

SD-Connect™
User's Manual



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Convergent Design SD-Connect User's Manual

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Welcome

Congratulations on selecting a Convergent Design SD-Connect™ . The SD-Connect™ is shipped from the factory in the most secure packaging available. Please inspect the contents of the package and make sure to email us at support@convergent-design.com if you find any shipping damage or missing components in your package, as soon as possible.

Shipping Contents

- A SD-Connect™
- A grounded A/C power cord
- User's Manual

Packing Material

Please store all original containers. Convergent Design will not take responsibility for any products shipped to Convergent Design without the original shipping material. We have engineered a full damage proof packaging for the unit and without this package your unit may be damaged beyond repair when being shipped using FedEx, UPS, or other freight companies. Please make sure to keep the packaging in a safe location for future use.

About this User's Manual

This manual provides information needed to operate the Convergent Design SD-Connect™ . This manual assumes that the reader is familiar with basic analog and digital video and audio connections.

This manual reflects software and firmware versions 1.1.49 and 0.27 respectively.

Return Packing Procedures

Please keep all packing material for future shipping purposes. Never ship delicate equipment in Styrofoam pellets. Systems returned to Convergent Design in unacceptable packing will be refused and the warranty could be void. Please see last page for more warranty information.

SD-Connect™ Overview

The Convergent Design SD-Connect™ is a low-cost, high-performance audio/video format converter for a range of editing and broadcast applications. Unlike some other converters, SD-Connect™ is compatible with a variety of editing applications on both Power Mac and PC hardware platforms. Through its intrinsic hardware DV CODEC and menu-based user interface, it can also be configured as a stand-alone device for frame synchronization and format conversion without any intervention from a host computer. In addition to the DV format commonly transmitted over the 1394 bus, SD-Connect™ also supports uncompressed digital video captured to and played back from a host computer.

Format Conversions

- DV over 1394 ↔ Analog Video and Analog / Digital Audio
- DV over 1394 ↔ SDI (with embedded audio) and Analog / Digital Audio
- Uncompressed Video/Audio/Time Code ↔ Analog Video and Analog / Digital Audio
- Uncompressed Video / Audio ↔ SDI (with embedded audio) and Analog / Digital Audio
- Analog Video and Analog/Digital Audio ↔ SDI (with embedded audio)
- Multiple Deck Control Options: 1394 → RS-422 and RS-422 (from PC) → RS-422 (to deck) loop-through mode

Features

- DV over 1394 Support: DV25: DV / DV CAM / DVC Pro (NTSC: 4:1:1, PAL 4:2:0), DVC Pro PAL (4:1:1) at 100/200/400 Mbits/sec
- Analog Video I/O (12-Bit A/D and D/A with 4x / 16x oversampling)
- Composite Video I/O with 5-Line Super Adaptive Comb Filter
- S-Video I/O
- Component Video I/O
- Video Standards: NTSC, NTSC-J and PAL (BGHID)
- SDI I/O with 4-Channels of Embedded 20-Bit Audio
- 4-Channel Balanced Analog Audio I/O, (24-bit A/D and D/A)
- 4-Channel AES/EBU Digital Audio I/O
- On-Board 2nd generation Hardware DV CODEC
- All outputs simultaneously active
- TBC (Time Base Corrector) and Frame Synchronizer Capable
- Menu-Based Control, including comprehensive proc amp
- Web-Based Firmware upgrades with auto-checking for updates
- Front Panel LCD screen control and Error message display
- Standalone and PC/MAC editing modes

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- Compatible with Apple® Final Cut Pro®, Adobe Premiere®, Avid Xpress® Pro, Sony Vegas® Video, DV Camcorders and Decks

SD-Connect™ Front View



Figure 1

A 128x64 graphics LCD panel, a power button to its left, and a rotary push-knob to its right comprise the SD-Connect™ user.

LCD Panel

Figure 2 shows a typical appearance for the LCD panel. The eight text lines on the panel are divided into four areas. The top four lines are used for the display of menu items. The fifth is a status line, displayed in inverse characters, showing the current video, audio, and 1394 sources from left to right. The sixth is an error line, showing either **No errors**, a flashing set of possible problems with the system, or **Error display off**, depending on the state of the system and the setting for the **Error Display** menu option (see below). The final two text lines are used in stand-alone mode to display a two- or four-channel audio meter. When SD-Connect™ is not in stand-alone mode, the seventh line is unused and the eighth displays the current timecode either

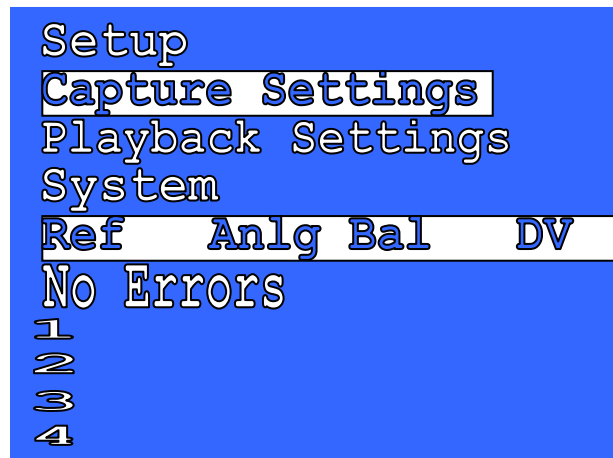


Figure 2

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synthesized by the system or recovered from an attached deck. Text that may appear on the status and error lines is described in **Status Line** and **Error Line** sections below. The full menu system is described under **SD-Connect™ Menu Details**.

Status Line

The status line will display the current video source, audio source, and 1394 mode, in that order from left to right, followed by clockface icon or blank space to indicated whether SD-Connect™ is synthesizing the timecode or retrieving it from a connected deck. The possible values display for each are described below.

Video Source

CVBS. Current video source is analog composite on the video-in connector.

Ref. Current video source is analog composite on the reference-in connector.

SVid. Current video source is analog S-Video.

YpBpR. Current video source is analog component.

SDI. Current video source is SDI.

Test. Current audio source is a video test pattern.

Audio Source

Anlg Unb. Current audio source is analog unbalanced.

Anlg Bal. Current audio source is analog balanced.

AES/EBU. Current audio source is AES/EBU digital.

1394. Current audio source the 1394 bus.

SDI. Current audio source is SDI.

Test. Current audio source is an audio test pattern.

1394 Mode

DV. Standard-definition audio/video DV data are expected on the 1394 bus.

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UC8. 8-bit uncompressed audio/video data are expected on the 1394 bus.

UC10. 10-bit uncompressed audio/video data are expected on the 1394 bus.

Timecode Mode

Clockface. SD-Connect™ is simulating the timecode.

Blank Space. Timecode is retrieved from a connected deck. Merely intermittent appearance of the clockface reflects the fact that SD-Connect™ occasionally polls the deck for status information, simulating the timecode for the frame during which a status request is sent instead of a timecode request. This intermittent clockface is the norm when a deck is connected and deck control is enabled.

Error Line

When the **Error Display** menu option is off, the text **Error Display Off** appears in the error line. Otherwise, the error line displays either **No Errors** or a set of one or more flashing messages indicating possible error conditions in the system. These error indications are described below.

NO DECK. SD-Connect™ detects that it is not connected to an RS-422 deck.

LOCAL DECK CONTROL. A connected deck appears to be set for local deck control. This will prevent an editing application from controlling the deck through SD-Connect™.

NO DECK REF. A connected deck is reporting that it has lost its reference signal.

NO TAPE. A connected deck is reporting that there is no tape in the deck.

TAPE BEGIN OR END. A connected deck is reporting that the tape in the deck is either at its beginning or at its end.

WRITE PROTECTED. A connected deck is reporting that the tape in the deck is write-protected. An operation involving recording to the deck will not work properly.

ANLG VIDEO UNLOCKED. SD-Connect™ could not lock to the incoming analog video signal.

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SDI VIDEO UNLOCKED. SD-Connect™ could not lock to the incoming SDI video stream.

NO 1394 STREAM. In playback mode, SD-Connect™ was unable to find a start-of-frame pattern in the incoming 1394 stream.

Power Button

After you have applied AC power and see that the SD-Connect™ display is stable, you may press the power button to turn off the display and minimize the power SD-Connect™ consumes. In its power-down mode, SD-Connect™ will stop streaming audio and video but will remember the state of your session at the time the power button was pressed. On pressing the button again, you should return to the same system settings and menu position as when you entered power-down mode. On entry to power-down mode, SD-Connect™ will also save most of the current settings (although *not* the menu position) in memory that retains its contents even when AC power is withdrawn. When power is later applied again, SD-Connect™ will recover these settings. It is usually a good practice to end a session by pushing the power button, so that SD-Connect™ will always retain your current settings even if AC power is lost. See also the **Update** section below for the restart function the power button assumes following software and firmware updates.

Rotary Push-Knob

The rotary push-knob is used principally for navigation through the SD-Connect™ menu system. Clockwise rotation of the knob moves the selection highlight down through items in the current menu. Counter-clockwise rotation moves the highlight up through the items. Pushing the knob will select the current menu item, which may be either another menu or an action as described under **SD-Connect™ Menu Selections** below. See some of these actions for use of the push-knob in setting certain system parameters. See also the **SD-Connect™ Initialization** section below for use of the push-knob in selecting a reference source.

SD-Connect™ Rear View

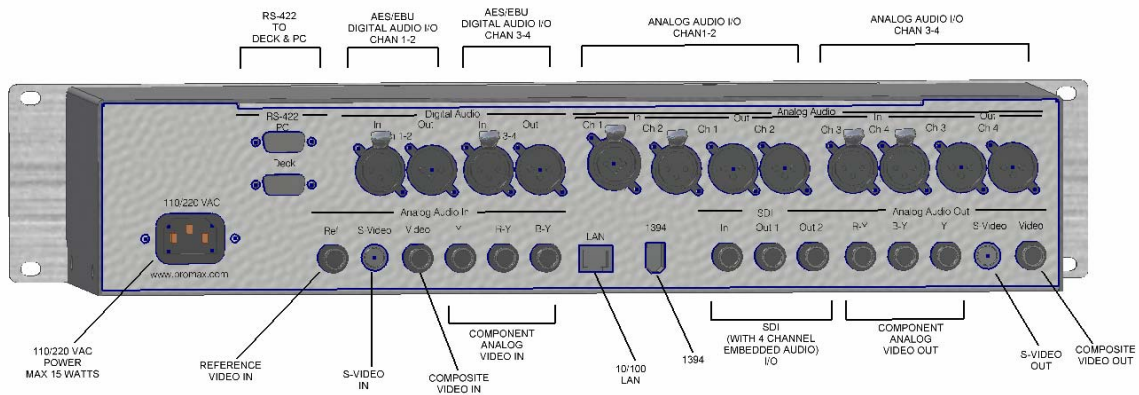


Figure 3

All of SD-Connect™'s video, audio, 1394, LAN, tape deck control and power connections are located on the back on the box. In general, the inputs are located on the left side and the outputs are on the right. Video, 1394 and LAN I/Os are located on the bottom row, while audio and RS-422 connections are located on the top row.

All inputs and outputs can be simultaneously connected. The desired video and audio source can be selected via the LCD menu or via the web control. Once a given input is selected, it will appear on all the various corresponding outputs simultaneously. (all outputs are always “hot”).

The 10/100 LAN connection is utilized for web based control and firmware updates. SD-Connect™ may use a DHCP sever for LAN access or use specific static IP addresses to be entered (and stored) on the box. The LAN connection is not required for normal operation, but is required for firmware updates and web-based control.

SD-Connect™ requires that you either connect a stable black burst or use an internal reference that SD-Connect™ provides. Connect the black burst signal to the “Ref” video input. Also connect this same reference signal to any decks connected to SD-Connect™.

Two modes of tape deck control (and time code read/write) are supported via two separate RS-422 connections: one for the deck and a second to the PC (or serial control device). The modes allow 1394 to RS-422 (deck) control or RS422 (PC) to RS-422 (Deck) Control (loop-thru mode)

SD-Connect™ Menu Summary

Setup

Direction

Capture (Audio/Video In → 1394 Out)

Playback (1394 In → Audio/ Video Out)

Application

Final Cut Pro

Premiere Pro

Vegas

Xpress Pro PC

Xpress Pro Mac

DV Camera/Deck

Stand-Alone

1394 Mode

DV

DVCPro PAL

Uncompressed 10-Bit

Uncompressed 8-Bit

Deck Ctrl

1394 (1394 AV/C → RS-422)

RS422 (RS-422 → 1394 AV/C)

None

Capture Settings

Video Src

Reference (Reference-In (Default))

CVBS (Composite Video Input)

S-Video (S-Video Input)

Component (Component Video Input)

SDI (SDI Video Input)

Test (Color Bars)

Quality (Professional or consumer)

Audio Src

Unbalanced

Balanced

AES/EBU

SDI

Test

Audio Rate

48 KHz

44.1 KHz

32 KHz

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Video Proc Amp

Y Offset (Brightness)
Y Gain (Contrast)
C Phase (Hue)
C Gain (Saturation)
Restore Defaults

Playback Settings

Source

1394
SDI

System

Blackburst on Y

Standard

NTSC (NTSC with 7.5 IRE Setup)
PAL (PAL BGHID, no setup)
NTSC-J (NTSC with no Setup)

Ref Source

IP Addresses

Use DHCP
Device
Gateway
Subnet
DNS
TFTP

Backlight Level

Audio Mute

Error Display

System Reset

Update

Get new only
Force Current
Get Version

About

SD-Connect™ Menu Details

Sections below describe each of the menus and actions summarized above.

You may select a menu item by turning the rotary push-knob to move a highlight bar over the option and then pushing the knob. Every menu below the top-level

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menu that appears on the screen when power is applied to SD-Connect™ includes an **<EXIT>** item not included in the summary above or the descriptions below. Selection of each such item will return the display to the next higher level in the menu system. The menu system will remember the last non-**<EXIT>** selection at each menu in the system and return you to that option the next time you select that menu.

You will note that many of the menu items display in parentheses the action item currently selected within that menu. Other items displaying values in parentheses are action items whose selection will either toggle some condition within the system or allow you to dial in a new value by turning the push-knob. Clockwise rotation of the knob will increase the value, while counter-clockwise rotation will decrease it. Where appropriate, the adjustment of such values will provide immediate feedback without the need for you to push the knob to select the new value.

Some menu or action items may be “grayed out” on the display with a horizontal line through the item. This indicates either that the item is temporarily unavailable as a result of some other setting in the system or that it represents an option soon to be added to available SD-Connect™ features.

Setup

The **Setup** menu includes settings most likely to change during the course of a session with your SD-Connect™, while the **System** menu described below includes settings likely to remain the same across multiple sessions.

Direction

The direction setting determines whether SD-Connect™ will encode a stream on the 1394 bus for some external device or application to capture or will decode a stream played back over the bus by an external source. When you select **Capture**, the source of data for the encoded stream will be determined by the **Video** and **Audio Src** settings described below. SD-Connect™ will encode the data according to the **1394 Mode** setting and make it available on the 1394 bus. When you select **Playback**, either the 1394 bus or the SDI bus will be the source of the data SD-Connect™ processes, as determined by **Playback Settings/Source**. SD-Connect™ will decode incoming data and route it to all audio and video outputs. Note that when used with an editing application (see **Application** setting below) employing device control, SD-Connect™ will automatically switch between capture and playback modes as you perform capture and playback operations within the application.

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Application

SD-Connect™ may be used in a variety of applications requiring slightly different handling of various situations. SD-Connect™ adapts to application requirements depending on your selection under this menu as described below.

Final Cut Pro. SD-Connect™ assumes you are using device control through Apple® Final Cut Pro® editing.

Premiere Pro. SD-Connect™ assumes you are using device control through Adobe Premiere® Pro software on a Windows-based PC system.

Vegas. SD-Connect™ assumes you are using device control through Sony Vegas® Video software on a Windows-based PC system.

Xpress Pro PC. SD-Connect™ assumes you are using device control through Avid Xpress® Pro software on a Windows-based PC system.

Xpress Pro Mac. SD-Connect™ assumes you are using device control through Avid Xpress® Pro software on an Apple Mac system.

DV Camera/Deck. SD-Connect™ assumes you have connected SD-Connect™ to a DV camera or deck and are not using external device control. Switches between capture and playback modes will occur only in response to your selections under the **Direction** menu.

Stand-Alone. The stand-alone mode is currently “grayed out”. This mode will provide for the generation of a variety of audio and video test patterns and the activation of the audio meter on the last two LCD lines. It is intended for applications in which SD-Connect™ will be used for format conversions without the intervention of any editing application.

1394 Mode

This option determines the type of audio/video data carried on the 1394 bus. If you select **DV**, SD-Connect™ will encode standard-definition DV data in capture mode and decode DV data in playback mode. If you select **DVCPro PAL**, SD-Connect™ will switch to **Standard/PAL** (see below) if necessary and begin encoding or decoding DVC Pro data. The **Uncompressed 10-Bit** and **Uncompressed 10-Bit** options are currently “grayed out”. These options will allow receipt and transmission over the 1394 bus of uncompressed standard-definition video with embedded 8-channel audio and will be activated as soon as drivers are available for certain editing platforms.

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Deck Ctrl

The option selected under this menu determines the device-control protocol used to control a deck connected to SD-Connect™. Only the **1394** option is currently available. This allows control of an RS-422-protocol deck via AV/C messages passed between an editing application and SD-Connect™. SD-Connect™ will translate AV/C messages into their analogues in the RS-422 protocol and will maintain status information retrieved from the deck that may be forwarded to the editing application in response to AV/C queries. The **RS-422** option is currently “grayed out” and, once activated, will allow deck control to be initiated externally via the RS-422 control protocol and passed through SD-Connect™ to a connected RS-422-controlled deck. The **None** option allows you to turn off deck control for situations in which you wish to control an A/V source manually, as you might when capturing from a consumer deck that does not support RS-422 device control. In this mode, SD-Connect™ will synthesize timecodes to pass to an editing application during video capture.

Capture Settings

Items under this menu allow you to adjust settings that affect audio and video capture through SD-Connect™.

Video Src

This setting determines the single video source SD-Connect™ will use when in **Capture** mode. The selections here all correspond to possible connections on the SD-Connect™ rear panel.

Reference. SD-Connect™ will process composite video input at the *Ref* connector in the *Analog Video In* section of the rear panel.

CVBS. SD-Connect™ will process composite video input at the *Video* connector in the *Analog Video In* section of the rear panel.

S-Video. SD-Connect™ will process S-Video input at the *S-Video* connector in the *Analog Video In* section of the rear panel.

Component. SD-Connect™ will process component video input at the *Y*, *R-Y*, and *BY* connectors in the *Analog Video In* section of the rear panel.

SDI. SD-Connect™ will process uncompressed video input at the *In* connector in the *SDI* section of the rear panel.

Test. SD-Connect™ will generate color bars internally as the video input source. This option will be extended in the stand-alone mode to permit selection of any of a number of video test patterns.

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Quality. This is a toggle switch that allows you to select either professional-quality or consumer-quality input. The consumer setting may be required to obtain satisfactory results with inexpensive consumer decks.

Audio Src

This setting determines the single audio source SD-Connect™ will use when in **Capture** mode. The selections here all correspond to possible connections on the SD-Connect™ rear panel.

Unbalanced. SD-Connect™ will process unbalanced analog audio input at the *Ch1* through *Ch4* connectors in the *Analog Audio/In* sections of the rear panel.

Balanced. SD-Connect™ will process balanced analog audio input at the *Ch1* through *Ch4* connectors in the *Analog Audio/In* sections of the rear panel.

AES/EBU. SD-Connect™ will process digital audio input at the *Ch 1-2* and *Ch 3-4* connectors in the *Digital Audio/In* sections of the rear panel.

SDI. SD-Connect™ will process digital audio input embedded within the SDI input at the *In* connector in the *SDI* section of the rear panel.

Test. SD-Connect™ will generate a 1-KHz tone internally as the audio input source. This option will be extended in the stand-alone mode to permit selection of any of a number of audio test patterns.

Audio Rate

The SD-Connect™ audio rate is currently fixed at 48 KHz, so all of the options under this menu are “grayed out” and will have no effect.

Video Proc Amp

This menu gives you the opportunity to make several adjustments to an incoming analog video signal by selecting the parameter to adjust and dialing in the desired value.

Y Offset. This luma offset (brightness) setting allows you to dial in an offset in a range from -100.00 IRE to 100 IRE.

Y Gain. This luma gain (contrast) setting allows you to dial in a multiplier in a range from 0.000 to 2.000.

C Phase. This chroma phase (hue) setting allows you to dial in a phase offset in a range from -90° to 90°.

C Gain. This chroma gain (saturation) setting allows you to dial in a unitless gain in a range from 0 to 255.

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Restore Defaults. This option allows you to restore the current proc-amp settings to their default values. Note that the displayed values for the settings described above will change immediately when you push the knob to select this option.

Playback Settings

Items under this menu allow you to adjust settings that affect audio and video playback through SD-Connect™.

Source

The option selected here determines the bus over which SD-Connect™ will expect to receive audio/video data to be played back through its various output connections. If you select **1394**, SD-Connect™ will expect to decode audio and video data input at the *1394* connection on the rear panel. The format of that data will be determined by the **1394 Mode** setting (see above). If you select **SDI**, SD-Connect™ will expect to process audio and video data at the *In* connector in the *SDI* section of the rear panel.

System

The **System** menu includes settings likely to remain the same across multiple sessions with your SD-Connect™, while the **Setup** menu described above includes settings most likely to change during the course of a session.

Blackburst on Y

Given the proper cabling (to split the Y component out of the Y-C, or *S-Video* connector in the *Analog Video Out* section of the rear panel), it is possible for SD-Connect™ to provide a blackburst signal for use in synchronizing external equipment. Selecting this action item will toggle SD-Connect™'s handling of the *S-Video* output connector, switching between such a blackburst signal and the standard *S-Video* output.

Standard

This menu allows you to select from the following three video standards.

NTSC. NTSC video with 7.5 IRE setup.

PAL. PAL BGHID with no setup.

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NTSC-J. NTSC with no setup.

Note that when you switch between **PAL** and either of the **NTSC** modes, SD-Connect™ will automatically restart in the new mode. When switching between **NTSC** and **NTSC-J**, SD-Connect™ can switch standards without restarting.

Ref Source

This action item allows you to toggle between the use of an internal reference signal and the requirement for an external reference signal at the *Ref* connector in the *Analog Video Input* section of the rear panel. When the menu displays **(External)** as the **Ref Source**, SD-Connect™ is currently using an external reference and pressing the push-knob will cause it to restart and use its internal reference. When the menu displays **(Internal)**, SD-Connect™ is currently using its internal reference and pressing the push-knob will cause it to restart and attempt to use an external reference signal. On restart the display will inform you of a missing or incorrect reference and give you the opportunity to go back to internal reference by pressing the push-knob.

IP Addresses

Under this menu are options that determine the network settings SD-Connect™ will use in the course of system updates.

Use DHCP. By selecting this action item, you may toggle between the use of a DHCP server and the use of specific static IP addresses you must enter manually by selecting the **Device**, **Gateway**, **Subnet**, and **DNS** items described below. When SD-Connect™ is using DHCP, it will attempt to contact a DHCP server on your local-area network (LAN) to secure all the IP addresses it will need to connect to the SD-Connect™-update FTP server. When *not* using DHCP, SD-Connect™ will attempt its FTP connection using the static IP settings you provide. Note that the specific IP addresses indicated under this menu currently reflect existing settings manually entered into SD-Connect™ and *not* any addresses obtained through DHCP.

Other action items under this menu use the rotary push-knob to dial in and select new values. For each of the IP addresses you wish to enter, push the knob once to begin entering the address. You will see the first of four three-digit sections of the value unhighlighted. By rotating the knob you may adjust to any value from 0 to 255. When you see the value that corresponds to the first field in the dotted notation for an IP address, push the knob to select that value. The display will proceed to the next field in the IP address. Continue adjusting and selecting the second, third, and fourth fields in the dotted notation. On pressing the knob for the final field, the action item will again appear completely highlighted, and the new IP address will have been saved.

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Device. This is the IP address for SD-Connect™ itself. The address you use will depend on the configuration of your LAN.

Gateway. This is the address of the device, a router or a server computer providing routing services, that will provide access to the world outside your local-area network. Again, the address you use will depend on the configuration of your LAN.

Subnet. This is the subnet mask required by your LAN. Adjustment of this value differs from that for IP addresses. You need only push the knob once to begin the adjustment, then dial in the value your LAN requires and push the knob again to accept the new value.

DNS. This is the IP address of the Domain Name Server (DNS) that SD-Connect™ will use to translate the name of its FTP site into an IP address to use in connecting to that site. This will depend on your LAN configuration and may be the address of a computer on that LAN or the address of another computer somewhere on the Internet.

TFTP. This option is “grayed out” and will be used only for system recovery with guidance from technical support.

Backlight Level

SD-Connect™ provides sixteen levels (0 to 15) of backlighting for its LCD screen. When you push the knob to select this item, the value within parentheses will become unhighlighted, and you may rotate the knob to adjust the backlight to the desired level. Pushing the knob will then select the new level.

Audio Mute

This item is currently “grayed out” but will, when activated, allow you to mute audio output during fast-forward and rewind operations in capture mode.

Error Display

This is a toggle switch that allows you to turn the error-line display on or off. When error display is off, the error line will always show **Error display off**. When error display is on, errors should display normally.

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System Reset

Selecting this option will cause the system to restart. In some cases in which SD-Connect™ is exhibiting unexpected (and unwanted) behavior, initiating a reset may be a good alternative to power-cycling the box.

Update

You should use this option periodically to ensure that your SD-Connect™ box has the most appropriate software and firmware. In order for you to perform an update, your LAN must allow an FTP client to make connections and exchange data.

Each of the first two options under this menu is capable of updating your SD-Connect™ box to the current revisions. The **Get new only** option checks whether there is a new revision available and performs an update only if there is. The **Force current** option forces an update, even if it appears that the version of your currently installed software and firmware match those of the most current versions available. The **Get Version** allows you to recover to your SD-Connect™ box some previous version of software and firmware. After selecting **Get Version**, you will see the current software version number displayed in inverse characters except for the field (from left to right: major version, minor version, or build number) whose value you may modify by rotating the pushknob. Pushing the knob selects the currently displayed value for a field. Selecting the value for the build field initiates the update process. Specific versions available for selection under the **Get Version** option will be listed at www.convergent-design.com.

When an update is performed, SD-Connect™ will update both *software* and *firmware* from files maintained on the SD-Connect™ update FTP site. *Software* refers to the operating code that sets up audio and video streaming, manages the user interface, and processes messages for device control. *Firmware* refers to on-board logic that manages active audio/video streaming and other low-level functions SD-Connect™ performs. Mutually compatible software and firmware versions are both required for proper operation of your SD-Connect™. When you select either of the options under this menu, SD-Connect™ will, after a few moments with a blank LCD screen, begin to show progress through the update process.

Most often, the update will proceed unattended to a successful completion. In the event that some error condition is encountered in the course of the update, SD-Connect™ will abort the update and display advice on the LCD screen suggesting what to do next. In some instances, for example if you have unplugged your connection to the LAN, there will have been no corruption of either software or firmware, and you may continue to use your SD-Connect™ normally until your next attempt to update. You may also be advised that due to the failure of an update operation, you will need to go through a successful

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update before again using your SD-Connect™. When a connection with the FTP server is lost, SD-Connect™ will continue indefinitely to attempt completion of an update. Should you find SD-Connect™ still trying to complete an update after an unacceptably long period of time, you should check the integrity of your LAN connection and any servers or routers to which SD-Connect™ is connected. If you cannot account for the loss of connection, you may remove AC power from SD-Connect™, but on powering up after resolving the networking problem, you will need to perform an update before continuing to use SD-Connect™ normally.

IMPORTANT NOTE: Should power to SD-Connect™ be lost at certain points in the update process, there is a possibility that the system will be corrupted and will subsequently not start up in such a way as to allow a further update attempt. In this instance, you will need to contact customer support for advice on how to recover. *It is strongly recommended that SD-Connect™ be connected to an uninterruptible power supply (UPS) before you attempt a software/firmware update.*

About

This item provides the revision numbers for software and firmware currently installed.

Example Configurations

Analog Deck Capture/Playback

- Connect the analog component video outputs from the deck to the corresponding Y, R-Y and B-Y inputs on the SD-Connect™ box.
- Connect the balanced audio outputs from the deck to the balanced analog audio Ch 1-2 inputs on SD-Connect™.
- Connect one black-burst reference output to the deck and a second output to the Ref input of SD-Connect™.
- Connect the analog component video outputs from SD-Connect™ (Y, R-Y and B-Y) to the corresponding deck inputs.
- Connect the balanced audio Ch 1-2 outputs from SD-Connect™ to the corresponding analog inputs on the deck.
- Connect an RS-422 cable from the SD-Connect™ “Deck” output to the corresponding input on the deck. Place the deck in “Remote” mode of operation.
- Connect a 1394 cable from the back of SD-Connect™ to the PC/MAC for capture / playback.
- Connect a composite / S-Video / SDI cable from SD-Connect™ to a Video monitor to allow viewing of the capture or playback video.
- Select the following inputs:

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- Video: Component
- Audio: Balanced

Digital BetaCam Capture/Playback

- Connect one black-burst reference output to the deck and a second output to the Ref input of SD-Connect™.
- Connect an SDI cable from your Digital BetaCam Deck output to the SDI In on SD-Connect™.
- Connect an SDI cable from the SDI-Out of SD-Connect™ to the SDI-In on the Digital Deck.
- Connect the RS-422 (Deck) from SD-Connect™ to the RS-422 of the deck. Place the deck in "Remote" mode of operation.
- Connect a 1394 cable from the back of SD-Connect™ to the PC/MAC for capture / playback.
- Connect a composite / S-Video / SDI cable from SD-Connect™ to a Video monitor to allow viewing of the capture or playback video.
- Select the following inputs:
 - Video: SDI
 - Audio: SDI

SD-Connect™ Initialization

When AC power is applied to the SD-Connect™, SD-Connect™ will try to lock to some reference source. If you have previously selected internal reference, SD-Connect™ will simply use its internal reference and will start up normally. If SD-Connect™ is configured for an external reference source, it will start up normally only if it locks to a reference signal on the reference-in connector that matches the video standard for which SD-Connect™ is currently configured. If the reference is present, but is not for the current standard, SD-Connect™ will display a brief message, switch to the standard presented on the reference-in connector, and attempt to restart. If there is no reference signal present at all, SD-Connect™ will offer you the option of connecting a valid reference signal or pushing the push-knob to use SD-Connect™'s internal reference.

Operating Notes

- Always connect SD-Connect™ to an un-interruptible power source (UPS). If the power is accidentally cut-off during the last phase of the firmware update, your box may be rendered unusable and will require shipment back to the dealer for repair. Note that the download of new code over the internet can be interrupted without causing a fatal error.

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- Always use high-quality cables to connect SD-Connect™ to any video and/or audio device. This recommendation is especially critical for composite video and SDI connections. Always ensure that the three component cables are matched in length, so as to avoid potential color shifts.
- Route all cables away from computer monitors and other video monitors as they often emit EMI interference which can affect the video quality.
- Avoid “T” connections and couplers in the coaxial cable as much as possible.
- We recommend the use of high quality SDI grade cables for all connections. These cables have a very-high bandwidth and low attenuation and distortion characteristics.
- Whenever possible, maintain power to the SD-Connect™ and the black burst generator. SD-Connect™ uses crystal controlled clocks which can shift in frequency with temperature changes. Leaving the box powered-on and the black-burst generator also enabled, will minimize any drifts in clock frequency. SD-Connect™ can be left in standby mode (by pressing the “power button”) as the clocks will continue running.
- When operating SD-Connect™ in a stand-alone mode (no connection to a PC/MAC via 1394), set the “Mode” to “Capture”. Select the desired video and audio input; all of the outputs are simultaneously “hot”.
- During DV playback mode, only audio channels 1-2 are active. (Audio channels 3-4 are muted). SD-Connect™ does not support the 4-channel 32-KHz DV audio mode.

Safety and ESD Precautions

- Always connect the box to specified power source: 100 to 240 VAC, 50/60 Hz. Ensure that the ground pin on the power plug is connected to earth ground (i.e., do not use a “cheater plug” which bypasses the 3rd prong on the power plug)
- Do not operate the unit in an unprotected outdoor installation or in wet area. Do not expose this product to rain or snow.
- Keep the operating temperature between 5°C and 40° C. Avoid conditions which would cause moisture condensation on the outside cover.
- There are no user serviceable components inside the box. Only a qualified technician should perform servicing of the unit. Opening the box may void the warranty.
- Do not pour water or any other fluid over the box. Avoid the use of sharp objects near the box as they may scratch the LCD panel.
- Clean only with a damp cloth.
- CAUTION: Electrostatic discharge (ESD) can damage components in this product. Avoid ESD by wearing a ground strap to discharge static voltage from your body before touching any of the outside surfaces, especially any of the connectors on the back side of the box.

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- Do not touch exposed connector pins and do not insert any metal objects in the connector.
- Ensure that all connections made to the box (including at the “other end of the cable”) are made in ESD safe environments.
- Always transport and store the box in a static protected bag.

Specifications

Analog Video Input

Composite / S-Video:	NTSC, NTSC-J, PAL (BGHID) 12-Bit A/D, 4x oversampling 5-line adaptive comb filter < 1% Diff Phase < 1% Diff Gain
Component	Betacam, SMPTE/EBU N10 12-Bit A/D, 4x oversampling

Analog Video Output

Composite / S-Video:	NTSC, NTSC-J, PAL (BGHID) 12-Bit D/A, 16x oversampling < 1% Diff Phase < 1% Diff Gain
Component	12-Bit D/A, 16x oversampling

Reference Input

Black with Color Burst (1V)
Timing Accuracy < 5 ppm

Analog Audio Input

24-Bit A/D, 48KHz sample rate
108 dB dynamic range
-90 dB THD

Analog Audio Output

24-Bit D/A, 48 KHz sample rate
100 dB dynamic range
-85 dB THD

Digital Audio I/O

24-Bit AES/EBU, 48Khz sample rate
(Sample rate converter on input)

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SDI I/O

270-MBit, 10-Bit SMPTE 259M-C
4-Channel Embedded Audio
20-Bit, 48KHz, SMPTE 272M-A

FireWire

100/200/400 MBits/sec
Standard 6-Pin connector
Box does not consume or supply bus
power

Physical

6.875" (175 mm) deep x
3.47" (88 mm) high x
19.00" (483 mm) wide
5 lbs (2.3 kg)

Power

100 to 240 V AC (50/60 Hz)
15W maximum operating
8W maximum standby

Operating Temperature

40° F to 104° F (5°C to 40°C)

Storage Temperature

-5° F to 140° F (-20°C to 60°C)

Operating Relative Humidity

Less than 80% (non-condensing)

Storage Relative Humidity

Less than 90% (non-condensing)

Obtaining a Return Merchandise

Authorization (RMA) Number

It is our policy that all material and repair returns, whether in warranty or not, are only accepted if an RMA number has been issued for the products being returned. Any unauthorized shipments will be returned, un-repaired at the customer's expense.

The Conditions of the Warranty

Convergent Design reserves the right to determine if a repair is subject to the warranty agreement. Damage caused by products being dropped or mishandled is not covered by this warranty. Also damage caused by over-voltage conditions on any of the I/O connectors is not covered by this warranty.

There are no user-serviceable parts inside the cabinet. Opening the cabinet voids the warranty. Transit damage caused by inadequate packaging also invalidates the warranty agreement. Please ship the unit in its original packaging, if possible.

All products are shipped prepaid to Convergent Design. For insurance reasons, Convergent Design cannot accept any product that is returned via U.S. Postal Service. Returns will be accepted from Federal Express, UPS, DHL, or other comparable freight carrier. Convergent Design returns the product via a prepaid two-day delivery service within the continental United States, only if the product is under warranty and subsequently found to faulty. Out-of-warranty repaired products are shipped at customer's expense. Turnaround time for warranty repairs normally will not exceed 48 hours (excluding shipping time), unless extraordinary fault conditions exist. A failure analysis report is returned with each product.

Convergent Design Limited Warranty

Labor and defects are covered for the warranty period stated on your original invoice from the original date of purchase. Only the original purchaser of the product is covered under this warranty. The warranty is non-transferable. If you discover a defect, please refer to our Return Merchandise Policy, below. The warranty covers all Convergent Design hardware defective in materials or workmanship. Software is warranted in a separate written statement accompanying the software. During the warranty period, Convergent Design, at its option, will repair or replace product or product components, which in its opinion prove defective. Parts and components used in the repair process may

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be recycled or repaired, at Convergent Design's discretion. This warranty service will be performed at no charge to the registered owner, provided the product is shipped prepaid to Convergent Design. Convergent Design will return the repaired product via a like carrier, in the continental United States within 48 hours, shipping time excluded. Convergent Design reserves the right to determine whether a needed repair is subject to the warranty as per its provisions stated herein. Transit damage caused by inadequate packing violates the warranty. The warranty will be void if, in the opinion of Convergent Design, the product has been damaged through accident, misuse, misapplication, or as a result of service or modification performed not authorized in writing by Convergent Design.

Return Merchandise Policy

Damaged or defective Convergent Design products that are purchased from Convergent Design may be returned for replacement only. Convergent Design will not accept returns for any other reason. All eligible returns require a Return Merchandise Authorization (RMA) number. E-mail Convergent Design Systems, Inc. at support@convergent-design.com to obtain an RMA number. Items must be returned within 10 days of receiving your RMA number. Returned product must be in its original packaging with all contents included and must have the RMA number clearly marked on the outside of the package.

RMA numbers and the return address may be obtained from Technical Support

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Colorado Springs, CO 80907

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VOICE: (720) 221-3861 or (866) 654-0080