

ST-700

User's Manual



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1. Introduction

Thank you for purchasing the ST-700.

1-1. Introduction

1-1-1. Introduction

This manual provides information on how to configure and use the ST-700. Please read the Safety Instructions carefully before you begin.

About the Notation

This manual uses the following symbols to indicate specific information for operating ST-700. Be sure to carefully review before using ST-700.



TIP : This symbol indicates important information that needs to be observed when operating ST-700. Make sure to read this information for safe and proper use.



Note : This symbol indicates information that is useful when using ST-700. If you experience difficulties operating ST-700, please refer to this information first.

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.
- Although every effort was made to prepare this manual with the utmost accuracy, Silex Technology will not be held liable for any damages as a result of errors, setting examples, or other content.

Trademarks

- AMC Manager® is a registered trademark of Silex Technology, Inc.
- Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries.
- Wi-Fi, Wi-Fi Protected Access (WPA), WPA2 is a registered trademark of Wi-Fi Alliance.
- Other company names and product names contained in this manual are trademarks or registered trademarks of their respective companies.

1-1-2. Glossary

This section provides a glossary of terms used in this manual. Refer to the following terms as you read this manual.

Content

Files which ST-700 shows and plays such as videos, images, closed captions, HTML, and audio.

Layer

An area that shows content. There are two layer formats: one shows content on a single layer without splitting the screen of a monitor, and the other divides the screen into multiple layers and shows content on each of them.

Playlist

Data that defines content to play and its play order.

Program

Data that defines the layout of layers and a playlist for each layer.

Schedule

Data that defines the date and the play duration (seconds) of a created program.

Timeline

The minimum unit of schedule management data. A timeline shows content that is to be played on the specified time.

Monitor synchronization

A function that synchronizes videos played by multiple units of ST-700 in one network.

1-1-3. Notes on Use

If you are using ST-700 (EU), please pay attention to the following points.

- It is recommended to use an HDMI cable shorter than 3m.
- It is recommended to use a serial cable shorter than 3m.
- For power supply, only the AC adapter is supported (the power supply using PoE is not guaranteed).

1-2. Safety Instructions

This page provides the safety instructions for safe use of ST-700. To ensure safe and proper use, please read the following information carefully before using ST-700.

<Indication of the warning>

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

<Meaning of the symbols>

	This symbol indicates the warning and caution. (Example:  "Danger of the electric shock")
	This symbol indicates the prohibited actions. (Example:  "Disassembly is prohibited")
	This symbol indicates the actions users are required to observe. (Example:  "Remove the AC plug from an outlet")

<Installation>

 Warning	
	<ul style="list-style-type: none"> - Do not place anything on top of the product. Also, do not place the product on top of the other product. Failure to do so may cause fire, electrical shock, malfunction or performance degradation. - Do not cover up the product with a cloth such as blanket or table cloth. The heat remains inside and it may cause fire or malfunction.

 Caution	
	<ul style="list-style-type: none"> - Do not use or store the product under the following conditions. It may cause malfunction. <ul style="list-style-type: none"> - Locations subject to vibration or shock - Shaky, uneven or tilted surfaces - Locations exposed to direct sunlight - Humid or dusty places - Wet places (kitchen, bathroom, etc.) - Near a heater or stove - Locations subject to extreme changes in temperature - Near strong electromagnetic sources (magnet, radio, wireless device, etc.) - When installing the product to a high position, make sure that the product is firmly fixed so it does not drop for weight of the cables.

<Safe handling>

 Warning	
	<ul style="list-style-type: none"> - Do not move the product when the AC adapter is connected to it. The cable of AC adapter may be damaged, and which may result in fire or electric shock. - For use of the devices connected to the product, please follow all warnings, cautions and notices given by that manufacturer and carefully use them in a proper manner. Failure to follow these instructions may cause fire, electrical shock or malfunction. - If a ground wire is supplied with your device to use with, connect it to the ground terminal in order to prevent an electrical shock. Do not connect the ground wire to gas pipe, water pipe, lighting rod or telephone ground wire. It may cause malfunction.

 Caution	
	<ul style="list-style-type: none"> - The product may become hot when it is in use. Be careful of the heat when moving or removing the product.

<Handling of malfunctioned units>

 Warning	
	<ul style="list-style-type: none"> - In the following cases, turn off the connected devices and unplug the AC plug of the product from a power outlet. Failure to follow these instructions may cause fire or an electrical shock. <ul style="list-style-type: none"> - When the product emits a strange smell, smoke or sound or becomes too hot to touch. - When foreign objects (metal, liquid, etc.) gets into the product. - When the product is dropped or the case is broken or cracked.

<Ventilation>

 Warning	
	<ul style="list-style-type: none"> - Do not cover up the vents on the product. The temperature inside may rise and cause fire or malfunction.

<Disassembly / Modification>

 Warning	
	<ul style="list-style-type: none"> - Do not disassemble or modify the product. It may cause fire, electrical shock or malfunction. - Do not disassemble or modify the AC adapter that comes with the product. It may cause fire, electrical shock or malfunction.

<Power supply>

 Warning	
	<ul style="list-style-type: none"> - Use the correct power voltage. Improper voltage may cause fire or an electrical shock.

 Caution	
	<ul style="list-style-type: none"> - Always use the AC adapter supplied with the product. Other AC adapters may cause malfunction. - When the product will not be used for a long period of time, unplug the power cables of the product and other devices.

<Use of AC adapter and AC cord>

 Warning	
	<ul style="list-style-type: none">- Do not place any objects on top of AC adapter, and do not cover it up with anything. Also, do not use the AC adapter on top of the heat/moisture retaining materials (carpet, sponge, cardboard, styrofoam, etc.). The accumulated heat may result in fire or malfunction.- Do not roll up or wrap the AC cord. It may cause fire or an electrical shock.- Do not plug or unplug the AC adapter or any other cables with wet hands. It may cause an electrical shock or malfunction.- Keep the cords and cables away from children. It may cause an electrical shock or serious injury.

 Caution	
	<ul style="list-style-type: none">- Do not place anything on top of the cables, and do not bend, twist and stretch the cables by force.- Do not use the cables or AC cords at a place where someone may trip over them. It may cause serious injury.- Do not pull on the cord to disconnect the plug from the power supply. The cord may be broken, which could result in fire or an electrical shock.- Verify all cables are plugged correctly before using the product.- When removing the product, disconnect the AC plugs of both the product and the other device you are using with.

1-3. Product Information and Customer Services

Product Information

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

Silex Technology's website
(URL) <https://www.silextechnology.com/>

- Latest firmware download
- Latest software download
- Latest manual download
- Support information (FAQ)

Customer Support Center

Customer support is available 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 our Customer Support Center.

Contact Information	
USA	support@silexamerica.com
Europe	support@silexeurope.com



Note

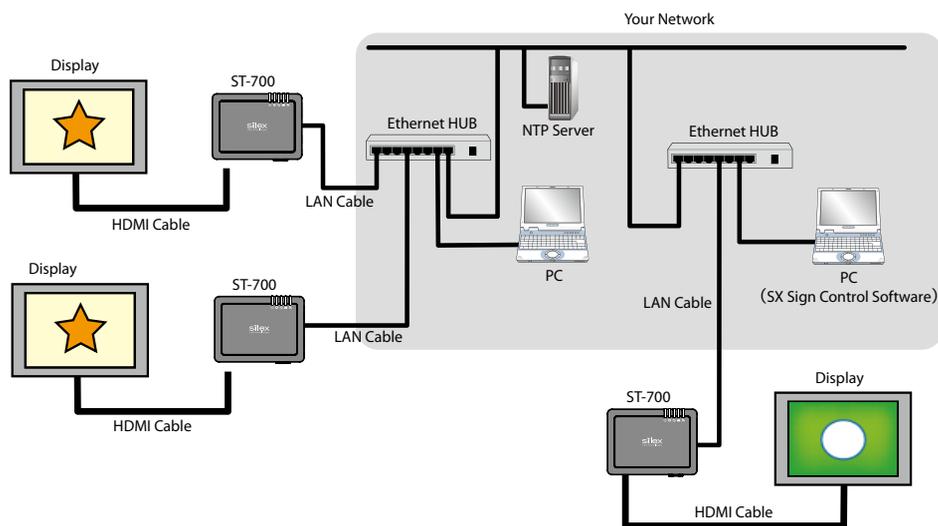
- Refer to the Silex Technology's website (<https://www.silextechnology.com/>) for the latest FAQ and product information.

2. Product Specifications

2-1. Features

2-1-1. System Structure

Connect ST-700 to an Ethernet HUB in your network using a LAN cable. By doing so, ST-700 can be configured via a network and its system will be set up to transmit programs. The following diagram shows an example of system structure using ST-700.



- This is just an example. You can configure a system to broadcast programs without connecting ST-700 to your network environment. For more details, see **4-3. Installing ST-700 without NTP Server.**

Note

2-1-2. Features

ST-700 has the following features.

- Plays programs created with Silex's original software SX Sign Control Software.
- Divides the monitor screen up to 8 layers, and shows videos or still images on each layer.
Note: Videos can be played on one layer only. Web pages can be shown on up to two layers.
- Output resolutions: 3840 x 2160 pixels (4K)
- Equipped with a web browser to show web content conforming to HTML 5.
- Decoder of H.264 and H.265/HEVC codec
- Supports power supply of IEEE802.3at PoE+.
Note: If you are using ST-700 (EU), only the AC adapter can be used.
- Plays videos in sync with other ST-700 units operating in the same network. Up to 9 units can play video content in sync.
- Equipped with a DHCP server.
- A periodic restart function that automatically restarts ST-700 at the specified time.
- Supports the wireless LAN standards IEEE 802.11 a/b/g/n/ac, and connects to 2.4 GHz or 5 GHz.
- Access Point mode and Station mode as the wireless LAN operation modes, which can be switched by changing the setting.
- Supports IEEE 802.1X as the authentication method for Station mode, which provides robust security.
- Works with Silex's comprehensive device management software AMC Manager® (sold separately).

2-1-3. Used Tools

ST-700 uses the following tools:

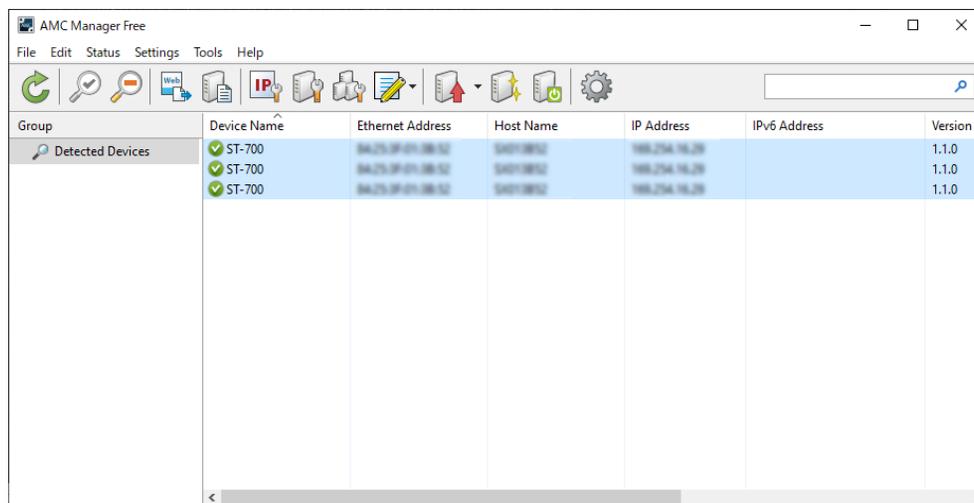
- AMC Manager®
- SX Sign Control Software

The following sections show outline of the tools.

AMC Manager®

AMC Manager® is total management software of Silex devices that allows remote monitoring of Silex products and enables users to configure settings in bulk or individually using an IP network.

AMC Manager® shows ST-700's operation status in a list. Silex provides AMC Manager® Free (free license) and AMC Manager® (non-free license). AMC Manager® Free is used in this document.



The screenshot shows the AMC Manager Free application window. The interface includes a menu bar (File, Edit, Status, Settings, Tools, Help), a toolbar with various icons, and a main table displaying detected devices. The table has columns for Group, Device Name, Ethernet Address, Host Name, IP Address, IPv6 Address, and Version. Three ST-700 devices are listed, all with version 1.1.0.

Group	Device Name	Ethernet Address	Host Name	IP Address	IPv6 Address	Version
Detected Devices	✓ ST-700	94.25.07.01.00.12	1071.00.12	198.254.16.20		1.1.0
	✓ ST-700	94.25.07.01.00.12	1071.00.12	198.254.16.20		1.1.0
	✓ ST-700	94.25.07.01.00.12	1071.00.12	198.254.16.20		1.1.0

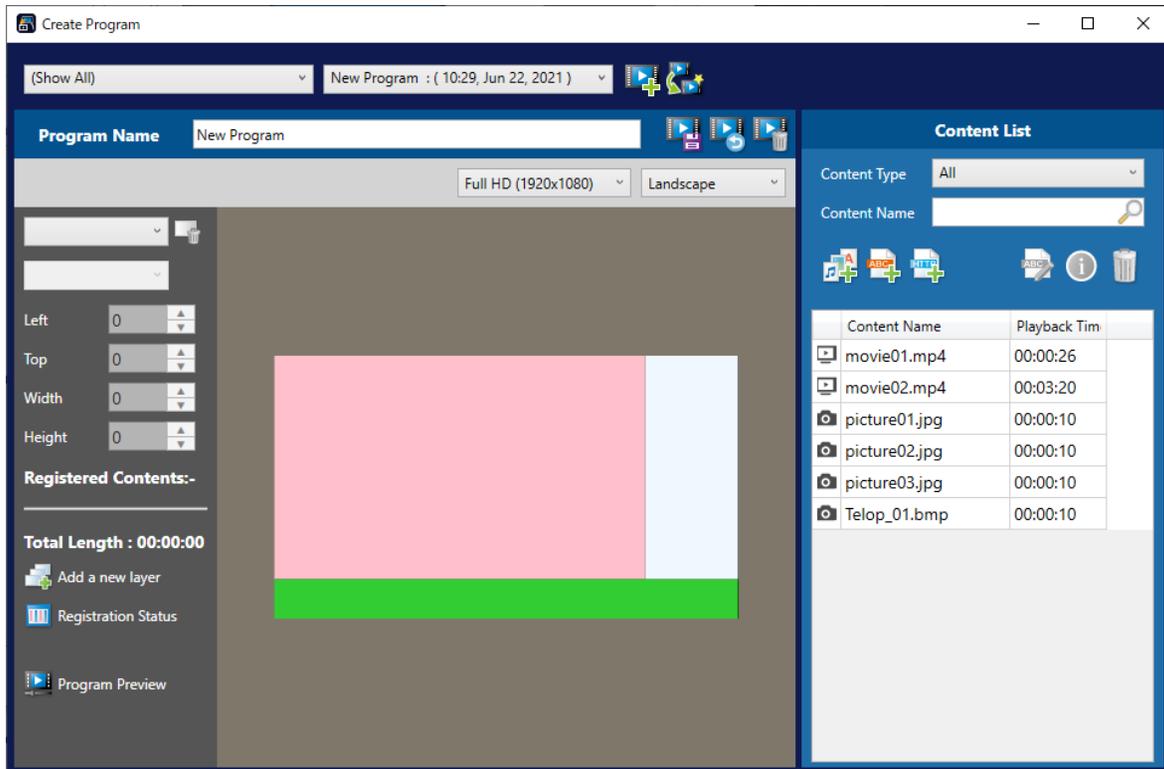


TIP

- AMC Manager® Free allows up to 10 devices to be configured at once.
- To use AMC Manager® (non-free license), you need to purchase a license key.
- Please contact Silex Technology, Inc. to purchase the license key. For the contact information, see **1-3. Product Information and Customer Services**.

SX Sign Control Software

SX Sign Control Software is content management software that creates programs for ST-700. The software can create programs, set up play schedules, and distribute programs to multiple units of ST-700 in a network.

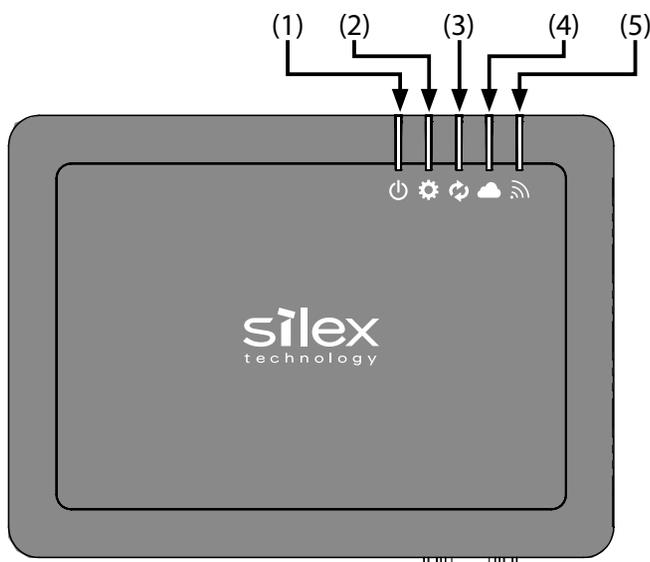


Note

- SX Sign Control Software is license-free application software.
- It is published on the Silex website. For details on how to get the software, see **3-2. Downloading Application Software.**

2-2. Parts and Functions

This chapter describes names and functions of ST-700 parts.



(1) POWER LED [🔌]

Color	Light	Description
Green	ON	ST-700 is powered on.
	Blink	-
Orange	ON	The USB file link function is operating.
	Blink	The USB file link function has been completed. (1,000-millisecond cycle)
Red	ON	Factory reset (When the RESET switch is pushed for a long time while ST-700 is booting.)
	Blink	The wired LAN port is working under 10BASE connection. (2,000-millisecond cycle) A USB storage disconnection error occurs. (500-millisecond cycle) The USB over current status is detected. (200-millisecond cycle)

(2) STAT LED [⚙️]

Color	Light	Description
Green	ON	-
	Blink	-
Orange	ON	-
	Blink	The internal storage has been accessed.
Red	ON	-
	Blink	The firmware is being updated. (2,000-millisecond cycle)

(3) MODE LED [

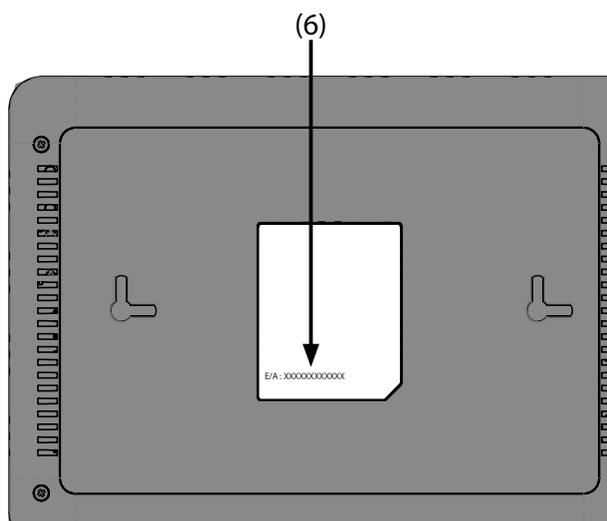
Color	Light	Description
Green	ON	-
	Blink	-
Orange	ON	There is content to play.
	Blink	There is no content to play. (2,000-millisecond cycle)
Red	ON	-
	Blink	-

(4) CLOUD LED [

This is not used.

(5) WLAN LED [

Color	Light	Description
Green	ON	ST-700 is operating in Access Point mode or is making wireless connection in Station mode in 2.4 GHz.
	Blink	-
Orange	ON	ST-700 is operating in Access Point mode or is making wireless connection in Station mode in 5 GHz.
	Blink	ST-700 is operating in Station mode and not wirelessly connected. (2,000-millisecond cycle)
Red	ON	A wireless module recognition error occurs.
	Blink	-

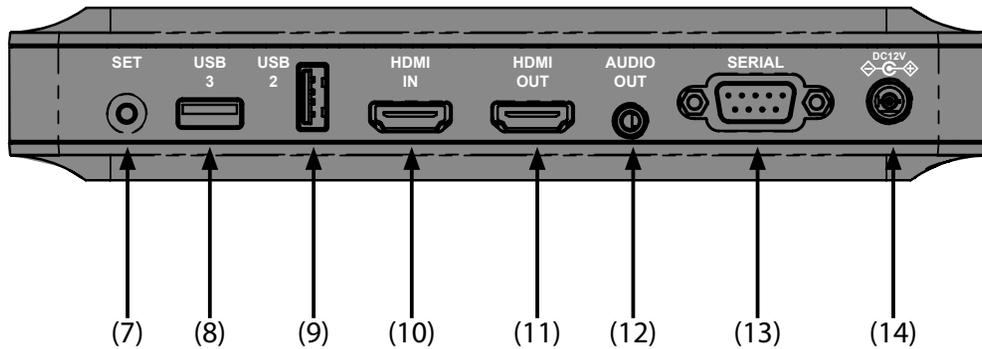


(6) Product Label

Shows MAC address of ST-700 (E/A: XXXXXXXXXXXXX).

Example)

MAC address 84:25:3F:00:11:22 is written as E/A: 84253F001122



(7) SET switch (SET)

Push to remove a USB storage from ST-700.

(8) USB 3.0 Port (USB 3)

USB 3.0 port.

(9) USB 2.0 Port (USB 2)

Connect to an HID device or a small storage to change programs.

(10) HDMI input interface (HDMI IN)

Connect an HDMI cable to receive video signals.

(11) HDMI output interface (HDMI OUT)

Connect a monitor with an HDMI cable to send video/audio data.

(12) AUDIO output interface (AUDIO OUT)

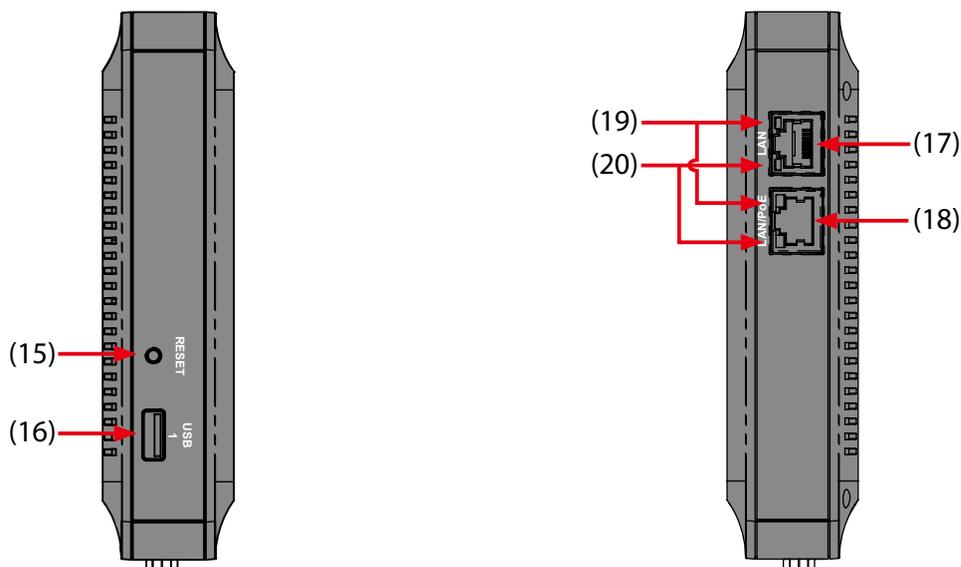
Send audio data to an external device using a 3.5 mm stereo mini cable.

(13) Serial Port (SERIAL)

Connect to a serial port of a monitor using a serial cable.

(14) DC Jack (DC 12V)

Connect an AC adapter that comes with ST-700.



(15) RESET switch (RESET)

Push to reset ST-700 to the factory default settings.

(16) USB 2.0 Port (USB 1)

Connect to an HID device or a small storage to change programs.

(17) LAN Port 1 (LAN)

Connect a LAN cable.

(18) LAN Port 2 (LAN/PoE)

Connect a LAN cable. This can be connected to a hub supporting PoE+ power feeding.



- If you are using ST-700 (EU), only the AC adapter can be used.

TIP

(19) LINK LED

1000BASE Link Status:

Color	Light	Description
Green	ON	ST-700 is linking up in 1000BASE.
	Blink	ST-700 is sending/receiving data in the middle of 1000BASE link-up status.
	OFF	The wired LAN is disconnected.

(20) LINK LED

100BASE Link Status:

Color	Light	Description
Orange	ON	ST-700 is linking up in 100BASE.
	Blink	ST-700 is sending/receiving data in the middle of 100BASE link-up status.
	OFF	The wired LAN is disconnected.

2-3. Specifications

2-3-1. Hardware Specifications

Wired LAN Interface	2 ports: 100BASE-TX/1000BASE-T Auto-MDI/MDI-X Note: One is PoE+ (IEEE802.3at) power supply port.	
Wireless LAN Interface	IEEE 802.11a/b/g/n/ac	
Channel	(US) 2.4 GHz: Ch1 - Ch11 5 GHz: (W52) 36,40,44,48 (W53) 52,56,60,64 (W56) 100,104,108,112,116,120,124,128,132,136,140 (W58) 149, 153, 157, 161, 165 (EU) 2.4 GHz: Ch1 - Ch13 5 GHz: (W52) 36,40,44,48 (W53) 52,56,60,64 (W56) 100,104,108,112,116,120,124,128,132,136,140 Note: W53 and W56 cannot be selected in Access Point mode.	
Push Switch	2 switches: SET switch, RESET switch	
Serial Interface	RS-232C D-sub 9pin	
USB interface	USB 3.0 Type-A 1 port (BUS Power Max 900mA) USB 2.0 Type-A 2 ports (BUS Power Max 1,000mA) Note: 1,000mA is the total power for two USB 2.0 ports.	
Internal Storage Capacity	20 GBytes	
LED	Top	5 lights: POWER LED STAT LED MODE LED CLOUD LED WLAN LED
	LAN port	4 lights: LINK LED (1000BASE-T) x 2 LINK LED (100BASE-TX) x 2
HDMI	HDMI Out 1 Port (HDMI 1.4b, CEC not supported) HDMI In 1Port (HDMI 1.4b, CEC not supported) - HDMI Switch IC is used.	
Audio	S/PDIF (HDMI out) 3.5mm Stereo Mini	

Operation Condition	Temperature: -10 °C to +40 °C (For PoE+ power supply) 0 °C to +40 °C (For AC adapter power supply)
	Humidity: 20%RH to 90%RH (No condensation)
Storage Condition	Temperature: -10 °C to +50 °C
	Humidity: 20%RH to 90%RH (No condensation)
EMC	VCCI Class-A FCC Part 15 Subpart B Class-A EN 301 489-1/-17 , EN 55032 Class-A
Radio regulation	MIC FCC Part 15 Subpart C / Subpart E EN 300 328 , EN 301 893

**TIP**

- If you are using ST-700 (EU), only the AC adapter can be used.

Notice to US Customers



ST-700

Contains FCC ID : N6C-SDMAC

Fcc Rules Part 15

FCC CAUTION

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

FCC Rules, Part 15 §15.19(a)(3)

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 Rules Part 15 Subpart C §15.247 and Subpart E

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body.

FCC Rules Part 15 Subpart E §15.407(c)

Data transmission is always initiated by software, which is the passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted.

In other words, this device automatically discontinue transmission in case of either absence of information to transmit or operational failure.

FCC Rules Part 15 Subpart E §15.407(g)

Frequency Tolerance: +/-20 ppm

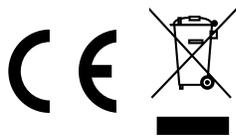
FCC Rules Part 15 Subpart C §15.247(g) / Subpart E

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

FCC Rules Part 15 Subpart B §15.105(a)

Note: This equipment has been tested and found 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 generates, uses, and can 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 his own expense.

Notice to European Customers



AT	EE	IE	NL	ES	CH
BE	FI	IT	PL	SE	HR
BG	FR	LV	PT		MK
CY	DE	LT	RO	IS	TR
CZ	EL	LU	SK	LI	ME
DK	HU	MT	SI	NO	RS

Notice to UK Customers

**UK
CA**



UK

Restrictions or Requirements in the UK

2-3-2. Software Specifications

Wireless LAN	Mode	Access point Station	
	Access Point	Authentication method	OPEN Shared WPA-Personal WPA2-Personal
		Encryption mode	WEP(64/128-bit) TKIP/AES/AUTO
		Max number of connectable clients	10 units
	Station	Authentication method	OPEN WPA-Personal WPA2-Personal 802.1X WPA-Enterprise WPA2-Enterprise
		Encryption mode	WEP(64/128-bit) TKIP/AES/AUTO

Basic Protocol	Network layer	ARP IP
	Transport layer	TCP UDP
	Application layer	DHCP (Client/Server) (UDP #67-68) HTTP (TCP #80) / HTTPS (TCP #443) NTP (UDP #123) SNMP (UDP #161) Syslog (UDP#514) SXSMP Original time synchronization protocol

Recommended Web Browsers for ST-700 Web pages	Microsoft Edge Internet Explorer 11 or later Google Chrome Firefox 2.0.0 or later
---	--

H.264 License

THIS PRODUCT IS LICENSED UNDER THE AVC PATENT PORTFOLIO LICENSE FOR THE PERSONAL USE OF A CONSUMER OR OTHER USES IN WHICH IT DOES NOT RECEIVE REMUNERATION TO (i) ENCODE VIDEO IN COMPLIANCE WITH THE AVC STANDARD ("AVC VIDEO") AND/OR (ii) DECODE AVC VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED TO PROVIDE AVC VIDEO. NO LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION MAY BE OBTAINED FROM MPEG LA, L.L.C.
SEE [HTTP://WWW.MPEGLA.COM](http://www.mpegla.com)

H.265 License



2-3-3. Video/Audio Specifications

ST-700 supports HDMI 1.4b for video/audio output. HDMI CEC and HDCP are not supported. The following sections show supported resolutions and audio specifications.

Video/Audio Specifications

Resolutions

Resolution	Aspect Ratio	Refresh Rate
3840 x 2160 (2160p)	16:9	30 Hz
1920 x 1080 (1080p)	16:9	60 Hz
1280 x 720 (720p)	16:9	60 Hz
720 x 480 (480p)	4:3	60 Hz

Audio

Sampling Rate	Data Bit	Channel
32 KHz	16 bits / 24 bits / 32 bits	2
44.1 KHz	16 bits / 24 bits / 32 bits	2
48 KHz	16 bits / 24 bits / 32 bits	2
96 KHz	16 bits / 24 bits / 32 bits	2

Supported File/Codec Format

Video

Format	Extension
H.264, H.265/HEVC	.mp4
VP8, VP9	.webm
Theora	.ogv



Note

- A slideshow saved as an ".mp4" file on Microsoft PowerPoint can be played back as a video.
- VP8, VP9 and Theora do not support non-split screen programs.

Still Image

Format	Extension
BMP	.bmp
JPEG	.jpg .jpeg .jpe
PNG	.png

Audio

Format	Extension
AAC	.aac

HTML

Format	Extension
HTML	.htm .html



- HTML does not support non-split screen programs.

Note

2-4. Power Supply

There are two ways to supply power to ST-700.

- Use the AC adapter.
- Use a LAN cable.

ST-700 can receive power from a power supply device conforming to IEEE 802.3at via a LAN cable. For more details, see instruction manuals of power supply devices such as hubs with PoE+ power supply function (PoE hub).



- To get powered by PoE, connect a LAN cable to LAN Port 2.
- When connected with the AC adapter, ST-700 gets powered by the AC adapter.
- If you are using ST-700 (EU), only the AC adapter can be used.

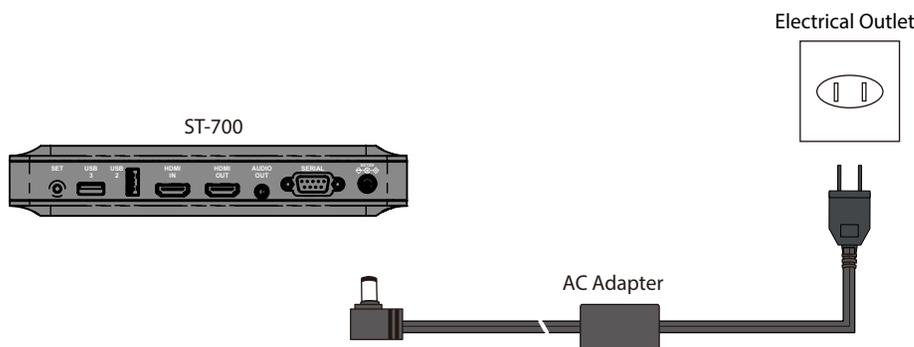


Note

- PoE (Power over Ethernet) is a technology to supply electrical power over Ethernet cable (Category 5e or above). This technology allows you to set up your PoE supported devices in a location without electrical outlet nearby

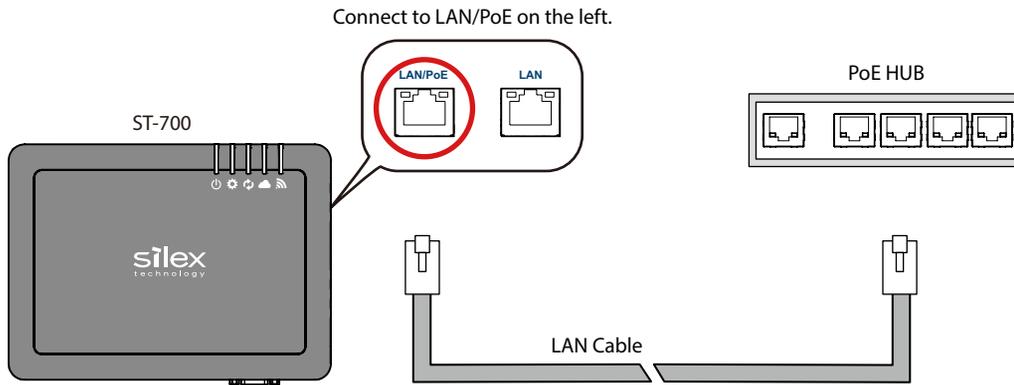
Sample Connection 1: When using AC adapter

Connect the AC adapter to ST-700 and the AC adapter's plug to an electrical outlet.



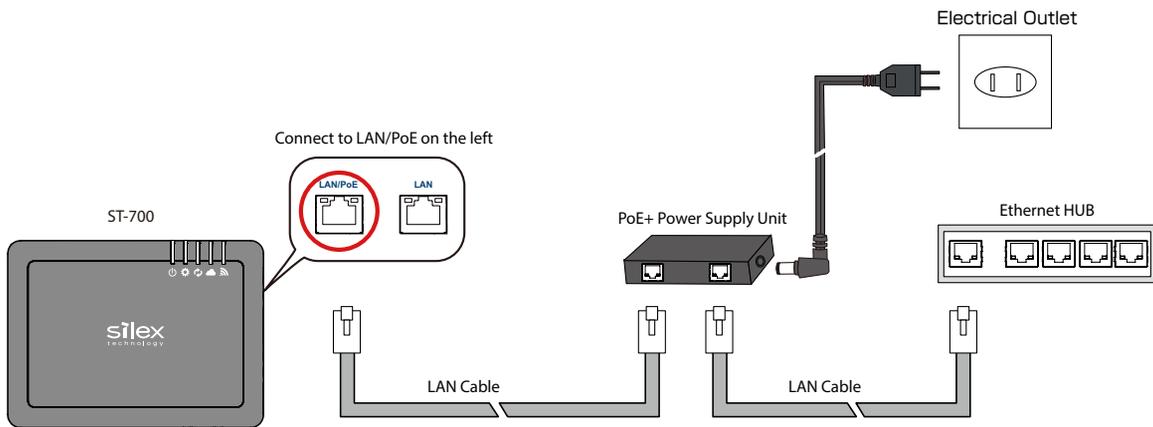
- Use only the AC adapter that comes with ST-700.

Sample Connection 2: When using a PoE hub



- If you are using ST-700 (EU), only the AC adapter can be used.

Sample Connection 3: When using a PoE+ power supply unit



- If you are using ST-700 (EU), only the AC adapter can be used.

2-5. Usage Notes

2-5-1. Radio Waves

Do not use ST-700 near the equipment below.

- Industrial, scientific, and medical equipment such as microwave ovens and pacemakers
- Specified low power radio station (A non-licensed radio station)

The above equipment uses the same radio frequency band as ones used in wireless LANs. Radio interference can occur if ST-700 is used near these devices. This can result in a communication failure or slower communication speed.

Do not use ST-700 near a cellular phone, TV or Radio.

Cellular phones, televisions and radios use a different radio frequency band from ones used in wireless LANs. Generally, using these devices near ST-700 will not affect communication of ST-700 or these devices. However, when they are placed closed to wireless LAN products, audio or video noise may occur due to electromagnetic waves generated by the wireless LAN products including ST-700.

If there is reinforced concrete/metal between wireless devices, they may not connect.

ST-700 can make radio communications through wood or glass walls used in ordinary houses. However, the signals will not pass through walls made of reinforced steel, metal, concrete, or similar materials. Radio communications cannot be made across rooms with these types of walls, and the same goes for floors: communication cannot be made through floors using reinforced steel, metal, concrete, or similar materials

A certificate of conformity to technical standards has been obtained for ST-700. Make sure of the following before use.

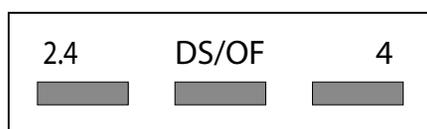
- Do not disassemble or remodel ST-700. It is prohibited by law.
- Do not remove the certificate label. Use of ST-700 without the label is prohibited.

Wireless devices using 2.4 GHz band

The operating frequency band of ST-700 is used by microwave ovens, industrial, scientific and medical devices, and also by premise radio stations (licensed) and specified low-power radio stations (non-licensed) for mobile identification used in factory manufacturing lines.

- Before using ST-700, make sure that there are no premise radio stations or specified low-power radio stations for mobile identification in the immediate area.
- If ST-700 generates signal interference with a premise radio station for mobile identification, either immediately change the operating frequency band or stop transmitting signals, and contact Silex Technology, Inc. about possible corrective actions for preventing interference (such as installation of a partition).
- For other problems, such as signal interference with a specified low-power radio station for mobile identification due to ST-700, contact Silex Technology, Inc.

Meaning of the indicators written on the rear panel of the product:



2.4	: Indicates wireless equipment using the 2.4 GHz frequency band.
DS/OF	: Indicates that DS-SS and OFDM are being used as the modulation scheme.
4	: Indicates that the estimated interference distance is "40 m maximum".
	: Indicates that all bands are used and the band for mobile identification devices can be avoided.

Notes When Using 5 GHz Bands

Usage of the 5.2/5.3GHz band (W52/W53) outdoors is prohibited in Europe under the Radio Law. For outdoor usage, use the W56 channel only, and do not use the W52/W53 channel.

2-5-2. Radio Security

Wireless LAN uses radio waves instead of LAN cables to establish communications between devices. There is the advantage in connecting devices to a LAN freely, but the radio waves can reach everywhere in a certain range through obstacles, such as walls. If no security setting is made for the wireless LAN, the following problems may occur.

- Interception of communications by a third party
- Unauthorized intrusion into the network
- Leakage of information such as personal information, ID, and card information
- Spoofing and falsification of communication data
- System or data corruption

Wireless LAN cards and access points are originally designed with a security mechanism to deal with these problems. When wireless products are used after the security settings are configured, these problems barely occur. You should fully understand the risk of using ST-700 without setting the security. It is recommended that you set the security at your own discretion and responsibility before using ST-700.

2-5-3. Copyright of Video and Audio

You will need to seek permission from the copyright holder of works (content) if you are to distribute the content using ST-700. Unauthorized distribution of other people's copyrighted content is prohibited by law.

2-6. Restrictions

ST-700 has the following restrictions.

- The performance of **Resolution Auto** or **3840 x 2160** is not guaranteed to play a split-screen program. Set the resolution to **1920 x 1080** or less to play a split-screen program.

3. ST-700 Settings and Installation

3-1. ST-700 Settings

This section describes how to set up ST-700. There are three methods.

Use AMC Manager® to set ST-700 individually.

Use AMC Manager®. ST-700 can be set one by one.

Use AMC Manager® to set multiple ST-700 units in bulk.

Use AMC Manager®. Multiple units of ST-700 can be configured at once with the configuration file created beforehand. The same file can be used when the similar configuration is required.

Use ST-700's web page.

Access the web page to configure ST-700. If you know the IP address, you can use your PC without AMC Manager®.



TIP

- When you use AMC Manager Free, up to 10 devices can be configured at once.

3-2. Downloading Application Software

This section describes how to download **AMC Manager**[®] from Silex's web site to use for ST-700 setting.

1. Access the Silex Technology's website (<https://www.silextechnology.com/>).
2. When the website is displayed, click **Support** from the top menu.
3. Click **Software Download**.
4. In the **Software Download** page, click **AMC Manager**[®].

**Note**

- To upgrade ST-700's firmware or download SX Sign Control Software, choose the firmware or SX Sign Control Software on the download page.
- To configure ST-700, use **AMC Manager Free** (free license). Refer to **AMC Manager**[®] **User's Manual** for how to install AMC Manager Free. AMC Manager[®] can also be used for the setting after you purchase the license key.

AMC Manager[®] is now downloaded.

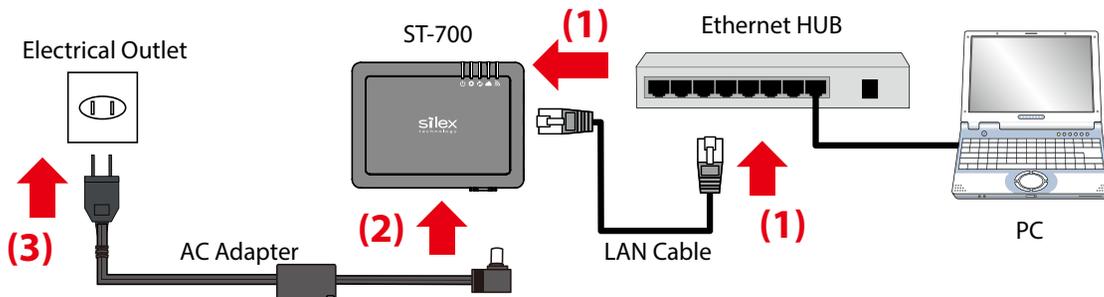
**TIP**

- When you use AMC Manager Free, up to 10 devices can be configured at once.

3-3. Individual Setup

This section describes how to set up a single device.

1. Connect ST-700 to Ethernet hub (1), and power on ST-700 (2, 3)



TIP

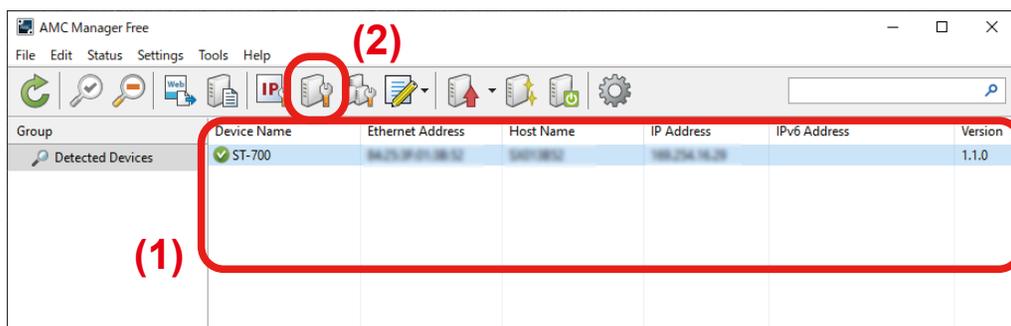
- Assign IP address that can communicate with ST-700 to the PC (to use for the setup). To make the initial settings, choose **Obtain an IP address automatically** for the IP address of the PC.
- When you set up ST-700 in a network without DHCP server, specify a link-local address (169.254.xxx.xxx) for the IP address of the PC.
- In the network settings of the PC, disable network adapters other than the LAN port used for the setup.



Note

- You can directly connect ST-700 and the PC with a LAN cable for the settings.

2. Run AMC Manager® on the PC.
When ST-700 is shown in the device list of AMC Manager®, select it (1) and click the **Configure the device** icon () from the tool bar (2).



3. Enter the ST-700's password (1), and click **OK** (2).



Note

- When no password is set to ST-700, the following window will appear. Enter a password for ST-700 and click **Register**. After the password is configured, ST-700 will be restarted. Go to Step 2 again.

4. The following window appears for the individual settings. Click a setting category on the left menu (1). The setting items will be shown on the right side (2). Change the setting values (3). To play a program, the following setting items need to be specified.

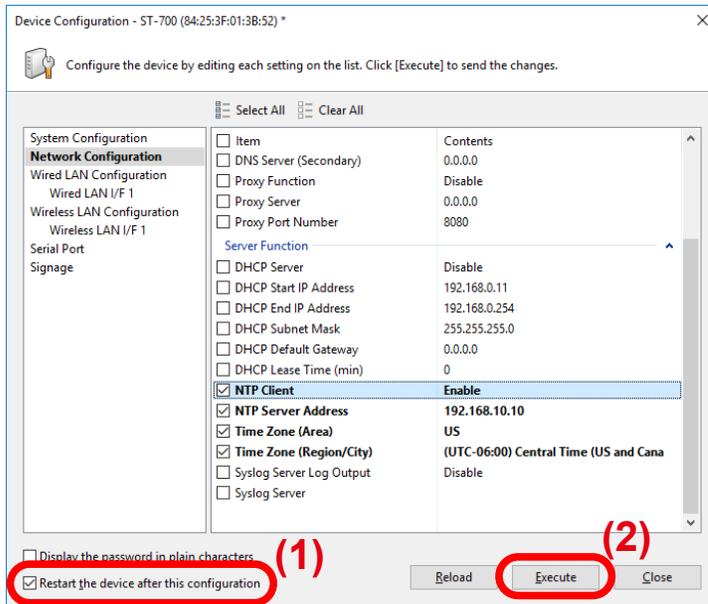
- Network Configuration - NTP Client
- Network Configuration - NTP Server Address
- Network Configuration - Time Zone (Area)
- Network Configuration - Time Zone (Region/City)



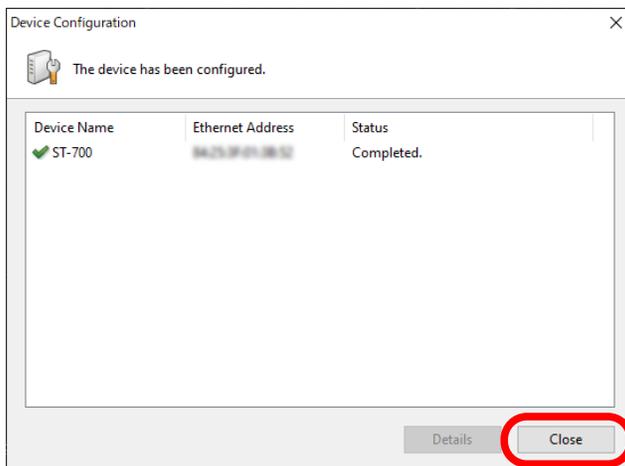
Note

- Choose **Enable** for NTP client.
- You need NTP server to play programs with ST-700. When there is no NTP server, specify the IP address of PC with SX Sign Control Software. After SX Sign Control Software is installed, the PC will work as NTP server.
- Only the items you have ticked will be updated. Untick the check box of items you do not want to change the configuration.

5. After changing the setting items to apply, tick **Restart the device after this configuration** (1) at the bottom and click **Execute** (2).



6. ST-700 will restart and the new settings will take effect. Click **Close** on the following window.



The individual setup is now completed.

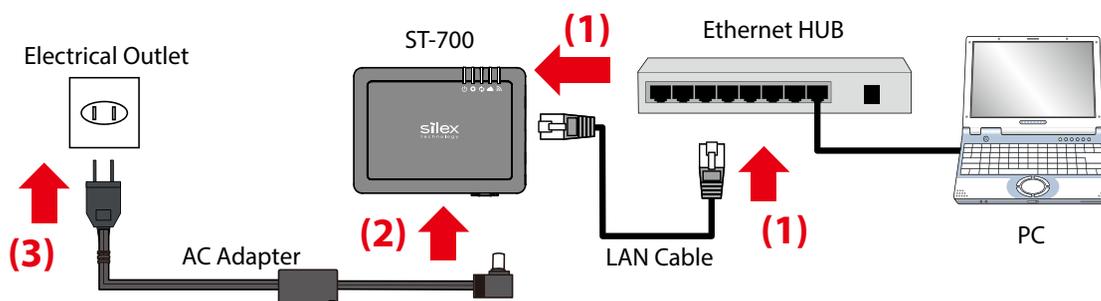
3-4. Bulk Setup

This section describes how to set up multiple units of ST-700 at once.
To make bulk changes, create the configuration file beforehand for the bulk setup.

3-4-1. Creating Configuration File

The following steps show how to create the configuration file.
You need to get the setting information of one ST-700 unit to create the configuration file.

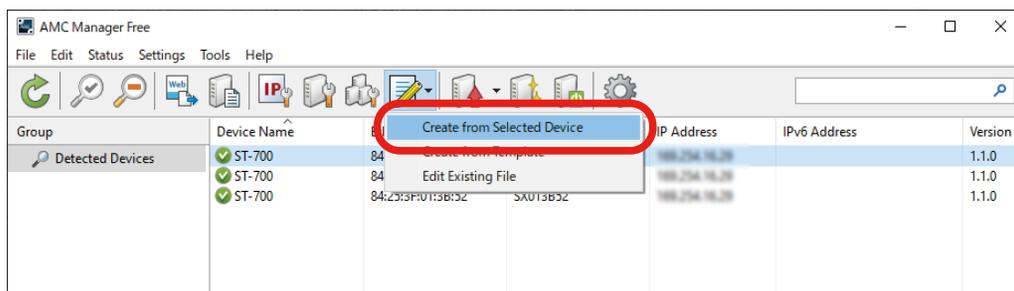
1. Connect your PC (to use for the setup) to ST-700 to get the setting information using a LAN cable, and power on ST-700 (1 - 3).



TIP

- Assign IP address that can communicate with ST-700 to the PC. To make the initial settings, choose **Obtain an IP address automatically** for the IP address of the PC.
- When you set up ST-700 in a network without DHCP server, specify a link-local address (169.254.xxx.xxx) for the IP address of the PC.
- In the network settings of the PC, disable network adapters other than the LAN port used for the setup.

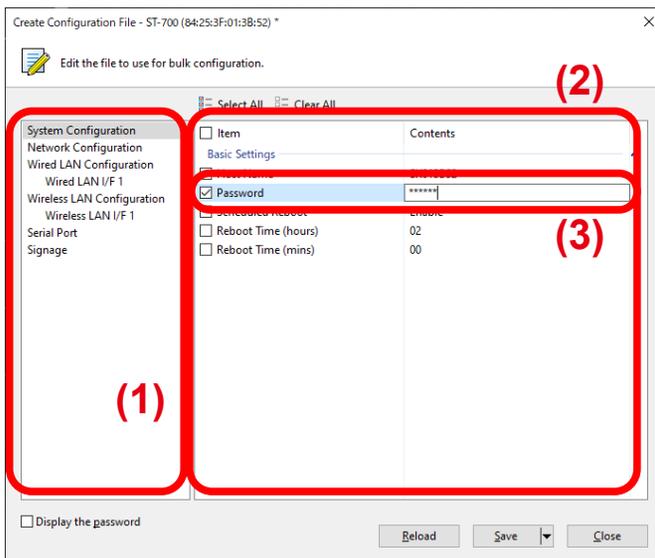
2. Run AMC Manager®.
Select one of ST-700 from the device list and click the **Create the configuration file** icon () from the tool bar and select **Create from Selected Device**.



3. The Create Configuration File window appears for the bulk settings. Click a setting category on the left menu (1). The setting items will be shown on the right side (2). Change the setting values (3).

To play a program after the bulk setup, the following setting items need to be specified.

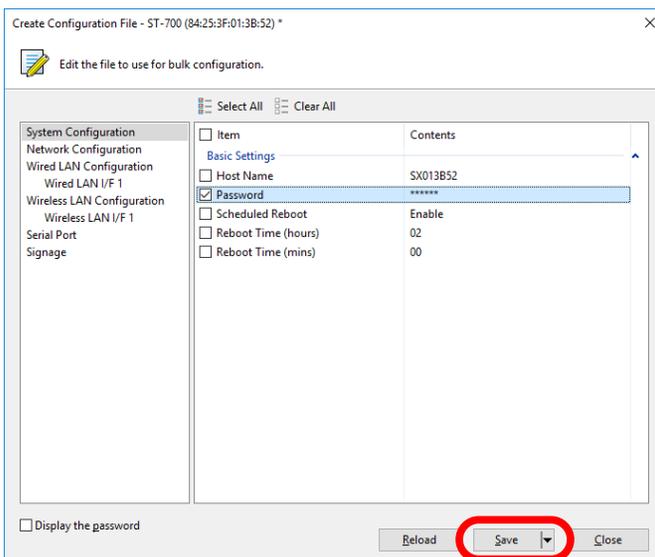
- System Configuration - Password
- Network Configuration - NTP Client
- Network Configuration - NTP Server Address
- Network Configuration - Time Zone (Area)
- Network Configuration - Time Zone (Region/City)



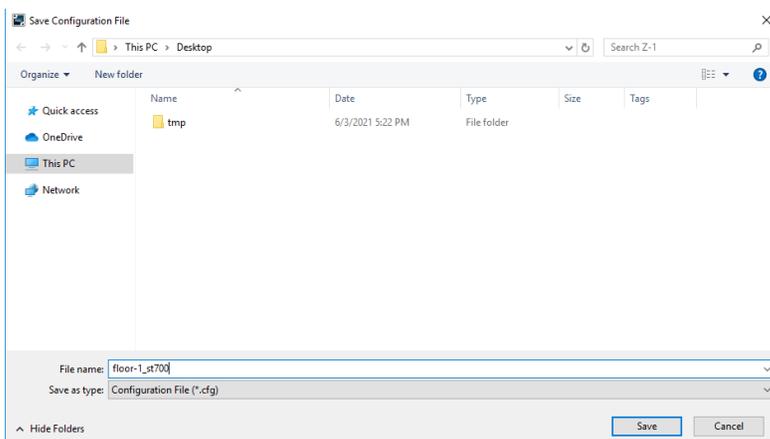
Note

- Choose **Enable** for NTP client.
- You need NTP server to play programs with ST-700. When there is no NTP server, specify the IP address of PC with SX Sign Control Software. After SX Sign Control Software is installed, the PC will work as NTP server.
- Only the items you have ticked will be updated. Untick the check box of items you do not want to change the configuration.

4. When you change the settings to apply, click **Save**.



5. In the save dialog for the configuration file, give any file name and save it.



6. After the configuration file is saved, the window in Step 3 will appear. To create the configuration files for multiple ST-700, repeat Step 3 through Step 5 to create as many configuration files as you need.
7. Click **Close** to close the Create Configuration File window. The main window of AMC Manager® will appear.

The configuration files have been created.
Go to **3-4-2. Configuring ST-700 in Bulk.**

3-4-2. Configuring ST-700 in Bulk

This section describes how to configure multiple ST-700 in bulk. To do so, the configuration file needs to be created beforehand. If you have not done so, see **3-4-1. Creating Configuration File** and create the configuration file.



- When you use AMC Manager Free, up to 10 devices can be configured at once.

1. To obtain and set IP addresses in bulk using AMC Manager® function, the IP address of the PC needs to be changed temporarily. Set an IP address that can communicate with ST-700 to the PC.

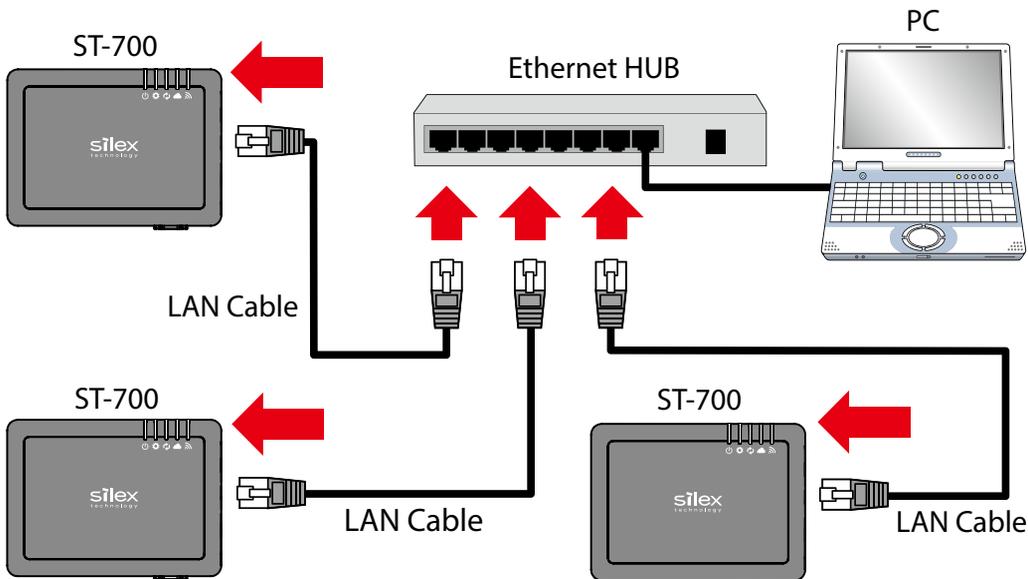
Setting Example)

Bulk IP Address Setting Example	PC's IP Address Example
192.168.0.10 - 192.168.0.30	192.168.0.100
172.25.10.10 - 172.25.10.25	172.25.10.100

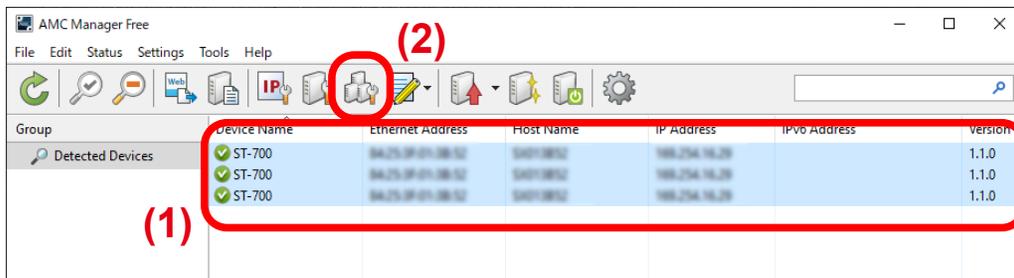


- In the network settings of the PC, disable network adapters other than the LAN port used for the setup.

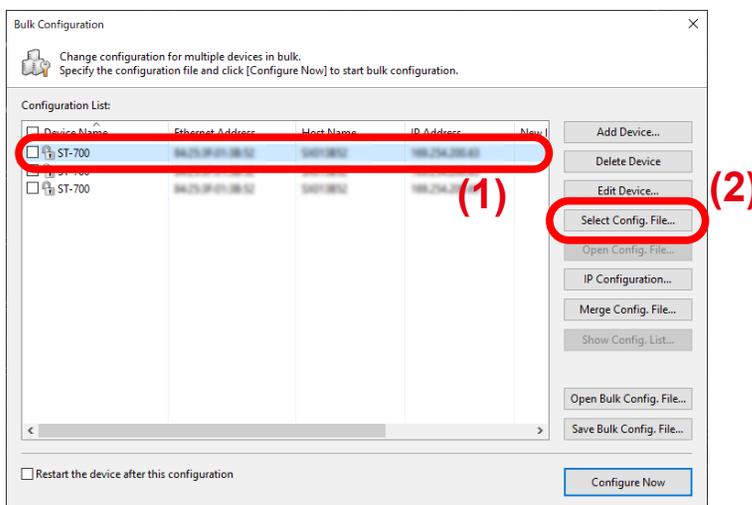
2. Connect ST-700 units to make the bulk settings to Ethernet Hub and power them on.



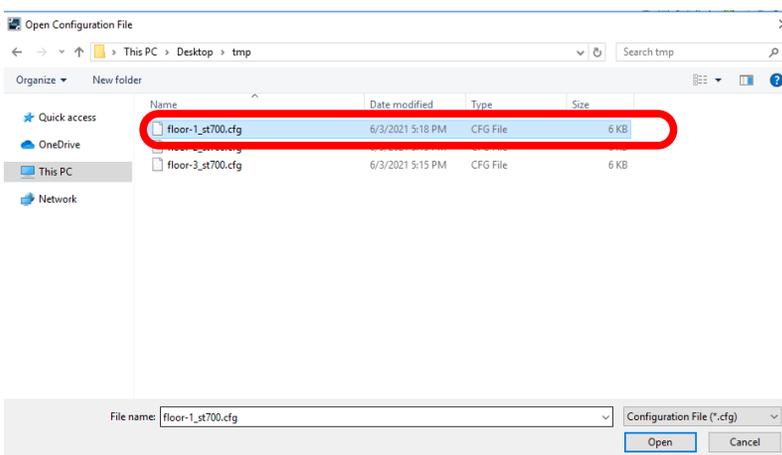
3. Run AMC Manager® on the PC.
Select ST-700 units (multiple choices allowed) to configure in bulk (1) and click the **Configure multiple devices in bulk** icon () (2).



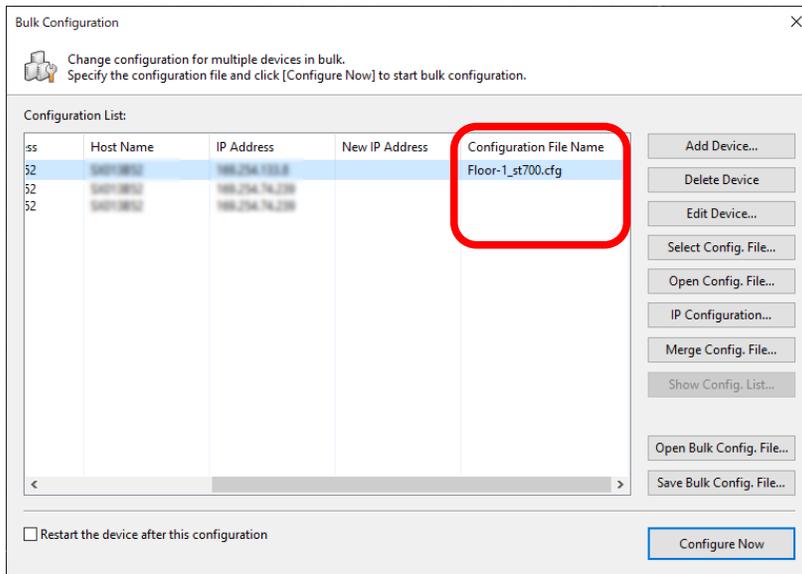
4. The bulk configuration window will be displayed.
Specify the configuration file to be used for the configuration.
Select ST-700 to specify the configuration file (1), and click **Select Config. File.** (2).



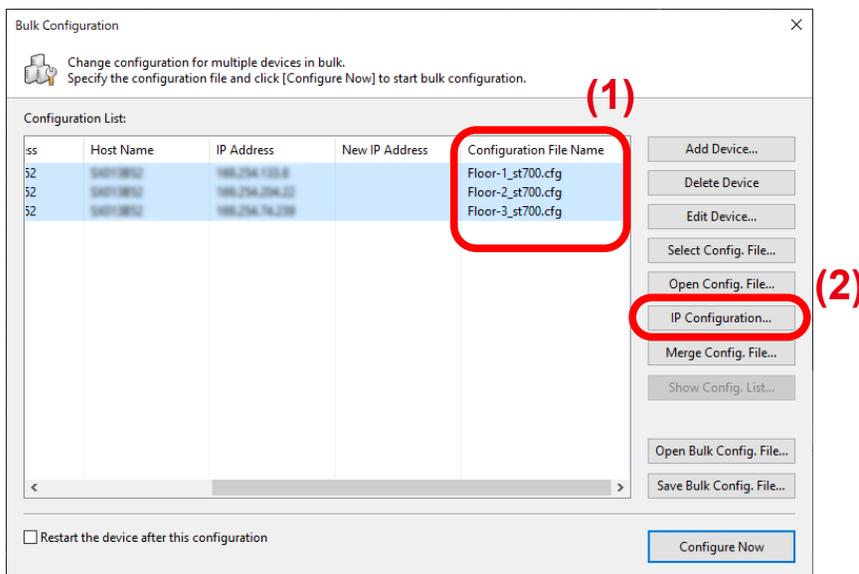
5. The configuration file open dialog appears.
Select the configuration file created in **3-4-1. Creating Configuration File.**



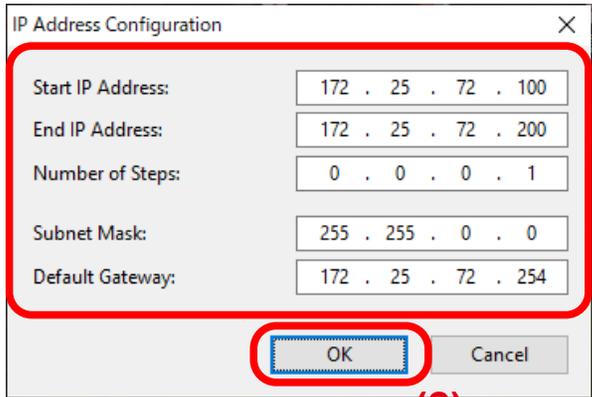
- The selected file is displayed under **Configuration File Name**. Repeat Step 4 through Step 5 to specify the configuration file for each ST-700.



- After specifying the configuration file for all the ST-700 units (1), click **IP Configuration** (2). When IP addresses are obtained from DHCP server, skip this step and go to Step 10.



8. In the IP Address Configuration window, specify the range of IP addresses for ST-700. (1)
When finished, click **OK**. (2).



The IP Address Configuration dialog box is shown with a red border around the input fields and a red circle around the OK button. The fields are:

- Start IP Address: 172 . 25 . 72 . 100
- End IP Address: 172 . 25 . 72 . 200
- Number of Steps: 0 . 0 . 0 . 1
- Subnet Mask: 255 . 255 . 0 . 0
- Default Gateway: 172 . 25 . 72 . 254

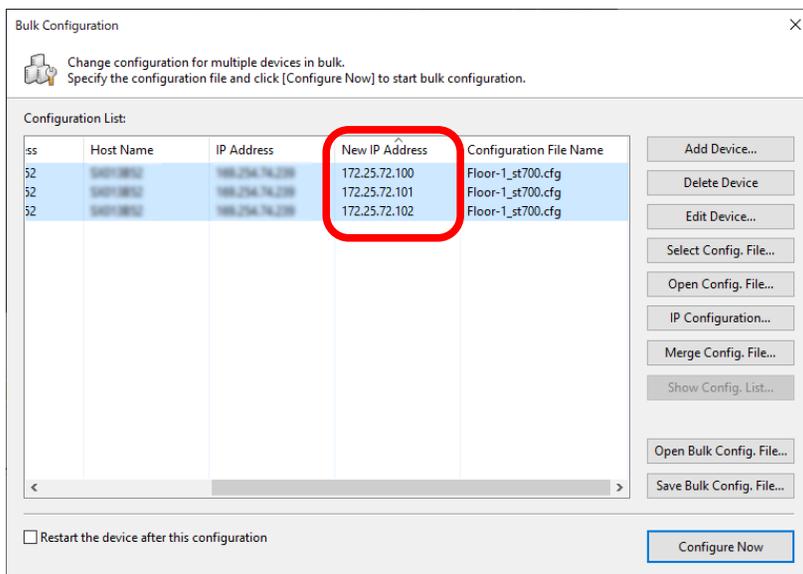
The OK button is circled in red, and the Cancel button is also visible.



Note

- When you assign IP addresses to 3 devices with the above setting, the **Start IP Address** "172.25.72.100" will be assigned to the first device, and "172.25.72.101" and "172.25.72.102" will be assigned to the second and the third one respectively by increasing the address by "0.0.0.1" as specified in the **Number of Steps**.

9. The IP addresses are assigned and displayed under **New IP Address** in the Bulk Configuration window.

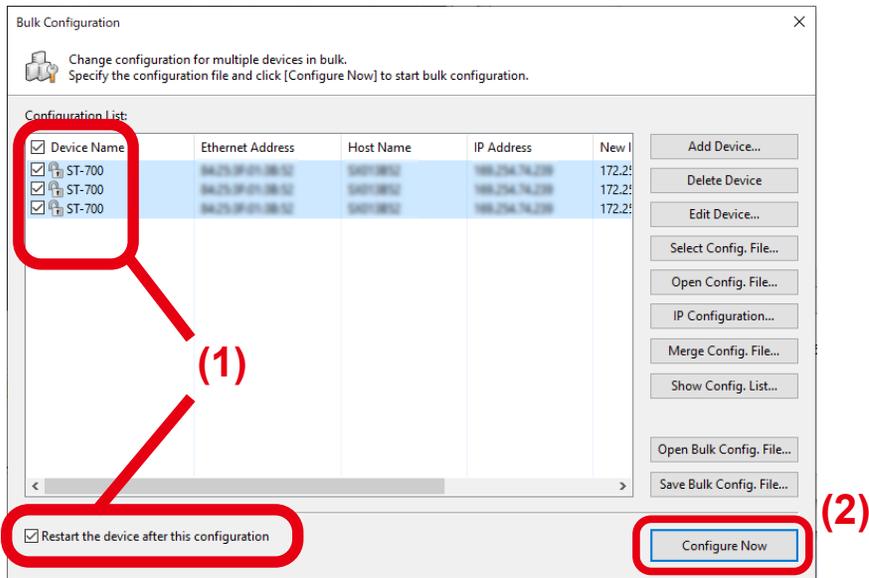


The Bulk Configuration dialog box is shown with a red circle around the 'New IP Address' column in the Configuration List table. The table contains the following data:

SS	Host Name	IP Address	New IP Address	Configuration File Name
52	540718812	198.254.74.258	172.25.72.100	Floor-1_st700.cfg
52	540718812	198.254.74.258	172.25.72.101	Floor-1_st700.cfg
52	540718812	198.254.74.258	172.25.72.102	Floor-1_st700.cfg

The dialog box also includes a 'Configure Now' button and a checkbox for 'Restart the device after this configuration'.

10. Tick ST-700 to configure in bulk and the check box of **Restart the device after this configuration** (1), and click **Configure Now** (2).

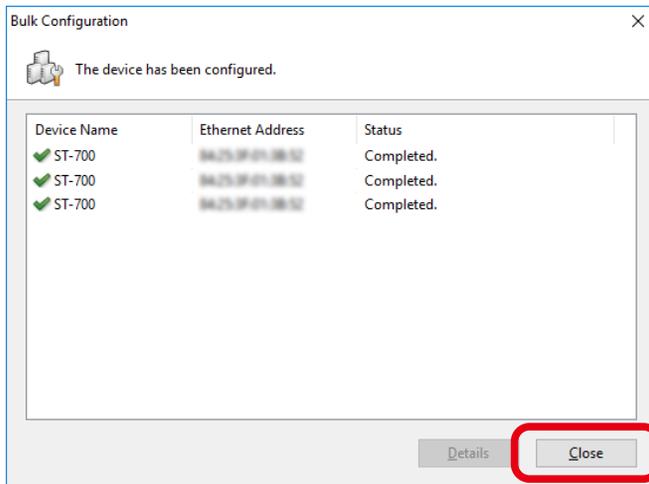


Note

- When a password has been set to ST-700, the dialog below will show up. Enter the password and click **OK**.



11. The result window of bulk configuration will be displayed. The window shows a progress bar during the configuration and then shows the result. After the configuration, click **Close**.



- If the status field does not show **Completed** as the result of bulk configuration, check what was wrong. Change the configuration file and make the bulk configuration again.

12. After ST-700 is updated with the specified configuration file, ST-700 will restart automatically. The new settings will take effect after the restart.

The bulk configuration has been completed.

3-5. Setup Using ST-700 Web Page

3-5-1. Connecting ST-700 to PC

See Step 1 in **3-3. Individual Setup** or Step 2 in **3-4-2. Configuring ST-700 in Bulk** to connect ST-700 and your PC to configure devices.

3-5-2. ST-700 Web Page

How to Access the Web Page

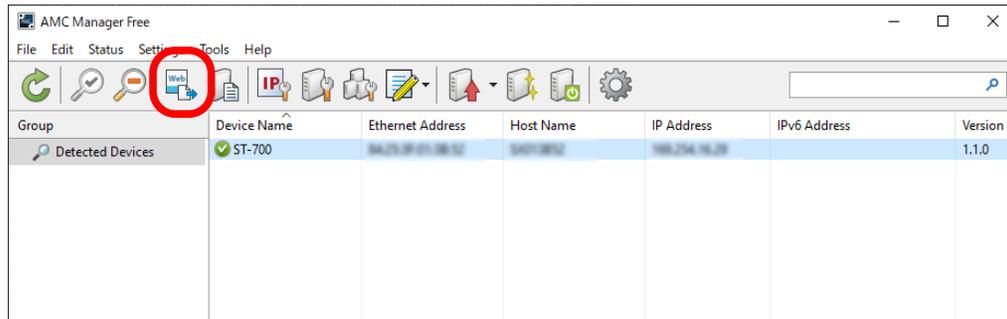
1. Access the web page using the IP address set to ST-700.

When you cannot find the IP address of ST-700:

Check the IP address in AMC Manager® to access the web page.

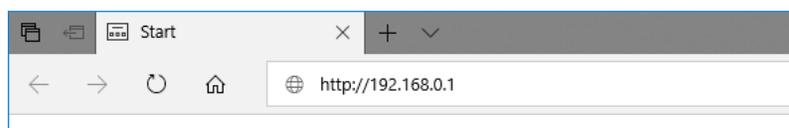
Start AMC Manager®, the device list shows connectable ST-700 units.

Select ST-700 to configure, and click the icon **Configure using Web browser**. When the web page appears, go to Step 2.



When you know the IP address of ST-700:

Start a web browser in the PC, and enter the IP address into the address bar. When the web page appears, go to Step 2.



2. The login password configuration page is displayed.
Enter the password to configure for ST-700 and click **Submit**.

Welcome to ST-700

Please set a password for this unit.

Password

Confirm Password

1 - 8 Character String (Password)

Select Language

English



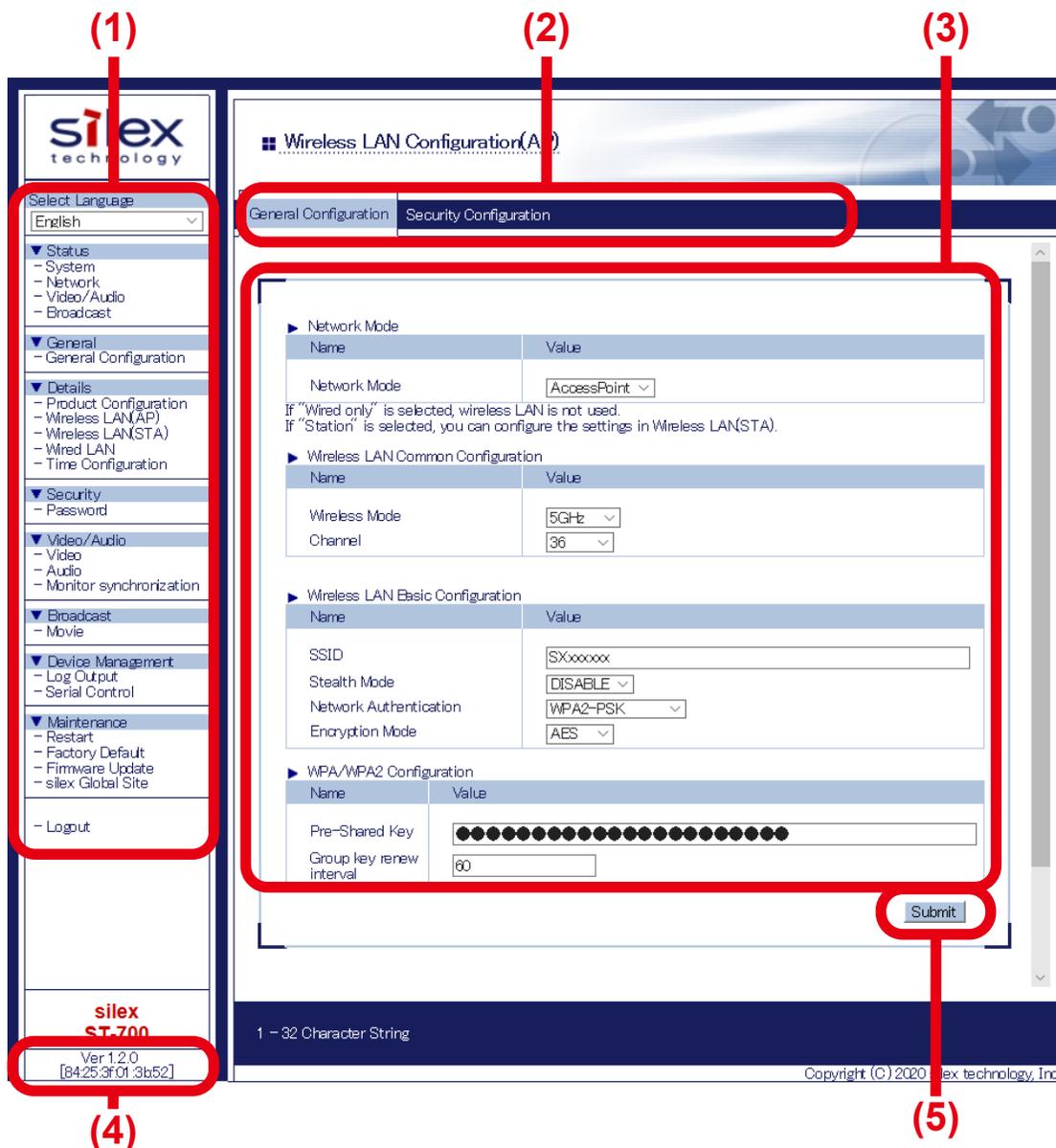
- The login password configuration window is displayed only when ST-700 is configured for the first time.

Note

3. The web page shows up.

Web Page Structure

After login, you can change ST-700 settings from the web pages.
 The following image shows the page structure for each configuration page.



- (1) **Menu**
Shows the links to each configuration page.
- (2) **Tab**
Appears when several pages are prepared to display the settings. If you click the tab, the content will be changed.
- (3) **Configuration page**
Updates each setting of ST-700.
- (4) **Firmware version / MAC address**
Shows ST-700's firmware version and the MAC address.

(5) Submit (Save) button

Saves the setting values entered in the configuration page.

You may need to scroll down to see the button in some pages.



- To use ST-700 connecting to a public network, make sure you change the password.
- The communication band of IEEE 802.11b/g or IEEE 802.11n/b/g is often occupied due to widespread of wireless devices, and ST-700 may not be able to secure communication band enough for transmission.

The following table shows the menu items.

Status

Item	Outline
System	Shows the product name, the firmware version, and the network status such as TCP/IP.
Network	Shows the network status of wired/wireless LAN.
Video/Audio	Shows the output status of video and audio data.
Broadcast	Shows the playback status of the playlist.

General

Item	Outline
General Configuration	Makes the necessary settings for ST-700.

Details

Item	Outline
Product Configuration	Sets the host name, TCP/IP, DNS, and DHCP server.
Wireless LAN(AP)	Sets the access point function.
Wireless LAN(STA)	Sets the station function.
Wired LAN	Sets the wired LAN interface.
Time Configuration	Sets NTP server to get the time and the periodic restart function.

Security

Item	Outline
Password	Sets the password of ST-700.

Video/Audio

Item	Outline
Video	Sets the resolution and the screen orientation.
Audio	Sets the audio output interface (HDMI and Stereo mini jack).
Monitor synchronization	Sets the multiscreen synchronization function.

Broadcast

Item	Outline
Movie	Sets the video play mode.

Device Management

Item	Outline
Log Output	Sets a function to export logs to Syslog server.
Serial Control	Sets the serial monitor control function.

Maintenance

Item	Outline
Restart	Restarts ST-700.
Factory Default	Resets ST-700 back to the factory default settings.
Firmware Update	Updates the firmware.
silex Global Site	Shows Silex Technology's web site.

Logout

Item	Outline
Logout	Logs out from the configuration page and shows the login page.

3-5-3. Configuring ST-700 in Web Page

1. See **How to Access the Web Page in 3-5-2. ST-700 Web Page** to access the web page.
2. Select the configuration page from the menu or tab, and enter the setting values.
When it is completed, click **Submit** at the bottom right corner.

The screenshot displays the web configuration interface for the Silex ST-700. On the left is a navigation menu with categories like Status, General, Details, Security, Video/Audio, Broadcast, Device Management, and Maintenance. The main content area is titled 'General Configuration' and contains several sections:

- DNS Server (Primary)** and **DNS Server (Secondary)**: Both set to 0.0.0.0.
- Time Configuration**: A table with columns 'Name' and 'Value'. The 'NTP' row has a value of 'ENABLE', and the 'NTP Server' row is empty.
- Wireless LAN(STA) General Configuration**: A table with columns 'Name' and 'Value'. The 'SSID' row has the value 'aoyama-st700', and the 'Network Authentication' row has a value of 'Open'.
- Wireless LAN(STA) WEP Configuration**: A table with columns 'Name' and 'Value'. The 'WEP' row has a value of 'OFF', and the 'Key Index' row has a value of '1'. The 'WEP Key1', 'WEP Key2', 'WEP Key3', and 'WEP Key4' rows are empty.

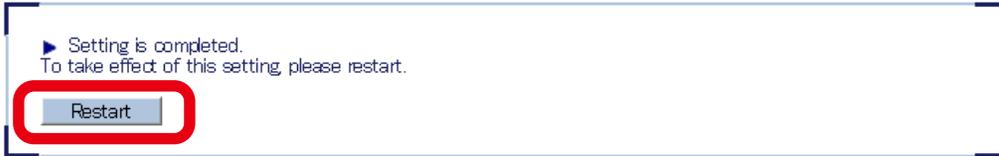
A red box highlights the 'Submit' button at the bottom right of the configuration area. The footer of the page includes the Silex ST-700 logo, version information (Ver 1.2.0 [8425:3f01:3b52]), and the copyright notice: Copyright (C) 2020 silex technology, Inc.



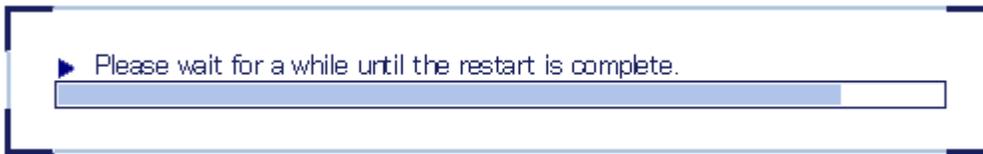
Note

- For details of the setting items, see **A. Web Page Setting Items**.
- When you click the link of another page on the menu before saving the updated values, all the entered values will be deleted. To access other pages, click **Submit** to save the entered values.
- The new setting values will take effect after ST-700 restarts.

3. After the settings are saved, the **Restart** button will appear. To continue changing settings, select the configuration page from the menu or the tab. When you finish all the necessary changes, click **Restart**.



4. ST-700 will restart. A progress bar will be displayed while the ST-700 restart process continues. When the progress bar reaches the right edge, the restart is completed. Close the web browser.



4. Installation

4-1. Installation Procedure

This chapter shows examples of how to install ST-700. There are two main procedures.

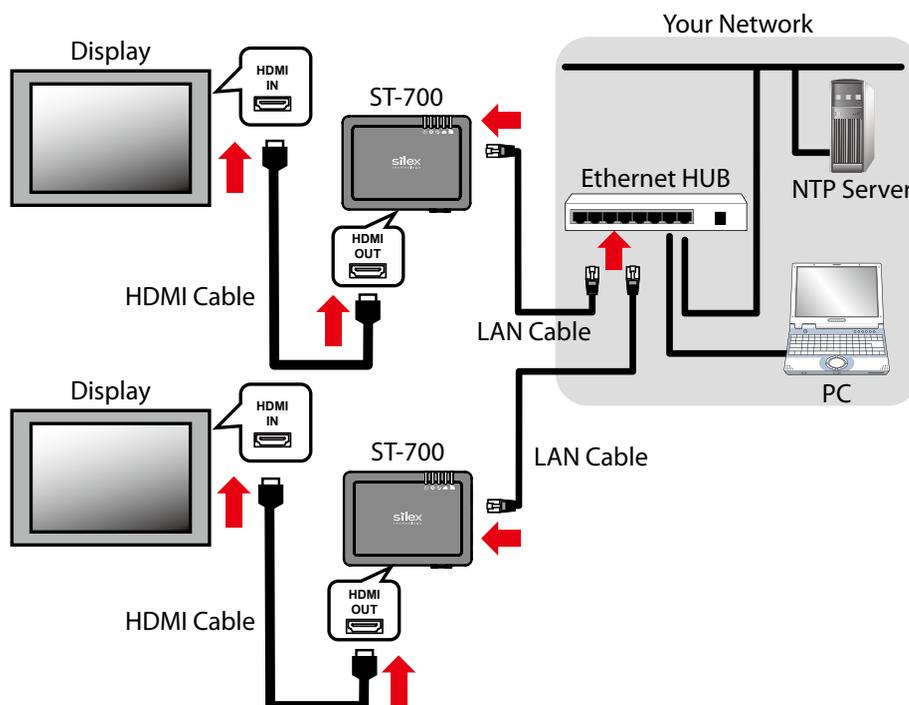
- Install ST-700 by connecting to an existing network with NTP server.
- Install ST-700 by establishing a network with a PC without NTP server.

Either way, ST-700 has to get the time from NTP server to play the programs. When NTP server is running in the network, see **4-2. Installing ST-700 in NTP Server Network** to install ST-700.

When there is no NTP server, use PC with SX Sign Control Software as NTP server. See **4-3. Installing ST-700 without NTP Server** to install ST-700.

4-2. Installing ST-700 in NTP Server Network

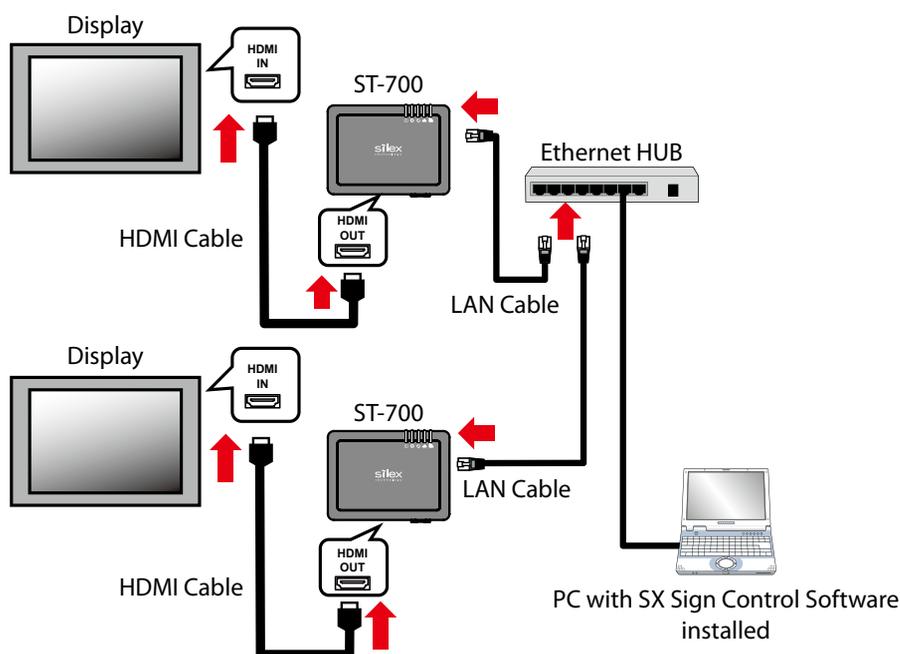
Connect ST-700 to a display using an HDMI cable, and connect ST-700 and Ethernet Hub in your network with a LAN cable. In this configuration, SX Sign Control Software can transmit a program to multiple ST-700 in the same network at once.



- When the local domain name of the DNS server ends with ".local", name resolution cannot be used because it conflicts with the mDNS service.

4-3. Installing ST-700 without NTP Server

When there is no NTP server in your network or when you install ST-700 and a display without connecting to your network, connect PC with SX Sign Control Software installed to the network. After SX Sign Control Software is installed, the PC will act as NTP server. In this configuration, specify the IP address of the PC for NTP Server Address of ST-700.



- To use the PC as NTP server, keep the PC running all the time. Make sure the PC does not turn off the power automatically or enter into the sleep mode.

(Blank page)

5. Program Broadcasting

5-1. Program Playback Procedure

To play programs with ST-700, create programs and the play schedule using SX Sign Control Software and import the data to ST-700. This chapter describes how to play programs.

5-1-1. Creating Programs

Create programs with SX Sign Control Software and import the data to ST-700. For details on how to create programs, see **SX Sign Control Software User's Manual**.



- For details on how to download **SX Sign Control Software**, see **3-2. Downloading Application Software**.

Note

5-1-2. Importing Programs into ST-700

Created programs and the schedule are saved as **Schedule** by SX Sign Control Software. Here are the procedures for importing Schedule.

Using SX Sign Control Software

SX Sign Control Software exports Schedule to ST-700 in the same network. For more details, refer to **SX Sign Control Software User's Manual**.

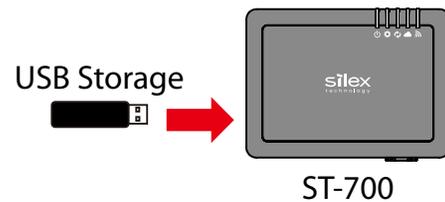
Use USB Storage

ST-700 can import Schedule from a USB storage attached to the USB port. To do so, export Schedule from SX Sign Control Software beforehand. For more details, refer to **SX Sign Control Software User's Manual**. Here are steps to import Schedule from the USB storage.



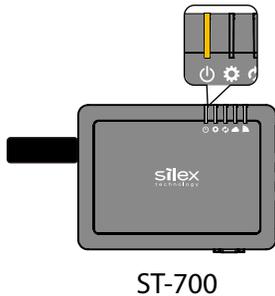
- When there is no NTP server in ST-700's network, programs will not be played back as scheduled.

1. Turn on ST-700 and connect the USB storage to the USB port 1 or 2. In this document, the USB storage is attached to the USB port 1.

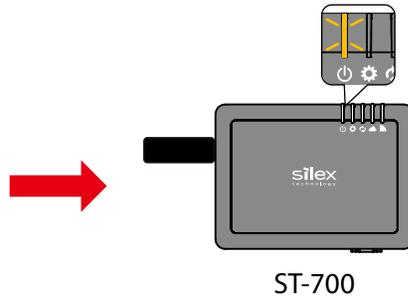


2. When Schedule has already been written in the USB storage, POWER LED will turn orange and ST-700 will import the Schedule. When POWER LED (orange) blinks, the import of Schedule is completed.

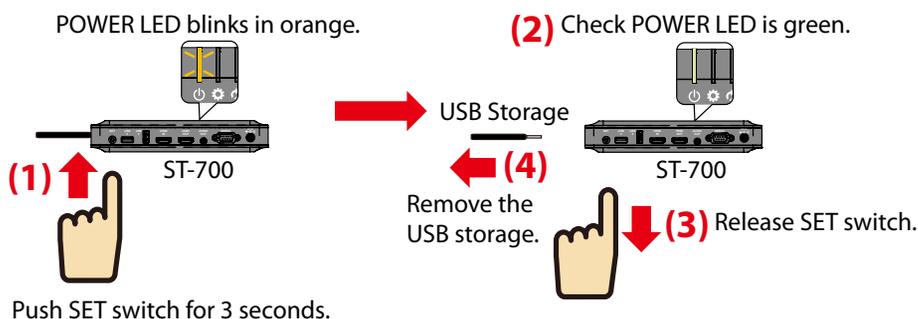
POWER LED stays steady orange during the import



Power LED blinks in orange after the import.



3. Keep pressing down the SET switch for 3 seconds, POWER LED will turn green. Make sure that POWER LED is green, and then remove the USB storage.



5-1-3. Program Playback Error

If programs are not played back, make sure of the following.

- Devices are properly connected with LAN cables.
- The HDMI cable is properly connected to the HDMI OUT of ST-700.
- ST-700 correctly receives the time from NTP server.
- A program is set to the current time schedule.

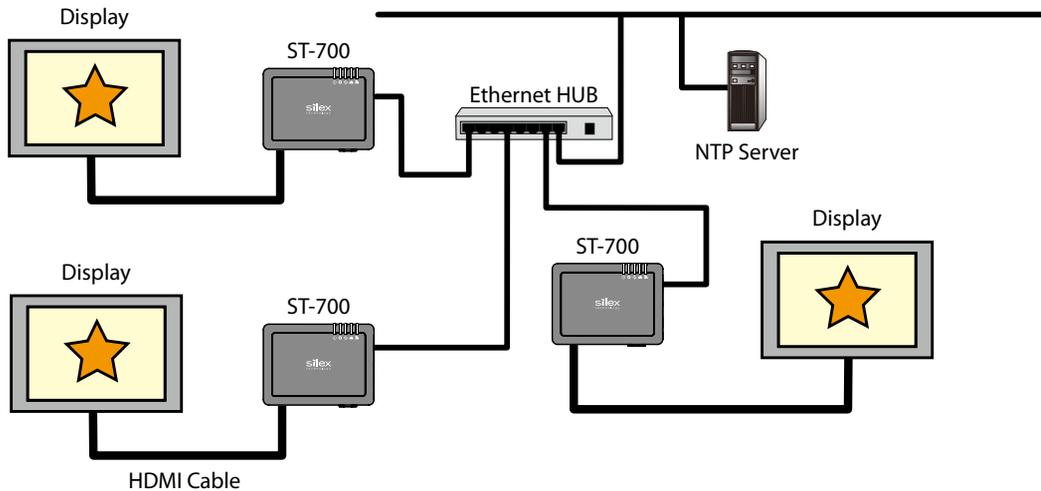


Note

- You can check the communication status with NTP server on ST-700's web page. See **7-1-4. How to Check Playing Status.**

5-2. Synchronizing Multiple Screen Content

Enable the monitor synchronization function to synchronize the content play time. The function prevents ST-700 from playing content behind or ahead of time when content on all the screens are changed at once.



TIP

- The monitor synchronization function has to be enabled for all the ST-700 units to be in sync.
- The monitor synchronization function cannot be used for split-screen programs.
- All the ST-700 units in sync have to play the same program.



Note

- When the monitor synchronization function is enabled, ST-700 units create a group and communicate each other within the group. One of ST-700 works as a master device and the others become slave devices and are synchronized with the master device. To check whether ST-700 is a master or a slave device, see **7-1-3. How to Check Video/Audio Status**.

Here is how to enable the monitor synchronization function.



Note

- The monitor synchronization function has been enabled under the factory default settings.

1. Access the web page and click **Monitor synchronization** on the menu.



Note

- See **How to Access the Web Page** in **3-5-2. ST-700 Web Page** to access the web page with your web browser.

2. Change **Monitor synchronization** to **ENABLE** on the **Monitor synchronization** page. (1)
Click **Submit**. (2)

The screenshot shows the 'Monitor synchronization' page. At the top, there is a header with the title 'Monitor synchronization'. Below the header, there is a table with the following structure:

Name	Value
Monitor synchronization	ENABLE

Red circles highlight the 'ENABLE' value in the table (labeled (1)) and the 'Submit' button (labeled (2)).

3. The new setting will take effect after ST-700 is restarted.
Click **Restart** to restart ST-700.

The screenshot shows a confirmation message: 'Setting is completed. To take effect of this setting, please restart.' Below the message is a 'Restart' button, which is highlighted with a red circle.



Note

- To continue updating settings in other pages, wait restarting ST-700 until all updates are done.

4. After the restart, the login page appears.
The monitor synchronization function has been configured.

5-3. Controlling Monitor from Serial Port

ST-700 can control industrial monitors supporting serial communication control connected to the serial port. Set the time and character strings to ST-700. The specified character strings, such as control commands, will be sent to an industrial monitor at the specified time.



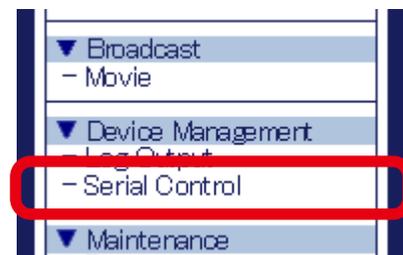
- To use this function, ST-700 has to get the time from NTP server.

**Note**

- Up to two sets of a character string and a time value can be saved.

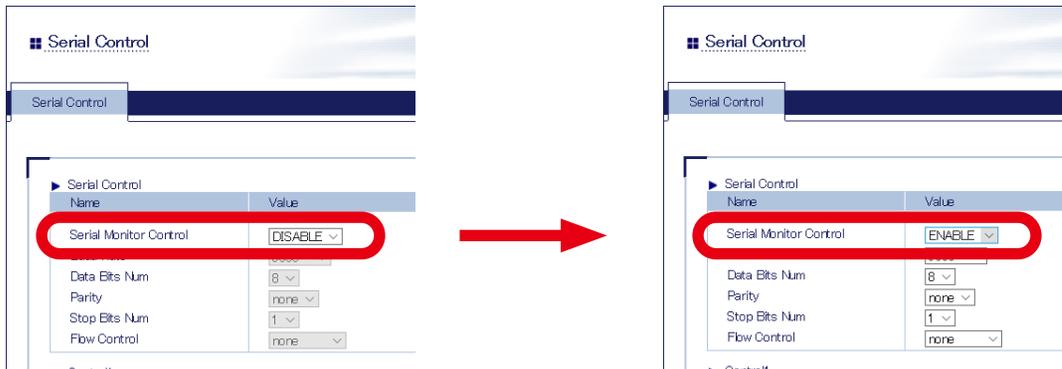
Here is how to use the serial control function.

1. Access the web page, and click **Serial Control** on the menu.

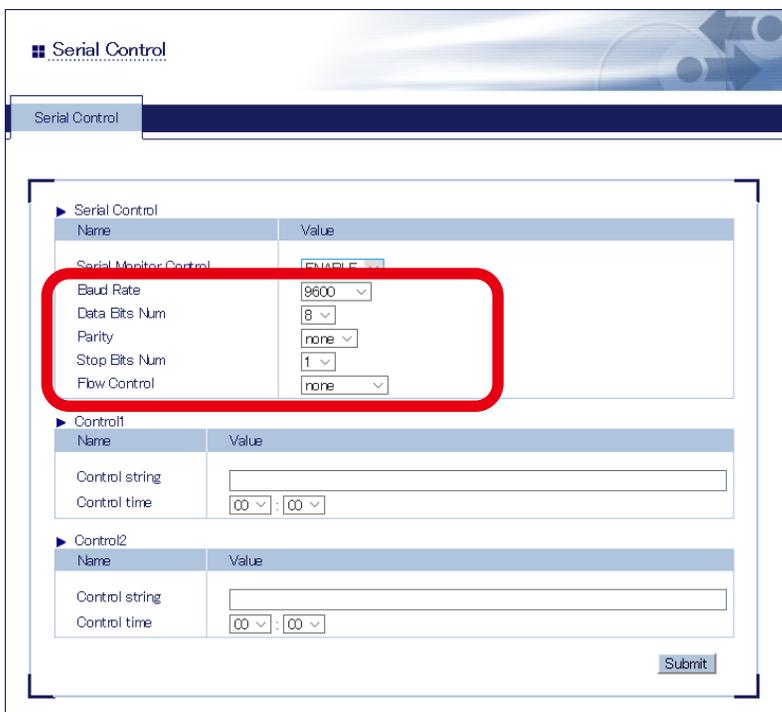
**Note**

- See **How to Access the Web Page** in 3-5-2. **ST-700 Web Page** to access the web page with your web browser.

2. Change **Serial Monitor Control** to **ENABLE** on the Serial Control page.



3. Change the serial port settings of ST-700.
Change the settings so that ST-700 can communicate with the serial port of a connected monitor.



4. Change character strings to send to the serial port and the output time (1), and click **Submit** (2).

The screenshot shows the 'Serial Control' configuration window. The 'Serial Control' section is expanded, showing settings for 'Serial Monitor Control' (ENABLE), Baud Rate (9600), Data Bits Num (8), Parity (none), Stop Bits Num (1), and Flow Control (none). Below this, the 'Control1' and 'Control2' sections are highlighted with a red box (1). Each section has a 'Control string' text box and a 'Control time' dropdown menu. A red circle (2) highlights the 'Submit' button at the bottom right of the control sections.



Note

- You can set a different character string and a time to **Control1** and **Control2**.
- Up to 40 alphanumeric characters can be entered in **Control string**.
- The following table shows special characters including control codes.

Special Character	Detail
\a	An alert character
\b	A backspace character
\c	Does not allow a line feed at the end of sentence (a character after \c will not be returned.)
\"	Shows " (a double quotation mark) as a character.
\t	A tab character
\v	A vertical tab character
\r	Linefeed (CR)
\n	Return (LF)
\f	Form feed (new page)
\\	Shows \ as a character
\x**	Any character code. Specify a code in one or two hexadecimal digits for **. Example) \x06\x1c
\0***	Any character code. Specify a code in one to three octal digits for ***. Example) \0001\0777

- 5.** The new settings will take effect after ST-700 is restarted.
Click **Restart**.



Note

- To continue updating settings in other pages, wait restarting ST-700 until all updates are done.

- 6.** After the restart, the login page appears.
When ST-700 obtains the correct time from NTP server, it will send **Control string** from the serial port at the specified time.

6. Security Functions

6-1. Password Setting

1. Use a web browser to access the web page.



- See **How to Access the Web Page** in **3-5-2. ST-700 Web Page** to access the web page with your web browser.

Note

2. Click **Password** on the menu.



3. The password configuration page appears. Enter **New Password** and **Confirm New Password** , and click **Submit**.

A screenshot of the 'Password Configuration' web page. The page title is 'Password Configuration'. Below the title, there is a sub-header 'Password Configuration'. The main content area contains the text: 'Set a password for accessing the configuration page. Please handle the password carefully. If it is lost, you won't be able to change the configuration without resetting this product to factory defaults.' Below this text, there is a section titled 'Please input the password.' which contains two input fields: 'New Password :' and 'Confirm New Password :'. A 'Submit' button is located at the bottom right of this section. Red rectangles highlight the two input fields and the Submit button.

- If you forget your password, you will not be able to change the settings unless a factory reset is performed. Make sure you keep your password safe.

TIP

4. The setting is saved and restart appears. The new setting will take effect after ST-700 restarts. Click **Restart**.



Note

- To continue updating settings in other pages, wait restarting ST-700 until all updates are done.

5. After the restart, the login page appears.

The password setting is now completed.

6-2. Device Access Permission

6-2-1. Allowing Wireless LAN Devices to Connect to ST-700

When ST-700 is operating as an access point, connecting wireless LAN devices can be specified.

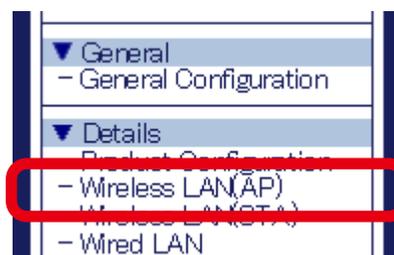
This section describes how to register MAC addresses of wireless LAN devices to allow or block their communications.



- Check MAC addresses of the wireless LAN devices beforehand.

TIP

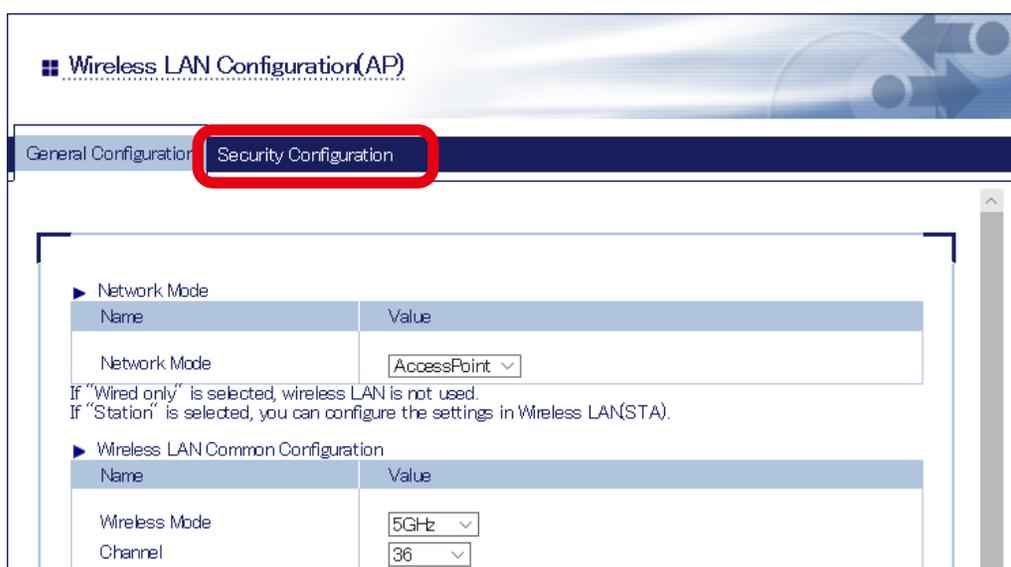
1. Access the web page and click **Wireless LAN(AP)** on the menu.



- See **How to Access the Web Page** in 3-5-2. **ST-700 Web Page** to access the web page with your web browser.

Note

2. The Wireless LAN(AP) page appears. Click the tab of **Security Configuration**.



3. Select the **Filer Type** under **MAC Address Filter Configuration**.

- **DISABLE**: Allows connections from all the wireless LAN devices.
- **ALLOW**: Accepts connections from only the registered wireless LAN devices.
- **DENY**: Blocks connections from the registered wireless LAN devices.

Name	Value
Filter Type	DISABLE

00:00:00:00:00:00 Add Delete

Submit

4. Enter the MAC address of the wireless LAN device in the MAC address input box, and click **Add**.

Repeat the step to register multiple devices.

Click **Submit** after all MAC addresses have been registered.

Name	Value
Filter Type	ALLOW
MAC address	84:25:3F:01:29:45 70:3E:AD

84:76:C5:99:99:99 Add Delete

Submit



TIP

- When the page is switch to another page from the menu before **Submit** is clicked, all the entered values will be cleared. To access other pages, click **Submit** to save the entered values.



Note

- MAC addresses must be in the form of "XX:XX:XX:XX:XX:XX".
- The vendor code (the first 6 digits) of MAC address alone can be registered. In that case, wireless devices having the vendor code will be filtered.
- To delete the registered MAC addresses, select them and click **Delete**.
- Total 10 MAC addresses including vendor codes can be registered.

- 5.** After the setting, the restart page shows up. The new settings will take effect after ST-700 is restarted. Click **Restart**.



- To continue updating settings in other pages, wait restarting ST-700 until all updates are done.

Note

- 6.** After the restart, the login page appears. This is the end of the setting for wireless LAN devices to connect to ST-700.

6-2-2. Allowing Wired LAN Devices to Connect to ST-700

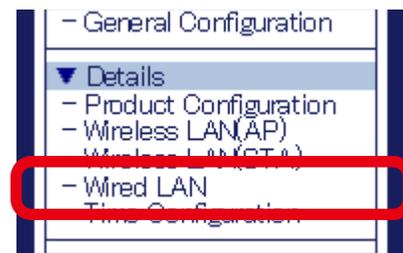
This section describes how to register MAC addresses of wired LAN devices to allow or block their communications.



- Check MAC addresses of the wired LAN devices beforehand.

TIP

1. Access the web page and click **Wired LAN** on the menu.

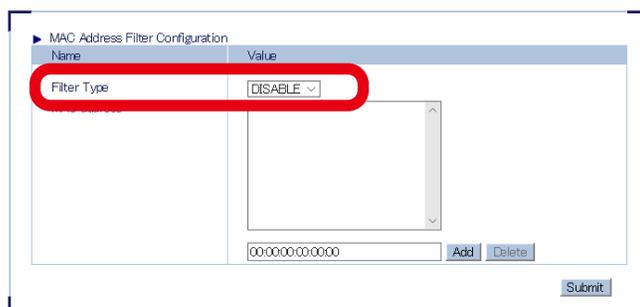


- See **How to Access the Web Page** in 3-5-2. **ST-700 Web Page** to access the web page with your web browser.

Note

2. The Wired LAN page appears.
Select the **Filter Type** under **MAC Address Filter Configuration**.

- DISABLE: Allows connections from all the wired LAN devices.
- ALLOW: Accepts connections from only the registered wired LAN devices.
- DENY: Blocks connections from the registered wired LAN devices.



3. Enter the MAC address of the wired LAN device in the MAC address input box, and click **Add**.

Repeat the step to register multiple devices.

Click **Submit** after all MAC addresses have been registered.

Name	Value
Filter Type	ALLOW
MAC address	84:25:3F:01:29:45 703EAD

84:76:C5:99:99:99 Add Delete Submit



TIP

- When the page is switch to another page from the menu before **Submit** is clicked, all the entered values will be cleared. To access other pages, click **Submit** to save the entered values.



Note

- MAC addresses must be in the form of "XX:XX:XX:XX:XX:XX".
- The vendor code (the first 6 digits) of MAC address alone can be registered. In that case, wireless devices having the vendor code will be filtered.
- To delete the registered MAC addresses, select them and click **Delete**.
- Total 10 MAC addresses including vendor codes can be registered.

4. After the setting, the restart page shows up. The new settings will take effect after ST-700 is restarted. Click **Restart**.

▶ Setting is completed.
To take effect of this setting, please restart.

Restart



Note

- To continue updating settings in other pages, wait restarting ST-700 until all updates are done.

5. After the restart, the login page appears. This is the end of the setting for wired LAN devices to connect to ST-700.

7. Maintenance Functions

7-1. Status Checking

1. Use a web browser to access the web page.



Note

- See **How to Access the Web Page** in **3-5-2. ST-700 Web Page** to access the web page with your web browser.

2. Click the status page on the menu



System

Shows the network status such as TCP/IP.

See **7-1-1. How to Check System Status** for more details.

Network

Shows the networks status of wired/wireless LAN.

See **7-1-2. How to Check Network Status** for more details.

Video/Audio

Shows the output status of videos and audio.

See **7-1-3. How to Check Video/Audio Status** for more details.

Broadcast

Shows the playing status of a playlist.

See **7-1-4. How to Check Playing Status** for more details.

7-1-1. How to Check System Status

This page shows the network status of ST-700 including TCP/IP.

The screenshot shows a web interface titled "System Status". It features a "Refresh" button and two expandable sections:

- Product Information:**

Name	Status
Product Name	ST-700
Version	1.2.0
- TCP/IP Information:**

Name	Status
IP Address	172.25.72.80
Subnet Mask	255.255.252.0
Default Gateway	172.25.75.230
DHCP Server	10.128.128.1
DNS Server (Primary)	172.25.1.55
DNS Server (Secondary)	172.20.0.100

Product Information

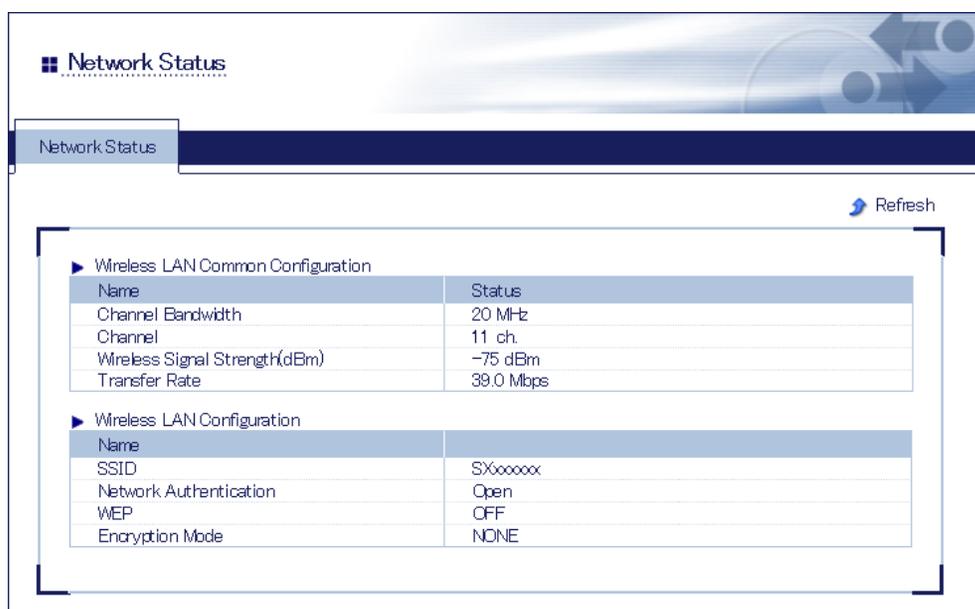
Item	Outline
Product Name	Name of the product: ST-700
Version	Firmware version of the product

TCP/IP Information

Item	Outline
IP Address	Currently assigned IP address
Subnet Mask	Subnet mask in use
Default Gateway	Gateway address in use
DHCP Server	DHCP server in use
DNS Server (Primary)	DNS server in use (Primary)
DNS Server (Secondary)	DNS server in use (Secondary)

7-1-2. How to Check Network Status

This page shows the wireless LAN connection status of ST-700 when the network mode is **Access Point** or **Station**.



Network Status

Refresh

Wireless LAN Common Configuration

Name	Status
Channel Bandwidth	20 MHz
Channel	11 ch
Wireless Signal Strength(dBm)	-75 dBm
Transfer Rate	39.0 Mbps

Wireless LAN Configuration

Name	Status
SSID	SXxxxxxx
Network Authentication	Open
WEP	OFF
Encryption Mode	NONE

Wireless LAN Common Configuration

The following information is shown when the network mode is **Access Point**.

Item	Outline
Wireless Mode	Wireless mode in use
Channel	Channel in use

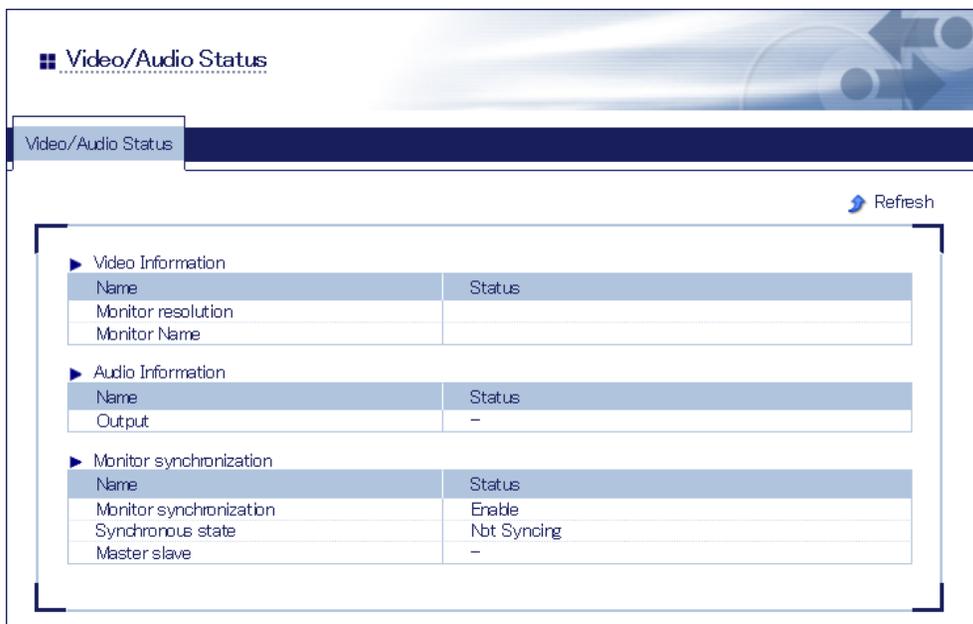
The following information is shown when the network mode is **Station**.

Item	Outline
Channel Bandwidth	Channel bandwidth in use
Channel	Channel in use
Wireless Signal Strength(dBm)	Current radio intensity of the wireless LAN
Transfer Rate	Current transmission rate of the wireless LAN

Wireless LAN Configuration

Item	Outline
SSID	SSID in use
Network Authentication	Authentication method in use
WEP	Shows ON/OFF about encryption with WEP key. This is shown when the network authentication is Open or Shared .
Encryption Mode	Encryption method in use

7-1-3. How to Check Video/Audio Status



Video Information

Item	Outline
Monitor resolution	Shows the current screen resolution. It will show nothing when no monitor is connected.
Monitor name	Shows the name of a monitor in EDID. It will show nothing when no monitor is connected.

Audio Information

Item	Outline
Output	Shows the audio output interface (HDMI/Stereo Mini).

Monitor synchronization

Item	Outline
Monitor synchronization	Shows the setting (Enabled/Disabled) of multiscreen synchronization function.
Synchronous state	Shows the status of synchronization.
Master slave	Shows either Master or Slave. When it is Slave, the MAC address of connected master device will be displayed.

7-1-4. How to Check Playing Status



Content

Item	Outline
Broadcast State	Shows the content playing status, either one of the following: On broadcasting On stopping
Playlist	Name of the playlist now playing
Timeline	Start and end time of the showing program.
Current Local Time	Shows the current system time in the following format: yyyy/mm/dd HH:MM:SS (UTC+<TZ HH:MM>) When the time is obtained from NTP server, the time is displayed. When the time is not obtained from NTP server, it displays the time elapsed since startup. The start time is set to 0:00 on January 1, 2019. Example) 2019/01/01 00:00:34 (UTC+9:00)
Summer time	Shows the period of summer time (daylight saving time) of the year.
Content	Name of content now playing This is displayed when ST-700 is playing a non-splitting screen program.

Storage

Item	Outline
Capacity	Maximum capacity which the user can use
Free space	Free space available for the user

7-2. Exporting Syslog of ST-700

This chapter describes how to export logs to Syslog server.

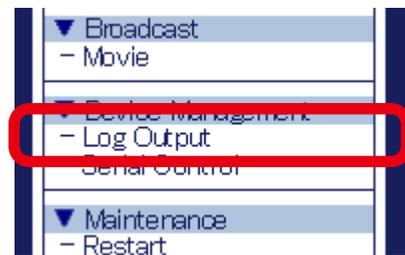
1. Use a web browser to access the web page.



Note

- See **How to Access the Web Page** in **3-5-2. ST-700 Web Page** to access the web page with your web browser.

2. Click **Log Output** on the menu.



3. The Log Output page appears. Enable **Syslog Server Log Output** and enter the domain name or host name of Syslog server in **Syslog Server**. Click **Submit**.

The image shows the 'Log Output' configuration page. It has a header 'Log Output' and a sub-header 'Log Output'. Below is a table with two columns: 'Name' and 'Value'. The table has two rows: 'Syslog Server Log Output' with a dropdown menu set to 'ENABLE', and 'Syslog Server' with a text input field containing 'syslog.silex.jp'. A 'Submit' button is located at the bottom right of the table. A red circle highlights the 'Syslog Server Log Output' row and the 'Submit' button.

Name	Value
Syslog Server Log Output	ENABLE
Syslog Server	syslog.silex.jp



Note

- When Syslog server is specified with the host name, the IP address resolution process will be conducted by DNS before the log is exported. If DNS fails in address resolution, the process will not be performed for 30 seconds.

- The new settings will take effect after ST-700 restarts. Click **Restart**.



- To continue updating settings in other pages, wait restarting ST-700 until all updates are done.

Note

- When the login page appears. The log export setting has been completed. A log message will be sent to Syslog server

The log message is in the following format.

<Pri><Process>:< Message >

Detail	Pri	: Log type (facility) and the severity (Refer to RFC 3164)
	Process	: kernel or a process name (source). When it is a process name, [ID] will be displayed.
	Message	: Log message

Output Example (1)

<6>kernel: [1173.959511] wlan: [3438:E :HDD] received scan request

Output Example (2)

<78>CROND[4347]: (root) CMD (/usr/sbin/logrotate /etc/logrotate.conf)



- When ST-700 is not communicating with Syslog server, log messages cannot be sent to the Syslog server.

Note

7-3. Restart

The following options can restart ST-700.

- 1) Hard reboot
- 2) Web page
- 3) AMC Manager®



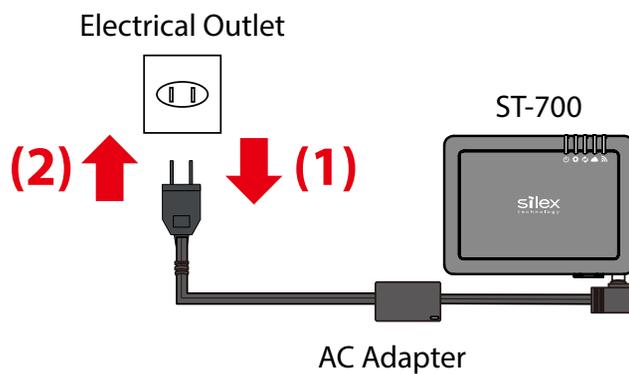
- To use AMC Manager®, see **AMC Manager® User's Manual**.

Note

7-3-1. Hardware Reboot

This section describes how to restart ST-700 with its system alone.

1. Unplug and plug the power cord back into the electrical outlet. (1), (2)



7-3-2. Restart from Web Page

1. Use a web browser to access the web page.



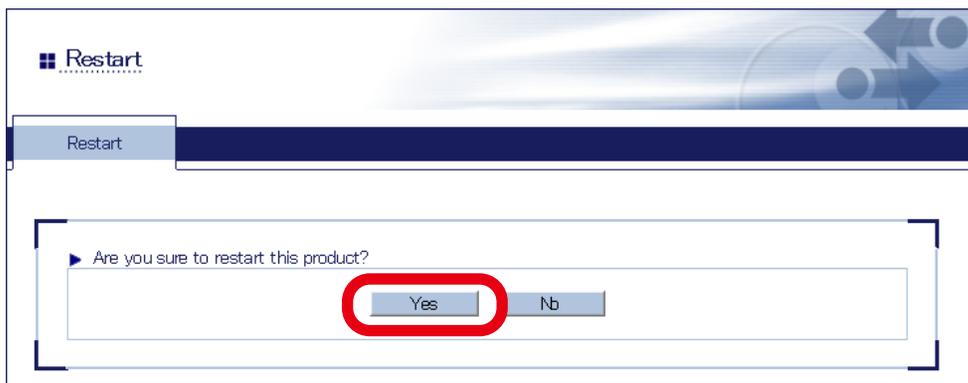
Note

- See **How to Access the Web Page** in 3-5-2. **ST-700 Web Page** to access the web page with your web browser.

2. Click **Restart** on the menu.



3. The restart page appears. Click **Yes** to restart ST-700.



4. After the restart, the login page appears.

7-4. Factory Reset

The following options can perform a factory reset.

- 1) RESET switch
- 2) Web page
- 3) AMC Manager®



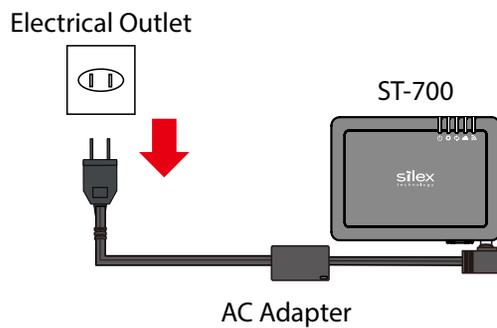
Note

- To use AMC Manager®, see **AMC Manager® User's Manual**.

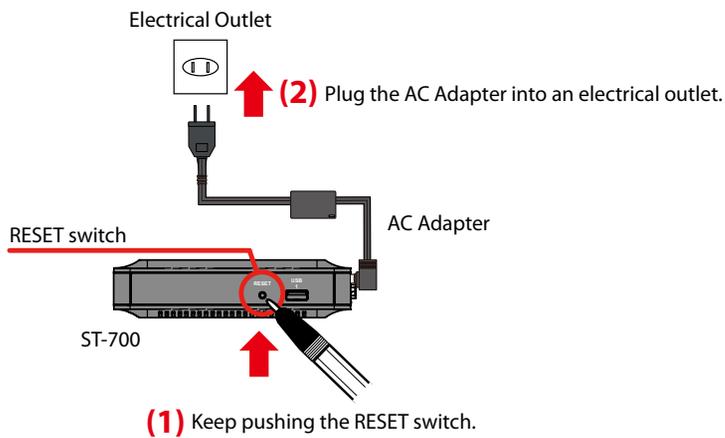
7-4-1. Reset Switch

This section describes a factory reset using ST-700's RESET switch.

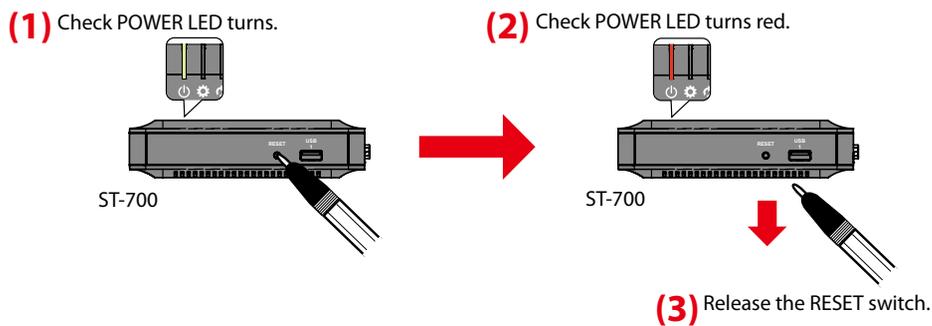
1. Unplug the AC adapter from the electrical outlet



- Using the tip of a ball-point pen, press and hold the RESET switch on the left side of ST-700. Plug the AC adapter into an electrical outlet while pushing the RESET switch.



- The POWER LED turns green and then becomes red. Release the RESET switch when the POWER LED turns red.



The factory reset has been completed.

7-4-2. Factory Reset from Web Page

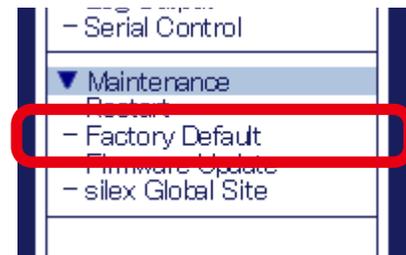
1. Use a web browser to access the web page.



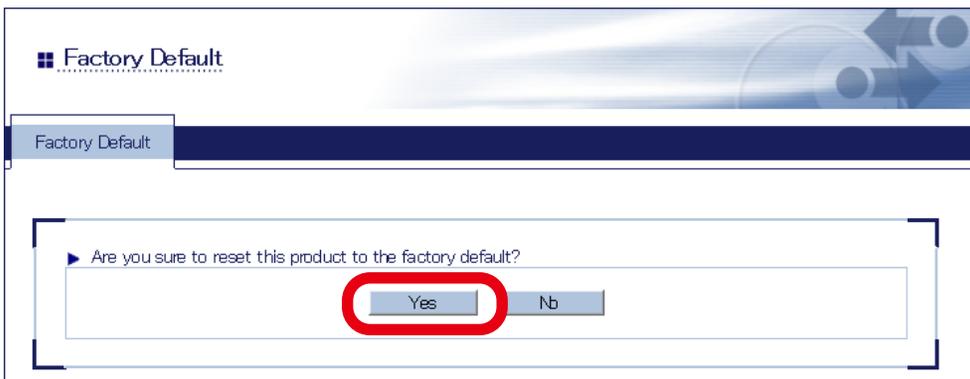
- See **How to Access the Web Page** in **3-5-2. ST-700 Web Page** to access the web page with your web browser.

Note

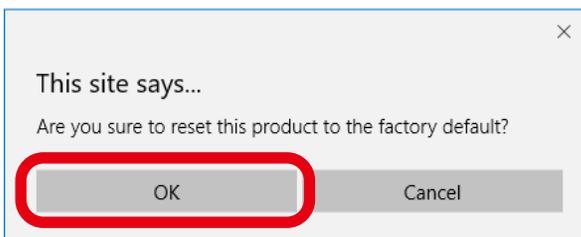
2. Click **Factory Default** on the menu.



3. The Factory Default page appears. Click **Yes** for a factory reset.



4. The confirm dialog appears. Click **OK** to initiate the factory reset.



5. ST-700 will restart and operate in the factory default settings.

7-5. Firmware Update

7-5-1. Downloading Firmware

The latest firmware is published on Silex Technology's web site. Download the firmware from the web site beforehand. For details on how to download the firmware, see **3-2 Downloading Application Software**.

7-5-2. How to Update Firmware

1. Use a web browser to access the web page.



Note

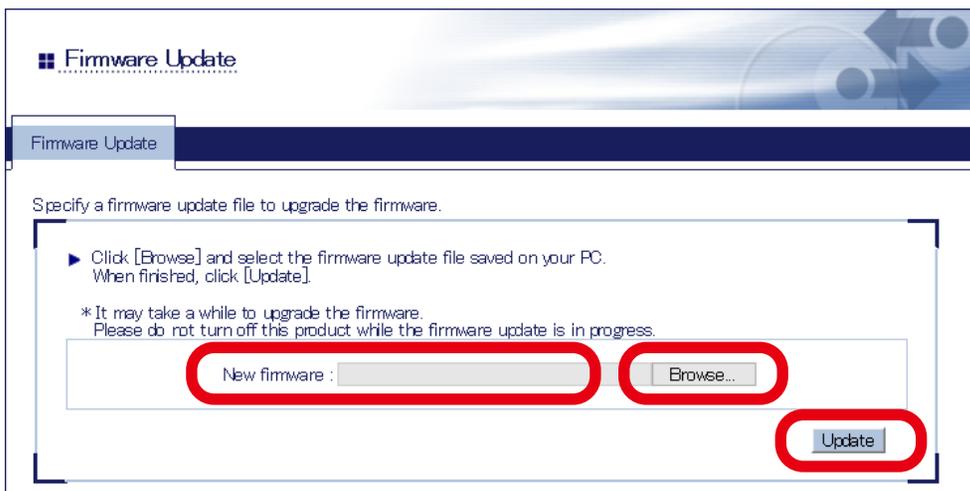
- See **How to Access the Web Page** in **3-5-2. ST-700 Web Page** to access the web page with your web browser.
- The firmware can be updated using AMC Manager®. See AMC Manager® User's Manual for more details.

2. Click **Firmware Update** on the menu.

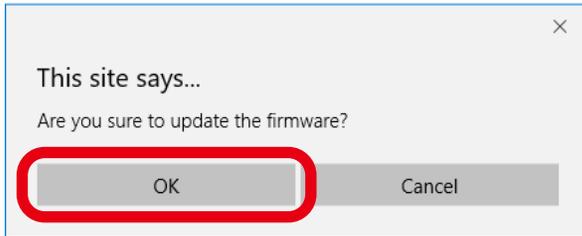


3. The Firmware Update page appears.

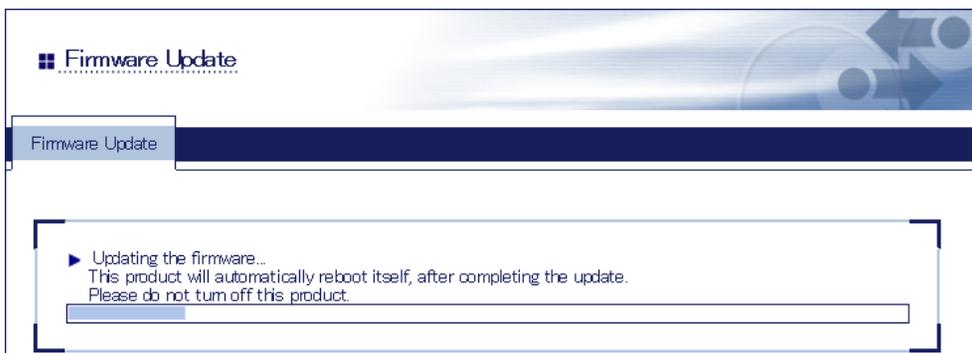
- (1) Click **Browse** next to New firmware and select the latest firmware file (ST-700.bin) you downloaded.
- (2) Check the input box of New firmware shows the file name.
- (3) Click **Update**.



- The confirm dialog appears.
Click **OK**.



- The firmware update starts.
Do not turn off ST-700 or close the web browser until the update is completed.



- When the login page appears, the firmware update has been completed.
See the bottom left corner of the page to check the latest firmware version.



That's all for the firmware update.

7-6. Deleting Saved Schedules

To delete the data of program schedules, use SX Sign Control Software. Check **SX Sign Control Software User's Manual** for more details.

A. Web Page Setting Items

A-1. General Setting Items

The general setting items are the necessary items to use ST-700.
Some of **A-2. Details Setting Items** can be changed.
The following setting items can be set in the general settings.

TCP/IP Configuration

See **A-2-1. Product Configuration**.

Time Configuration

See **A-2-5. Time Configuration**.

Wireless LAN(STA) General Configuration

Wireless LAN(STA) WEP Configuration

Wireless LAN(STA) WPA/WPA2 PSK Configuration

Wireless LAN(STA) WPA/WPA2 EAP Configuration

See **A-2-3. Wireless LAN(STA)**.

A-2. Details Setting Items

A-2-1. Product Configuration

Device Configuration

Name	Host Name
Description	It sets a host name. Give a unique name to distinguish it from the other devices.
Value/Range	0 to 15 alphanumeric characters and some symbols (one-byte symbols except for /:*?"<> \\)
Default value	SXxxxxxx (xxxxxx: last 6 digits of the MAC address)
Note	The specified host name will be displayed in AMC Manager® and SX Sign Control Software.

TCP/IP Configuration

Name	DHCP Client
Description	It enables/disables DHCP protocol. ST-700 has to be in the same network of DHCP server to get IP addresses automatically.
Value/Range	ENABLE/DISABLE
Default value	ENABLE

Name	IP Address
Description	It specifies an IP address. Use this setting when DHCP client is disabled.
Value/Range	0.0.0.0 to 255.255.255.255
Default value	192.168.0.10

Name	Subnet Mask
Description	It specifies a subnet mask. Use this setting when DHCP client is disabled.
Value/Range	0.0.0.0 to 255.255.255.255
Default value	255.255.255.0

Name	Default Gateway
Description	It specifies a gateway address. "0.0.0.0" (default value) disables the setting. Use this setting when DHCP client is disabled.
Value/Range	0.0.0.0 to 255.255.255.255
Default value	0.0.0.0

DNS Configuration

Name	DNS Server (Primary)
Description	It specifies the address of DNS primary server. When DHCP client is enabled, DNS server obtained with DHCP will be preferentially assigned.
Value/Range	0.0.0.0 to 255.255.255.255
Default value	0.0.0.0

Name	DNS Server (Secondary)
Description	It specifies the address of DNS secondary server. When DHCP client is enabled, DNS server obtained with DHCP will be preferentially assigned.
Value/Range	0.0.0.0 to 255.255.255.255
Default value	0.0.0.0



TIP

- When the local domain name of the DNS server ends with ".local", name resolution cannot be used because it conflicts with the mDNS service.

DHCP Server Configuration

Name	DHCP Server Function
Description	It enables/disables DHCP server. Enable this setting to run ST-700 as DHCP server to automatically assign an IP address to PC. Disable this when DHCP server already exists in the same network.
Value/Range	ENABLE/DISABLE
Default value	DISABLE

Name	Start IP Address
Description	It specifies the start IP address when DHCP server function is enabled.
Value/Range	0.0.0.0 to 255.255.255.255
Default value	192.168.0.11

Name	End IP Address
Description	It specifies the end IP address when DHCP server function is enabled
Value/Range	0.0.0.0 to 255.255.255.255
Default value	192.168.0.254

Name	Subnet Mask
Description	It specifies the subnet mask for the assigned IP address. When "0.0.0.0" is given, this setting will be disabled, and a subnet mask corresponding to the assigned start IP address will be automatically used.
Value/Range	0.0.0.0 to 255.255.255.255
Default value	255.255.255.0

Name	Default Gateway
Description	It specifies the default gateway address. "0.0.0.0" (default value) disables the setting.
Value/Range	0.0.0.0 to 255.255.255.255
Default value	0.0.0.0

Name	Lease Time
Description	It sets the lease time.
Value/Range	0 Days 0 Hours 0 minutes to 44 Days 23 Hours 59 minutes
Default value	0 Days 0 Hours 0 minutes
Note	When this is 0 Days 0 Hours 0 minutes, the lease period will be 10 days.

Proxy Setting

Name	Proxy Function
Description	It enables/disables communications through a proxy server. Enable this setting to play web content in an environment that requires a proxy server.
Value/Range	ENABLE/DISABLE
Default value	DISABLE

Name	Proxy Server
Description	It sets the domain name or the IP address of proxy server to use when the proxy function is enabled.
Value/Range	0 to 63 alphanumeric characters or 0.0.0.0 to 255.255.255.255
Default value	0.0.0.0

Name	Port Number
Description	It sets the port number of proxy server to use.
Value/Range	1 to 65535
Default value	8080



TIP

- When the local domain name of the DNS server ends with ".local", name resolution cannot be used because it conflicts with the mDNS service.

A-2-2. Wireless LAN(AP)

General Configuration

Network Mode

Name	Network Mode
Description	It sets the network operation mode.
Value/Range	Access Point Station Wired only
Default value	Station
Note	When this is set to Access Point , the wireless LAN (AP) setting items besides this setting will be displayed.

Wireless LAN Common Configuration

Name	Wireless Mode
Description	It specifies the radio frequency band that ST-700 uses.
Value/Range	2.4 GHz 5 GHz
Default value	5 GHz

Name	Channel		
Description	It sets a channel to use in the wireless LAN. Segmented frequency bands are called channels. Frequency bands are divided in a wireless LAN so that multiple wireless devices can communicate at once.		
Value/Range	2.4 GHz	(US) 1 to 11 (EU) 1 to 13	
	5 GHz	W52	(US/EU) 36, 40, 44, 48
		W58	(US) 149, 153, 157, 161, 165
	AUTO		
Default value	36		
Note	Available communication channels vary depending on the frequency band specified with the Wireless Mode .		

Wireless LAN Basic Configuration

Name	SSID
Description	It sets SSID of the wireless LAN to connect to ST-700. SSID is an identification for a group to communicate in a wireless LAN. Devices need to have the same SSID to communicate each other in a wireless LAN.
Value/Range	1 to 32 alphanumeric character(s)
Default value	SXxxxxxx (xxxxxx: Last 6 digits of the MAC address)

Name	Stealth Mode
Description	It enables/disables the stealth mode function.
Value/Range	ENABLE/DISABLE
Default value	DISABLE

Name	Network Authentication
Description	It sets the authentication method used for communicating with wireless devices. WPA/WPA2 is recommended for robust security.
Value/Range	<p>Open (Open system): Accepts all access to ST-700 without performing authentication. WEP can be used for encryption of the communication.</p> <p>Shared (Shared key): Uses WEP key as the authentication key for encryption, and allows devices having the same key to connect to ST-700. WEP is used for encryption of the communication.</p> <p>WPA-PSK: Uses PSK for network authentication. The communication encryption method is selected from TKIP/AES/AUTO. The encryption key is generated with a wireless device based on the shared key. The WEP key setting will not be used.</p> <p>WPA2-PSK: Uses PSK for network authentication. The communication encryption method is selected from AES/AUTO. The encryption key is generated with a wireless device based on the shared key. The WEP key setting will not be used.</p> <p>WPA/WPA2-PSK: Both WPA-PSK and WPA2-PSK can be used for authentication.</p>
Default value	WPA2-PSK

Name	Encryption Mode
Description	It specifies the encryption algorithm when the network authentication method is set to WPA-PSK , WPA2-PSK , or WPA/WPA2-PSK .
Value/Range	TKIP AES AUTO
Default value	AES
Note	This setting can be made when the network authentication method is one of the following: WPA-PSK WPA2-PSK WPA/WPA2-PSK

WEP Configuration

Name	WEP
Description	It enables or disables the WEP encryption function when the network authentication is Open . When WEP encryption is used, transmit data will be encrypted in the wireless LAN based on the settings of WEP Key1-4) and Key Index .
Value/Range	ON/OFF
Default value	OFF
Note	This setting can be made when the authentication method is Open . When it is Shared , this setting will be fixed to ON.

Name	Key Index
Description	It specifies the WEP key number (1, 2, 3, or 4). ST-700 and communicating devices have to have the same key index.
Value/Range	1 to 4
Default value	1

Name	WEP Key1-4
Description	It specifies the WEP key.
Value/Range	<p>5 or 13-digit alphanumeric characters 10 or 26 hexadecimal digits</p> <p>* Alphanumeric characters usually mean single-byte alphabets and numbers.</p> <p>* When the size of key (key length) is 64 bits, enter 5 characters. When it is 128 bits, enter 13 characters.</p> <p>* Hexadecimal digits should be a combination of numbers (0 to 9) and alphabets (A to F).</p> <p>* When the key length is 64 bits, enter 10 hexadecimal digits. When it is 128 bits, enter 26 hexadecimal digits.</p>
Default value	None (blank)

WPA/WPA2 Configuration

Name	Pre-Shared Key
Description	<p>It specifies the pre-shared key to use TKIP or AES as the encryption algorithm when the network authentication method is set to WPA-PSK, WPA2-PSK or WPA/WPA2-PSK.</p> <p>The pre-shared key is a keyword to generate an encryption key, which is called a network key or a password for some wireless LAN devices.</p>
Value/Range	<p>8 to 63 alphanumeric characters 64 hexadecimal digits</p>
Default value	silex technology, Inc.
Note	<p>This setting can be made when the network authentication is one of the following:</p> <p>WPA-PSK WPA2-PSK WPA/WPA2-PSK</p>

Name	Group key renew interval
Description	It specifies the update interval for the encryption key in minutes. Zero (0) disables the setting.
Value/Range	0 to 1440
Default value	60

Security Configuration

MAC Address Filter Configuration

Name	Filter Type
Description	It specifies the security type of the MAC address filter in the wireless LAN.
Value/Range	<p>DISABLE: Accepts communications with any wireless device.</p> <p>DENY: Blocks communications from devices registered in the MAC address filter list.</p> <p>ALLOW: Accepts communications with devices registered in the MAC address filter list.</p>
Default value	DISABLE

Name	MAC address
Description	<p>It sets the MAC address filter for the wireless LAN. Setting the MAC address filter will limit wireless LAN devices to connect to ST-700.</p> <p>When the vendor code of MAC address (the first 6 digits) is registered, all the devices having the vendor code will be filtered.</p>
Value/Range	<p>MAC address: 00:00:00:00:00:01 to FF:FF:FE:FF:FF:FF</p> <p>MAC address vendor code; 00:00:00 to FF:FF:FE</p>
Default value	00:00:00:00:00:00
Note	Total 10 MAC addresses including vendor codes can be registered.

A-2-3. Wireless LAN(STA)

Network Mode

Name	Network Mode
Description	It sets the network operation mode.
Value/Range	Access Point Station Wired only
Default value	Station
Note	When this is set to Station , the wireless LAN (STA) setting items besides this setting will be displayed.

Wireless LAN Basic Configuration

Name	SSID
Description	It sets SSID of the wireless LAN to connect to ST-700. SSID is an identification for a group to communicate in a wireless LAN. Devices need to have the same SSID to communicate each other in a wireless LAN.
Value/Range	1 to 32 alphanumeric character(s)
Default value	SXxxxxxx (xxxxxx: Last 6 digits of the MAC address)

Name	Network Authentication
Description	It sets the authentication method used for communicating with wireless devices. WPA/WPA2 is recommended for robust security.
Value/Range	<p>Open (Open system): Accepts all access to ST-700 without performing authentication. WEP is used for encryption of the communication.</p> <p>Shared (Shared key): Uses WEP key as the authentication key for encryption, and allows devices having the same key to connect to ST-700. WEP is used for encryption of the communication.</p> <p>WPA-PSK: Uses PSK for network authentication. The communication encryption method is selected from TKIP/AES/AUTO. The encryption key is generated with a wireless device based on the shared key. The WEP key setting will not be used.</p> <p>WPA2-PSK: Uses PSK for network authentication. The communication encryption method is either AES or AUTO. The encryption key is generated with a wireless device based on the shared key. The WEP key setting will not be used.</p> <p>WPA/WPA2-PSK: Both WPA-PSK and WPA2-PSK can be used for authentication.</p> <p>802.1X: Provides IEEE 802.1X's user authentication and makes encrypted communications using dynamic WEP.</p> <p>WPA-Enterprise: Provides IEEE 802.1X's user authentication and makes encrypted communications using TKIP/AES/AUTO.</p> <p>WPA2-Enterprise: Provides IEEE 802.1X's user authentication and makes encrypted communications using AES/AUTO.</p> <p>WPA/WPA2-Enterprise: Provides IEEE 802.1X's user authentication and makes encrypted communications using AES/AUTO.</p>
Default value	Open

Name	Encryption Mode
Description	It specifies the encryption algorithm when the network authentication method is set to WPA-PSK , WPA2-PSK , or WPA/WPA2-PSK .
Value/Range	TKIP AES AUTO
Default value	AES
Note	This setting can be made when the network authentication method is one of the following: WPA-PSK WPA2-PSK WPA-Enterprise WPA2-Enterprise

WEP Configuration

Name	WEP
Description	It enables or disables the WEP encryption function when the network authentication is Open . When WEP encryption is used, transmit data will be encrypted in the wireless LAN based on the settings of WEP Key1-4) and Key Index .
Value/Range	ON/OFF
Default value	OFF
Note	This setting can be made when the authentication method is Open . When it is Shared , this setting will be fixed to ON.

Name	Key Index
Description	It specifies the WEP key number (1, 2, 3, or 4). ST-700 and communicating devices have to have the same key index.
Value/Range	1 to 4
Default value	1

Name	WEP Key1-4
Description	It specifies the WEP key.
Value/Range	5 or 13-digit alphanumeric characters 10 or 26 hexadecimal digits * Alphanumeric characters usually mean single-byte alphabets and numbers. * When the size of key (key length) is 64 bits, enter 5 characters. When it is 128 bits, enter 13 characters. * Hexadecimal digits should be a combination of numbers (0 to 9) and alphabets (A to F). * When the key length is 64 bits, enter 10 hexadecimal digits. When it is 128 bits, enter 26 hexadecimal digits.
Default value	None (blank)

WPA/WPA2 PSK Configuration

Name	Pre-Shared Key
Description	It specifies the pre-shared key to use TKIP or AES as the encryption algorithm when the network authentication method is set to WPA-PSK , WPA2-PSK or WPA/WPA2-PSK . The pre-shared key is a keyword to generate an encryption key, which is called a network key or a password for some wireless LAN devices.
Value/Range	8 to 63 alphanumeric characters 64 hexadecimal digits
Default value	silex technology, Inc.
Note	This setting can be made when the network authentication is one of the following: WPA-PSK WPA2-PSK WPA/WPA2-PSK

WPA/WPA2 EAP Configuration

Name	Authentication Method
Description	It specifies one of EAP authentication methods when the network authentication is 802.1X or WPA/WPA2-Enterprise .
Value/Range	EAP-TLS EAP-TTLS PEAP EAP-FAST LEAP
Default value	EAP-TLS
Note	This setting can be made when the network authentication is one of the following: 802.1X WPA-Enterprise WPA2-Enterprise

Name	EAP User Name
Description	It specifies a user name used for EAP authentication methods.
Value/Range	0 to 64 alphanumeric characters
Default value	None (blank)

Name	Client Certificate Password
Description	It sets a password to get the secret key from the client certificate.
Value/Range	0 to 32 alphanumeric characters
Default value	None (blank)
Note	This setting can be made when the authentication method is the following: EAP-TLS

Name	Client Certificate
Description	It uploads a client certificate. Click Browse and select a client certificate to upload.
Value/Range	A certificate file used for authenticating ST-700 with IEEE802.1X authentication function.
Default value	Nothing is uploaded.
Note	The uploaded client certificate can be confirmed under the Certificate Registration Status . Upload is allowed when the authentication method is the following: EAP-TLS

Name	EAP Password
Description	It sets a password used for EAP authentication when the authentication method is LEAP, EAP-TTLS, PEAP, or EAP-FAST .
Value/Range	0 to 32 alphanumeric characters
Default value	None (blank)
Note	This setting can be made when the authentication is one of the following: LEAP EAP-TTLS PEAP EAP-FAST

Name	Inner Authentication Method
Description	It specifies the authentication protocol for EAP-TTLS and PEAP . For PEAP , only MSCHAPv2 is available.
Value/Range	PAP MSCHAPv2
Default value	MSCHAPv2
Note	This setting can be made when the authentication is one of the following: EAP-TTLS PEAP

Name	Server Authentication
Description	It enables (ON) or disables (OFF) the server authentication. When it is ON, the CA certificate setting is needed to verify the sever certificate.
Value/Range	ON/OFF
Default value	OFF
Note	This setting can be made when the authentication is one of the following: EAP-TLS EAP-TTLS PEAP

Name	CA Certification
Description	It uploads CA certificate. Click Browse and select CA certificate file to upload.
Value/Range	CA certificate file to authenticate a certificate sent from RADIUS server with IEEE802.1X authentication function.
Default value	Nothing is uploaded.
Note	The upload is allowed when the Server Authentication is set to ON.

A-2-4. Wired LAN

MAC Address Filter Configuration

Name	Filter Type
Description	It specifies the security type of the MAC address filter in the wired LAN.
Value/Range	DISABLE ALLOW DENY
Default value	DISABLE

Name	MAC address
Description	It sets the MAC address filter for the wired LAN. Setting the MAC address filter will limit wired LAN devices to connect to ST-700. When the vendor code of MAC address (the first 6 digits) is registered, all the devices having the vendor code will be filtered.
Value/Range	MAC address: 00:00:00:00:00:01 to FF:FF:FE:FF:FF:FF MAC address vendor code: 00:00:00 to FF:FF:FE
Default value	00:00:00:00:00:00
Note	Total 10 MAC addresses including vendor codes can be registered.

A-2-5. Time Configuration

Name	NTP
Description	It enables or disables NTP protocol to get the time.
Value/Range	ENABLE/DISABLE
Default value	DISABLE

Name	NTP Server
Description	It specifies the domain name or the IP address of NTP server.
Value/Range	0 to 128 alphanumeric characters
Default value	None (blank)
Note	This setting can be made when the NTP setting is enabled.

Name	Local Time Zone
Description	It sets the local time zone.
Value/Range	(UTC-10:00) Hawaii (UTC-09:00) Alaska (UTC-08:00) Pacific Standard Time (UTC-07:00) Mountain Standard Time (UTC-06:00) Central Standard Time (UTC-05:00) Eastern Standard Time (UTC+00:00) Dublin, Edinburgh, Lisbon, London (UTC+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna (UTC+01:00) Brussels, Copenhagen, Madrid, Paris (UTC+02:00) Athens, Bucharest (UTC+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius (UTC+03:00) Minsk (UTC+09:00) Osaka, Sapporo, Tokyo
Default value	(UTC+09:00) Osaka, Sapporo, Tokyo

Name	Scheduled Reboot
Description	It enables or disables the periodic restart function.
Value/Range	ENABLE/DISABLE
Default value	ENABLE

Name	Reboot Time
Description	It specifies the time to restart ST-700 when the scheduled reboot function is in use.
Value/Range	0:00 to 23:50 (set by 10 minutes)
Default value	2:00
Note	This setting can be made when the Scheduled Reboot is enabled.



- When the local domain name of the DNS server ends with ".local", name resolution cannot be used because it conflicts with the mDNS service.

A-3. Security Setting Items

A-3-1. Password

Name	New Password
Description	It sets the administrator password between 1 and 8 alphanumeric character length. The password is used for authentication when the user updates settings from a web browser or uses the device management software AMC Manager®.
Value/Range	1 to 8 alphanumeric characters
Default value	None

A-4. Video/Audio Setting Items

A-4-1. Video

Name	Monitor resolution
Description	It sets the screen resolution displayed by ST-700.
Value/Range	AUTO 3840 x 2160 1920 x 1080 1280 x 720 720 x 480
Default value	1920 x 1080
Note	When this is set to AUTO , the monitor's recommended resolution will be selected. The performance of AUTO or 3840 x 2160 is not guaranteed to play split-screen programs.

Name	Monitor orientation
Description	It sets the orientation of screen displayed by ST-700.
Value/Range	Landscape Portrait - Left Portrait - Right
Default value	Landscape

A-4-2. Audio

Name	Audio Output
Description	It sets the audio output interface.
Value/Range	HDMI Stereo Mini
Default value	HDMI

A-4-3. Monitor synchronization

Name	Monitor synchronization
Description	It enables or disables the multiscreen synchronization function.
Value/Range	ENABLE/DISABLE
Default value	ENABLE

A-5. Broadcast Setting Items

A-5-1. Movie

Name	Broadcast mode
Description	It sets the video play mode for split-screen programs.
Value/Range	<p>Keep smoothness: Plays a video smoothly. ST-700 does not read the next video data in advance. It will read the data after finishing playing the current video. When the next video's bit rate is high, ST-700 will take time to read the video data and show a black screen for a moment to switch the video. Because of this, the play timing of the next video might be behind the play schedule.</p> <p>Follow schedule: Plays videos based on the program schedule. ST-700 will read the next video data before the end of the current video. Loading data will use much ST-700's power, so the current video may not be played back smoothly.</p>
Default value	Keep smoothness:
Note	This setting will take effect for split-screen programs. For non-split screen programs, the play mode is fixed to Follow schedule all the time.

A-6. Device Management Setting Items

A-6-1. Log Output

Syslog Server

Name	Syslog Server Log Output
Description	It enables or disables a function to export logs to Syslog server.
Value/Range	ENABLE/DISABLE
Default value	DISABLE

Name	Syslog Server
Description	It specifies the domain name of Syslog server.
Value/Range	0 to 128 alphanumeric characters
Default value	None (blank)
Note	This setting can be made when Syslog Server Log Output function is enabled.

A-6-2. Serial Control

Serial Control

Name	Serial Monitor Control
Description	It enables or disables the serial monitor control function.
Value/Range	ENABLE/DISABLE
Default value	DISABLE

Name	Baud Rate
Description	It sets a speed of the serial port to send and receive data.
Value/Range	2400, 4800, 9600, 19200, 38400, 57600, 115200
Default value	9600
Note	This setting can be made when the Serial Monitor Control is enabled.

Name	Data Bits Num
Description	It specifies the number of bits per character.
Value/Range	7, 8
Default value	8
Note	This setting can be made when the Serial Monitor Control is enabled.

Name	Parity
Description	It sets the parity method for each character.
Value/Range	none odd even
Default value	none
Note	This setting can be made when the Serial Monitor Control is enabled.

Name	Stop Bits Num
Description	It sets the number of stop bit at the end of each character.
Value/Range	1, 2
Default value	1
Note	This setting can be made when the Serial Monitor Control is enabled.

Name	Flow Control
Description	It sets the flow control method.
Value/Range	none RTS/CTS
Default value	none
Note	This setting can be made when the Serial Monitor Control is enabled.

Control1 / Control2

Name	Control string
Description	It sets a character string to send to the serial port.
Value/Range	0 to 40 alphanumeric characters.
Default value	None (blank)
Note	This setting can be made when the Serial Monitor Control is enabled.

Name	Control time
Description	It sets the time to send the control character strings to the serial port.
Value/Range	0:00 to 23:50 (Set by 10 minutes)
Default value	0:00
Note	This setting can be made when the Serial Monitor Control is enabled.