

XLogic Alpha-Link LIVE-R

User Guide

XLogic Alpha-Link. This is SSL.

Solid State Logic
S O U N D | | V I S I O N

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Introduction

Congratulations on your purchase of this Solid State Logic Alpha-Link LIVE-R audio I/O unit. Please be assured that it will provide you with many years of reliable service while delivering the pristine audio quality you expect from any Solid State Logic product.

The Alpha-Link LIVE-R is a stylishly designed, 2U-high rack-mountable unit providing fully featured multi-channel audio converters for Studio, Live and Broadcast Applications with an incredible price/performance ratio. The Alpha-Link LIVE-R is a MADI & AES/EBU based converter which offers fibre redundancy and dual power supplies and features control ports for up to three Alpha-Link 8-RMP Mic preamps. Alpha-Link LIVE-R is configurable to suit either European or US broadcast analogue interface levels.

The unit offers simple front panel controls for configuration and a comprehensive input/output routing matrix which can be used to set up global connections between the various I/O connections and makes all combinations possible. There is also a meter section for the analogue inputs and outputs with an AD/DA selection button, mode indicator LEDs and 24 tri-colour level LEDs.

The Alpha-Link LIVE-R unit can be used as standalone format converter, but used in combination with an SSL C10 HD or C100 HDS console it provides a powerful, highly flexible I/O solution which is especially suited to broadcast applications. When connected to a C10 HD or C100 HDS console, Alpha-Link LIVE-R provides automatic fibre redundancy switching and remote control of up to three Alpha-Link 8-RMP Mic preamps is possible.

Please refer to the Alpha-Link LIVE-R Installation Guide and the C10 HD and C100 HDS Operator's Reference Manuals for details of processor and fibre redundancy configuration.

Scope

This User Guide should be read in conjunction with the **Alpha-Link LIVE-R Installation Guide**. This guide covers the configuration, features and operation of your Alpha-Link LIVE-R unit whilst the Installation Guide provides all of the information required to install and interface to your new unit.

IMPORTANT

Please register your Alpha-Link LIVE-R unit on our website. This will ensure that you receive notification of future updates and other important information, and that your guarantee is registered. Registration will also make you eligible for technical support.

The Solid State Logic home page is at: www.solidstatelogic.com

From there you can access our Support page, which includes links to the Product Registration and Download pages. You can also visit the Frequently Asked Questions (FAQ) area for any questions you might have or to contact our Technical Support staff.

I/O Capabilities

The number of channels available on each audio interface provided by the Alpha-Link LIVE-R is determined by the sample rate and in certain circumstances by the mode of operation chosen.

The LIVE-R can operate at the following sample rates; 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz and 192kHz and if locked to an external clock source, it can also operate at a deviation of up to $\pm 10\%$ from these rates. Throughout this guide we will often refer to the lowest set of sample rates (44.1kHz, 48kHz) collectively as 'Fs', medium rates (88.2kHz, 96kHz) – being twice the lowest set – as '2Fs' and the highest sample rates (176.4kHz, 192kHz) as '4Fs'.

Early digital audio interfaces designed to run at 2Fs rates did so by modifying the way that data is packed into the digital audio stream without increasing the actual transmission rate. This leads to a lower channel count for a given interface but results in a 2Fs interface that is broadly compatible with the original Fs rate interface. Later improvements for some interface types lead to 'proper' double speed 2Fs interfaces that did not compromise the channel count but were no longer compatible with older Fs rate interfaces. These developments resulted in two different modes of operation at the higher rates; 'Legacy' (SMUX₂/SMUX₄) and 'High Speed'. The channel count differences are loosely summarised in the following table and further information will be found towards the rear of this guide.

Audio Interface	Sample Rate and Mode				
	Fs	2Fs (High Speed)	2Fs (Legacy/SMUX ₂)	2Fs (High Speed)	4Fs (Legacy/SMUX ₄)
AES/EBU	24 Channels	24 Channels	12 Channels	24 Channels	6 Channels *
Analogue	24 Channels – irrespective of sample rate				
MADI	56/64 Channels	28/32 Channels	28/32 Channels	14/16 Channels	14/16 Channels

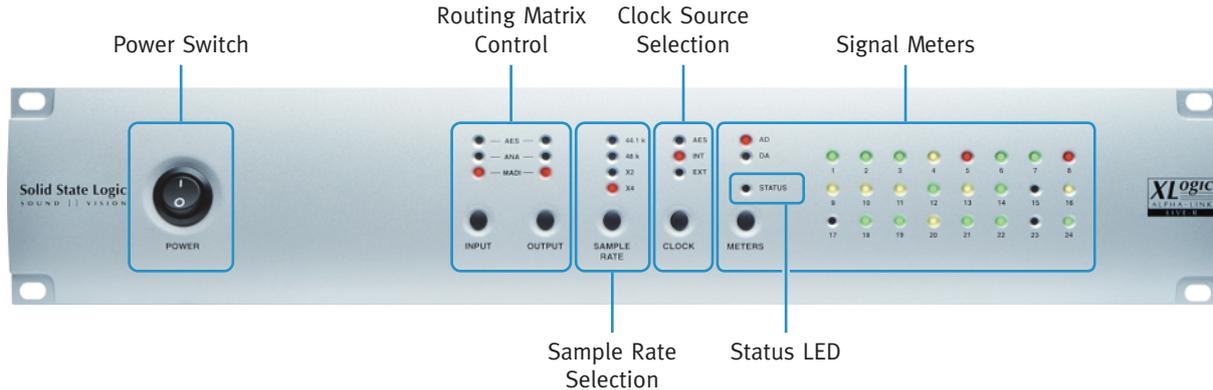
* Uses a pair of AES/EBU ports per channel

Installation Notes

Please take time to read through this guide before installing your Alpha-Link LIVE-R. If however you are unable to resist that temptation, do take note of the following points:

- Full connector pin-out details are provided at the rear of the **Alpha-Link LIVE-R Installation Guide**.
- The nominal analogue I/O level of the Alpha-Link LIVE-R defaults to +24dBu \approx 0dB FS – please refer to the **Virtual Switches** discussion to learn how to change this.
- If interfacing Alpha-Link 8-RMP units to the unit and the chosen operating level for the Alpha-Link LIVE-R is *not* +24dBu it may be necessary to set internal links to fix the input level (in blocks of 8) to +24dBu – please refer to **Appendix B** for further details.
- Your Alpha-Link LIVE-R unit can be rack mounted. Whilst the unit occupies 2U of rack space in a standard 19-inch rack, do please leave (a 1U) space above and below the unit for cooling.
- It may be necessary to change the default **CLOCK SOURCE** – please refer to the **Clock Source Selection** discussion on page 8 for further details.
- Please turn down, switch off or disconnect any connected amplifiers before re-configuring your Alpha-Link LIVE-R. Changing signal routing and/or clock source can potentially produce loud audible clicks.

Front Panel



Power Switch

This is used to switch the Alpha-Link LIVE-R on or off.

All front panel settings are stored in non-volatile memory ~5 sec after the last front panel change; please allow time for this before switching the unit off.

Status LED

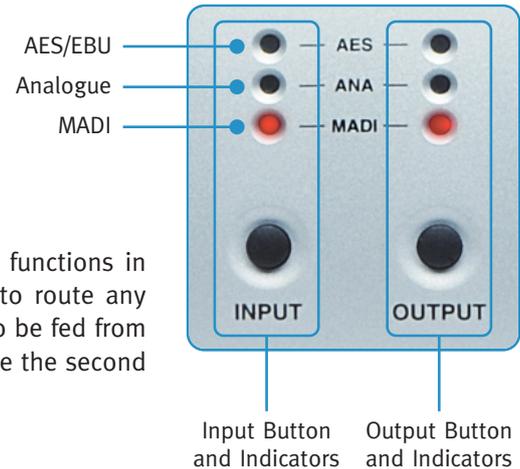
The STATUS LED will normally be extinguished. It will however flash under the following conditions:

- The Alpha-Link LIVE-R is in diagnostic mode (*please refer to the **System Settings and Diagnostics** section*).
- One of the two internal PSU units has failed (or is missing mains power) – *firmware version V1.1 or later*.

Routing Matrix Control

The Alpha-Link LIVE-R contains a routing matrix which enables routing of groups of signals between the inputs and outputs. This routing matrix is controlled using two buttons – one to select an **OUTPUT** and the other to pick the **INPUT** for that output – along with a set of indicator LEDs to show the routing setup. Using these two buttons, any input group (AES/EBU, Analogue or MADI) can be connected to any output group.

All routing is performed to full 24-bit precision. There are no mixing functions in Alpha-Link LIVE-R so whilst it is possible to use the routing matrix to route any single input to multiple outputs, it is not possible for a single output to be fed from more than one input (selecting a second source for an output will cause the second source to *replace* the original).



The routing matrix LEDs indicate which input group(s) are feeding which output group. Each audio interface has both input and output groups which are routed independently so routing Analogue to/from MADI for example requires routing both Analogue In → MADI Out and MADI In → Analogue Out as two separate steps.

Viewing and Setting Routing

Pressing the **OUTPUT** button repeatedly will cycle through the available output groups, the currently selected output group being indicated by the corresponding LED. For each output group, the LEDs of the input column will indicate which input group(s) are connected to that output group. To set or change the input group(s) connected to a given output group:

- Use the **OUTPUT** button to select the required output.
- Press *and hold* the **OUTPUT** button.
- With the **OUTPUT** button held, each press of the **INPUT** button will step through each possible input group for that output.
- Once the required routing has been selected, releasing the **OUTPUT** button will store and activate your selection.

*Please note that the **INPUT** button works only in combination with the **OUTPUT** button.*

Where capacity is available, two input groups may be assigned to one output group – the AES and analogue input groups can both connect to the MAD1 output group. Where this is possible it will be indicated by illuminating both input group LEDs whilst stepping through the different modes.

*In cases where two input groups are connected to a single output group, the order in which input groups are assigned is determined by the ‘Connection Mode’ described in the **System Settings and Diagnostics** section of this guide. Channels will be routed in order, hence the ‘lower’ input group will be fully used before the routing spills over to the ‘higher’ group. Where this split occurs will depend on the sample rate and channel count and may result in some channels remaining unused or un-routed.*

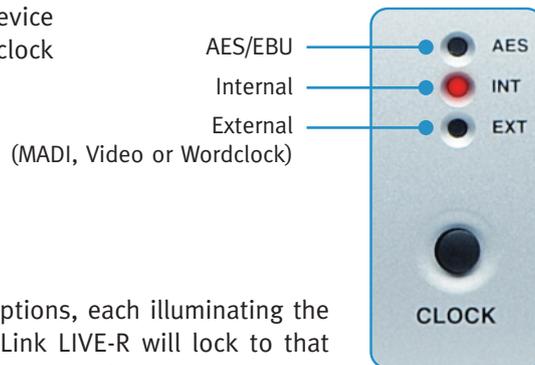
Clock Source Selection

The Alpha-Link LIVE-R unit can operate either as a Clock Master device ('Internal' mode), or as a Clock Slave device locked to an external clock signal. Possible external sources are:

- AES/EBU
- MADI
- Video
- Wordclock

Pressing the **CLOCK** button will step through each of the possible options, each illuminating the corresponding LED. When the button is released, the entire Alpha-Link LIVE-R will lock to that source. Note that a flashing clock LED indicates that although the corresponding mode has been selected, the unit is not receiving a valid Master Clock signal via the selected port/input.

Alpha-Link LIVE-R units are preconfigured to receive an external clock extracted from the incoming MADI stream. In case this primary clock source is lost, the unit can automatically switch to an alternative 'fallback' clock source – by default this is External Wordclock.



*If AES/EBU is selected as an external clock source, it may be necessary to preset which AES/EBU input (port A only) is used to derive the clock signal from. In the same manner, the 'External' source – MADI or Wordclock – must also be preset. Please refer to the **System Settings and Diagnostics** section of this guide for details of how to preset these clock sources.*

Sample Rate Selection

The sample rate indicators show the current sample rate of the unit. When the Alpha-Link LIVE-R clock source is set to 'Internal' (see opposite), pressing the **SAMPLE RATE** button will step through each available sample rate (44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz and 192kHz) – as indicated by the corresponding LEDs.

Front Panel Indications

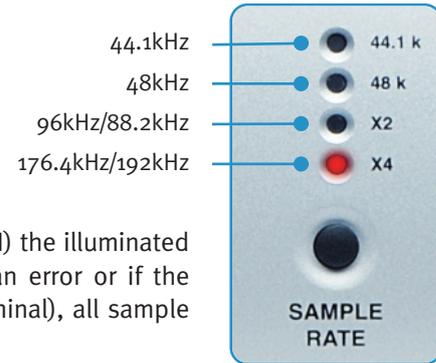
When the clock source is set to an 'external' source (AES/EBU, External or MADI) the illuminated LED indicates the sample rate being received from that source. If there is an error or if the received sample rate falls outside of the tolerance expected ($\pm 0.5\%$ from nominal), all sample rate LEDs will be off.

External Lock Range

When locking to an 'external' source Alpha-Link LIVE-R will normally accept and lock to a wider clock range at up to $\pm 10\%$ of the nominal rate, provided that the nominal rate corresponds to one of the supported rates (44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz and 192kHz).

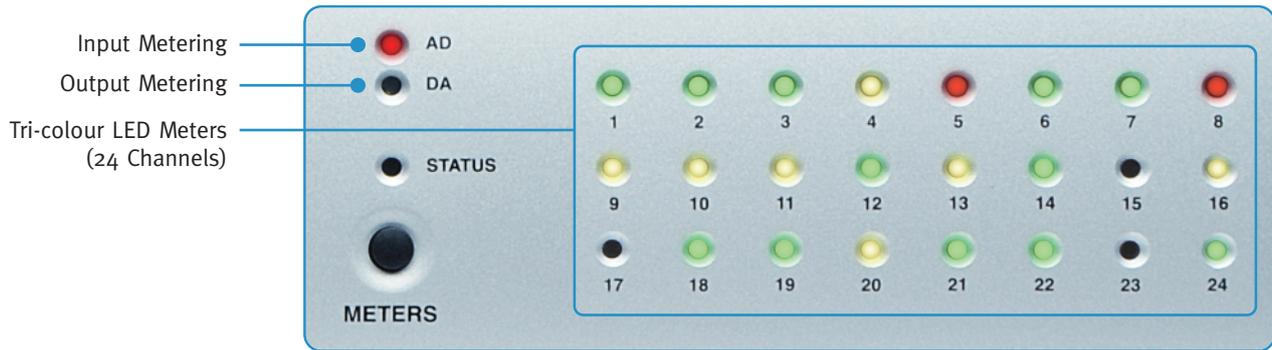
If the unit has been set to interface the maximum 64 MADI channels (32 or 16 channels at higher sample rates), the tighter clock tolerance of $\pm 0.5\%$ applies.

As noted above, if the sample rate from an external source falls outside of the expected tolerance ($\pm 0.5\%$) all sample rate LEDs will be extinguished although the clock source LED should still indicate if a valid signal is being received.



Signal Meters

The meter section of the front panel provides simple tri-colour LED metering for either the 24 analogue inputs (AD) or the 24 analogue outputs (DA), selectable using the **METERS** button.



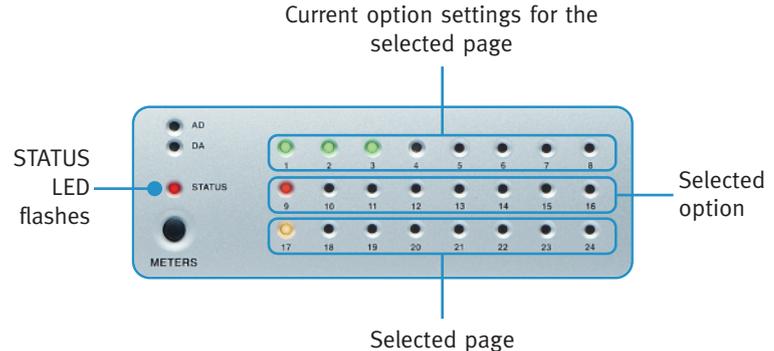
For each input or output channel, the signal level is represented by the state of the LED with the corresponding number. The LEDs respond to the signal level in the digital domain (in dB FS) as follows:

- OFF < -3odB FS (depending on operating level, less than -16dBu to -6dBu applied)
- GREEN > -3odB FS (depending on operating level, greater than -16dBu to -6dBu applied)
- AMBER > $-3.\text{odB FS}$ (depending on operating level, greater than $+11\text{dBu}$ to $+21\text{dBu}$ applied)
- RED > -0.1dB FS (depending on operating level, $+14\text{dBu}$ to $+24\text{dBu}$ or more applied)

*The **STATUS** LED located in this area of the front panel has no metering function – its use is described on page 5.*

System Settings and Diagnostics

Each Alpha-Link LIVE-R unit is configured by default to work in a simple system. Many users however may find that these defaults are not appropriate for their setup. To cater for such situations the default settings may be adjusted using a set of virtual switches, accessed from the Alpha-Link LIVE-R front panel by placing the unit into a diagnostic mode. These virtual switch settings are non-volatile and once saved are retained when the unit is power cycled.



Diagnostic Mode

Hold the **SAMPLE RATE** and **CLOCK** buttons, switch the Alpha-Link LIVE-R unit on and continue to hold the buttons for ~2 seconds to put it into diagnostic mode – indicated by a flashing **STATUS** LED. Diagnostic mode can be cancelled either by power cycling the unit or by simultaneously pressing both the **SAMPLE RATE** and **CLOCK** buttons once more.

*Any changes will be lost if the unit is power cycled; the internal memory is only written to and settings saved if diagnostic mode is exited by pressing both **SAMPLE RATE** and **CLOCK** buttons. Please allow time for any changes to be saved.*

Picking a Page of Virtual Switches

Several pages of virtual switches are provided, the current page being indicated in AMBER by the lower row of meter LEDs where the Channel 17 LED indicates Page 1, Channel 18 indicates Page 2 etc. Pressing the **METERS** button will step through the available pages of which there are four for the Alpha-Link LIVE-R.

Selecting an Option

For each page of switches, the middle row of meter LEDs indicates, in RED, the currently selected switch such that Channel 9 LED indicates Switch 1, Channel 10 indicates Switch 2 etc. Pressing the **OUTPUT** button will cycle through all switches for that page.

Setting an Option

The current setting of each option in the current page is indicated, in GREEN, by the state of the corresponding LED in the first row of meter LEDs where the Channel 1 LED indicates the state of Option 1, Channel 2 indicates Option 2 etc. When an option is selected, pressing the **INPUT** button toggles the state of that option (ON or OFF).

Tables detailing the available options and their default settings will be found on the following pages. In each table the relevant LED states are indicated as either extinguished ('○') or illuminated ('●').

Firmware Version

Whilst in diagnostic mode, the Alpha-Link LIVE-R unit can also be set to display the current firmware version by simultaneously pressing both the **SAMPLE RATE** and **CLOCK** buttons. The firmware version will be displayed across the top row of meter LEDs (1 through 8) whilst the buttons are pressed; releasing the buttons will return the unit to normal operation.

The number will be displayed as a two digit binary number where LEDs 1 to 4 indicate the 'major' part and LEDs 5 to 8 the 'minor' part; the table here can be used to convert the numbers displayed on the unit into decimal – for example a version number of '1.2' would display as '● ○ ○ ● ○ ○ ● ○' (where '●' indicates an illuminated LED).

At the time of writing, Alpha-Link LIVE-R ships with firmware version V1.0

Firmware Update

The Alpha-Link LIVE-R firmware can be updated in the field using the standard USB 2.0 port located on the rear panel. An update utility (MS Windows™ only) can be downloaded from the Support section of the Solid State Logic website to facilitate this.

Whilst updating a unit, ensure that the unit and controlling PC remain powered with the USB cable connected until the process completes – any interruption of the update process may leave the unit inoperable.

LEDs	Number
○ ○ ○ ○	0
○ ○ ○ ●	1
○ ○ ● ○	2
○ ○ ● ●	3
○ ● ○ ○	4
○ ● ○ ●	5
○ ● ● ○	6
○ ● ● ●	7
● ○ ○ ○	8
● ○ ○ ●	9
● ○ ● ○	10
● ○ ● ●	11
● ● ○ ○	12
● ● ○ ●	13
● ● ● ○	14
● ● ● ●	15

Virtual Switches, Page One *(indicated by an illuminated channel 17 LED)*

Settings in bold indicate defaults. Please also refer to the notes overleaf for details of each setting.

LED	Option	Setting	LED State	See Note
1	Number of MADI channels	64 (32/16 at 2Fs/4Fs)	<input type="radio"/>	1.
		56 (28/14 at 2Fs/4Fs)	<input checked="" type="radio"/>	
2 3	MADI 2Fs/4Fs data format	High Speed	<input type="radio"/> <input type="radio"/>	2.
		Legacy (SMUX2)	<input type="radio"/> <input checked="" type="radio"/>	
		Legacy (SMUX4)	<input checked="" type="radio"/> <input type="radio"/>	
4 5	AES/EBU 2Fs/4Fs data format	High Speed	<input type="radio"/> <input type="radio"/>	2.
		Legacy (SMUX2)	<input type="radio"/> <input checked="" type="radio"/>	
		Legacy (SMUX4)	<input checked="" type="radio"/> <input type="radio"/>	
6	Analogue/Digital connection mode	Analogue first (lowest)	<input type="radio"/>	3.
		Digital first (lowest)	<input checked="" type="radio"/>	
7 8	Sample rate when an Fs rate signal is applied to the wordclock input	Fs	<input type="radio"/> <input type="radio"/>	4.
		2Fs	<input type="radio"/> <input checked="" type="radio"/>	
		4Fs	<input checked="" type="radio"/> <input type="radio"/>	

Notes for Virtual Switches, Page One

1. There are two MAD I channel formats; 56 or 64 channel. The 56 channel format allows for $\pm 10\%$ deviation from the nominal sample rate whilst the 64 channel format uses the full capacity of the MAD I stream fixed to the selected sample rate. Not all MAD I interfaces support both formats; please refer to the documentation for the connected interface to determine the correct format to use. Note that the MAD I link transmission rate is always fixed hence at higher or '2Fs' sample rates the channel capacity is halved to either 28 or 32 channels and at '4Fs' sample rates the channel capacity is halved again to 14 or 16 channels.

For Alpha-Link LIVE-R to control 8-RMP units, it is essential that the MAD I port be set to operate in 56 channel mode; control signals are transmitted as data packets over channel 57.

2. These options are used at 2Fs and 4Fs sample rates either to determine the rate of the master clock or to set the data format for that interface.
 - a. If the unit is set to lock to the interface in question, these options determine how the clock signal embedded in the selected clock source is interpreted *when the clock is below 57kHz (Fs rate)*:
 - When the source sample rate is Fs, the '2Fs / Legacy (SMUX2)' setting is invalid; 'Fs / High Speed' must be selected to receive valid data. The distributed clock will be Fs.
 - When the source sample rate is 2Fs – with 'Legacy (SMUX2)' format data – the 'Fs / High Speed' setting is invalid; '2Fs / Legacy (SMUX)' must be selected to receive valid data. The distributed clock will be Fs.
 - When the source sample rate is 4Fs – with 'Legacy (SMUX4)' format data – the 'Fs / High Speed' setting is invalid; '4Fs / Legacy (SMUX)' must be selected to receive valid data. The distributed clock will be Fs.When Alpha-Link LIVE-R is provided with a 2Fs rate clock (above 57kHz) the setting of this switch will be ignored and the distributed clock will always be 2Fs rate.

- b. If the unit is *not* set to lock to the interface in question *and the interface provides multiple data formats*, these options are used to set the 2Fs/4Fs data format for that interface:
- When set to ‘Legacy (SMUX2 or SMUX4) a half-rate frame pattern will be used. This format is functionally compatible with Fs rate interfaces and may be required to interface to older equipment.
 - When set to ‘High Speed’ a proper 2Fs or 4Fs frame pattern will be used.
3. When both analogue and digital input groups are both connected to the MAD1 output groups, this option determines which input group feeds the output group first and hence affects the order in which input channels are assigned to channels on the MAD1 stream. Similarly, when the MAD1 input groups are routed to the analogue output groups, this switch also determines the order in which the input channels are split across the selected output groups. Please refer to the **Routing Matrix Control** section on page 6 for more detail.
4. Further to point 2. opposite, when Alpha-Link LIVE-R is set to lock to external wordclock whilst operating at 2Fs or 4Fs, it may be necessary to inform the unit how to treat the applied clock signal if that signal is at Fs rate.

Virtual Switches, Page Two *(indicated by an illuminated channel 18 LED)*

Settings in bold indicate defaults. Please also refer to the notes opposite for details regarding each setting.

LED	Option	Setting	LED States	See Note
1	AES/EBU clock source (port 'A' only)	AES/EBU In 1 & 2	<input type="radio"/> <input type="radio"/>	1.
		AES/EBU In 3 & 4	<input checked="" type="radio"/> <input type="radio"/>	
		AES/EBU In 5 & 6	<input type="radio"/> <input checked="" type="radio"/>	
		AES/EBU In 7 & 8	<input checked="" type="radio"/> <input checked="" type="radio"/>	
3	Clock source for 'External' selection	Wordclock	<input type="radio"/>	2.
		MADI or Video	<input checked="" type="radio"/>	
4	AES/EBU sample rate converters (port 'A' only)	Input 1 & 2 enabled	<input type="radio"/>	3.
		Input 1 & 2 bypassed	<input checked="" type="radio"/>	
5		Input 3 & 4 enabled	<input type="radio"/>	
		Input 3 & 4 bypassed	<input checked="" type="radio"/>	
6		Input 5 & 6 enabled	<input type="radio"/>	
		Input 5 & 6 bypassed	<input checked="" type="radio"/>	
7		Input 7 & 8 enabled	<input type="radio"/>	
		Input 7 & 8 bypassed	<input checked="" type="radio"/>	
8	Unused	n/a	n/a	–

Notes for Virtual Switches, Page Two

1. The Alpha-Link LIVE-R unit can optionally lock to one of the four AES/EBU inputs provided on AES/EBU port 'A'. To enable one of these four inputs to be selected the first two option switches operate together. The current AES clock input selection is shown by the status of the channel 1 and channel 2 metering LEDs.

For the Alpha-Link LIVE-R to lock to one of these inputs it requires that the sample rate converter on that input is also bypassed – see point 3. below.

2. When the clock source is set for **EXT** on the front panel, this option determines if that source is an external Wordclock signal or one of MAD1 or Video – either the clock signal embedded in the incoming MAD1 stream or an external PAL or NTSC video sync signal, as set on Virtual Switches page three.

When locking to video it will be necessary to specify the video standard and the unit sample rate using switches 5 through 8 on Virtual Switches page three.

3. Sample rate conversion is provided on the four AES/EBU inputs on AES/EBU port 'A'. These converters can be switched out in pairs.

Virtual Switches, Page Three *(indicated by an illuminated channel 19 LED)*

Settings in bold indicate defaults. Please also refer to the notes opposite for details regarding each setting.

LED	Option	Setting	LED States	See Note
1	Unused	n/a	n/a	–
2	Fallback Clock Source	None	<input type="radio"/> <input type="radio"/> <input type="radio"/>	1.
		External Wordclock	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>	
		<i>Currently Unused</i>	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	
		AES A 1/2	<input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	
		AES A 3/4	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	
		AES A 5/6	<input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	
		AES A 7/8	<input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/>	
4		MADI Wordclock	<input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/>	
5	External Clock Source (non-wordclock)	MADI	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	2.
		NTSC and 44.1kHz	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	3.
6	NTSC and 48kHz	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>		
	NTSC and 88.2kHz	<input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>		
	NTSC and 96kHz	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>		
7	PAL and 44.1kHz	<input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	4.	
	PAL and 48kHz	<input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/>		
8	PAL and 88.2kHz	<input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/>		
	PAL and 96kHz	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>		

Notes for Virtual Switches, Page Three

1. This option sets an alternative clock source to automatically take over if the main External Clock Source fails (see notes 2. through 4. below). Note that video sync is not available as a Fallback Clock Source.
2. When **EXT** is selected as the clock source and 'MADI or Video' has been selected in virtual switches page two, setting switches 5 through 8 to 'off' will enable the clock signal embedded in the incoming MADI stream to be used as the clock source.
3. When **EXT** is selected as the clock source and 'MADI or Video' has been selected in virtual switches page two, these virtual switches allow the LIVE-R to lock to an applied NTSC/colour (29.97Hz) video sync signal. Because the video sync signal obviously carries no sample rate information, it will be necessary to select the required sample rate using the appropriate switches.
4. When **EXT** is selected as the clock source and 'MADI or Video' has been selected in virtual switches page two, these virtual switches allow Alpha-Link to lock to an applied PAL video sync signal. Because the video sync signal obviously carries no sample rate information, it will be necessary to select the required sample rate using the appropriate switches.

Virtual Switches, Page Four *(indicated by an illuminated channel 20 LED)*

Settings in bold indicate defaults. Please also refer to the notes below for details regarding each setting.

LED	Option	Setting	LED States	See Note
1 2 3	Analogue Operating Level	+14dBu		1.
		+15dBu		
		+16dBu		
		+18dBu		
		+20dBu		
		+21dBu		
		+22dBu		
		+24dBu		
4	Unused	n/a	n/a	–
5	Unused	n/a	n/a	–
6	Unused	n/a	n/a	–
7	Unused	n/a	n/a	–
8	Unused	n/a	n/a	–

1. These options set the analogue line level for the Alpha-Link LIVE-R. A range of levels can be selected including EBU (+18dBu \approx odB FS), SMPTE (+24dBu \approx odB FS) and DIN (+15dBu \approx odB FS) standards.

*Three internal links are provided to fix the analogue input level to +24dBu – see **Appendix B** for details.*

Appendix A – AES/EBU Interface

Inputs with Sample Rate Conversion

The inputs of AES/EBU port A (channels 1 through 8) have sample rate conversion available. These sample rate converters combine a wide input-to-output sampling ratio with outstanding dynamic range and ultra low distortion, resulting in high quality even at a 1:1 conversion (where many SRCs offer their lowest quality). In many instances the converters may be left in-circuit albeit at the expense of increased delay through these inputs. If required, the sample rate converters can be bypassed, in pairs, as described in the **System Settings and Diagnostics** section of this guide.

Input Sample Rate and Auxiliary Data

The input sample rate is not extracted from channel status bits but measured from the selected AES/EBU stereo pair on port A (see page 18). Information about ‘Legacy’ or ‘High Speed’ mode may be extracted from the channel status bits if the in-coming stream contains this information but this should not be relied upon (see pages 15 through 17).

Inputs without Sample Rate Conversion

The inputs of AES/EBU ports B and C (channels 9 through 24) do not have sample rate converters. Any signals applied to these inputs (and port A if the sample rate converters are bypassed) must be synchronized to the system.

Output Auxiliary Data

The following will be set in the auxiliary data fields of all AES/EBU output streams:

Channel Status Data	Indication of the selected sample rate and mode (‘Legacy’ or ‘High Speed’) All other channel status fields default to ‘1’
User Data Bit	Always set low (‘0’)
Validity bit	Always set true (valid)
Parity Bit	Always recalculated

Appendix B – Troubleshooting

Symptom	Possible Solution
There is no sound, all the LEDs are off.	Check that the Alpha-Link LIVE-R unit is connected to the mains supply and that the Power switch is in the 'ON' position. Check the condition of the mains cable.
There is no sound. The AES/EBU or External Clock indicator LED flashes. The Sample Rate LEDs are off.	Check that the device connected to the WordClock, MADI, or AES/EBU port is set to transmit a suitable Master Clock signal and operates at a supported sample rate.
The sound is distorted.	Use the front panel metering section to check the level of the audio signals.
Alpha-Link 8-RMP inputs distort.	The maximum Alpha-Link 8-RMP output is +24dBu. If the Alpha-Link LIVE-R operating level is <i>not</i> +24dBu it may be necessary to adjust internal link CSN ₁ on the analogue converter card to fix the required LIVE-R inputs to +24dBu – please refer to page 42 in the Alpha-Link LIVE-R Installation Guide for further details.
The operating level of some analogue inputs (in groups of 8) is not as expected.	Check that internal link CSN ₁ is set correctly – please refer to page 42 in the Alpha-Link LIVE-R Installation Guide for further details.

Support FAQs

Support information for the entire SSL Alpha-Link range of audio I/O is always available through our online support site:

www.solidstatellogic.com/support

If you can't find the answer or solution for your particular issue, questions and queries can be submitted to our support staff.

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Support

FAQs, documentation and other useful utilities

A great product is only the start of what sets SSL apart from the rest. You know that, you'll find a team of products offering the best support. To provide this, SSL has a network of sales and service centres throughout the world, including its headquarters in New York, Los Angeles, Paris and Milan. Through these offices, and specialist distributors in other countries, a full program of backup and technical support is guaranteed. Our range, all in one location, is the global support available from SSL's service centres at the company headquarters near Oxford, England.

- Console Resources**
 - Duality
 - AWS 900+
 - C100 HD
 - C200 HD
 - C300 HD
 - SL 8000 X
- Duende**
 - Duende Classic
 - Duende Mini
 - Duende PCIe
 - Plug-ins
- Audio I/O**
 - Alpha-Link Range
 - Delta-Link MADI-HD
 - MadiXtreme
 - MADI Opti-Coax
- Workstation Products**
 - Pro-Convert
 - Mixpander
 - X-ISM Plug-in
 - LMC-1 Plug-in
 - SoundExchange
- Analogue Outboard**
 - X-Rack
 - G Series Bus Comp
 - E-Signature Channel
 - SuperAnalogue Ch
 - Hi-Resolution Comp
 - Alpha Channel

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Appendix C – Alpha-Link Model Numbers

The SSL Alpha-Link range provides a variety units for different applications. The following table correlates the major differences between the different models, including the Alpha-Link LIVE-R, with the unit part numbers to aid identification of units:

Model	SSL Part Number ¹	Unit Identifier ²	Analogue I/O Level ³	Digital Interfaces
AX	726903X1	AFN-047	+22dBu	ADAT
MADI-AX	726902X1	AFN-046	+22dBu	ADAT, MADI
MADI-SX	726901X1	AFN-045	+22dBu	AES/EBU, MADI
LIVE	726908X1	AFN-052	+24dBu	AES/EBU, MADI
	726910X1	AFN-054	+18dBu	
LIVE-R	726912X1	AFN-056	+14dBu ~ +24dBu	AES/EBU, MADI

1. This is the SSL Part number for ordering and unit returns
2. This is the number found on the rear of the unit, adjacent to the unit Serial Number
3. Nominal maximum analogue I/O level for odB FS

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