Wireless LAN Survey NX-1

User's Guide



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1. Introduction

Thank you for purchasing Wireless LAN Survey NX-1 (called "NX-1" below).

1-1. Introduction

This manual provides information on how to configure and use NX-1. Please read the Safety Instructions carefully before you begin.

Disclaimers

- The unauthorized transfer or copying of the content of this manual, in whole or in part, without prior written consent is expressly prohibited by law.
- The content of this manual is subject to change without notice.
- This manual was prepared to accurately match the content of each OS, but the actual information shown on the computer monitor may differ from the content of this manual due to future OS version upgrades, modifications, and other changes.
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- Google Chrome is a trade mark or a registered trademark of Google Inc.
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1-2. Safety Instructions

This section provides the safety instructions for safe use of NX-1.

To ensure safe and proper use, please read the following information carefully before using NX-1. The safety instructions include important information on safe handling of NX-1 and on general safety issues. Please be sure to read this page before using.

< Indication of the warning >

Danger	"Danger" indicates the existence of a hazard that could result in death or serious injury if the safety instruction is not observed.
Warning	"Warning" indicates the existence of a hazard that could result in bodily injury and/or material damage if the safety instruction is not observed.

< Indication of the symbol >

\bigwedge	This symbol indicates the warning and notice. (Example: 🕂 "Danger of the electric shock")
\bigcirc	This symbol indicates the prohibited actions. (Example: 🛞 "Disassembly is prohibited")
	This symbol indicates the necessary actions. (Example: 🚌 "Remove the AC plug from an outlet")



* Do not allow physical impact. When damaged, turn off your network device, unplug the AC plug of NX-1 from power outlet (unplug the network cable from Ethernet HUE when receiving power over the Ethernet) and contact your point of purchase. Failure to take this action could cause fire or an electrical shock.
 * In the following cases, turn off your network device, unplug the AC plug of NX-1 from power outlet (unplug the network cable from Ethernet HUB when receiving powe over the Ethernet) and contact your point of purchase for a repair or inspection Failure to take this action could cause fire or an electrical shock. * When NX-1 emits a strange smell, heat, or smoke. * When foreign objects (liquid, metal, etc.) gets into NX-1.
* Keep the cord and cables away from children. They may be injured or receive a shock
* Do not disassemble or modify NX-1. Doing so could result in fire or an electrical shock or cause NX-1 to malfunction.
* Do not disassemble or alter the AC adapter bundled with NX-1. Doing so could result in fire or an electrical shock, or cause NX-1 to malfunction.

🔨 Warning

	* When unplugging NX-1, do not pull on the cord.
8 5	The cord may break resulting in fire and/or electric shock. Pull only on the plug.
	 * When moving NX-1, turn off connected devices and NX-1 by unplugging the power cables from the outlet (if you are receiving power over the Ethernet (PoE), unplug the network cable from the HUB). * Always use the AC adapter bundled with NX-1. Other AC adapters may cause NX-1 to malfunction. * Verify all cables are connected properly and safely before using NX-1. * When NX-1 will not be used for an extended time, unplug the power cables of connected devices and NX-1.
\bigcirc	 * Do not use or store NX-1 under the following conditions to avoid potential damage to NX-1. Hard vibrations Tilted places Unstable places Exposure to the direct rays of the sun Humid or dusty places Wet place (kitchen, bathroom, etc.) Heated places (near stove, heater, etc.) Wide temperature change Strong electromagnetic field (near magnet, radio, wireless device, etc.)
	- Strong electromagnetic field (near magnet, radio, wireless device, etc.)

1-3. User Registration and Customer Services

User registration

To enable us to provide better services (support and repair), please perform the user registration process from our website below:

URL	
USA	http://www.silexamerica.com/support/product-registration/
Japan	http://www.silex.jp/register/



- For user registration, a serial number is required.

Product Information

The services below are available from the Silex Technology website. For details, please visit the Silex Technology website.

URL		
USA	USA http://www.silexamerica.com/	
Japan http://www.silex.jp/		

- Latest firmware download - Latest software download

- Latest manual download - Support information (FAQ)

Customer Support Center

Customer Support is available by e-mail or telephone for any problems that you may encounter. If you cannot find the relevant problem in this manual or on our website, or if the corrective procedure does not resolve the problem, please contact Silex Technology Customer Support.

Contact Information			
USA	+1-801-748-1199	support@silexamerica.com	
Japan	+81-(0)774-98-3981	support@silex.jp	



- Visit the Silex Technology website (http://www.silexamerica.com/) for the latest FAQ and product information.

Note

2. About NX-1

NX-1 is a wireless frame capture unit supporting IEEE 802.11 a/b/g/n. NX-1 enables you to capture wireless LAN frames to survey a wireless environment before introducing wireless LAN products, to monitor the operating status of NX-1, and to troubleshoot problems. You can view the analysis results in the web page of NX-1.

2-1. Included Items

The following items are included with this package.

- NX-1
- AC adaptor
- Rubber feet
- Warranty booklet
- GPL notice sheet
 - (About distribution of GPL software source code)
- Website guide

2-2. Features

NX-1 has the following features.

NX-1 features the Operating Mode, which consists of the following four operation modes. You can make use of them for various purposes concerning use of wireless LAN products, such as an environment survey prior to introduction, operating status monitoring, and troubleshooting.

○ Survey Mode

Measures use of specified wireless channels and reports the result in chart.

○ Monitoring Mode

Monitors the surrounding wireless environment regularly and reports the results in chronological order in charts.

○ Spectrum Analyzer

Measures radio noise that affects wireless LAN and reports the results in chart.

Capture Mode
 Captures wireless LAN frames of specified channels.

Standalone operation

NX-1 can be installed in a target wireless environment for standalone operation and enables you to make a survey without technical knowledge about operating the unit.

Remote control via a wired LAN

In the environment which allows communication with NX-1 via a wired LAN, you can remotely collect wireless LAN environment information and view the analysis results through the Web page of NX-1.

External storages

You can store monitored/captured data in a USB storage connected to NX-1.

Easy analysis function

Easy analysis function of NX-1 allows you to view collected wireless LAN environment information in the Web page.

Print layout view

Wireless LAN information can be displayed in a printable format after it is collected in the survey mode, monitoring mode or spectrum analyzer.

AMC Manager (non-free program) / AMC Finder (free program)

NX-1 supports the total management software, "AMC Manager" and "AMC Finder". The AMC Manager provides the useful features as follows:

- Remote device control and monitoring

- Bulk configuration and firmware updates



- For details on the "AMC Manager" and "AMC Finder", please visit our homepage.

Note

2-3. Limitations and Precautions

The following limitations and precautions are applied to NX-1.

Limitations

- NX-1 does not support Short Guard Interval HT20 and cannot capture frames at the corresponding transfer rates.

The communication at the corresponding rates is not reflected in the reports of the Monitoring Mode and the Survey Mode.

- Depending on the performance of your USB storage, some frames can be missed and not saved in the USB storage. Note that it is not guaranteed for all frames to be captured and stored in all USB storages.
- The Capture Mode of NX-1 does not guarantee that all frames are captured correctly in your wireless LAN environment.

Precautions

Do not perform the following actions during operation of the Operating Mode. The USB storage may be damaged.

- Disconnect the USB storage from NX-1.
- Unplug the AC adaptor of NX-1 from an outlet (When receiving power over the Ethernet (PoE), unplug the network cable).

Silex Technology will not be held liable for any damage to USB storages and/or data loss as a result of use of NX-1.

2-4. Parts and Functions

The parts name and functions are as follows:

🔳 Тор



(1)	Wireless LAN Antenna	Antenna for receiving wireless LAN radio signals.	
(2)	WSTAT LED (Green)	BLINK (Green) Turns on for 100 ms when wireless LAN frames are received followed by turning off.	
		ON (Green)	Storage writing speed is more than 20 Mbytes/sec.
	BAND LED	ON (Orange)	Storage writing speed is 10 to 20 Mbytes/sec.
(3)	(Green/Orange/Red)	ON (Red)	Storage writing speed is less than 10 Mbytes/sec.
		BLINK (Orange)	Storage writing speed is being measured.
		BLINK (Green)	The Monitoring Mode is running (1 second interval).
	SETTING LED (Green/Orange/Red)	BLINK (Orange)	The Survey Mode is running (1 second interval).
		BLINK (RED)	The Capture Mode is running (1 second interval).
(4)		BLINK ALTERNATELY (Green/Red)	The Spectrum Analyzer mode is running (1 second interval).
		OFF	No mode is running.
	POWER LED (Green/Orange/Red)	ON (Green)	Ready
(5)		BLINK (Orange)	Powering on (1 second interval)
		BLINK (RED)	USB storage writing error (500 ms intervals). * A failure of writing data into a USB storage during an operation results in an error.

Front



(6)	AC Connector	Connect an AC adaptor.	
(7)	Network Port	Connect a network cable.	
(8)	Status LED	BLINK	Wired LAN packet receive status.
(0)	Status LED	(Yellow)	Turns on for 100 ms when packets are received followed by turning off.
	Link LED	ON	A wired LAN is connected.
(9)		(Green)	A wired LAW is connected.
		OFF	A wired LAN is disconnected.

Back



(10)	Control Switch	Starts or stops the pre-configured mode (the Monitoring Mode or the Capture Mode).
(10)	Control Switch	starts of stops the pre-compared mode (the monitoring mode of the capture mode).

Right side



(11)	USB Port	Connect a USB storage.	
(12) Push switch		Factory default configuration	Press when setting NX-1 to factory default configuration. For details, see 5-1. Maintenance Feature - Factory Default Configuration .
	Push switch	Unmount	Press when unplugging the connected USB storage. Press-and-hold for 1 second. When BAND LED on the top of NX-1 turns off, you can remove the storage.

2-5. Hardware Specification

Operating Environment	Temperature : 0 °C to +40 °C		
	Humidity :	20% to 80%RH (Non-condensing)	
Storage environment	Temperature : -10 °C to +50 °C		
Storage environment	Humidity : 20% to 90%RH (Non-condensing)		
Compliant standards	VCCI Class B		
Compliant standards	FCC Part15 SubPart B Class B		
CPU	32bit RISC CPU	J	
Momory	RAM : 64	1 MByte	
Memory	Flash ROM : 16	MByte	
	10BASE-T/100BASE-TX/1000BASE-T(Auto-sensing) : 1 port		
Wired network interface	Auto MDI/MDI	I/MDIX	
	Power over Ethernet (PoE)		
Wireless network interface	IEEE 802.11a/b/g/n		
Antenna	Non-directional antenna × 2		
USB interface	USB2.0 Hi-Speed port (A type) : 1 port		
Push switch	2	For the Operating Mode: 1	
Push switch	2	For factory default configuration: 1	
		POWER LED (Green/Orange/Red)	
	Тор	SETTING LED (Green/Orange/Red)	
1.50		BAND LED (Green/Orange/Red)	
LED		WSTAT LED (Green)	
	Network Port	Status LED (Yellow)	
		Link LED (Green)	

FCC Notice



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC CAUTION

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

Federal Communication Interference Statement (United States only)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

2-6. Software Specification

Supported protocols

	Network layer	ARP, IP, ICMP
TCP/IP Transport layer		TCP, UDP
	Application layer	TELNET, BOOTP, DHCP (Client), HTTP, NTP, JCP (Silex proprietary protocol),

■ Supported Web browsers

The recommended Web browsers are as follows:

○ Internet Explorer 11 or later



- Be sure to disable the Compatibility View feature. For details, see **A. Appendix** - **A-1. Notes on Web browsers**.

○ Google Chrome 42.0 or later

2-7. OpenSSL License

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit.

(http://www.openssl.org/)

OpenSSL	License
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*

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* STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
* ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED

```
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```

*

* This product includes cryptographic software written by Eric Young

* (eay@cryptsoft.com). This product includes software written by Tim

* Hudson (tjh@cryptsoft.com).

*/

Original SSLeay License

/* Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com)

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* This package is an SSL implementation written

* by Eric Young (eay@cryptsoft.com).

* The implementation was written so as to conform with Netscapes SSL.

*

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- * 3. All advertising materials mentioning features or use of this software
- * must display the following acknowledgement:
- * "This product includes cryptographic software written by
- * Eric Young (eay@cryptsoft.com)"
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- * being used are not cryptographic related :-).
- * 4. If you include any Windows specific code (or a derivative thereof) from
- * the apps directory (application code) you must include an acknowledgement:
- * "This product includes software written by Tim Hudson (tjh@cryptsoft.com)"

*

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- * copied and put under another distribution licence
- * [including the GNU Public Licence.]

*/

3. Setup

This chapter explains how to setup NX-1.

3-1. Setup through the Web Page of NX-1

The following explains how to access and set up NX-1 from a Web browser on a PC.



- For information about supported Web browsers, see **2-6. Software specification**.

- To use this setup method, you need to modify PC network settings temporarily.

Connecting NX-1 to a Network

The following explains how to set up NX-1 by connecting it directly to your setup PC.

1. Connect NX-1 to your setup PC by using a network cable.



 Connect the AC adaptor to NX-1 and plug in the AC adaptor into an outlet. NX-1 starts. When NX-1 is ready, the POWER LED (green) on the top of NX-1 stops blinking and becomes ON.



• Always use the AC adaptor bundled with NX-1. Other AC adaptors may cause failures.

3. Start your setup PC.

Modifying PC Network Settings

You can use PCs to set up NX-1 and to view measurement results. The following explains how to modify PC network settings so that you can access NX-1 from your PC.

The default IP address of NX-1 is **192.168.0.100** (Class C). Set up the IP address of your PC so that it does not overlap the IP address of NX-1.

Example) Network settings

Set up the network settings of your PC as follows: IP address : 192.168.0.123 Subnet mask : 255.255.255.0



- To modify network settings on Windows 7

- 1. Click Start Control Panel Network and Internet View network status and tasks. The Network and Sharing center appears.
 - 2. Click Local Area Connection. The Local Area Connection Status appears.
 - 3. Click Properties. The Local Area Connection Properties appear.
 - 4. Choose Internet Protocol (TCP/IP) and click Properties.
 - 5. Set up IP address and Subnet mask. Enter Default gateway if necessary.

Setting up NX-1

<To access the Web page of NX-1>



Note

- The following screenshots show Internet Explorer 11 on Windows 7. The UI may differ depending on the version of your operating system or that of your Web browser.

1. Start a Web browser on your setup PC and enter 192.168.0.100 in the address bar.

(¢)@	http://192.168.0.100/	· → 🧔 Blar
	- "192.168.0.100" is a default IP add - When the IP address is changed d	ress configured to NX-1. uring initial setup, enter the new IP ad

2. The login page of NX-1 is displayed. Click **Login**.





- No default password is set in NX-1.

- When the password has been changed during initial setup, enter the new password.

Note - You cannot log in while another user is logging in from another device.

3. The Web page of NX-1 is displayed. From **Configuration** in the menu, select an item you want to set up.



Device Configuration

The Device Configuration allows you to set up TCP/IP of NX-1.

Operating Mode

The Operating Mode allows you to set up the Operating Mode default settings.

NTP

The NTP allows you to set up the NTP settings.

Password

The Password allows you to set up the password for NX-1.



The Web page will automatically be logged out if no operations are made for a certain amount of time after it is displayed. (The default is 30 minutes)
 The auto-logout time can be changed from **Configuration** - **Device**.

To open a report page after log-out, re-login to NX-1.

<Device Configuration>

The following explains how to set up TCP/IP of NX-1.

1. From **Configuration** in the Web page menu, click **Device**.



2. The Device Configuration page is displayed. Enter each setting.

silex	Device Configuration		
leibot Lansubre English V Operating Mode	Device Configuration		
- Survey - Monitoring - Spectrum Analyzer - Capture	 TCP/IP Configuration Name 	Value	
Configuration - Device - Operating Mode - NTP - Password	DHCP IP Address Subnet Misk	08248LE V 1922983.0100 285.295.295.0	
Maintenance Restart Factory Default Firmware Update - silex Global Site	Default Gateway ONS Configuration Name	Value	
- Lapout	DNS Server (Primary) DNS Server (Secondary)	0.000	
	 Device Configuration 		
	Name Auto-locout time(minute)	Value 30	



- For information on the settings, see A. Appendix - A-2. List of All Settings.

Note

3. After entering the settings, click **Submit** in the lower right of the Web page.

4. When the setup is completed, restart NX-1.



For information on how to restart NX-1, see 5-1. Maintenance Feature - Restarting in this manual.
If you want to make a setup in another page, you do not have to restart NX-1 here. Restart it after you complete the setup.

5. When the restart is completed, the login page of NX-1 is displayed.



- When the IP address have been changed to access an existing network, there are cases that you cannot access the Web page of NX-1. In this case, to access the Web page, use a network cable and connect NX-1 to a Ethernet hub of your network.

<Operating Mode>

The Operating Mode Configuration allows you to set up the Operating Mode default settings.

The settings entered in this page are displayed as the defaults in the page of the corresponding Operating Mode.

1. From **Configuration** in the Web page menu, click **Operating Mode**.



2. The Operating Mode Configuration page is displayed. Enter each setting.

ten v species Auto American Second Auto Second Auto	SILEX	Operating Mode Configura		
Section Votes Section Votes Secti	lect Language	Operating Mode Configuration		
Andreg Schwarten Service Confursten New				
Saver Vene Vene Vene Vene Vene Vene Vene Ve	Ventoring			
Level Market All Development	Capture		Value	
Charlen Charlen Testes Particit Particit Particit Marrier Charlen Particit Particit Marrier Charlen Particit Particit Marrier Charlen Particit Particit State Ch	Configuration			
Philing Pairs <	Operation Mode			
Alexandre de la composition de	NTP Password			
Terminal Transformation Terminal Transformation Terminal Transformation * Surve Configuration Note Statistic * Surve Configuration Note Statistic Surve Configuration Surve Configuration Surve Configuration	Maintenance			
New Cale (the control of the	Eactory Default	The solid	E 10 jevery files	
New Value State Zioni	Firmware Update			
Article Constraints Service Constraints S	NEX CIEBOTONE	Name	Value	
Section S	Lapout	20Hz		Select All Depelect All
Streichfel S		5GHz(W52)	CH36 CH40 CH44 CH48	Select All Decelect All
Mainter Works Water Mainter Works Water Mainter Works Mainter Will Son trensfeed Image: All		5GHz(W53)		Select All Deselect All
Sportieres/face) Sportieres/f		50Hz(W56)		Select All Decelect All
San Court - Marcolar Confunction New Value 2016 Vicini		5GHz(W58)	MOH149 MICH153 MICH157 MICH161 MICH165	Select All Deselect All
Moholink Conference Main Main Main Monit		Scan Interval(sec)	1	
Neme Value Value Value Description		Scan Count	1	
Neme Value Value Value Description		 Monitorios Continuation 		
Rose Real Store Roam Store Distance All Designed Distance All Designed Store Roam Store Store All Designed Distance All Designed			Value	
50년(192) 전 여당 전 여당 전 여러 전 여러 전 여러 전 여러 전 여러 전 여러		2GHz		Select All Develoct All
5GH2(WS3) 201452 201456 201450 201454 Saletzt All Demited All Saletzt All Demited All Saletzt All Sal		50He(W52)		Select All Deselect All
5GH2(W98) ØCH100 ØCH104 ØCH108 ØCH112 ØCH116 ØCH120		5GHz(W53)		
		5GHz(W56)		
Sole(WS8) 20 CH195 20		5GHz(W58)		Select All Deselect All
Manitoring Interva (minuta)		Monitoring Interva(minute)	2	



- For information on the settings, see A. Appendix - A-2. List of All Settings.

Note

3. After entering the settings, click **Submit** in the lower right of the Web page.



4. When the setup is completed, restart NX-1.



TIP

- For information on how to restart NX-1, see 5-1. Maintenance Feature - Restarting in this manual.

- If you want to make a setup in another page, you do not have to restart NX-1 here. Restart it after you complete the setup.

5. When the restart is completed, the login page of NX-1 is displayed.

• When the IP address have been changed to access an existing network, there are cases that you cannot access the Web page of NX-1. In this case, to access the Web page, use a network cable and connect NX-1 to a Ethernet hub of your network.

<NTP>

The NTP allows you to set up the NTP settings.

1. From Configuration in the Web page menu, click NTP.



2. The NTP Configuration page is displayed. Enter each setting.

C 🕘 🧭 http://192.168.0.10	00/en/index.htm	* Č 🦉 NG-1	×	د د د د د و
Silex technology Beket Language	NTP Configuration			0,70
Ensteh V Constite Mode - Survey - Monitorine - Sectrum Analyzer - Capture V Configuration - Device	NTP Configuration	Value		
- Operating Mode - NTP Password Maintenance escart	NTP Server Local Time Zone	DISABLE V +9:00 V		
- Factory Default - Firmwere Update - silex Global Site - Lopout	L			Suemt



- For information on the settings, see A. Appendix - A-2. List of All Settings.





3. After entering the settings, click **Submit** in the lower right of the Web page.

4 When the setup is completed, restart NX-1.



- For information on how to restart NX-1, see 5-1. Maintenance Feature - Restarting in this manual.

- If you want to make a setup in another page, you do not have to restart NX-1 here. Restart it after you complete the setup.

Ц Ц

TIP

5. When the restart is completed, the login page of NX-1 is displayed.

- When the IP address have been changed to access an existing network, there are cases that you cannot access the Web page of NX-1. In this case, to access the Web page, use a network cable and connect NX-1 to a Ethernet hub of your network.
<Password>

The Password allows you to set up the password for NX-1.

No default password is set in NX-1.
 When using NX-1 with it connected to the public network, be sure to change the password.

1. From **Configuration** in the Web page menu, click **Password**.



2. The Password Configuration page is displayed. Enter a new password.

C (// 192.168.0.10	130/ev/index/em + C 6 1001 x	- □ - × ∩ ☆ ®
Silex	II Password Configuration	010
Select Language English V V Operating Mode - Survey	Passeard Configuration	
- Monitoring - Spectrum Analyzer - Capture	Set a possion for accessing the configuration page.	^ ^
Configuration Device Operating Mode NTP Password	New Password Confirm New Password	
Maintenance Restart Factory Default Firmware Update slex Global Site	L	Submit
- Lapout		



- For information on the settings, see A. Appendix - A-2. List of All Settings.

Note

3. After entering the password, click **Submit** in the lower right of the Web page.

4. When the setup is completed, restart NX-1.



- For information on how to restart NX-1, see **5-1. Maintenance Feature** - **Restarting** in this manual.

- If you want to make a setup in another page, you do not have to restart NX-1 here. Restart it after you complete the setup.

5. When the restart is completed, the login page of NX-1 is displayed.



- When the IP address have been changed to access an existing network, there are cases that you cannot access the Web page of NX-1. In this case, to access the Web page, use a network cable and connect NX-1 to a Ethernet hub of your network.

4. Using NX-1

This chapter explains how to collect wireless LAN environment information by using NX-1 and how to view analysis results of the easy analysis function of this product.

4-1. Collecting Wireless LAN Environment Information

NX-1 has two methods for collecting wireless LAN environment information.

- Clicking a start button on the Web page of NX-1
- Pressing the Control Switch on NX-1

You can view the analysis results of the collected information in the Web page of NX-1.

Operating Mode	Web page	Control Switch
Survey Mode	Yes	No
Monitoring Mode	Yes	Yes
Spectrum Analyzer	Yes	No
Capture Mode	Yes	Yes

Yes: Supported No: Not supported

- For information about supported Web browsers, see **2-6. Software Specification**.

Installing NX-1 in a Target Wireless LAN Environment to Collect Information

Install NX-1 in a target wireless LAN environment to collect information.

Installation location of NX-1 differs depending on your target devices:

- When collecting information from multiple wireless LAN devices Install NX-1 at the center surrounded by the target wireless LAN devices.
- When collecting information from a particular wireless LAN device Install NX-1 near the target wireless LAN device

When collecting information through the Web page of NX-1 When viewing analysis results in the Web page

<When NX-1 is using the default IP address>

1. Connect NX-1 to a PC using a network cable.



2. Connect the AC adaptor to NX-1 and plug in the AC adaptor into an outlet. NX-1 starts.



- Always use the AC adaptor bundled with NX-1. Other AC adaptors may cause failures.

3. After starting the PC, set up the network settings so that the PC can access NX-1.



- For how to set up PC network settings, see **3-1. Setup through the Web Page of NX-1** - **Modifying PC network settings** in this manual.

<When NX-1 is using a new IP address>

Connect NX-1 to your network environment.

■ When collecting information with the Control Switch of NX-1

Connect the AC adaptor to NX-1 and plug in the AC adaptor into an outlet. NX-1 starts.



TIP

Always use the AC adaptor bundled with NX-1. Other AC adaptors may cause failures.
The Survey Mode and the Spectrum Analyzer mode do not support information collection by means of the Control Switch.

4-2. Using the Survey Mode

The Survey Mode scans specified channels sequentially and measures the wireless LAN environment around NX-1. The measured data are analyzed by the analysis function of NX-1 and the analysis results are displayed in chart in the Web page of NX-1.

<When to use the Survey Mode>

The Survey Mode is used for analysis of the status of currently used channels or for selection of channels to use in initial introduction.

Running the Survey Mode through the Web Page

1. Start a Web browser and enter the IP address of NX-1 in the address bar.



- By default, an IP address is set to NX-1 as "192.168.0.100".

- When the IP address has been changed during initial setup, enter the new IP address.

Note

2. The login page of NX-1 is displayed.

Type the password set to NX-1 and click **Login**.

🗲 🛞 🙋 http://192.168.0.100/en/login.htm	- C 🛃 Welcome to ND:1 X	× ∩ ☆ ®
Welcome to NX-1.		
	Enter the passion is and citis (Lapid). Passenint	
	Loon Smot Lanuar (Entin v)	



- No default password is set in NX-1.

When no changes are made in the password setting of NX-1, just click **Login**.

Note - You cannot log in while another user is logged in from another device.

3. The Survey Configuration page is displayed.

This page is composed of **General Configuration** tab, **Detail Configuration** tab and **Storage** tab. Click **General Configuration** tab or **Detail Configuration** tab.

Survey Configuration	Silex to choology H. Survey Configuration
Image: Section and Configuration Store Image: Section Section Section Section Store Image: Section Se	National National Image: Section of the section of th

General Configuration



General Configuration

Scan Interval and Scan Count can be changed.

Detail Configuration

You can select target channels for each wireless band as well as Scan Interval and Scan Count.



- The Survey Mode settings set in Operating Mode of Configuration in the Web page are displayed as the defaults.
- **Note** After changing the settings in **General Configuration** or **Detail Configuration**, the new settings are displayed until you restart NX-1. After a restart, the defaults are displayed.

Storage

Data can be read or deleted from the storage.

4. To save the survey result to the storage, check the check box at Save the survey data to storage.



- Up to 30 characters can be entered for Memo.

- Information entered to Memo will be displayed on data list of Storage tab.

5. Click Start Survey to start the survey.

silex	Survey Configuration		Cor
elect Language	Survey Reg	at .	
Operating Mode - Survey - Monitoring - Spectrum Analyzer - Cepture	Savey		
Configuration Device	Name	Statue	
Operating Mode NTP	Scan Count	1/1	
Password	2GHz	CH1 CH2 CH3 CH4 CH5 CH6 CH7 CH8 CH9 CH10 CH11 CH12 CH13	
Maintenance Restart	5GHz(W52)	CH36 CH40 CH44 CH48	
Factory Default Firmware Update	5GHz(W53)	CH52 CH56 CH60 CH64	
silex Gibbal Site	5GHz(W96)	CH100 CH104 CH108 CH112 CH116 CH120 CH124 CH128 CH132 CH136 CH140	
Lopout	50Hz(W58)	0H149 0H153 0H157 0H161 0H165	
		State Survey	

Starting survey unchecks wireless band channels and changes the color of the check boxes with the progress of the survey displayed.

Gray : Channels that are not surveyed

White : Channels that are going to be surveyed

Red : Channels that are being surveyed

Green : Channels that have been surveyed



Ly~

TIP

- To stop survey, click Stop Survey in the center of the page.

When available disk space of USB storage is 4MB or lower, a warning message is displayed and the Start Survey button is disabled. To deleted the measured data of NX-1, refer to 4-2. Using the Survey Mode, 4-4. Using the Spectrum Analyzer or 4-5. Using the Capture Mode for how to delete the data.

- Do not unplug the USB storage when the survey is in progress. The USB storage may be damaged. When unplugging a USB storage, be sure to stop the survey process and unmount the storage beforehand. For information on how to unmount, see the explanation of the Push Switch in **2.4 Parts and Functions**.
- When survey is in progress, do not unplug the AC plug of NX-1 from an electrical outlet (when the power is supplied by PoE, do not unplug the network cable). The USB storage may be damaged.

6. Completion of survey opens a report page showing the survey results in radar charts.



- The report page will automatically be logged out if no operations are made for a certain amount of time after it is displayed. (The default is 30 minutes) The auto-logout time can be changed from **Configuration** - **Device**. To open a report page after log-out, re-login to NX-1.

Jg (

TIP

Viewing Survey Analysis Results

After completion of survey, the measurement analysis data are reported in charts in the Web page.

Band Information

Based on the results of survey conducted by NX-1, the following band information is displayed in radar charts or bar charts. Chart scales of both radar charts and bar charts can be adjusted.



\Box Print Layout

Opens a printable format page.

Band Occupy Ratio

Displays band occupy ratio for specified channels.

Device Count

Displays the number of access points and stations that are confirmed to be in operation.

Frame Status

Displays received correct frames/error frames/retry frames both in percentage and in numerical values.

Device Information

Displays information on wireless devices that are in operation in each channel based on the survey results conducted by NX-1.

(-) (S) http://192.168.0.10		
Silex technology Selet Lanuage	I Survey Configuration	70
English V V Operatins Mode - Survey - Monitoring - Spectrum Analyzer - Capiture V Conflueration	Survey Report Print Layout Band Information Device Information	^
- Device - Operating Mode - NTP - Password ▼ Maintenance - Restart	2.4CHz 5CHz(W52) 5CHz(W56) 5CHz(W58) All Channel >= -60(dBm) < -80(dBm)	
- Factory Default - Firmware Update - silex Global Site - Logout		
	→ ↓	

□ Print Layout

Opens a printable format page.

□ Access Point Information

Displays information on access points in operation.

Station Information

Displays information on stations that have communicated with access points during survey.

Band Information - Band Occupy Ratio



Displays wireless band occupy ratio for specified channels in percentage.

Band Occupy Ratio

Displays wireless band occupy ratio for specified channels in radar charts or bar charts.

□ Chart

Allows you to select how to display wireless band occupy ratio. Radar: Displays wireless band occupy ratio in radar charts. Bar: Displays wireless band occupy ratio in bar charts.

\Box Scale

Allows you to select scales of displayed charts. 5/10/25/50/100 (Unit: %)

Band Information - Device Count

Displays the total number of access points and that of stations connected to the access points for specified channels.



Access Point

Checking this displays the total number of access points for specified channels in radar charts or bar charts.

Station

Checking this displays the total number of stations connected to access points for specified channels.



- The number of stations is counted up when a frame sent from a station to an access point is detected during survey.

Note - Stations that do not communicate during survey are not detected or counted.

🗆 Total

Checking this displays the total number of access points and stations for specified channels.

\Box Chart

Allows you to select how to display wireless band occupy ratio.

Radar : Displays the number of devices in radar charts.

Bar : Displays the number of devices in bar charts.

\Box Scale

Allows you to select scales of displayed charts. 10/25/50/100/250/500 (Unit: the number of devices)

Band Information - Frame Status



Displays wireless band occupy ratio for specified channels in percentage.

□ Correct

Displays the number of received correct wireless frames in percentage or numerical values in radar charts or bar charts.

Displays the number of received error wireless frames in percentage or numerical values in radar charts or bar charts.

□ Retry

Displays the number of received retry wireless frames in percentage or numerical values in radar charts or bar charts.

 \Box Chart

Allows you to select how to display the frames previously mentioned.

Radar : Displays the previously mentioned frames in radar charts.

Bar : Displays the previously mentioned frames in bar charts.

Ratio : Displays the number of received frames in percentage.

Count : Displays the number of received frames in numerical value.

 \Box Scale

Allows you to select scales of displayed charts.

Ratio : 5/10/25/50/100

Count: 10/100/1000/10000

Survey Configuration - Device Information

Displays information on the operating access points and the operating stations for each channel.

SIEX technology	II Survey Configuration
Select Language English	Survey Report
Operating Mode Survey Monitoring Spectrum Analyzer Capture	PrintLayout Band Information Device Information
Configuration Device Operating Mode NTP Password	2.4GHz 5GHz(W52/W53) 5GHz(W56) 5GHz(W58) All Channel ■ >= -60(dBm) = < -60(dBm)
▼ Maintenance - Restart - Factory Default - Firmware Update	CH1 CH2 CH3 CH6 CH7 CH8 CH9 CH10 CH11 CH12 CH13 →
- silex Global Site	

□ Frequency bands and channels

You can select frequency bands and channels to display.

Band	Channel
2.4GHz	CH1-CH13
5GHz(W52)	CH36/CH40/CH44/CH48
5GHz(W53)	CH52/CH56/CH60/CH64
	CH100/CH104/CH108/CH112/CH116/CH120
5GHz(W56)	CH124/CH128/CH132/CH136/CH140
5GHz(W58)	CH149/CH153/CH157/CH161/CH165
All Channel	All channels mentioned above

Access Point Information

Displays the following information on access points.

Wireless device information	Remarks
MAC Address (BSSID)	Displays a MAC address (BSSID) of an access point.
ESSID(SSID)	Displays an ESSID (SSID) of an access point.
	Displays the wireless signal strength of an access point in dbm. Green: \geq -60 (dBm)
Wireless signal strength	Yellow: < -60 (dBm)
	Red: < -80 (dBm)
The number of connected stations	Displays the number of stations connected to the access point.
Encryption	Displays a key mark when the access point is encrypted.
Operation mode	Displays [n] when IEEE802.11n is used.

□ Station information

Clicking the arrow on the left when there is a connected station displays the station.

•	00 80 92 41 39 43	~ -58(dbm)	1	f bgn
N.	/AC Address	Wireless Signal Strength(dBm)		
8	34:25:3f:01:09:e9	-65		
	2		-	

Wireless device information	Remarks
MAC Address	Displays the MAC address of the station.
Wireless signal strength	Displays the wireless signal strength of the station.

Survey Configuration - List of Data on Storage

If the **Storage** tab is clicked, the survey result is displayed that is saved in the storage.

Silex technology	# Survey Configuration	
Select Lansuage English 🗸	Survey Report	
Operating Mode Survey Monitoring Spectrum Analyzer Capture	General Configuration Detail Configuration Storage	
Configuration - Device - Operating Mode - NTP - Password	Display Delete List of Data on Storage 20100329-143288 Wridess NetWork08 List of Data on Storage	
Maintenance - Restart - Factory Default - Firmware Update - Input License Køy - silex Global Site	20160421-160445 Wireless NetWork01	
– Logout		

Reading the survey results

1. Select the data to read from a list and click **Display**.

C () (http://192.168.0.10	Ørenrindez.htm • C SNK-1 ×	- □ × ∩ ☆ ®
Sect Lansuse Ergish	Survey Configuration	
Corestite Mode Survey Munitorine Survey Munitorine Spectrum Analyzer Sopture Sopture Confluention Device Operative Mode NTP Password Maintennice Returt Pactory Default Firmware Uodate	General Configuration Detail Configuration Storage Dipby Detail List of Data on Storage 20100422-18/2009 Wireless NetWork(0) List of Data on Storage 20100422-18/2009 Wireless NetWork(0) Automatic Storage	
- hout Liewes Key - slex Gibbal Site - Lopout		

2. The selected survey result is displayed.



Deleting the survey results

1. Select the data to delete from a list and click **Delete**.

🗲 🕘 💋 http://192.168.0.100	ren/indec.htm - C 🖉 NK-1 ×	 ∩ ☆ @
Silex technology Selet Language	II Survey Configuration	
Opperative Mode Survey Survey Survey Opperative Mode Opperative Opp	General Configuration Detail Configuration Storage Display Delete List of Data on Storage D100402-165000 Windees NetWork(2 20100422-165000 Windees NetWork(2 20100422-165000 Windees NetWork(2 20100422-165000 Windees NetWork(2) List of Data on Storage	
- ellex Global Site		

2. Click OK to delete.

Message from webpage
Are you sure you want to delete?
OK Cancel

3. When the data is deleted, a list of data is displayed again.



Displaying Print Layout

If the **Print Layout** button is clicked in the report page, a printable format page is displayed.



1. Click the **Print Layout** button in the report page.



2. Click the information to display in the printable format page.



Band Information

Shows the graphs of band information in a printable format page.

Device Information

Shows the device information in a printable format page.

- All Information Shows the band information and device information in a printable format page.
- **3.** Printable format page is displayed.



4-3. Using the Monitoring Mode

The Monitoring Mode allows you to scan specified channels regularly and to take long term measurements of surrounding wireless environment.

Measured data are stored in a USB storage connected to NX-1. The 24-hour averages of the measurement items are displayed as statistics information in chart format in the Web page of NX-1.

<When to use the Monitoring Mode>

Use this function when monitoring statuses of currently used channels or when analyzing causes of communication troubles that occasionally occur.

Running the Monitoring Mode through the Web Page

The following explains how to perform monitoring operations using the Monitoring Configuration page of NX-1.

- **1**. Plug in a USB storage into a USB port on the right side of NX-1.
- 2. Start a Web browser and enter the IP address of NX-1 in the address bar.



3. The login page of NX-1 is displayed.

Type the password set to NX-1 and click Login.

C 🖉 http://132168.0.100/en/login.htm * 6 🖉 Walcome to NK-1 ×	<u>କ ଲାକ୍କ</u> ଜନ୍ମ ଭ
Welcome to NX-1	
Enter the password, and citis (Login). Password	
Lath	
Select Loncore (online	



- No default password is set in NX-1.

When no changes are made in the password setting of NX-1, just click Login.

- **Note** You cannot log in while another user is logging in from another device.
- **4.** The Survey Configuration page is displayed. From **Operating Mode** in the Web page menu, click **Monitoring**.

Select Language English V	
▼ Operating Mode - Survey - Monitoring - Spectrum Analyzer - Capture	
▼ Configuration	

5. The Monitoring Configuration page is displayed.

The Monitoring Configuration page has the **General Configuration** tab and the **Detail Configuration** tab.

Click Start Monitoring in one of the tabs.

- () (2 Http://192.168.8.390/en/i	ndechtm	- C 💋 NK4	×	ເວຍ . ດ ຜ
Silex	Monitoring Configuration			050
Belect Language English V V Operating Mode - Survey - Monitoring	Nonkorine Report			
- Spectrum Analyzer - Cepture - Cepture - Device - Cepture Mode	General Configuration Detail C	Value		
- NTP - Pasword V Maintenance - Restory - Pactory Default - Finnware Update - siles (Stabs) Ste	Manharing Interval(minute)	2	Start Monitorine	
- Firmware Update - silex Gibbal Site - Lopout	<u> </u>			
silex NX-1				Constitut [2] 2015 also technology for
[0080324534553]				Copyright E3 2015 siles technology. It

Silex	Monitoring Configuration		
Select Language	Notion Report		
Operating Mode - Surver - Monitoring - Spectrum Analyzer - Capture		Configuration	-
Configuration Device Operating Mode	Name	Vela	
- NTP - Pazzvord	2016	Кон Кон Кон Кон Кон Кон Кон	Sdect All Developt All
 Maintenance Restart 	50Hz/W5(2)	MICHE MICHE MICHIE MICHIE MICHIE MICHEE MICHEE MICHEE MICHEE	Select All Deselect All
- Factory Default - Firmware Update	90Hz/W530		Select All Develop All
- silex Global Site	50Hz(W56)	2010 2010 2010 2010 2010 2011 2011 2011	Select All Decelect All
	5GHz(W58)	Контер Контаз Контал Контел Контер	Select All Deselect All
	Name	Value	
	Nanitoring Interval(minute)	2	
		Start Monitoring	
	L		

General Configuration

Detail Configuration

General Configuration

You can change only Monitoring Interval.

Detail Configuration

You can change Radio band channels to monitor and Monitoring Interval.



- Monitoring settings set up in **Operating Mode** under **Configuration** in the Web page are displayed as the defaults.

- **Note** After changing the settings in **General Configuration** or **Detail Configuration**, the new settings are displayed until you restart NX-1. After a restart, the defaults are displayed.
- 6. Monitoring starts. To stop the monitoring operation, click **Stop Monitoring**.

C () (2 http://192.168.0.10	0/en/indec.htm - C	🦉 NX-1 ×	
Select Language	Monitoring Configuration		070
English V Coperating Mode	Monitorine Report		
- Survey - Montoring - Spectrum Analyzer - Capture	Moritoria		
Configuration Device Operating Mode NTP Password		Stop Meritaring	
Maintenance Restart Factory Default Firmware Update		Soop root root ing	
- silex Global Site			
- Lapout			



- Monitoring data are stored in a storage on a daily basis.

- A failure of writing data into a USB storage during monitoring operation results in an error.



- Do not unplug a USB storage during monitoring operation. The USB storage may be damaged. When unplugging a USB storage, be sure to stop monitoring operation and unmount the storage beforehand For information on how to unmount, see the explanation of the Push Switch in **2.4 Parts and Functions**.

- Do not unplug the AC adaptor of NX-1 from an outlet during monitoring operation (When the power is supplied by PoE, do not unplug the network cable.). The USB storage may be damaged.

Using the Control Switch to Run the Monitoring Mode

The following explains how to perform monitoring operations with the Control Switch on the back of NX-1.



To perform monitoring operation with the Control Switch, you need to assign **Monitoring** to the switch.
 From **Operating Mode** - **Push Switch Configuration** in the Web page of NX-1, you can set up the Control Switch.

- To start monitoring operation
 - **1.** Plug in a USB storage into a USB port on the right side of NX-1.
 - **2.** Turn on NX-1.
 - **3.** Press-and-holding the Control Switch on the back of NX-1 for one second or more causes the WSTAT LED (green) and SETTING LED (green) on the top side to blink, and a monitoring operation starts.

After confirming the start of monitoring operation, release the Control Switch.



- Monitoring data are stored in a storage on a daily basis.

- The status of the Capture Configuration page is Monitoring during monitoring operation.
- **Note** A failure of writing data into a USB storage during monitoring operation results in an error.

Do not unplug a USB storage during monitoring operation. The USB storage may be damaged. When unplugging a USB storage, be sure to stop monitoring operation and unmount the storage beforehand For information on how to unmount, see the explanation of the Push Switch in 2.4 Parts and Functions.

 Do not unplug the AC adaptor of NX-1 from an outlet during monitoring operation (When the power is supplied by PoE, do not unplug the network cable.). The USB storage may be damaged.

To stop monitoring operation

Press-and-holding the Control Switch on the back of NX-1 for one second or more turns off the WSTATLED (green) and SETTING LED (green) on the top side, and the monitoring operation stops.

After confirming the stop of monitoring operation, release the Control Switch.



- You can also stop monitoring as follows: Log in the Web page of NX-1. From **Operating Mode**, choose **Monitoring**. In Monitoring Configuration, click **Stop Monitoring**.

Note

Viewing Monitoring Results

After completion of the Monitoring Mode, the monitoring results are analyzed and the report of the data is displayed in chart format in the Web page.

C () () () () () () () () () () () () ()	00 en/indechtm - C Ø №1 × 00 Å
Reput Isoladou	Windowski Configuration Monitoring Configuration Mon
Operating Mode No No	2.4GHz 5GHz(W52/W53)) 5GHz(W56) CHI CH2 CH3 Name Time Same Bard occupy Statestics Information Scale 100 V Statestics Information
	Device Cont
silex NX-1 Ver 1.10 [00809265+650]	Frame Status Connect

Print Layout

Opens a printable format page.

Bands and Channels

Allows you to select bands and channels to display.

Band Channel		
2.4GHz	CH1-CH13	
5GHz(W52) CH36/CH40/CH44/CH48		
5GHz(W53)	CH52/CH56/CH60/CH64	
	CH100/CH104/CH108/CH112/CH116/CH120	
5GHz(W56)	CH124/CH128/CH132/CH136/CH140	
5GHZ(W58) CH149/CH153/CH157/CH161/CH165		
All Channel All channels mentioned above		

Band Occupy Ratio

Shows the usage rate of a specified wireless band on a daily basis. The vertical axis is the usage rate and the horizontal axis is time.

Device Count

Shows the number of access points communicating in a specified wireless band and the number of connected stations on a daily basis.

Frame Status

Shows correct frames, error frames, and retry frames contained in received frames of a specified band in percentage or numerical value on a daily basis.

Frame Type

Shows management frames, control frames, and data frames contained in received correct frames of a specified band in percentage or numerical value on a daily basis.



The report page will automatically be logged out if no operations are made for a certain amount of time after it is displayed. (The default is 30 minutes)
 The auto-logout time can be changed from **Configuration** - **Device**.
 To open a report page after log-out, re-login to NX-1.

Monitoring Configuration - Band Occupy Ratio

After completion of the Monitoring Mode, the monitoring results are analyzed and the usage rate of a wireless band is displayed in percentage in chart format in the Web page.



Wireless Band

Displays the usage rate of wireless band in percentage in chronological order.

□ Average Band Occupy

Displays the average band occupy ratio calculated from the monitoring results.

 \Box Scale

Allows you to select scales of displayed charts. 10/25/50/100 (Unit: %)

Monitoring Configuration - Device Count

After completion of the Monitoring Mode, the monitoring results are analyzed and the total number of access points and that of stations are displayed in chart format in the Web page.



Access Point

Checking this displays the total number of access points in green in chronological order.

□ Station

Checking this displays the total number of stations connected to access points in red in chronological order.



- The number of stations is counted up when a frame sent from a station to an access point is detected during survey.

Note - Stations that do not communicate during survey are not detected or counted.

🗆 Total

Checking this displays the total number of access points and stations in blue in chronological order.

□ Average Device

Displays the average number of devices in operation.

Scale

Allows you to change the chart scale. 10/25/50/100/250/500 (Unit: the number of devices)

Monitoring Configuration - Frame Status

After completion of the Monitoring Mode, the monitoring results are analyzed and correct frames, error frames, and retry frames are displayed in percentage and numerical value in chart format in the Web page.



□ Correct

Checking this displays correct frames (frames with no error) of received frames in percentage or numerical value in green in chronological order.

Checking this displays error frames of received frames in percentage or numerical value in green in chronological order.

□ Retry

Checking this displays retry frames of received frames in percentage or numerical value in green in chronological order.

Total Frame

Displays the total number of frames received during monitoring operation.

□ Chart

Allows you to select how to display the frames previously mentioned.

Ratio : Displays the number of received frames in percentage.

Count : Displays the number of received frames in numerical value.

Scale

Allows you to change the chart scale.

- Ratio : 10/25/50/100 (Unit: %)
- Count : 10/100/1000/10000

Monitoring Configuration - Frame Type

After completion of the Monitoring Mode, the monitoring results are analyzed and management frames, control frames, and data frames are displayed in percentage and numerical value in chart format in the Web page.



Management

Displays management frames contained in received correct frames in percentage or numerical value in green.

Control

Displays control frames contained in received correct frames in percentage or numerical value in red.

🗆 Data

Displays control frames contained in received correct frames in percentage or numerical value in blue.

Total Correct Frame

Displays the total number of correct frames received during monitoring operation.

🗆 Chart

Allows you to select how to display the frames previously mentioned.

Ratio : Displays the number of received frames in percentage.

Count : Displays the number of received frames in numerical value.

Scale

Allows you to change the chart scale.

- Ratio : 10/25/50/100 (Unit: %)
- Count : 10/100/1000/10000
Changing Display Date

You can select obtained monitoring data to display.



1. Putting the cursor in the date entry field in the upper left of the window followed by clicking there opens a calendar.

Dates of the calendar that have their corresponding monitoring data are displayed in green boldface.

2. Select a date to display.

3. Click Change Disp Date.

The report of the result for the selected date is displayed.

Changing Display Time

You can rescale the charts.

■ To rescale the charts with the slider displayed on the top of the tab.

1. Put the cursor at the start point (green) on the left and/or at the end point (orange) on the right of the slider, then slide them and specify the time to display.



- 2. Click Change Disp Time.
- 3. All charts are rescaled according to the specified time.



- To rescale the charts by using the mouse cursor in charts
 - **1.** In a chart to rescale, put the mouse cursor at a point of the display start time, then click and drag the cursor to the right. When reaching the display end time, release the cursor.



2. The chart you adjusted is rescaled according to the specified time.



Displaying Print Layout

If the **Print Layout** button is clicked on the report page, the printable format page is displayed.



1. Click the **Print Layout** button in the report page.



2. Printable format page is displayed.



4-4. Using the Spectrum Analyzer

The Spectrum Analyzer mode measures wireless signal conditions of specified frequency bands.

Measured data are stored in a USB storage connected to NX-1. The spectrogram and spectral density of the data are displayed in chart format in the Web page of NX-1.

<When to use the Spectrum Analyzer>

Use this function when monitoring statuses of currently used channels or when analyzing causes of communication troubles that occasionally occur.

Running the Spectrum Analyzer through the Web Page

- **1.** Plug in a USB storage into a USB port on the right side of NX-1.
- 2. Start a Web browser and enter the IP address of NX-1 in the address bar.



3. The login page of NX-1 is displayed.

Type the password set to NX-1 and click **Login**.





- No default password is set in NX-1.

When no changes are made in the password setting of NX-1, just click **Login**.

Note - You cannot log in while another user is logged in from another device.

4. The Survey Configuration page is displayed.

From **Operating Mode** in the Web page menu, click **Spectrum Analyzer**.

silex technology
Select Language English V
▼ Operating Mode - Survey - Monitoring - Spectrum Analyzer - Capture
▼ Configuration

5. The Spectrum Analyzer Configuration page is displayed.

Set up measurement settings, then click Start.





ЦУ Д

TIP

- The Spectrum Analyzer settings set in **Operating Mode** under **Configuration** of the Web page are displayed as the defaults.

Note - After changing the settings, the new settings are displayed until you restart NX-1. After a restart, the defaults are displayed.

6 The Spectrum Analyzer starts.

¢	() (C http://192.168.0.10	Ven/index.htm • C	Kc1 ×	<mark>ຼີ ເພີ່ສະ</mark> ດີ ສີ ອີ
ſ	Silex	Spectrum Analyzer Configuration		
	Select Language English V Counsting Mode - Survey - Monkoring - Spectrum Analyzer - Capture	Spectrum Analyzer Report		
	Contiauration Device Operating Mode NTP Password Maintenance Restart Factory Default		Stop	
	- Firmvare Update - silex Global Site			

 Do not unplug a USB storage when the Spectrum Analyzer is in operation. The USB storage may be damaged. When unplugging a USB storage, be sure to stop the Spectrum Analyzer and unmount the storage beforehand. For information on how to unmount, see the explanation of the Push Switch in 2.4 Parts and Functions.

- Do not unplug the AC adaptor of NX-1 from an outlet when the Spectrum Analyzer is in operation (When the power is supplied by PoE, do not unplug the network cable). The USB storage may be damaged.

LL

TIP

7. Completion of a Spectrum Analyzer operation opens a report page showing the measurement results.



- The report page will automatically be logged out if no operations are made for a certain amount of time after it is displayed. (The default is 30 minutes)

The auto-logout time can be changed from **Configuration** - **Device**. To open a report page after log-out, re-login to NX-1.

Viewing Measurement Results

The spectrogram and spectral density of measured data are displayed in the Web page.



Print Layout

Opens a printable format page.

□ Frequency Bands

Allows you to select frequency bands to display from 2.4GHz, 5GHz (W52/W53), 5GHz (W56), or 5GHz (W58).

Spectrogram

Displays frequency, time, and signal strength on x, y, and z axis respectively in a threedimensional chart.

Spectral Density

Displays frequency, signal strength, and z (appearance ratio) on x, y, and z axis respectively in a three-dimensional chart.

🗆 File Name

Displays the names of stored data files.

Delete button

Deletes the stored data.

Spectrum Analyzer - Spectrogram

Wireless signal conditions of each frequency band during measurement time are displayed in a three-dimensional chart.



□ Spectrogram

After measurement, displays frequency, time, and signal strength on x, y, and z axis respectively in a three-dimensional chart.

Using the sidebar on the right allows you to narrow the range of signal strength to display. The past report can be displayed by clicking one from the drop-down list.

Spectrum Analyzer - Spectral Density

Signal strength densities of each frequency band detected during measurement are displayed in percentage.



□ Spectral Density

After measurement, displays x (frequency), y (signal strength), and z (density, or appearance ratio) in a three-dimensional chart.

Using the sidebar on the right allows you to narrow the range of signal strength density to display.

The past report can be displayed by clicking one from the drop-down list.

Deleting Measured Data

The measured data of USB storage can be deleted on the report page.

- **1**. Go to the **Report** page of Spectrum Analyzer.
- 2. Select the data to delete from the drop-down list and click **Delete**.



3. Click OK to delete.



4. When the data is deleted, the **Report** page is displayed again.

Displaying Print Layout

If the **Print Layout** button is clicked on the report page, the printable format page is displayed.



1. Click the **Print Layout** button in the report page.



2. Printable format page is displayed.



4-5. Using the Capture Mode

The Capture Mode allows you to capture wireless LAN frames of specified channels. Captured data are saved in PCAP files and stored in a USB storage connected to NX-1.

<When to use the Capture Mode>

When a communication trouble occurs in wireless LAN environment, this mode allows you to capture wireless frames and analyze them for errors, helping you to troubleshoot. Analyzing wireless frames requires you to have a technical knowledge of wireless LAN.

Running the Capture Mode through the Web Page

- **1.** Plug in a USB storage into a USB port on the right side of NX-1.
- 2. Start a Web browser and enter the IP address of NX-1 in the address bar.



3. The login page of NX-1 is displayed.

Type the password set to NX-1 and click Login.





- No default password is set in NX-1.

When no changes are made in the password setting of NX-1, just click Login.

Note - You cannot log in while another user is logged in from another device.

4. The Survey Configuration page is displayed.

From **Operating Mode** in the Web page menu, click **Capture**.

silex technology
Select Language English
▼ Operating Mode - Survey - Monitoring - Spectrum Analyzer - Capture
▼ Configuration

5. The Capture Configuration page is displayed.

Set up capture settings, then click Start capture.





Capture settings set in **Operating Mode** of **Configuration** in the Web page are displayed as the defaults.
 After changing the settings, the new settings are displayed until you restart NX-1. After a restart, the defaults are displayed.

6. Capture starts.

To stop the capture, click **Stop capture**.

C (192368.0.100/en/indes.htm - C (1920.0.1 x	- □ × ^ ☆ ®
Carture Configuration Carture Confi	



- A failure of writing data into a USB storage during capture results in an error.

Note

TIP

- Do not unplug a USB storage during capture. The USB storage may be damaged. When unplugging a USB storage, be sure to stop capture and unmount the storage beforehand For information on how to unmount, see the explanation of the Push Switch in **2.4 Parts and Functions**.

- Do not unplug the AC adaptor of NX-1 from an outlet during capture (When the power is supplied by PoE, do not unplug the network cable). The USB storage may be damaged.

Using the Control Switch to Run the Capture Mode

The Control Switch on the back of NX-1 allows you to start or stop capture.



■ To start capture

- **1.** Plug in a USB storage into a USB port on the right side of NX-1.
- **2.** Turn on NX-1.
- **3.** Press-and-holding the Control Switch (SET2) on the back of NX-1 for one second or more causes the WSTAT LED (green) and SETTING LED (red) on the top side to blink, and a capture operation starts.

After confirming the start of capture, release the Control Switch.





- The status of the Capture Configuration page is **Capturing frame** during capture operation.

- A failure of writing data into a USB storage during capture results in an error.

Note

TIP

- Do not unplug a USB storage during capture. The USB storage may be damaged. When unplugging a USB storage, be sure to stop capture and unmount the storage beforehand for information on how to unmount, see the explanation of the Push Switch in 2.4 Parts and Functions.
 - Do not unplug the AC adaptor of NX-1 from an outlet during capture (When the power is supplied by PoE, do not unplug the network cable). The USB storage may be damaged.

■ To stop capture

Press-and-holding the Control Switch (SET2) on the back of NX-1 for one second or more turns off the WSTAT LED (green) and SETTING LED (red) on the top side, and the capture operation stops.

After confirming the stop of capture, release the Control Switch.



- You can also stop capture as follows: Log in the Web page of NX-1. From **Operating Mode**, choose **Capture**. In Capture Configuration, click **Stop capture**.

Note

Viewing Captured Data

You can view captured data in the Storage tab of Capture Configuration.



ltem	Remarks
Free space in storage	Shows the free space in a USB storage connected to NX-1.
Directory name	Shows the names of directories created in a USB storage connected
	to NX-1.
	Directories are named after their captured date and time.
	<directory name=""></directory>
	YYYYMMDD-hhddss
	(Y: year, M: month, D: day, h: hour, d: minute, s: second)
	Example) For the capture started at 14:40:10 on 4/1/2015, the
	directory is named 20150401-144010.
	* Date and time are obtained from NX-1.
	Running capture operation through the Web page overwrites the
	date and time of NX-1 with those of Web browsers, and names
	directories after the data.

ltem	Remarks
The number of files in directory	Shows the number of captured data stored in a directory.
All data download Downloads all captured data stored in a directory.	
(Download) * Supported only for Google Chrome.	
Delete	Deletes all captured data stored in a directory.
	Shows file names of captured data stored in a directory.
	File names are determined based on the settings of the Capture
	Configuration page as follows:
	- When the File Divide/Ring Buffer is enabled
File Name	<specified file="" name=""><serial number=""></serial></specified>
rile Name	The serial number starts from 0.
	- When the File Divide is enabled and the Ring Buffer is disabled
	The first file: <specified file="" name=""></specified>
	The second file or later: <specified file="" name=""><serial number=""></serial></specified>
	The serial number starts from 1.
Date	Shows the date and time when captured data are created.
Size	Shows file size of captured data stored in a directory in Kbyte.



- The report page will automatically be logged out if no operations are made for a certain amount of time after it is displayed. (The default is 30 minutes)

The auto-logout time can be changed from **Configuration** - **Device**. To open a report page after log-out, re-login to NX-1.

Downloading Captured Data

You can download a file from a directory created in a USB storage by clicking the file name. It is also possible to download all files in a directory by clicking **Download**. (Supported only for Google Chrome)

You can view downloaded files by using network analyzer software (Wireshark, etc.).

- To download a single file
 - **1.** Open the Storage tab in Capture Configuration.
 - 2. Click a directory and display stored files.

Capture Storage		
Space area 7/7 GB	22	Delete
20151027-143042 📃 2	Download 🗑 🗆	
File Name	Date	Size(KB)
packet0 packet1	2015/10/27 1431:28 2015/10/27 1453:30	100,000 10,611
20151027-142813	Download 🗑 🗆	
20151027-142711 📃 1	Download 🗑 🗆	

3. Clicking a file to download opens the file download pop-up. Click Save.



4. File download starts.

When the download is complete, a pop-up notification appears.

- To download all files (Supported only for Google Chrome)
 - **1.** Open the Storage tab in Capture Configuration.
 - 2. Click **Download** for a directory to download.

Deleting Captured Data

Captured data stored in a USB storage can be deleted on a directory basis.

- **1.** Open the Storage tab in Capture Configuration.
- **2.** Check the check box on the right of a target directory, then click **Delete** in the upper right of the tab.

-			
Space area 7	983 / 7 GB		Delete
20151027-143042	2 Download	8 □	
20151027-142813	1 Download	1	
20151027-142711	1 Download	<u> </u>	

- **3.** Deletion of the directory starts.
- **4.** When the deletion is complete, the Storage tab is displayed.



This chapter explains the other features of NX-1.

5-1. Maintenance Feature

Restarting

■ To restart NX-1 by unplugging the AC adaptor

1. Unplug the AC adaptor of NX-1 from the outlet.



- When receiving power over the Ethernet (PoE), unplug the network cable.

2. Plug in the AC adaptor of NX-1 into an outlet.



- When receiving power over the Ethernet (PoE), plug in the network cable.

Note

3. The Power LED starts blinking in orange. When the LED turns green, the restart is completed.

■ To restart NX-1 through the Web page

The following explains how to restart NX-1 through the Restart page.

1 Start a web browser and enter the IP address of NX-1 in the address bar.



- By default, an IP address is set to NX-1 as "192.168.0.100".

- When the IP address has been changed during initial setup, enter the new IP address.

2. The login page of NX-1 is displayed.

Type the password set to NX-1 and click **Login**.

() 6 http://192168.0.100/en/login.htm	
Welcome to NX-1	
	
	Enter the password, and click [Login]
	Password
	Seloci Longuan
	[Exitan v]



- No default password is set in NX-1.

When no changes are made in the password setting of NX-1, just click **Login**.

Note - You cannot log in while another user is logged in from another device.

3. The Survey Configuration page is displayed. From **Maintenance** in the Web page menu, click **Restart**.



4. The Restart page is displayed. Click **Yes**.

silex	II Restart	
Select Language English	Restart	
Operating Mode Survey Monitoring Spectrum Analyzer Capture	Are you sure to restart this product?	
Configuration - Device - Operating Mode - NTP - Passeord		No
Maintenance Restart Factory Default Firmware Update - sitex Global Site		

5. Now NX-1 is restarting.

C 🕢 🧭 http://192.168.0 1	00/en/indeuhtm * C 🖉 Mc1 ×	 ດ 🕁 ເ
Silex technology Select Language	11 Restart	
Konsentre silose Sunon Sunon Sunon Montorise Construction Constructin Construction Construction Const	Plate wait for a white until the resting is complete.]

6. When the restart is completed, the Login page is displayed. Close the Web browser.

Factory Default Configuration

■ To reset NX-1 to factory defaults using the Push Switch

The following explains how to reset NX-1 to factory defaults using the Push Switch.

1. Unplug the AC adaptor of NX-1 from the outlet.



2. Press-and-holding the Push Switch (SET1) on the right side of NX-1, plug in the AC adaptor of NX-1 into an outlet. After the Power LED starts blinking in orange, release the Push Switch.





- When receiving power over the Ethernet (PoE), press and hold the push switch (SET1) on NX-1 while inserting the network cable.

3. The Power LED starts blinking in orange. When the LED turns green, the factory default configuration is completed.



Resetting NX-1 to factory defaults sets the IP address to 192.168.0.100. This may disable the access to NX-1 from your PC, preventing the Login page from appearing. In this case, change the IP address of NX-1 or that of your PC to enable the access from your PC.

■ To reset NX-1 to factory defaults using the Web page

The following explains how to reset NX-1 to factory defaults through the Factory Default page.

1. Start a Web browser and enter the IP address of NX-1 in the address bar.



2. The login page of NX-1 is displayed.

Type the password set to NX-1 and click **Login**.

C (http://192.168.0.100/en/login.htm	n - C 🛃 Welcome to 16/1 ×	<u>- 日 ×</u> 介☆印
Welcome to NX-1		
	Enter the person of which (login)	
	Pazzword	
	Select Lare are	
	[fxth v	



No default password is set in NX-1.

When no changes are made in the password setting of NX-1, just click **Login**.

Note - You cannot log in while another user is logged in from another device.

3. The Survey Configuration page is displayed. From **Maintenance** in the Web page menu, click **Factory Default**.



4. The Factory Default page is displayed. In the page, click Yes.

Sheet Language (Action V) (Action	silex	Eactory Default		A
Copier opier Copier Copier Copier Co	Ensildh	Factory Dafade		
T Matomice Filiatorine iliatorine Filiatorine Filiator	Configuration Device Operating Mode NTP	Are you sure to reset this product to the fectory default?	Yes No	
- siles Global Site	Maintenance - Restart			

5. A confirmation message appears. Click OK.



6. The factory default configuration starts. After the configuration is completed, NX-1 is restarted.

C Mtp://192.168.0.10	Vervindeuhtm • C C Nc1 ×	<u>ຼຸດ</u> ແລະ ດ ແລະ
Silex technology	I Factory Default	
English V C Constrict Mode - Survey - Monitorine - Selectrum Analyzer - Capiture V Conflucation - Operative Mode - NTP - Paissoned	Place with the subburil the notion is complete]
Mainternense Person Person		

7. When the restart is completed, the Login page is displayed. Close the Web browser.



- Resetting NX-1 to factory defaults sets the IP address to 192.168.0.100. This may disable the access to NX-1 from your PC, preventing the Login page from appearing. In this case, change the IP address of NX-1 or that of your PC to enable the access from your PC.

Firmware Update

The latest firmware file can be downloaded from our website.

The following explains how to update the firmware through the Web page of NX-1.



- The current firmware version can be identified at the bottom left of the Web page of NX-1.

■ To download the latest firmware

Download the latest firmware as follows:

- 1. Access our website: http://www.silexamerica.com/
- **2**. Go to the Support page and select the product model.

Product name	NX-1

- **3** The download page will open. Download the firmware from the page.
- To update the firmware

For the firmware update procedure, refer to the manual attached to the firmware.



A-1. Notes on Web Browsers

When using **Internet Explorer 11** (hereinafter "IE11") with the Compatibility View feature enabled, the Web page of NX-1 may not be displayed correctly. When using IE11, disable the Compatibility View feature as follows:

1. Click Tools (Gears icon) in the top right corner of IE11 and choose **Compatibility View Settings** from the menu.



2. Uncheck (disable) Display intranet sites in Compatibility View and click Close.



A-2. List of All Settings

The following explains the settings that are configured from the Web page of NX-1.

Device Configuration- TCP/IP Configuration	
DHCP	
Details	Enables/Disables the DHCP protocol. Obtaining an IP address from a DHCP server requires the server to be running in the same subnetwork.
Range	ENABLE/DISABLE
Default	DISABLE
IP Address	
Dataila	Set the IP address.
Details	If the DHCP is enabled on your network, the IP Address obtained from it will be applied.
Range	0.0.0.0 ~ 255.255.255.255
Default	192.168.0.100
Subnet Ma	ask
Details	Set the subnet mask. If the DHCP is enabled on your network, the Subnet Mask obtained from it will be applied.
Range	0.0.0.0 ~ 255.255.255
Default	255.255.255.0
Note	When set to "0.0.0.0", a subnet mask appropriate for the IP address is automatically assigned.
Default Ga	iteway
Details	Set the gateway address. The default is "0.0.0.0." Setting the default value disables the gateway address. If the DHCP is enabled on your network, the Default Gateway obtained from it will be applied.
Range	0.0.0.0 ~ 255.255.255.255
Default	0.0.0.0

Device Configuration - DNS Configuration		
DNS Server (Primary)		
Details	Set a primary DNS server address. When DHCP is enabled, the DNS server address obtained from DHCP will be given higher priority.	
Range	0.0.0.0 ~ 255.255.255.255	
Default	0.0.0.0	
DNS Server (Secondary)		
Details	Set a secondary DNS server address. When DHCP is enabled, the DNS server address obtained from DHCP will be given higher priority.	
Range	0.0.0.0 ~ 255.255.255.255	
Default	0.0.0.0	

Device Configuration - Device Configuration	
Auto-logout time	
Details	Set the idle time until the user is logged out automatically.
Range	5 to 60
Default	30

Operating Mode Configuration - Capture Configuration		
Channel		
Details	Set a channel to capture.	
Range	2.4GHz: 1 to 13 5GHz : 36/40/44/48/52/56/60/64 100/104/108/112/116/120/124/128/132/136/140 149/153/157/161/165	
Default	1	
Extension	channel	
Details Range	Set an extension channel for IEEE802.11n. For 11b/g/a, set this to 0. LOWER / 0 / UPPER	
Default	0	
File Name		
Details	The name of a captured data file.	
Range	Alphanumeric characters (1-32 characters)	
Default	packet	
File divide		
Details	Enables or disables the file divide and save feature for captured data.	
Range	File divide	
Default	Enabled	
File size		
Details	The size of a captured data file.	
Range	Integer number of 1 to 1000	
Default	100	
Ring buffe	er	
Details	Enables or disables the ring buffer feature for saving captured data.	
Range	Ring buffer	
Default	Enabled	
The numb	per of files in the ring buffer.	
Details	The number of files stored in the ring buffer.	
Range	Integer number of 1 to 1000	
Default	10	

Operating Mode Configuration - Survey Configuration

Operating mode configuration - Survey configuration		
2GHz	2GHz	
Details	Set the target channels of 2.4GHz band.	
Range	CH1 / CH2 / CH3 / CH4 / CH5 / CH6 / CH7 / CH8 / CH9 / CH10 / CH11 /	
hunge	CH12 / CH13	
Default	All channels are enabled.	
5GHz(W52	2)	
Details	Set the target channels of 5GHz (W52) band.	
Range	CH36 / CH40 / CH44 / CH48	
Default	All channels are enabled.	
5GHz(W53	3)	
Details	Set the target channels of 5GHz (W53) band.	
Range	CH52 / CH56 / CH60 / CH64	
Default	All channels are enabled.	
5GHz(W56)		
Details	Set the target channels of 5GHz (W56) band.	
Range	CH100 / CH104 / CH108 / CH112 / CH116 / CH120 / CH124 / CH128 /	
	CH132 / CH136 / CH140	
Default	All channels are enabled.	
5GHz(W58)		
Details	Set the target channels of 5GHz (W58) band.	
Range	CH149 / CH153 / CH157 / CH161 / CH165	
Default	All channels are enabled.	
Scan Interval (sec)		
Details	Specifies the scan time for a channel in seconds.	
Range	Integer number of 1 to 60	
Default	1000	
Scan Cour	nt	
Details	Specifies the scan time for a channel in seconds.	
Range	Integer number of 1 to 255	
Default	1	

Operating Mode Configuration - Monitoring Configuration		
2GHz		
Details	Set the target channels of 2.4GHz band.	
Range	CH1 / CH2 / CH3 / CH4 / CH5 / CH6 / CH7 / CH8 / CH9 / CH10 / CH11 /	
hange	CH12 / CH13	
Default	All channels are enabled.	
5GHz(W52)		
Details	Set the target channels of 5GHz (W52) band.	
Range	CH36 / CH40 / CH44 / CH48	
Default	All channels are enabled.	
5GHz(W53)		
Details	Set the target channels of 5GHz (W53) band.	
Range	CH52 / CH56 / CH60 / CH64	
Default	All channels are enabled.	
5GHz(W56)		
Details	Set the target channels of 5GHz (W56) band.	
Danca	CH100 / CH104 / CH108 / CH112 / CH116 / CH120 / CH124 / CH128 /	
Range	CH132 / CH136 / CH140	
Default	All channels are enabled.	
5GHz(W58)		
Details	Set the target channels of 5GHz (W58) band.	
Range	CH149 / CH153 / CH157 / CH161 / CH165	
Default	All channels are enabled.	
Monitoring	Interval (minute)	
Details	Specify the monitoring interval in minutes.	
Range	2-60	
Default	2	

Monitoring Mode Configuration - Spectrum Analyzer Configuration

Band

Default

180

Details	Set the target wireless band.
Range	2.4GHz / 5GHz(W52 / W53) / 5GHz(W56) / 5GHz(W58)
Default	2.4GHz
Measurement Time (sec)	
Details	Specify the monitoring time in seconds.

Monitoring Mode Configuration - Push Switch Configuration	
Assigned function	
Details	Assigns the Monitoring Mode or the Capture Mode to the Control Switch (SET2) on the right side of
	NX-1.
Range	Monitoring/Capture
Default	Monitoring

NTP Configuration - NTP Configuration		
NTP		
Details	Enables/Disables the NTP protocol.	
Range	ENABLE / DISABLE	
Default	DISABLE	
NTP Serv	er	
Details	Set the domain name or IP address for NTP server.	
Range	Domain name: Alphanumeric character string (0-128 characters) IP Address: 0.0.0.0 - 255.255.255.255	
Default	None	
Local Time Zone		
Details	Set the local time zone.	
Range	-12:00 ~ +12:00	
Default	+9:00	

Password Configuration - Password Configuration Password	
	This password is used for authentication when changing settings from a Web browser.
Range	Alphanumeric characters (0-8 characters)
Default	None