
APPENDIX B: PRODUCT SPECIFICATION	
APPENDIX C: ROUTER/BRIDGED MODE SELECT	
APPENDIX D: TROUBLESHOOTING	
APPENDIX E: COMPLIANCE INFORMATION	
CHINESE SJ/T 11364-2024	

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

Chapter 1. Unpacking Information

1.1 Check List

Thank you for choosing Netsys NV-720S Before installing the router, please verify the contents inside the package.

Package Contents:



Notes:

1. Please inform your dealer immediately for any missing or damaged parts. If possible, retain the carton including the original packing materials. Use them to repack the unit in case there is a need to return for repair.

2. If the product has any issue, please contact your local vendor.

3. Do not use sub-standard power supply. Before connecting the power supply to the device, be sure to check compliance with the specifications. The NV-720S uses a DC12V/1A power supply.

4. The power supply included in the package is commercial-grade. Do not use in industrial-grade applications.

5. Please look for the QR code on the bottom of the product, the user can launch the QR code scanning program to scan and download the user's manual electronic format file. Above QR code icon is for reference.

Chapter 2. Installing the Router

2.1 Hardware Installation

This chapter describes how to install the router and establish the network connections. The NV-720S may be installed on any level surface (e.g. a table or shelf). However, please take note of the following minimum site requirements before you begin. **The NV-720S has pre-installed two rubber feet and 2 x 2dBi external Antennas (2.4 GHz).**

2.2 Pre-installation Requirements

Before you start the actual hardware installation, make sure you can provide the right operating environment, including power requirements, sufficient physical space, and proximity to other network devices that are to be connected.

Verify the following installation requirements:

- Power requirements: DC 12 V / 1A
- The router should be located in a cool dry place, with at least **10cm/4in** of space at the front and back for ventilation.
- Place the router away from direct sunlight, heat sources, or areas with a high amount of electromagnetic interference.
- Check if the network cables and connectors needed for installation are available.
- Do not install phone lines strapped together with AC power lines, or telephone office line with voice signal.
- Avoid installing this device with radio amplifying stations nearby or transformer stations nearby.
- Please note that the voice spectrum allowed by the NV-720S external splitter is 0 KHz ~ 120 KHz.

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

2.3 General Rules

Before making any connections to the router, please note the following rules:

• Ethernet Port (RJ-45)

All network connections to the router Ethernet ports must be made using Category 5 UTP or above for 100 Mbps, Category 3, 4 UTP for 10Mbps.

No more than 100 meters of cabling may be used between the MUX or HUB and an end node.

• VDSL2 Port (RJ-11)

All network connections to the RJ-11port must use 24~26 gauge with twisted pair phone wiring.

We do not recommend the use of the telephone line 28 gauge or above.

The RJ-11 connectors have six positions, two of which are wired. The router uses the center two pins. The pin out assignment for these connectors is presented below.

Please note that the line port is no polarity, therefore user can reverse the two wires of the phone cable when installed.

Pin#	MNEMONIC	FUNCTION
1	NC	Unused
2	NC	Unused
3	DSL	Used
4	DSL	Used
5	NC	Unused
6	NC	Unused

RJ-11 Pin out Assignments

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

2.4 Connecting the Router

The router has four Ethernet ports which support connection to Ethernet operation. The devices attached to these ports must support auto-negotiation /10Base-T / 100Base-TX unless they will always operate at half duplex. Use any of the Ethernet ports to connect devices such as Monitor systems, Servers, Switches, bridges or routers.

Notes:

- 1. The (RJ11) Line port is used to connect the telephone that is connected to VDSL2 CO and CPE router (Point-to-point solution).
- 2. The Slave device (CPE) must be connected to the Master device (CO) through the telephone wire. The Slave cannot be connected to another Slave, and the Master cannot be connected to another Master.

netsys

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

2.5 Connecting the RJ-11 / RJ-45 Ports

The line port has 1 connector: RJ-11. It is used to connect with NV-802S (CO) using a single pair phone cable to NV-720S (CPE) bridge side (point to point solution). (Figure 2.1).



Red Line: Valid Blake Line:Invalid

Figure 2.1 NV-720S line ports straight connection

- When inserting a RJ-11 plug, make sure the tab on the plug clicks into position to ensure that it is properly seated.
- Do not plug a RJ-11 phone jack connector into the Ethernet port (RJ-45 port). This may damage the router. Instead, use only twisted-pair cables with RJ-45 connectors that conform to Ethernet standard.

Notes:

- 1. Be sure each twisted-pair cable (RJ-45 Ethernet cable) does not exceed 100 meters (333 feet).
- We advise using Category 5~7 UTP/STP cables for making Bridge or Router connections to avoid any confusion or inconvenience in the future when you attach high bandwidth devices.
- 3. Use **24 ~ 26** gauge twisted pair phone wiring, we do not recommend 28 gauge or above.
- 4. Be sure phone wire has been installed before the NV-720S boot.

netsys

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

2.6 VDSL2 Application

The router's line port supports up to 3km for data service across existing phone wiring. It is easy-to-use and do not requires installation of additional wiring. Every modular phone jack in the home can become a port on the LAN. Networking devices can be installed on a single telephone wire that can be installed within a suitable distance. (Figure 2.2)



Figure 2.2 NV-720S applications

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5



Figure 2.2.1 VDSL2 applications

• 2.6.1 Connect the NV-802S and the NV-720S to the Line

The objective for VDSL2 is to pass high speed data over a twisted pair cable. In the setup, connect NV-802S to NV-720S through phone wire (24~26 AWG) or line simulator or any other hardware representation of a cable network, with or without noise injection and crosstalk simulations.

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

2.6.2 Connect the NV-802S and the NV-720S to LAN Devices

In the setup, usually an Ethernet tester serves as a representation of the LAN side as well as a representation of the WAN side.

2.6.3 Run Demos and Tests

The Ethernet tester may send data downstream as well as upstream. It also receives the data in order to check the integrity of the data transmission. Different data rates can be tested under different line conditions.

2.6.4 Wireless Basics

In recent years, the market for wireless communications has enjoyed tremendous growth. Wireless technology now reaches or is capable of reaching virtually every location on the surface of the earth. Hundreds of millions of people exchange information every day via wireless communication products. Anyone can bring a built-in WLAN client Smartphone, tablet or notebook into a meeting room for a conference without laying a clot of LAN cable or drilling holes everywhere. Wireless LAN enables high mobility so WLAN users can simultaneously access all LAN facilities just like on a wired LAN as well as Internet access. The NV-720S is equipped with a wireless LAN interface compliant with the standard IEEE 802.11 protocol. To boost its performance even further, the NV-720S is also loaded with an advanced wireless technology to lift up the data rate up to 300 Mbps. You can finally smoothly enjoy a wide range of apps on your smart phone, tablet or smart TV.

What is WEP?

Wired Equivalent Privacy (WEP) is an easily broken security algorithm for IEEE 802.11 wireless networks. Introduced as part of the original 802.11 standard ratified in September 1999, its intention was to provide data confidentiality comparable to that of a traditional wired network. WEP, recognizable by the key of 10 or 26 hexadecimal digits, was at one time widely in use and was often the first security choice presented to users by router configuration tools.



What is WPA?

Wi-Fi Protected Access (WPA) and Wi-Fi Protected Access II (WPA2) are two security protocols and security certification programs developed by the Wi-Fi Alliance to secure wireless computer networks. The Alliance defined these in response to serious weaknesses researchers had found in the previous system, WEP (Wired Equivalent Privacy).

WPA (sometimes referred to as the draft IEEE 802.11i standard) became available in 2003. The Wi-Fi Alliance intended it as an intermediate measure in anticipation of the availability of the more secure and complex WPA2. WPA2 became available in 2004 and is common shorthand for the full IEEE 802.11i (or IEEE 802.11i-2004) standard.

A flaw in a feature added to Wi-Fi, called Wi-Fi Protected Setup, allows WPA and WPA2 security to be bypassed and effectively broken in many situations. WPA and WPA2 security implemented without using the Wi-Fi Protected Setup feature are unaffected by the security vulnerability.

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

Chapter 3. Hardware Description

This section describes the important parts of the wireless VDSL2 router. It features the front and rear panel.



Wireless Router Outward



3.1 Front Panel

The front panel provides a simple interface monitoring of the router. (Figure 3.1) shows the front panel of the NV-720S



Figure 3.1 NV-720S Front Panel

3.2 Front Indicators

The wireless router has **Nine** LED indicators. The following Table shows the description. (Table 3-1)

 Table 3-1 LED Indicators Description and Operation

LED	Color	Status	Descriptions
PWR		On(Steady)	When the router is powered on, and in ready state.
(Power LED)	Green	Off	When the router is powered off
	Green	On(Steady)	Wireless access point is ready.
WLAN		Blinking	Data is being transmitted through WLAN
(VVIreless LED)		Off	Wireless access point is off or has malfunctioned.
USB	Green	On(Steady)	The device has a good USB connection
		Off	The device is not ready or has malfunctioned

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

LED	Color	Status	Descriptions
		On(Steady)	The device has a good Ethernet connection.
$E1 \sim E4$	Green	Blinking	The device is sending or receiving data via the corresponding LAN port.
(Ethemet EED)		Off	The LAN is not connected or has malfunctioned.
	Green	On(Steady)	The Internet or network connection is up.
		Fast Blinking	The device is sending or receiving data.
		Off	The Internet or network connection is down.
WPS	Green	On(Steady)	The WPS connection is ready.
		Off	The WPS is not available, or WPS is not enabled or initialized

Notes:

- 1. It is normal for the connection between two Routers to take up to 3 minutes, due to NV-802S/NV-720S to establish a link mechanism in auto-negotiation, that detects and calculates CO and CPE both PBO and PSD level, noise levels and other arguments for getting a better connection.
- 2. Every time the user presses the WPS button, there will be two minutes of time to detect the available equipment. If the WPS function does not detect the device, the WPS light will turn off.

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

3.3 Rear Panel

The rear panel provides the physical connectors connected to the power adapter and any other network device. (Figure 3.2) shows the rear panel of the NV-720S.



Figure 3.2 Rear Panel



And the table shows the description. (Table 3-2)

Connectors	Туре	Description
Reset	Reset Button	The reset button allows users to reboot the VDSL2 or load the default settings. Press and hold for 1-5 seconds: Reboot the VDSL2 Router Press over 5 seconds: Load the default settings
Power	DC Power Jack	External Power Adapter: Input: AC 100~240Volts/50~60Hz Output: DC 12V/1A
Line	RJ-11	For connecting to a VDSL2 device.
USB	USB2.0 Type A	For connecting to the USB dongle.
Ethernet (E1-E4)	RJ-45	For connecting an Ethernet equipped device.
WPS WLAN ON/OFF	WPS Button	Press this button over 5 seconds to make a network connection through WPS (WPS function is only supported on windows 7 or above operating systems). Press this button 1~5 seconds to make switch on/off the WLAN. Every time the user presses the WPS button, there will be two minutes of time to detect the available equipment.

 Table 3-2 Description of the router rear connectors

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

Before installing power and device, please read and follow these essentials:

Use separate paths to route wiring for power and devices. If power and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

Note:

Do not run signal or communications wiring and power wiring through the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring sharing similar electrical characteristics can be bundled together.
- You should separate input wiring from output wiring.
- We recommend that you mark all equipment in the wiring system.
- The maximum wireless data transfer rate is derived from IEEE Standard 802.11b/g/n specifications. Actual data transfer rate will vary from network environment including: distance, network traffic, building site materials/construction, interference from other wireless devices, and other adverse conditions.

metsys

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

Chapter 4. Configuring the NV-720S via Web Browser

The NV-720S provides a built-in HTML based management interface that allows configuration of the NV-720S via Internet Browser. Best viewed using Chrome or Firefox browsers.

In order to use the web browser to configure the device, you may need to allow:

- Web browser pop-up windows from your device. Web pop-up blocking is enabled by default in windows XP SP2 or above.
- Java Scripts. (Enabled by default)
- Java permissions. (Enabled by default)

Launch your web browser and input the IP address 192.168.1.1 (NV-720S) in the Web page. Following section user can find default username and password.

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.1 BASIC Setup

4.1.1 Login Webpage

The IP address is **192.168.1.1**, username and password are "admin".

Please enter the	e username and j	password:	
Username:	admin		
Password:	•••••		
	Login	Cancel	

Figure 4.1 Login Password

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.2 Status

When the device is running, the status page will display device information for Hardware/Software Version, MAC Address, and System Up Time. A screen is displayed as shown in Figure 4.2.

Status

Quick Setup

- Lan Setup
- Wan Setup

Wireless Setup

Advanced Setup

Applications

System

Logout

Device Info

Hardware Version:	A.3
Software Version:	B.3.2
MAC Address:	00:05:6e:02:03:06
System Up Time:	0 hours, 52 mins, 27 secs

Figure 4.2 Device Info

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.2.1 WAN

Select "WAN", and click on "Network" link in the left navigation bar to check IPv4/IPv6 WAN Connection Status. A screen is displayed as shown in Figure 4.2.1.

Status Device Information WAN Distance	IPv4 WAN Conn	ection \$	Status							
Dongle	Connection Name	гуре	IP Address/Mask	6	Default	t Gateway	Primary DNS	Secondar	y DN S	Status
XDSL	vdsl	DHCP	192.168.16.64/25	55.255.255.0	192.16	8.16.1	192.168.16.1			Connected
► LAN										
 Statistics ARP 	IPv6 WAN Conn	ection S	Status							
Guick Setup	Connection Name	Type	IP Address	Default Gates	vav	Primary DP	IS Seconda	ILV DNS	Prefix	Status
Lan Setup		.164	in man ooo	Donath Gato	,					
▶ Wan Setup	NO RUIE FOUND!									
Wireless Setup										
Advanced Setup	DS-Lite Status									
Applications										
▶ System	Connection Name	Ту	pe Mode	AFTR Address		Status				
Logoul	No Rule Found!									
	Refresh									

Figure 4.2.1 WAN Connection Status

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.2.2 LAN

To check NV-720S Wi-Fi status, click on the "WLAN" link in the left navigation bar. A screen is displayed as shown in Figure 4.2.2.

 Status 						
Device Information WAN	LAN - WLAN	I				
✓ LAN Network	SSID Index	SSID	BSSID	Status	Authentication Mode	Encryption Mode
Ethernet	SSID-1	dsI_2GAp	00:05:6E:02:03:07	7 Enable	WPA-PSK/WPA2-PSK	AESEncryption
WLAN DHCR Client	SSID-2	dsI_2GAp_2	02:05:6E:12:03:07	7 Disable	WPA-PSK/WPA2-PSK	AESEncryption
Statistics	SSID-3	dsI_2GAp_3	02:05:6E:22:03:07	7 Disable	WPA-PSK/WPA2-PSK	AESEncryption
ARP	SSID-4	dsl_2GAp_4	02:05:6E:32:03:07	7 Disable	WPA-PSK/WPA2-PSK	AESEncryption
Quick Setup						
Lan Setup						
Wan Setup						
 Wireless Setup 	: Attached De	evices Info				
Advanced Setup						
 Applications 	IP Address	MAC Address				
► System	No Rule Found	d!				
Logout						

Figure 4.2.2 WLAN

Refresh

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.2.3 Statistics

To check xDSL link status, click on the "xDSL" link in the left navigation bar. A screen is displayed as shown in Figure 4.2.3.

✓ Status		
Device Information	Statistics xDSI	
► WAN		
► LAN	Statua	L In
 Statistics 	otatus.	Οp
WAN	Line Standard:	G.993.2_/Annex_A
LAN	Current Rate(Up/Down):	102409/102393 Kbps
XTM	Max Rate(Up/Down):	118571/177816 Kbps
xDSL	Noise Margin(Up/Down):	8.2/15.7 dB
ARP	InterleaveDepth(Up/Down):	19/1
QUICK Setup		
 Lan Setup 	Line Attenuation(Op/Down):	0.8/6.7 dB
 Wan Setup 	Output Power(Up/Down):	8.2/14.2 dBm
 Wireless Setup 	FEC(Up/Down):	0/9810
 Advanced Setup 	HEC(LIp/Down):	0/0
 Applications 	neo(op/bown).	0/0
 System 	CRC(Up/Down):	0/25804
Logout	ESTI.DISTANCE:	123m

Figure 4.2.3 xDSL Link Status

Refresh

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.3 WAN Setup

4.3.1 WAN Interface

4.3.1.1 Create ATM Mode

Select "WAN Interface" and click on "ATM" link in the left navigation bar and press "Create".

 Status 						
Quick Setup	Interface	DSL Link Type	VPI/VCI	QoS	Encapsulation	
Lan Setup						
Wan Setup	Create	Refresh				
 WAN Interface 						
ATM						
PTM						
Dongle						
WAN Service						
xDSL Configuration						
ireless Setup						
dvanced Setup						
Applications						
System						
Logout						

Figure 4.3.1.1 Create ATM Mode



4.3.1.2 Select ATM Settings

After pressing "Create", select DSL Link Type, VPI/VCI settings, Encapsulation, and QoS, and press "Apply", the ATM mode will be successfully created.



Figure 4.3.1.2 Select ATM Settings



4.3.1.3 ATM Mode Created

After the ATM mode has been created, there will be three interfaces: ATM/PTM/USB in WAN service.

▶ Status						
Quick Setup	WAN ServiceInfo					
► Lan Setup						
 Wan Setup 	WAN Name	Interface	Mode	IP Protocol Type	Service Type	Edit/Delete
 WAN Interface 						
WAN Service						
xDSL Configuration	Set New WAN					
 Wireless Setup 						
Advanced Setup	Interface:	ATM 0 32	•			
 Applications 		ATM 0 32	2			
 System 	Mode:	PTM				
Logout		USB				
	Create	efresh				

Figure 4.3.1.3 ATM Mode Created



4.3.2 TR-069 settings

4.3.2.1 Set New WAN for TR-069

Select "WAN Service" in the left navigation bar to set new WAN, there will be three interfaces now (ATM/PTM/USB). To create PTM +PPPoE WAN Router Connection for TR-069, choose PTM interface & PPPoE mode, and press "Create".

 Status 							
Quick Setup	WAN ServiceInfo						
► Lan Setup							
 Wan Setup 	WAN Name	Interface	Mode	IP Protocol Type	Service Type	Edit/D)elete
 WAN Interface 							
ATM	vdsl PPPoF	PTM	PPPoF	IPv4	TR069 INTERNET	Edit	Delete
PTM	100					Luit	Delete
Dongle							
WAN Service	Set New W	/AN					
xDSL Configuration							
 Wireless Setup 	Interface:	DTM	•				
Advanced Setup	interface.		•				
 Applications 	Mode:	DHCP	•				
 System 		DHCP					
Logout	:	Static					
	Create Re	PPPoE Drides					
		Driage					

Figure 4.3.2.1 Set New WAN



4.3.2.2 Setup TR-069 WAN Service Type

Type in the connection name and MTU, choose TR069_Internet for Service Type, and press "Apply", this WAN Connection can suffer internet and can use TR069.

 Status 		
Quick Setup	WAN Service	
 Lan Setup 		
Wan Setup	Connection Name:	vdsl
WAN Interface	Enable:	
xDSL Configuration	MTUS	576-1402
Wireless Setup	MIO.	570~1492
 Advanced Setup 	IP Protocol Type:	IPv4 •
 Applications 	NAT:	
 System 	ID: 4 Otatia DNIO:	_
Logout	IPV4 Static DINS:	
	PPPoE Type:	Normal PPPoE *
	Servicename:	
	User Name:	
	Password:	•••••
	Authentication Type:	AUTO •
	Dial Mode:	Automatically .
	Keep Alive Time:	30 (10-30)s
	Keep Alive Max Fail:	5 (1-100)
	MAC Address	_
	Override:	
		_
	Enable VLAN:	
	Service Type:	TR069_INTERNET •
	Advanced Settings	2

Figure 4.3.2.2 Setup TR-069 WAN Service Type

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.3.2.3 CWMP

Select "System", and click on "CWMP" link in the left navigation bar to create TR-069 connection, and setup ACS URL/ ACS User Name/ACS Password and basic information.

Status		
Quick Setup	TR069 Settings	
Lan Setup	Troop Settings	
Wan Setup	Enable TD069	
Wireless Setup	Linable (1900).	•
Advanced Setup	ACS URL:	http://acs.demo.co.th:7005/acsmgt
Applications	ACS User Name:	net
System	ACS Password:	
Configuration Backup Configuration Restore	Period Inform:	
Update Software DHCP Option 66 files	Inform Interval:	86400
Account Management	Connection Request Authentication	: 🖉
Logs	User Name:	net
CWMP	Password:	
Internet Time	Connection Request Port:	7547
Reboot Restore Default	Connection Request URL:	/tr069
xDSL Diag		
Tools	Apply Refresh	
Logout		

Figure 4.3.2.3 TR-069 Settings



Warning: The settings will restore the factory defaults except WAN connection and TR069 Settings.

Confirm WAN service type must be TR-069 or TR069_INTERNET.

Service Type:

TR069_INTERNET V



4.3.3 xDSL Configuration

Select "xDSL Configuration" in the left navigation bar, choose the Link types, Annex versions, and band profiles.

WAN - xDSL Configuration

T.413	
T1.413:	

ADSL2	
G.992.3_Annex_A:	
G.992.3_Annex_B:	
G.992.3_Annex_J:	
G.992.3_Annex_L1:	
G.992.3_Annex_L2:	
G.992.3_Annex_M:	
NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

 Status 		ADSL2+	
Quick Setup Lan Setup		G.992.5_Annex_A:	
- Wan Setup		G.992.5_Annex_B:	
 WAN Interface WAN Service 		G.992.5_Annex_J:	
xDSL Configuration		G.992.5_Annex_M:	v
 Wireless Setup 			
Advanced Setup Applications		VDSL2	
► System		G.993.2_Annex_A:	
Logout		G.993.2_Annex_B:	 Image: A start of the start of
	-	G.993.2_Annex_C:	
	*	Profile:	✔ 8a ✔ 8b ✔ 8c ✔ 8d ✔ 12a ✔ 12b ✔ 17a ✔ 30a
		Capability	
		Enable Bitswap:	
		Enable SRA:	 Image: A start of the start of
		Enable US0:	
		Apply Refresh	

Figure 4.3.3 xDSL Configuration

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.4 System

4.4.1 Update Software

To update software, click on the "Update Software" link in the left navigation bar, and follow the steps for updating. A screen is displayed as shown in Figure 4.4.1.

Status	
Quick Setup	Lindate Software
Lan Setup	opuate optimate
Wan Setup	Step 1: Obtain an updated software image file from your ISP
Wireless Setup	Step 2: Enter the nath to the image file location in the hox below or click the 'Browse' button to locate the image file
Advanced Setup	Step 2: Click the "Indate Seftware" butten and to unlead the new image file
Applications	Step 5. Shek the Opuale Soltware button once to upload the new image life.
System	Note: The update process takes about 2 minutes to complete, and your Broadband Router will reboot.
Configuration Backup	
Configuration Restore Update Software	Software File Name: File not found
DHCP Option 66 files	
 Account Management 	Update Software
Logs	
Service Control	
CWMP	
Internet Time	
Reboot	
Restore Default	
xDSL Diag	
Tools	
Logout	

Figure 4.4.1 Update Software

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.4.2 Restore Default Settings

To restore broadband router settings to the factory default, select "Logs", and click on the "Restore Default" link in the left navigation bar. When click "Restore Default Settings", the device will reboot in 10 seconds. A screen is displayed as shown in Figure 4.4.2.



Figure 4.4.2 Restore Default Settings

4.5 Wireless (Wi-Fi) Setup

4.5.1 Basic Configuration 2.4GHz

Select "Basic Configuration 2.4GHz" link in the left navigation bar, and you'll see the options on the right page. Enable SSID and choose SSID1 to SSID4 for 2.4GHz. Make sure Enable Wireless has been ticked, then you can set your SSID name.



Figure 4.5.1 Basic Configuration 2.4GHz



4.5.1.1 Advanced Configuration 2.4GHz

Click on "Advanced Configuration 2.4GHz" link in the left navigation bar, and you'll see the options on the right page, some options need to be carefully select. First, choose 802.11 b/g/n modes, and set Bandwidth 20/40 MHz.

In the Short GI (Guard Interval) option, the Wi-Fi link rates are different between enable or disable. If enable GI (Guard Interval), the Wi-Fi link rate speed will be the highest, however, the rate speed may depend on the environment.

After pressing "Apply" to setup your options, test Wi-Fi to check your settings are all correct.

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

 Status
Quick Setup
Lan Setup
Wan Setup
 Wireless Setup
Basic Configuration
2.4GHz
Advanced Configuration
2.4GHz
WPS Configuration
2.4GHz
WDS Settings
Channel Information
 Advanced Setup
 Applications
 System
Logout

Mode:	802.11b/g/n 🔻
Bandwidth:	40 • MHz
Rate:	Auto •
TX Power:	100% •
Choose Country:	TW •
Channel:	Auto 🔻
Current Channel:	9
Beacon Interval:	100
RTS Threshold:	2347
Fragment Threshold:	2346
DTIM Interval:	1
Short GI(Guard Interval):	
WMM:	
WMM APSD:	
Apply Refresh	

Wireless Advanced Configuration 2.4GHz

Figure 4.5.1.1 Advanced Configuration 2.4GHz Options



4.5.2 Security Setting

Select "Security Setting" link in the left navigation bar, you can change security type in the right page.

Quick Setup	Wireless Security	Setting
Lan Setup	in cloco cocany	ootang
Wan Setup	Choose SSID:	SSID1 •
 Wireless Setup 		
Basic Configuration	Authentication:	WPA-PSK/WPA2-PSK MIXED *
2.4GHz	WPA Preshare key:	•••••
Security Setting	Encontion Mode:	AEQ
Advanced	Encryption mode.	AES -
Configuration		
2.4GHZ	Apply Refresh	
WPS Configuration		
Z.4GHZ		
Chappel		
Information		
Advanced Setun		
 Advanced Setup Applications 		
 Applications System 		
/ System		
Logoul		

Figure 4.5.2 Wireless Security Setting

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.5.2.1 Choose SSID

Please note that SSID1 to SSID4 are 2.4GHz Wi-Fi settings and confirm the SSID number here should be matched with Basic Configuration page above.



Figure 4.5.2.1 Choose SSID



4.5.2.2 Authentication Options

In Authentication options, you can change security type. Normally, test Wi-Fi to check your security type are correct.



Figure 4.5.2.2 Authentication Options

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.6 Applications

4.6.1 IGMP Settings

Select "Multicast" \rightarrow "IGMP" link in the left navigation bar. According to the WAN setting, if you want to test IGMP function on Router mode, you only need to enable IGMP function basic on the WAN Setup.

 Status 	
Quick Setup	IGMP Settings
Lan Setup	ionii octarigo
Wan Setup	Enter IGMP protocol configuration fields if you want modify default vaules shown belo
 Wireless Setup 	NOTE: Query Interval is advised to no longer than 125s.
Advanced Setup	
 Applications 	Default Version: IGMP v2 •
 Storage Service Telnet Service 	Query Interval(s): 125
SSH Service	Query Response Interval(1/10s): 100
Printer Share Multimedia Share	Last Member Query Interval(1/10s): 10
 DNS 	Robustness Value: 2
UPnP	Maxinum Multicast Data Source(for IGMPv3): 10
 Multicast IGMP 	Fast Leave Enable: ✔
MLD	Membership Join Immediate(IPTV):
► VPN	Anniv Refresh
 System 	
Logout	Enable IGMP Snooping:
	Apply Refresh
	Enable IGMP Proxy:
	WAN Connection Enable IGMP
	vdsl 🕑
	Apply Refresh

Figure 4.6.1 IGMP Settings

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.6.2 USB setup

Insert a U disk into the USB interface, then login 192.168.1.1, select "Storage Service"->"Storage Device Info" link in the left navigation bar. Confirm the system has mounted the U disk.



Storage Device Info

Number	Provider	Product Type	Capacity(MB)
1	FUJITSU	MHV2040AH	39999

Figure 4.6.2 USB Setup



4.6.3 FTP Server

Select "Storage Device Info" \rightarrow "FTP Server" link in the left navigation bar, on the right page you will see how to enable FTP Server function.

 Status 	
Quick Setup	Storage Service - FTP Service Setup
Lan Setup	eterage eervice i in eervice eerup
Wan Setup	Note: To enable FTP Server, at least one storage device would be inserted.
 Wireless Setup 	
Advanced Setup	Enable FTP Service:
 Applications 	FTP Directory: FUJITSU-MHV2040AH-0811-81
 Storage Service 	
Storage Device Info	Apply Refresh
Samba Server	rencon
FTP Server	
FTP Client	
TFTP Server	

Figure 4.6.3 FTP Service Setup

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.6.4 FTP Client

Select "Storage Device Info" \rightarrow "FTP Client" link in the left navigation bar, on the right page you can input FTP Client Settings, and click "Download". Then, click "Refresh" to make sure the status is completed.





The latest 10 download records

Refresh							
User Name	Password	Port	Download URL	Save Path	Progress	Status	Action
blake		21	ftp://netsys.com.tw/helio.htm	xdown	100%	complete	Delete

Figure 4.6.4 FTP Client Settings

4.6.5 TFTP Server

Select "Storage Device Info" \rightarrow "TFTP Server" link in the left navigation bar, on the right page you will see how to enable TFTP Server function.

 Status 	
Quick Setup	Storage Service - TETP Service Setup
Lan Setup	Storage Service - IT IT Service Setup
Wan Setup	Note: To enable the TFTP Server, a storage device may be needed.
 Wireless Setup 	
Advanced Setup	Enable TFTP Service:
 Applications 	TFTP Directory:
 Storage Service 	
Storage Device Info	Apply Refresh
Samba Server	Apply Reliesh
FTP Server	
FTP Client	
TFTP Server	

Figure 4.6.5 TFTP Service Setup

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

4.7 SNMP Setup

Click on "SNMP" link in the left navigation bar, on the right page you will see how to enable SNMP function. NV-720S supports SNMP V1/V2.

 Status 		
Quick Setup	SNMP Settings	
Lan Setup	Orthin Cettings	
 Wan Setup 	Enable SNMP	
 Wireless Setup 		
Advanced Setup	System Contact	net
 Applications 	System Name	net
 Storage Service Storage Device Info 	System Location	net
Samba Server	Public community	public
FTP Server FTP Client	Private community	private
TFTP Server	Trap Enable	
Telnet Service SSH Service	Trap Version	SNMP V1 V
Printer Share	Trap Address	192.168.1.100
Multimedia Share DNS	Apply Dofroch	
UPnP	Apply Reliesh	
 Multicast 		
SNMP		
VPN		
 System 		
Logout		

Figure 4.7 SNMP Settings

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

Download "MG-SOFT MIB Browser". below is picture for how to use the software.

Connect Remote SNMP agant.

A MG-SOFT MIB Browser Professional SNMPv3 Edition		
File Edit View SNMP Action Tools Window Help		
de)?{] 🖉 🖏 🔮 i 💷 🔤 🗛 🖢 🍀 🖾 🏚 🎭 🕼	4	
Query MIB Ping		
Bemote SNMP agent		
192.168.1.1 ▲ 🔊 🖾 .	SNMP Protocol Preference	s
⊡- 🔂 MIB Tree	SNMP protocol version	
terment iso	SNMPv1 O SNM	IPv2c
	General	Get-Bulk settings
	Read community	🔽 Use Get-Bulk
	public 👻	0 Non repeaters
	Set community	10 Max repetitions
	private 👻	SNMPv3 security
	Timeout [s] 5	User security name
	Retransmits 4	Securitu level
	Port number 161 👻	
Query results		
1: ifNumber.0 (integer) 26		oad user profile
Remote address: 192.168.1.1 port: 161 transport: IP/UDP Local address: 192.168.20.102 port: 52441 transport: IP/UDP Protocol version: SNMPv2c	Add to agent profiles	OK Cancel

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

Select OID:1.3.6.1.2.1.1.3 System Up Time



Appendix A: Cable Requirements

A.1 Ethernet Cable

A CAT 3~7 UTP (unshielded twisted pair) cable is typically used to connect the Ethernet device to the router. A 10Base-T cable often consists of four pairs of wires, two of which are used for transmission. The connector at the end of the 10Base-T cable is referred to as an RJ-45 connector and it consists of eight pins. The Ethernet standard uses pins 1, 2, 3 and 6 for data transmission purposes. (Table A-1)

		MDI		MDI-X	
PIN #	Signal	Media Dependent	Signal	Media Dependent	
	Signai	interface	Signai	interface-cross	1234362
1	TX+	Transmit Data +	RX+	Receive Data +	
2	TX-	Transmit Data -	RX-	Receive Data -	
3	RX+	Receive Data +	TX+	Transmit Data +	
4		Unused		Unused	87634321
5		Unused		Unused	
6	RX-	Receive Data -	TX-	Transmit Data -	Figure A.4 Stendard D.I.45 recented
7		Unused		Unused	-Figure A-1 Standard RJ-45 receptacie/c
8		Unused		Unused	

Table A-1 RJ-45 Ethernet Connector Pin Assignments

Note:

Please make sure your connected cables have the same pin assignment as the table above before deploying the cables into your network.

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5



Figure A-3 Pin Assignments and Wiring for an RJ-45 Crossover Cable

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

A.2 Telephone wire

Standard telephone wire of any gauge or type-flat, twisted or quad is used to connect the Modem to the telephone network. A telephone cable typically consists of three pairs of wires, one of which is used for transmission. The connector at the end of the telephone cable is called an RJ-11 connector and it consists of six pins. POTS (plain old telephone services) use pins 3 and 4 for voice transmission. A telephone cable is shown below. (Figure A-6)



Figure A-4 Telephone cable

The A and B connectors on the rear of the Modem are RJ-11 connectors. These connectors are wired identically. The RJ-11 connectors have six positions, two of which are wired. The Modem uses the center two pins. The pin out assignment for these connectors is presented below. (Table A-3)

Pin#	MNEMONIC	FUNCTION
1	NC	Unused
2	NC	Unused
3	TIP	POTS
4	RING	POTS
5	NC	Unused
6	NC	Unused

Appendix B: Product Specification

Key Features & Benefits

- ◆ Adopts ARM Cortex A9 dual-core processor
- Supports G.993.5 Vectoring and ADSL2+
- Supports G.998.4 G.INP
- Supports Dying Gasp
- Supports ATM and PTM transmission mode auto detection (ADSL backward compatible)
- Supports 8a, 8b, 8c, 8d, 12a, 12b, 17a, 17b, and 30a band profile and auto follow-up on CO side
- Supports 997, 998 band plan
- Supports ATM-TC,ATM and AAL5 (ATM Flow Throughput / OAM Cell Filter and Forwarding / AAL5 SAR:PVC / ATM Traffic Class / ATM PVC Shaping / ATM PVC Scheduling)
- Supports ATM Qos CBR, rt-VBR, nrt-VBR, UBR
- Support 2.4G single band wireless
- Compliant with IEEE 802.11b/g/n wireless standard with 2T2R MIMO(Up to 300 Mbps)
- Supports WPS, WMM, WDS
- Supports WEP,WPA,WPA2
- Supports QoS- IP version, LAN port, MAC, VLAN, 802.1P, IP address, DSCP, Protocol type
- Low power with Advanced Power Management
- Supports uPnP/PPPoE/PPPoATM/IPv4/IPv6/NAT/NAPT
- Supports static routing for IPv4 and IPv6 forwarding
- Supports Firewall functions contains Packet filtering, DMZ, Mac Address based filtering, Parental Control, Application based filtering

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

- Supports DHCP Server/ DHCP Relay/ DHCP Client/ DHCPv6 Client/ DHCPv6 Server/ DNS/ DNS Proxy or Relay/ DNSv6 Proxy or Relay/ NTP Client/HTTP1.1 server
- Supports Multicast IP table/IGMP v3 Proxy and Snooping
- Supports IEEE802.1q Tag VLAN
- Support IEEE 802.1p VLAN Priority and mapping to DSCP
- Support 8 queue MFC/DSCP both type QoS
- Supports HTTP/HTTPS web management
- Support SSL / SSH security
- Supports remote management and monitor
- Supports configuration backup and restore
- Provides surge protection for Line port
- Supports Router & Switch(Bridged) mode selection
- Supports Dual Firmware Image Backup
- Supports SNMP v1/v2
- ♦ Supports TR-069
- Supports VPN

Notes:

- 1. Features and specifications in this manual are subject to change without prior notice.
- 2. (*) Firmware upgradeable for future enhancement.



Product Specification

Standarde:	IEEE802.3/802.3u/802.11b/802.11g/802.11n standards
otanuarus.	standards
	FCC
Regulatory Compliance:	CE
	RoHS compliance
	4 x RJ-45 10/100Mbps auto-negotiation Ethernet port
	1 x RJ-11 for VDSL2 line port
Physical Interface:	2 x 2dBi external Antennas
rnysical menace.	1 x WPS Button
	1 x Reset Button for resetting to factory default
	1 x USB2.0 for connecting USB dongle
	1 x Power LED
	4 x Link/Active Status for Ethernet port
LED Indicators:	1 x Link LED for VDSL2 port
	1 x WPS LED
	1 x WLAN LED
	1 x USB LED
Wireless Frequency Range	2.4GHz Single band
Switch method:	Store and forward

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

	Full duplex: IEEE 802.3x				
Flow control.	Half duplex: Back pressure				
Typical Power Consumption:	3.6 W(Full load)				
Power Supply:	Input Voltage: 12 VDC/1A (Commercial-grade power adapter)				
Operating Temperature:	0°C ~ 50°C (32°F ~ 122°F) Fan-less, free air cooling				
Storage Temperature:	-20°C ~ 70°C (-4°F ~158°F)				
Humidity:	10% to 90% (non-condensing)				
Dimensions:	184 x 177 x 104 mm (7.2" x 6.9" x 4.1") with 2dBi Antenna				
Weight:	0.44 Kg				
EMC	EMI Compliant: FCC				
	EMS Compliant: CE mark				

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

Appendix C: Router/Bridged Mode select

This appendix describes how to select the router/bridged mode, The NV-720S default mode is router mode, please refer to the following steps to select the router mode or switch mode.

• Selecting the Router mode:

1. For configuring the router mode settings, click the **IPv4 Configuration** link (**LAN Setup**) on the left navigation bar. Select "Server" as the DHCP Mode and click **Apply** at any time during configuration to save the information that you have entered. A screen is displayed as shown in Figure C.1

 Status 	
Quick Setup	IPv4 Configuration
 Lan Setup 	ii vy ooniiguraaon
IPv4 Configuration IPv6 Configuration	IP Address: 192.168.16.234
Ethernet Mode	Subnet Mask: 255.255.255.0
Wan Setup	Primary DNS Server: 192.168.16.234
 Wireless Setup 	
 Advanced Setup 	Secondary DNS Server:
 Applications 	Domain Name: localhost
 System 	Disable DHCP Enable DHCP Relay Enable DHCP Server
Logout	Relay IP: 192.168.16.1
	Start(PC): 192.168.1.2
	End(PC): 192.168.1.254
	Lease Time: 86400 (Seconds)
	Edit Reserved IP Address
	Edit Dhcp Option 60 Edit Dhcp Options
	Apply Refresh

Figure C-1 DHCP Server

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

2. Click the **WAN Service** link (**WAN Setup**) on the left navigation bar to specify the WAN Setup. Please Select as the DHCP Mode.

 Status 							
Quick Setup	WAN Servi	celnfo					
▶ Lan Setup							
- Wan Setup	WAN Name	Interface	Mode	IP Protocol Type	Service Type	Edit/D	elete
 WAN Interface 							
ATM	vdsl PPPoE	РТМ	PPPoE	IPv4	TR069 INTERNET	Edit	Delete
PTM						Luit	Delete
Dongle							
WAN Service	Set New W	AN					
xDSL Configuration							
 Wireless Setup 	Interface:	PTM	•				
 Advanced Setup 	internatio.	1 1111					
 Applications 	Mode:	DHCP	•				
▶ System		DHCP					
Logout		Static					
	Create Re	PPPoE Bridge	-				
		Dhuge					

Figure C-2 WAN Setup

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

3. Please refer to the **section 4.2** for configuring the WAN type; the user can configure the Dynamic IP Address, Static IP Address, PPPoE mode.

▶ Status	WAN Service	
Quick Setup		
▶ Lan Setup	Connection Name:	PTM router
✓ Wan Setup		
 WAN Interface 	Enable:	 Image: A start of the start of
	MTU:	
Dongle		
WAN Service	IP Protocol Type:	IPv4 ▼
xDSL Configuration	NAT:	
 Wireless Setup 		
 Advanced Setup 	IPv4 Static DNS:	
 Applications 	PPPoF Type	Normal PPPoF
► System	THOE TYPE.	
Logout	. Servicename:	
	User Name:	
	Password:	•••••
	Authentication Type:	AUTO 🔻
	Dial Mode:	Automatically •
	Keep Alive Time:	30 (10-30)s
	Keep Alive Time: Keep Alive Max Fail:	30 (10-30)s 5 (1-100)
	Keep Alive Time: Keep Alive Max Fail: MAC Address Override:	30 (10-30)s 5 (1-100)
	Keep Alive Time: Keep Alive Max Fail: MAC Address Override: Enable VLAN:	30 (10-30)s 5 (1-100)
	Keep Alive Time: Keep Alive Max Fail: MAC Address Override: Enable VLAN: Service Type:	30 (10-30)s 5 (1-100)
	Keep Alive Time: Keep Alive Max Fail: MAC Address Override: Enable VLAN: Service Type: Advanced Settings	30 (10-30)s 5 (1-100) INTERNET V

Figure C-3 Configuring WAN Type

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

- Click **Apply** for applying the changes.
- Click Back to exit from this page without saving the changes.

• Select the Bridged mode:

1. To configure the bridged mode settings, click the **IPv4 Configuration** link (**LAN Setup**) on the left navigation bar. And click Apply at any time during configuration to save the information that you have entered. A screen is displayed as shown in Figure C.4

▶ Status					
Quick Setup	IPv4 Configura	ation			
- Lan Setup	ii v4 oomigure				
IPv4 Configuration	IP Address:		192.168.16.234		
Ethernet Mode	Subnet Mask:		255.255.255.0		1
▶ Wan Setup	Primary DNS Serve	r.	192 168 16 234		1
 Wireless Setup 	r minury brite beine		102.100.10.201		_
Advanced Setup	Secondary DNS Se	rver:			
 Applications 	Domain Name:		localhost]
 System 	Disable DHCP		Enable DHCP Relay	0	- Enable DHCP Server
Logout	· Disable Drive	-			
	Relay IP:		192.168.16.1		
	Start(PC):		192.168.1.2]
	End(PC):		192.168.1.254]
	Lease Time:		86400		(Seconds)
			Edit Reserved IP Ad	dress	
			Edit Dhcp Option 60	ł	Edit Dhcp Options
	Apply Refresh				

Figure C-4 DHCP Mode – Disable



2. Click the **WAN Service** link (**WAN Setup**) on the left navigation bar to specify the WAN setup. A screen is displayed as shown in Figure C.5

 Status 									
Quick Setup	WAN Servi	iceInfo							
Lan Setup									
- Wan Setup	WAN Name	Interface	Mode	IP Protocol Type	Service Type	Edit/Delete			
 WAN Interface 									
WAN Service									
xDSL Configuration	Set New WAN								
 Wireless Setup 									
 Advanced Setup 	Interface:	PTM	•						
 Applications 									
 System 	Mode:	Bridge	•						
Logout		DHCP							
Logour		Static							
	Create Re	PPPoE							
		Bridge							

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

 Status 						
Quick Setup	WAN Service					
Lan Setup						
 Wan Setup 	Connection Name: PTM_Bridge					
 WAN Interface 						
WAN Service	Enable:					
xDSL Configuration	IP Protocol Type:					
 Wireless Setup 	IP Protocol Type. IPv4 V					
 Advanced Setup 	Enable VLAN:					
 Applications 						
 System 	Service Type: INTERNET V					
Logout						
	Advanced Settings					
	Apply Back Refresh					

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

Lan Setup Wan Setup Wireless Setup ✓ Advanced Setup	
► Wan Setup Connection Name: LAN ▼ ► Wireless Setup Enable: ✓	
► Wireless Setup ✓ Advanced Setup Enable:	Г
✓ Advanced Setup Enable:	
NAT Destination Subnet: 0.0.0.0	
Security	-
Parental Control Subnet Mask. 0.0.0	
✓ Routing Gateway: 192.168.16.1	
Static Route Metrics: 1	
IPv6 Static Route	
IPv6 Dynamic Route ; Back Apply Refresh	
Quality of Service	
Bandwidth Limit	
IP Tunnel	
▶ Applications	
▶ System	
Logout	

Figure C-5 WAN Setting

Appendix D: Troubleshooting

Diagnosing the Router's Indicators

The router can be easily monitored through its comprehensive panel indicators. These indicators assist the network manager in identifying problems the hub may encounter. This section describes common problems you may encounter and possible solutions.

1. Symptom:	POWER indicator does not light up (green) after power on.
Cause:	Defective External power supply
Solution:	Check the power plug by plugging in another that is functioning properly. Check the power cord with another device. Check the terminal block make sure to fasten the power cord. If these measures fail to resolve the problem, have the unit power supply replaced by a qualified distributor.
Note:	Please refer to the power status table to check power input status. Section 3.3

2. Symptom:	Link indicator does not light up (green) after making a connection.
Causai	Network interface (ex. a network adapter card on the attached device), network cable, or switch port
Cause.	is defective.
	2.1 Power off and re-power on the VDSL2 router.
	2.2 Verify that the switch and attached device are power on.
	2.3 Be sure the cable is plugged into both the switch and corresponding device.
Solution:	2.4 Verify that the proper cable type is used and its length does not exceed specified limits.
	2.5 Check the router on the attached device and cable connections for possible defects.
	2.6 Make sure that the phone wire must be connecting NV-720S first, when powered on.
L	2.7 Replace the defective router or cable if necessary.

netsys

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

3. Symptom:	VDSL Link cannot be established.
Cause:	VDSL setting failure or phone cable length is over the specification limit.
Solution:	 3.1 Please make sure that the phone wire must be connected between CO side and NV-720S (CPE) when both are power on. CO side will do link speed function depending on phone wire length, therefore if CO side can't detect NV-720S (CPE) over phone wire while both power on, this will cause the link to fail. 3.2 Please check the phone wire, we recommend using 24-26 gauge twisted pair cables without rust. 3.3 Please reinsert power when changing the cable length or link time over 3 minutes.
Note:	The phone wire must meet CAT 3 standard or above and without clustering , otherwise it will cause more cross talk, reducing the DSL power driver.

4. Question:	What is VDSL2? (Only reference)
4. Question: Answer:	What is VDSL2? (Only reference) Very-high-speed digital subscriber line 2 (VDSL2) is an access technology that exploits the existing infrastructure of copper wires that were originally deployed for traditional telephone service. It can be deployed from central offices, from fiber-optic connected cabinets located near the customer premises, or within buildings. It was defined in standard ITU-T G.993.2 finalized in 2005. VDSL2 was the newest and most advanced standard of digital subscriber line (DSL) broadband wire
	video, data, high definition television (HDTV) and interactive gaming, VDSL2 was intended to enable operators and carriers to gradually, flexibly, and cost-efficiently upgrade existing xDSL infrastructure.



The protocol was standardized in the International Telecommunication Union telecommunications sector (ITU-T) as Recommendation G.993.2. It was announced as finalized on 27 May 2005, [1] and first published on 17 February 2006. Several corrections and amendments were published in 2007
through 2011.
VDSL2 is an enhancement to very-high-bit rate digital subscriber line (VDSL), Recommendation
G.993.1. It permits the transmission of asymmetric and symmetric aggregate data rates up to 200
Mbit/s downstream and upstream on twisted pairs using a bandwidth up to 30 MHz.
VDSL2 deteriorates quickly from a theoretical maximum of 250 Mbit/s at source to 100 Mbit/s at 0.5
km (1,600 ft.) and 50 Mbit/s at 1 km (3,300 ft.), but degrades at a much slower rate from there, and still outperforms VDSL. Starting from 1.6 km (1 mi) its performance is equal to ADSL2+.
ADSL-like long reach performance is one of the key advantages of VDSL2. LR-VDSL2 enabled
systems are capable of supporting speeds of around 1–4 Mbit/s (downstream) over distances of 4–5
km (2.5–3 miles), gradually increasing the bit rate up to symmetric 100 Mbit/s as loop-length
shortens. This means that VDSL2-based systems, unlike VDSL1 systems, are not limited to short
local loops or MTU/MDUs only, but can also be used for medium range applications.

5. Question:	What is SNR (Signal-to-Noise)? (Only reference)
	Signal-to-noise ratio (often abbreviated SNR or S/N) is a measure used in science and engineering
Answer:	that compares the level of a desired signal to the level of background noise. It is defined as the ratio
	of signal power to the noise power. A ratio higher than 1:1 indicates more signal than noise. While



- 7

SNR is commonly quoted for electrical signals, it can be applied to any form of signal (such as
isotope levels in an ice core or biochemical signaling between cells). The ratio is usually measured
in decibels(dB)
The signal-to-noise ratio, the bandwidth, and the channel capacity of a communication channel are
connected by the Shannon–Hartley theorem.
In digital communications, the SNR will probably cause a reduction in data speed because of
frequent errors that require the source (transmitting) computer or terminal to resend some packets of
data. SNR measures the quality of a transmission channel over a network channel. The greater the
 ratio, the easier it is to identify and subsequently isolate and eliminate the source of noise.

6.	Symptom:	Connected the CO Router with CPE Router within 300 meters RJ-11 phone cable got only less than
		10 Mbit/s.
	Cause:	Some testing programs which are based on TCP/IP protocols such as FTP, Iperf, NetIQ, the testing
		bandwidth outcome will be limited by TCP window size.
	Solution:	We recommend testing VDSL2 bandwidth using Smartbits® equipment or IPERF program. The
		TCP window size must be set to max. 64k, the parameter as iperf –c server IP address –i 1 –t 50 –w
		65535 for client side.

	Question:	I just bought a Netsys NV-720S to replace my Quest DSL modem for my home. I was told any VDSL2
7. Que		modem would work and give me higher communication speeds. It doesn't get me internet when
		hooked up. All lights come on but no Link light. Is this the complete wrong application for this unit?
A	Answer:	Please note NV-720S is a remote side (CPE side), it must be connected to the CO side to work.
Ans		Tone mode, Band profile and band plan settings must be compatible with each other, if not; access



error will show when applied. Please deactivate and activate once the settings have been changed.

8.	Question:	We need to set up a default gateway on a NV-720 pair which is in Bridge mode, as they want to
		manage the units from a different network.
	Answer:	When the application is used within the LAN, the switch (bridged) mode is not necessary to set up a
		gateway .However, if the application crosses various network segments (LAN to WAN or WAN to
		LAN), you must set up a gateway to connect a different network segment.
		Regarding on how to configure a default gateway at switch (bridged) mode for crossing various
		network segments.
		Example for configuring the gateway from static routing:
		Destination LAN IP: 0-0-0-0
		Subnet Mask: 0-0-0-0
		Gateway: 255-255-255-0
		Note: Static Routing functionality is used to define the connected Gateway between the LAN and
		WAN.

9. Question:	What can I do if I forgot my password?
Answer:	If you forgot your password, you must reset your router. This process will change all your settings back to the factory default. To reset the router, locate the reset button on the rear panel of the unit. With the router powered on, use a paperclip to hold the button down for over 5 seconds. Release the button and the router will go through its reboot process. The default IP is 192.168.1.1. When logging in, the default username and password are both " admin ".


10. Question:	Is it possible to use ADSL2 IP DSLAM with the NV-720S?
Anower	NV-720S support the ADSL Annex B backward compatible, therefore the NV-720S can connect to
Answer.	ADSL2 IP DSLAM.

11. Question:	I have purchased a kit of NV-802S and NV-720S to extend the property Wi-Fi network. They will sit in the property LAN which is served by a modem router and off an ADSL telecom connection. Each NV unit will have a fixed IP LAN address. All Wi-Fi user addresses are provided by the gateway modem router. The reason for purchase is to extend the LAN service via phone lines to the Wi-Fi access point. I would appreciate a simple configure set up for each unit. e.g. should the NV-802S be configured as a
	switch or router?. Do I need to configure a VDSL2 WAN between the NV-802S and NV-720S?
Answer:	Basically, use default settings that the network can be established. NV-802S should configure to
	switch mode (default mode), and NV-720S configure to router mode (default mode).

12. Question:	What is the maximum Ethernet frame MTU for these routers?
Answer:	NV-720S maximum Ethernet frame MTU is 1536 bytes.

13. Question:	We have a customer who previously had the NV-720S (regular antenna) and we sent them a NV-720S with the 5db antenna (high power output) to replace the original unit when it failed, but the new unit with 5db antenna has less coverage than the original unit. Can you please send me the NV-720S wireless configuration settings to optimize the range of the high output antenna? If they are the same, why is the NV-720S with the 5db antenna, providing less coverage? Please advise.
Answer:	Please note that the two antennas have almost the same coverage range, the difference between the



two antennas is the Gain pattern shape (the 5dBi Gain pattern shape is butterfly and the 2dBi Gain pattern shape is chubbier), and also the 5dBi antenna has higher penetrating power (ex. Through walls).

So regarding this issue, we don't think that the 5dBi is providing less coverage, we think is because of the Gain pattern shape. Furthermore, the actual performance will vary depending on the environment factors.

Gain Pattern 2dBi Antenna



Gain Pattern 5dBi Antenna





System Diagnostics

Power and Cooling

If the POWER indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply as explained in the previous section. However, if the unit power is off after running for a while, check for loose power connections, power losses or surges at the power outlet. If you still cannot isolate the problem, then the internal power supply may be defective. In this case, please contact your local dealer.

Installation

Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (e.g. the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.

Transmission Mode

The transmission mode for RJ45 ports is Giga Ethernet, for RJ-11 port is auto-negotiation VDSL2. Therefore, if the Link signal is disrupted (e.g. by unplugging the network cable and plugging it back in again, or by resetting the power), the port will try to reestablish communications with the attached device via auto-negotiation. If auto-negotiation fails, then communications are set to half duplex by default. Based on this type of commercial-standard connection policy, if you are using a full-duplex device that does not support auto-negotiation, communications can be easily lost (i.e. reset to the wrong mode) whenever the attached device is reset or experiences a power fluctuation, the best way to resolve this problem is to upgrade these devices to a version that support Ethernet and VDSL.



Physical Configuration

If problems occur after altering the network configuration, restore the original connections, and try to track the problem down by implementing the new changes, one step at a time. Ensure that cable distances and other physical aspects of the installation do not exceed recommendations.

System Integrity

As a last resort verify the switch integrity with a power-on reset. Turn the power to the switch off and then on several times. If the problem still persists and you have completed all the preceding diagnoses, then contact your dealer.

Appendix E: Compliance Information

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a computing device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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:

- 1. Reorient or relocate the receiving antenna.
- 2. Increase the separation between the equipment and receiver.
- 3. The equipment and the receiver should be connected to outlets on separate circuits.
- 4. Consult the dealer or an experienced radio/television technician for help.

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

If this telephone equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance in order for you to make necessary modifications to maintain uninterrupted service.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FCC Warning



This equipment has been tested to comply with the limits for a **Class A** digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment can generate, use, and radiate radio frequency energy and, if not installed and used in accordance with the

instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at owner's expense.



FCC ID: 2AOKZNV720XX

This device complies with part 15 of the FCC rules. Operation is subject to the follow Two Conditions.

(1)This device may not cause harmful interference and

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

CE Mark Warning

This is a class A product. In a domestic environment, this product may cause radio interference in which
case the user may be required to take adequate measures.

ErP Power Usage

This device is an Energy Related Product (ErP) with High Network Availability (HiNA). If it is not needed during certain periods of time, it can be unplugged to save energy.

Network Standby: 2.9 watts

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

RoHS Warning



RoHS stands for Restriction of Hazardous Substances, and impacts the entire electronics industry and

many electrical products as well. The original RoHS, also known as Directive 2002/95/EC, originated in the European Union in 2002 and restricts the use of six hazardous materials found in electrical and electronic products. All applicable products in the EU market since July 1, 2006 must pass RoHS compliance. Directive 2011/65/EU was published in 2011 by the EU, which is known as RoHS-Recast or RoHS 2. RoHS 2 includes a **CE-marking directive**, with RoHS compliance now being required for CE marking of products. RoHS 2 also added Categories 8 and 9, and has additional compliance recordkeeping requirements. Directive 2015/863 was published in 2015 by the EU, which is known as RoHS 3. RoHS 3 adds four additional restricted substances (phthalates) to the list of six.

WEEE Warning



To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.



Warranty

The original product that the owner delivered in this package will be free from defects in material and workmanship for one year parts after purchase.

There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty will not apply to any products which have been subjected to any misuse, neglect or accidental damage, or which contain defects which are in any way attributable to improper installation or to alteration or repairs made or performed by any person not under control of the original owner.

The above warranty is in lieu of any other warranty, whether express, implied, or statutory, including but not limited to any warranty of merchantability, fitness for a particular purpose or any warranty arising out of any proposal, specification or sample. We shall not be liable for incidental or consequential damages. We neither assume nor authorize any person to assume for it any other liability.

WARNING WARNING:

Warranty Void If Removed

1. DO NOT TEAR OFF OR REMOVE THE WARRANTY STICKER AS SHOWN, OR THE WARRANTY IS VOID. 2. WARRANTY VOID IF USE COMMERCIAL-GRADE POWER ADAPTER IS USED AT HARSH ENVIRONMENTS.

NV-720S ADSL2+/VDSL2 Wi-Fi USER'S MANUAL Ver. B.5

Chinese SJ/T 11364-2024

	有毒有害物质或元素									
部件名称	铅(Pb)	汞 (Hg)	镉(Cd)	六价铬 [Cr(VI)]	多溴联苯 (PBB)	多溴二苯 醚(PBDE)	邻苯二甲 酸二(2- 乙基己 基)酯 (DEHP)	邻苯二甲 酸丁酯苯 甲酯 (BBP)	邻苯二甲 酸二丁酯 (DBP)	邻苯二甲 酸二異丁 酯 (DIBP)
结构壳体	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc
电路组	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
电源供应器	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
线材	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	0	0	\bigcirc	0	\bigcirc
包装及配件	\bigcirc	\bigcirc	\bigcirc	0	\bigcirc	0	0	0	0	\bigcirc
〇:表示该有毒物质在该部件所有均质材料中的含量均在 GB/T 39560 标准规定的限量要求以下。										
×:表示该有毒物质至少在该部件的某依均质材料中的含量超出 GB/T 39560 标准规定的限量要求。										

上述规范仅适用於中国法律