Cleanit

Profanity delay system

Crystal Vision

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Revision 1	Addition of 59.94 delay figures on Page 3. SBB-4 buttons functionality changed for Cleanit 1 on Pages 23 - 26.	19/03/20

1 Introduction

Cleanit is a flexible and budget-friendly video and audio profanity delay system for live broadcasts.

Cleanit allows a video and audio content stream to be delayed to prevent the broadcast of unwanted or offensive material, with both audio and video covers available. The programme signal can be delayed by up to ten seconds (eight seconds in 59.94) in 3Gb/s, 20 seconds (16 in 59.94) in HD or 110 seconds in SD. This delay gives the operator – who is monitoring the live feed – time to react and remove the unwanted content.

It's perfect at preventing expletives, obscene gestures, wardrobe malfunctions, bloopers, competitor mentions, coughing fits or technical problems from making it to air – whether regulations insist on protection of content or you want to control exactly what you broadcast.

Cleanit is an easy-to-use fully integrated solution which is based on the Crystal Vision Indigo range of modular products and frames. Different packages are available – allowing you to purchase as much or as little protection as needed for your application. The three standard versions of Cleanit take care of the most common applications, muting or shuffling either embedded or discrete AES or analogue audio, along with video freeze or black. Choose Cleanit Custom and we'll design a custom solution for you, understanding your application and adding whatever extra functions you need to the mix.

Once you've selected the most suitable version of Cleanit for you, you need to select a frame to house it in. One standard Cleanit will fit in a desk top box, ideal for those wanting a portable system. 1U ears can be fitted to the desk top box to facilitate mounting in a control desk, while the IDT-RK rack mounting kit allows it to be fitted in a 19" rack if required. For multi-channel applications (or for those wanting power supply redundancy), up to three channels of Cleanit can fit in a 1U frame or six in a 2U frame – making the most of your rack space.

The two control options for Cleanit make configuration and operation easy and ensure that you always know the status of your audio and video.

VisionWeb Control is a free-of-charge way of operating Cleanit from a web browser running on any device connected to the same network. The simplified VisionWeb GUI makes it easy to set the delay timings and activate the video and audio covers, as well as providing feedback status of when the system has been initiated and when it returns to normal operation.

The SBB-4 smart button box is perfect for live operation. With big buttons to press, it features clear text (using LCD graphics) and colour indications of function and status – such as the button flashing orange while counting down. The SBB-4 works in conjunction with VisionWeb, with – for example – VisionWeb providing the delay time variables and status information. The SBB-4 connects to the Crystal Vision frame via Ethernet and uses PoE for convenience.

Both audio and video covers are available – either independently or simultaneously. To mask the unwanted audio, the operator can mute the audio, shuffle to another embedded source or (with Cleanit Custom) to an external discrete source. To mask the unwanted video, the operator can freeze or black the video or (with Cleanit Custom) insert a graphic or switch to another live or recorded source. The cover/uncover functions can be activated either manually or automatically and be either delayed or immediate.

Using manual delayed cover/uncover is ideal when you don't want to lose more of your programme than is necessary and you have an operator able to concentrate on this task, as it involves them both starting and stopping the mute or freeze. Delay timings can be set for the delayed mute or freeze and the delayed unmute or unfreeze.

Using automatic delayed cover/uncover is ideal when your operator is multi-tasking and only wants one button to press to clean the air. With this option you will need to choose suitable delay settings in advance, with the delay timer counting down to audio mute (or video freeze) then continuing to count to unmute (or unfreeze). With this option, you have fixed the expected length of the obscenity. If the obscenity is longer than expected, you have other measures in place to get rid of it – for example, moving the microphone or having the profanity delay system set to automatically drop the offensive caller.

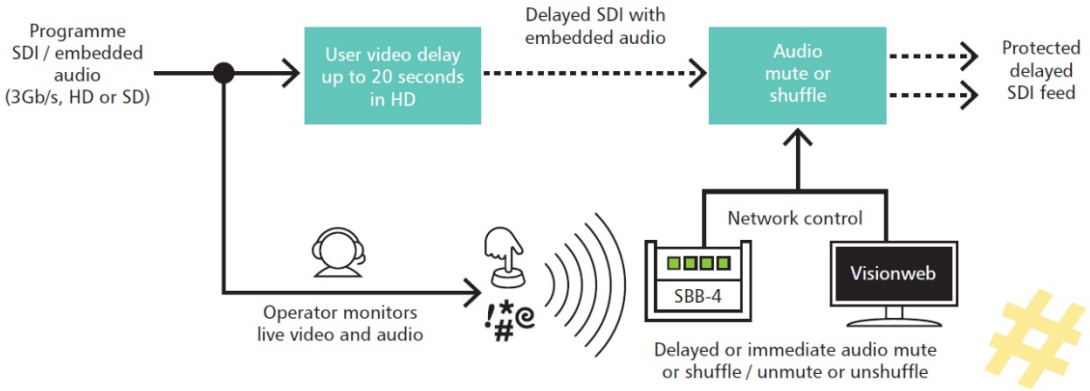
Using manual instant cover/uncover is ideal for emergency situations where you have missed the profanity. You can immediately mute the output using Instant mute or Instant mute and freeze. When using the SBB-4 smart button box, you can hold down the button for the required duration of the cover. The Instant unmute can be used for testing or if a mute request needs to be cancelled.

The main features of Cleanit are as follows:

- Flexible profanity delay system for live video and audio
- Use it with a variety of SDI sources: works with 3Gb/s, HD and SD video and with embedded audio or discrete AES or analogue audio
- Equally suited to traditional broadcasting or social media webcasts
- Purchase as much or as little protection as needed – available in different versions
- Main programme can be delayed by up to ten seconds (eight in 59.94) in 3Gb/s, 20 seconds (16 in 59.94) in HD or 110 seconds in SD
- Audio protection includes audio mute or shuffle
- Video protection includes video freeze or black
- Easy to add any custom functionality you need (with Cleanit Custom)
- Manual and automatic activation of cover/uncover functions
- Simple control and status monitoring using VisionWeb web browser or SBB-4 smart button box
- Saves you space, with one Cleanit in a desk top box, and up to three in 1U or six in 2U

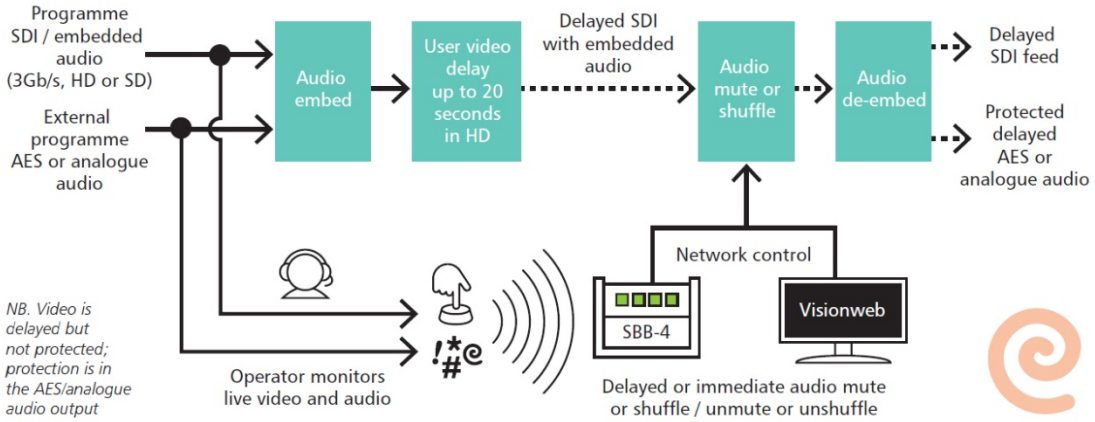
Cleanit 1

Profanity delay system for video containing embedded audio. The audio cover allows for audio mute of up to 16 channels of embedded audio.



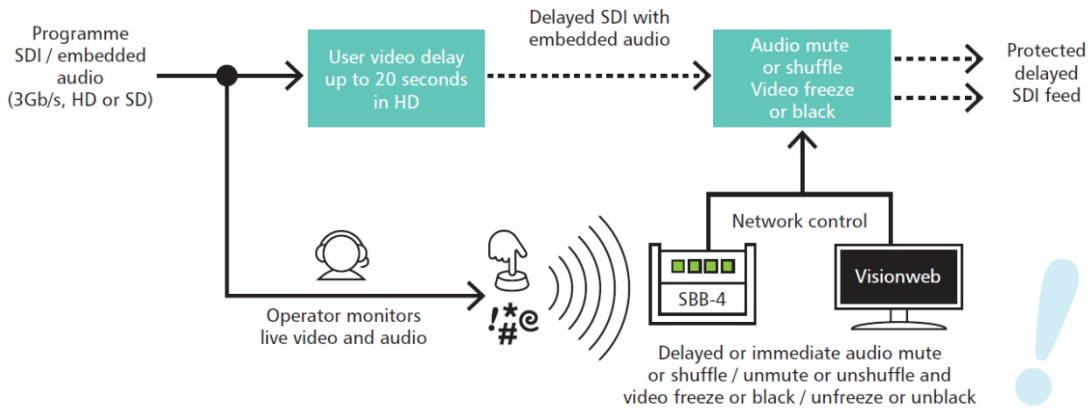
Cleanit 2

Profanity delay system for video and discrete AES or analogue audio. The audio cover allows for audio mute of up to eight channels of 110 ohm AES or four channels of analogue audio.



Cleanit 3

Profanity delay system for video containing embedded audio. The audio and video cover allows for audio mute of up to 16 channels of embedded audio as well as video freeze.



Cleanit Custom

Cleanit Custom is for those who need any additional functionality – such as the insertion of a graphic or audio file or clean switching to another source. Cleanit Custom can also be used to get extra video outputs or video outputs in different formats, synchronise the programme, get additional delay or use discrete 75 ohm AES or fibre input or output – and will be custom designed to meet the broadcaster's exact requirements.

Note: This user manual does not include operational information for any of the additional functionality that may be part of Cleanit Custom. Please contact Crystal Vision customer support for this information.

2 Connections

2.1 Indigo frame connections

Connect power mains to the frame. Connect your network cable to the Ethernet port on the frame. The frame's default network settings are:

IP Address: 10.0.0.201
Netmask: 255.255.255.0
Default Gateway: 10.0.0.1

(Note: For detailed frame connections, consult the appropriate Indigo frame manual.)

2.2 Cleanit 1 connections

Top row connections:	
HD/SD In	Connect your programme video input
NC	No connection in this application
HD/SD Out 1	Connect to bottom row HD/SD In using provided BNC to BNC link
HD/SD Out 2	No connection in this application
HD/SD Out 3	No connection in this application
HD/SD Out 4	No connection in this application

Bottom row connections:	
HD/SD In	Connect to top row HD/SD Out 1 using provided BNC to BNC link
NC	No connection in this application
Audio I/O	No connection in this application
HD/SD Out	Delayed, protected programme out
HD/SD Out	Delayed, protected programme out

See *Figure 1* below for more info on connections.

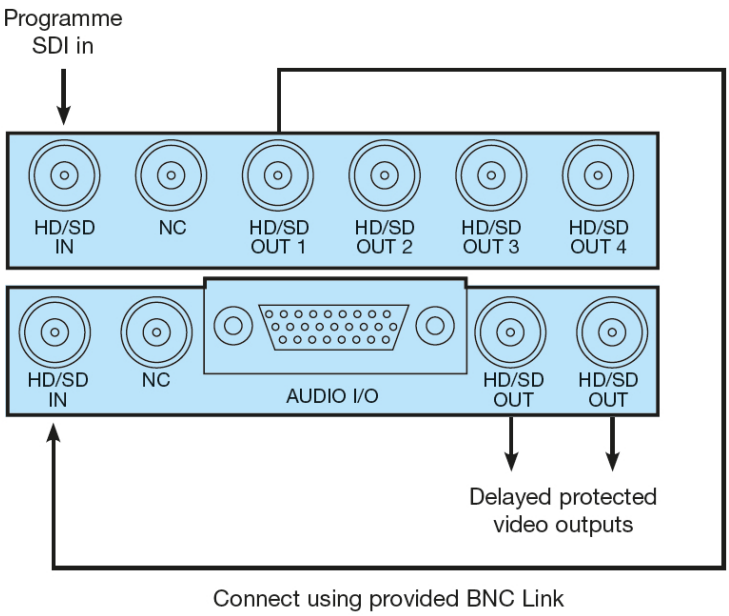


Figure 1

Note: Cleanit 1 includes ViViD 3G-20 and TANDEM 310 which are normally fitted in frame positions 1 and 2. Your Cleanit GUI will have been set up with the correct positions for your frame.

2.3 Cleanit 2 connections

Top row connections:	
HD/SD In	Connect to bottom row HD/SD Out 1 using provided BNC to BNC link
NC	No connection in this application
HD/SD Out 1	Connect to bottom row HD/SD In 2 using provided BNC to BNC link
HD/SD Out 2	No connection in this application
HD/SD Out 3	No connection in this application
HD/SD Out 4	No connection in this application

Bottom row connections:	
HD/SD In 1	Connect your programme video input
Audio I/O	Audio in and out will be connected to this 26 pin D connector. *See Figure 3 below for audio input pinouts and Figure 4 for audio output pinouts*
HD/SD In 2	Connect to top row HD/SD Out 1 using provided BNC to BNC link
HD/SD Out 1	Connect to top row HD/SD In using provided BNC to BNC link
HD/SD Out 2	Delayed programme out

See *Figure 2* below for more info on connections.

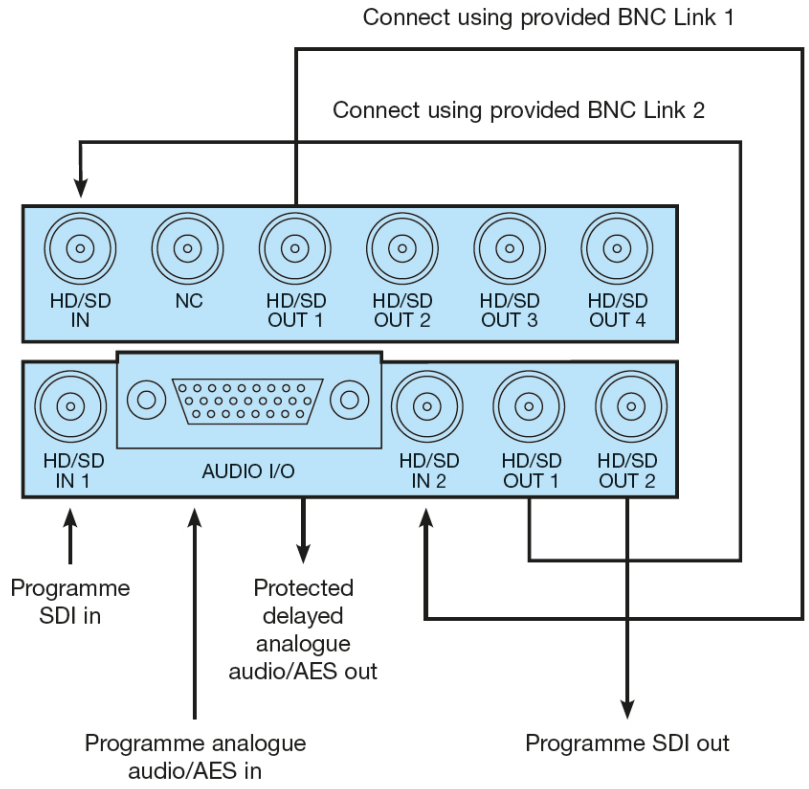


Figure 2

Note: Cleanit 2 includes ViViD 3G-20 and TANDEM 320 which are normally fitted in frame positions 1 and 2. Your Cleanit GUI will have been set up with the correct positions for your frame.

I/O		Pin-out
GND		1
Analogue audio 1/ AES1	+	2
	-	3
Analogue audio 2/ AES2	+	4
	-	5
Analogue audio 3/ AES3	+	6
	-	7
Analogue audio 4/ AES4	+	8
	-	18
GND		9

Figure 3 – Audio input pinouts

I/O		Pin-out
Analogue audio 5/ AES5	+	14
	-	15
Analogue audio 6/ AES6	+	10
	-	11
Analogue audio 7/ AES7	+	16
	-	17
Analogue audio 8/ AES8	+	12
	-	13
GND		19, 20, 23, 24
NC		21, 22, 25, 26

Figure 4 – Audio output pinouts

2.4 Cleanit 3 connections

Top row connections:	
HD/SD In	Connect your programme video input
NC	No connection in this application
HD/SD Out 1	Connect to bottom row HD/SD In using provided BNC to BNC link
HD/SD Out 2	No connection in this application
HD/SD Out 3	No connection in this application
HD/SD Out 4	No connection in this application

Bottom row connections:	
HD/SD In	Connect to top row HD/SD Out 1 using provided BNC to BNC link
Sync In	Black & Burst or tri level house reference input
Audio I/O	No connection in this application
HD/SD Out	Delayed, protected programme out
HD/SD Out	Delayed, protected programme out

See *Figure 5* below for more info on connections.

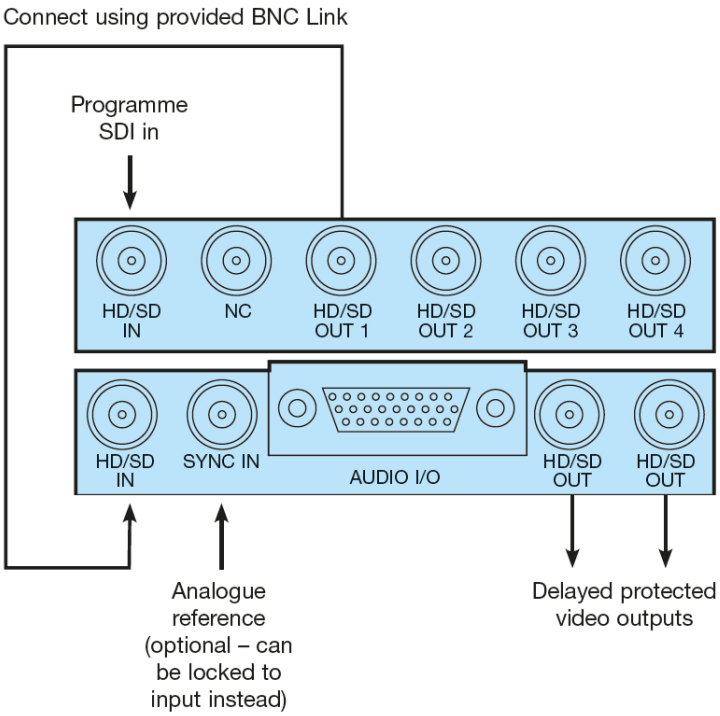


Figure 5

Note: Cleanit 2 includes ViViD 3G-20 and SYNNER 310 which are normally fitted in frame positions 1 and 2. Your Cleanit GUI will have been set up with the correct positions for your frame.

2.5 SBB-4 connections

The SBB-4 remote control surface is a Power over Ethernet (PoE) device and must be connected to a switch or hub that provides power over Ethernet. Unless otherwise specified, the SBB-4 will ship with the following default network connections:

IP Address: 10.0.0.211
Netmask: 255.255.255.0
Default Gateway: 10.0.0.1

Once networked with the frame the system will read the settings of the frame and be ready to control the operation. Network settings and switch configurations can be altered to suit individual applications. Contact Crystal Vision customer support for more information on these changes.

Multiple SBB-4 smart button boxes can be connected to the same Cleanit or a single SBB-4 can be made to control multiple Cleanits. The first allows control from more than one location and the second allows for multiple versions of a programme to be controlled together.

3 VisionWeb Control

To access the control menus on VisionWeb, the operator simply types the IP address of the frame into a web browser running on any device that is connected to the same network as the frame – you can even use a tablet or phone if your frame is located on a wireless network.

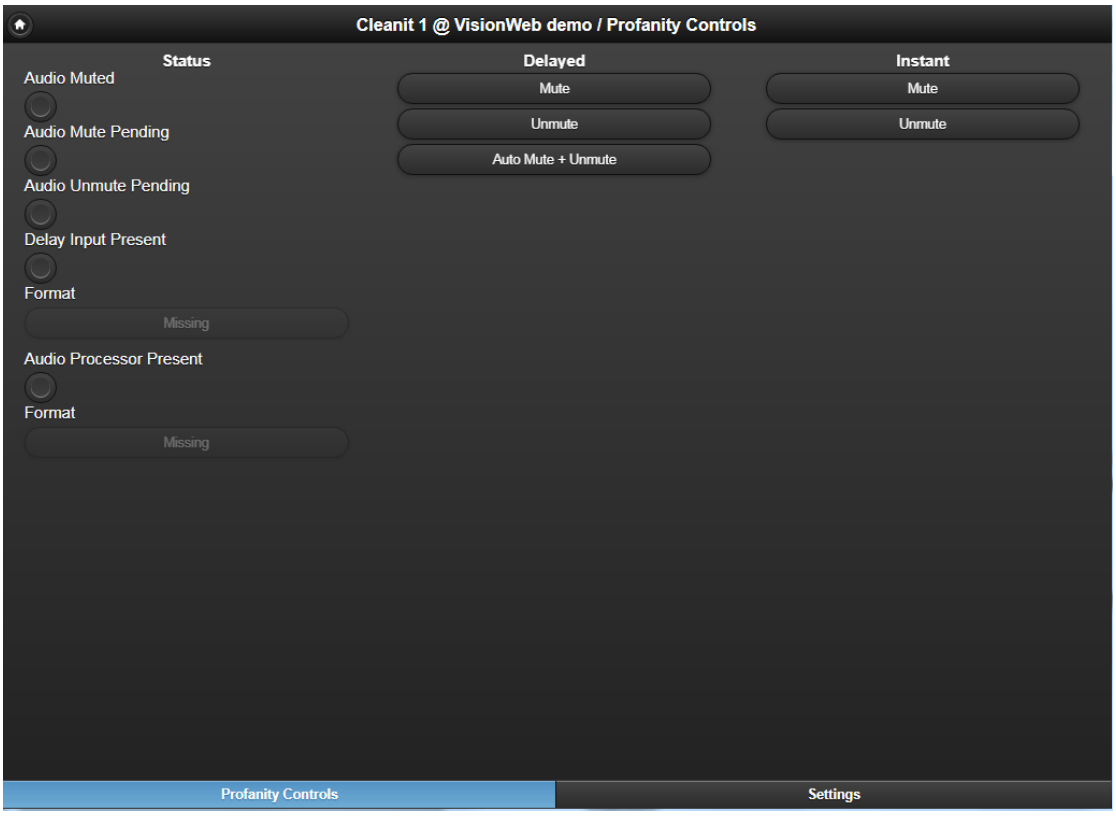
Once connected, you will see the home VisionWeb control page allowing you to access the individual system controls. For Cleanit systems, you will select the Cleanit control set. The Cleanit control menu will then open and all control and settings are available to the user.

3.1 Cleanit 1 and Cleanit 2 setup and control

Cleanit 1 and 2 systems have the same control set, with the difference in systems being that the audio inputs are either SDI embedded or discrete, analogue or digital. VisionWeb setup and control have two main menus that are selected on the bottom of the browser window, *Profanity Controls* and *Settings.*

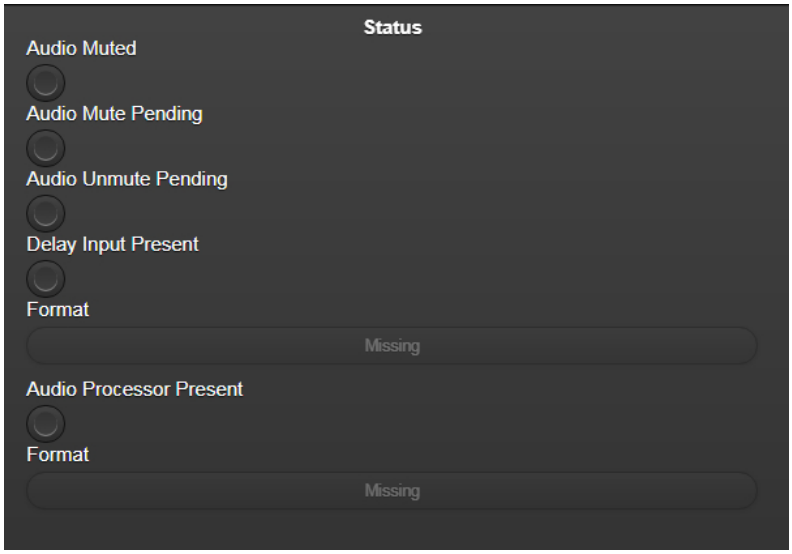
Profanity Controls

Profanity Controls are used to control the Cleanit system during test and operation. The controls have three areas: **Status, Delayed and Instant.** These are example GUIs and the actual controls shown will be configured to the customer's exact requirements.



Status

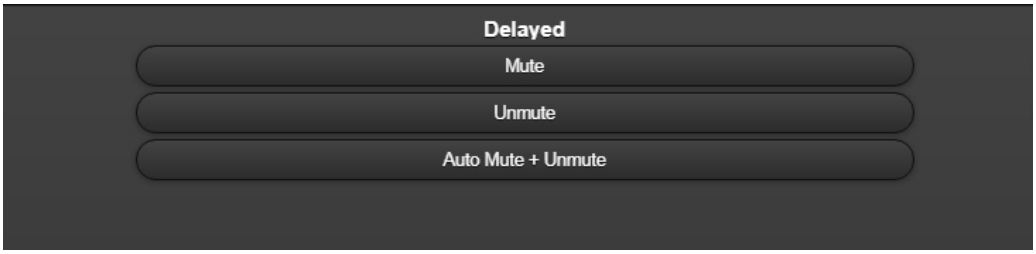
Displays video presence and format as well as status of audio mute.



Audio Muted	Yellow indication shows that Group 1 audio is currently muted.
Audio Mute Pending	Will show yellow when a Delayed Audio Mute has been initiated and is pending.
Audio Unmute Pending	Will show yellow when a Delayed Audio Unmute has been initiated and is pending.
Delay Input Present	Will show green when programme input is properly connected.
Format	Will show the video format of the connected programme input i.e. 1080i 50, 1080p 50, 720p 50, 625, 525 etc.
Audio Processor Present	Will show green when input signal is present to audio processor.
Format	Will show the video format connected to the audio processor i.e. 1080i 50, 1080p 50, 720p 50, 625, 525 etc.

Delayed

These controls allow you to initiate a delayed mute and unmute.

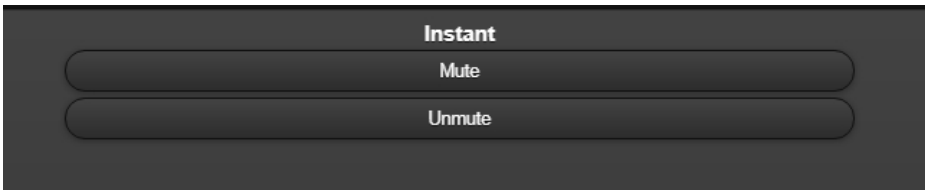


Mute	Click to initiate a delayed audio mute. Delayed mute time in seconds is selected on the ***Settings*** menu.
Unmute	Click to initiate a delayed audio unmute. Delayed unmute time in seconds is selected on the ***Settings*** menu.
Auto mute + Unmute	Click to initiate auto clean operation. This runs the delay to mute, delay to unmute sequence. These time variables are set in the ***Settings*** menu.

Note: The default audio protection setting for Cleanit 1 and Cleanit 2 is audio mute. If required, the system can be modified by Crystal Vision to perform audio shuffle instead. The default operation for mute is audio Group 1 – should you require additional channels or fewer channels to be muted, please contact Crystal Vision support.

Instant

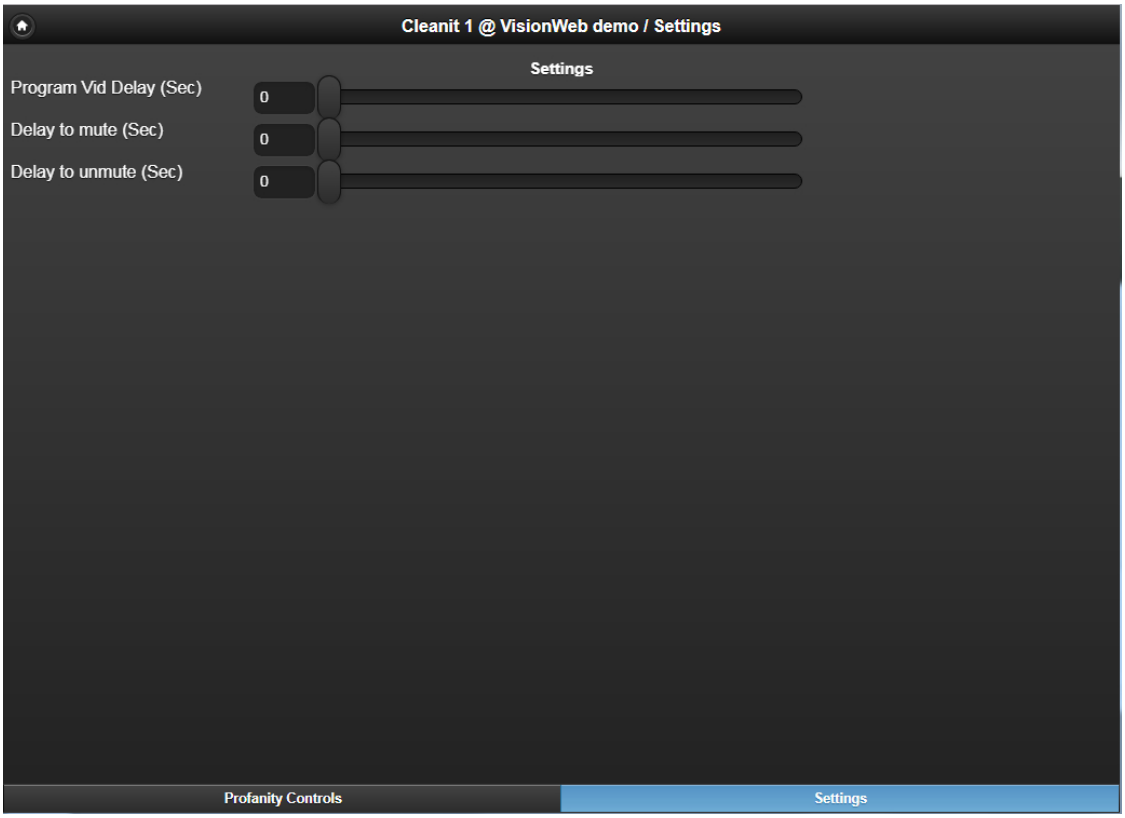
These controls allow you to instantly mute and unmute, useful for missed profanities.

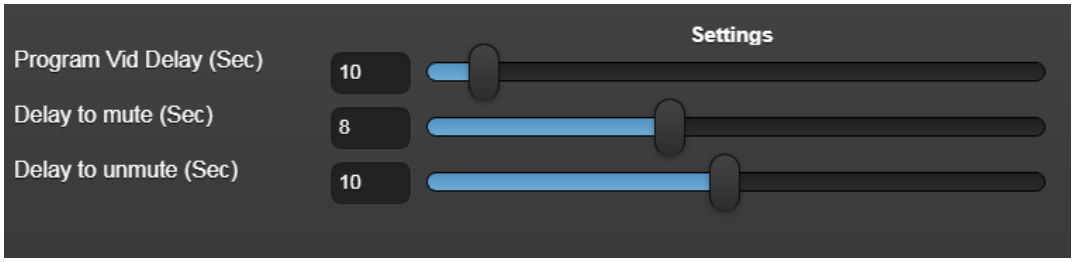


Mute	Click to instantly mute audio.
Unmute	Click to instantly unmute audio.

Settings

The Settings menu allows for setting of all Cleanit timing controls.



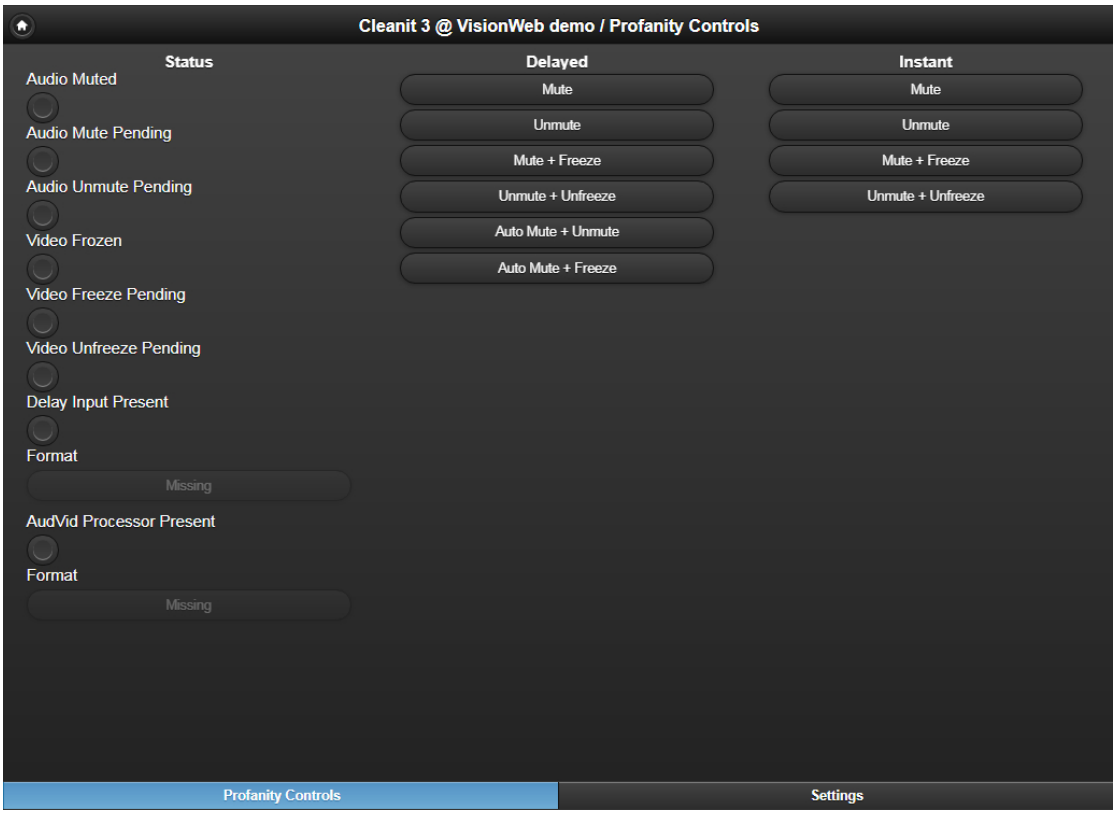
Settings	
These controls set the length of the overall programme delay, the delay time to mute and the delay time to unmute.	
	
Program Vid Delay (Sec)	This slider sets the overall programme delay in seconds, up to the maximum available for the video format. *110 secs (625 line), 91 secs (525 line), 20 secs (1080i50 / 720p50 / 1080PsF23.98 / 1080PsF24), 10 secs (1080p50), 8 secs (1080p59.94).*
Delay to Mute (Sec)	This slider sets the delay time to mute in seconds.
Delay to Unmute (Sec)	This slider sets the delay time to unmute in seconds.

3.2 Cleanit 3 setup and control

VisionWeb setup and control for Cleanit 3 has two main menus that are selected on the bottom of the browser window, *Profanity Controls* and *Settings.*

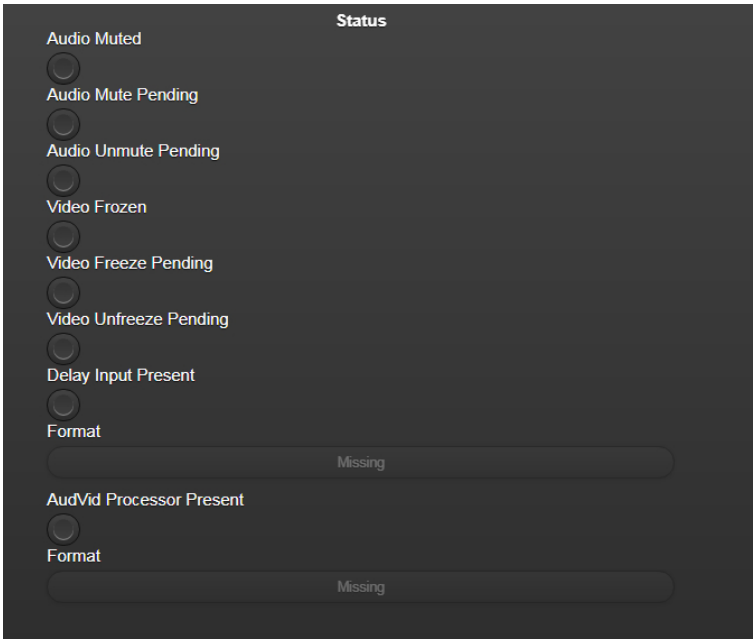
Profanity Controls

Profanity Controls are used to control the Cleanit system during test and operation. The controls have three areas: **Status, Delayed and Instant.** These are example GUIs and the actual controls shown will be configured to the customer's exact requirements.



Status

Displays video presence and format as well as status of audio mute and video freeze.



Audio Muted	Yellow indication shows that Group 1 audio is currently muted.
Audio Mute Pending	Will show yellow when a Delayed Audio Mute has been initiated and is pending.
Audio Unmute Pending	Will show yellow when a Delayed Audio Unmute has been initiated and is pending.
Video Frozen	Green indication shows that video is currently frozen.
Video Freeze Pending	Will show yellow when a Delayed Freeze has been initiated and is pending.
Video Unfreeze Pending	Will show yellow when a Delayed Unfreeze has been initiated and is pending.
Delay Input Present	Will show green when programme input is properly connected.
Format	Will show the video format of the connected programme input i.e. 1080i 50, 1080p 50, 720p 50, 625, 525 etc.
AudVid Processor Present	Will show green when input signal is present to audio/video processor.
Format	Will show the video format connected to the audio/video processor i.e. 1080i 50, 1080p 50, 720p 50, 625, 525 etc.

Delayed

These controls allow you to initiate a delayed mute and unmute and/or freeze and unfreeze.

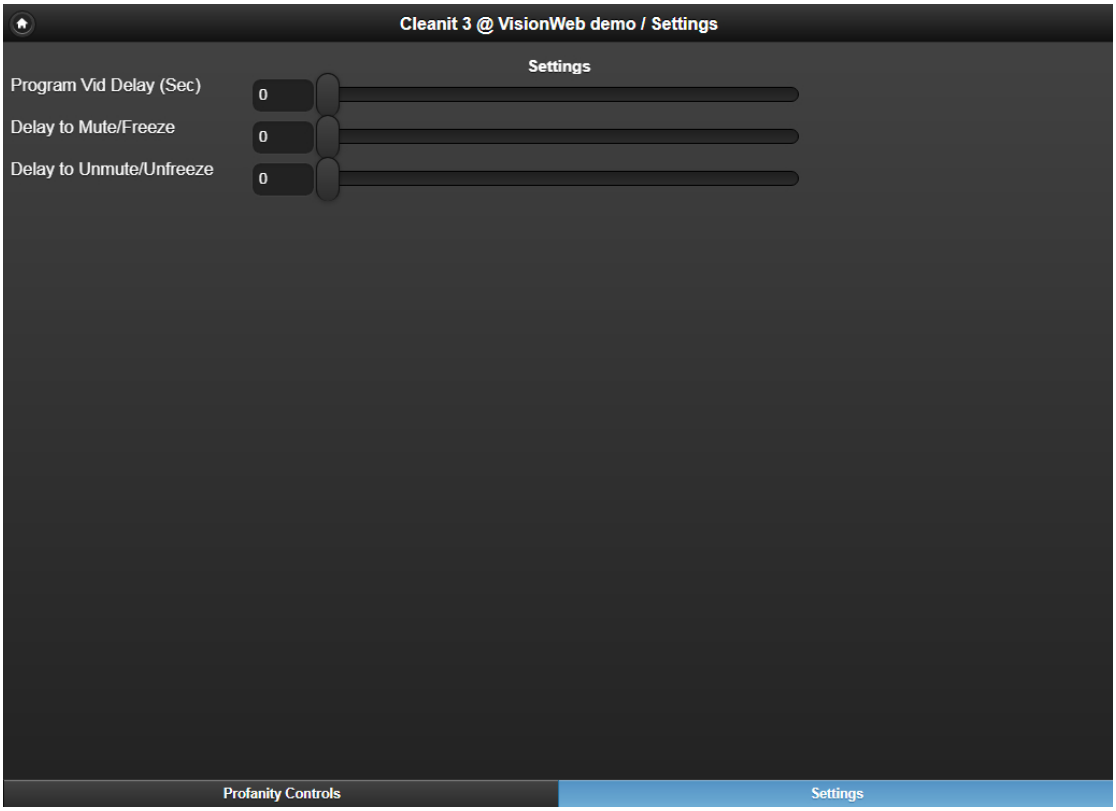
Mute	Click to initiate a delayed audio mute. Delayed mute time in seconds is selected on the ***Settings*** menu.
Unmute	Click to initiate a delayed audio unmute. Delayed unmute time in seconds is selected on the ***Settings*** menu.
Mute + Freeze	Click to initiate a delayed audio mute and delayed video freeze. Delay to mute time in seconds is selected on the ***Settings*** menu.
Unmute + Unfreeze	Click to initiate a delayed audio unmute and delayed video unfreeze. Delay to unmute time in seconds is selected on the ***Settings*** menu.
Auto mute + Unmute	Click to initiate auto clean operation. This runs the delay to mute, delay to unmute sequence. These time variables are set in the ***Settings*** menu.
Auto Mute + Freeze	Click to initiate auto clean audio and video operation. This runs the delay to mute, delay to unmute sequence. These time variables are set in the ***Settings*** menu.

Note: The default audio protection setting for Cleanit 3 is audio mute. The default video protection setting for Cleanit 3 is video freeze. If required, the system can be modified by Crystal Vision to perform audio shuffle and/or video black instead. The default operation for mute is audio Group 1 – should you require additional channels or fewer channels to be muted, please contact Crystal Vision support.

Instant	
These controls allow you to instantly mute/freeze and unmute/unfreeze, useful for missed profanities.	
	
Mute	Click to instantly mute audio.
Unmute	Click to instantly unmute audio.
Mute + Freeze	Click to instantly mute audio and freeze video.
Unmute + Unfreeze	Click to instantly unmute audio and unfreeze video.

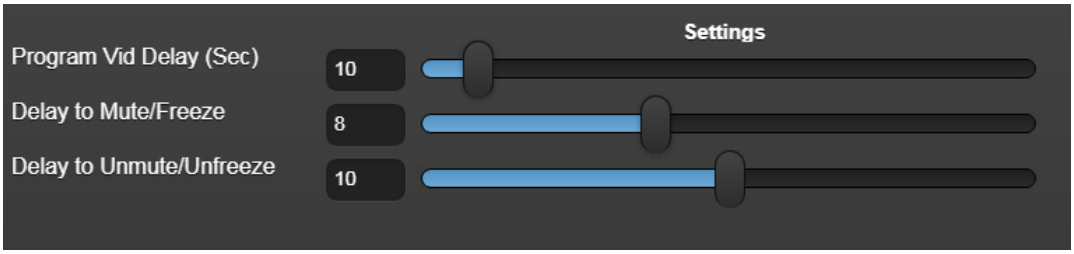
Settings

The Settings menu allows for setting of all Cleanit timing controls.



Settings

These controls set the length of the overall programme delay, the delay time to mute and freeze and the delay time to unmute and unfreeze.



Program Vid Delay (Sec)	This slider sets the overall programme delay in seconds, up to the maximum available for the video format. *110 secs (625 line), 91 secs (525 line), 20 secs (1080i50 / 720p50 / 1080PsF23.98 / 1080PsF24), 10 secs (1080p50), 8 secs (1080p59.94).*
Delay to Mute/Freeze (Sec)	This slider sets the delay time to mute and freeze in seconds.
Delay to Unmute/Unfreeze (Sec)	This slider sets the delay time to unmute and unfreeze in seconds.

4 SBB-4 smart button box

The SBB-4 smart button box is the preferred way to control the Cleanit system during live productions. The SBB-4 is a PoE (Power Over Ethernet) device that allows for it to be placed where convenient in your production control room.

All of the parameters that are accessible on the SBB-4 are first set up using the VisionWeb control settings. The SBB-4 will then initiate all of the Cleanit functionality during your production.

4.1 Cleanit 1 and Cleanit 2 system operation

There are two available versions of SBB-4 operation, *Manual Clean and Auto Clean*, for Cleanit 1 and Cleanit 2.

Manual Clean

Manual Clean (Version 1) workflow requires the operator to trigger the mute and unmute operation. With this operation, the workflow allows for a very precise cleaning of the audio. The following is an example of that application and workflow:

The **Program Vid Delay** is set to ten seconds, the **Mute Delay** to eight seconds and the **Unmute Delay** to ten seconds. We are assuming a one second reaction time for the operator to react before muting and unmuting.

Time zero	Obscenity starts
1 second	Operator presses the delayed mute control (after one second reaction time)
3 seconds	Obscenity finishes
4 seconds	Operator presses delayed unmute control (after one second reaction time)
9 seconds	System mutes (due to delayed mute setting of eight seconds + one second muting reaction time)
10 seconds	Obscenity reaches delayed programme output (NB. System has already been muted for a second)
13 seconds	Obscenity finishes on delayed programme output
14 seconds	System unmutes (due to delayed unmute setting of ten seconds + one second of unmuting reaction time since obscenity finished at '3 seconds')

With this control, the SBB-4 layout is as follows:

Key 1 – Delay Audio Mute

Click to initiate a delayed audio mute. Delayed mute time in seconds is selected on the ***Settings*** menu. Once initiated, key will flash amber and show "Mute Pend" as the delay to mute counts down. When the countdown ends, Key 1 will return to normal state, the audio will mute, and Key 3 will show "Audio Muted" with red flashing to indicate that the audio is muted.

Key 2 – Delay Audio Unmute

Click to initiate a delayed audio unmute. Delayed unmute time in seconds is selected on the ***Settings*** menu. Once initiated, key will flash amber and show “Unmute Pend” as the delay to unmute counts down. When the countdown ends, Key 2 will return to normal state, the audio will unmute.

Key 3 – Immed Audio Mute

Push to instantly mute audio. Once audio mutes, key will show red “Audio Muted” status. Pressing Key 2 (Delay Audio Unmute) or Key 4 (Immed Audio Unmute) will unmute audio and Key 3 status will return to normal.

Key 4 – Immed Audio Unmute

Push to instantly unmute audio. Once audio unmutes, Key 3 will again show normal operation.

Note: Unless otherwise specified, this version of operation will ship as standard operation for a Cleanit 1 and Cleanit 2 system. Contact Crystal Vision customer support if Version 2 (*Auto Clean*) operation of the SBB-4 is required.

Auto Clean

Auto Clean (Version 2) only requires the operator to trigger the auto clean function and both mute and unmute then occur based on the settings of the delay to mute and delay to unmute time variables.

This operation is not as precise and usually has to be set for a little longer overall mute to ensure that all obscenity is cleaned. The advantage to this workflow is the operator has one button push to execute the whole operation, which is helpful in a multitasking modern control room.

The following is an example of that application and workflow:

The **Program Vid Delay** is set to ten seconds, the **Mute Delay** to eight seconds and the **Unmute Delay** to 13 seconds. This will result in a total five second audio mute, the difference of the **Mute Delay** and **Unmute Delay**. We are assuming a one second reaction time for the operator to react before muting and unmuting.

Time zero	Obscenity starts
1 second	Operator presses the delayed mute control (after one second reaction time)
3 seconds	Obscenity finishes
9 seconds	System mutes (due to delayed mute setting of eight seconds + one second reaction time)
10 seconds	Obscenity reaches delayed programme output (NB. System has already been muted for a second)
13 seconds	Obscenity finishes on delayed programme output
14 seconds	System unmutes (due to automatic delayed unmute setting of 13 seconds + one second of muting reaction time)

With this control, the SBB-4 layout is as follows:

Key 1 – Auto Audio Mute

Click to initiate an auto audio mute. Delayed mute time and delayed unmute time in seconds is selected on the ***Settings*** menu. Once initiated, key will flash amber and show “Auto Pend” as the delay to mute counts down. When the delay to mute countdown reaches 0, audio will mute and Key 3 will show "Audio Muted" with red flashing to indicate that the audio is muted. Key 1 will continue to flash amber as the unmute is pending. Once the audio unmute time occurs, audio will unmute, the key will return to green normal operation and Key 3 will show normal audio operation.

Key 2 – Dark

Has no operation in *Auto Clean* mode.

Key 3 – Immed Audio Mute

Push to instantly mute output audio. Key will flash red “Audio Muted” when the audio is muted.

Key 4 – Immed Audio Unmute

Press to immediately unmute audio. Once audio unmutes, Key 3 will again show normal operation.

4.2 Cleanit 3 system operation

There are two available versions of SBB-4 operation, *Manual Clean and Auto Clean*, for Cleanit 3.

Manual Clean

Manual Clean (Version 1) workflow requires the operator to trigger the mute/freeze and unmute/unfreeze operation. With this operation, the workflow allows for a very precise cleaning of the audio and video.

The following is an example of that application and workflow:

The **Program Vid Delay** is set to ten seconds, the **Mute Delay** to eight seconds and the **Unmute Delay** to ten seconds. We are assuming a one second reaction time for the operator to react before muting and unmuting.

Time zero	Obscenity starts
1 second	Operator presses the delayed mute control (after one second reaction time)
3 seconds	Obscenity finishes
4 seconds	Operator presses delayed unmute control (after one second reaction time)
9 seconds	System mutes (due to delayed mute setting of eight seconds + one second muting reaction time)
10 seconds	Obscenity reaches delayed programme output (NB. System has already been muted for a second)
13 seconds	Obscenity finishes on delayed programme output
14 seconds	System unmutes (due to delayed unmute setting of ten seconds + one second of unmuting reaction time since obscenity finished at '3 seconds')

With this control, the SBB-4 layout is as follows:

Key 1 – Delay Audio Mute

Click to initiate a delayed audio mute. Delayed mute time in seconds is selected on the ***Settings*** menu. Once initiated, key will flash amber and show "Mute Pend" as the delay to mute counts down. When the countdown ends, the key will return to normal state, the audio will mute, and Key 4 will show red flashing to indicate that the audio is muted.

Key 2 – Return To Normal

Click to initiate a delayed audio unmute or video unfreeze. Delayed unmute time in seconds is selected on the ***Settings*** menu. Once initiated, key will flash amber and show “Unmute Pend” as the delay to unmute counts down. When the countdown ends, the key will return to normal state, the audio will unmute, video will unfreeze and Key 4 will show green normal audio video operation.

Key 3 – Delay Video Freeze

Click to initiate a delayed audio mute and video freeze. Delayed mute time in seconds is selected on the ***Settings*** menu. Once initiated, key will flash amber and show “Mute Freeze Pend” as the delay to mute/freeze counts down. When the countdown ends, the key will return to normal state, the audio will mute, video will freeze, and Key 4 will show red flashing to indicate that audio is muted and video is frozen.

Key 4 – Audio Video Normal

This key is monitoring the mute status of Group 1 protected audio, and the freeze state of video. In normal operation the key will show green “Audio Video Normal” status. In a mute condition of the audio, or freeze of video Key will flash red and show “Audio Video Muted” status.

Note: Unless otherwise specified, this version of operation will ship as standard operation for a Cleanit 3 system. Contact Crystal Vision customer support if Version 2 (*Auto Clean*) operation of the SBB-4 is required.

Auto Clean

Auto Clean (Version 2) only requires the operator to trigger the auto clean function and both mute/freeze and unmute/unfreeze then occur based on the settings of the delay to mute and delay to unmute time variables.

This operation is not as precise and usually has to be set for a little longer overall mute to ensure that all obscenity is cleaned. The advantage to this workflow is the operator has one button push to execute the whole operation, which is helpful in a multitasking modern control room.

The following is an example of that application and workflow:

The **Program Vid Delay** is set to ten seconds, the **Mute Delay** to eight seconds and the **Unmute Delay** to 13 seconds. This will result in a total five second audio mute, the difference of the **Mute Delay** and **Unmute Delay**. We are assuming a one second reaction time for the operator to react by muting and unmuting.

Time zero	Obscenity starts
1 second	Operator presses the delayed mute control (after one second reaction time)
3 seconds	Obscenity finishes
9 seconds	System mutes (due to delayed mute setting of eight seconds + one second reaction time)
10 seconds	Obscenity reaches delayed programme output (NB. System has already been muted for a second)
13 seconds	Obscenity finishes on delayed programme output
14 seconds	System unmutes (due to automatic delayed unmute setting of 13 seconds + one second of muting reaction time)

With this control, the SBB-4 layout is as follows:

Key 1 – Auto Audio Mute

Click to initiate an auto audio mute. Delayed mute time and delayed unmute time in seconds is selected on the ***Settings*** menu. Once initiated, key will flash amber and show “Auto Pend” as the delay to mute counts down. When the delay to mute countdown reaches 0, audio will mute and Key 4 will show red flashing to indicate that the audio is muted. Key 1 will continue to flash amber as the unmute is pending. Once the delay unmute time occurs, audio will unmute, the key will return to green normal operation and Key 4 will show normal audio operation.

Key 2 – Auto Mute Freeze

Click to initiate an auto audio mute and video freeze. Delayed mute time and delayed unmute time in seconds is selected on the ***Settings*** menu. Once initiated, key will flash amber and show “Auto Pend” as the delay to mute counts down. When the delay to mute countdown reaches 0, audio will mute, video will freeze and Key 4 will show red flashing that the audio is muted, video frozen. Key 2 will continue to flash amber as the unmute/unfreeze is pending. Once the delay unmute time occurs, audio will unmute, video will unfreeze, the key will return to green normal operation and Key 4 will show normal audio video operation.

Key 3 – Immed Cover Off

Hold to instantly mute programme audio and freeze programme video. On hold of key, the key will flash amber, show “Immed Cover On”, audio will mute, video will freeze and Key 4 will show the red flashing audio video mute status. Releasing the momentary switch will unmute, unfreeze, show green normal operation and Key 4 will reflect that status as well.

Key 4 – Audio Video Normal

This key is monitoring the mute status of Group 1 protected audio and video freeze status. In normal operation the key will show green “Audio video Normal” status. In a mute condition of the audio, or freeze of video, Key 4 will flash red and show “Audio Video Muted” status.

5 Troubleshooting

In the event that operation is not as expected, here are some troubleshooting tips to help solve the issues. In the event that there are still issues or questions with the system, please contact us at support@crystalvision.tv.

"I have connected my inputs but I am not seeing any output"

Please recheck your connections. Cleanit utilises two modules in our frame for a complete system. This manual shows the proper connections for each system. In addition, there is a status LED on the VisionWeb profanity controls menu for each Cleanit system. On the page, there is a **Delay Input Present** LED that should show green and show the input format when properly connected. The second module input is shown present with a green LED lit labelled **Audio Processor Present** (Cleanit 1) or **AudVid Processor Present** (Cleanit 3) and format. Both of these LEDs should be green and the video format should match for a properly connected system. Past that, ensure that you have connected your output cable to the proper BNC connection.

"My SBB-4's third button is blinking red and I don't seem to be able to control anything"

The third button on the SBB-4 will blink when there is a loss of connection with the Indigo frame system. The SBB-4 communicates continuously with the Indigo frame system for control and status of the Cleanit system. This status shows a communication error. Please check to ensure network connectivity between the two devices.

"My SBB-4 will not power up"

The SBB-4 is a Power over Ethernet device. Please ensure that it is connected to a switch or hub that is Power over Ethernet compliant.

"Some of my audio channels are muting, but not all"

As a default, the system is setup to mute audio Group 1. If you need to configure the system for additional channels or less, please contact us at support@crystalvision.tv.

"I need to change the programme delay settings, how do I do that on the remote control panel?"

The remote control panel (SBB-4) is for operation only, those settings must be changed via a web browser using our VisionWeb control.

"I would like different control parameters on my SBB-4 buttons"

The SBB-4 is fully customisable, please contact us to discuss changing this setup at support@crystalvision.tv.

"I need to change the network settings on the frame and SBB-4 to work on my network"

As a rule, we try to ship these systems configured for your network as a turnkey device. In the event that network settings have to changed, please contact us at support@crystalvision.tv. These settings are easy to change but do require a bit of reconfiguration to the system that we can assist with.

6 Specification

Cleanit 1

VIDEO INPUT
One 3Gb/s or HD or SD input with embedded audio
270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A
The video formats supported are 625, 525, 720p50, 720p59.94, 1080i50, 1080i59.94, 1080PsF23.98, 1080PsF24, 1080p50 and 1080p59.94
3Gb/s cable equalisation up to 80m using Belden 1694A. HD/SD cable equalisation up to 140m with Belden 1694A or equivalent (approx. 100m with Belden 8281)
Input return loss: -15dB for 50MHz to 1.5GHz
Auto data rate and video format selection
Input is electrical BNC. For fibre input, contact us about Cleanit Custom instead

VIDEO OUTPUTS
Two reclocked, protected and delayed 3Gb/s, HD or SD outputs with embedded audio
270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A. Output follows the input format
Output is electrical BNC. For fibre output, contact us about Cleanit Custom instead

STANDARD DEFINITION DELAY
Minimum delay: 3 lines
Maximum delay: 110 seconds/2750 frames (625 line); 91 seconds/2750 frames (525 line)
Programme delay adjustable in seconds

HIGH DEFINITION DELAY
Minimum delay: 2 lines
Maximum delay: 20 seconds/500 frames (1080i50/720p50/1080PsF23.98/1080PsF24); 16 seconds/500 frames (1080i59.94/720p59.94)
Programme delay adjustable in seconds

3GB/S DELAY
Minimum delay: 2 lines
Maximum delay: 10 seconds/500 frames (1080p50); 8 seconds/500 frames (1080p59.94)
Programme delay adjustable in seconds

AUDIO MUTE AND SHUFFLE
Group 1 is the default mute group
Default operation is for audio mute. The system can be modified to perform audio shuffle instead or to mute additional channels of audio

USER SETTINGS FOR PROFANITY DELAY

Programme video delay in seconds (range is from one second to the maximum available for the video frame rate)
Delay to audio mute from initiation in seconds
Delay to audio unmute from initiation in seconds
Manual delayed mute/unmute
Auto delayed mute/unmute
Instant mute/unmute
Custom controls are available on request

ANCILLARY DATA/EMBEDDED AUDIO

Passes entire video stream, including embedded audio and HANC and VANC

STATUS MONITORING

Signal presence and alarm monitoring of signals
Status of profanity delay operation and audio status

CONTROL

VisionWeb Control is available via the web server on the frame and allows operation using a standard web browser on a PC or tablet. A custom GUI will be configured for each order to provide the controls required
Optional SBB-4 smart button box connects to the frame via Ethernet and provides four programmable LCD switches. The SBB-4 uses information from VisionWeb for delay timings etc. The four switches will be configured for each order to provide the controls required. Uses Power over Ethernet so must be used with PoE enabled switch

Cleanit 2

VIDEO INPUT

One 3Gb/s or HD or SD input
270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A
The video formats supported are 625, 525, 720p50, 720p59.94, 1080i50, 1080i59.94, 1080PsF23.98, 1080PsF24, 1080p50 and 1080p59.94
3Gb/s cable equalisation up to 80m using Belden 1694A. HD/SD cable equalisation up to 140m with Belden 1694A or equivalent (approx. 100m with Belden 8281)
Input return loss: -15dB for 50MHz to 1.5GHz
Auto data rate and video format selection
Input is electrical BNC. For fibre input, contact us about Cleanit Custom instead

VIDEO OUTPUT

One reclocked and delayed 3Gb/s, HD or SD output (NB. Protection is in the AES/analogue audio output)
270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A. Output follows the input format
Output is electrical BNC. For fibre output, contact us about Cleanit Custom instead

AUDIO INPUTS AND OUTPUTS

Package is either analogue or digital. Must be specified at order

Analogue input:

Two analogue stereo pairs or four mono channels. 24 bit quantising A to Ds. High input impedance (20 kohm) balanced

Input level range: 0dBFS = +28dBu max / 0dBFS = +12dBu min

Factory set default: 0dBFS = +18dBu or +24dBu by on board link

Signal to noise - 99dB (+18dBu) rms., 22Hz to 22kHz typ.

Total harmonic distortion: 0.004% THD+N rms., 22Hz to 22kHz typ.

Interchannel crosstalk: -110dB at 1kHz, -90dB at 20kHz, rms., typ.

Analogue output:

Two analogue stereo pairs or four mono channels. 24 bit quantising D to As. Low output impedance (66 ohm) balanced

Input level range: 0dBFS = +28dBu max / 0dBFS = +12dBu min

Factory set default: 0dBFS = +18dBu or +24dBu by on board link

Signal to noise: 99dB (+18dBu) rms., 22Hz to 22kHz typ.

Total harmonic distortion: 0.002% THD+N rms., 22Hz to 22kHz typ.

Interchannel crosstalk: -110dB at 1kHz, -90dB at 20kHz, rms., typ.

Digital input:

Four 24 bit stereo pairs

Standard package set for 110 ohm AES/EBU balanced

For 75 ohm AES3-id unbalanced, contact us about Cleanit Custom instead

Asynchronous audio to video 48kHz + or - 50ppm

Total harmonic distortion: With asynchronous inputs: < 0.0001% (-120dB)

Digital output:

Four 24 bit stereo pairs

Standard package set for 110 ohm AES/EBU balanced

For 75 ohm AES3-id unbalanced, contact us about Cleanit Custom instead

Asynchronous audio to video 48kHz + or - 50ppm

Total harmonic distortion: With asynchronous inputs: < 0.0001% (-120dB)

STANDARD DEFINITION DELAY

Minimum delay: 3 lines

Maximum delay: 110 seconds/2750 frames (625 line); 91 seconds/2750 frames (525 line)

Programme delay adjustable in seconds

HIGH DEFINITION DELAY

Minimum delay: 2 lines

Maximum delay: 20 seconds/500 frames (1080i50/720p50/1080PsF23.98/1080PsF24); 16 seconds/500 frames (1080i59.94/720p59.94)

Programme delay adjustable in seconds

3GB/S DELAY

Minimum delay: 2 lines

Maximum delay: 10 seconds/500 frames (1080p50); 8 seconds/500 frames (1080p59.94)
Programme delay adjustable in seconds

AUDIO MUTE AND SHUFFLE
Group 1 is the default mute group
Default operation is for audio mute. The system can be modified to perform audio shuffle instead or to mute additional channels of audio

USER SETTINGS FOR PROFANITY DELAY
Programme video delay in seconds (range is from one second to the maximum available for the video frame rate)
Delay to audio mute from initiation in seconds
Delay to audio unmute from initiation in seconds
Manual delayed mute/unmute
Auto delayed mute/unmute
Instant mute/unmute
Custom controls are available on request

ANCILLARY DATA
Passes entire video stream, including all ancillary data

STATUS MONITORING
Signal presence and alarm monitoring of signals
Status of profanity delay operation and audio status

CONTROL
VisionWeb Control is available via the web server on the frame and allows operation using a standard web browser on a PC or tablet. A custom GUI will be configured for each order to provide the controls required
Optional SBB-4 smart button box connects to the frame via Ethernet and provides four programmable LCD switches. The SBB-4 uses information from VisionWeb for delay timings etc. The four switches will be configured for each order to provide the controls required. Uses Power over Ethernet so must be used with PoE enabled switch

Cleanit 3

VIDEO INPUT
One 3Gb/s or HD or SD input with embedded audio
270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A
The video formats supported are 625, 525, 720p50, 720p59.94, 1080i50, 1080i59.94, 1080PsF23.98, 1080PsF24, 1080p50 and 1080p59.94
3Gb/s cable equalisation up to 80m using Belden 1694A. HD/SD cable equalisation up to 140m with Belden 1694A or equivalent (approx. 100m with Belden 8281)
Input return loss: -15dB for 50MHz to 1.5GHz
Auto data rate and video format selection

Input is electrical BNC. For fibre input, contact us about Cleanit Custom instead

VIDEO OUTPUTS
Two reclocked, protected and delayed 3Gb/s, HD or SD outputs with embedded audio
270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A. Output follows the input format
Output is electrical BNC. For fibre output, contact us about Cleanit Custom instead

STANDARD DEFINITION DELAY
Minimum delay: 3 lines
Maximum delay: 110 seconds/2750 frames (625 line); 91 seconds/2750 frames (525 line)
Programme delay adjustable in seconds

HIGH DEFINITION DELAY
Minimum delay: 2 lines
Maximum delay: 20 seconds/500 frames (1080i50/720p50/1080PsF23.98/1080PsF24); 16 seconds/500 frames (1080i59.94/720p59.94)
Programme delay adjustable in seconds

3GB/S DELAY
Minimum delay: 2 lines
Maximum delay: 10 seconds/500 frames (1080p50); 8 seconds/500 frames (1080p59.94)
Programme delay adjustable in seconds

ANALOGUE REFERENCE
Tri-level syncs or analogue Black and Burst or video
3Gb/s, HD or SD source can use either type of reference

AUDIO MUTE AND SHUFFLE
Group 1 is the default mute group
Default operation is for audio mute. The system can be modified to perform audio shuffle instead or to mute additional channels of audio

VIDEO FREEZE AND BLACK
Default operation is for video freeze. The system can be modified to perform video black instead

USER SETTINGS FOR PROFANITY DELAY
Programme video delay in seconds (range is from one second to the maximum available for the video frame rate)
Delay to audio mute from initiation in seconds
Delay to video freeze/audio mute from initiation in seconds
Delay to audio unmute from initiation in seconds
Delay to video unfreeze/audio unmute from initiation in seconds
Manual delayed mute/unmute (audio only)
Manual delayed mute/freeze (audio and video)
Auto delayed mute/unmute (audio only)

Auto delayed mute/unmute and freeze/unfreeze (audio and video)
Instant mute/unmute (audio only)
Instant mute/unmute and freeze/unfreeze (audio and video)
Custom controls are available on request, including control of video freeze (or black) on its own

ANCILLARY DATA/EMBEDDED AUDIO
Passes entire video stream, including embedded audio and HANC and VANC

STATUS MONITORING
Signal presence and alarm monitoring of signals
Status of profanity delay operation and audio status

CONTROL
VisionWeb Control is available via the web server on the frame and allows operation using a standard web browser on a PC or tablet. A custom GUI will be configured for each order to provide the controls required
Optional SBB-4 smart button box connects to the frame via Ethernet and provides four programmable LCD switches. The SBB-4 uses information from VisionWeb for delay timings etc. The four switches will be configured for each order to provide the controls required. Uses Power over Ethernet so must be used with PoE enabled switch