

AirCleaner™

THE HD/SD VIDEO/AUDIO DIGITAL DELAY FOR LIVE-TO-AIR BROADCAST



Abekas

Abekas is proud to present AirCleaner – an HD/SD digital video and audio

Are you worried about accidentally airing obscene content in your live broadcasts? There's no need to be. AirCleaner provides an insurance policy against those unexpected "wardrobe malfunctions," spoken profanities and obscene gestures from your televised audience. How? With the simple push of a button, content sensors have the ability to eliminate unseemly visuals and offensive sounds before that unwanted content reaches the airwaves and enrages the viewing public. AirCleaner provides a variety of features to seamlessly eliminate the possibility of costly content violations.

AirCleaner accepts either high definition or standard definition SDI video and multi-channel digital audio. For video, you have the choice to switch to an auxiliary "safe" source, internally generated luminance matte, or a built-in effects engine that produces a defocused image to blur out visual obscenities. For audio, you have the choice to switch to an auxiliary "safe" source or to mute an aural breach. Audio and video delay can be adjusted independently, providing a parameter to correct for audio/video synchronization errors. AirCleaner handles AES and embedded audio in the video stream, and has a stereo analog audio output for monitoring purposes.

The unique architecture of AirCleaner employs two input/output pathways, offering four different modes of operation. Two of these modes configure the system to work like a traditional delay machine, while the other two offer a distinct new way of operating. One of these modes allows AirCleaner to be configured as two delay lines connected in series, with support for two operators — it's like having two delay systems in a single box. This feature allows one operator to view the incoming live feed and react to any inappropriate content. If the first operator happens to miss any part of the incident, then the second operator, who receives the feed with additional delay, is able to react accordingly. In this configuration AirCleaner provides extra insurance to the broadcaster, by supplying two separate opportunities to conceal the violation before it reaches the airwaves. Each trigger button also has a variable reaction time that "backs up" the start of the switch in order to catch the beginning of the violation without changing the overall delay.

In all operating modes, audio and video are controlled independently with two separate trigger buttons. When a violation is observed, the operator presses one of these two buttons, and AirCleaner masks the offense. AirCleaner can be programmed to produce any of the following masking effects:

Video: Adjustable defocus through built-in effects engine
Auxiliary "safe" input
Internal luminance matte

Audio: Auxiliary "safe" input
Mute

AirCleaner features solid-state technology and is equipped with a bypass relay circuit to further ensure integrity of live television broadcasts. This bypass can be operated manually via a front panel push button, or will trigger automatically in the event of a complete loss of power. To help protect against such a power loss, a

redundant power supply option is available. AirCleaner is equipped with a front panel LCD screen for simple operation and set up, and is housed in a compact 1RU chassis. If your transmission facility handles only SD or a very small amount of HD, then AirCleaner is available in a lower-cost model with half the delay memory of the standard model.

AirCleaner employs four separate delay circuits: an audio and video delay for up to two outputs. Each delay time is variable and user programmable. Once the delay times are programmed for a particular broadcast, the delay settings and other setup parameters are saved in non-volatile memory — ensuring they remain unchanged throughout the broadcast.

UNDERSTANDING REACTION TIME

Depending on the desired operation, AirCleaner requires one or two human operators. To account for the fact that all humans have differing reaction times, AirCleaner includes AutoClean™ — a feature that eliminates the natural delayed reaction of human operators to respond to an observed visual or aural event.

With AutoClean, two separate reaction times (one for each operator) can be programmed to automatically "back up" the trigger point of the masking trigger button. This gives each operator the time to recognize a violation prior to the button press, so that the masking will start before that point — and will continue to be masked for the entire duration the button is held down.

Example: With the overall delay time set to 120 frames and the reaction time set to 30 frames, when the operator presses the masking button it will take 90 frames for the change to occur at the output. AutoClean thus provides an additional 30 frames to "back up" the button press. The total program delay will still be 120 frames, but the content will be masked 30 frames before the button is pressed and will remain masked for the duration the button is held down.

(Total Delay) – (Reaction Time) = Start Point of Masking
(Time Button Held) + (Reaction Time) = Total Time of Masking

OPERATIONAL MODES

In AirCleaner, audio and video have separate pathways that allow audio and video to be masked independently of each other. There are also separate reaction time parameters available for each operator, along with an audio-to-video synchronization parameter for the program pathway.

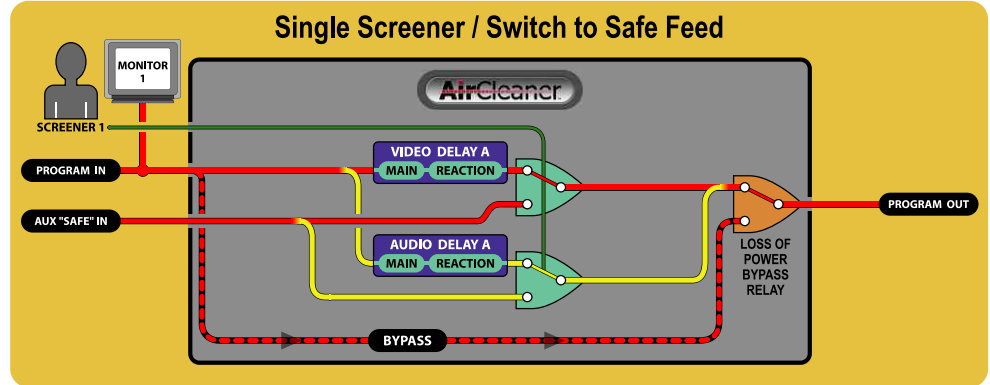
For the sake of simplicity, the block diagram illustrations depict only the main audio and video delay pathways, and without analog audio monitoring. The AutoClean reaction delays and the audio-to-video synchronization delays are also not illustrated.

delay system targeted for today's live-to-air broadcasts.

OPERATIONAL MODE ILLUSTRATIONS

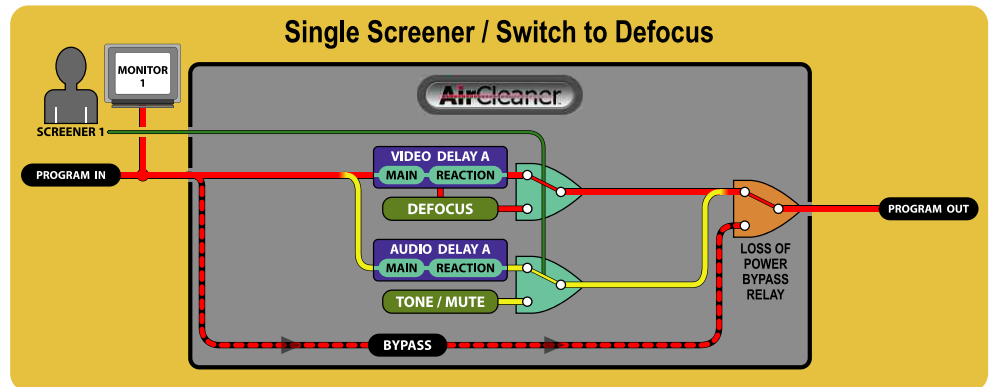
Single Screener / Switch to Safe Feed

- At button press, video and/or audio switches to auxiliary input "Safe" feed; video can also be switched to luminance matte; audio can switch to mute.
- AutoClean operator reaction time setting is independent of the overall delay time
- Switch to auxiliary input is timed to program input, assuming delays are equal
- Auxiliary output (not shown) can be used to monitor any signal through the delay paths and is user-selectable
- Embedded digital audio is shown, although discreet AES digital audio may be routed instead



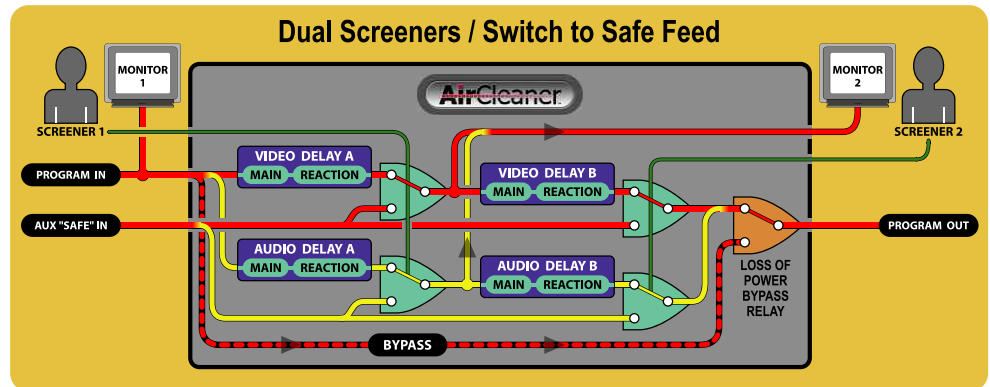
Single Screener / Switch to Defocus

- At button press, video switches to defocused feed; audio switches to mute or auxiliary input (not shown)
- AutoClean operator reaction time setting is independent of the overall delay time
- Switch to auxiliary audio input is timed to program input, assuming delays are equal
- Auxiliary output (not shown) can be used to monitor any signal through the delay paths and is user-selectable
- Embedded digital audio is shown, although discreet AES digital audio may be routed instead



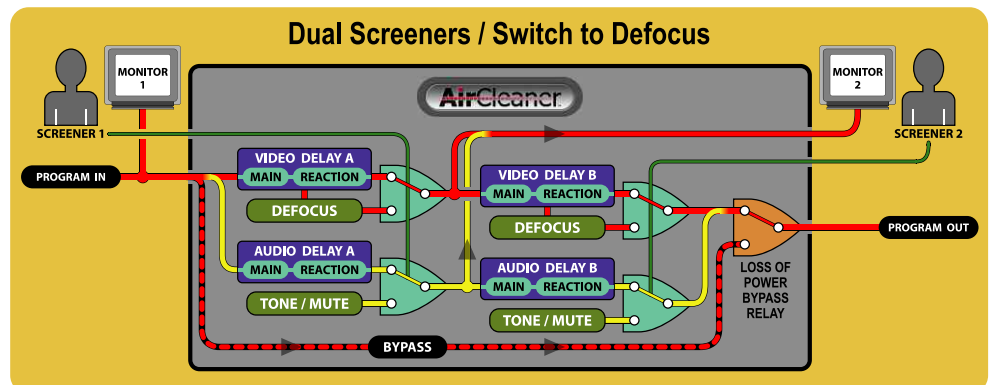
Dual Screeners / Switch to Safe Feed

- At button press, video and/or audio switches to auxiliary input "Safe" feed; video can also be switched to luminance matte; audio can switch to mute.
- AutoClean operator reaction time setting is independent of the overall delay time
- Switch to auxiliary input is timed to program input, assuming delays are equal
- Auxiliary output (not shown) can be used to monitor any signal through the delay paths and is user-selectable
- Embedded digital audio is shown, although discreet AES digital audio may be routed instead



Dual Screeners / Switch to Defocus

- At button press, video switches to defocused feed; audio switches to mute or auxiliary input (not shown)
- AutoClean operator reaction time setting is independent of the overall delay time
- Switch to auxiliary audio input is timed to program input, assuming delays are equal
- Auxiliary output (not shown) can be used to monitor any signal through the delay paths and is user-selectable
- Embedded digital audio is shown, although discreet AES digital audio may be routed instead



SPECIFICATIONS

STANDARD FEATURES

- Four Solid-State programmable audio and video delays (Program-1 and Program-2)
- SDTV 10-Bit YUV 4:2:2 SDI Video I/O (525/625)
- HDTV 10-Bit YUV 4:2:2 SDI Video I/O (formats listed below)
- Digital Audio
 - Accommodates AC-3 and Dolby-E Bit Streams
 - Embedded and discrete AES/EBU digital audio I/O
 - Analog Audio Monitoring: unbalanced, on 3.5mm audio connector
- Non-Volatile Setup Memory
- Bypass Relay circuit with power-loss fail-safe and manual switch
- Ethernet control port
- GPI control port
- Analog HD Tri-Level or Composite Analog SD reference (terminating)
- User-programmable defocus effects engine
- User-programmable video luminance matte

OPTIONAL FEATURES

- Redundant power supply
- Trigger Button Box with Audio and Video trigger buttons / GPI Interconnect cable

SUPPORTED VIDEO FORMATS

High Definition 4:2:2 YUV

at 1.5Gb/s with 10-Bit Resolution

- 1920x1080: /60i /59.94i /50i
- 1920x1080: /30p /29.97p /25p /24p /23.98p
- 1920x1080: /30psF /29.97psF /25psF /24psF /23.98psF
- 1280x720: /60p /59.94p

Standard Definition 4:2:2 YUV

at 270Mb/s with 10-Bit Resolution

- 720x486 (525): /59.94i (ITU-R/BT.601-4)
- 720x576 (625): /50i (ITU-R/BT.601-4)

ANALOG REFERENCE INPUT

- Tri-level HD or Composite Analog SD, Terminating

(1) F BNC

SAFETY & EMISSIONS COMPLIANCE

- TUV (United States and Canada)
- BSMI / VCCI / GS Mark / CE Mark
- EN55103-01 / EN55103-02

DATA / CONTROL

- Ethernet Control

LAN Port

(1) F RJ45

- GPI Control

Input Port

(1) F 9D

CHASSIS PHYSICAL & ELECTRICAL

- Rack-Mount Configuration Dimensions:

W = 17.0 in / H = 1.75 in / D = 10.5 in

W = 43.18 cm / H = 4.45 cm / D = 26.67 cm

- Weight: ~10 lbs. (~4.55 kg.)
- AC Power: 100 to 240 VAC / 3 to 1.5 Amps / 50-60Hz (Auto-sensing power input)

DIGITAL VIDEO INPUT (PGM IN)

(1) F BNC

High-Definition:

- SDI SMPTE 292M (10-bit at 1.5 Gb/s)

Standard-Definition:

- SDI SMPTE 259M (10-bit at 270 Mb/s)

DIGITAL VIDEO INPUT (AUX IN)

(1) F BNC

High-Definition:

- SDI SMPTE 292M (10-bit at 1.5 Gb/s)

Standard-Definition:

- SDI SMPTE 259M (10-bit at 270 Mb/s)

DIGITAL VIDEO OUTPUT (PGM OUT)

(1) F BNC

High-Definition:

- SDI SMPTE 292M (10-bit at 1.5 Gb/s)

Standard-Definition:

- SDI SMPTE 259M (10-bit at 270 Mb/s)

DIGITAL VIDEO OUTPUT (TAP OUT)

(1) F BNC

High-Definition:

- SDI SMPTE 292M (10-bit at 1.5 Gb/s)

Standard-Definition:

- SDI SMPTE 259M (10-bit at 270 Mb/s)

DIGITAL AUDIO INPUT

(8) F BNC

(Also embedded in PGM IN and AUX IN SDI input video streams)

High-Definition:

- AES/EBU 48kHz at 24-bit resolution

- 8-tracks (4 stereo pairs) PGM IN

- 8-tracks (4 stereo pairs) AUX IN

Standard-Definition:

- AES/EBU 48kHz at 20-bit resolution

- 4-tracks (2 stereo pairs) PGM IN

- 4-tracks (2 stereo pairs) AUX IN

DIGITAL AUDIO OUTPUT

(8) F BNC

(Also embedded in the PGM OUT and TAP OUT SDI output video streams)

High-Definition:

- AES/EBU 48kHz at 24-bit resolution

- 8-tracks (4 stereo pairs) PGM OUT

- 8-tracks (4 stereo pairs) TAP OUT

Standard-Definition:

- AES/EBU 48kHz at 20-bit resolution

- 4-tracks (2 stereo pairs) PGM OUT

- 4-tracks (2 stereo pairs) TAP OUT

ANALOG AUDIO MONITORING OUTPUT

(1) F 3.5mm

- Unbalanced, line-level at -10 dBV

2-Tracks (1 stereo pair)

User-selectable to monitor any stereo audio pair (input or output)

MODEL CONFIGURATIONS

- Model 1: HD Max.Delay = 12 to 33 Sec. (depending on format)
SD Max.Delay = 68 Sec.

- Model 2: HD Max.Delay = 6 to 16 Sec. (depending on format)
SD Max.Delay = 34 Sec.



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AirCleaner

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