

# Solid State Logic

S O U N D | | V I S I O N

## C10 HD

### Digital Broadcast Console

## V3.1/2 Software Update and Install Notes

*Applicable to upgrades from V2.0/1 onwards*

### **Packing List**

Please check that the V3.1/2 Software Upgrade Kit (726750S6) contains the following items:

- |   |  |                              |
|---|--|------------------------------|
| I | V3.1/2 Update Notes  | (this document)              |
| I | C10 HD Software Disk image   | P996C010D (website download) |
| I | Software Licence String<br><i>(redundant systems will require two licence strings)</i> | P996C012D                    |

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*If any of the listed items are missing, please contact your local SSL representative before attempting the upgrade*

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***This document contains essential information – please read it carefully before making any attempt to upgrade the system***

# Solid State Logic

S O U N D | | V I S I O N

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E&OE

## INTRODUCTION

This document describes the new features, new options and bug fixes incorporated in the V3.1/2 software upgrade and details the software installation procedure required to update your system to this latest release of C10 HD software.

Please note that this release is only applicable to those systems that have previously been installed with V2.0/1 or greater software and that have had the 256 channel Blackrock DSP card installed.

### Important Note

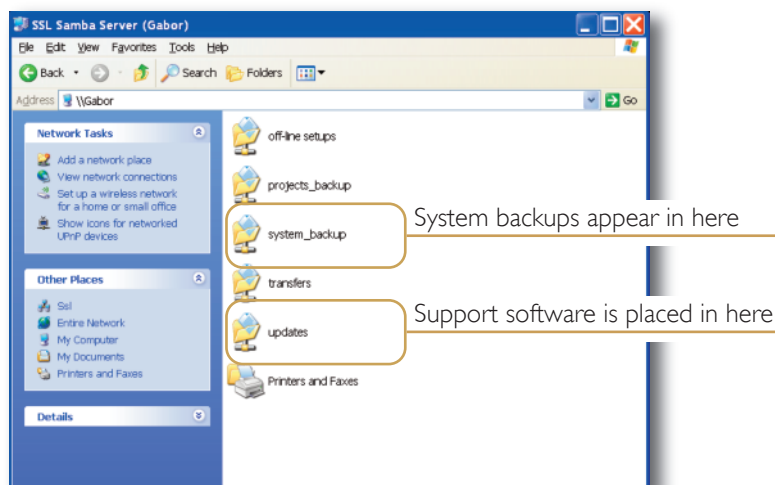
The initial upgrade to V3 is a significant upgrade requiring an SSL Service visit. As well as software installation and configuration, your DSP core(s) and IO interface require a firmware update to unlock extra resources.

## Assumptions

The following points are assumed in these installation instructions:

- A1. This installation procedure details installation of new software on a running system, not a fresh installation.
- A2. During commissioning/installation of the C10 HD system, at least one networked computer within the studio facility – ideally located in the same room as the console – will have been configured to communicate with the system. Access to one of these computers will be required to run the software installation process. This will be referred to in the following text as the '**networked computer**'.
- A3. The network IP Address that has been assigned to the C10 HD system will be required. If you do not know either of these details, please contact your IT or Studio Maintenance Department.
- A4. The **networked computer** used for this installation should have an SSH client installed ('PuTTY', for example). This program will be used to communicate with the C10 HD system – login as 'sbc' using 'server' as the password. If you are unsure how to run this program, or the default password has been changed, please contact your IT or Studio Maintenance Department.
- A5. Backing up of the current system and installation of the new software will require that the **networked computer** has access to the folders exported by the C10 HD system. This can be achieved as follows:
  - a. Click on 'Run' in the Windows Start menu.
  - b. In the 'Run' box, type '\\<IP\_Address> <CR>'
 

Where: '\\' indicates that we wish to mount a file share,  
'<IP\_Address>' is the IP Address of the C10 HD system,  
'<CR>' indicates the 'Return' key on the computer keyboard.
  - c. At the resulting login prompt, enter the username ('sbc') and password (the default for this login being 'sbc123'). This will result in a view of the shared folders on the C10 HD system, similar to that shown below:



### Software Installation on a Single Blackrock System

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*This installation procedure applies to single Blackrock systems only – the process for redundant systems is slightly different and so is detailed separately on page 4.*

---

1. Check the contents of the Software Upgrade Kit against the packing list; if there are any omissions, please contact your local SSL office before proceeding further.

#### Archiving the System Disk

2. As with all software installations, we strongly advise you to generate a 'mirror' copy of the C10 HD System Disk before proceeding. Open the SSH client on the **networked computer** and login to the C10 HD system (ref. **Assumption A4.**). Once you are logged in (as user 'sbc'), type:

```
backup_system_disk <CR>
```

This will create a time and date stamped backup file in the 'system\_backup' folder.

---

*The backup process copies the entire C10 HD System Disk and so will take a considerable time (~15min) to complete. It is of course also recommended that any backups created are stored off-line elsewhere.*

---

3. To ensure that sufficient space is still available to contain the upgrade, type:

```
df -h /home <CR>
```

Check that the percentage used is less than about 90%. If it is higher, consider removing any old backups from the 'system\_backup' folder.

#### Installing the Support Software

4. Connect the USB memory device containing the V3.1/2 Software Disk image to the networked computer and open a window to display the contents of the USB device.
5. Locate the 'updates' folder within the folders exported by the C10 HD system (ref. **Assumption A5.**).
6. On the USB device, open the 'C10\_V3.1/2\_Updates' folder and drag the following three .rpm files from the USB device into the 'Updates' folder:

- kernel *SBC kernel and associated modules*
- ssl\_console\_files *Blackrock system software and files*
- ssl\_host\_tools *SBC support files and applications*

7. Once the .rpm files have been copied, return to the SSH client and type:

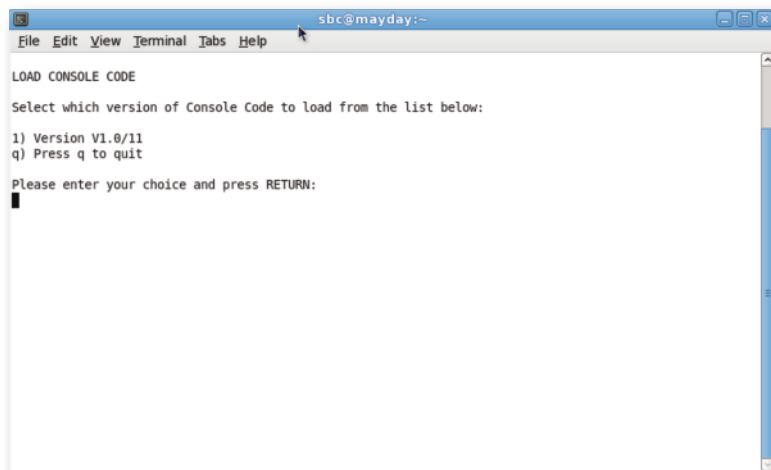
```
install_updates <CR>.
```

This will unwrap and install each of the .rpm archives. Follow the on-screen instructions to install them. Ignore any error messages printed to the terminal during this time.

## Installing the C10 HD System Software

8. Once the files are installed the system code will need to be copied to the flash memory on the Blackrock processor's PCIe card. At the terminal prompt typing `load_console_code <CR>` will result in a list of software versions similar to that shown here.

Select the version of code you wish to install by entering the number next to the software version, eg. 1 <CR> in the illustration opposite. The system code will now be copied to the flash device on the PCIe card. A percentage indicator on the terminal will provide an indication as to how far through the process the system is. On completion a prompt will request a key on the keyboard be pressed to shutdown 'p' or reboot 'r' the Blackrock processor – it is recommended that at this point the Blackrock processor be shutdown and re-powered if possible.



```
sbc@mayday:~$ load_console_code
LOAD CONSOLE CODE
Select which version of Console Code to load from the list below:
1) Version V1.0/11
q) Press q to quit
Please enter your choice and press RETURN:
█
```

## Enabling the New System

9. When the system has fully booted, a pop-up will appear on screen inviting you to enter a Software Licence string and so enable the software.

---

*You will not be able to use the console until the Software Licence has been accepted.*

---

Open the Software Licence envelope containing your Licence string and type this carefully using the on-screen keyboard. Once the system has verified the validity of the Licence, a Software Licence Agreement will appear on-screen. Stab on the 'I Agree' box at the top of the pop-up to complete the licensing procedure. Reboot the processor to ensure the licence is correctly read.

10. Remember to store the Software Licence string in a safe place along with the C10 HD Software Disk.

---

*Once the update is complete and the console has rebooted, any Windows workgroup the Blackrock has been assigned to may need to be reassigned (updates performed by the SSL Host Tools package may erase various parts of the network integration settings) – you may need to contact your contact your IT or Studio Maintenance personnel to check this.*

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### Software Installation on a Redundant Blackrock System

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*Installation of software and support files on a redundant Blackrock system must be performed on one processor at a time with the other processor powered down. Do not attempt this process with both units running!*

---

1. Check the contents of the Software Upgrade Kit against the packing list; if there are any omissions, please contact your local SSL office before proceeding further.

#### Archiving the System Disk

2. As with all software installations, we strongly advise you to generate a 'mirror' copy of the C10 HD System Disk before proceeding. Open the SSH client on the **networked computer** and login to the C10 HD system (ref. **Assumption A4.**). Once you are logged in (as user 'sbc'), type:

```
backup_system_disk <CR>                                     This will create a time and date stamped backup file in the  
                                                             'system_backup' folder.
```

---

*The backup process copies the entire C10 HD System Disk and so will take a considerable time (~5min) to complete. It is of course also recommended that any backups created are stored off-line elsewhere. This must be done separately for both Blackrock processors – but this can be done on both processors simultaneously.*

---

3. To ensure that sufficient space is still available to contain the upgrade, on each system type:

```
df -h /home <CR>                                           Check that the percentage used is less than about 90%. If it  
                                                             is higher, consider removing any old backups from the  
                                                             'system_backup' folder.
```

#### Installing the Support Software

4. Connect the USB memory device containing the V3.1/2 Software Disk image to the networked computer and open a window to display the contents of the USB device.
5. Locate the 'updates' folder within the folders exported by the C10 HD system (ref. **Assumption A5.**).
6. On the USB device, open the 'C10\_V3.1/2\_Updates' folder and drag the following three .rpm files from the USB device into the 'Updates' folder:

- kernel *SBC kernel and associated modules*
- ssl\_console\_files *Blackrock system software and files*
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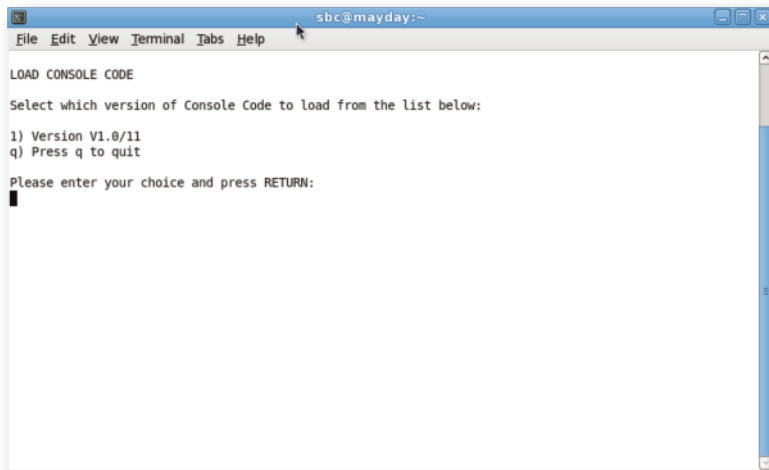
7. Once the .rpm files have been copied, return to the SSH client and type:

```
install_updates <CR>.                                       This will unwrap and install each of the .rpm archives. Follow  
                                                             the on-screen instructions to install them. Ignore any error messages  
                                                             printed to the terminal during this time.
```

## Installing the C10 HD System Software

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```

sbc@mayday:~$ load_console_code
LOAD CONSOLE CODE
Select which version of Console Code to load from the list below:
1) Version V1.0/11
q) Press q to quit
Please enter your choice and press RETURN:
█

```

## Enabling the New System

10. When the system has fully booted, a pop-up will appear on screen inviting you to enter a Software Licence string and so enable the software.

---

*You will not be able to use the console until the Software Licence has been accepted.*

---

Open the Software Licence envelope containing your Licence strings. Each processor will have a different licence; match the 5 digit PAL id. given with the licence to the Blackrock network ID on the sticker on the front face of the Blackrock unit and type this in carefully using the on-screen keyboard. Once the system has verified the validity of the Licence, a Software Licence Agreement will appear on-screen. Stab on the 'I Agree' box at the top of the pop-up to complete the licensing procedure. Reboot the processor to ensure the licence is correctly read.

11. Power down the master Blackrock processor and power up the slave processor, such that only the slave processor is on and running. Repeat this process from Step 2. for the slave processor.
12. Once all updates have been performed, re-boot both processors together.
13. Remember to store the Software Licence strings in a safe place along with the C10 HD Software Disk.

---

*Once the update is complete and the console has rebooted, any Windows workgroup the Blackrock has been assigned to may need to be reassigned (updates performed by the SSL Host Tools package may erase various parts of the network integration settings) – you may need to contact your contact your IT or Studio Maintenance personnel to check this.*

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## NEW FEATURES

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### MADI Remote

This new feature allows the console to send mic amp control data over MADI to any third-party pre-amps or routing systems which use DHD-protocol control data, such as Optocore and RockNet systems.

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*Please see your equipment's own user documentation to establish what control protocol it uses.*

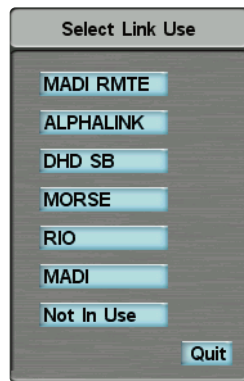
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*Note that DHD protocol uses a standard 64 channel MADI Link with 56 channels for Audio; Control Data is carried on Channel 57 and the remaining channels are unused.*

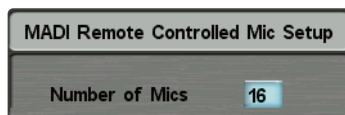
---

### Configuration

First, the relevant mic inputs need to be defined within the console. This is done in the **Link Use** window, opened by pressing the **Route** menu's **IO Links** button. Click on the MADI socket symbol to which the mic amps are connected, and select **MADI RMTE** from the pop-up list which appears:



Ensure that the link has a suitable device number, and then press the **Config** button beneath it. In the pop-up which appears, you need to define how many mic amps are included in the external MADI IO device by clicking on the number box and entering a new value in the numeric keypad which appears:



---

*Note that the console assumes that mic amps occupy the lowest-numbered MADI channels – if there are 16 mic amps, the console will send mic amp control data on channels 1 to 16 of that MADI device.*

---

The console must now be re-started for these changes to take effect. Once the restart is complete, you will find the mic inputs listed in the **Route** menu's **IO Groups** display as **MADI RMIC X-Y** (where **X** is the device number and **Y** the channel number). Mic MADI sources will then need to be added to source groups as applicable.

Inputs from the MADI device which have not been defined as mic amps will simply be displayed as **MADI ip X-Y**, in the normal way.

---

*Note that the non mic amp inputs are numbered from 1, and don't refer to the MADI device's channel numbers.*

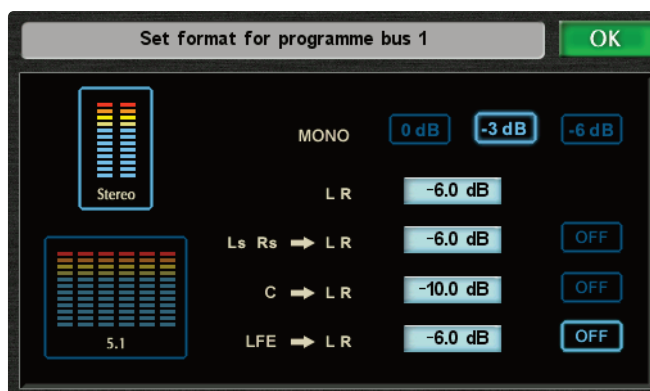
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## 5.1 and Stereo Fold-down Levels

To improve efficiency when providing multiple format broadcast feeds, a new adjustable programme fold-down allows the user to adjust the individual C, Rear (LS & RS), and LFE channels stereo fold-down levels. M-3 and M-6 options are also included for stereo-to-mono fold-down.

Programme formats and fold-downs are configured by selecting the meter screen's **Setup** button and then touching the each Programmes meters. The following pop-up will open:



The bus format is selected by pressing on the **Stereo** and **5.1** meter graphics to the left.

The following 5.1 to stereo component levels can be adjusted by clicking on the numeric box to the right of each fold-down element's label and entering a new value using the numeric keypad which appears:

- left-surround to left, right-surround to right (**Ls Rs → LR**)
- centre to left and right (**C → LR**)
- sub to left and right (**LFE → LR**)

*Note that if you type in an attenuation greater than -100dB, the 5.1 components in question will simply be muted within the fold-down, as indicated by the numeric box displaying 'off'.*

In addition, the stereo component levels of the folded-down signal can be adjusted in the same way using the numeric box to the right of the **LR** label.

You can also mute 5.1 components within the fold-down by pressing the **OFF** buttons to the right of each fold-down label. The button will 'light' to indicate that the fold-down element is muted.

Stereo-to-mono fold-down can be attenuated using the **0dB**, **-3dB** and **-6dB** buttons towards the top-right of the pop-up.

## 5.1 Tone Generation

5.1 BLITS ("Black and Lanes' Ident Tones for Surround") can now be generated and routed to all 5.1 formatted channels and outputs.

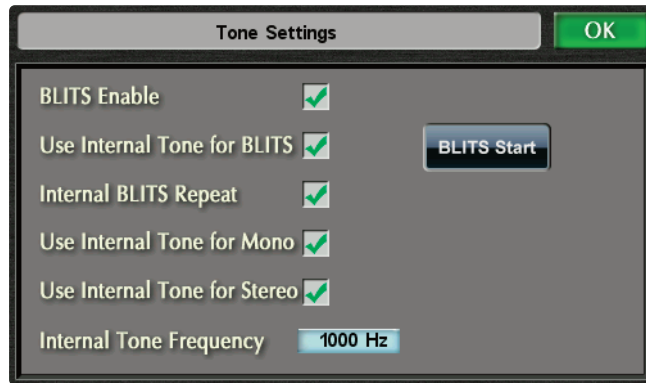
### BLITS Tone Injection

The **Tone** button in the parameter display of each bus can be used to inject BLITS tone. In order to do this BLITS must be enabled and configured in the **Tone Settings** panel, opened by pressing the **MISC** button on the main touchscreen, followed by **Tone Setup**.

To enable BLITS, touch the highest box, labelled **BLITS Enable**. Once this box is checked, two further options become available:

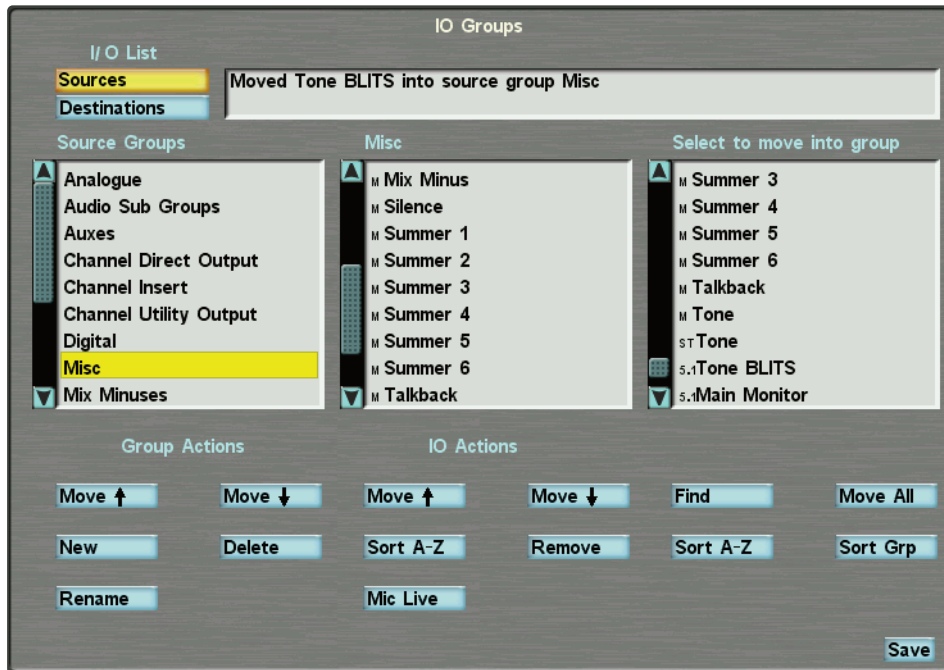
- If **Use Internal Tone for BLITS** is unchecked, the external source routed to the Tone destination in the routing display will replace the internally generated tone source.

- If **Internal BLITS Repeat** is unchecked, the BLITS tone sequence will only be generated once – touch the **BLITS Start** button to trigger the sequence.



### BLITS in the routing panel

5.1 BLITS has to be assigned to a routing group (ordinarily, the **Misc** group) before it can be assigned via the console's normal routing procedures (described in Section 4 of the Operating Manual). To do this, open the **Groups** display from within the **Route** menu and ensure that **Sources** is selected in the top left-hand corner.



Select the **Misc** group in the left-hand column (or wherever else you have located your tone sources), locate **Tone BLITS** (displayed as a 5.1 signal) in the right-hand column and select it to move it into the group.

---

*Note that 5.1 BLITS routed using this standard procedure is still subject to the settings in the **Tone Settings** panel: BLITS will only be generated if it is enabled, set to internal, and set to repeat (or triggered using the panel's **BLITS Start** button).*

---

*Note also that, because the BLITS standard defines a specific audio level, no BLITS level control is available using the **Misc Levels**.*

---

*The **BLITS Start** button can be assigned to a front panel or Touch Screen Soft Key using the Free Assign function.*

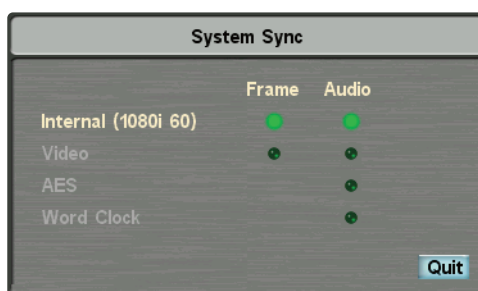
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## Extended Sync Source Compatibility

The range of external clocks to which the C10 can lock has been expanded to include a range of HD sync sources. The full list of compatible sync sources is now as follows:

PAL	1080p 59.94Hz	1080PsF 24Hz (1080i 48Hz)
PAL 24	1080p 50Hz	1080PsF 23.976Hz (1080i 47.95Hz)
NTSC	1080p 30Hz	720p 60Hz
1080i 60Hz	1080p 29.97Hz	720p 59.94Hz
1080i 59.94Hz	1080p 25Hz	720p 50Hz
1080i 50Hz	1080p 24Hz	
1080p 60Hz	1080p 23.976Hz	

The precise current sync source is displayed in brackets to the right of the active sync source type (**Internal**, **Video**, **AES** or **Word Clock**), in the **System Sync** panel, opened by pressing the **System** menu's **Sync** button:



## AES II Compliance

With this firmware upgrade, C10 is AESII Compliant, with the exception of the following:

The firmware adds support for consistent phase locking of AES-3 outputs to a PAL video reference signal, thus ensuring consistent latency through connected AES-3 devices. Connecting video sync to the Blackrock Sync input and selecting Video as a reference will automatically enable this. Note that phase lock to an NTSC video signal is not supported as the Blackrock processor does not support decoding of the NTSC 5 field sequence. Clients who wish to take advantage of this feature in an NTSC environment will need to carry out FSB884 on their Blackrock processor cards and connect an AES-3 DARS from a sync generator that supports decoding of the 5 field sequence.

## AFV Glide Off

It is now possible to set different Glide On and Glide Off times for AFV. This is done in the **Config** menu's **AFV Setup** screen – simply click on the value box for each time, and set a new time in the numeric keypad which appears:

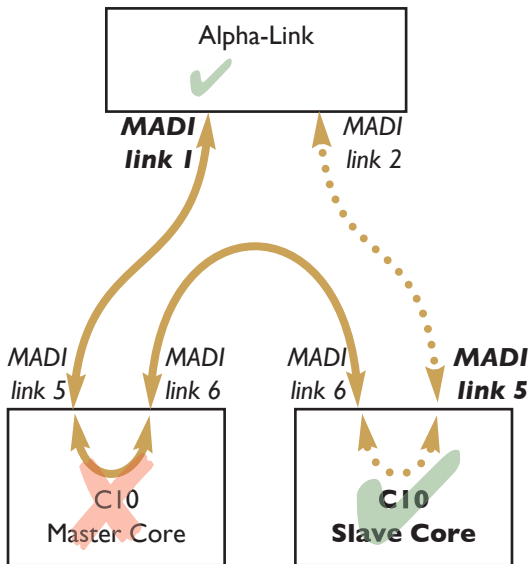


### Loop MADI Redundancy

The C10 now provides a new option for configuring MADI cabling, allowing for dual redundancy of processor core and MADI link over two IO connections. Rather than Master and Slave cores both requiring two MADI connections to the IO in order for both to have fully redundant links, the new Loop option allows both cores to share the same links, using a MADI connection between them:

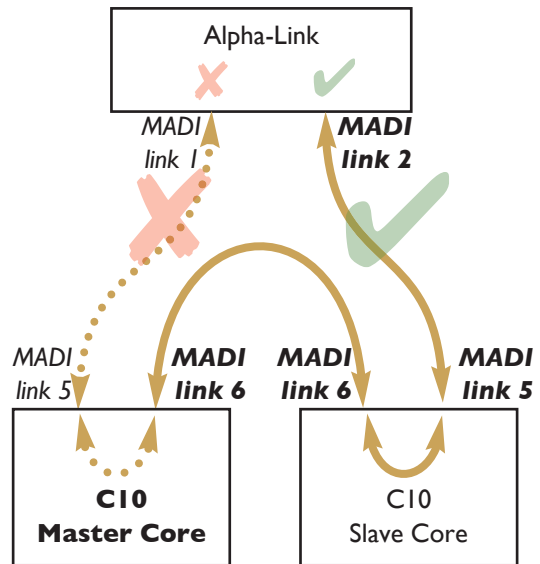
**Master Core goes down:**

Control switches to Slave core, using Slave-to-Master MADI Loop and Master-to-IO MADI connection.



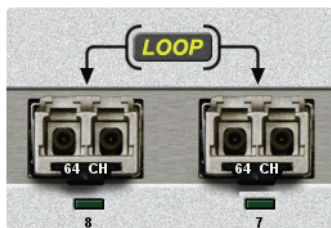
**Master-to-IO MADI goes down:**

Control remains with Master core, using Master-to-Slave MADI Loop and Slave-to-IO MADI connection.



Note that if the Master Core power fails, the Slave Core will use its direct link to the Alpha-Link, rather than attempting to route via the Master Core.

To use the Loop configuration, connect the MADI cabling as shown above (using any pair of MADI sockets, duplicated between cores), then go to the **Route** menu's **Link Use** page (using the **IO Links** button):



Touch the label linking the two connections you are using (usually labelled **DUAL**), and cycle through until the label reads **LOOP**. Configure the odd-numbered link (1,3,5 or 7) for the IO, and use the even-numbered link (2,4,6 or 8) for the loop.

Note that if the Master Core fails and the Slave Core takes over, re-powering the Master Core will cause the Slave's audio to be interrupted, as the Alpha-Link will sense that the Master Core is on-line and switch to it before it is passing audio.

Note also that when the Slave Core is active, the loop MADI link must remain in place, as audio is ordinarily still passing via the Master Core.

Note also that enabling Loop Mode configures both sets of MADI ports to Loop redundancy, reducing the I/O capacity of the mezzanine card to 128 channels.

Loop Redundancy can be used with any SSL IO which has redundant capacity – B-RIO, Alpha-Link LIVE-R and DHD SB.

## Mix-Minus Off-Air Audition Feature

A new Autocue function has been added to the CI0 HD Mix Minus bussing, which can be used as a simple off-air check feed, as a Cue feed, or as an off-air conference feature.

When the **MM Autocue** button in the participant's **Mix Minus** setup page (opened by touching the Mix Minus's meter with no menu buttons selected at the base of the screen) is activated, the **Insert** button follows the open/closed status of the fader which owns that Mix Minus bus: the insert is off when the fader is open, and on when the fader is closed. (Otherwise, the insert switching can be done manually using the Master Channel's **Insert** button which can be assigned to a **Free Assign** button).

To configure Autocue for off-air conferencing, route the appropriate Cue signal to the insert return of the participant's Mix Minus bus, and activate the **MM Autocue** button. This allows an individual participant to hear their normal Mix Minus feed when on-air, but all off-air conference participants (minus themselves) when they are off-air.

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*Mix Minus insert signals are selected using the console's normal routing procedures, described in Section 4 of the manual.*

---

## Program Delays

It is now possible to introduce delays into the PGM bus, allowing audio to be aligned with video which is delayed by any processing. Delays are controlled in the normal way, by assigning the PGM bus to the Master Channel. The delay's range is 0 - 5.46 seconds.

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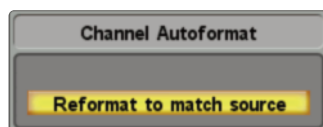
*Note that PGM delays use up either two (stereo) or six (5.1) of the 64 channels of delay available in the console.*

---

## Auto Channel Formatting

Channels can now be automatically reformatted when an input source of a different format is routed to it. When changing a channel's input, you no longer need to change the format in the **Channel Settings** display; Simply select the new input using the console's normal routing procedures (described in Section 4 of the manual) and the channel will automatically reformat itself if required.

This feature is activated using a new **Auto Format** pop-up located, located in the Maintenance pages' **Config** menu:



Touch the button to switch Auto Format on and off – Auto Format is on when the button displays **Reformat to match source** (yellow background) and off when it displays **Preserve format on re-route** (blue background)

## Shutdown Button Access

The shutdown button is now duplicated in the main touchscreen's Misc menu. If it is assigned to the console's free controls, a press-and-hold function is introduced to prevent the console from being shut down accidentally.

## Quik-Control Encoder Changes

The location of the Channel Quik-Controls for Input and Insert quickrouting have been swapped around to give easier access to the most commonly used controls.

## Quickroute Formatting

Source Formats are now saved as part of the Quickroute source list. This resolves confusing behaviour regarding Quickroute sources which change formats (such as Channel and ASG outputs) and sources of different formats but the same name (such as mono/stereo/5.1 tone, or stereo/5.1 DVD player).

When using the Centre Section **ROUTING** display to route to a destination with a fixed format (such as an ASG or console output), any sources which are not of a relevant format will be hidden in the source list, reappearing when a potentially suitable destination is selected for Quickrouting.

Channel Quickroute lists still display all sources, as the channel is able to reformat to match the source format. The only element that has changed for channel Quickrouting is that sources of different formats which share a name appear as distinct sources with a defined format.

The **Show Format** checkbox in the **Route** menu's **Quick Route** panel is used to define whether or not formats are shown to the left of each source in the Quickrouting displays.

Any sources which were previously in a Quickroute list (and therefore don't have a format associated with them) will continue to function as before. However, if you wish to associate a format with one of these sources, simply remove it from the Quickroute list and then re-add it – the source's format will then be saved with it.

*If channel sources are added to a Quickroute list before the channel has been formatted, those sources will be saved without a format and will appear in the Quickroute list regardless of format. To save a channel source with its format, format the channel before adding it to the Quickroute list.*

*Note that a new Quickroutes folder will be created for V3 software, enabling your previous Quickroutes list to be accessed if you choose to run older code, for any reason.*

## Gate/Expander (Cost Option)

C10 HD signal processing now includes a gate/expander module. This is controlled using the soft keys in the channel strip. To assign the gate/expander to the channel soft keys, press the **PARAM** button in the Master Control Strip, followed by the **GATE** button which appears to its right.

The parameters assigned to the Quik-Controls (at the top of the channel strip) and the Scribble Keys (above the digital scribble strip) are listed in the diagram to the right; They are spread over three pages, with the Lower Quik-Key used for cycling through the pages.

The gating action is displayed at the bottom of the channel's metering area, as shown below-right.

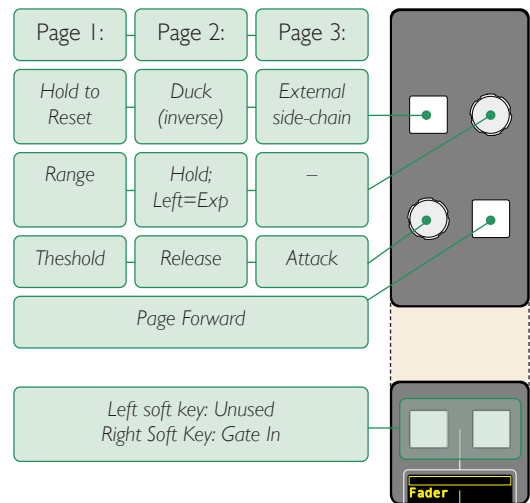
Note the following:

To reset the gate, press and hold **ResG** (Page 1 Upper Quik-Key).

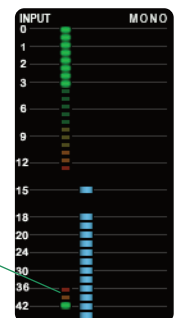
The effect of the inverse (ducking) gate (Page 2 Upper Quik-Key, labelled **DUCK**) can be viewed by pressing the **PARAM** menu's **SHOW** button.

The gate's external side-chain is shared by the rest of the channel dynamics, and is routed using the console's normal routing procedures (described in Section 4 of the manual).

To access the Expander, turn the hold control (Page 2 Upper Quik-Knob, labelled **G-Ho**) fully left. A blue 'light' at the base of the hold time display indicates that the Expander is on.



Gate traffic lights:  
 Red: closed  
 Amber: opening or closing  
 Green: open (passing audio)



## **BUG FIXES**

The following is a list of the major bugs fixed or resolved in this release:

- Monitor Setup Options are now properly synchronised.
- There are now Gate and Upmix copy/swap lists.
- ASGs no longer disappear from the Quickroute lists when switching between ASG formats. Quickrouting sources which differ in format but share a name can now be distinguished in the Quickrouting lists. (See 'Quickroute Formatting' in the New Features.)
- ASG insert routes which disable the insert normalising are no longer lost when switching between cores.
- C10's SNMP no longer uses CI 10 MIB files.
- Channel TFT screens no longer display residual meter graphics on shut-down or restart.

## **KNOWN BUGS**

- |           |   |
|-----------|---|
| Ref 12642 | <p>Periodically, on redundant systems, the following erroneous sync error message is displayed in the console status bar:</p> <p><b><i>Warning: Problem synchronising files with other machine because timeout within filesync program.</i></b></p> <p>The main sync status icon at the top of the meter screen shows the true status of the sync system.</p> |
|-----------|---|

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