BrightEye™

BrightEye NXT Routers
Quick Start Guide
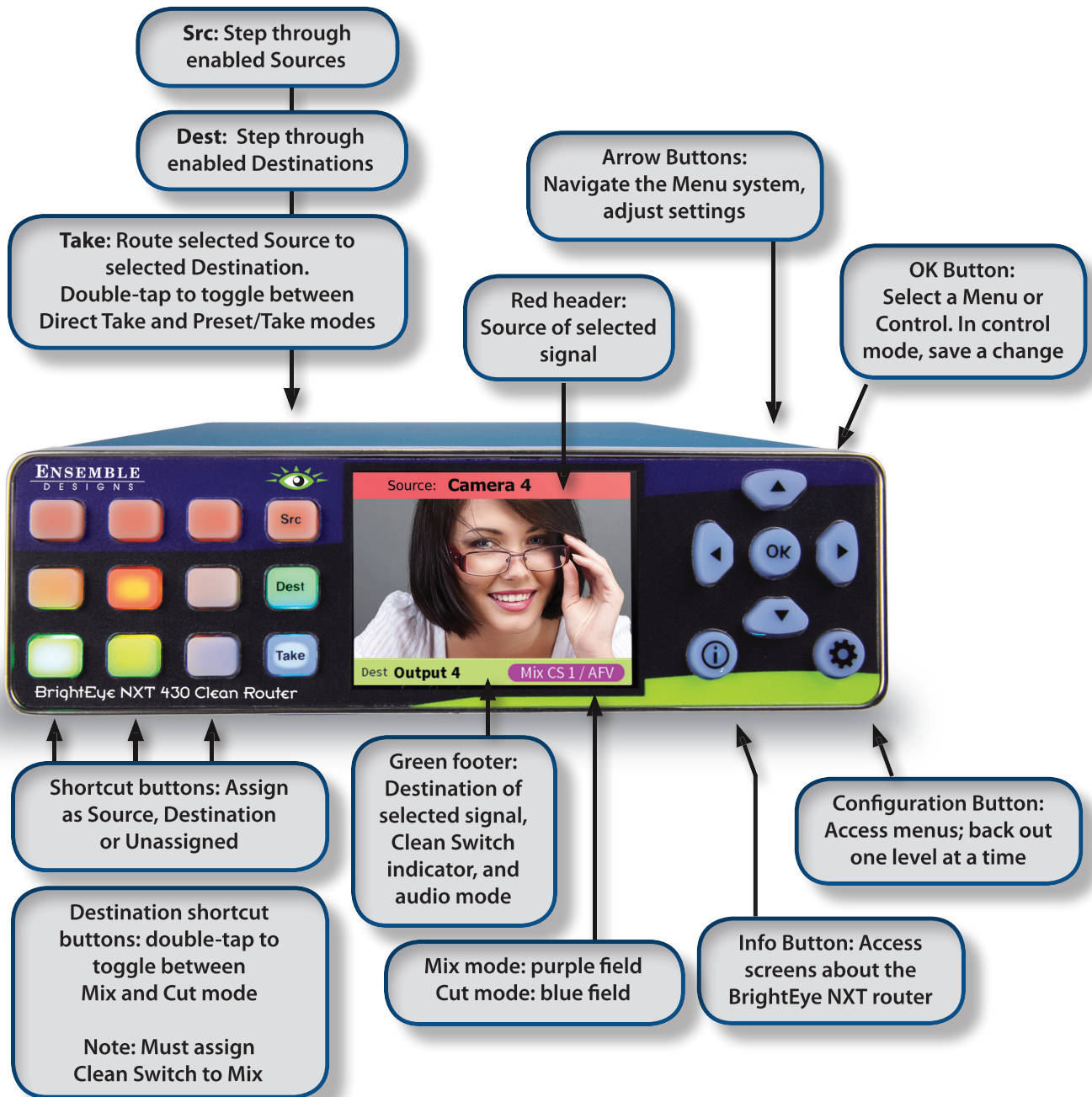
Clean and Quiet Video and Audio Routing Switchers

Models 430-X, 430, 415, 410-H, 410
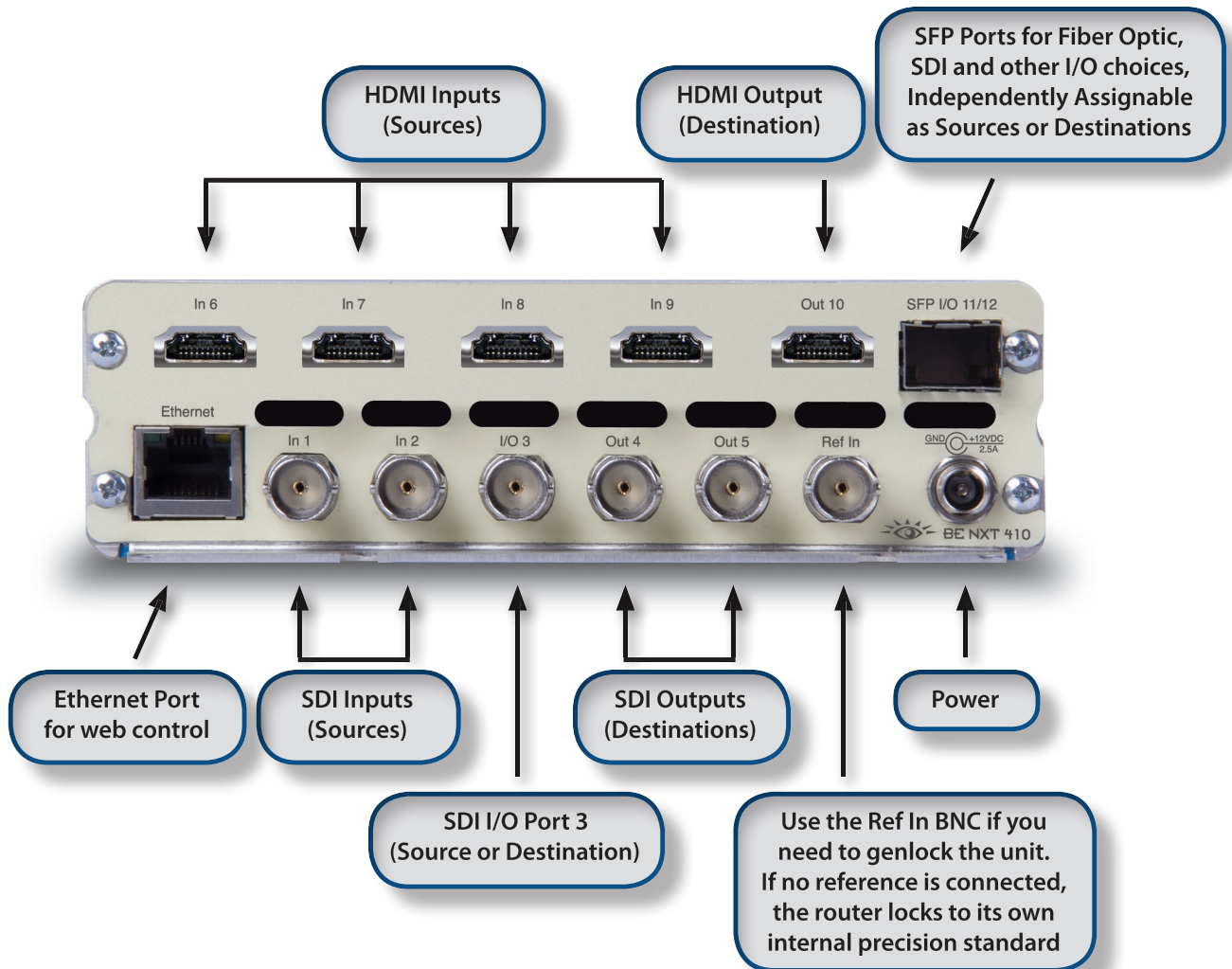

ENSEMBLE
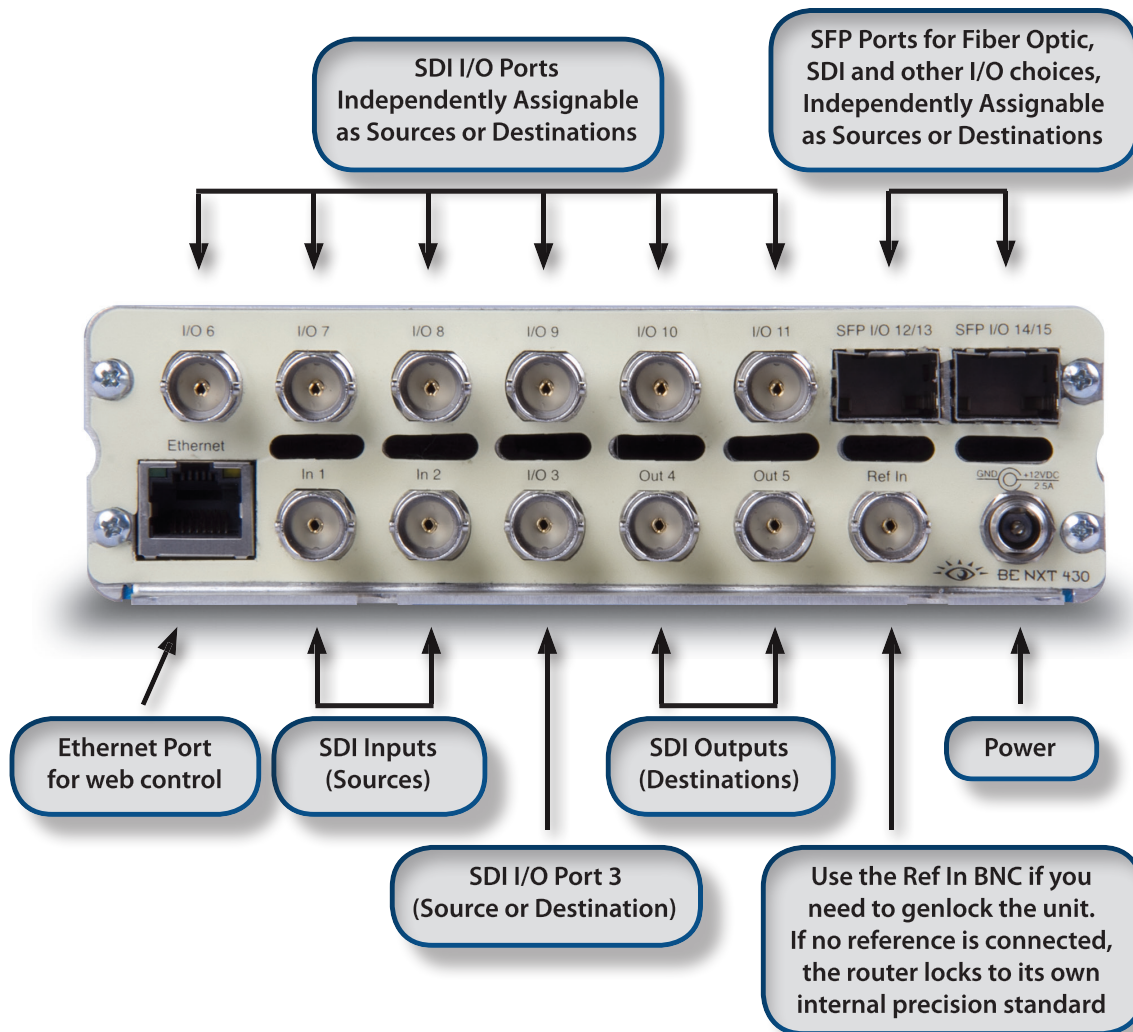## D E S I G N S

Front Panel Controls

Src: Step through enabled Sources

Dest: Step through enabled Destinations

Take: Route selected Source to selected Destination. Double-tap to toggle between Direct Take and Preset/Take modes

Arrow Buttons: Navigate the Menu system, adjust settings

Red header: Source of selected signal

OK Button: Select a Menu or Control. In control mode, save a change

ENSEMBLE
D E S I G N S

Src

Dest

Take

BrightEye NXT 430 Clean Router

Source: **Camera 4**

Dest **Output 4**   Mix CS 1 / AFV

OK

Shortcut buttons: Assign as Source, Destination or Unassigned

Destination shortcut buttons: double-tap to toggle between Mix and Cut mode

Note: Must assign Clean Switch to Mix

Green footer: Destination of selected signal, Clean Switch indicator, and audio mode

Mix mode: purple field Cut mode: blue field

Info Button: Access screens about the BrightEye NXT router

Configuration Button: Access menus; back out one level at a time

Models 410-H and 410 Rear Connectors

HDMI Inputs
(Sources)

HDMI Output
(Destination)

SFP Ports for Fiber Optic,
SDI and other I/O choices,
Independently Assignable
as Sources or Destinations

Ethernet Port
for web control

SDI Inputs
(Sources)

SDI Outputs
(Destinations)

Power

SDI I/O Port 3
(Source or Destination)

Use the Ref In BNC if you
need to genlock the unit.
If no reference is connected,
the router locks to its own
internal precision standard

Models 430-X, 430 and 415 Rear Connectors

SDI I/O Ports
Independently Assignable
as Sources or Destinations

SFP Ports for Fiber Optic,
SDI and other I/O choices,
Independently Assignable
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Ethernet Port
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SDI Inputs
(Sources)

SDI Outputs
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Power

SDI I/O Port 3
(Source or Destination)

Use the Ref In BNC if you
need to genlock the unit.
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the router locks to its own
internal precision standard

Ventilation

Maintaining proper airflow is required to keep the NXT's internal temperature normal. Air input occurs below the front panel. Air output occurs through the rear panel. If placing the unit on a surface, the four feet must be mounted on its base. If mounted in a rack, the unit must be installed in such a way that the air flow on the front and rear is not restricted. Our BERKMT-Full rack mount kit, designed for this purpose, holds up to 3 NXT units in a 1RU rack.

Connecting Cables to Ports

BrightEye NXT 410-H and 410 Default Port Configuration

The default port configuration for the BrightEye NXT 410 is shown below. Ports that are Unassigned, such as Port 3, can be configured from the front panel either as a Source or Destination, as described on page 8. The two Clean Switches (CS) can be assigned to Destinations as described on pages 10 and 11.

In 1: Source	In 6: Source	SFP I/O 11: Unassigned
In 2: Source	In 7: Source	SFP I/O 12: Unassigned
I/O 3: Unassigned	In 8: Source	TSG 1: Source
Out 4: Destination	In 9: Source	TSG 2: Source
Out 5: Destination	Out 10: Destination	CS 1: Unassigned
		CS 2: Unassigned

BrightEye NXT 430-X, 430 and 415 Default Port Configuration

The default port configurations for the BrightEye NXT 430-X, 430 and 415 are shown below. Ports that are Unassigned, such as Port 3, can be configured from the front panel either as a Source or Destination, as described on page 8. The two Clean Switches (CS) can be assigned to Destinations as described on pages 10 and 11.

In 1: Source	I/O 6: Unassigned	SFP I/O 12/13: Unassigned
In 2: Source	I/O 7: Unassigned	SFP I/O 14/15: Unassigned
I/O 3: Unassigned	I/O 8: Unassigned	TSG 1: Source
Out 4: Destination	I/O 9: Unassigned	TSG 2: Source
Out 5: Destination	I/O 10: Unassigned	CS 1: Unassigned (430, 430-X)
	I/O 11: Unassigned	CS 2: Unassigned (430, 430-X)

Connect Reference If Needed

The BrightEye NXT locks to house reference or to its own internal precision standard. Select Internal or External from the Timing & Genlock menu.

Connect Power Supply

Connect the power supply that is provided with the BrightEye NXT unit. The boot up process takes about 40 seconds.

Note: BrightEye NXTs must be powered by their own product-specific power supply that comes with each unit. This is a 5 amp single power supply, Ensemble Designs part number 23600106, order info: BEPS-NXT. DO NOT use a BrightEye Spider power supply (BEPS6) or a BrightEye Individual power supply (BEPS, ED part number 23118900).

Panel Mode
Preset / Take

Panel Mode
Direct Take

Changing Output 4
Transition to:
Mix

Selecting Sources and Destinations and Making a Cross Point Switch

Preset/Take Panel Mode

Use the **Dest** button to step through the router's Destinations. The router's LCD will show the signal on each Destination. Stop on the Destination you want to use.

Likewise, use the **Src** button to step through and then select a Source. The LCD will display the Source, whether it's a video input or an internal test signal.

Once you've selected a Destination and a Source, press **Take** to make a cross point switch.
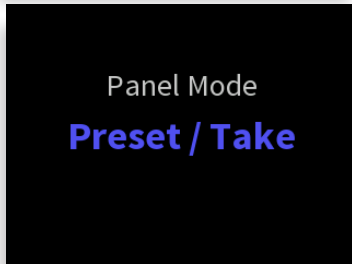
Direct Take Panel Mode

Double-tap the **Take** button to enter Direct Take panel mode. In this mode, selecting an assigned source shortcut button instantly makes a cross point switch to the already-selected destination. Double-tap the **Take** button again to return to Preset/Take mode.
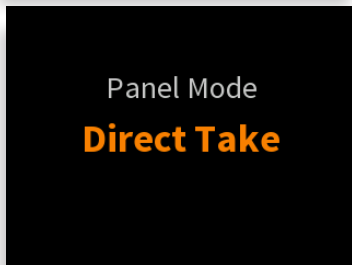
Mix Transition Panel Mode

For destinations that are going through a Clean Switch, you can mix transitions from the front panel using configurable transition durations. Switch between Mix mode and Cut mode by double-tapping the assigned destination shortcut button. Adjust the transition duration through the **Panel Config** menu.
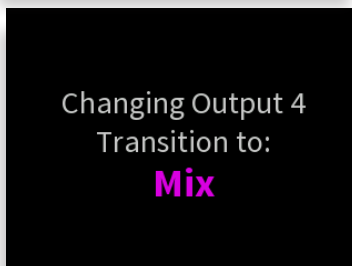
Front Panel Navigation

Press (⚙) to bring up the configuration menus on the front panel screen.

Use the (⌄⌃) arrows to scroll through the configuration menus, navigate submenus, or to change the values of a selected setting.

Press (▸) or (OK) to drop down successive levels within a menu.

Press (◂) or (⚙) to come back up one menu level.

Pressing any operational button—any button to the left of the screen—will take you immediately from configuration mode to the router's operational mode.

After approximately 30 seconds of inactivity of the configuration controls, the BrightEye NXT screen will time out and revert to the router's operational mode.
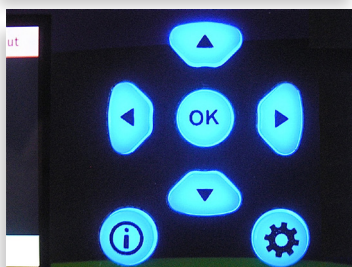
Front Panel Router Configuration Menus

Panel Config	Assign shortcut buttons, adjust mix transition durations, select preset/take or direct take mode, adjust panel brightness, number of audio meters, meter reference level, peak display, disable live video
Ports	Name Sources and Destinations, define ports as inputs or outputs as needed
TSG1	Select a test signal, choose its standard, adjust test signal output timing, configure slate, enable audio groups, select tone frequency
TSG2	Same as test signal generator 1, but for the 2nd TSG
Clean Switch 1	Set the clean switch's standard and assign it to an output, adjust vertical and horizontal timing, enable audio groups, choose audio source settings, audio type (embedded or AES), split mode settings, SD > HD Pillar Box settings, HD > SD Letter Box settings. 430-X, 430, 410-H and 410 units only
Clean Switch 2	Same as Clean Switch 1, but for the 2nd Clean Switch
Timing & Genlock	Select between external and internal reference, get info about reference status and the system frame rate (determined by TSG1)
Network	Change the router's IP address and other network settings
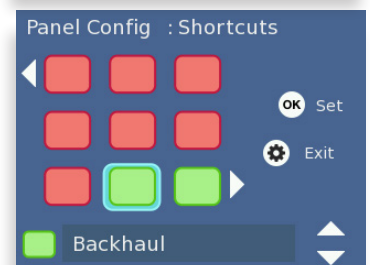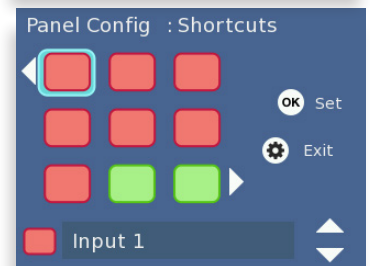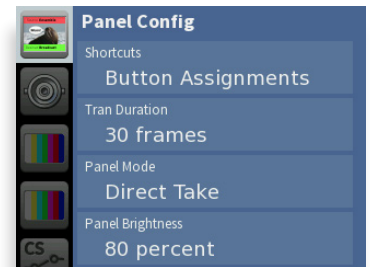
Assigning Shortcut Buttons

Assign Sources and Destinations to the nine shortcut buttons in order to streamline router operation. You can have any combination of Source buttons and Destination buttons.

Press (⚙) to get to the configuration menus. **Panel Config** is the first configuration menu. If needed, use the (▲) arrow to navigate to **Panel Config**.

Press (▸) or (OK) twice to select **Shortcuts** and then go to the Shortcuts Button Assignments map. Use the (◂▸) arrows to select the shortcut button you want to configure.

Use the (▲▼) arrows to select a Source or Destination to assign to the selected shortcut button. A button can also be unassigned.

After you've finished assigning shortcuts, press (OK) to save, or press (⚙) to cancel.

Configuring Ports

Some of the BrightEye NXT Router ports are fixed as inputs or outputs, whereas the flexible I/O ports are configured as inputs or outputs from the **Ports** menu. Naming the ports can make router operation more intuitive.

Press ⚙ to get to the configuration menus. Use the arrows to navigate to the **Ports** menu.

Press ▶ or **OK** to highlight Input #1.

Use the arrows to select the port you want to assign.

Press ▶ or **OK** to go to **Ports Configuration**. Use the arrows to select the port's assignment. Available choices reflect the type of port you are working with.

Press **OK** to set your new port configuration selection, or press ⚙ to cancel your selection.

Naming Ports

From **Ports Configuration**, press ▶ to enter the **Port Name** menu. Then press ▼ to go to the front panel keyboard menu.

Use the arrows and ◀ ▶ arrows to highlight the letter you want to enter. Press **OK** to enter the highlighted letter into the label area. Change case by highlighting and selecting either "abc" or "ABC." To backspace or delete letters one at a time, highlight the "del" key, then press **OK**. When finished editing, highlight "Set", then press **OK**.
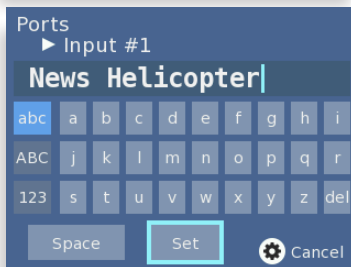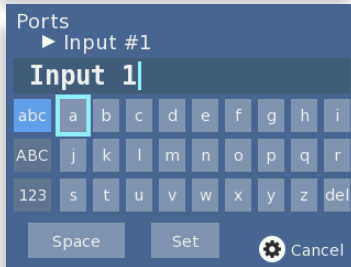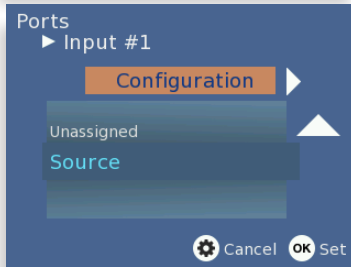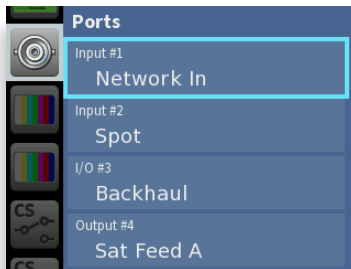
Adjusting Audio Levels

When the signal is output through a Clean Switch, you can adjust audio levels on a per-input and per-channel basis. The BrightEye NXT compact routers can apply gain or attenuation from +12.0 dB to -70 dB. When the Clean Switch is in Mix mode, the audio output will properly mix between the adjusted settings of one input to the adjusted settings of the new source.

From the **Port Name** menu, press ▶ to enter the **Audio Gain** menu. Then press ▼ to go to the **Audio Gain** editing screen. Use the arrows to select one channel at a time and adjust its levels. Press and hold ▲ or ▼ to accelerate the rate of adjustment. When finished, press ✿ to return to the **Audio Gain** menu.
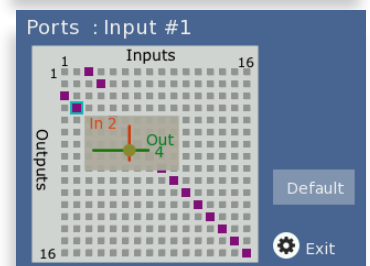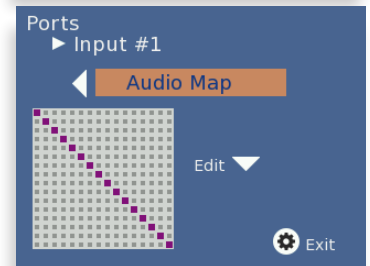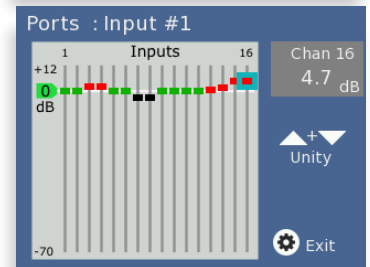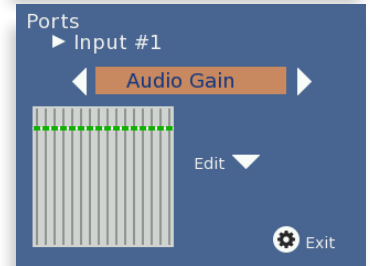
Mapping Audio Channels

From the **Audio Gain** menu, press ▶ to access the **Audio Map** menu. Then press ▼ to go to the **Audio Map** editing screen.

Each point on the audio map represents a potential cross-point for a specific audio channel Input and audio channel Output. By default, Input 1 is mapped to Output 1, Input 2 is mapped to Output 2, and so forth.

To edit the audio map, use the arrows to select a point on the grid. Press OK to toggle between purple and gray. When purple, the cross-point is active. When gray, the cross-point is not active.

When finished, press ✿ to exit.

Clean Switching on Models 430 and 410

The BrightEye NXT 430 and 410 have two clean switches that are useful when switching between asynchronous sources or taking a router output directly to air. To switch cleanly between different sources, the sources and the clean switch must share the same format and standard. For example, if you are using 1080i/50 signals, set the clean switch to 1080i/50. Note that if you feed a signal to the clean switch that is a different format and standard (for example, if a 525 SD signal is fed to a clean switch that is set to 1080i/50), the clean switch will output black and silence.

There are controls to adjust the output timing of the clean switch with respect to the genlock reference. If you are using embedded audio, enable the appropriate audio groups.

Assigning a Clean Switch to a Router Destination

Press (⚙) to get to the configuration menus. Use the arrows to navigate to the **Clean Switch 1** or **Clean Switch 2** configuration menu.

Press (▶) or (OK) to highlight the **Assignment** submenu. Then press (▶) or (OK) to go to **Assignment** selection.

Use the arrows to select the Destination port to which you want to assign the selected Clean Switch.

Press (OK) to set your new selection, or press (⚙) to cancel.

Setting the Clean Switch Format and Standard

While in the **Clean Switch** menu, press (▼) to navigate to the **Standard** menu. Press (OK) to select it.

Use the arrows to select the standard you want the Clean Switch to use.

Press (OK) to confirm your new clean switch standard, or press (⚙) to cancel.
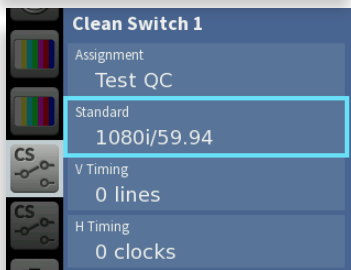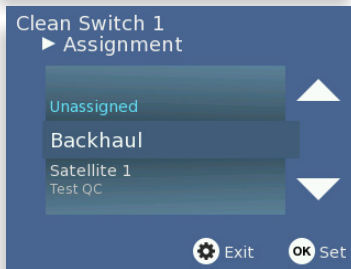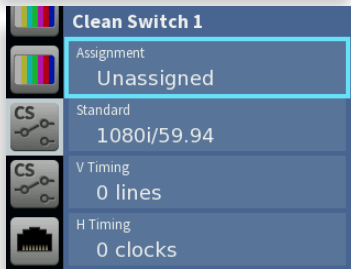
Clean Switching and Up/Down/Cross Converting on Models 430-X and 410-H

The BrightEye NXT 430-X and 410-H have two clean switches with which you can switch between asynchronous sources without glitches or pops. Both clean switches also have up/down/cross converters. Simply by setting the output standard of each clean switch, configured independently, they automatically convert any SMPTE broadcast resolution source to your chosen output standard, regardless of the signal's incoming format.

There are controls to adjust the output timing of the clean switch with respect to the genlock reference. If you are using embedded audio, enable the appropriate audio groups.

Assigning a Clean Switch to a Router Destination

Press (⚙) to get to the configuration menus. Use the arrows to navigate to the **Clean Switch 1** or **Clean Switch 2** configuration menu.

Press (▸) or (OK) to highlight the **Assignment** submenu. Then press (▸) or (OK) to go to **Assignment** selection.

Use the arrows to select the Destination port to which you want to assign the selected Clean Switch.

Press (OK) to set your new selection, or press (⚙) to cancel.

Setting the Clean Switch and U/D/C Conversion Output Standard

While in the **Clean Switch** menu, press (▾) to navigate to the **Standard** menu. Press (OK) to select it.

Use the arrows to select the standard you want the Clean Switch to use.

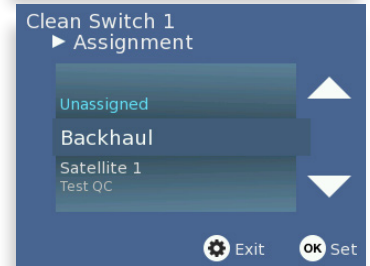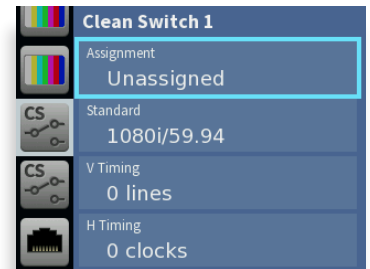Press (OK) to confirm your new clean switch standard, or press (⚙) to cancel.
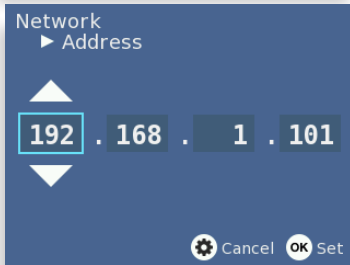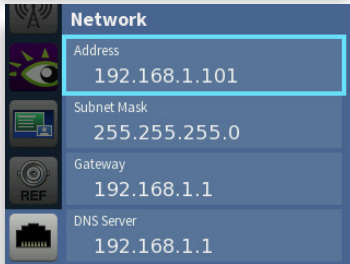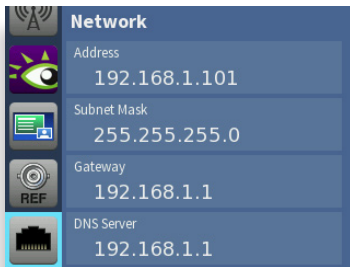
Web Control and Ethernet Interface

Your BrightEye NXT Router has a built-in web server providing control from a web browser. Plug an Ethernet cable into the BrightEye NXT Router to connect directly to a computer or to your Ethernet network.

When you initially power up the BrightEye NXT as received from the factory, it will have the self-assigned static IP address of 192.168.1.101. To change the BrightEye NXT's IP address and network settings, use the Network menu. Note that the router supports only manual settings. DHCP is not supported.

Setting the IP Address

Press (⚙) and use the (▼) arrow to navigate to the **Network** menu.

Press (▶) or (OK) to highlight the **Address** submenu. Press (▶) or (OK) to enter the **Network Address** menu.

Use the (arrows) to modify the IP address and other network settings as needed.

Press (OK) to save the new IP address, or press (⚙) to cancel.

Requesting the Web Control Point

After you have set the BrightEye NXT's IP address to be compatible with your network, you can connect to the BrightEye NXT with a web browser to establish a web control point.

Navigate to the BrightEye NXT's new IP address with your web browser. The Control Point Needed window displays.

Enter the name you want to use to refer to this web control point; for example, "NXT 430 Admin." Click **Request Control Point.** The message "Not Authorized" displays.

Select **Settings** from the upper left part of the browser window. The Settings window displays.

Click **Control Points**. The Settings > Control Points window displays.

The Control Point you just requested will now be shown. Set the profile to Factory Default (or another profile, if you have one set up) and click **Authorize**. Then click Back (or Done). The Router Control window comes up.
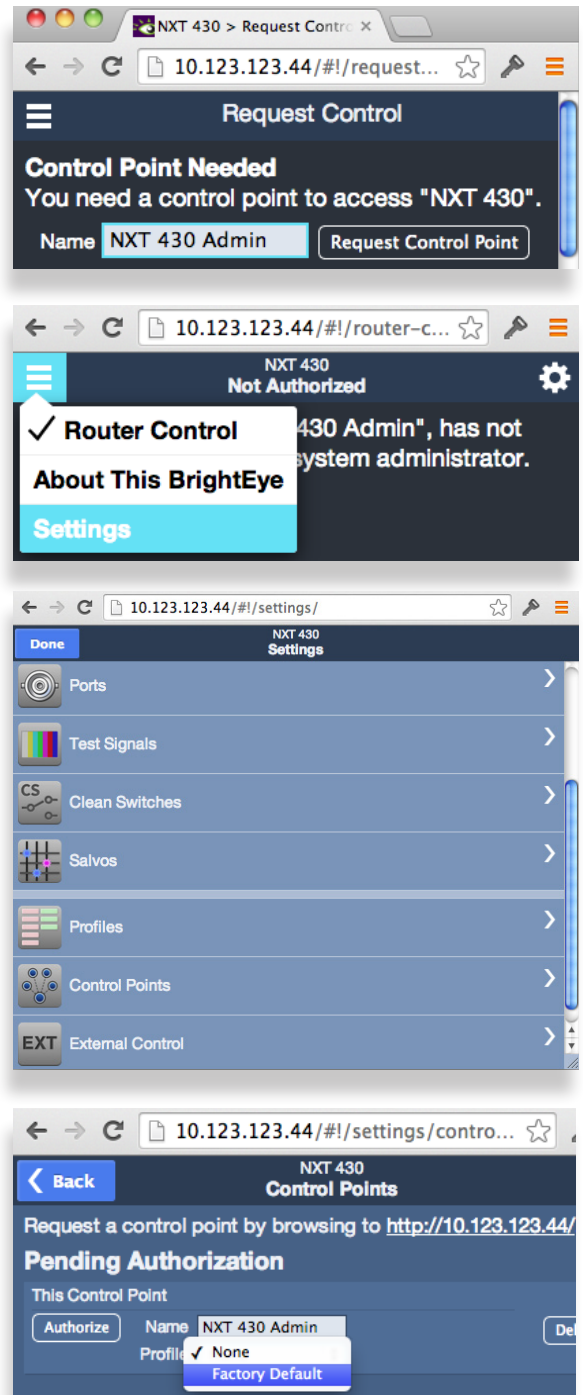
Web Browser Router Control Window

You can control the router through its web browser user interface to perform takes, direct takes, dissolves, gang, and gang combined with direct takes. Thumbnail representations of the router's Sources are shown in the upper area, Destinations in the lower area.

Click one of the lower thumbnails to select a Destination. Click one of the upper thumbnails to select a Source. Click **Take** or **Mix**. Your chosen Source is routed to the Destination you selected.
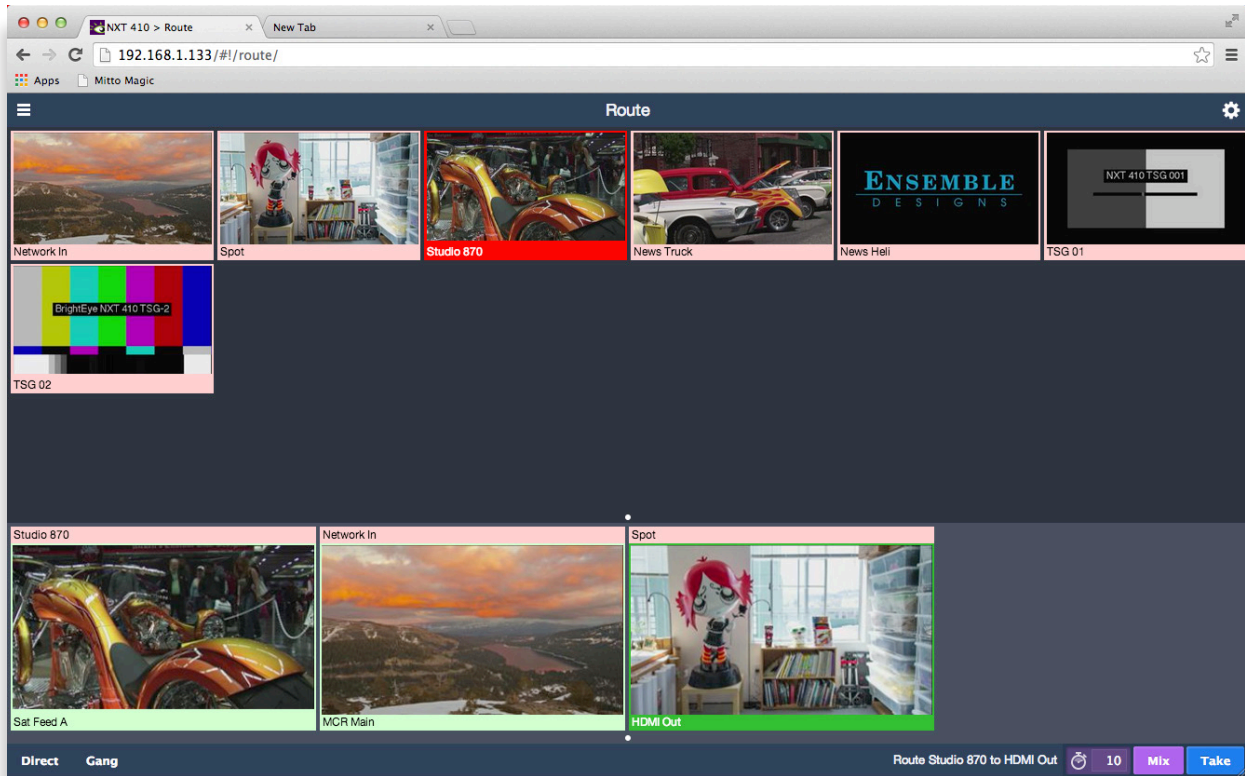
Click Direct to toggle the **Direct Take** mode on or off. Sometimes called a "hot take," a direct take lets you select a Destination and then immediately Take simply by selecting a Source.

Gang allows one Source to be routed to multiple Destinations. When **Gang** is on, select all of the Destinations you want to use, then select your Source and click **Take**. Alternately, Gang and Direct can be used together.

Keyboard Shortcuts

KEY	ACTION
number key	Select Source
shift + number key	Select Destination
return key	Select Take
"m" key	Select Mix
"d" key	Toggle Direct Mode
"g" key	Toggle Gang Mode

Settings Menu > Profiles

The web browser Settings menus provide complete control of the router, including a software update interface, network settings, timing and automation control.

Of special interest is the **Profiles** menu which allows you to define which Sources and Destinations can be accessed from a Control Point other than the router itself. Control Points include computers, tablets, smart phones, automation systems, and production switchers. Each Control Point must have a Profile assigned to it so that the Control Point can control the BrightEye NXT Router.

Each Profile can be customized to access unique combinations of Destinations and Sources. Create as many Profiles as your BrightEye NXT web users require. You can always create additional Profiles or edit existing ones later. Multiple Control Points can share the same Profile.

Creating a Profile

From the left navigation panel of the web interface, click **Profiles**.

Enter a profile name in the New Profile field.

Click **Create**. The new Profile is listed on the Profiles page.

Next to the newly created Profile, click **Edit**. All available Sources and Destinations are shown.

Click and drag unassigned Sources and Destinations up to the assigned area as desired for this specific Profile. Rearrange the order and add Space icons to fit your needs.

Click **Save Changes**, then click **Done**.

This newly created Profile is now available to assign to one or more Control Points.
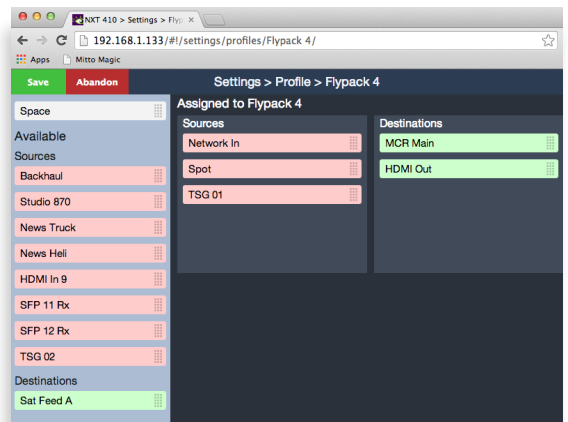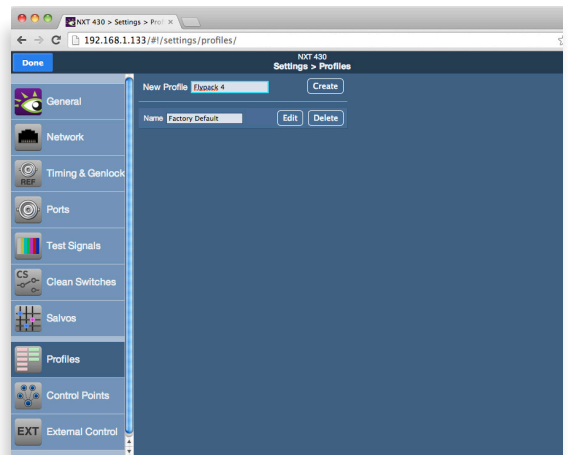
Factory Reset

To reset your BrightEye NXT Router to factory settings, press and hold both the (OK) and the (⚙) while powering up the unit. Wait for the arrows to turn red and blink three times. The BrightEye NXT will then be reset to its factory default settings.

Training Videos

In addition to this Quick Start Guide, please see our training videos at the link below to learn how to set up and program your BrightEye NXT video router. The training videos address initial setup, configuration, operation, and more.

www.ensembledesigns.com/training

For additional assistance, see the complete manual available through our website, or contact us at +1 530.478.1830 or service@ensembledesigns.com. All Ensemble Designs products have a 5-year warranty. Avenue and BrightEye products are designed and built in California at Ensemble Designs. Come visit us!

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