Bee8
Capture, Live Streaming, Distribution Appliance

USER'S MANUAL

VERSION V1.0 0058 (US)

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Note:

This user manual is compiled to ensure easy installation and configuration of the product. Please read this manual carefully before using the product, so that you can make best use of all its functions.

This manual is subject to update from time to time without prior notice. Updated versions are available at http:www.reach-us.net/products/bee8. Thank you.

Section 1.1 Overview

The Bee8 is a high performance all in one AV over IP appliance. Utilizing the latest revision DaVinci 8168 video processing architecture, the Bee8 provides amazing flexibility with respect to source inputs. Any signal from a composite video signal over coax, to full HD over DVI-I or HDMI can be input and configured to produce beautiful streamed content as well as full screen local display preview. The Bee8 utilizes an MP4 high profile CODEC, so the encoded content can be viewed on virtually any device. It's convenient USB 2.0 port allows users to download files immediately after recording, as well as redundantly record content on a flash drive, or USB hard drive.

The Bee8 can be controlled by serial or Telnet command strings, as well as a free "Reach Video" app available on the iTunes app store and by a free application included with the Bee8 called Manager Lite. All Bee8 operating parameters are set through its simple and intuitive integrated Web Interface.

Out of the box, the Bee8 can be integrated into a multi-media system as a stand-alone capture, record, streaming, and distribution solution. The Bee8 can stream live and VOD content to up to five concurrent users. It also can concurrently live stream RTSP and RTMP streams, so users can connect to a CDN service like YouTube or Wowza to view a live event. The Bee8 can also upload recorded content to an FTP server transparently and in the background. Where the Bee8 really shines is when its integrated into a complete AV over IP solution by leveraging the awesome power of the Reach Media Center Content Management Server. When deployed as this solution, all files are immediately uploaded to Media Center, transcoded to HTML5 and Flash 19 or above, and made available to users who have permissions to view specific content.

Section 1.2 Controls and Connections

Front Panel Detail

The Bee8 is very simple to integrate. It comes with all the adapters you need to connect any source, from analog composite signals to full HD 1080P. The illustrations below provide detail about all the controls and connections used on a Bee8. Before integrating it into your system, take a minute to familiarize yourself with the connections you will be using in your system, and what controls you will need to use to realize the content you are envisioning.

No.	Component	Description	No.	Component	Description
1	LCD	Display system info, IP address, status, etc.	6	Stop	Stop record or stop playback
2	Volume Status	Display dynamic audio volume level	7	USB 2.0 I/O	Connect USB devices
3	Input and Status indicator	Signal Present and System Status LED	8	Download	Download files to USB devices
4	Record	Start record	9	Playback	Local playback of VOD content
5	Pause	Pause record	10	Knob	Rotate dial to select file and press to confirm choice

After the USB flash disk or USB mobile HD is inserted in the USB connector, Bee8 will make self-check on the USB flash disk or USB mobile HD. In case that the available storage space is smaller than 1G, the text "USB" will flash on the LCD Display. Recording will not be started. However, recorded files may be downloaded to the USB flash disk or USB mobile HD. In case of multiple partition, a prompt of partition selection will be displayed on the LCD Screen. When downloading the video file with

USB flash disk or USB mobile HD, if the available space is less than 50MB during the downloading, a prompt will be displayed on the LCD Display and the downloading will stop. USB download is disabled when Bee8 is recording, however redundant recording is possible. (Supported Formats: EXT3, NTFS, FAT32). This USB port does not provide power to an external disk drive powered by USB!

No.	Connector	Description	No.	Connector	Description
1	Power Switch	Power on & power off	10	RS422/RS485	RS422/RS485 External control connection (phoenix connector)
2	Power Input	120-240 VAC to DC Brick 12V/10A power input	11	Line In 1	2 channel 3.5mm TRS line in
3	DVI In 1	Video signal input 1	12	Mic In 1 (Unbalanced)	Unbalanced microphone input (Hi-Z)
4	DVI In 2	Video signal input 2	13	Line In 2	2 channel line in, unbalanced (phoenix connector) (Hi-Z)
5	DVI In 3	Video signal input 3	14	Line Out 1	Line in loop out (phoenix connector)
6	VGA Loop	Analog VGA signal loop for DVI In 3	15	Mic In 2 (Balanced)	Balanced microphone input (phoenix connector) (Low-Z)
7	HDMI Out	Local Display	16	Line Out 2	Playback Line Out
8	RS232/485 Switch	RS232/RS485 switch for camera PTZ control	17	Reset	Reset to factory default momentary switch
9	RS232/RS485	RS232 or RS485 camera PTZ control connection (phoenix connector)	18	RJ-45	Ethernet network connector

Files larger than 4GB are not supported by FAT 32.

Section 2 Connection Example

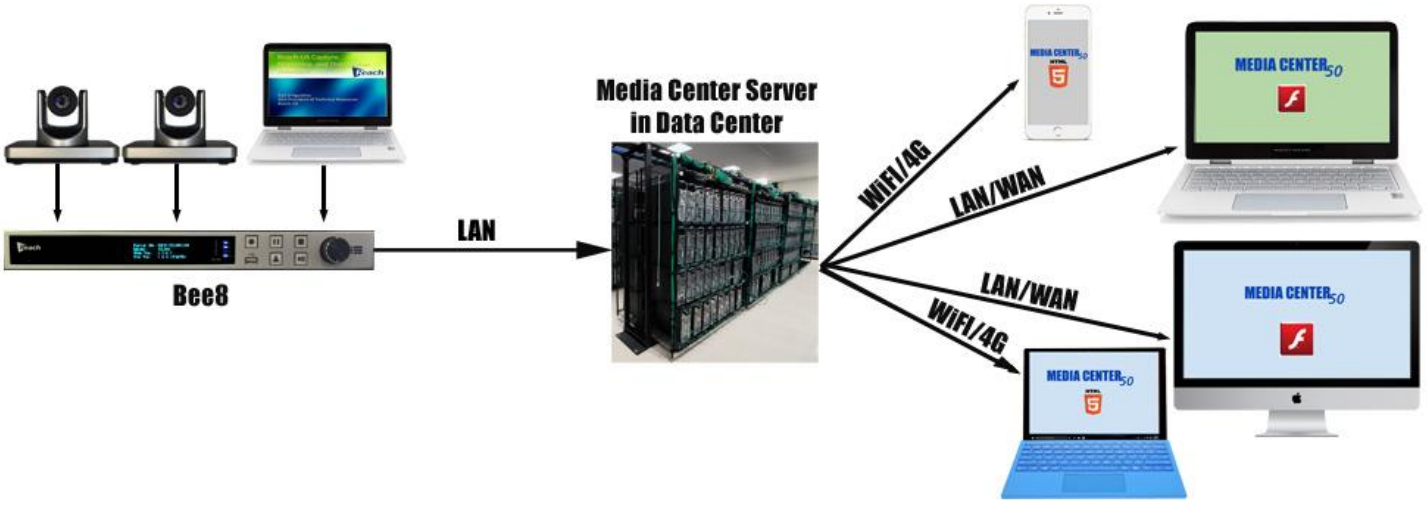


Figure 1Conceptual Flow

Section 3 Initial Set-up

The Bee8 is configured with a test and configuration IP address from the factory. The first step in integrating it into the resident IT ecosystem is to connect to it while in its IP Range. To accomplish this, first apply power to the Bee8, and record the IP address of the front panel of the Bee8, then change the IP address of your computer to the same Range, subnet, and gateway. Once you have temporarily changed your computer to be on the same "network" as the Bee8, connect an Ethernet cable between your computer and the Bee8 and type in the IP address of the Bee8 in the address bar of your browser. You will be presented with the landing page of the Bee8 web interface.

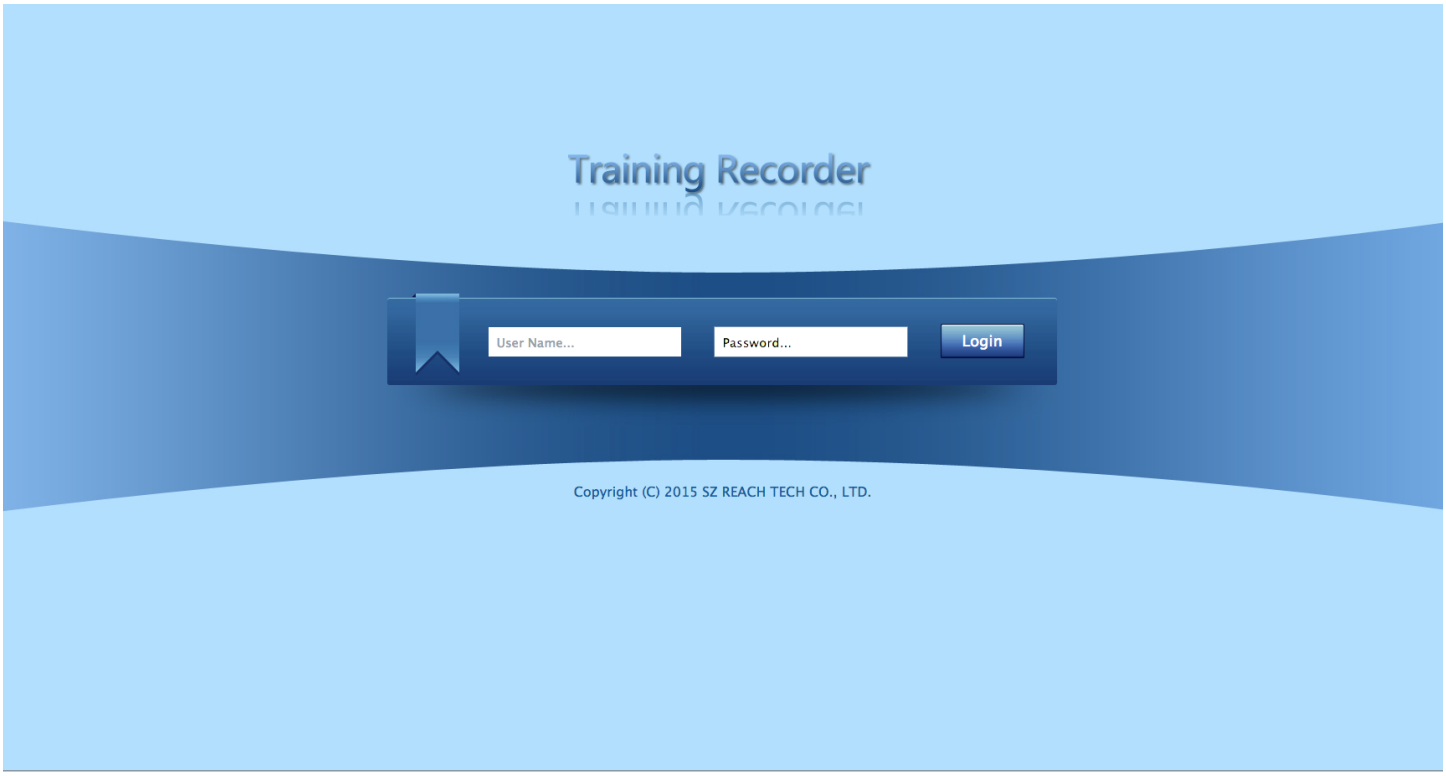


Figure 2 Login Page

Enter admin as the user name, and admin as the password and click the Login button. Once these credentials are accepted you will be presented with the web interface RECORD page. We will return to this page to explain it further shortly, but for now we will continue to localize the Bee8 to the local area network. Select the System Config button (highlighted in red) to

access the network administration section of the web interface.

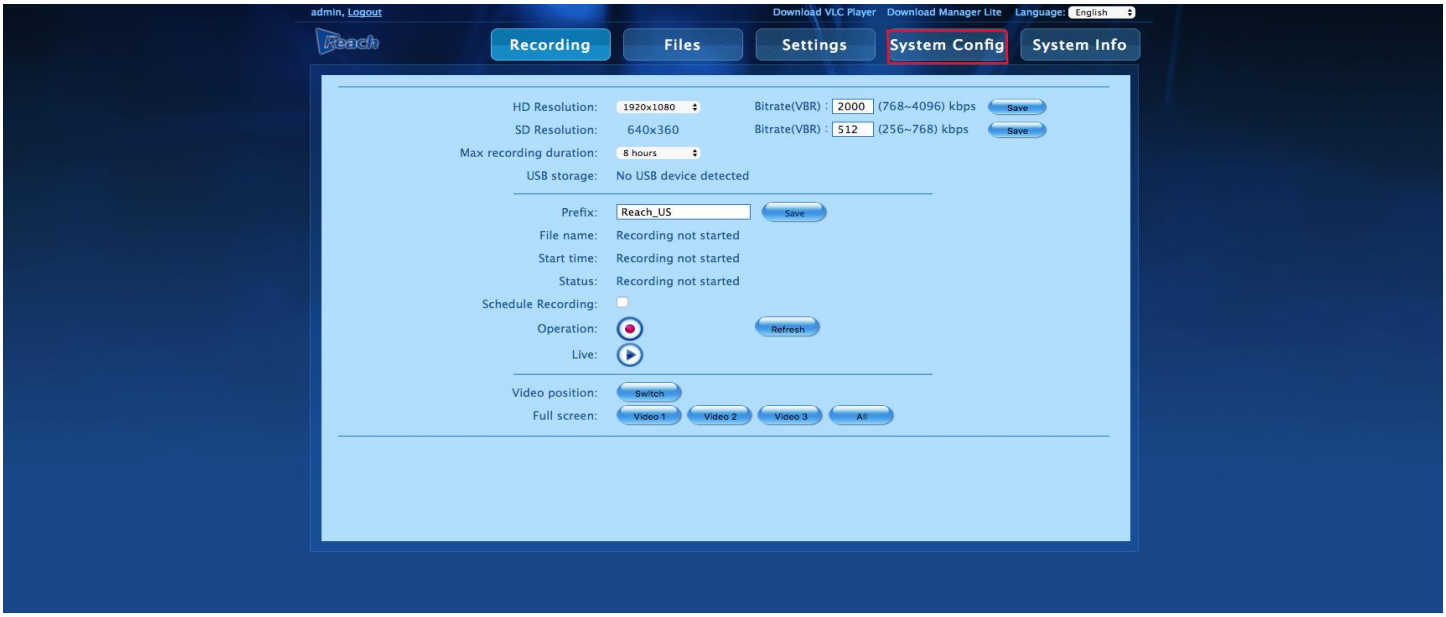


Figure 3 Record Page

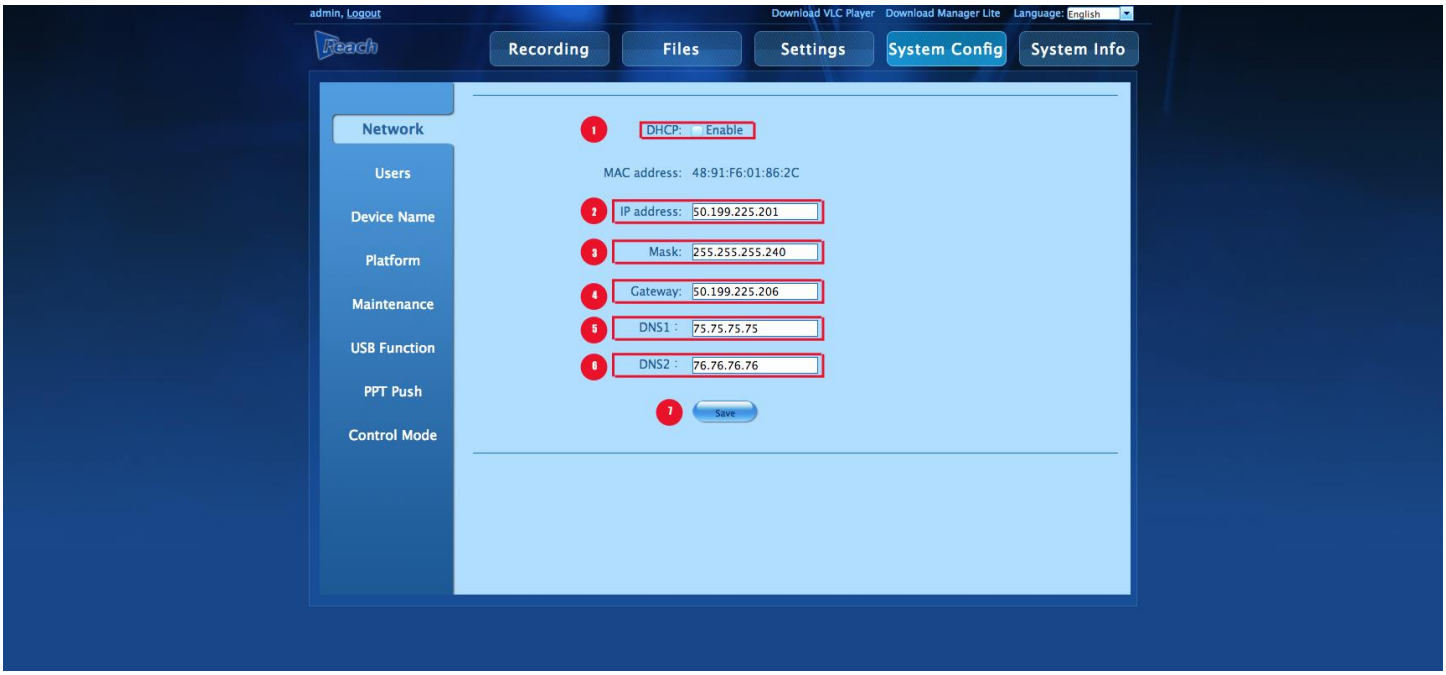


Figure 2-5 System Config Page-Network Tab

1. DHCP Enable

- Select this if your network infrastructure is based on Dynamic Host Configuration Protocol. Be aware that with any lease release/renewals the IP address may change, and cause a loss of communications between the Bee8 and other IP devices.

2. Static IP text box

- Type in the IP address you have chosen for the Bee8 here

3. Mask text box

- Enter the LAN Subnet Mask for the network

4. Gateway text box

- Enter to IP address of the LAN gateway

5. DNS1 text box

- Enter the IP address of the first Domain Name Server here (If applicable)

6. DNS2 text box

- Enter the IP iadress of the second Domain Name Server here (If applicable)

7. Save Button

- Once you have entered all the appropriate information, click the save buton to commit the changes. ***Note: after network changes have been made, the Bee8 will automatically restart!)***

When the Bee8 finishes restarting, it may be integrated into the existing IT infrastructure. Please confirm your settings on the front panel of the Bee8 that the IP address, Subnet, and Gateway information is correct.

You may choose to continue with the physical integration of the system at this point, or go back and configure the rest of the operating parameters.

User Controls

Bee8 Playback

The Bee8 has the ability to playback content, and control that playback by the front panel controls pictured above.

To playback a file on the Bee8

1. Press the Play button.
2. Use the scroll knob to find the file you wish to playback.
3. When you find the file, press the scroll knob. The content will start playing back.
4. The ***Pause*** and ***Stop*** buttons are active when playback is engaged so users can pause content or stop while playing back.

USB Download and Redundant Record Capability

The Bee8 can perform redundant recording when a USB flash drive is plugged into the USB 2.0 port on the front panel. When the Bee8 is recording, the file is built both on the internal 1TB hard drive and the USB storage device.

Alternatively, when a recorded file is completed, A user may insert a USB device into the USB 2.0 port, press the ***Download*** button and a copy of the file will be downloaded onto the device.

Section 4 The Bee8 Web Interface

As you have already logged in to the Bee8 in Section 3, repeat this process to log back in. As mentioned earlier, after you are logged in you land on the Record Page. This Page allows users to control the record function, schedule a record event, and change the way the content is presented. Please review the picture and legend (below to familiarize with the functions available.

The Record Page

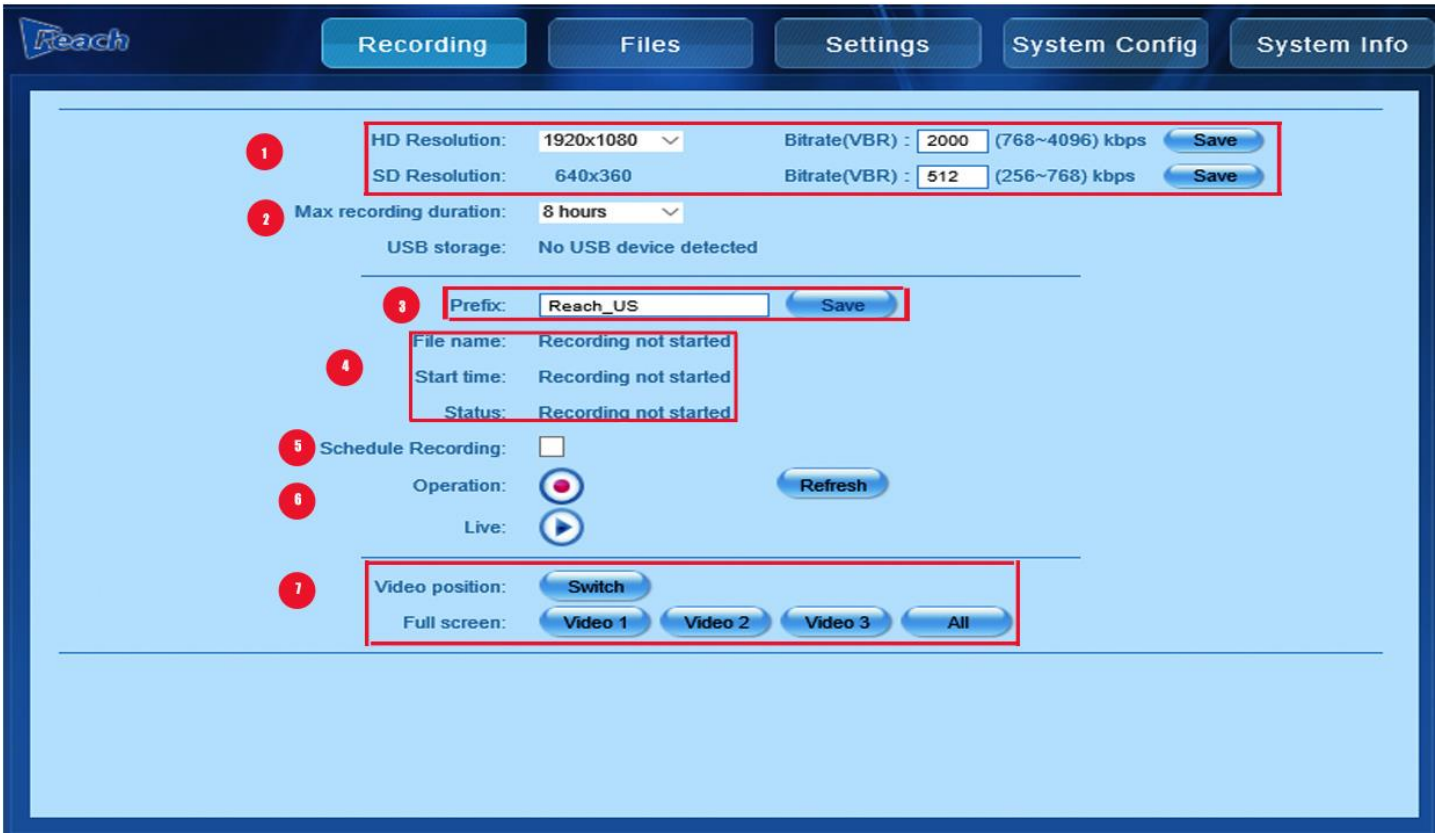


Figure 4 Record Page Detail

1. Setting the resolution of the recording (HD only)

- You can set HD Resolution here. The pull down menu provides you with the following choices: 1920X1080 (1080P Default) 1280X720 (720P), 704X576 (480P EU ONLY), and 720X480 (480P). You can also set the Variable Bitrate of the recording here for both HD and SD sources. The range for HD recording is 768-4096 kbps, and for SD sources 256-768 kbps. The higher the kbps, the better the recording quality will be. Press the save button for any parameter you have changed.

2. Maximum Recording Time

- This pull down menu will limit the recording time from the system maximum of 8 hours down to 1 hour, in one hour increments. If there is a USB device connected (Flash Drive or USB Hard Drive), it will be indicated here.

3. Prefix

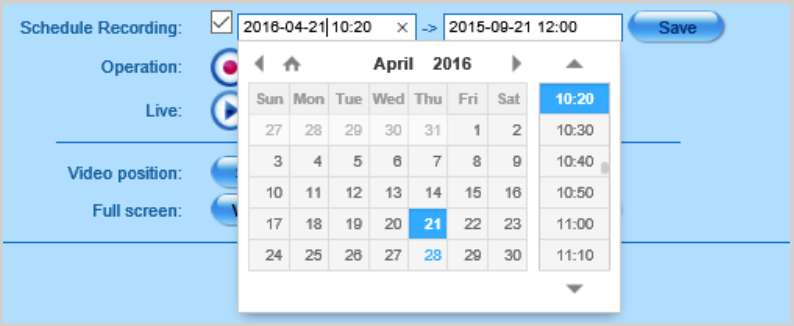
- A prefix to the recording name may be added here to help easily identify recorded content later. Press the save button after you have edited the prefix text.

4. Recording Status Feedback

- This set of three indicators gives live status of the Bee8 current record condition.

5.Schedule Recording Checkbox

- Check this box to schedule a recording event in the future.
- Press the ***Save*** button when you have entered the start and stop time of the recording. Time increments are at ten minute intervals.



6. Operation Buttons

- To start a new recording on the fly, press the record button. ***(NOTE:The play button is a feature for the Chinese Domestic Market only, and does not function on US Domestic Bee8 appliances.)***

7. Video Position/Full Screen Selection Buttons.

- These buttons help you select which source video arrangement will provide the most meaningful content. The switch button cycles the sources in a counterclockwise direction, so you can choose which source will have the largest display in the recording. You can also choose to toggle any of the 3 inputs full screen, then return to the two or three source display by pressing the ***Switch*** button again. ***NOTE:*** This function works both when the Bee8 is recording and streaming, or just streaming.

Files Page

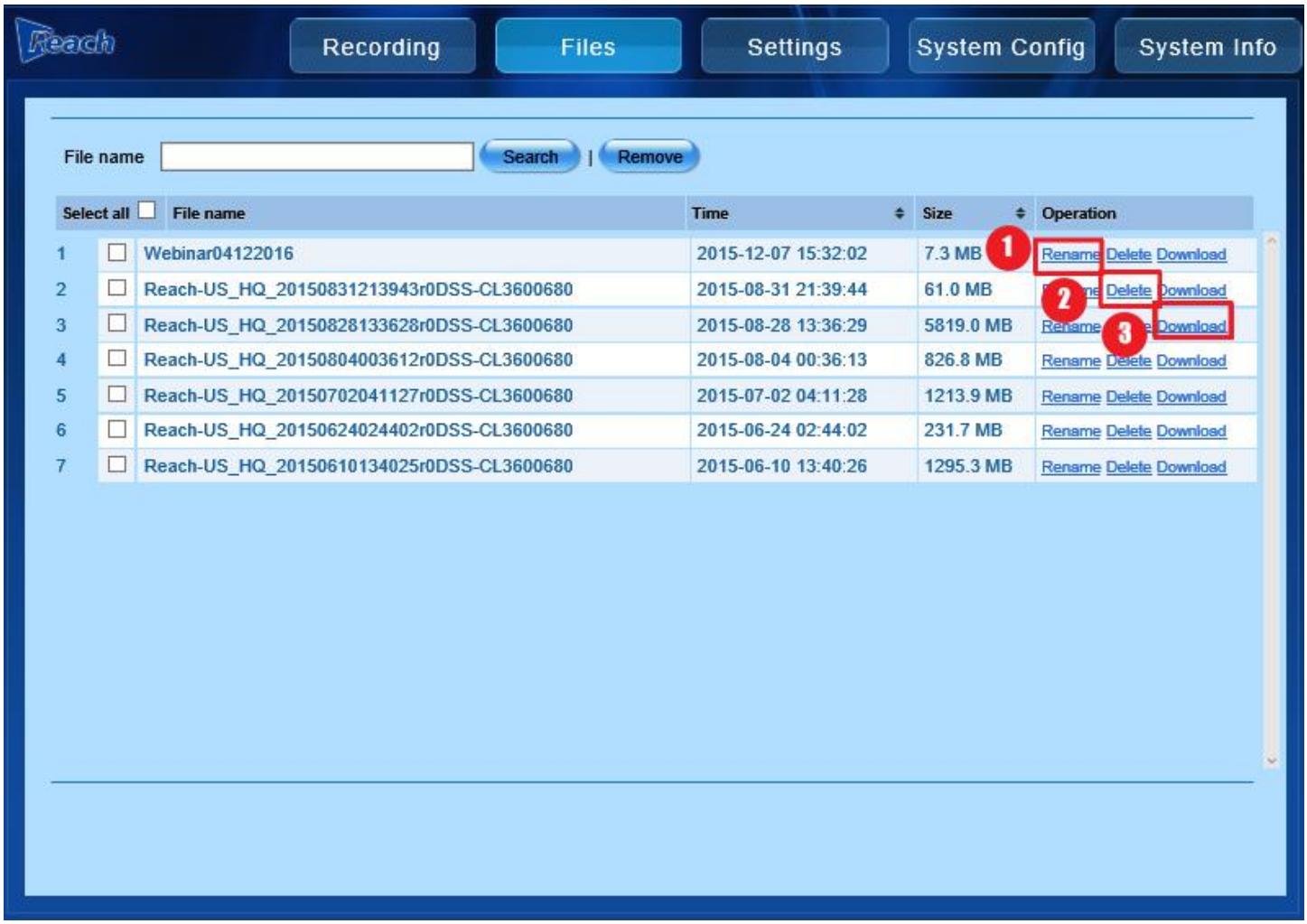
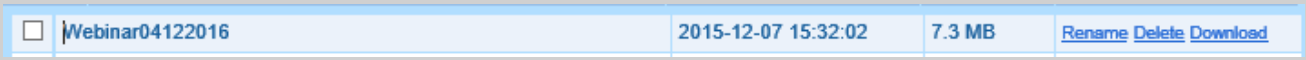


Figure 5 Files Page

The ***Files Page*** displays any files that are resident on the Bee8. These files are available for local playback, or VOD from this page. As you can see, the Prefix that was fixed on the previous page is now a part of the file name. This display shows when the file was recorded, its physical size and the options for what you can do with each file.

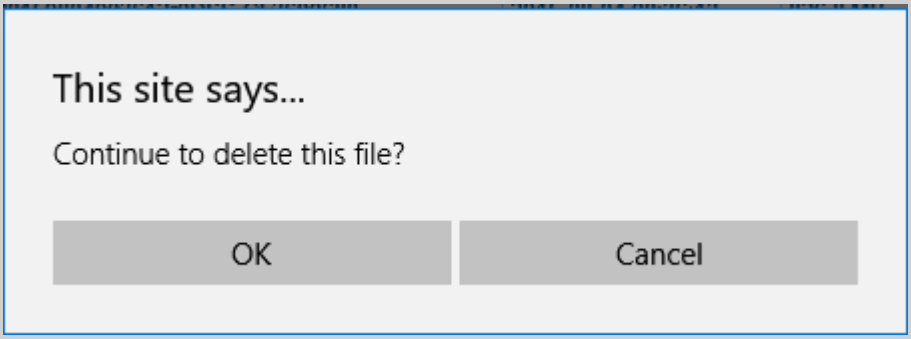
1. Rename Function

•Press ***Rename*** to change the name of the file to something more memorable. The textbox will become editable for you to change the name. Click anywhere on the page to commit the name change.



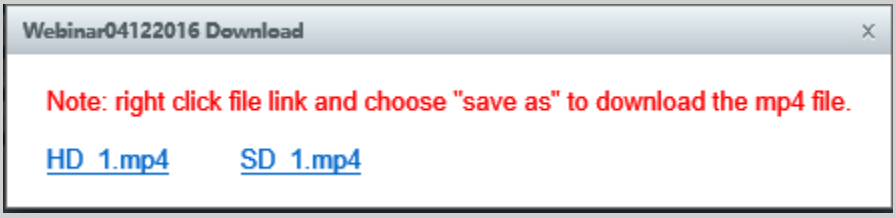
2. Delete Function

•Press ***Delete*** to permanently delete a file. When you press delete, a dialog box will appear to confirm that you want to commit this action. When you click ***OK*** the file will be permanently deleted.



3. Download

•Press ***Download*** to directly download the file to a USB sturage device plugged into the front panel. Simply follow the prompts.The downloaded content will be an MP4 file.



Settings Page

This page includes almost everything you will use to commission the Bee8 into a system. This section will be divided into each of the functional tabs:

- Video Setting
- Audio Setting
- Media Streams
- Image Adjust
- Title/Logo
- Disk Manage
- PPT Switch

Setting Page Video Settings Tab (3 input options)

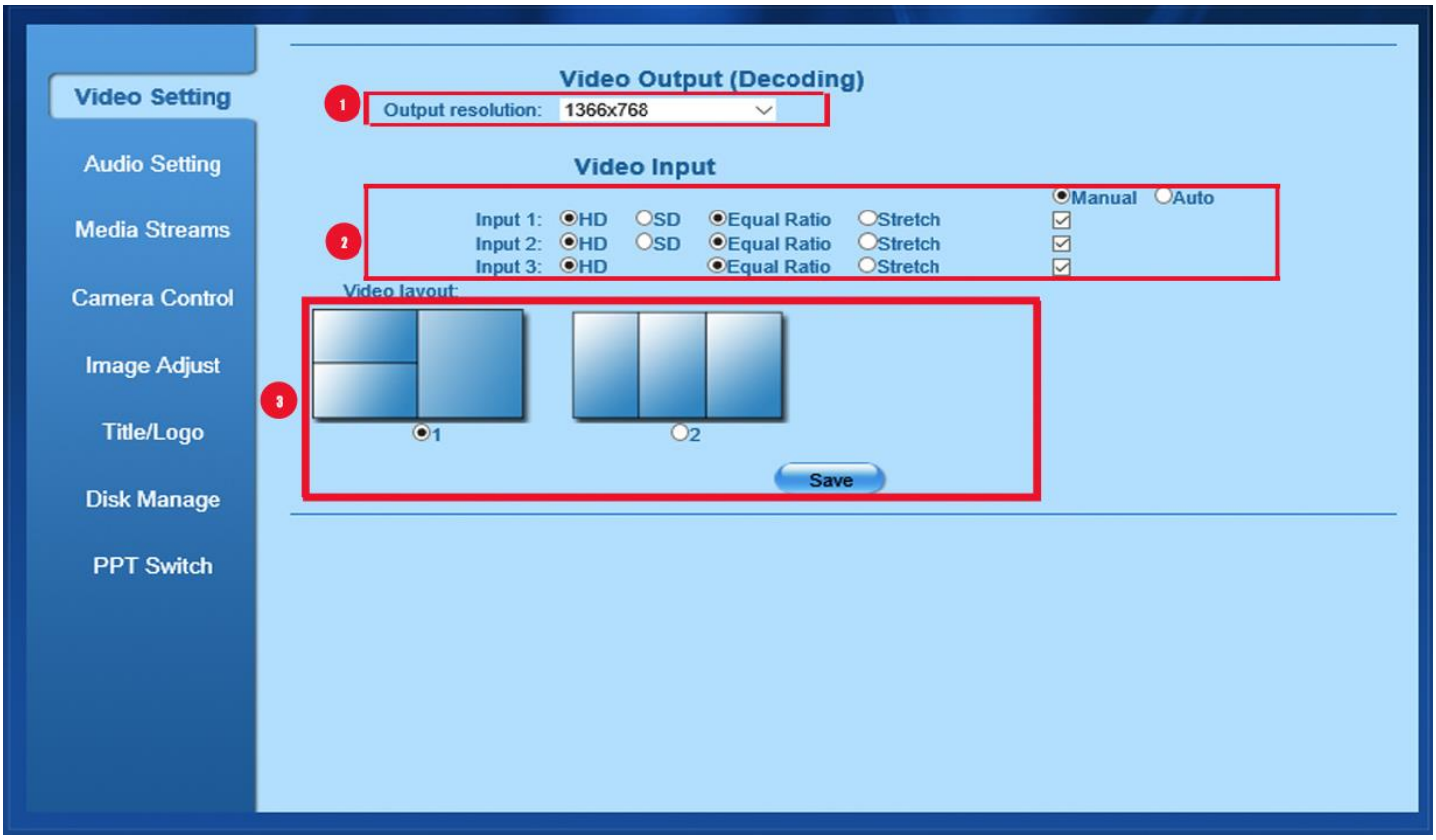


Figure 6 Settings Page, Video Setting Tab, 3 Sources

1. Output Resolution (3 live inputs)

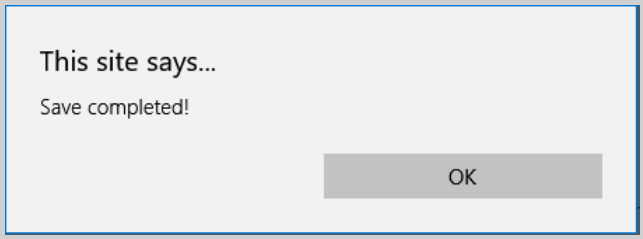
- This pull-down list contains all the display options the Bee8 can accomodate. The Choices are 1920X1080, 1440X1050, 1440X900, 1366X768, 1280X1024, 1280X800, 1024X769, 1280X720

2. Source Input Panel

- The source input panel allows you to select which inputs are active on the Bee8 when the panel is in ***Manual mode***. The Picture above shows the panel in manual mode, with all 3 inputs selected, and all sources being High Definition. When in three source mode, the layout choices are montage, or three in line.

3. Video Layout

- Video Layout defines the arrangement of the sources as displayed, recorded, an streamed. As mentioned above, when 3 sources are selected, the layout choices are montage or three in line. Please see the picture below to for a similar explanation for two input mode. These layout arrangements are changeable while recoding and streaming. After each change, press save to commit the action. A dialog box will confirm the setting change.



Setting Page Video Settings Tab (2 input options)

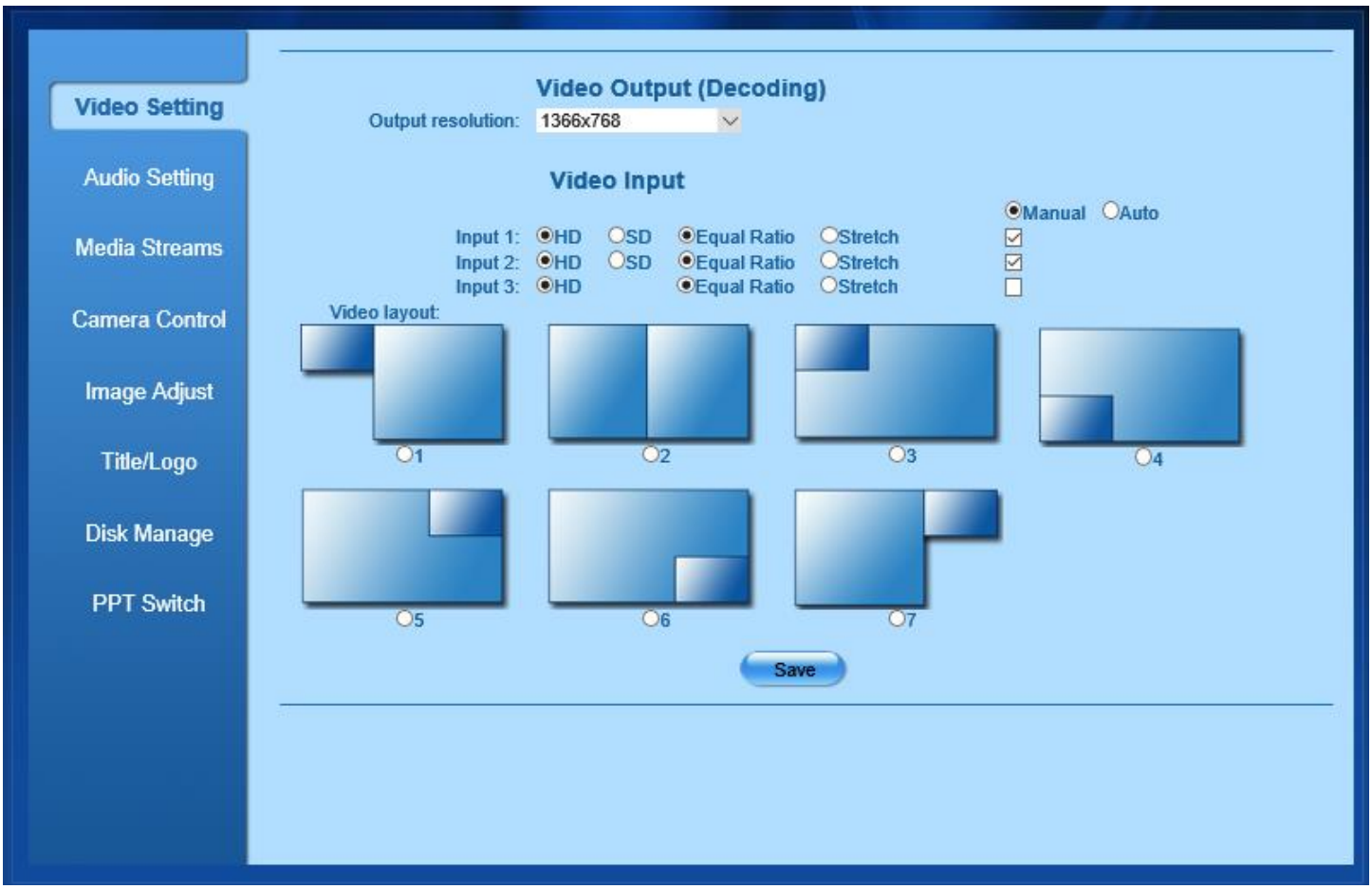


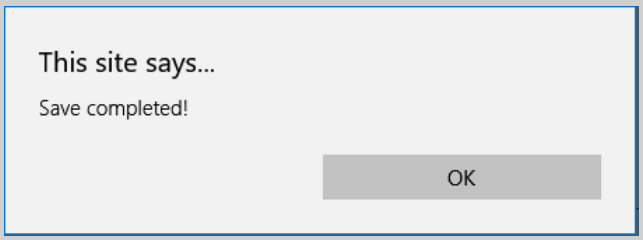
Figure 7 Settings Page, Video Settings Tab, Two Sources

2. Source Input Panel (2 Video Inputs Live)

- This image of the source input panel shows 2 live video inputs on the Bee8. When only two inputs are connected, the variety of layouts provides more options.

3. Video Layout

- When two inputs are connected, several layouts become available with four picture-in picture options, and three side-by-side options. These layout arrangements are changeable while recoding and streaming. After each change, press save to commit the action. A dialog box will confirm the setting change.



Settings Page Audio Settings Tab

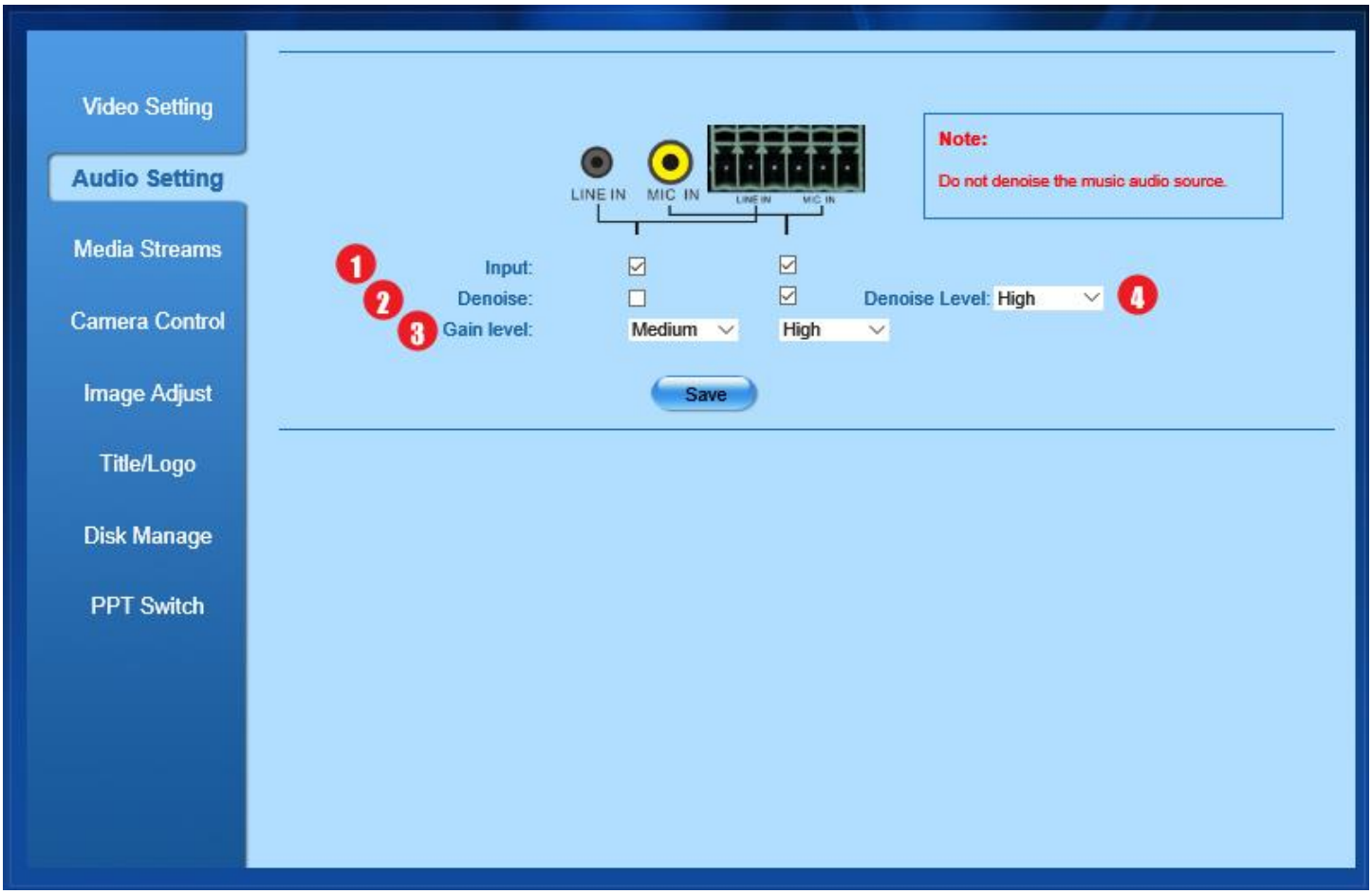


Figure 8 Settings Page, Audio Tab

1. Input Select Checkboxes

- Check each box for audio signals you have input to the Bee8.

2. Denoise

- Check each box to apply a denoise filter for the appropriate input. In most cases, filtering will not be required.

3. Gain Level

- VSelect the amount of gain needed for each input to achieve high quality audio recording. The pull-down menu choices are low (typically for line level inputs from a mixer or DSP), medium (typically for sources where audio was recorded low previously) or high (typically for microphones with low sensitivity). Press the save button after you have made your selections to commit the changes.

Settings Page Media Streams Tab

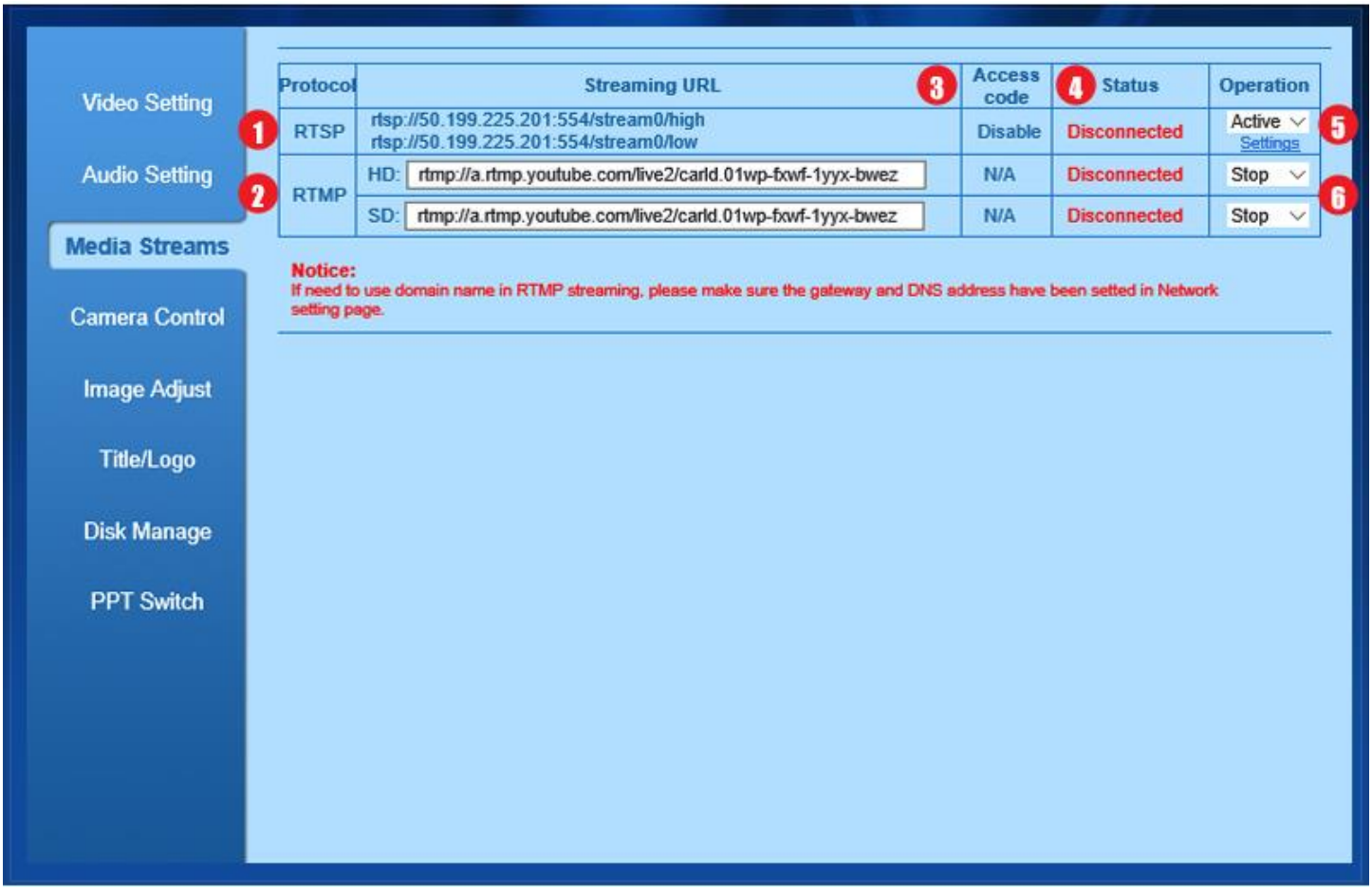


Figure 9 Settings Page, Media Streams Tab

1. RTSP Streams IP Address

- This part of the Media Streams Tab guides users to the self designated IP address of the Real Time Streaming Protocol Live Streams. By coping and pasting the IP address into a media Player like Flash Player or VLC Player, a user can view the live streaming directly from the Bee8. The High stream is a high bandwidth stream, the low is a low bandwidth stream. RTSP has the capability of negotiating with the client to determine which stream is most appropriate, based on available bandwidth of a users connection.

2. RTMP Streams Destination IP

- This user entered IP address is the server at a Content Delivery Network (CDN) where the live streams from the Bee8 are pulled to and served to subscibers. In this illustration, this Bee8 is providing live streaming content to YouTube to engage subscribers on the Reach-US YouTube channel .

3. Access Code

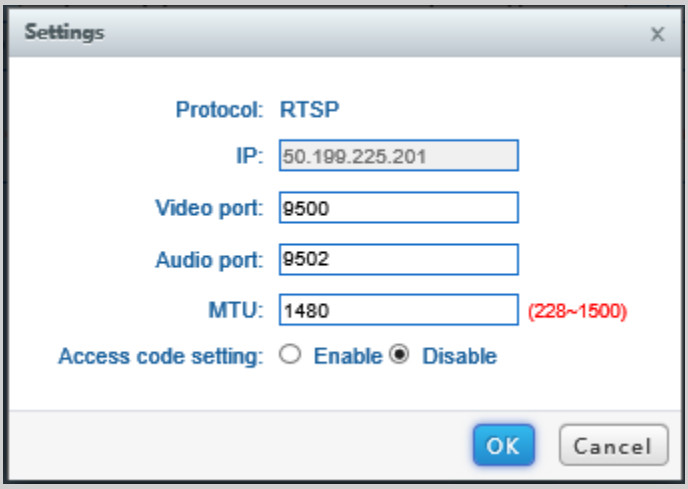
- This function is not utilized in the US market.

4. Live Streaming Status

- This indicator gives the live status of the Bee8. If a user was connected and viewing live streams derectly from the Bee8 The status would change to "connected". This function is not commonly used in the US market.

Operation Mode (RTSP Only)

- This pull down provides users with live streaming control. Streams are only propagated when the mode is set to ***Active***. When set to ***Stop*** recording is possible, but live streaming is suspended. Note also there is a ***Settings*** link to bring you to a Dialog box, where you may customize the ports and Maximum Transmission Unit (MTU) settings from their defaults. It is strongly recommended that you not change these settings unless you are a network specialist and are intimate with the network's design and architecture.



6. Operation Mode (RTMP Only)

- This pull down provides users with live streaming control for RTMP streams. Streams are only propagated when the mode is set to ***Active***. When set to ***Stop***, recording is still possible, but all interaction with the CDN is suspended.

Settings Page, Camera Control Tab

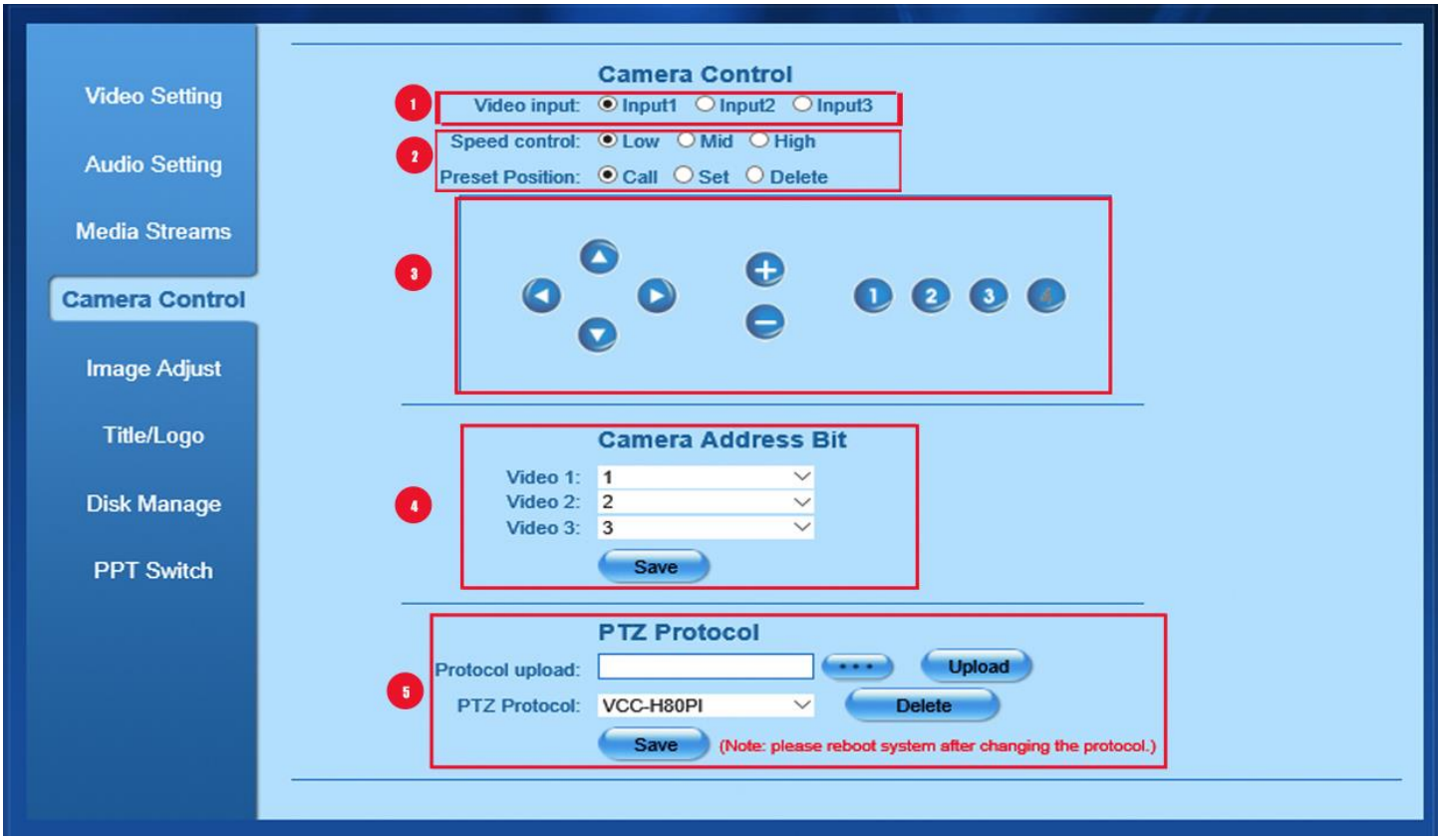


Figure 10 Camera Control Tab

1. Video Input Selector

- Select the camera and input you either wish to control, wish to set a preset for, or wish to upload protocol for.

2. Speed Control and Preset Position Control

- The Speed Control sets the speed at wisch the PTZ motors move the camera and Lens. For most applications ***Mid*** is the best choice, however ***Low*** is useful when panning tilting and Zooming between two subject in close proximity, and ***High*** is useful when you need to go from a tight shot to a wide shot quickly. ***NOTE: High is very fast!***
- Preset position Controls allow users to program a new preset position, recall a previously set preset position, or delete a preset. To program a new preset, use the pan tilt and zoom controls to move the camera to the desired shot, select ***Set***. then press one of the 3 preset buttons. To call a preset, first press one of the preset buttons, then ***press Call.***

3. Pan Tilt and Zoom Controls

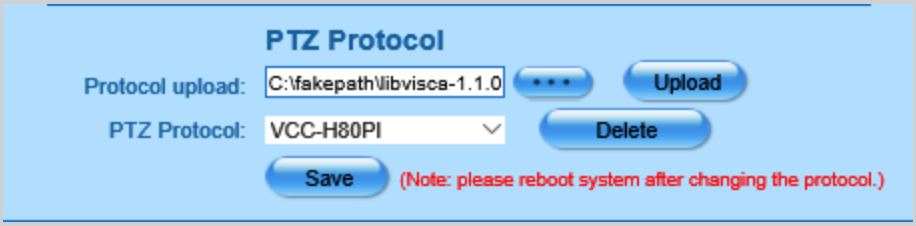
- Use the arrow buttons to control the movement of the camera where the left and right arrows control the pan movements, the up and down arrows control the tilt movements, the plus button zooms in, and the minus button zooms out.

4. Camera Address Bit

- Use these pull down menus to set the camera address bit to match what you have set your camera for when integrating them. This control is only applicable when multiple cameras are connected to the RS-232 or RS-485 camera control port of the Bee8.

PTZ Protocol

- This section allows users to upload protocol to the Bee8 in the rare and unlikely event that the standard protocol set included with the Bee8 will not control a connected camera. To upload camera control protocol software to the Bee8, click the 3 dot button to search your computer for the software and select it. when the file name appears in the text box, press the upload button. ***Note: The Bee8 must be restarted after successfully uploading camera control protocol software. Also note that this software must be linux compatible.***



Settings Page Image Adjustment Tab

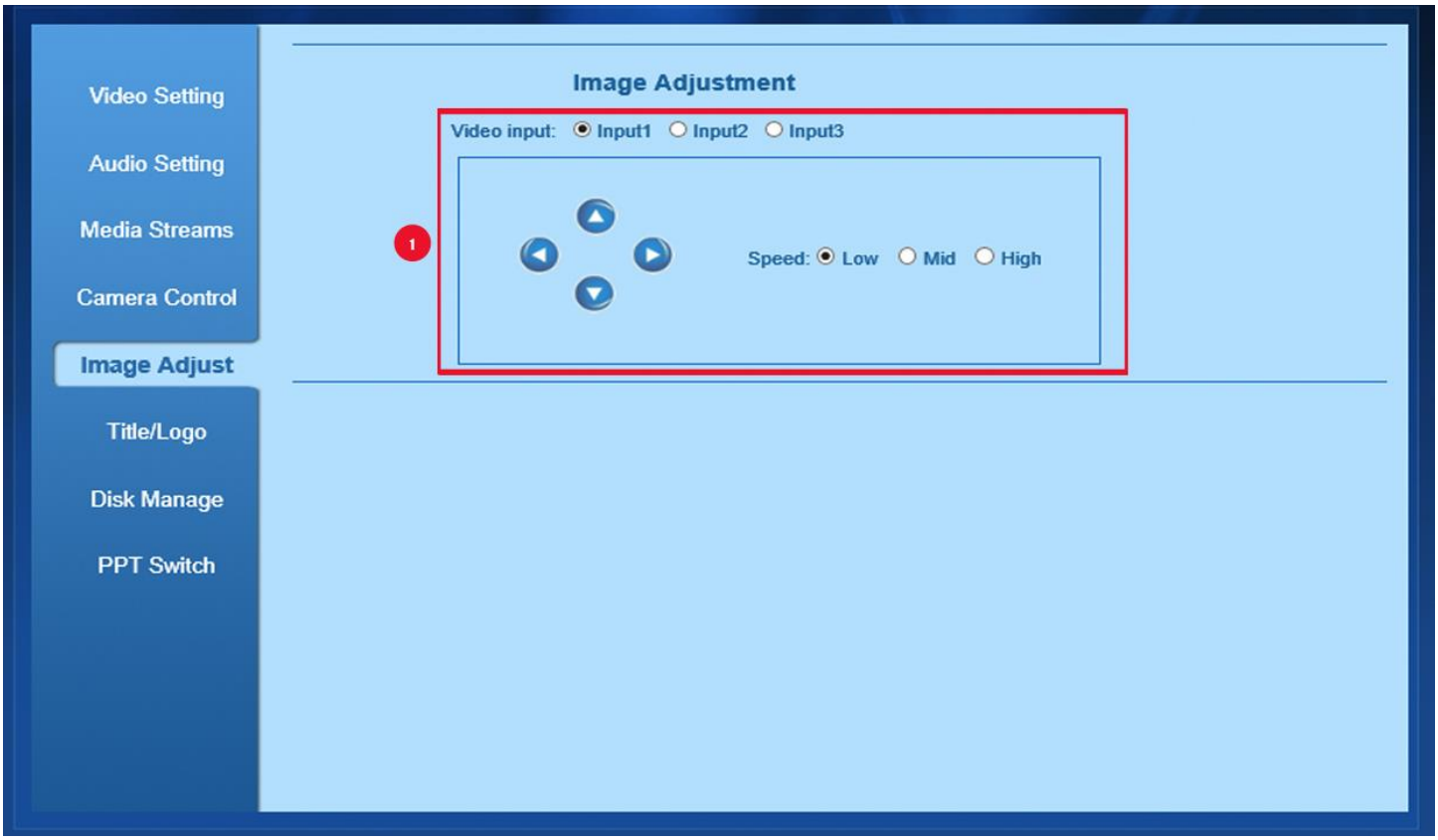


Figure 11 Image Adjustment Tab

1. Image Adjustment

- Select which input is not properly centered, and use the arrow buttons to center the content as desired. The speed controls affect how quikly the image moves within the frame. ***NOTE: This control works only with analog signals such as VGA or composite SD video. Digital signal video phase is not adjustable, nor should it be.***

Settings Page Title/Logo Tab

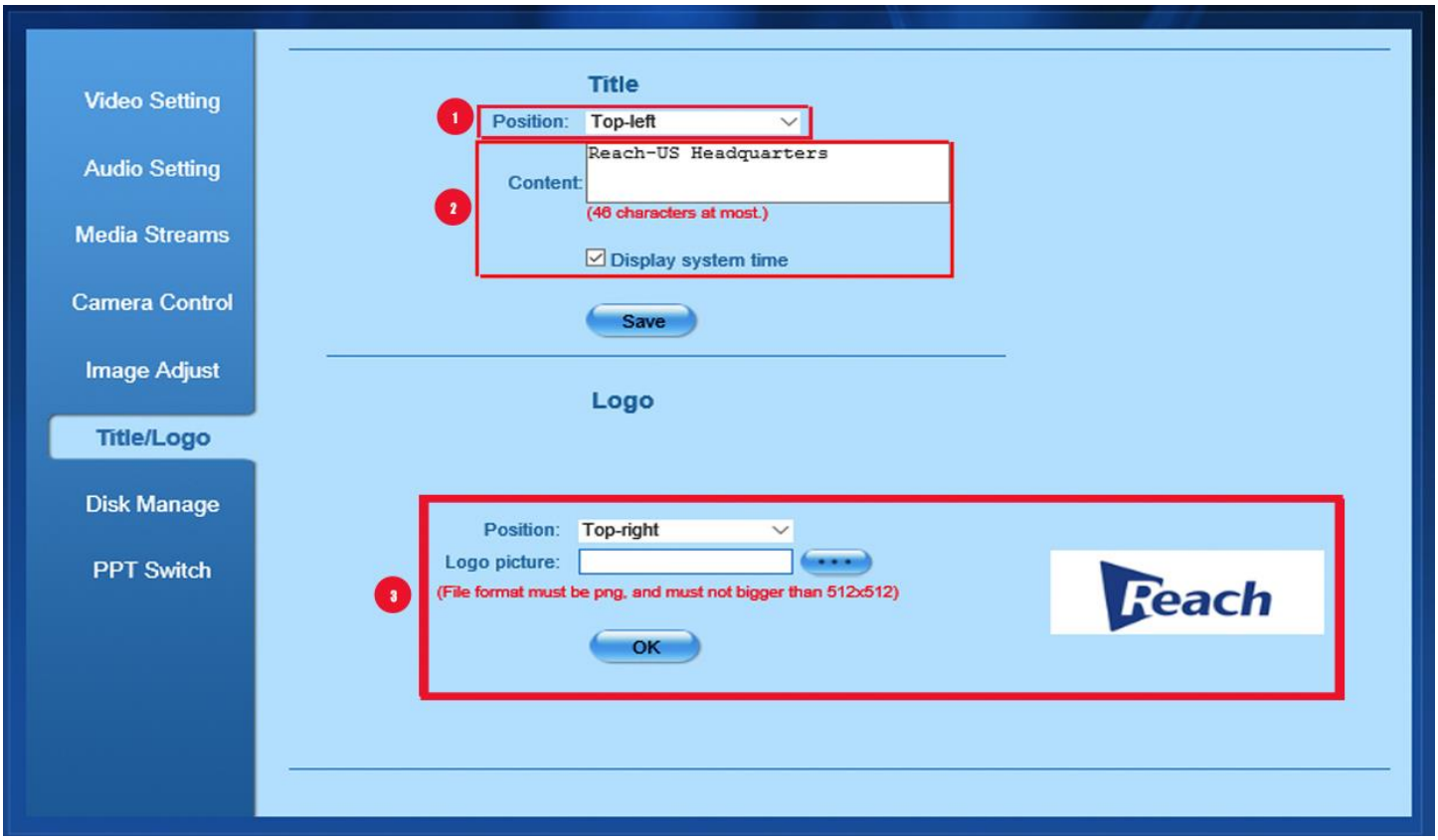


Figure 12 Title-Logo Tab

1. Title Position

- This pull down menu gives you the option of placing a title in the ***Top Left***, ***Top Right***, ***Bottom Left***, or ***Bottom Right*** of the display.After you have completed any changes in this section press ***Save*** to commit them.

2. Content Text Box

- Enter the content of the title here. You can also decide to display the System Time by checking the box below.After you have completed any changes in this section press ***Save*** to commit them.

3. Logo Placement

- Position the logo. This pull down menu gives you the option of placing a title in the ***Top Left***, ***Top Right***, ***Bottom Left***, or ***Bottom Right*** of the display. Logo Picture. Press the button with three dots to locate the file you wish to use as a logo. This file ***MUST*** be in PNG file format, no larger than 5132 X 512 pixels.After you have completed any changes in this section press ***OK*** to commit them. A preview of the file will appear to the right.

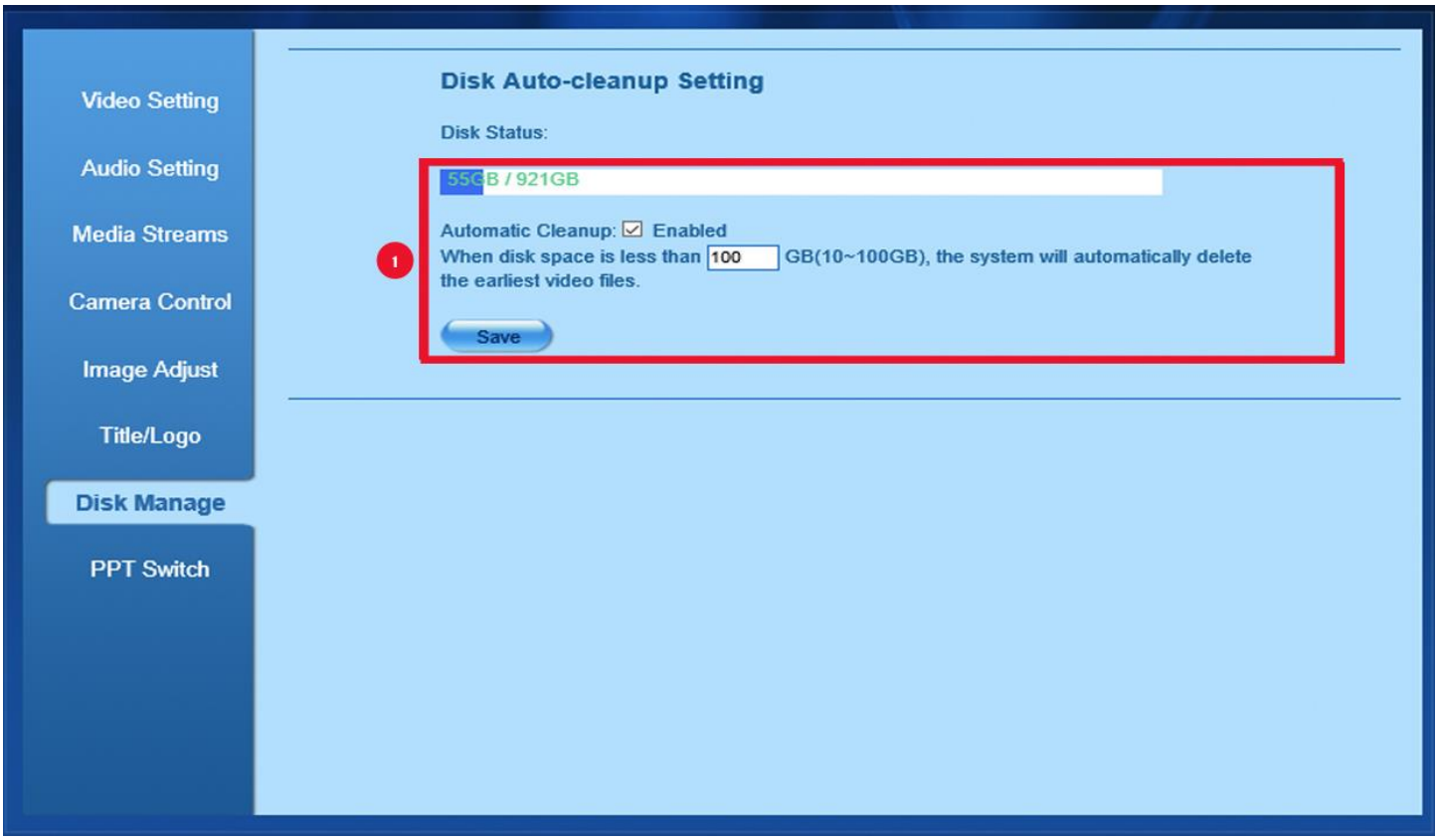


Figure 13 Disk Management Tab

1. Disk Management

- This control allows user to allow Bee8 to self-manage the 1TB internal hard drive wen Automatic Cleanup is checked. Users may specify when to delete files based on age by specifying a minimum remianing disk space parameter (selectable range is 10-100GB). When this parameter is reached, the oldest file(s) will be deleted.

Settings Page PPT Switch Tab

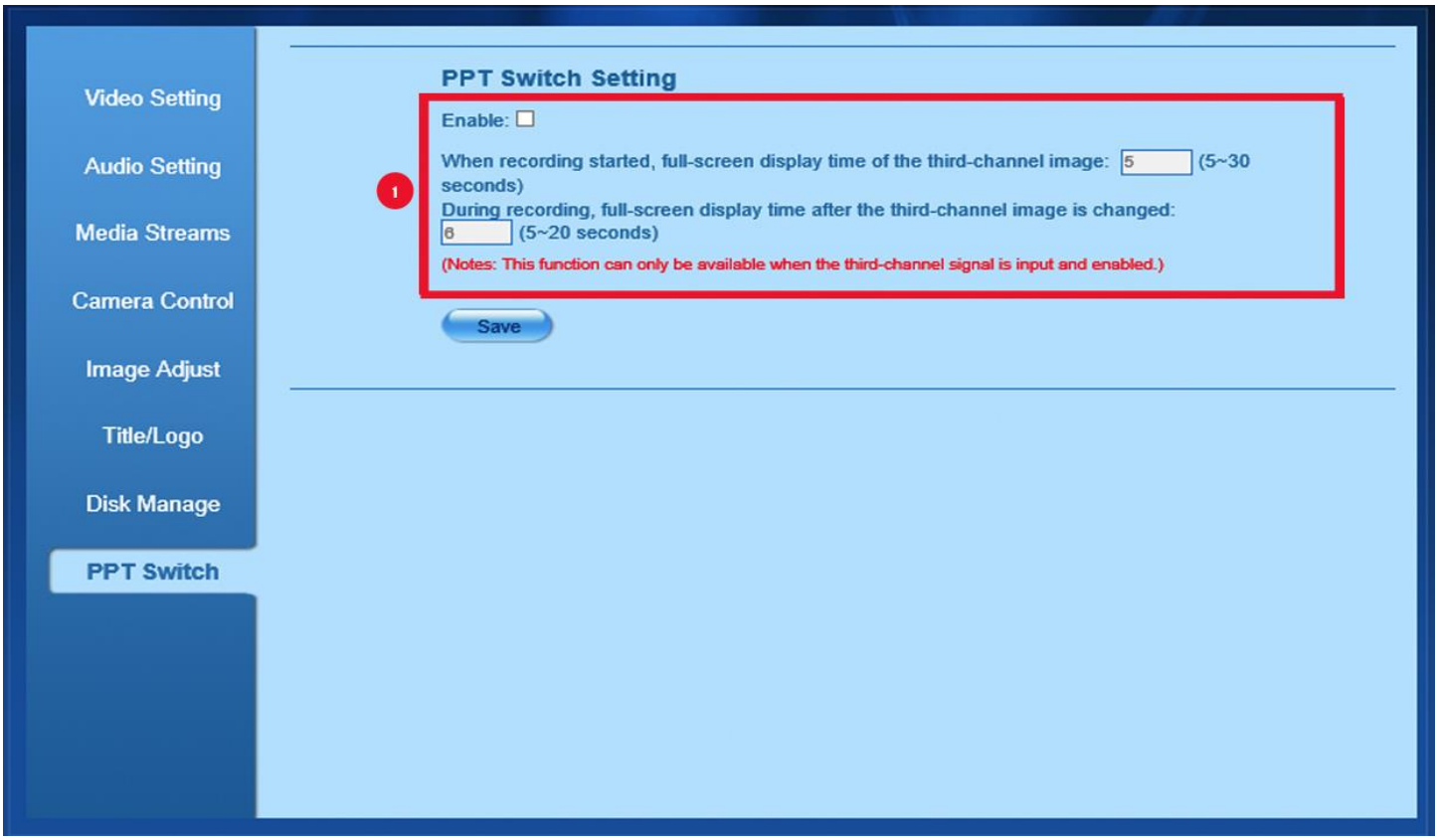


Figure 14 PPT Switch Tab

1. PowerPoint Switch

- PowerPoint Switch is an automated feature of the Bee Series appliances which automatically presents the Title slide for a user specified duration when the recording is started, then presents each slide full screen for a user specified duration, whenever a slide change is made. To enable this feature, check the enable box. Set the duration for the Title slide, and each subsequent slide changes in the appropriate text box. Range for the title slide is 5-30 seconds and subsequent slide changes is from 5-20 seconds. Commit the changes you made by pressing the save button.

System Config Page

The System Configuration Page is an engineering page. Much of the functionality that can be engaged on this page is part of the initial set-up, and will not need to be changed ever again. This section is also broken down by the 8 tabs that present on this page. In Section 3 the Network Tab was set up. This section will continue to the next tab.

System Config Page Users Tab

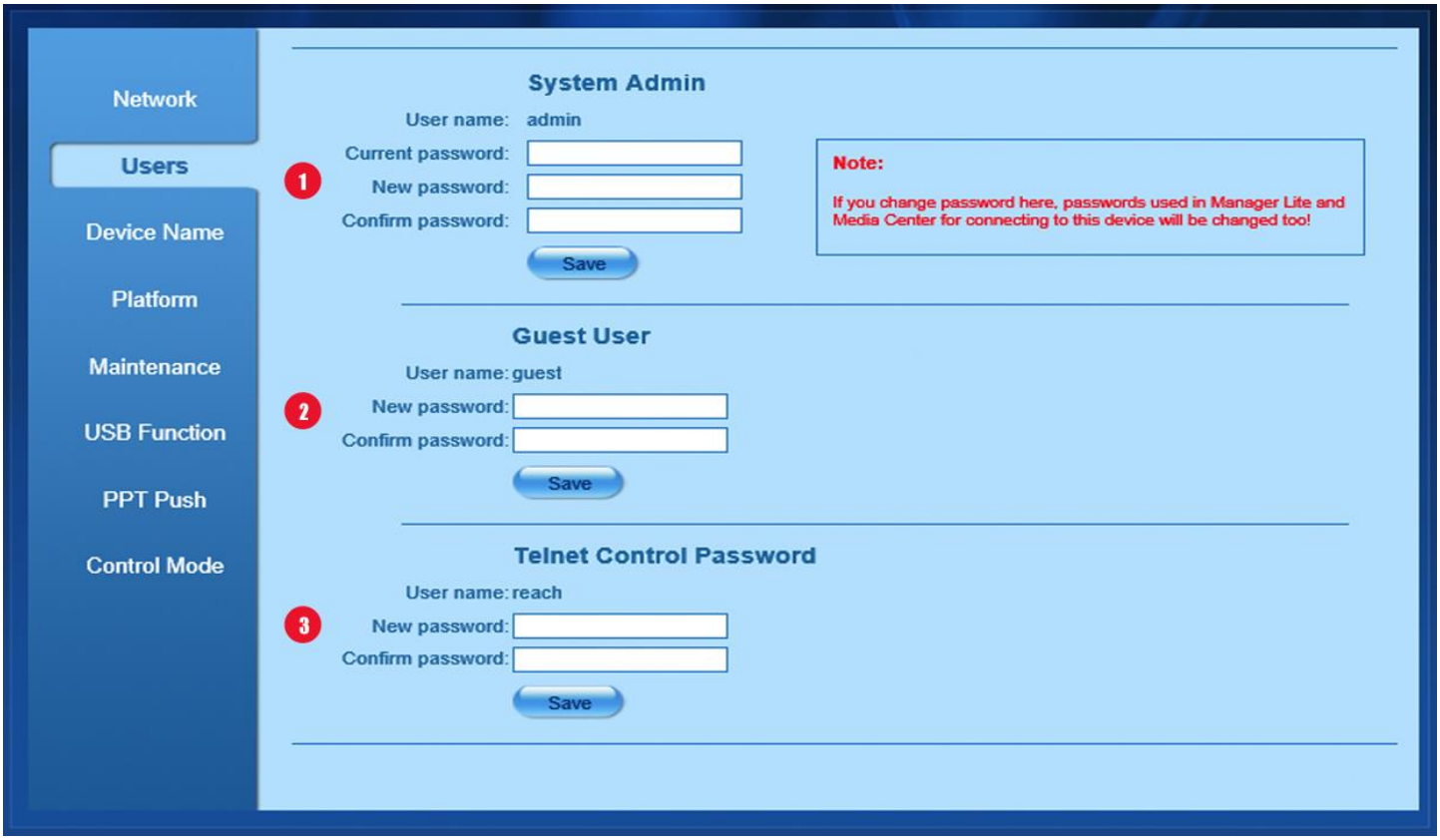


Figure 15 User Tab

1. Admin

•You can change the administrator password here. The default password from the factory is ***admin***.

2. guest

•You can change the guest password here. The default password from the factory is ***guest***.

3. Telnet Control Password

•You can change the telnet password here. The default password from the factory is ***szreach***.

System Config Device Name Tab

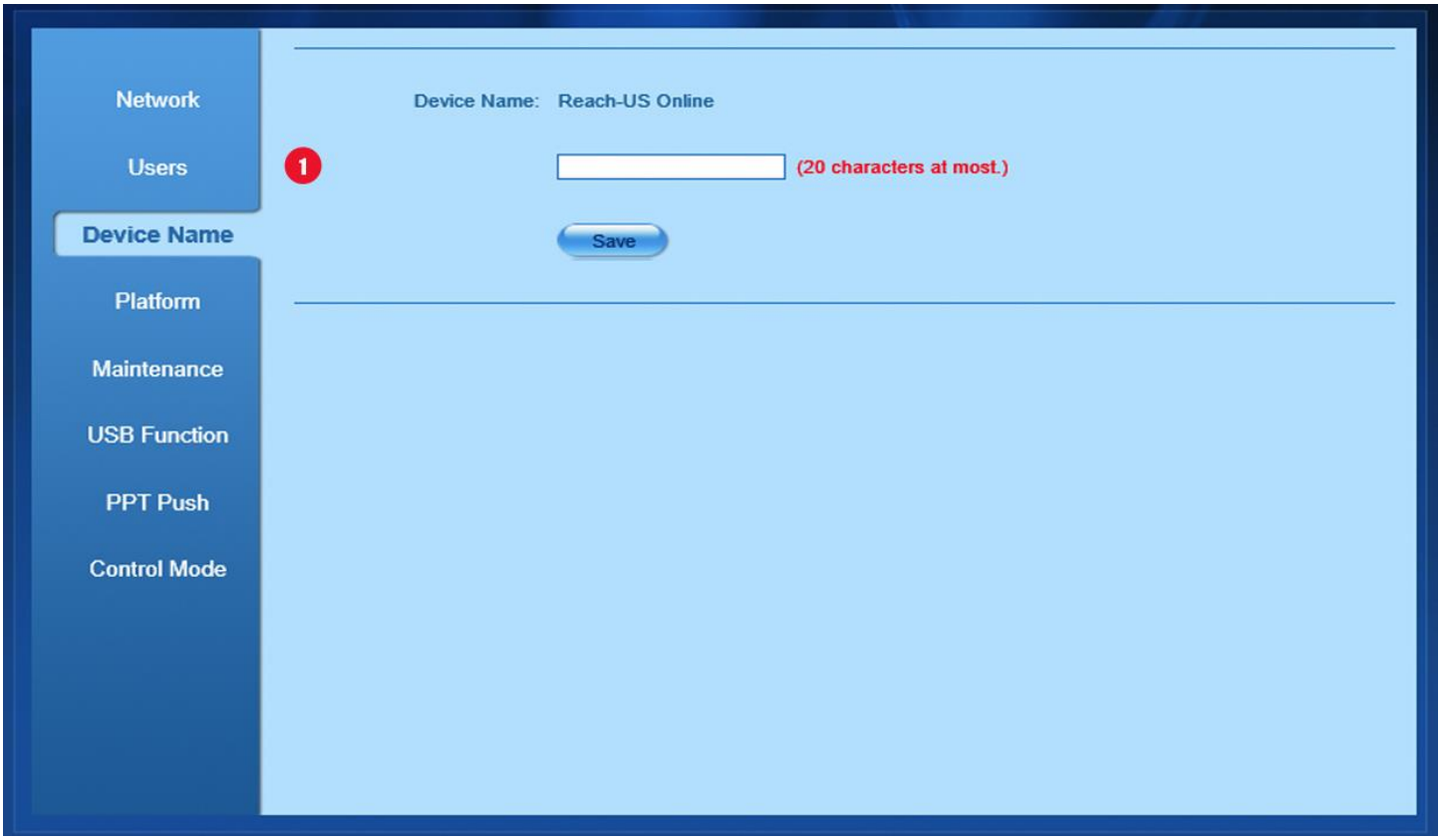


Figure 16 Device Name Tab

1. Device Name

- You can enter a user name for this device to assist in quickly locating it when connected to a Media Center Server.

System Config Platform Tab with Media Center chosen

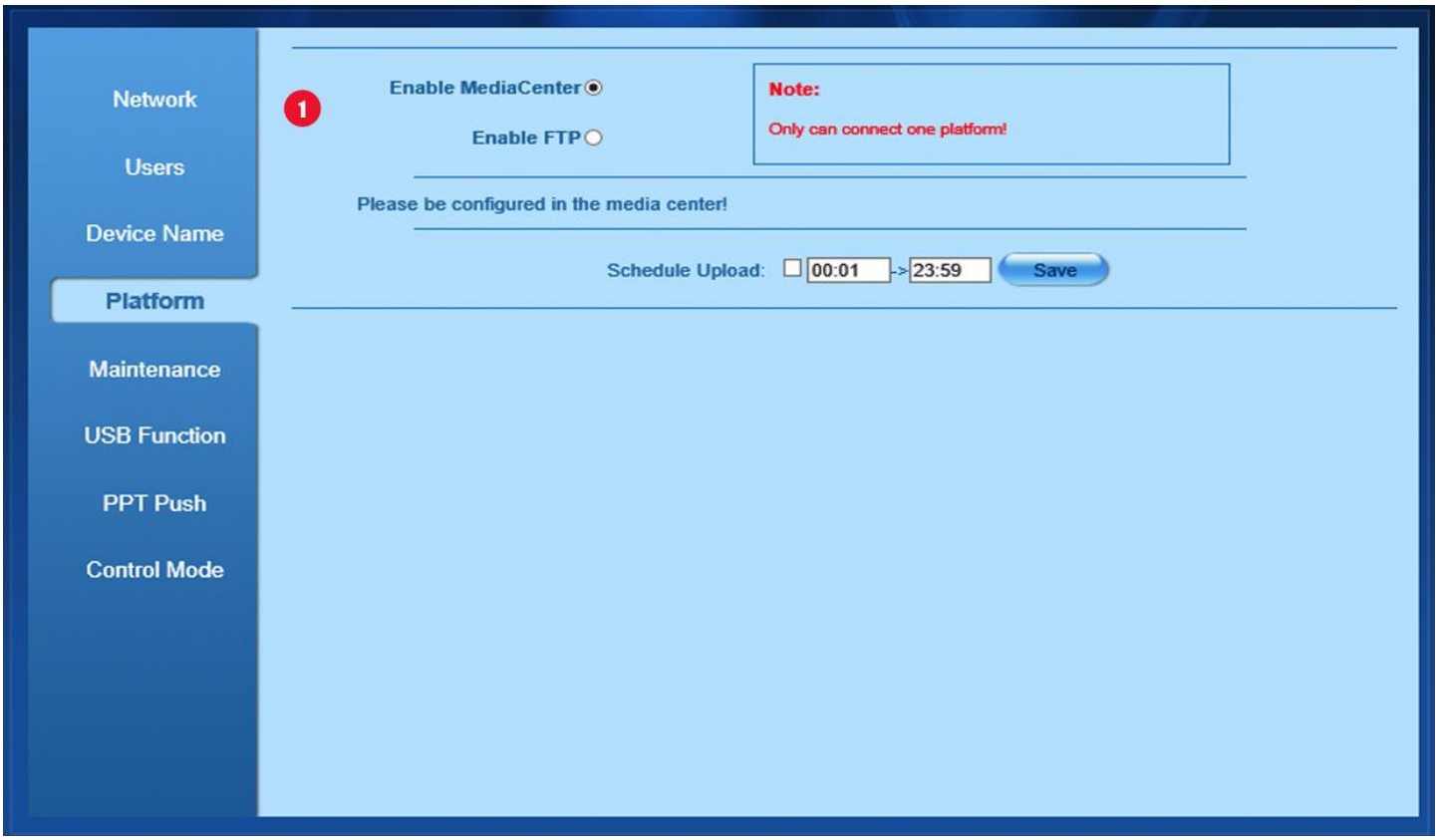


Figure 17 Device Platform Media Center Tab

1. Platform

- You can choose which platform you are interfacing with here. The default is ***Media Center*** and the option is ***FTP***. If you choose FTP an additional set of text boxes will appear.

System Config Platform Tab with FTP option chosen

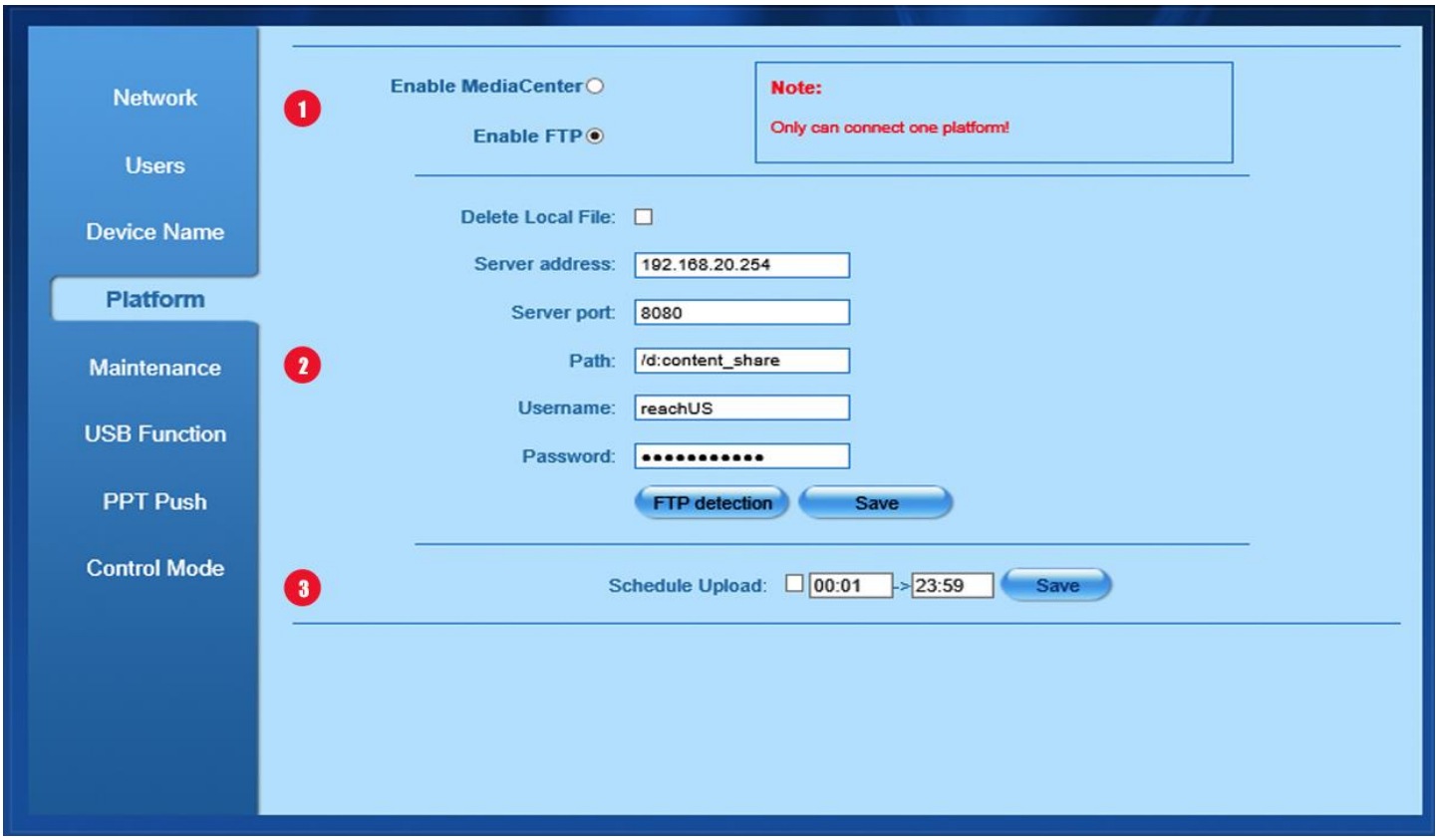


Figure 18 Platform Tab FTP Server Tab

1. Choose FTP

- Press the FTP radio button to choose an FTP server as your file distribution point. A dialog box will appear confirming your selection, and you will be presented with the following textboxes to route the content to the FTP Server.

2. FTP Server Network Credentials

- Enter the FTP Server IP address, Port, and the directory where the content is to be stored for distribution. After you have entered this information, click save to commit the changes. You can test your connection by pressing the ***FTP Detection*** button.

3. Schedule Upload

- By entering times here, you can conveniently set a period during low network activity to upload the content from the Bee8 to either the Media Center or the FTP server.

System Config Page Maintenance Tab

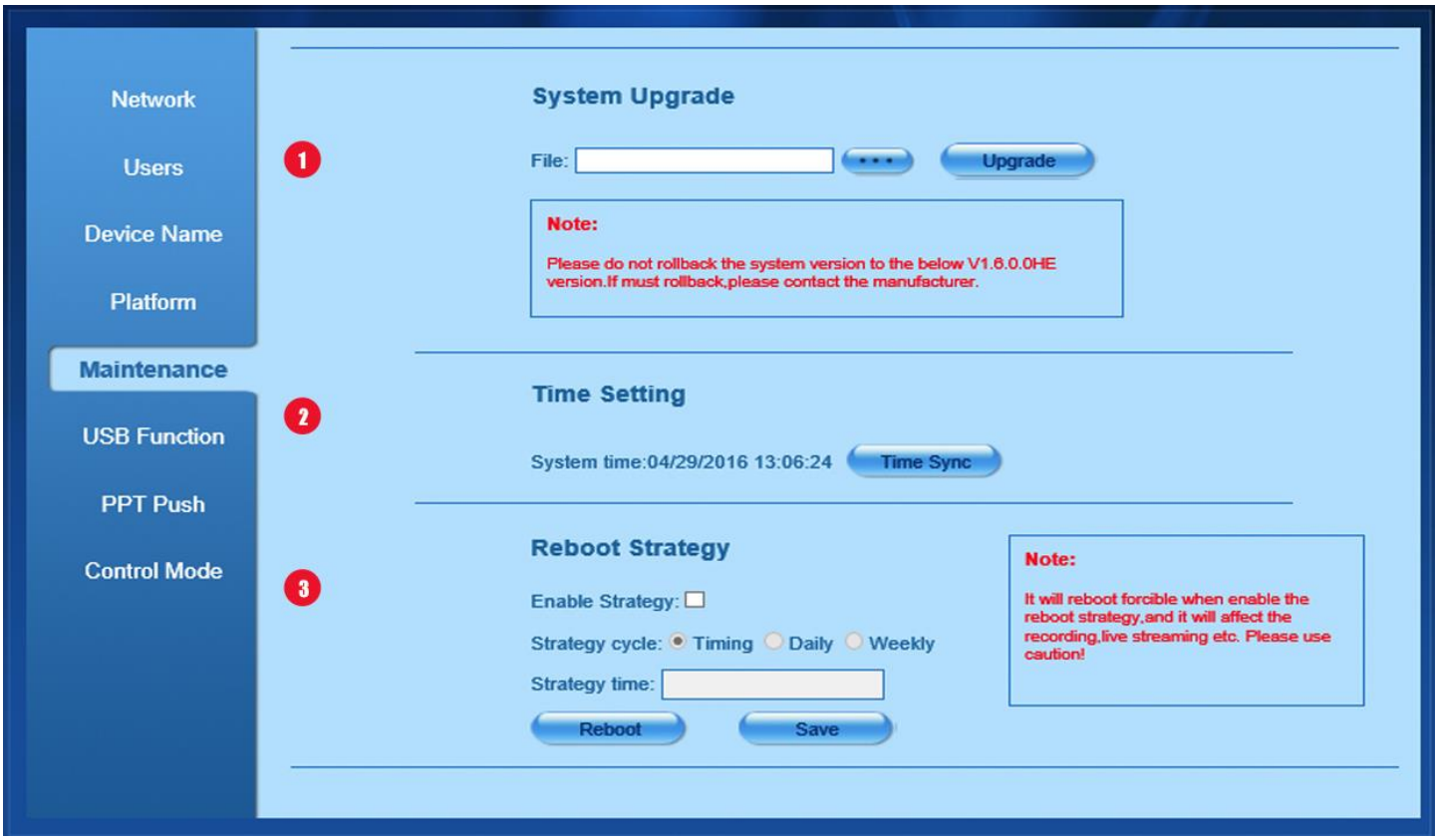


Figure 19 Maintenance Tab

1. System Upgrade

•When Reach-US creates an update to its firmware for the Bee8, you can download it from our website (www.reach-us.net/downloads). Press the 3 dot button and locate the file you downloaded, then press the ***Upgrade*** button. ***Note: the update process may take up to ten minutes, and when its finished, the Bee8 will restart. BE PATIENT! Never cycle the power while the Bee8 is installing as it may corrupt the operating system.***

2. Time Setting

•If the Bee8 system time does not match server time, press the ***Time Sync*** button.

3. Reboot Strategy

•In this set of controls, you can restart the Bee8, or schedule a reboot when the Bee8 is idle. To do this, first check the ***Enable Strategy*** box, then choose the option you desire; either a one time reboot event, a daily strategy, or a weekly strategy. Alternately you can press the ***Rebbot*** button to restart the Bee8 now.

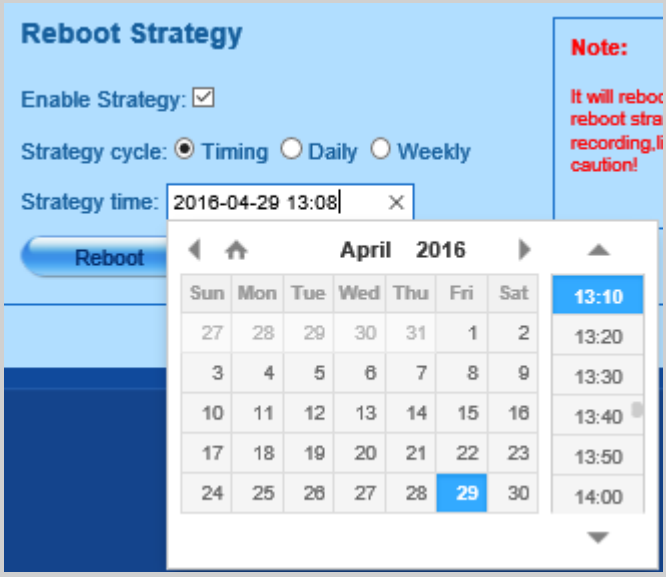


Figure 17 One-time reboot strategy

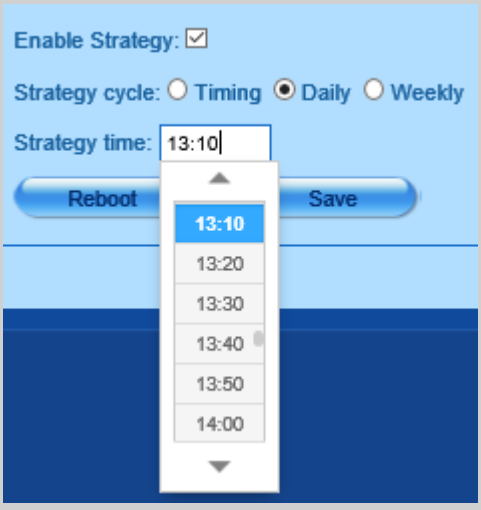


Figure 18 Daily Reboot Strategy

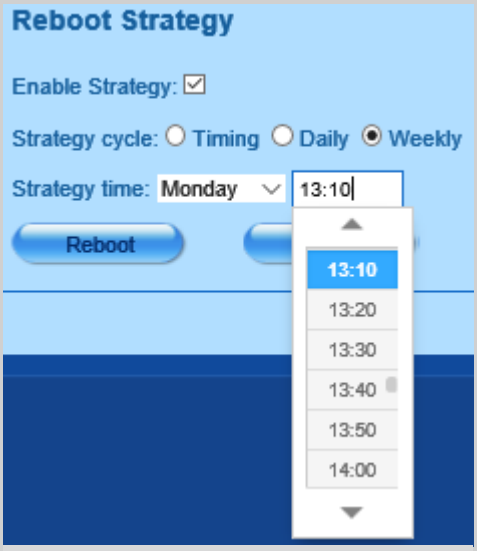
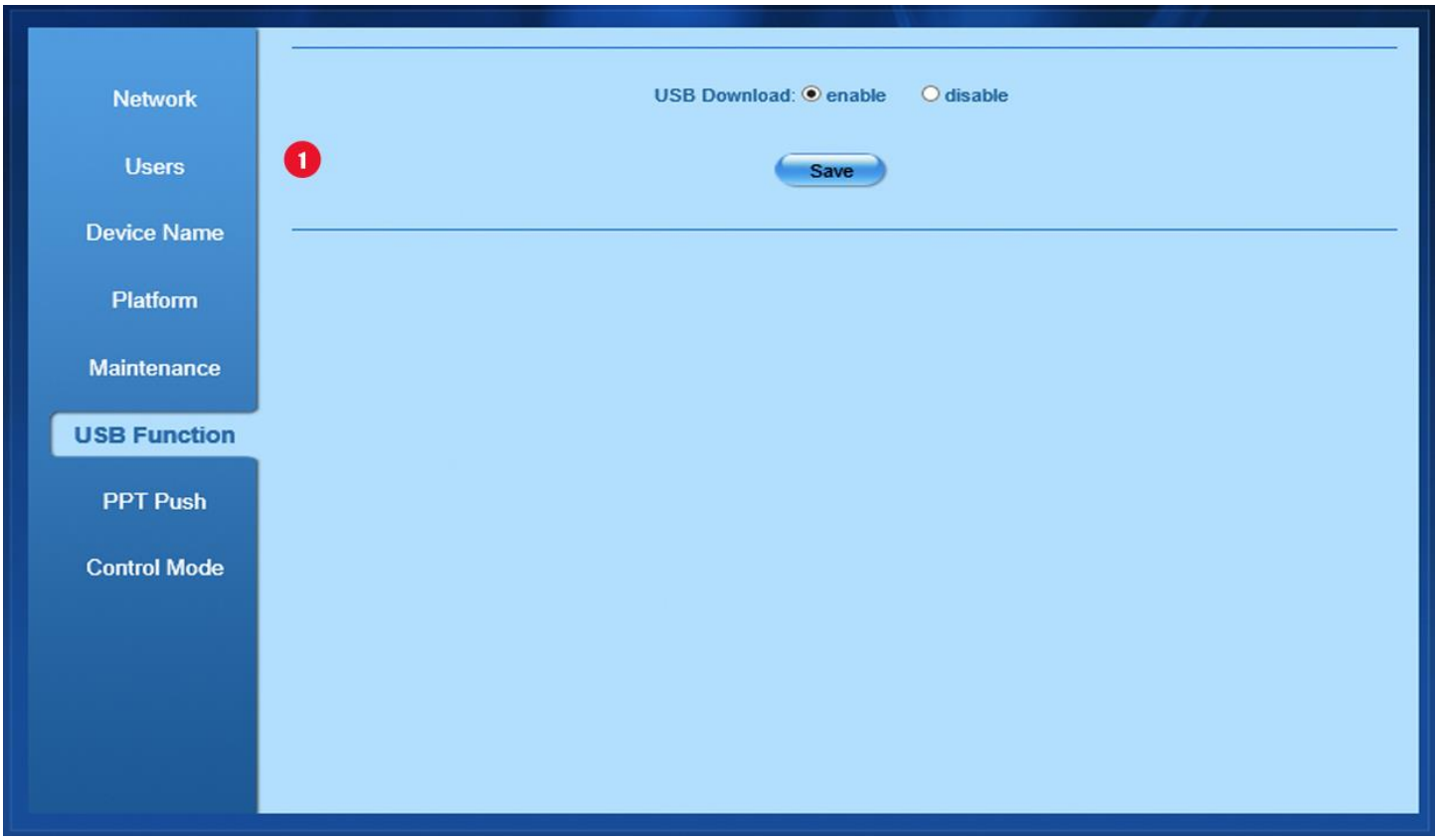


Figure 19 Weekly Reboot Strategy

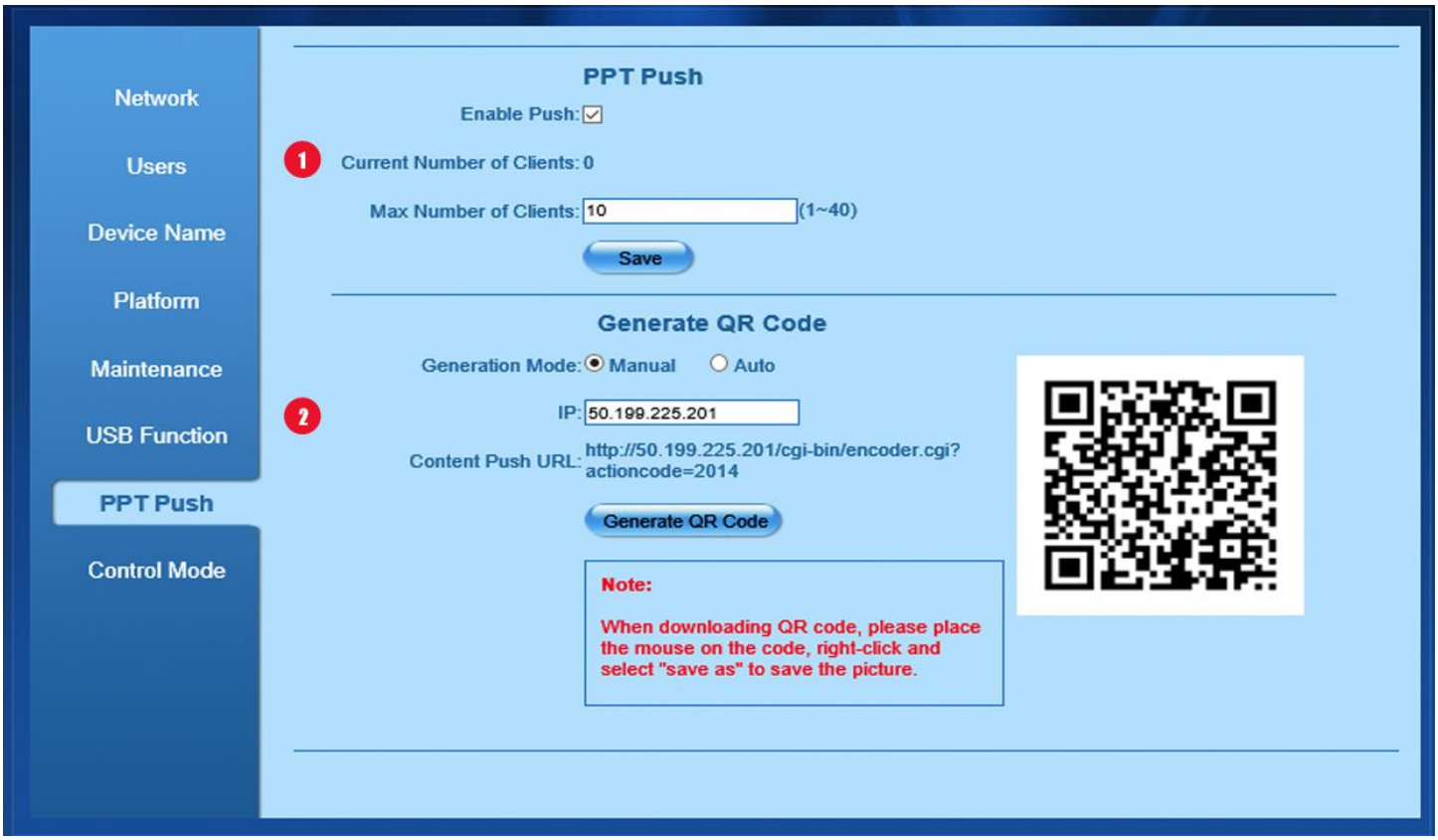
System Config USB Tab



1. USB Download

- Press the ***enable*** radio button to allow users to either redundantly record, or download recorded files.

System Config PPT Push Tab



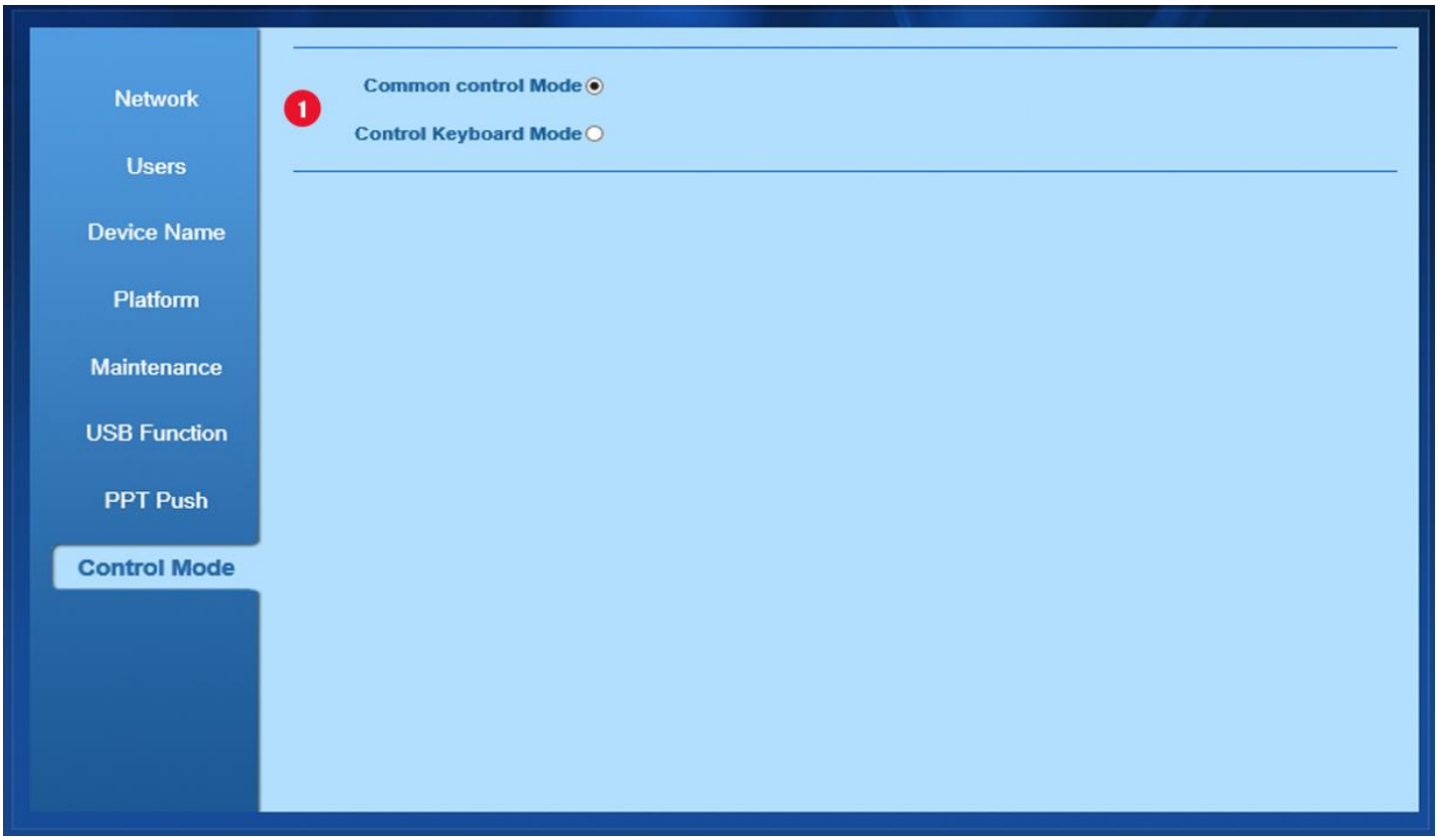
1. PPT Push

- To enable PowerPoint Puch check the ***Enable Push*** box. Below you can enter the maximum amount of users that can connect to the Bee8 content microstreams. (Range is 1 to 40)

Generate QR Code

- A QR Code is generated for the IP address of the Bee8 and the redirect to the microstream; in this case http//50.199.225.201/cgi-bin/encoder cgi? actioncode-2014. If ***Auto*** is selected the Bee8 will create the QR Code for you, in ***Manual*** you can enter the IP address yourself, and the Bee8 will supplement it with the redirect code. Th download the generated QR Code, right click on it and save it to your computer. Print The QR Code and locate it somewhere in the Room where users may scan it to view the presentation content on their handheld devices full screen.

System Config Page Control Tab



1. Common Control/Keyboard Mode Select

- In this section, by selecting ***Common Control Mode***, the Bee8 will respond to external control commands from a Crestron controller or other control device, either by Telnet or serial command strings.
- ***Control Keyboard Mode*** enables the serial port only, for use with the Reach P001 remote control keyboard.

System Info Page

The ***System Info*** page displays all the working verions of the internal software, the Bee8 Serial Number, Drive utilization, and what server the Bee8 is connected to, as well as if the unit is under control of the Manager Lite App.

Section 5 External Control

Telnet Control considerations

Reach Engineers have strived to make the Bee8 an easily and comprehensively controllable device. This manual provides the Record Function commands for both Telnet and serial communication. A separate manual provides the entire list of commands utilized for both Telnet and serial communications

To establish communications with the Bee8, point the control device at the Bee8 IP address followed by the Telnet port (15555). ***Example 192.168.1.1:15555***

When controlling the Bee8, each command, or set of commands is a unique Telnet session. It is necessary, therefore, to send a login string with each command set sent to the Bee8. The default Telnet user name is ***reach***, and the default password is ***szreach***.

Every control system is different, but for the most part, commands need only be sent once in each session. In less capable control systems, commands may need to be sent twice in order for the Bee8 to respond appropriately.

A string example to start a recording session is:

reach&h0dszreach&h0dtnrc record brecord:1&h0d *where:*

reach is the user name

tnrc record brecord:1 is the record command string

szreach is the password

&h0d is a carriage return

Please also note that Bee8 will return acknowledgements to all commands, and the feedback can be used to trigger other commands in the control structure of your code. The Quick Start commands listed below detail the feedback possibilities the Bee8 will respond.

Serial Control Considerations

Serial commands are sent to the bee8 over an RS-422 or RS-485 connection, as the Bee8 will be returning feedback to every command sent. The communications, therefore are required to be full duplex. The serial communication parameters are:

Baud Rate 9600 bps

Word size 8 bit

Parity None

Stop Bit 1

Command Structure Hexadecmal

A string example to start a recording session is:

3c 3c c2 80 00 01 3e 3e *where:*

3c 3c is the prefix

00 01 is the start command

80 is the record command

3e 3e is the suffix

Please also note that Bee8 will only return acknowledgements when a command is successfully executed in serial command mode. All commands listed below detail the acknowledgement feedback the Bee8 will respond.

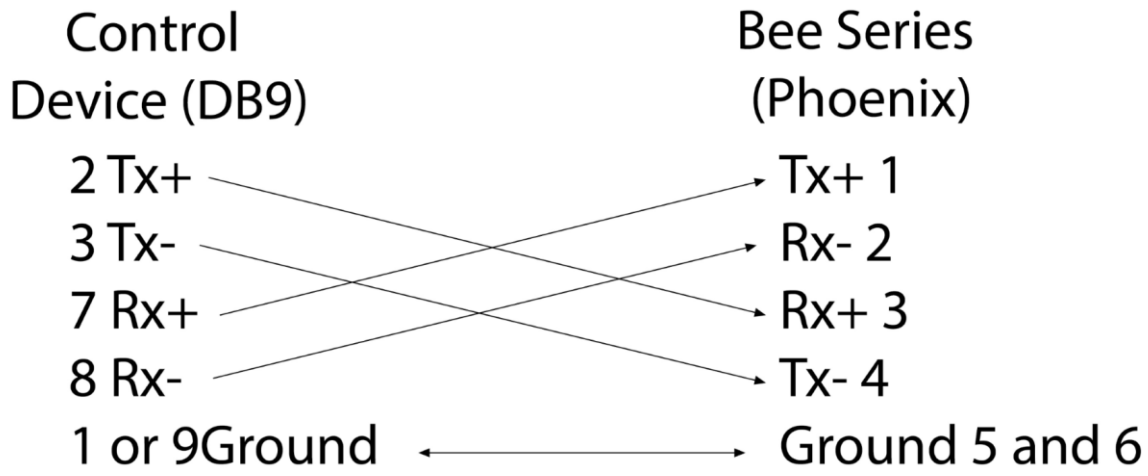


Figure 20 Serial Control Pinout

Unified Command Table

Command Name	Telnet Command String/Returned Feedback	Serial Command String
Record Start	tnrc record bRecord:1 operate success ERROR: already record	3c 3c c2 80 00 01 3e 3e 3c 3c c2 80 0f 6f 70 65 72 61 74 65 20 73 75 63 63 65 73 73 3e 3e
Record Pause	tnrc record bRecord:2 operate success ERROR: already pause" pause	3c 3c c2 80 00 02 3e 3e 3c 3c c2 80 0f 6f 70 65 72 61 74 65 20 73 75 63 63 65 73 73 3e 3e
Record Stop	tnrc record bRecord:0 operate success ERROR: already stop	3c 3c c2 80 00 00 3e 3e 3c 3c c2 80 0f 6f 70 65 72 61 74 65 20 73 75 63 63 65 73 73 3e 3e