
Smart-telecaster *Zao*

Ver.1.0.2

STC Zao/Zao Controller/STC HDView User Guide

Soliton Systems K.K.

Rev.1.1

LEGAL NOTICES

- ❑ The copyright and any other rights concerning “Smart–telecaster Zao,” “STC Zao,” “Zao Controller,” and “STC HDView” belong to Soliton Systems K.K.
- ❑ Windows is a trademark of Microsoft Corporation.
- ❑ VP8 is a patent–protected Google product.
- ❑ Other patents, trademarks, and copyrights included herein are the property of their respective owners.
- ❑ AES library of Mr. Isao Mori is stored in this product.
- ❑ Reproducing or modifying any portion of the product is prohibited.
- ❑ Design and specifications subject to change without notice.
- ❑ The connection condition written in this book is one example that does not provide a guarantee.

Soliton Systems K.K.

2–4–3 SHINJUKU, SHINJUKU–KU, TOKYO 160–0022 JAPAN

CONTENTS

1	Overview	4
2	Safety Information	5
2.1	Handling the Power Supply and Battery Equipment.....	5
2.2	Additional Warnings.....	5
3	Product Specifications	6
3.1	STC Zao Specifications	6
3.2	STC HDView Specifications	7
4	Notice	8
5	STC Zao Assenbly	9
5.1	Outline and connection method	9
5.1.1	Front side	9
5.1.2	Upper Side.....	10
5.1.3	Left side, Right side	11
5.1.4	Power Supply	11
5.2	Usage	12
5.2.1	Startup	12
5.2.2	LIVE mode	12
5.2.3	SETTING mode.....	14
5.2.4	POWER mode.....	17
5.2.5	Power off	17
5.2.6	Operation Lock	18
5.2.7	LED	19
6	Zao Controller	20
6.1	Usage	20
6.2	Install	20
6.3	How to connect	20
6.4	Usage.....	20
6.4.1	Startup	20
6.4.2	Main Screen.....	21
6.4.3	Network settings	23
6.4.4	Video and Audio setting	24
6.4.5	Setting destination.....	27
6.4.6	Preset screen	29
6.4.7	Setup screen	31

7	STC HDView.....	34
7.1	Requirements for Receiver.....	34
7.2	Startup.....	36
7.2.1	Main screen.....	36
7.3	Audio Input/Output.....	40
7.4	Edit Settings.....	41
7.5	Common settings.....	45



1 Overview

The Smart-Telecaster Zao ("STC Zao") is a system for transmitting HD video and audio in IP communications network. The STC Zao offers voice communication, unidirectional video transmission, and two-way video transmission, all of which allow access to remote location events in real time.

The system contains STC Zao that uses up to seven communication lines transmitting the image captured by the camera, Zao Controller that controls the STC Zao remotely, and STC HD View that displays a received video

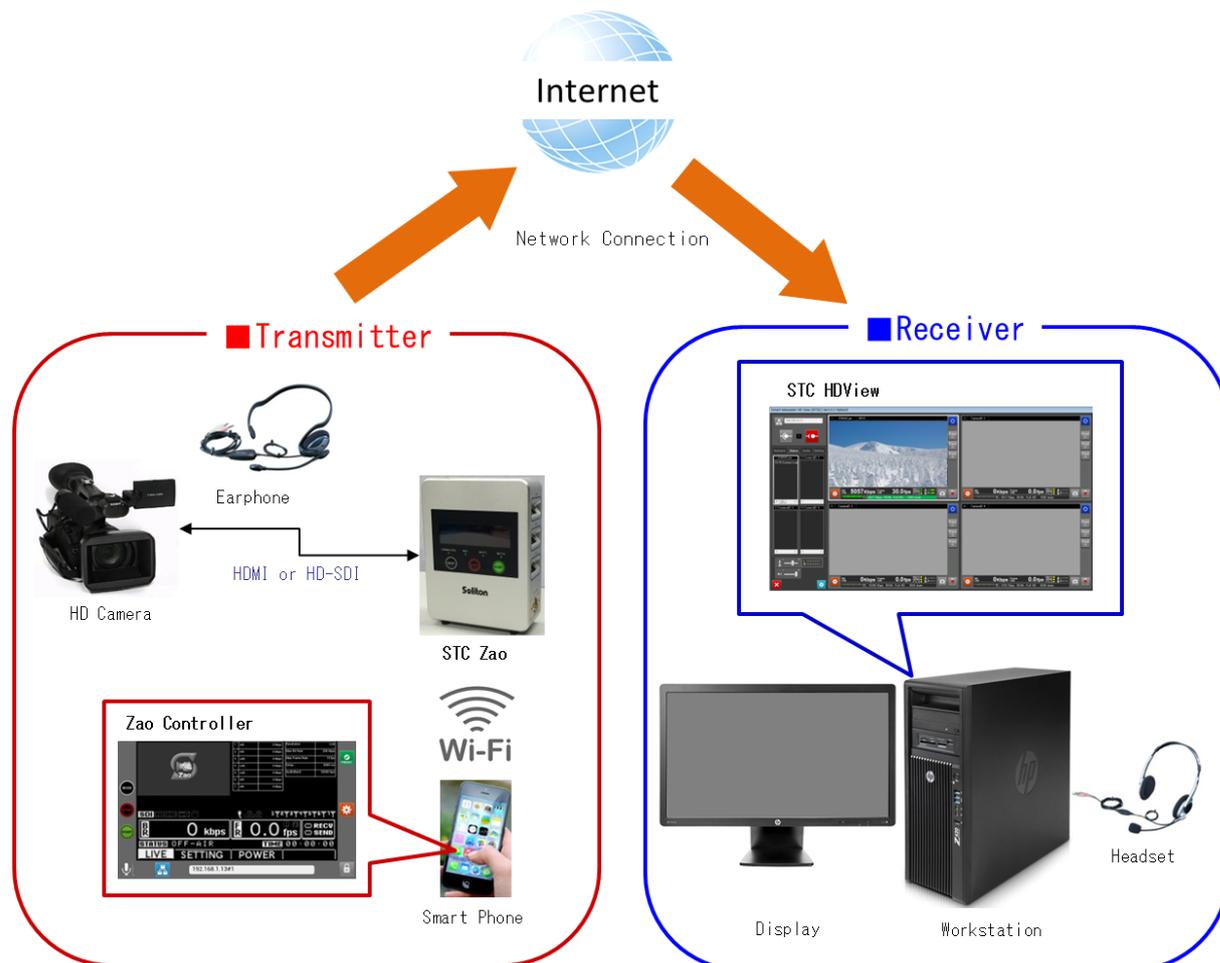


Figure 1. Connection Options

These operating instructions refer to the equipment configuration and method of operation of the Transmitter/Receiver.

2 Safety Information

WARNING! Be sure to read all safety precautions before operating the STC Zao or any of its components.

2.1 Handling the Power Supply and Battery Equipment

Risk of electrical fire or shock

Keep product away from heat.

Do not handle the power adapter or battery equipment with wet hands.

Do not forcibly bend or twist the power cable.

Do not plug in the power adapter in the octopus legs wiring.

2.2 Additional Warnings

Risk of product failure

Do not leave the product in direct sunlight for an extended period of time.

Do not drop the product or place heavy products on top of it.

Do not attempt to disassemble the product.

Do not use any type of power source other than that indicated in these instructions.

Risk of serious injury

Discontinue use if product begins to smoke.

Do not use product if any parts are damaged.

Do not use product if it feels hot to the touch.

Do not use product if it emits an unusual smell.

Do not use the product if any liquids or other foreign matter are inside.

3 Product Specifications

3.1 STC Zao Specifications

ITEM		DETAILS
Weight		900g
Dimension		123mm×160mm×46mm
Power Connector		Cannon4pin × 2
LAN		RJ45 × 1
Video Input	HD-SDI	BNC × 1
	HDMI	HDMI × 1
	Input	1080/59.97i, 1080/50i 480/59.97i, 576/50i
USB for Modem		USB2.0 × 6
Headphones output		3.5Φjack × 1
Accessories supplied		AC Power× 1 V-mount battery plate × 1 USB cable with latch × 6 HDMI cable with fixing screw× 1 USB memory (housing) × 1 WiFi dongle(housing) × 1 Transition bag × 1 CD-ROM × 1
Main Function		Live Relay (One-way video, Two-way audio)
Communication	Line	3G、LTE、Wireless LAN、Wired LAN、Satellite
	Error Correction	ARQ、Packet sort
	Protocol	UDP/IP(RASCOW)
	Encryption	AES256bit
	Authentication	Passphrase (Up to 32characters)
	Multilink	Up to 7 lines
	Connecting Method	Manual, Startup automatic, Reconnecting
	Non-Communication limit	Max 30sec
Video	Codec	H.265 Main Profile
	Pixels(NTSC)	Max 720×480
	Pixels (PAL)	Max 720×576
	Pixels (HD)	Max 1920×1080
	Bitrate	200kbps~10Mbps
	Framerate	Max 29.97fps (NTSC,59.94 field per sec) Max 25fps (PAL, 50 field per sec)

Audio	Codec	Vorbis
	Channel	Stereo/Mono×1ch
	Sampling	16bit、48KHz、22.05KHz、11.05KHz、8KHz
	Input	Embedded Audio
	Output	Analog・audio output×1

3.2 STC HDView Specifications

ITEM		DETAILS
Main Function		Live Relay (One-way video, Two-way audio) Accumulation file reception*, file reception *, Still image capture* * : not supported by Zao
Connection Possible Product		STC Zao、STC HDCam、Smart-telecaster for iOS ML
Available concurrent connections		4
Delay		240msec~30000msec
Codec	Video	VP8、H.265
	Audio	Vorbis
Operating Environment	Hardware	HP Z420 Workstation
	OS	Windows7 Professional
	CPU	Intel Xeon
	Memory	8GB+ (Four of the same physical memory is required)
External Output	Video Card	Blackmagic Design Decklink Quad (4output)
	Signal Format	SDI or HD-SDI (By the transmitter connection)

4 Notice

- ❑ The accompanying AC adapter is AC100V ~ 240V, 50Hz / 60Hz support, but the power cable is domestic only.
- ❑ IDX Inc. V-mount battery recommended
- ❑ If you do not use the product for a long time, please remove the battery and AC adapter.
- ❑ STC Zao employs an audio sampling rate of 48KHz
- ❑ STC Zao features a Wi-Fi dongle with USB memory. Do not remove it.
- ❑ The modem can be set only with the Zao Controller. It cannot be set from the STC Zao. Once you have set the modem, you do not need to set it again.

- ❑ 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.

5 STC Zao Assenbly

This chapter describes STC Zao, connection procedures and the preparation.

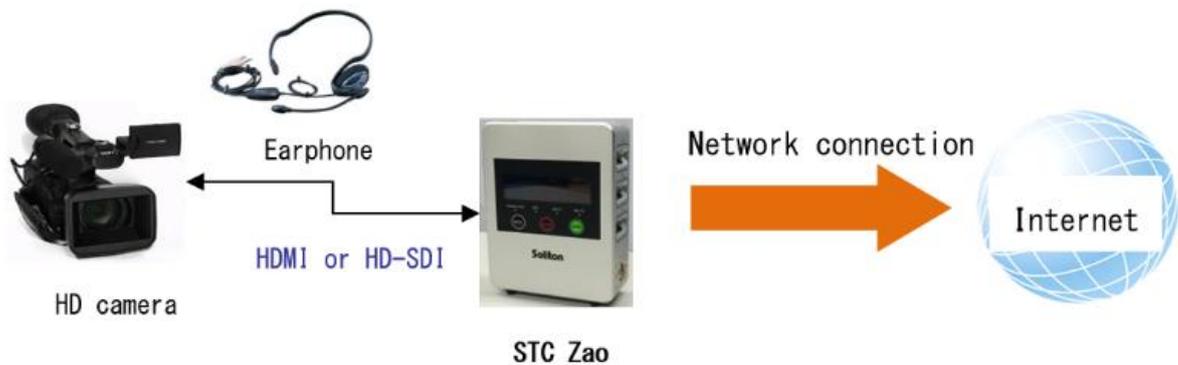


Figure 2. Connection Option for the STC Zao

5.1 Outline and connection method

5.1.1 Front side

Front side of STC Zao consists of a display, LEDs and operation buttons.

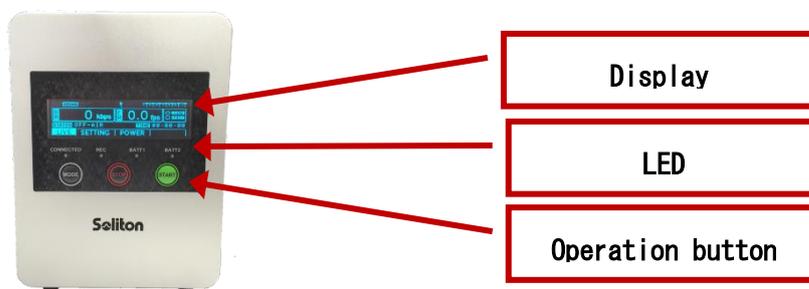


Figure 3. Front View of STC Zao

◆ Display

The display describes the status of the camera connection, status of the network connection, bit rate, frame rate, status of video transmission, time of live broadcasting, etc.

***Please refer to “5.2.2 LIVE mode” for more detail.**

◆ LED

CONNECTED Displays the connection status.

REC Displays the record status.

***Record function will be available in a future version.**

BATT1 Displays the battery status of Main power supply.

BATT2 Displays the battery status of Sub power supply.

***Please refer to “5.2.7 LED” for more detail.**

◆ Operation button

MODE Switch LIVE mode/SETTING mode/POWER mode.

STOP Stop live broadcasting, power off

START Start live broadcasting, final determination
(Power off/Live broadcasting end)

MODE+START (Long press) Operation lock

5.1.2 Upper Side

Wi-Fi dongle and USB port for outputting log are positioned on the upper side.

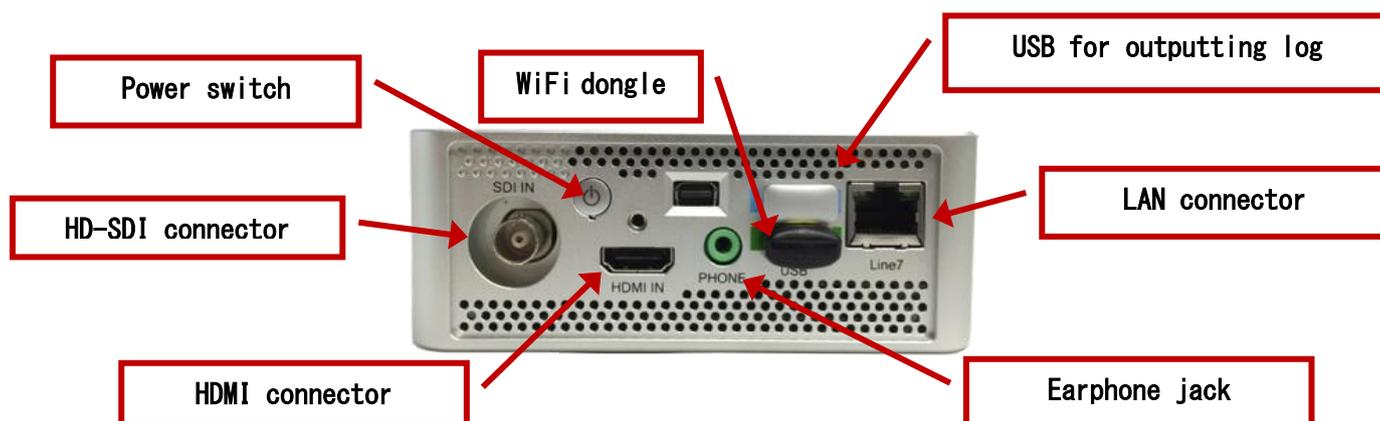


Figure 4. Upper Side View

*In case of using HD-SDI and HDMI at the same time, HD-SDI takes precedence.

5.1.3 Left side, Right side

The left side features three modem connectors and the main power connector while the right side has three modem connectors and the sub power connector.

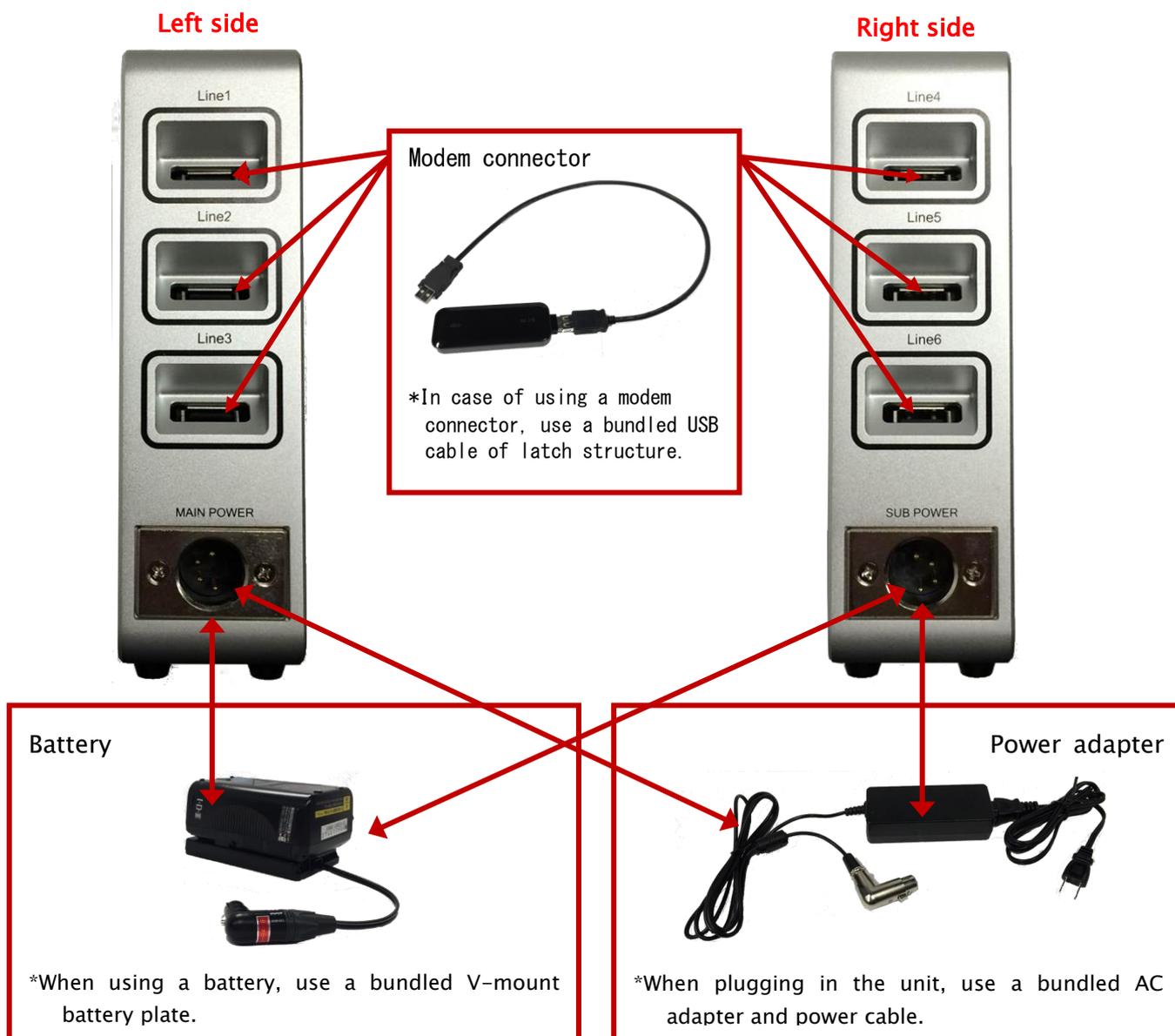


Figure 5. Right and Left Side Views

5.1.4 Power Supply

The STC Zao power supply prioritizes the main power connector.

For example, when connecting a battery to main power connector and connecting a power adapter to sub power connector, the unit draws power from the battery connected to main power connector. When the battery runs out, the unit switches to sub power automatically. The unit even runs only with sub power.

5.2 Usage

5.2.1 Startup

Push the power button on the upper side to start the STC Zao. STC Zao supports the following operation modes. (To switch modes, push “MODE” button.)

Mode name	Usage	Switching method
LIVE mode	Broadcast live	Initial state
SETTING mode	<ul style="list-style-type: none"> • Confirm the version • Select the destination • Initialize the configuration • Update STC Zao • Connect for remote maintenance 	Press “MODE” button once in the initial state
POWER mode	Shutdown STC Zao	Press “MODE” button twice in the initial state

5.2.2 LIVE mode

This mode transmits real-time video and audio. The following screen displays the initial state.



Figure 6. LIVE Mode (Initial State)

Press the “START” button in the initial state to start live broadcasting and display the following screen. Press the “STOP” button to return to the initial state.

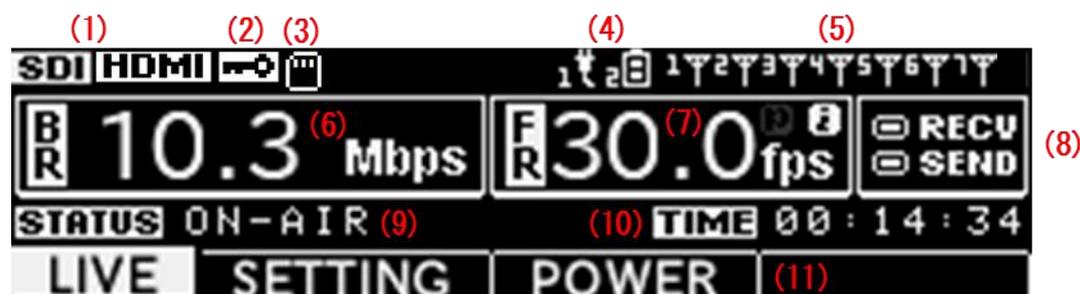


Figure 7. LIVE Mode (Live Broadcasting)

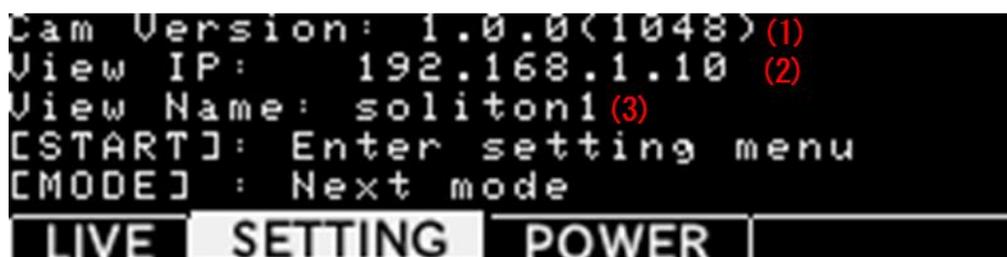
- (1) Status of camera connection
Displays the status of camera connection (HDMI/SDI/No connection).
- (2) Status of encryption
Displays the status of encryption.
- (3) Status of USB memory connection for log output
Displays the status of the USB memory connection for log output.
- (4) Status of power equipment connection
Displays the status of batteries / power adapters connecting main power and sub power.
- (5) Status of network connection
Displays the status of the network from 1 to 7.
- (6) Bit rate
Displays the communication band currently used.
- (7) Frame rate
Displays the frame rate.
- (8) Communication indicator [RECV, SEND]
Flashes on and off when communication occurs.
- (9) Status of connection
Displays the connection status of connection
(Connecting/ON-AIR/Disconnecting/OFF-AIR).
- (10) Connection time
Displays the connection time of live broadcasting.
- (11) Mode
Displays the current mode (LIVE/SETTING/POWER).

5.2.3 SETTING mode

This mode enables version confirmation, destination setting, initialization, firmware update, and remote maintenance connection.

5.2.3.1 SETTING mode (Cam Version)

The top level of “SETTING” mode displays the following screen.



```

Cam Version: 1.0.0(1048) (1)
View IP: 192.168.1.10 (2)
View Name: soliton1 (3)
[START]: Enter setting menu
[MODE]: Next mode
LIVE SETTING POWER
  
```

Figure 8. SETTING Mode (Version confirmation)

(1) Version

Displays the version of firmware.

(2) Destination IP address

Displays the destination IP address.

(3) Destination name

Displays the destination name.

SETTING mode supports the following operations.

Operation	Usage	Switching method
VIEW IP SELECT	Select the destination	Press “START” once
FACTORY RESET	Initialize the configuration	Press “START” once, and then press “MODE” once
FIRMWARE UPDATE	Update the firmware	Press “START” once, and then press “MODE” twice
REMOTE SUPPORT	Connect remotely for remote maintenance	Press “START” once, and then press “MODE” three times

5.2.3.2 SETTING mode (IP Select)

The SETTING mode (IP Select) displays the following screen.

```
VIEW IP SELECT
[START]: Change View IP
[MODE] : Next setting menu
[STOP] : Return
LIVE  SETTING  POWER
```

Figure 9. SETTING Mode (IP Select)

Press the "START" button to display the following screen

```
View IP: 192.168.1.11
View Name: soliton2
[MODE] : Next View IP
[STOP] : Select and return
LIVE  SETTING  POWER
```

Figure 10. SETTING Mode (IP Select)

5.2.3.3 SETTING mode (Factory Reset)

The SETTING mode (Factory Reset) displays the following screen.

**This function will be available in a future version*

```
FACTORY RESET
[START]: Factory reset
[MODE] : Next setting menu
[STOP] : Return
LIVE  SETTING  POWER
```

Figure 11. SETTING Mode (Factory Reset)

5.2.3.4 SETTING mode (Firmware Update)

The SETTING mode (Firmware Update) displays the following screen.

[NOTE] When installing a firmware update, use a wired LAN network.

```
FIRMWARE UPDATE
[START]: Connect server
[MODE] : Next setting menu
[STOP] : Return
LIVE  SETTING  POWER
```

Figure 12. SETTING Mode (Firmware Update)

Press the "START" button to display the following screen.

```
FIRMWARE UPDATE
Are you sure ?
[START]: Yes
[STOP] : Cancel
LIVE  SETTING  POWER
```

Figure 13. SETTING Mode (Firmware Update Confirmation)

5.2.3.5 SETTING mode (Remote Support)

The SETTING mode (Remote Support) displays the following screen.

[NOTE] For remote maintenance, use a wired LAN network.

```
REMOTE SUPPORT (Now: OFF)
[START]: Support mode ON/OFF
[MODE] : Next setting menu
[STOP] : Return
LIVE  SETTING  POWER
```

Figure 14. SETTING Mode (Remote Support)

Press the "START" button to display the following screen.

```
REMOTE SUPPORT -> ON
Are you sure ?
[START]: Yes
[STOP] : Cancel
LIVE  SETTING  POWER
```

Figure 15. SETTING Mode (Remote Support Confirmation)

5.2.4 POWER mode

POWER mode supports the following operations.

Operation	Usage	Switching method
Power off	Shutdown STC Zao	Press "START" button once *Pressing "START" button, shutdown processing starts

The POWER mode displays the following screen

```
POWER
[START]: Power Off
[MODE]: Next mode
LIVE | SETTING | POWER
```

Figure 16. POWER Mode (Initial State)

Press the "START" button to display the following confirmation screen.

```
POWER OFF
Are you sure ?
[START]: Yes
[STOP]: Cancel
LIVE | SETTING | POWER
```

Figure 17. POWER Mode (Power Off Confirmation)

5.2.5 Power off

Besides the POWER mode, the following operation will shut down the unit.

Operation	Usage	Switching method
Power off	Shutdown STC Zao	In a state of no live broadcasting, press the "STOP" button for three seconds.

Press the "STOP" button for three seconds to display the following screen.



Figure 18. Power Off Confirmation

5.2.6 Operation Lock

Operation lock supports the following operations.

Operation	Usage	Switching method
LOCK	All of the button operations are disabled.	Pressing "MODE" and "START" buttons for five seconds. *Pressing the buttons for five seconds again cancels the lock.

Once button operation is locked, display the following screen.



Figure 19. Button Operation Is Locked

5.2.7 LED

5.2.7.1 Startup

When the STC Zao starts, four LEDs flash on and off from the left.

When the startup is completed, the LEDs turn off and the screen displays LIVE mode.

5.2.7.2 Connecting

When a connection to STC HDView is completed, the CONNECTED LED flashes on and off with yellow green.

During processing of connection and disconnection, the LED flashes on and off with yellow green. Once the unit is disconnected, the LED turns off.

5.2.7.3 Battery State

Once the battery is mounted, the BATT1(Main) and BATT2(Sub) LED flashes on and off.

When battery power decreases, the LED flashes on and off.

5.2.7.4 Shutdown

When the STC Zao shuts down, four LEDs flash on and off at once.

When the shutdown is completed, the LEDs turn off.



6 Zao Controller

6.1 Usage

This smartphone application sets all possible STC Zao operations remotely.

6.2 Install

Download the free Android app from the Google Play store or free iOS app from the Apple App Store on your smartphone. The app is called STC Zao Controller.



6.3 How to connect

Smartphone connection with STC Zao Wi-Fi access point.

(1) Wi-Fi access point connection setup

Push STC Zao's power button.

Select the STC Zao's SSID from your smartphone to make a connection.

Please refer to the seal on the backside of STC Zao.

When you want to change the SSID and password, refer to "6.4.7(6) Access point setting"

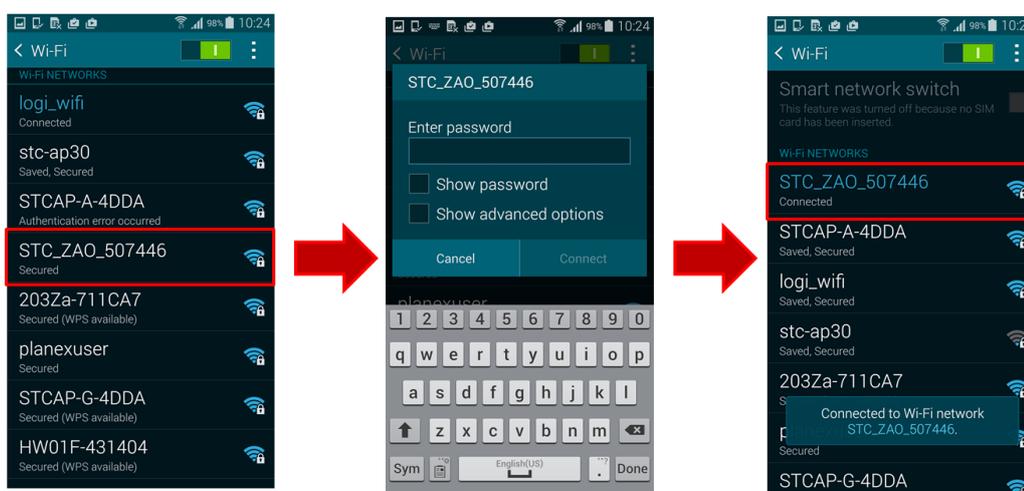


Figure 20. WiFi Access Point Setting

6.4 Usage

6.4.1 Startup

Open the Zao Controller app after make connection between your smartphone and STC Zao. When you start the Zao Controller app, you can see the main screen.

6.4.2 Main Screen

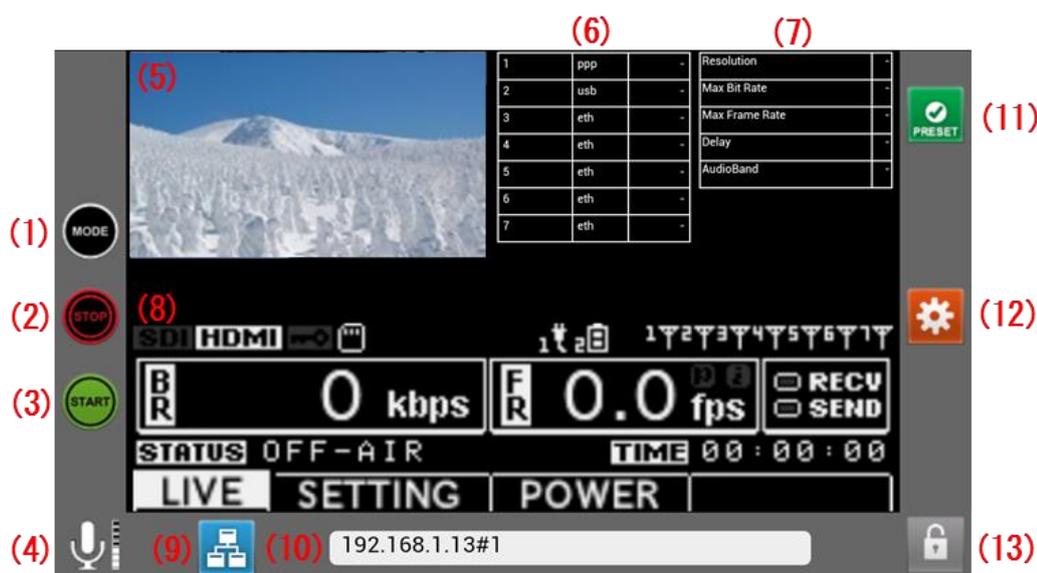


Figure 21. Zao Controller Main Screen

(1) "MODE" button

This button performs the same operation as "MODE" on the STC Zao.

(2) "STOP" button

This button performs the same operation as "STOP" on the STC Zao.

(3) "START" button

This button performs the same operation as "START" on the STC Zao.

(4) Audio input indicator

Displays the STC Zao's audio input status (available only LIVE broadcasting)

(5) Preview

Displays video from the camera connected to the STC Zao. (Display 2fps)

(6) Network Status

Displays the connection status of each network line and data speed that you are using. When you tap, you can access advanced settings.

***For details, please refer "6.4.3 Network setting"**

(7) Video and Audio Settings

Displays the current settings of video and audio. When you tap, you can access advanced settings.

***For details, please refer "6.4.4 Video and Audio settings"**

(8) Display of STC Zao

Displays contents of the STC Zao's OLED

(9) Setup destination button

SelectS or setS up the destination

***For details, please refer “6.4.5 Settings destination”**

(10) Destination

Displays the IP address of your destination.

(11) Preset button

Checks and selects the value of the preset in the STC HDView.

***For details, please refer “6.4.6 Preset Screen”**

(12) Setup button

Switches to the setup screen

***For details, please refer “6.4.7 Setup screen”**

(13) Lock button

When you tap this button, all functions are locked except power and some of the buttons.
To unlock, tap again.



6.4.3 Network settings

You can configure up to 7 network lines

[NOTE] In current version, mobile network modem and wired LAN are available only for live broadcasting. Wi-Fi is not available.

[NOTE] LINE7 can be used only with a wired LAN.



Figure 22. Zao Controller Network Setting Screen

(1) Setup

There are two network settings, ①Dialup or ②LAN. STC Zao recognizes the type of modem automatically and will display the appropriate screen.

Once you have implemented the modem settings, you do not need to set them again, even if you even use the other LINE.

[NOTE] IF LINE1~6 are LAN connections, DHCP is connected as ON state. Setting screen shows but does not allow edits.LINE7 is used only to set a fixed

① Dialup setting

Enter user name, password and phone number, then connect

Cancel
Dialup
Apply

User Name

Password

Tell No ▼

Figure 23. Dialup Setting Screen

② LAN setting

LINE1~6 are LAN connections. DHCP is connected as ON state. Setting screen shows but does not allow edits. When you use LINE7 (Upper side), you can edit settings. If you do not connect with DHCP, enter IP address, subnet mask and default gateway

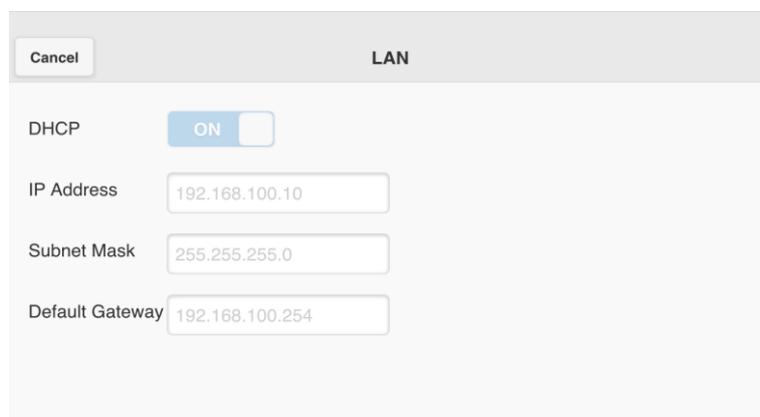


Figure 24. LAN Setting Screen

(2) Connection status display

If the icon is green, the STC Zao is connected using your network line of choice. If the icon is red, the STC Zao does not use your preferred line.

If the icon is green, you can disconnect the transmission by tapping the icon.

6.4.4 Video and Audio setting

Set the resolution, bitrate, frame rate, delay and the audio bandwidth.

[NOTE] Settings can be changed only during live broadcasting

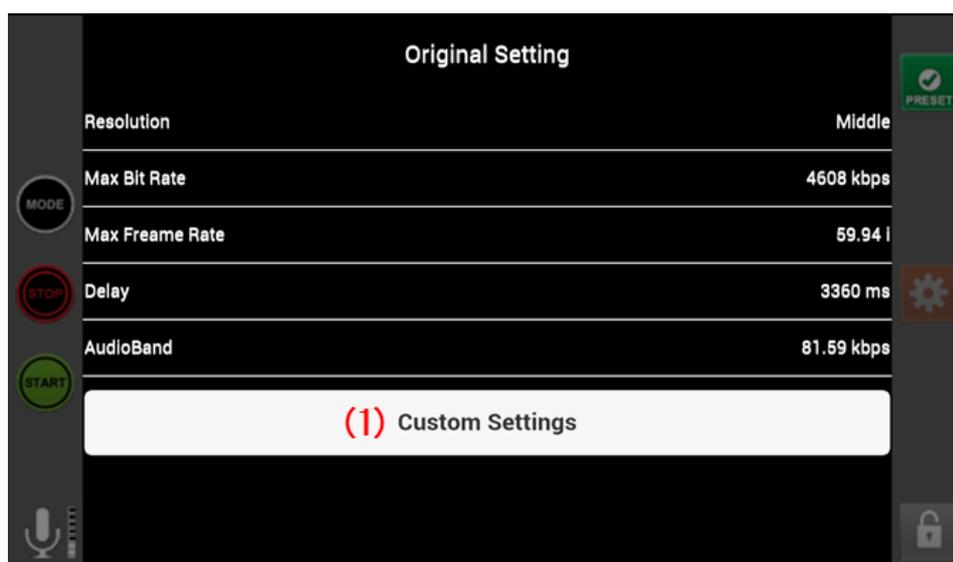


Figure 25. Display of Zao Controller Video and Audio settings

(1) Setting button

Change the video and audio settings from the transmitter.

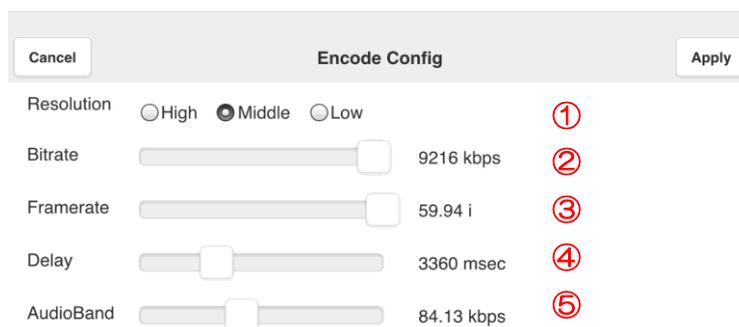


Figure 26. Zao Controller Video and Audio Settings

① Resolution

Changes the resolution of the live broadcast. Settings are as follows.

【NTSC】

Settings	HD Video input	
	Video quality	Resolution
High	Full HD	1920 x 1080
Middle	Half HD (59.94i)	960 x 1080
	Half HD (29.97)	1920 x 540
Low (over 768k)	Quarter HD	960 x 540
Low (below 512k)	D1	640 x 360

Settings	SD Video input	
	Video quality	Resolution
High	VGA	720 x 480
Middle	Half VGA (59.94i)	360 x 480
	Half VGA (29.97)	720 x 240
Low (over 768k)	CIF	360 x 240

② Target Bitrate

Sets up the network bandwidth.

③ Target Frame Rate

Sets up the frame rate

④ Delay

Changes the buffering of the receiver. Buffering can be specified in 240msec ~ 30000mse.

By specifying the buffering on the receiver, received data is delayed by the buffer time and will not be played immediately. The delay reduces the disturbance caused by the frame update interval.

***Reference value type/combination of networks**

For a Wired LAN, set up over 240msec.

For only 4G, set up over 720msec.

To include 3G, set up over 1200msec.

For satellite (BGAN, etc.)set up over 4000msec.

If you want to mix the line, please set to adjust the slower network line.

This reference value does not guarantee all situations or combinations.

Network speed may not be stable in some cases due to congestion and condition of the networks.

⑤ Audio Band

Changes the bandwidth to be used for two-way audio transmission (Kbps)

6.4.5 Setting destination

You can register the destination name and IP address in advance.

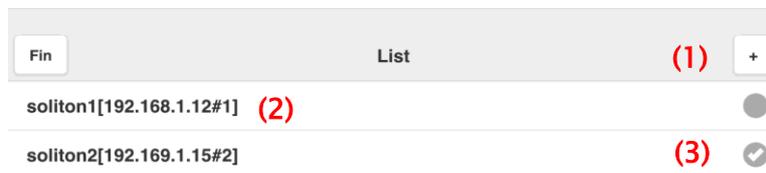


Figure 27. Zao Controller Destination List Screen

(1) Destination add button

Register the new destination. Enter the IP address and the name of destination and press “Done.” It will be registered in the destination list.

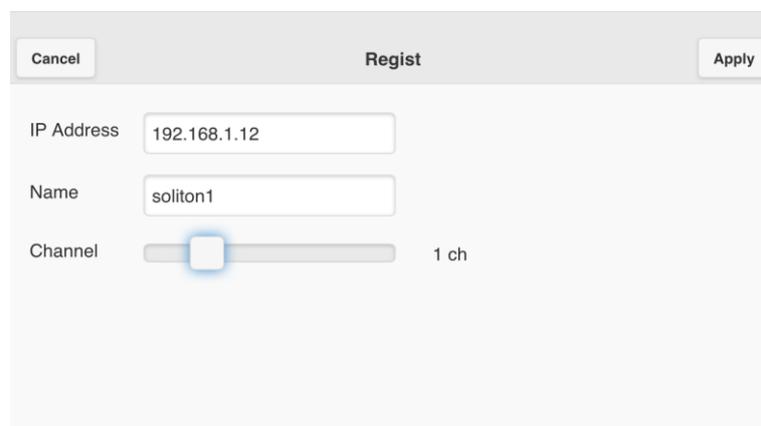


Figure 28. Zao Controller Destination Add Screen

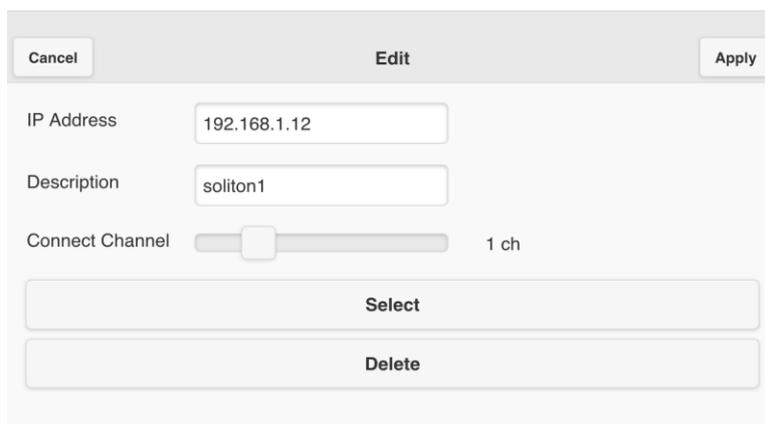
(2) Edit destination list

Press the destination that has been registered in the list. The destination edit screen appears. You may edit the IP address, name and connection channel.

Press the "Done" button. Setting changes will be reflected in the destination list.

Select the "Connection" button to change the destination.

Select the "Delete" button to delete the destination from the list.



The screenshot shows a mobile application interface for editing a destination. At the top, there is a header bar with three buttons: 'Cancel' on the left, 'Edit' in the center, and 'Apply' on the right. Below the header, there are three input fields. The first is labeled 'IP Address' and contains the text '192.168.1.12'. The second is labeled 'Description' and contains the text 'soliton1'. The third is labeled 'Connect Channel' and features a horizontal slider with a white knob positioned at the left end, and the text '1 ch' to its right. At the bottom of the screen, there are two large, light-colored buttons: 'Select' and 'Delete'.

Figure 29. Zao Controller Destination Edit Screen

(3) Destination

Displays the current destination. The configured destination is checked.

6.4.6 Preset screen

You can check and select a preset value in the STC HDView.

[NOTE] You can change the settings only during live broadcasting.
You cannot edit and save a preset from the Zao Controller.



Figure 30. Zao Controller Preset Screen

(1) Current

Displays the current settings in the “6.4.4 Video and Audio setting screen”

(2) Preset1

Displays the details of “Preset 1” in the STC HDView

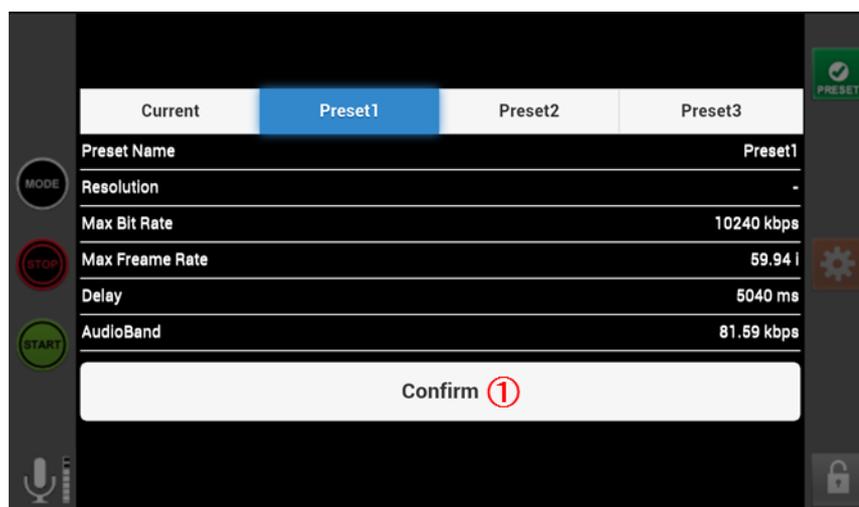


Figure 31. Zao Controller Preset1 Screen

① Confirm button

Press “Confirm” to reflect settings

[NOTE] Set only during live broadcasting

(3) Preset2

Displays the details of “Preset 2” in the STC HDView

*Reflects the settings as with “(2) Preset”

(4) Preset3

Displays the details of “Preset 3” in the STC HDView

*Reflects the settings as with “(2) Preset”



6.4.7 Setup screen

Confirms the connection, networks, access point, authentication, STC CAM name, user ID, log and version.

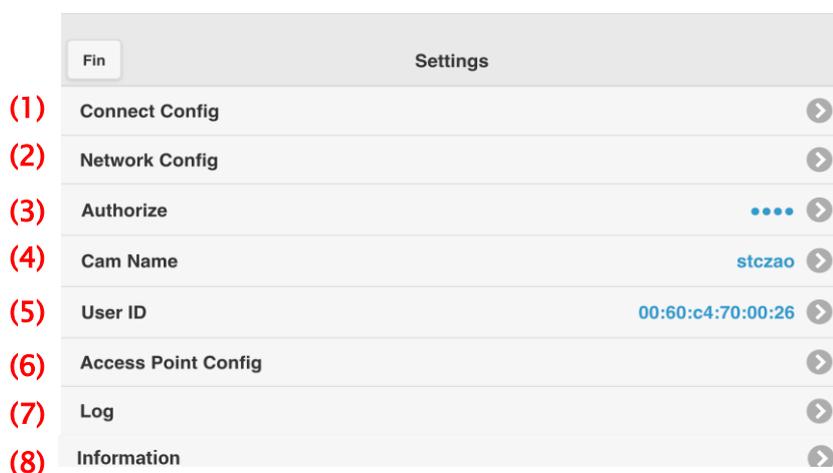


Figure 32. Zao Controller Settings Screen

(1) Connection settings

Sets up the STC Zao automatic connection, number of networks line and automatic connection settings when disconnected from the STC HDView

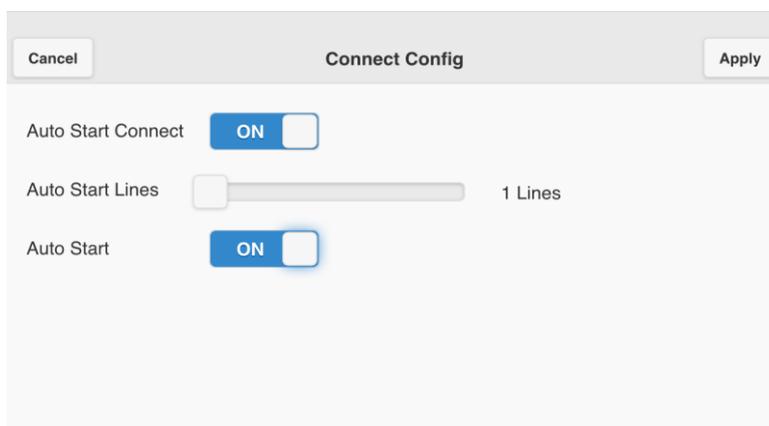


Figure 33. Connection Setting

(2) Network setting

Same settings as with [6.4.3 Network setting]

*For details see “6.4.3 Network setting”

(3) Connection authentication

If the connection authentication code has been set, the code will be displayed in ●.

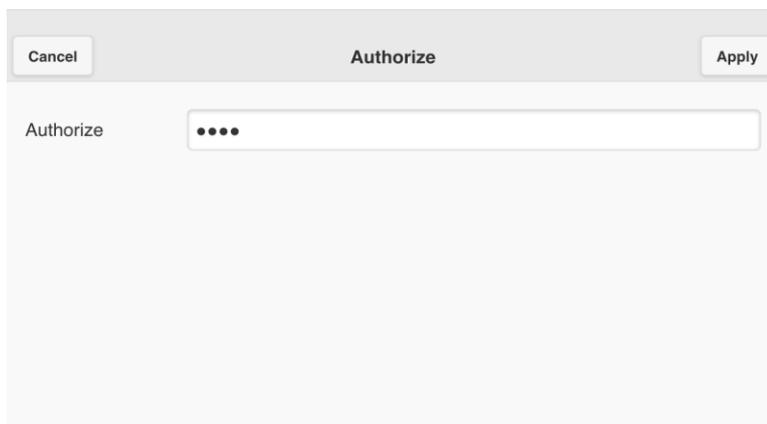


Figure 34. Connection Authentication Setting

(4) STC Cam name

STC Cam name becomes the identification name for connecting to the destination.

STC Cam name can be set up to 15 characters.

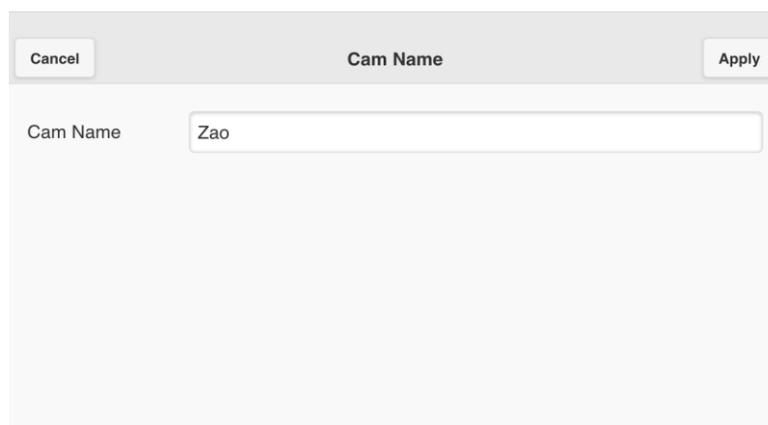


Figure 35. STC Cam Name

(5) User ID

Sets the user ID.

This version does not support this feature.

A screenshot of a dialog box titled "User ID". The dialog has a "Cancel" button in the top-left corner. The main content area contains a label "User ID" followed by a text input field containing the hexadecimal MAC address "00:60:c4:70:00:26".

Figure 36. User ID Setting

(6) Access point setting

You can change the password for STC Zao Wi-Fi access point SSID .

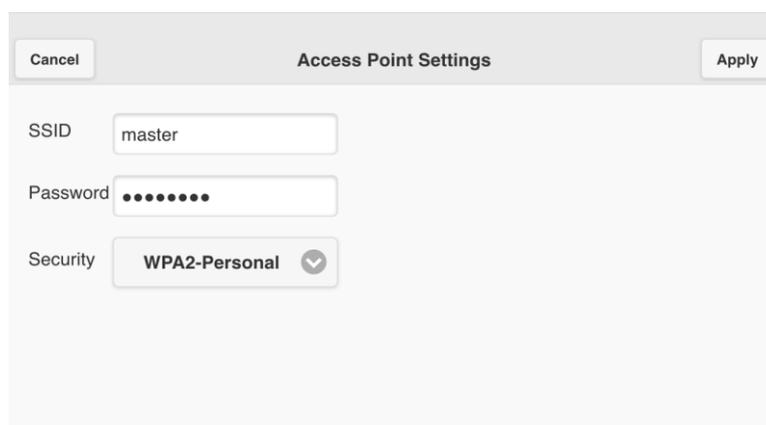
A screenshot of a dialog box titled "Access Point Settings". The dialog has "Cancel" and "Apply" buttons in the top-left and top-right corners, respectively. The main content area contains three settings: "SSID" with a text input field containing "master"; "Password" with a text input field containing ten black dots; and "Security" with a dropdown menu showing "WPA2-Personal" and a downward arrow.

Figure 37. Access Point Settings

(7) Log

Checks the log

(8) Version

Checks the software version and the hardware version

7 STC HDView

The receiver machine comes equipped with the recommended Intel® PC/AT compatible computer and Blackmagic Design® video output card.

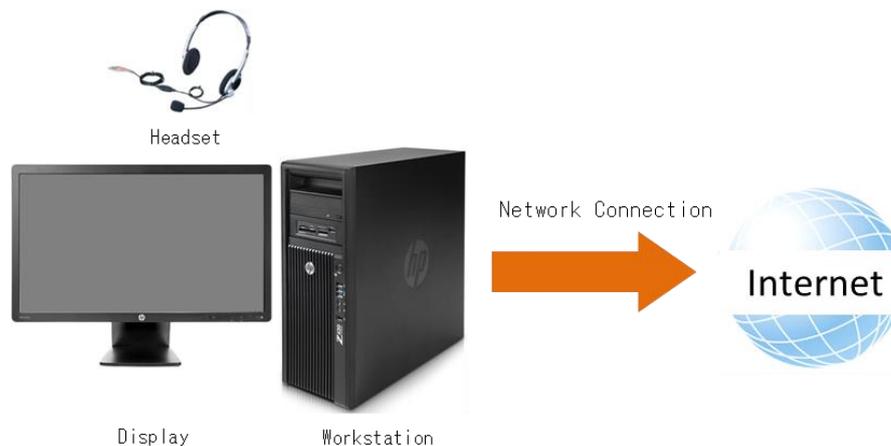


Figure 38. STC HDView Connection

7.1 Requirements for Receiver

❑ Network Interface

A fixed line and a global IP address are required.

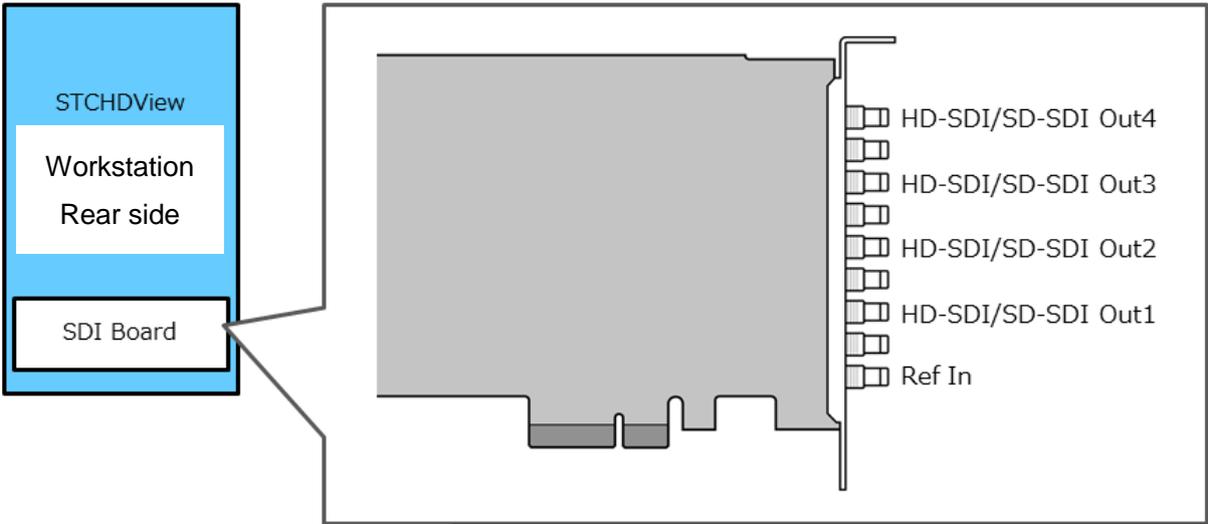
* Smart-telecaster Zao uses UDP Port number 31114 for both inbound and outbound transmission, and UDP Port number 31115, 31116, 31117, 31118 for inbound transmission. You may also set Receiver under network router. In this case, a NAT configuration with Port Forwarding for UDP Port numbers 31114 to 31118 is required.

❑ Output : (Integrated by Soliton Systems)

Blackmagic Design® DeckLink Quad

STC HDView receives live video and audio on each channel and outputs to 4 ports of the DeckLink Quad. The following is the correlation of channel and output.

- Channel 1 → HD-SDI/SD-SDI Out 1
- Channel 2 → HD-SDI/SD-SDI Out 2
- Channel 3 → HD-SDI/SD-SDI Out 3
- Channel 4 → HD-SDI/SD-SDI Out 4



DIN(Male) Connectors
DIN-BNC Conversion cable is included with product

Figure 39. Output Card Port



Figure 40. Rear Side of Workstation

7.2 Startup

When you power on the Receiver machine, STC HDView starts automatically. To start STC HDView manually, click "STC HDView" icon on Desktop, or extend "Smart-telecaster HD (MultiLink)" from Programs Menu and click on "STC HDView ML." STC HDView starts up with the following main screen.

7.2.1 Main screen

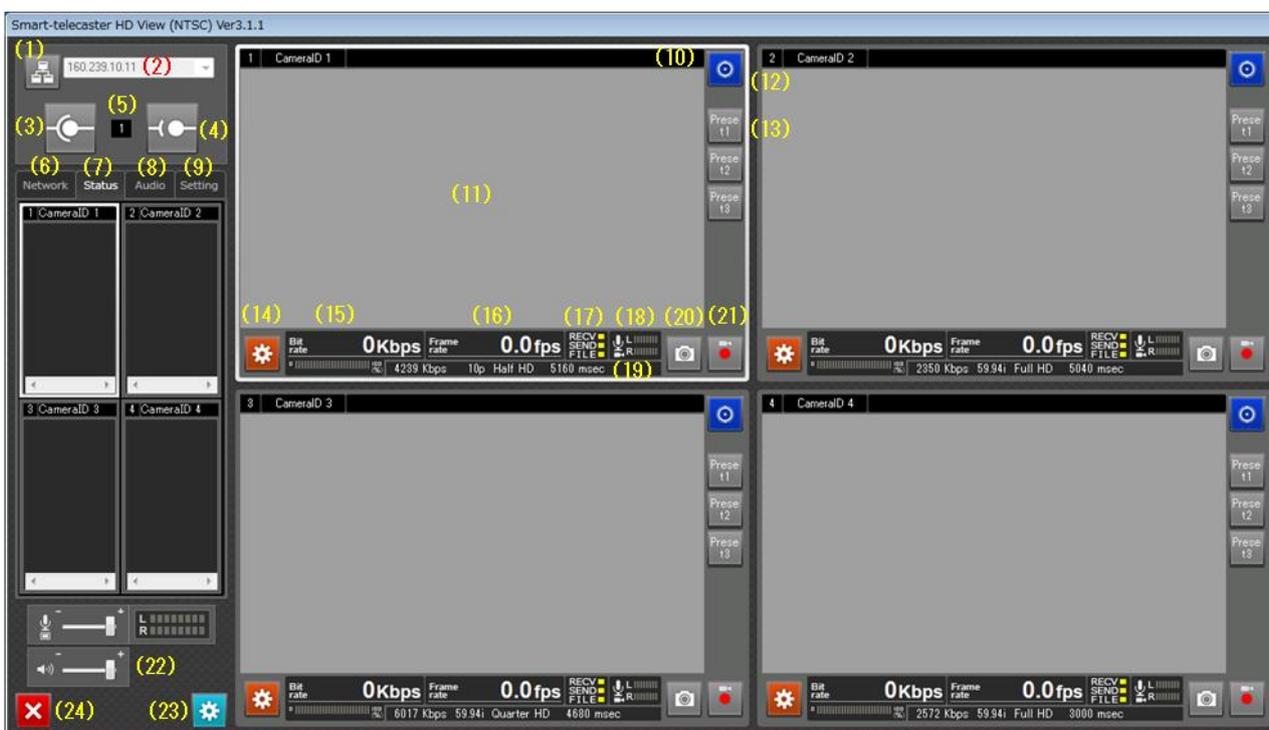


Figure 41. STC HDView Main Screen

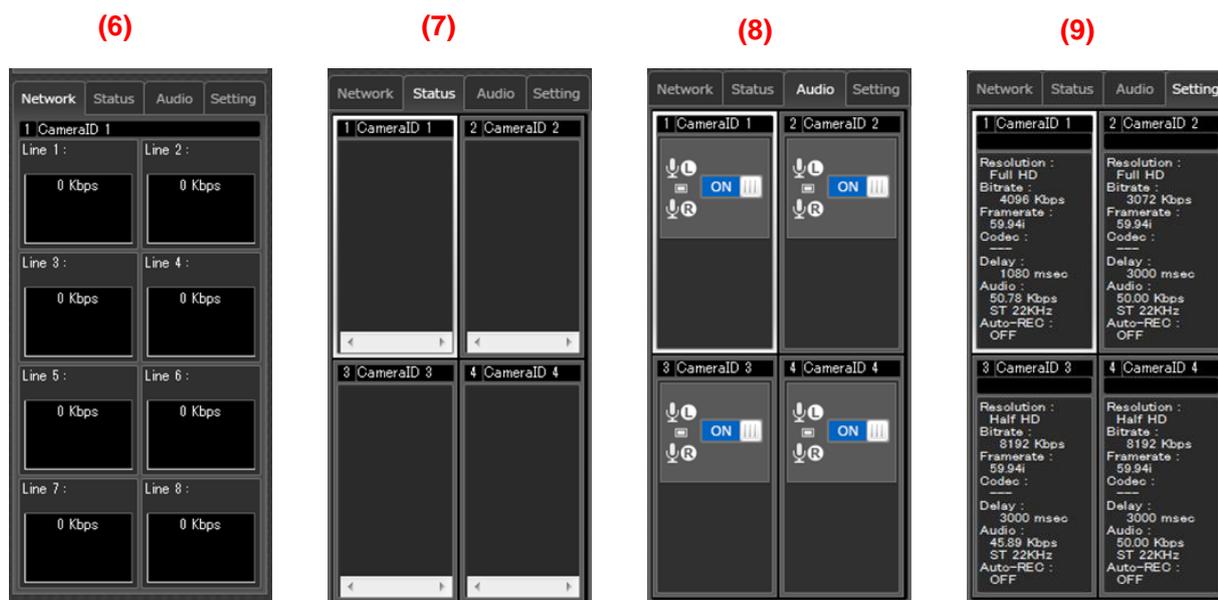


Figure 42. STC HDView Main Screen (Tag Details)

- (1) Destination Button
Calls selected Destination Screen.
This version does not support this feature.
- (2) Destination Display
Displays destination's name and IP address.
- (3) Connect Button
Connects a destination.
If you are connecting from Receiver you will need at least one network connection (e.g. wireless LAN) other than dial-up. If Receiver is on Live mode, then a live transmission will be started. However, a destination not stored in the list cannot be connected.
This version does not support this feature.
- (4) Disconnect Button
Disconnects destination.
- (5) Channel Indicator
Shows connected channel number.
- (6) Network
Selects to display each transmitter network connection status. It also displays connection speed numerically and graphically.
- (7) Status
Selects to display message status of STC HDView.
- (8) Audio
In general, the audio of STC HDView is transmitted to all connected transmitter channels. If Audio mode is turned to OFF, both audio of Transmitter and Receiver on its channel will be disconnected.
Example: When Audio mode is turned ON for all channels, audio of STC HDView will be transmitted to all channels.
If Audio mode is turned ON for Channel 1, NO audio is transmitted to channel 1, but transmitted continually to channel 2 through 4.
- (9) Settings
Displays Resolution, Bitrate, Frame Rate, Codec, Delay, Audio, Auto-Record status during live broadcasting.
- (10) Encryption Icon
When a live broadcast is transmitted in encryption mode, the  icon is displayed.
- (11) Preview Screen
Displays live broadcasting video.

(12) SDI Output Button

When video transmitted to Receiver and the SDI output environment is available, this button turns Blue.

Each of Output equipment configurations follows:

① Integrated with Blackmagic Design® Decklink Quad video board:

All channels can output video simultaneously and turn blue in color. Audio and video are output at simultaneously.

② Integrated with others video board:

Only one of 4 channels is able to output video at a time. The SDI output icon turns blue when selected.

③ When without video board:

All SDI output icons are grayed out and not selectable.

(13) Preset Button

You may register your desired preset of STC HDView settings.

When you click on a preset button, all registered settings will be applied immediately, and the selected preset button turns green.

(14) Settings Button

Displays Edit Settings dialog of each channel.

(15) Bitrate

Displays numbers of video data rates, which also means displaying the level of communication amount on current connected bandwidth.

(16) Frame Rate

Displays frame rate.

(17) Status Indicator [RECV, SEND, FILE]

When transmission has connected, the connection Status blinks.

(18) Transmitter Audio Indicator [Cam Audio indicator]

① Microphone Volume

Remotely controls the transmitter's MIC volume. Move the slide bar to the left for lower volume, right for higher volume. Slide the bar all the way left to stop audio between Transmitter and Receiver. All communication bandwidth will then be allocated for Video transmitting.

② Audio Level

Displays the transmitter's audio level. When audio mode is set to Stereo, the upper is left audio level and lower is right audio level. When the audio mode is set as mono, upper and lower are same audio level.

(19) Settings Display

During Live broadcasting, displays each variable of Bitrate, Frame Rate, Resolution and Delay.

(20) Static Picture Button

The ability to capture a still picture is not available in STC Zao, but is available in the old version of STC.

(21) Record Button

The record feature is not available in STC Zao, but is available in the old version of STC.

(22) Receiver Indicator [View Audio indicator]

① MIC Icon

In the event of a MIC input error, an X mark will be shown on top of the icon.

② MIC Volume

To adjust MIC volume for audio input, move the slide bar to left for lower record level and right for higher record level.

③ Speaker Icon

In the event of a Speaker output error, an X mark will be shown.

④ Speaker Volume

To adjust the audio play application volume, move slide bar to left for lower volume and right for higher volume.

⑤ Audio Level

Displays input audio level of STC HDView. When in Stereo mode, upper is left level and lower is right level. When in MONO mode, upper and lower will be the same level.

◀ (23) Common Settings Button

Displays the Edit Dialog of Common Settings.

(24) Finish Button

Finish application.

7.3 Audio Input/Output

STC HDView's Input/Output is designed to use Windows default playback/recording devices. If you are changing input sources, connect your recording device, select the Windows default device and then start up STC HDView.

Also, if you want to use audio via an external audio board, this application designed to use external output board automatically. You should set the Windows default device to be other than external output board.

*The Receiver computer is shipped with a video/audio output board installed and Windows Playback device disabled. The output board (Blackmagic Design® DeckLink Quad) is set as the default. If you change the default back to Windows Playback device, remember to reset the default to the output board device again before using the Receiver program. Otherwise there will be no audio output during transmission.

If you need to reinstall Windows OS, this application is set to use an external output board, so set Windows default playback devices to use other than an external output board.

Start STC HDView up, open Volume Mixer in Task tray then set System Sound to 0. This step is only needed once. System Sound is suppressed when STC HDView is running.



7.4 Edit Settings

Edit audio and video settings when Transmitter and Receiver are connected. Each setting dialogue is distinct, so you must configure every channel.

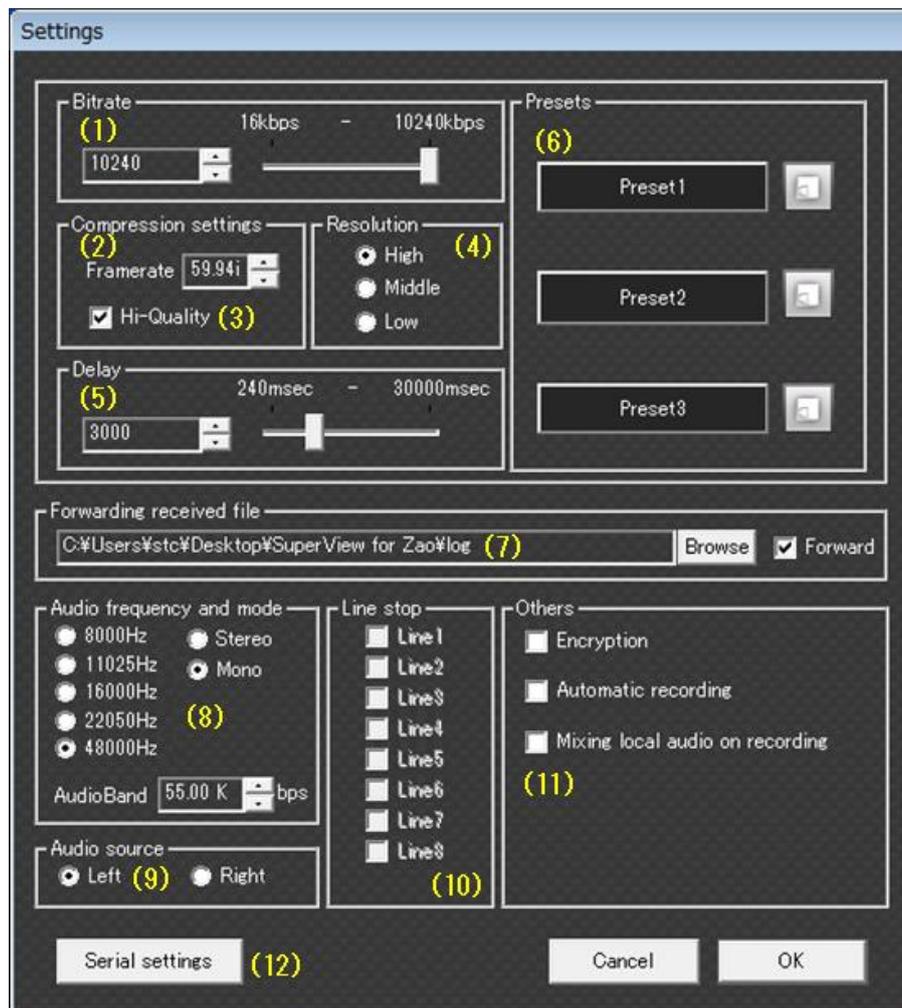


Figure 43. STC HDView Setting Screen

(12)

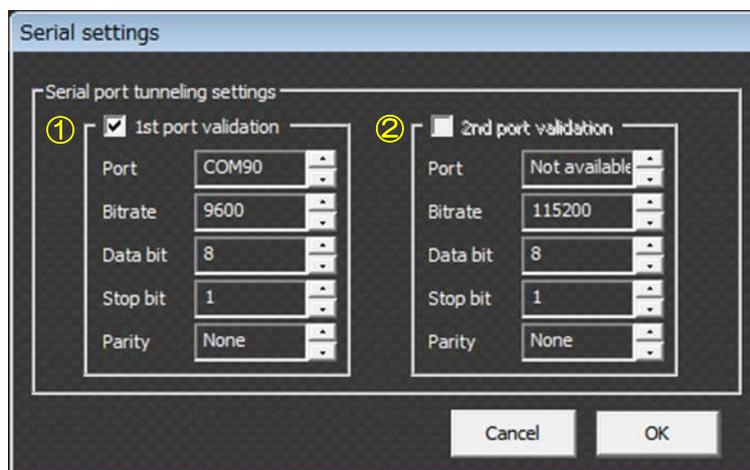


Figure 44. STC HDView Serial Settings Screen

(1) Bitrate [Bitrate]

Communication bandwidth.

[Note] STC Zao's maximum is 10Mbps, compared with 8Mbps previously.

(2) Framerate [Framerate]

Specifies Framerate.

(3) Hi-Quality [Hi-Quality]

When checked, the Hi-Quality encode mode is used. In Hi-Quality mode, you can get better-quality video without increasing the video bitrate.

(4) Resolution [Resolution]

Set Resolution for Live broadcasting. Each resolution setting is shown in following tables.

[Note] You will need 4 RAM memory modules installed to output 4 channels simultaneously. If you are upgrading from the current system, you may need to expand memory.

If the settings value is Middle and the Transmitter is STC Zao, the resolution may change depending on settings of "7.5 (2) Framerate."

If the setting value is Low and the Transmitter is STC Zao, the resolution may change depending on settings of "7.5 (1) Bitrate."

【NTSC System】

	STC Zao HD	
Settings	Image Quality	Settings
High	Full HD	High
Middle	Half HD (59.94i)	Middle
	Half HD (29.97)	
Low (768k above)	Quarter HD	Low (768k above)
Low (512k below)	D1	Low (512k below)

	STC Zao SD	
Settings	Image Quality	Resolution
High	VGA	720 x 480
Middle	Half VGA (59.94i)	360 x 480
	Half VGA (29.97)	720 x 240
Low (768k above)	CIF	360 x 240
Low (512k below)		

	iOS	
Settings	Image Quality	Settings
High	Quarter HD	High
Middle	D1	Middle
Low		

All resolution settings may be changed when no video is being transmitted. However, during receiving video transmission, settings depend on image capture type. Either only SD or HD setting is available.

If settings have changed during video transmission, the change will still be activated after the video has been disconnected

(5) Delay [Delay]

Sets the delay buffering for Transmitter. The value range is from 240msec to 30000msec. By specifying delay buffering settings, the received video transmission will not be played immediately. Instead, the transmission will be delayed by a specified time, reducing the disturbance caused by the frame update interval.

*** Suggested settings chart for Transmitter.**

Wired LAN connection	240msec more
4G Connection	720msec more
3G Connection	1200msec more
Satellite (BGAN) connection	4000msec more

When transmitting with bonding multiple connections, set to match the slower connection. In addition, due to heavy traffic or poor signal situations, the network transmission might be unstable. In this case, stop moving and keep the camera still for a while. You also can increase the stability by extending the delay..

(6) Presets [Presets]

In STC HDView, you can register any of the settings as a preset.

① Preset Button

By clicking Preset button, it becomes highlighted in green. All registered settings in dialogues will be collectively changed.

[NOTE] The preset name set in registration will be displayed.

② Preset Register Button

By clicking this button, the preset dialogue will be displayed.

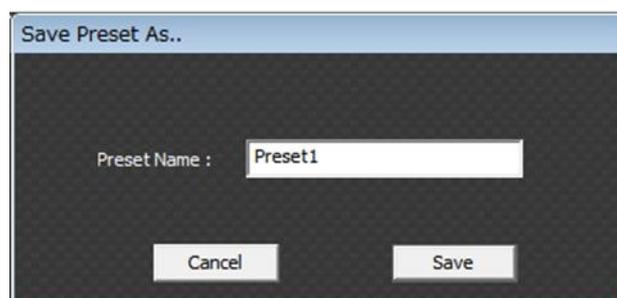
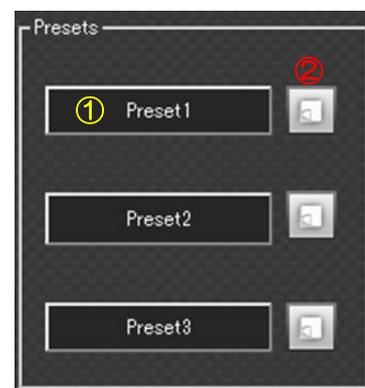


Figure 45. STC HDView Preset Screen

Specify the Preset name, then click Save button. Current settings will be registered as preset and become selected.

By clicking the Cancel button, the preset register will be canceled.

Note that Preset Name is also reflected in the Preset Button on the main screen.

When Preset is selected, the button becomes green.

The preset selected state will be canceled after any of settings have been changed.

(7) Forwarding Received File [Forwarding received file]

This feature is not embedded in STC HDView

(8) Audio Frequency and Mode [Audio frequency and mode]

Specifies Audio Sampling Rate, Stereo/MONO and Audio Bandwidth.

Audio Frequency

Sets sampling rate for audio send/receive.

[NOTE] When connected with iOS ML, it is fixed to 22050Hz.

Audio Channel

Set Stereo or MONO for audio input channel.

Audio Band [AudioBand]

Configures audio band (Kbps)

The available audio band, frequency and channels can be set in the following range.

Audio Frequency	Stereo (Kbps)	MONO (Kbps)
8000Hz	11.71 ~ 62.50	7.81 ~ 41.01
11025Hz	15.62 ~ 85.93	11.71 ~ 48.82
16000Hz	23.43 ~ 167.96	15.62 ~ 97.65
22050Hz	29.29 ~ 167.96	15.62 ~ 87.89
48000Hz	43.94 ~ 488.28	31.25 ~ 234.37

(9) Audio Source Selection [Audio source]

Select Left or Right when audio channel in MONO mode.

① Left Select Left channel to use as MONO audio input.

② Right Select Right channel to use as MONO audio input.

(10) Control Transmitter Line [Line stop]

In STC HDView, there is a Purge feature, which you can individually Pause and Reconnect the network connection with Transmitter. (This feature is available only when connected multiple connections.)

To pause the connection, check the desired connection and click the OK button.

To reconnect, uncheck the connection and click the OK button.

The Purge feature can be operated while maintaining a live broadcast. This is useful for

temporarily disconnecting a lower bandwidth connection caused by moving the Transmitter's location rapidly. It also can be useful for redialing (disconnect → reconnect).

(11) Others [Others]

① Encryption [Encryption]

Encrypts data for transmission.

② Automatic Recording [Automatic recording]

[NOTE] This feature is not available in STC Zao version, but it is available in the previous version.

③ Mix Recording with Local Audio [Mixing local audio on recording]

[NOTE] This feature is not available in STC Zao version, but it is available in the previous version.

(12) Serial Port Tunneling

The feature is not available in STC Zao.

7.5 Common settings

Configure Authentication Code with Transmitter.

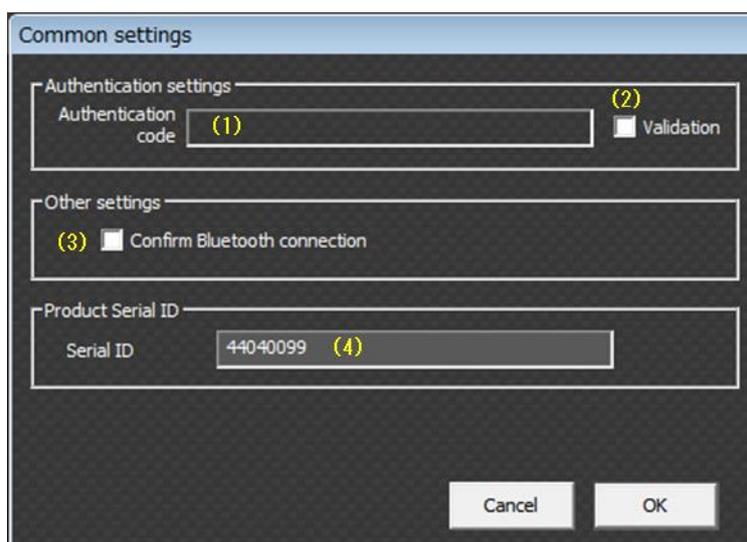


Figure 46. STC HDView Common Settings Screen

Authentication Setting [Authentication setting]

(1) Authentication Code [Authentication code]

You can set the code for connection authentication for the Transmitter.

The authentication code can be set using up to 30 alphanumeric characters. (The code you enter will be displayed as *.)

This feature is active only when Authentication is flagged.

(2) Authentication Validated Flag [Validation]

When ON checked : Enable Authentication Code

When OFF checked : Unable Authentication Code

* When the Authentication feature is enabled, only transmitters with same authentication code can be connected. If the authentication code is different, a transmitter cannot be connected with STC HDView.

Other settings [Other settings]

(3) Confirm Bluetooth Device [Confirm Bluetooth connection]

This feature is not available in this version.

(4) Product Serial [Product Serial ID]

(5) Serial ID [Serial ID]

Displays registered serial ID.

