# Sigma δelta

Remote-Controlled Analogue Mix Engine

**User Guide**

**Sigma δelta.** **This is SSL.**

**Solid State Logic**

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

# Table of Contents

# 1. Introduction

## ABOUT THIS USER GUIDE

Congratulations on purchasing your Solid State Logic Sigma δelta. This User Guide will help you to install and configure your Sigma δelta for your studio.

This User Guide is arranged into the following sections:

| | |
|---|---|
| **Introduction** | An overview of Sigma δelta's features |
| **Hardware Installation** | Provides information on Sigma δelta's physical connections and how to connect them to your existing studio equipment |
| **Software Installation** | Lists all the software required to make Sigma δelta work with your DAW |
| **Network Setup** | Guides you through configuring Sigma δelta to work on your computer network and tablet/smartphone |
| **Connecting to and Using Sigma δelta-Control Automation plugin** | Details how to operate Sigma δelta and discusses control from the Remote app Channel volume, mutes, solos, mix-bus routing, and mono/stereo switching |
| **Controling Sigma Mix Busses and Monitoring from δelta plugins** | Explains how to use the δelta-Mix Bus and δelta-Monitoring plugins to control Sigma mix bus and monitor levels and switching |
| **Using two Sigmas Together** | Explains how to establish control two Sigmas in one setup |
| **Appendices** | Contains additional documentation for reference |

# Sigma δelta Overview

## What is Sigma δelta and what was the idea behind it?

Sigma δelta consists of three independent elements – one hardware component and two software components – which when combined, form the central hub of a 16 channel music production studio.

The hardware is a 2U, remote-controllable analogue mix engine with 16 stereo/mono inputs and outputs, 2 mix buses (A and B), mix bus insert points, comprehensive monitoring, a talkback input and customisable user buttons. The idea of the Sigma δelta mix engine was to bring the sound of an SSL console together with all the workflow advantages of mixing in a DAW. Sigma is built upon the same Superanalogue technology as our Duality and AWS consoles. Superanalogue circuit design gives you extended frequency response, precise stereo imaging, clarity and depth. Sigma is designed for the professional looking to add that extra 10% to their sound that even the best plugin emulation cannot achieve.

The Sigma δelta mix engine features LED metering on all 16 channel strips and an additional high resolution stereo master meter. The blue rotary encoder is switchable (via a push function) between controlling the following levels: control room monitor level, headphones, Mix Bus A and Mix Bus B master "fader" gains.

The Sigma δelta Remote app is a cross-platform app through which all the mix engine functions can be accessed. The app also takes care of loading and saving settings, enabling remote control options, as well as updating the Sigma firmware.

The third element is δelta Control. Originally developed to replace the iconic stand-alone mix system in large-format SSL consoles, the δelta Single/16 fader plugins allow Sigma volume, mutes, mono stereo switching, and mix bus routing to be seamlessly incorporated into the DAW workflow; volume rides and switching can entered directly as DAW automation but are played out in the analogue domain after processing has been applied – as would happen in a traditional analogue mixdown situation. The δelta Mix Bus and Monitoring plugins allow all mix bus levels and switching, plus all monitor levels and sources to be controlled directly from your DAW, giving you complete control of Sigma from any MCU or EuCon based control surface/app.

*For users who wish to use the legacy A-FADA automation scheme, please see the legacy Sigma User Manual which is located here:* [Sigma User Manual](Sigma User Manual)

## How do I operate Sigma δelta?

All of Sigma δelta's controls can be accessed through the Remote app interface. The **CHANNELS** page is used to configure and control each of Sigma's 16 channels, whilst the **MASTER** page is used to configure the monitoring and mix bus sections and supplementary features, including user buttons and MIDI-Learn functionality. The **SETTINGS** page provides configuration options plus the loading and saving of Sigma δelta setup data. In addition to MAC and PC versions, the iOS(iPad) and Android operating systems are supported for remote control from a tablet-based computer.

The Sigma δelta mix engine can also be controlled from any control surface which supports the MCU protocol. With a controller, such as the SSL Nucleus, control of Channel level, Mute, Solo, Mono/Stereo, Mix Bus routing and Mono panning is supported. Monitoring and Talkback functions have been mapped to MCU Function keys for additional flexibility; channel labels are also returned to the control surface.

*Sigma δelta is compatible with any MCU controller. This includes the SSL Nucleus, Matrix, AWS and Duality.*

The following four simple steps are all that is required to automate Sigma channel volume:

1. Open the Sigma Remote app
2. Instantiate a δelta-Control plugin on a DAW track
3. Select the number of the Sigma channel to be automated from the plugin drop-down menu
4. Activate the relevant automation mode on the DAW track

At this point, Sigma volume automation can be written directly from the plugin GUI fader or by using the standard DAW edit tools. If a compatible MCU surface has been assigned to Sigma δelta, then the controller fader will automatically activate writing automation instead of needing to use the mouse. Sigma δelta, plus a control surface – such as Nucleus, in conjunction with the δelta-Control plugin, offers a hands-on automated mix experience formerly reserved for systems costing many thousands of pounds more.

*The Remote app must be open on your DAW PC/Mac for a control surface to communicate directly with Sigma δelta.*

## How does Sigma work?

Sigma works using SSL Logictivity™ proprietary control protocols over a standard TCP/IP network. Sigma is connected via the network to the computer hosting the DAW software and the Remote app. Both the app and the plugin communicate with Sigma using UDP messages to ensure minimum latency. ipMIDI messages between a compatible MCU controller, the DAW software and Sigma also share the network.

## Setup Concepts

*Sigma communicates with your computer a little differently to what you may be used to... it is worth reading the following – all of which is covered in detail in the User Guide – before setting up.*

- Sigma δelta is an analogue summing unit which can be simultaneously controlled from a cross-platform Remote app, a DAW via the δelta-Control plugins, and an MCU-compatible control-surface using MIDI

- The Remote app and the δelta-Control plugin use a standard Ethernet connection to communicate with Sigma

- δelta-Control, the Remote app and ipMIDI require that a network connection exists (via Ethernet) between your computer and Sigma. This is set up in a similar way to configuring a wireless hub and requires selection of appropriate settings in your network control panel in your computer

- To use a tablet device (iPad, etc.) to control Sigma, you will need a wireless router or wireless access point (AP), to which your computer and Sigma are already connected (using physical Ethernet cables). You simply connect to your tablet via WI-FI from the wireless router or access point. This allows the Remote app to control Sigma. This is necessary as Sigma does not have a wireless connection of its own. *See details of installation on Page 15; details of setup and use can be found in the DAW Setup Guides (Section 6, Page 37)*

- The network and MIDI control aspects of Sigma are entirely separate to the audio side of Sigma. All audio connections are made between the Sigma unit and your computer audio interface/converters

# Typical Sigma δelta Setup

DAW

δelta-Control plugin

Mac / PC

Audio Interface

I/O

Audio – Sigma I/O

Sigma Remote App

Outboard

Logictivity™

DHCP Server

Audio – Sigma I/O

δelta-Control
Remote App
MCU

Sigma δelta

Network

MCU Control for Sigma
HUI Control for DAW

Tablet running Sigma
Remote app control

Control Surface
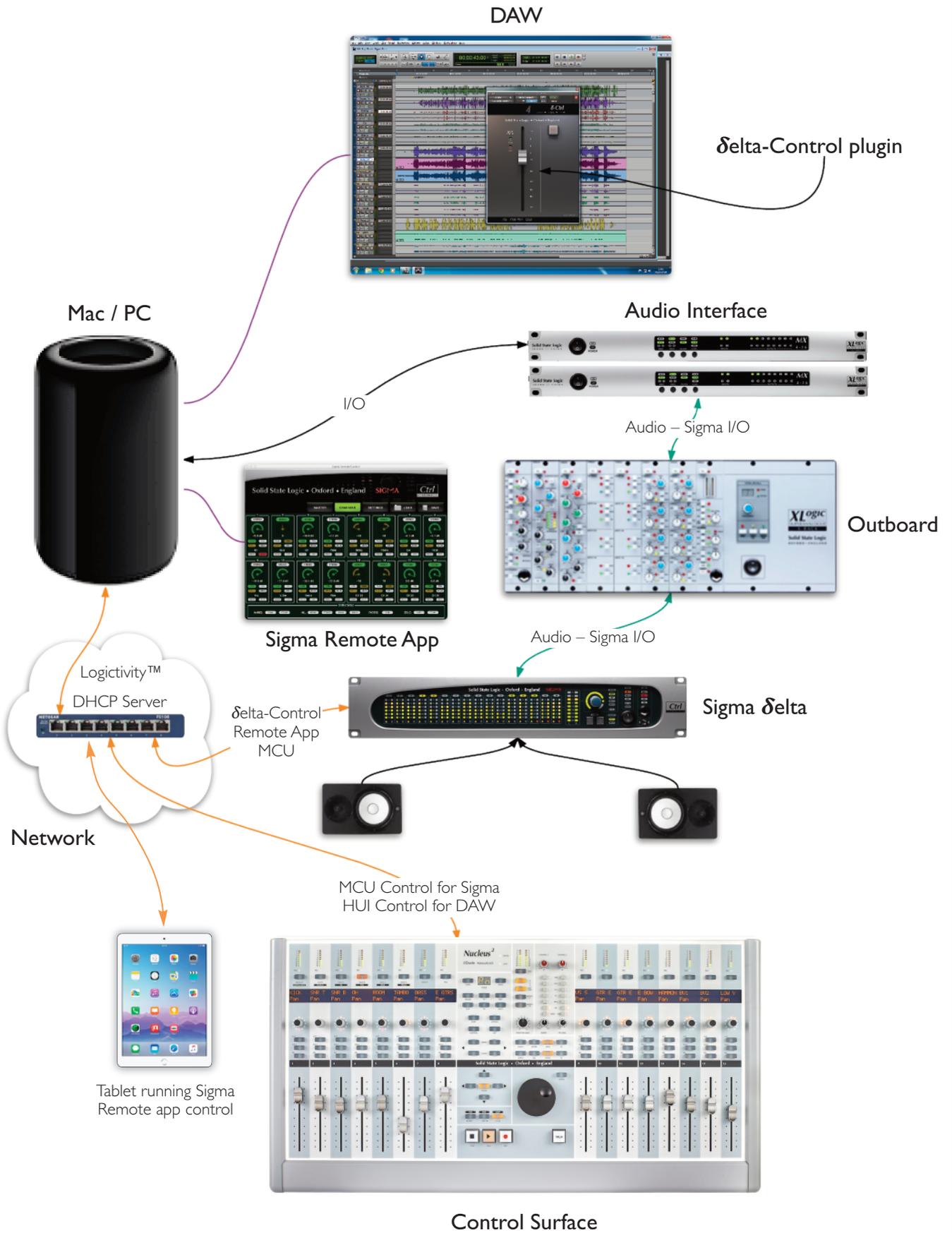
# 2. Hardware Installation

## INSTALLATION OVERVIEW

The diagram below gives you an idea of how Sigma δelta connects to your other studio gear.

Converters

Ethernet Router

Digital audio

Tablet (via Wi-Fi)

Ethernet Switch

Automation data via Ethernet

Analogue Audio

Analogue outboard
(if present)

Control surface

Analogue Inputs to Sigma

Mix outputs from Sigma back into DAW

Line-level H/P feed to live room

Ext input

Alt Mon

Main Mon

H/P
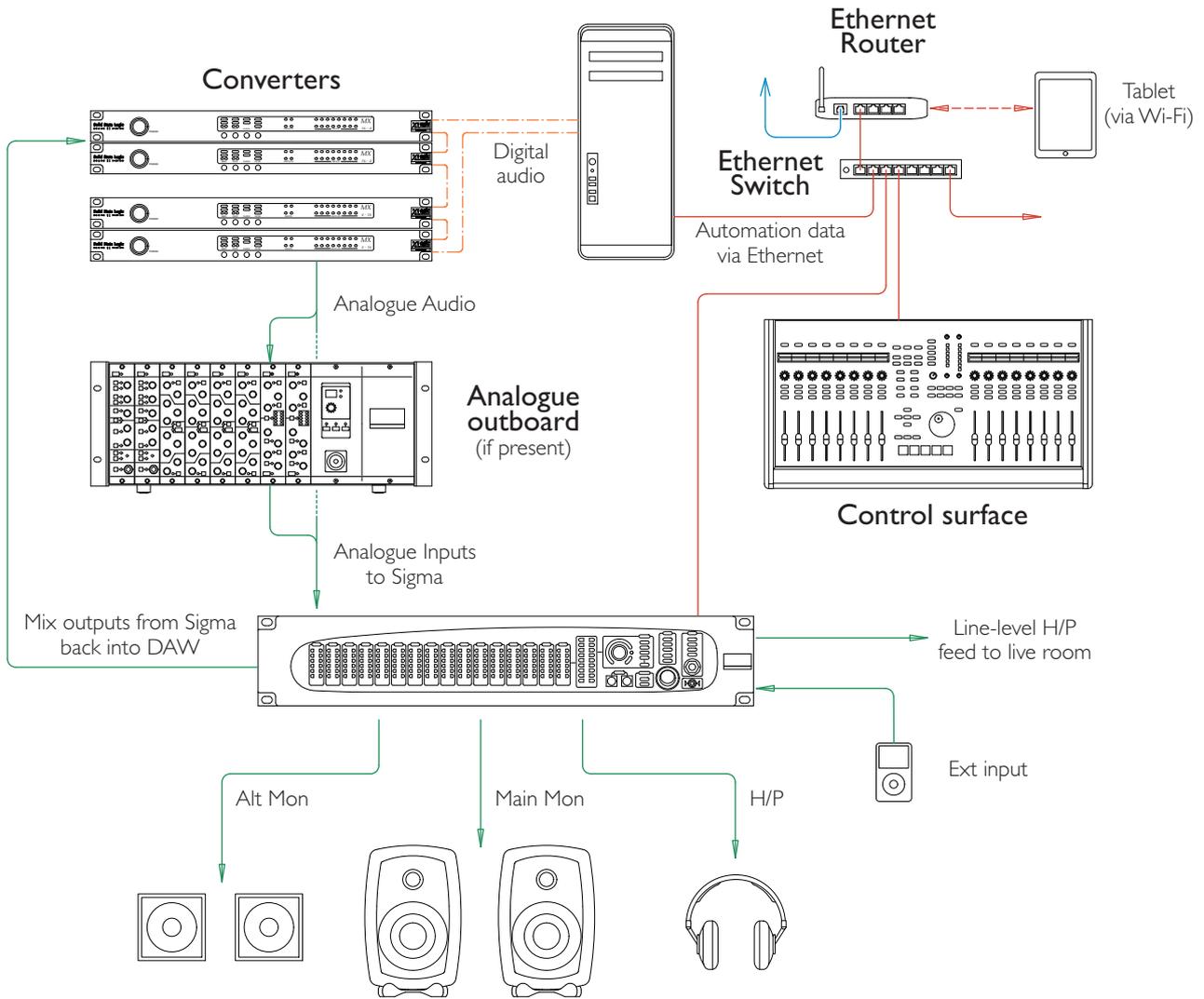
# FRONT PANEL

Sigma δelta provides you with 16 stereo line inputs and 16 stereo line outputs on Tascam analogue standard (AES59) 25-pin D-sub connectors. Using the Remote app, the left input of each stereo channel can be selected as a mono source. When an input is set to mono, the channel number on the front panel will glow green.

*Please note that setting an input to mono does not give you 2 independent mono inputs!*

*Currently Sigma δelta supports one Sigma unit.*



Channel Numbers    Master Meter    Rotary Encoder    Headphones

Mix Bus A/B Indicators    Customisable User Buttons    iJack Input

Input Level Meters
*Levels can be set for +18dBu, +22dBu or +24dBu via the Remote app*
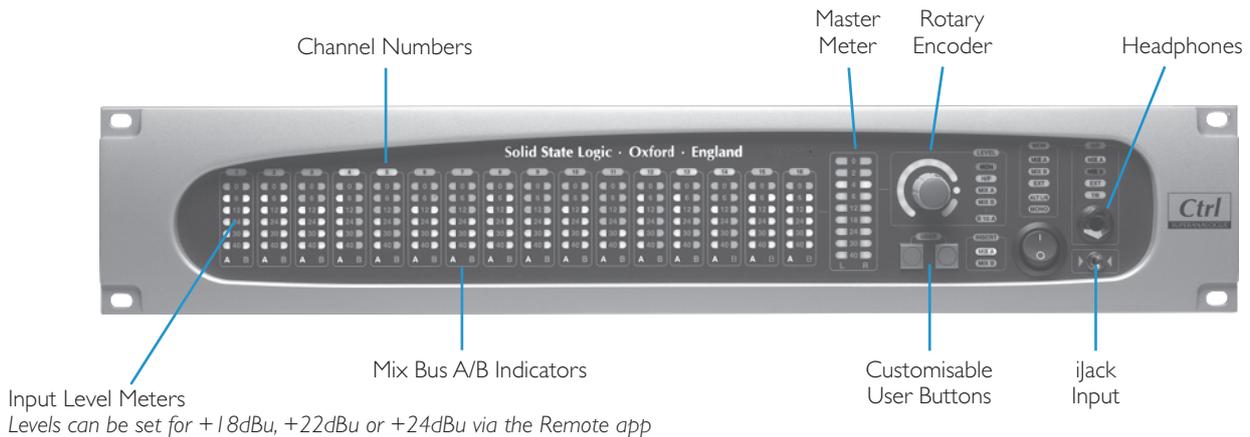
**Headphones** – stereo headphone output on 1/4" jack.

*Important: For health and safety reasons, do not reboot Sigma with while monitoring through headphones.*

**iJack Input** – stereo external input on 1/8" jack (from iPod output or similar device).

Sigma δelta also provides access to Mix Insert Send/Returns, a Line Level output for sending headphone feeds into a live room, an external input and talkback input, all on standard DB-25 connections. Access to the Main Speaker Outputs, Alternative Speaker Outputs and the Mix A Output is provided on XLR male connectors.

# Rear Panel

Miscellaneous Returns and Inputs

Footswitch Input

16 Stereo Channel Inputs

Alternate Monitor Output

Main Monitor Output

Mix A Output

*Clip to secure power cable*

*Factory use only*

Miscellaneous Sends and Outputs

16 Stereo Channel Outputs

Power Inlet +12V DC

Ethernet
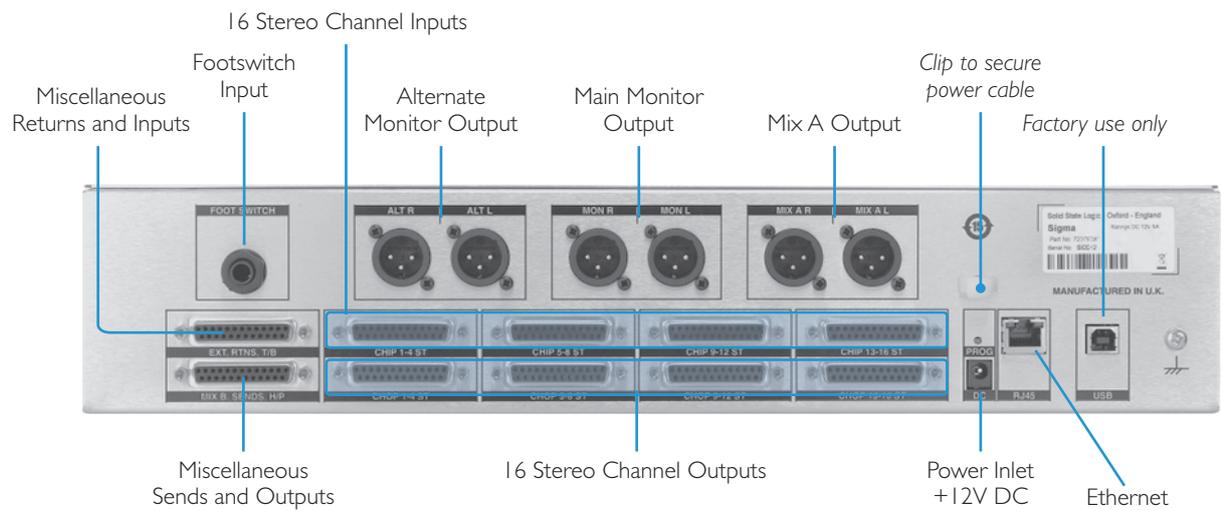
**ALT L** & **R** – Alternate monitor outputs

**MON L** & **R** – Main monitor outputs

**MIX A L** & **R** – Mix Bus A outputs

**FOOTSWITCH** input is suitable for any 1/4" on/off footswitch. By default this turns Talkback On/Off, although this can be changed in the app.

**DC** input for use with the power supply provided. The clip above the power inlet should be used to retain the power lead and so prevent accidental removal or damage.

**RJ45** to connect Sigma to your computer network – use a standard Ethernet cable (as supplied).

**USB** and **PROG** access are for SSL diagnostic use only.

# CHIP (CHANNEL INPUTS) AND CHOP (CHANNEL DIRECT OUTPUTS)

All inputs and outputs for Sigma δelta are on AES 59 'Tascam' standard D-sub connectors. Each D-sub carries up to four stereo signals. The inputs and outputs are all operating at line-level. The direct channel outputs are sourced *post-fader*.

Typically, you would connect the outputs from your D/A converter into the CHIPs.

The CHOPs would be connected to your A/D to record back into the DAW.

*A creative use for Sigma could be using it to automate 16 channels of an analogue desk. This could be achieved by connecting the insert sends from the console into Sigma's CHIPs and then connecting Sigma's CHOPs into the insert returns of the console.*

## MISCELLANEOUS CONNECTIONS

**EXT, RTNS, TB – AES 59 'Tascam' standard connections:**

**EXT**          Provides a line-level stereo input available from an external source such as a professional CD player.

**RTNS (A + B)**   Provides connections for the stereo insert return signals of both Mix Bus A and Mix Bus B.

**TB**           Provides a line-level input from which you can connect the output from a talkback microphone preamplifier.

**MIX B, SENDS, H/P – AES 59 'Tascam' standard connections.**

**MIX B**        Stereo Mix Bus B outputs

**SENDS**        Provides connections for the stereo insert send signals of both Mix Bus A and Mix Bus B.

**H/P**          Provides a line-level stereo headphone output suitable for running a headphone feed into a cue mixer.

| EXT, RTNS, T/B Connector Type: 25-way D-type Female | | | D-sub to XLR-F Loom |
|---|---|---|---|
| Pin | | Description | |
| 1 | | n/c | XLR-8 |
| | 14 | n/c | |
| 2 | | 0V | |
| | 15 | Talkback Mic Input (+ve) | XLR-7 |
| 3 | | Talkback Mic Input (–ve) | |
| | 16 | 0V | |
| 4 | | Mix B Insert Return Right (+ve) | XLR-6 |
| | 17 | Mix B Insert Return Right (–ve) | |
| 5 | | 0V | |
| | 18 | Mix B Insert Return Left (+ve) | XLR-5 |
| 6 | | Mix B Insert Return Left (–ve) | |
| | 19 | 0V | |
| 7 | | Mix A Insert Return Right (+ve) | XLR-4 |
| | 20 | Mix A Insert Return Right (–ve) | |
| 8 | | 0V | |
| | 21 | Mix A Insert Return Left (+ve) | XLR-3 |
| 9 | | Mix A Insert Return Left (–ve) | |
| | 22 | 0V | |
| 10 | | External Input Right (+ve) | XLR-2 |
| | 23 | External Input Right (–ve) | |
| 11 | | 0V | |
| | 24 | External Input Left (+ve) | XLR-1 |
| 12 | | External Input Left (–ve) | |
| | 25 | 0V | |
| 13 | | n/c | |

| MIX B, SENDS, H/P Connector Type: 25-way D-type Female | | | D-sub to XLR-M Loom |
|---|---|---|---|
| Pin | | Description | |
| 1 | | Headphone Right (+ve, line level) | XLR-8 |
| | 14 | Headphone Right (–ve, line level) | |
| 2 | | 0V | |
| | 15 | Headphone Left (+ve, line level) | XLR-7 |
| 3 | | Headphone Left (–ve, line level) | |
| | 16 | 0V | |
| 4 | | Mix B Insert Send Right (+ve) | XLR-6 |
| | 17 | Mix B Insert Send Right (–ve) | |
| 5 | | 0V | |
| | 18 | Mix B Insert Send Left (+ve) | XLR-5 |
| 6 | | Mix B Insert Send Left (–ve) | |
| | 19 | 0V | |
| 7 | | Mix A Insert Send Right (+ve) | XLR-4 |
| | 20 | Mix A Insert Send Right (–ve) | |
| 8 | | 0V | |
| | 21 | Mix A Insert Send Left (+ve) | XLR-3 |
| 9 | | Mix A Insert Send Left (–ve) | |
| | 22 | 0V | |
| 10 | | Mix B Output Right (+ve) | XLR-2 |
| | 23 | Mix B Output Right (–ve) | |
| 11 | | 0V | |
| | 24 | Mix B Output Left (+ve) | XLR-1 |
| 12 | | Mix B Output Left (–ve) | |
| | 25 | 0V | |
| 13 | | n/c | |

# 3. Software Installation and Configuration

Sigma δelta requires the following software to be installed onto your computer:

- **Sigma Remote** app – control of your Sigma δelta
- **δ-Ctrl** plugins – to automate Sigma; Single or 16 version as appropriate, δelta-Monitoring and δelta-Mix Bus
- **ipMIDI** software – Direct hardware control of Sigma from a compatible networked control surface using the MCU (Mackie Control Unit) protocol – *Only required if using a network-based control surface*
- **Nucleus Remote** – *Only required if using an SSL Nucleus as a remote control surface*

Locate either the **SSL Delta Control.dmg** disk image (Macintosh) or the **SSL Delta Control Setup.zip** file (Windows), included as part of the Sigma downloads – these contain the Sigma Remote and ipMIDI applications, the plugin installer, the Nucleus Remote profile and the latest version of the installation and operating instructions.

The files can be downloaded from the Update section of SSL's website here: Update

*Please note: To access the Update section, the Sigma δelta unit must be registered to a* user account*.*

## INSTALLING THE REMOTE APP

### Remote App (Mac)

Open the disk image and then the **Sigma Remote Control.pkg**; follow the installation steps in the installer.
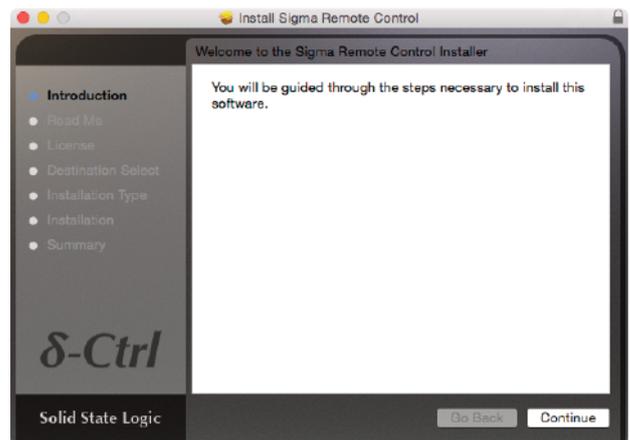
### Remote App (Windows)

Open the zip file and run the **SSL Sigma Remote.exe** file; follow the installation steps in the installer.

# INSTALLING THE δELTA-CONTROL PLUGINS

## δ-Ctrl Single Plugin (Mac)

Open the disk image and mount the **SSL Delta Control Plug-in.pkg**; follow the installation steps as shown below:
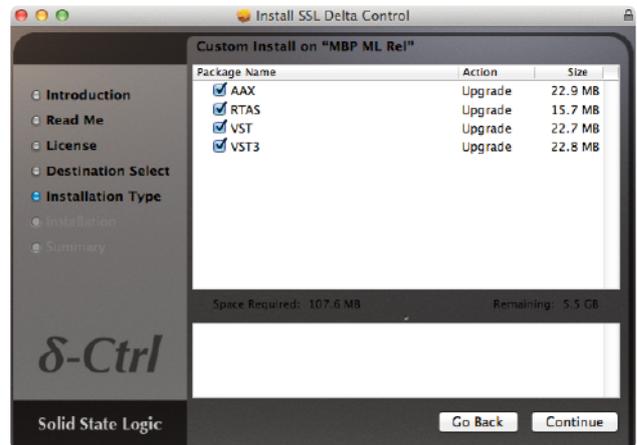
## δ-Ctrl Single Plugin (Windows)

Open the zip file and run the **SSL Delta Control Setup.exe** file; follow the installation steps as shown below:
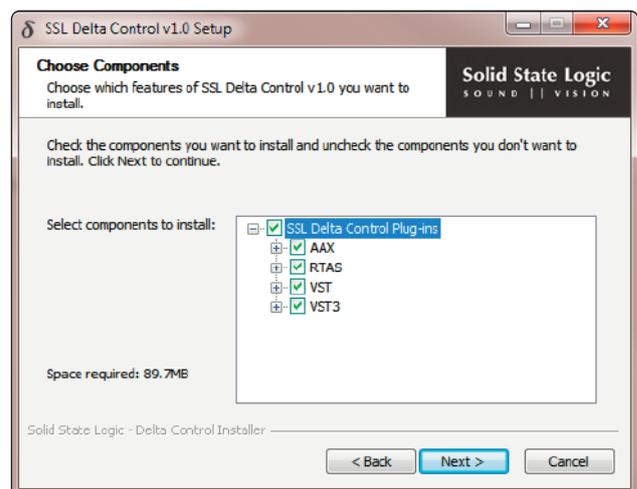
# iLok

The plugin uses the industry standard iLok copy protection scheme – users will need an iLok2 USB key.

In the case of a new unit 1 licence is included as standard, additional licences are be available from the SSL web store. Existing V1.0.3 customers will need to purchase a license from the SSL web store.

# $\delta$-Ctrl Single Plugin vs $\delta$-Ctrl 16 Plugin

The **$\delta$-Ctrl Single** plugin was derived from the Duality and AWS automation systems; an individual plugin for each channel of the console.

The **$\delta$-Ctrl 16** plugin was designed to contain all 16 fader, pan and switch parameters for Sigma within one plugin instance.

### Benefits of the Single Plugin
- The ability to enable/disable automation modes on individual channels of Sigma (when you write to one channel, the other channel can be in read/off mode).
- Easy to switch plugin to automate AWS/Duality channels

### Benefits of the $\delta$elta-16 Plugin
- Quicker to set up your session for automation
- Works within the control parameters set by Logic Pro
- Simpler workflow based around DAW automation system

### Installation
The **$\delta$elta-16 plugin** uses a separate installer from the 'Single' plugin; this can be found under the **Downloads** link for your Sigma. Run the installer and follow the same procedure described for the installation of the 'Single' version of $\delta$elta.

We advise running only one type of delta plugin in each DAW session.



*Your Sigma firmware and Remote browser will need updating to version 2.1.0 or above to work with all $\delta$elta plugins.*

*Both $\delta$elta-Single and $\delta$elta-16 work with the same 'SSL Delta Plugin' iLok license*

## $\delta$elta-Monitoring and $\delta$elta-Mix Bus

For automating Sigma mix bus levels, or for direct control of your monitor section via the DAW (particularly using a EuCon surface), install the SSL $\delta$elta Control Mix Bus and SSL $\delta$elta Control Monitoring plugins.

The $\delta$elta-Monitoring and $\delta$elta-Mix Bus plugins have separate installers; both of which can be found in your SSL account under **My Products** › **Sigma Downloads**. Run the installer of your plugin and follow the process described on page 6.

*Both $\delta$elta-Monitoring and $\delta$elta-Mix Bus work with the same 'SSL Delta Plugin' iLok license.*

# INSTALLING ipMIDI SOFTWARE

### ipMIDI (Mac)

After downloading the Sigma Mac Support File from the Downloads section, install the ***ipMIDI.dmg*** file. Note that you will be asked to logout and in again once you have completed the installation. Once you have logged back in open **Audio MIDI Setup** (in the **Utilities** folder on your Mac) and double click on the ipMIDI icon (in MIDI Window view). Set the number of ports to 20 in the resulting pop-up.
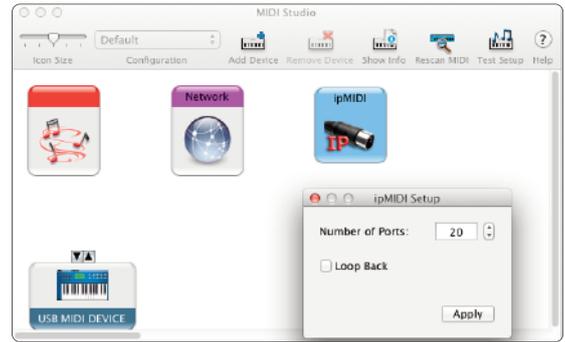
*If you are upgrading an older copy of ipMIDI you must uninstall it before running the installer. To uninstall ipMIDI simple delete: '/Library/Audio/MIDI Drivers/ipMIDIDriver.plugin'. You should empty the Trash after deleting the '.plugin' file before running the installer.*

### ipMIDI (Windows)

After downloading the Sigma Windows Support File from the downloads page, install the ***ipMIDI.exe***. Note that you will have to restart the computer at the end of the setup process. Once the computer has restarted, double-click on the ipMIDI icon in the bottom-right taskbar of Windows and set the number of MIDI ports to 20 in the resulting pop-up.

*Note that if you are upgrading an older copy of ipMIDI you must uninstall (using **Add/Remove programs**) it before running the installer.*
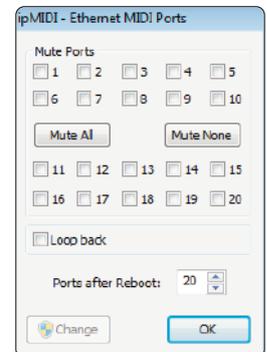
## NUCLEUS REMOTE PROFILE

In the Nucleus Remote click on Edit Profiles to bring up the Profile Editor popup and click Restore.
In the pop-up which appears, locate the file Sigma Delta.zip from the software download and click on Open. The restored Profile will appear in the Profile list which can be assigned to a Nucleus layer in the usual manner.

## SIGMA'S INTERNAL SOFTWARE

Sigma δelta has internal software that comes pre-installed from the factory. There may be infrequent updates for this software. Please refer to *Section 5, page 31: 'Software Update'* for more information on how to check your Sigma software version and how to update the software.

## SIGMA REMOTE CONTROL TABLET APP

The tablet app on iOS and Android is optional. The tablet app connects to the computer-based Sigma Remote Application, allowing wireless control of the 'Master' and 'Channel' tabs for Sigma.

Tablet Requirements:

• iOS: 9.0+ (iPad only)
• Android: Marshmallow (v5)+ (Tablet only)

The iOS version of the app can be found in the Apple App store: 'Sigma Remote Control'

The Android version of the app can be found in the Google Play store: 'Sigma Remote Control'

Both apps are free to download.

# 4. Network Setup

## GENERAL

Sigma δelta communicates with its Remote app and the δelta-Control plugin over a standard TCP/IP Ethernet connection.

The ipMIDI software driver uses multicast UDP, rather than TCP/IP, to ensure minimum latency. Routers that support high data transfer rates should be used. Some domestic routers have experienced problems, so please check your router specification if problems occur. *See following note.*

> **Notes for Network Technicians:**
> *Because ipMIDI and δelta Control use multicast UDP packets, messages between one computer and Sigma will be received by all other computers on the network, potentially causing problems with other ipMIDI devices / Sigma units on your network. The UDP packets can be blocked by using a firewall router and connecting the main network by the WAN connector. The firewall can then be configured to allow all traffic apart from the UDP ports required for ipMIDI and δelta Control.*
>
> *Firewall router settings: Block multicast addresses **255.0.0.37** and **255.0.0.38***
>
> *Note that it may be necessary to use a separate Ethernet switch in place of an integrated firewall router switch, as some of these can not support the high data transfer rate required. The NetGear GS108 (an eight port switch) has been used successfully at SSL Begbroke.*

## Sigma's IP Address

By default, Sigma uses a fixed IP address of **192.168.1.201.** Alternatively, Sigma can be set to use a dynamically assigned (DHCP) address if your installation precludes a simple direct connection. Switching between the two options is done in Sigma's **SETTINGS** page in the app.

## Useful Built-In Features

### Reverting from DHCP to Fixed IP

If a situation arises where Sigma δelta is set to DHCP but you are unable to connect via a DHCP, take the following steps:

1. Power Sigma off
2. Set your computer network settings to be a fixed IP address
3. Power Sigma on

This will force Sigma into reverting to its fixed IP address.

### How to Check the Current IP Address of Sigma δelta

Once connected to Sigma, it is possible to change the fixed IP address as desired. In a situation where you forget what the fixed IP address is set to, press and hold the first **USER** button on the front panel and whilst keeping this held down, press the second **USER** button. Sigma will use the front panel LEDs to readout the IP address it is set to.

# NETWORK CONNECTION EXAMPLES

## 1. Fixed IP – Direct Connection

This is the simplest way to setup Sigma with your computer. Sigma comes configured to use a fixed IP on first startup.

Ethernet
Connection

DAW
Computer
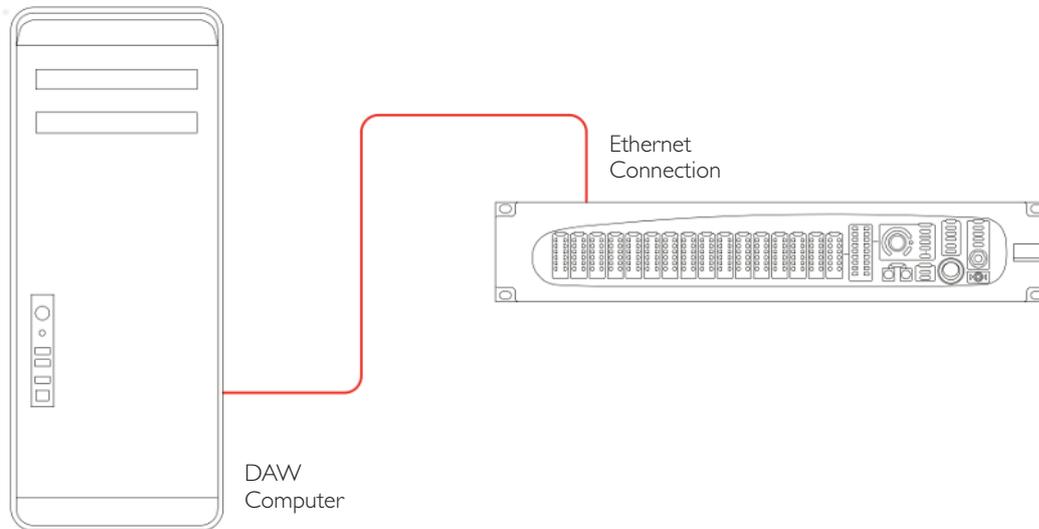
*Please note that Macintosh computers with multiple Ethernet ports can only use one of those ports at any one time!*

### Using Mac 'Airport' and ipMIDI/δelta Control

If you are using a Macintosh computer, you should ensure that Airport is switched off. We strongly recommend this as Airport is known to cause conflicts with ipMIDI/δelta Control data and may stop Sigma from working. If you wish to use the internet, we suggest you configure Sigma with a Router/Switch (see example 2).
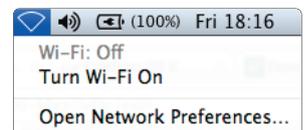
**Network Connection Configuration – Macintosh**

- On your computer go to **System Preferences** and click on the **Network** icon.
- Set **Configure IPv4** to **Manually** then fill in the **IP Address** and **Subnet Mask** boxes with the numbers shown. The IP address should be in the 192.168.1.X range with a Subnet of 255.255.255.0.

*'X' should be a number between 3 and 254. Make sure that the 'X' number is not the same as Sigma's address, or any other device on the network.*
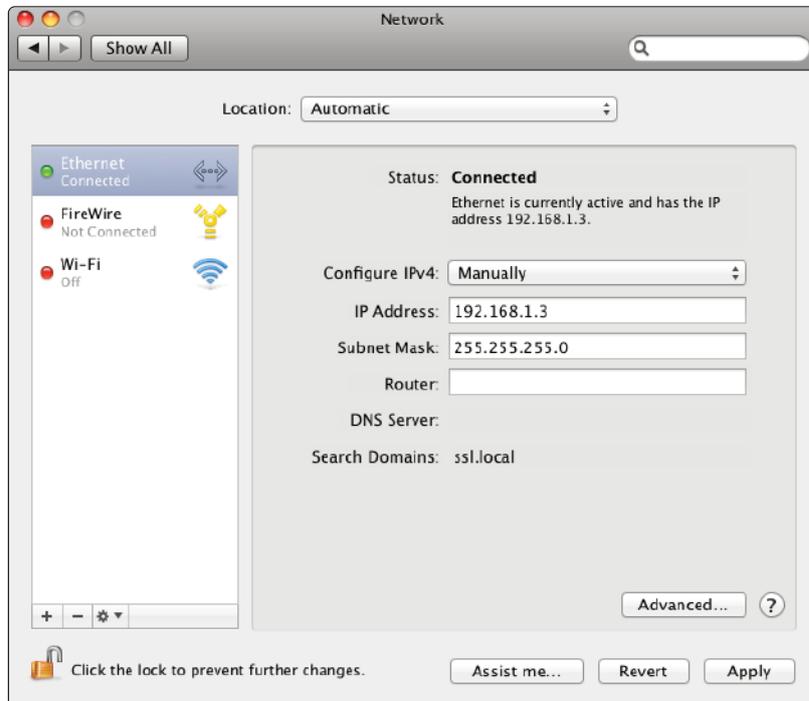
**Network Connection Configuration – Windows**

- Go to **Network** and go into **Local Area Connection Properties**.
- Open up the option **Internet Protocol Version 4 (TCP/IPv4)**.
- Select **Use the following IP address** and then fill in the **IP Address** and **Subnet mask** boxes as shown below.
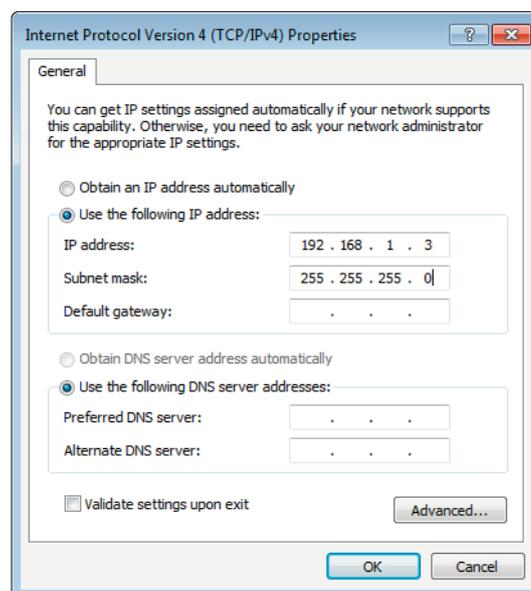
## 2. Router (and Switch) Connection using DHCP – Allows Access to Internet

This connection method allows you to connect multiple devices to your network and access the internet at the same time.

The premise behind this method is that your Internet router acts as a DHCP server, dynamically assigning IP addresses to all the devices on your network. The simplest configuration would be as follows:
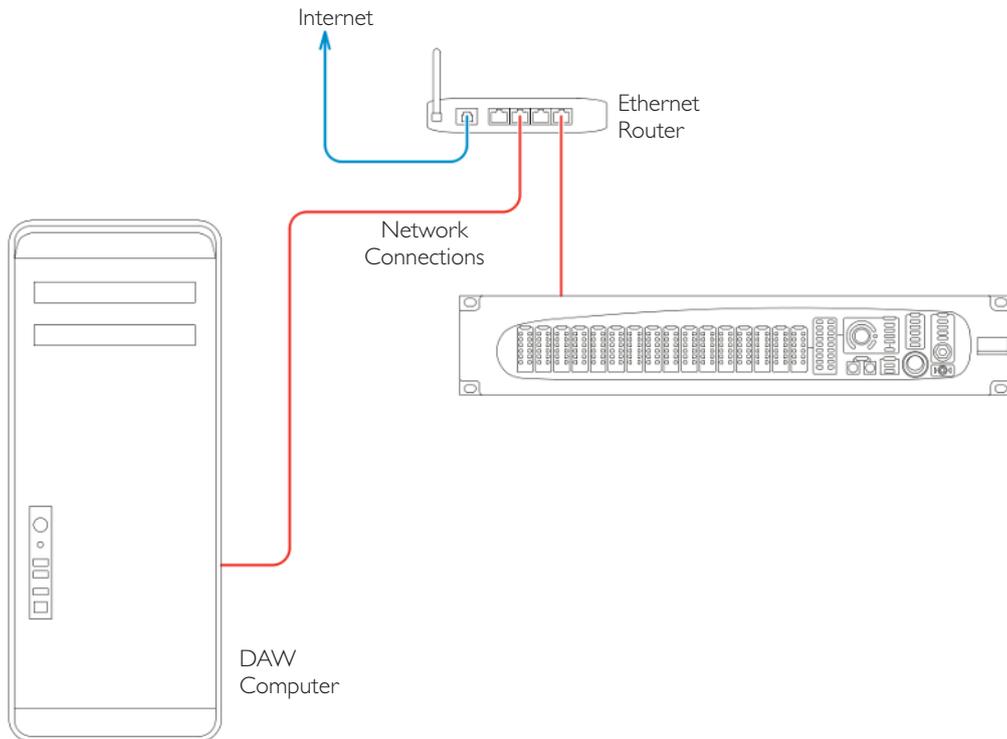


If you have more devices that you need to connect on your network, adding an Ethernet switch will allow more things to be connected.
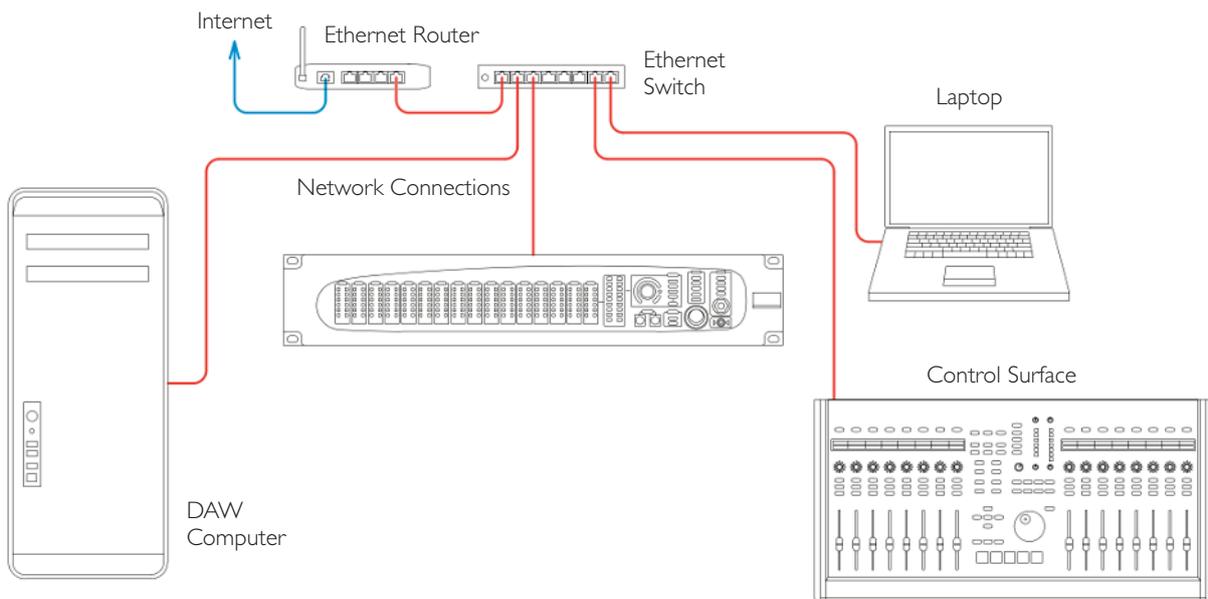
**Network Connection Configuration – Macintosh**
- Go to **System Preferences** and click on the **Network** icon.
- Set **Configure IPv4** to **Using DHCP**.
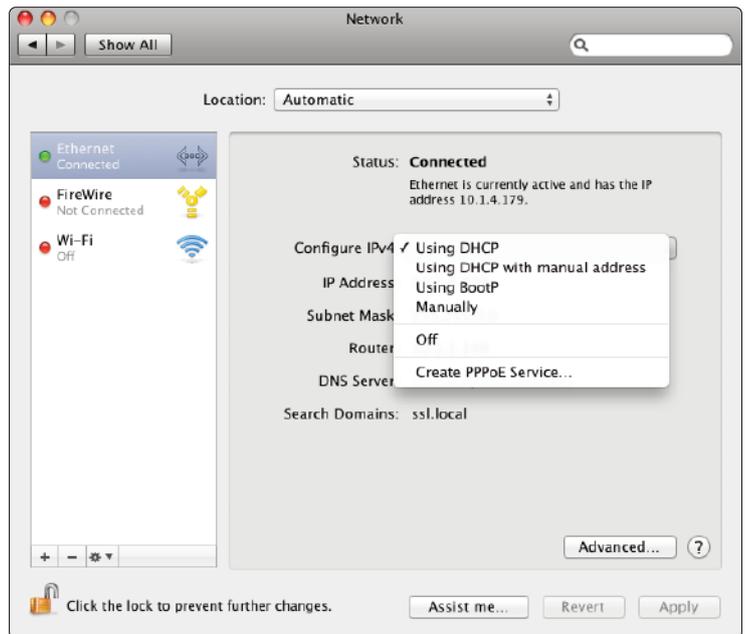
**Network Connection Configuration – Windows**
- Go to **Network** and go into **Local Area Connection Properties**.
- Open up the option **Internet Protocol Version 4 (TCP/IPv4)**.
- Choose the option **Obtain an IP address automatically**.
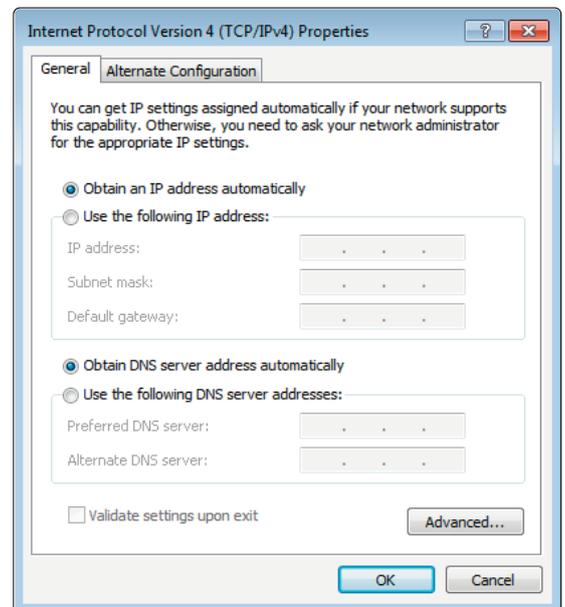
# 3. Connection in a facility that has multiple SSL Consoles/Multiple ipMIDI devices

If you are in a studio that has multiple SSL consoles/ipMIDI devices, we recommend that you purchase one of our 'LAN integration network switches' from the SSL web store. Due to the nature of UDP, if you have two SSL consoles/ipMIDI devices on the same network with a normal router/switch setup, then you may find that an ipMIDI device in one room will start affecting another ipMIDI devices in another room. Our managed switch blocks UDP data on two of the ports, solving the problem and allowing uplinking in a multi-room facility. Please visit the following link for more details and a picture example: store.solidstatelogic.com/catalog/36.

# SYSTEM WORKFLOW TIPS

This is a suggested workflow for the Sigma δelta system, incorporating Sigma hardware, Remote app, δelta-Control plugin, control surface and DAW.

## Boot Order

It is recommended to boot Sigma, the control surface and the Remote app before the DAW and δelta-Control plugins. If at any point Sigma, the control surface or the Remote app is closed/rebooted with the DAW and δelta-Control plugins open, the system should be re-booted from the start to ensure proper communication.

The Remote app must be open on your DAW PC/Mac at all times in order for an MCU control surface and the δelta-Control plugins to communicate. This includes situations where an iOS or OSC device is being used to control Sigma.

## Channel Names

Contrary to the previous Sigma software (v1.0.3.x) channel names are no longer read from the DAW when the δelta protocol is in use. You will notice that the NAMES: DAW button is greyed out in the Remote app in δelta mode.

Channel names should be entered manually in the Remote app using the computer keyboard. When a δelta Plugin is assigned to that Sigma channel in the DAW the channel name is displayed on the left hand side of the top panel.

## δelta Plugins

It is recommended that these are inserted and assigned a channel at the beginning of the session. Do not copy a plugin to another insert slot once it has been assigned to a channel as this can disrupt the connection to Sigma. Using the auto-increment feature of the plugin is recommended. See section 6 of this User Guide for detailed information on the δelta Plugin.

## Sigma δelta Nucleus Profile

A Nucleus Profile is included in the software download package. This maps some Sigma controls to Nucleus switches for easy access from the control surface, as shown:

| | |
|---|---|
| **MIX A** = F1 | **CUT** = SAVE |
| **MIX B** = F2 | **ALT L/S** = UNDO |
| **DIM** = ENTER | **T/B** = CTRL |
| **MONO** = ESC | |

*The MIX A and MIX B channel assignments are used in conjunction with the Nucleus SEL switch.*

*The talkback (T/B) function is non-latching.*

An SSL Nucleus (or other compatible MCU controller) needs one of its DAW layers dedicated to Sigma. This is assigned using the Sigma Remote app.

If, for example, you want to use Nucleus DAW layer 2 to communicate with Sigma, ipMIDI ports 3+4 should be assigned to Channels 1-8 and 9-16 respectively in the Sigma Remote app.

## SSL Console Transport Master

When your DAW is assigned to one SSL console DAW layer and Sigma to another, to retain transport control when the Sigma layer is in focus assign the transport master to the DAW layer.  Click on the appropriate button in the Transport Master area of the console Remote's DAW tab to assign this to your DAW layer.

# UPGRADING FROM SIGMA 1.0.3.X TO SIGMA δELTA

## Web Browser Interface
This method of controlling Sigma remains available to allow translation of Sigma settings to the Remote app.

*Important: The web browser interface should be closed at all times except when copying settings as outlined below. Leaving it open can disrupt proper communication in the δelta system.*

## Copying Sigma Settings from earlier software
Sigma settings stored with v1.0.3.x software or earlier can be recalled via the web browser using the Load tab. It is recommended to re-save the settings in the Remote app for further use.

## Translating Sigma v1.0.3.x Automation to the δelta System
If you have DAW projects that you wish to continue using with the δelta system, the automation data must be translated to the δelta plugin in the DAW.

**Pro Tools (HUI):**
- View and select the track Volume automation data
- Edit › Copy (or Cut)
- Change automation view to SSL δelta Control (Volume)
- Edit › Paste Special › To Current Automation Type
- Do this for each of the 16 Sigma channels

**Cubase, Nuendo and Ableton Live:**
- View and select the track Volume automation data
- Edit › Copy (or Cut)
- Change automation view to SSL δelta Control (Volume)
- Edit › Paste
- Do this for each of the 16 Sigma channels

# 5. Sigma δelta Operation

## THE REMOTE APP INTERFACE

Once the app is running and connected, you have access to all of Sigma's functions. The interface is arranged as follows:

Three Buttons for Sigma's Operational Control

Buttons for Saving and Recalling Settings

# MASTER

When launching the Remote app you will be looking at the **MASTER** page. Most functions that can be set by the app – such as monitoring source or insert points in/out – will also be reflected on Sigma δelta's front panel.

## Master Meter

The front panel Master Meter is to the right of the 16 channels. The 'o' mark indicates o dBFS (default is +24dBu). *Master and channel meter calibration can be set globally in the SETTINGS page.*

The app allows you to switch the master meter source between the following:

**MON**  Master Meter follows the current monitoring source(s)

**MIX A**  Lock the Master Meter to follow the post-fader level of Mix Bus A

**MIX B**  Locks the Master Meter to follow the post-fader level of Mix Bus B

## Mix Bus Inserts

The Mix A and Mix B insert points are enabled by clicking on the **MIX A** and **MIX B** buttons inside the **INSERT** box. Inserts have a 'Σ' function which sums the insert return with the original main stereo mix bus signal. This may be useful for a several reasons: it will allow you to link the mix busses of two Sigmas together by connecting the mix bus output from the second Sigma into the insert return of the first Sigma; or you could use this function with one Sigma to create a parallel compression effect, using the compressor's output level to control the amount of compressed signal present.

## Level Control

The front panel of Sigma has a blue rotary encoder, surrounded by an LED ring. Pushing the encoder in will cycle through the options **MON**, **H/P**, **MIX A** and **MIX B**, enabling independent level control of each one.

**MON**  Main/Alternate monitor level

**H/P**  Headphones output level

**MIX A**  Mix Bus A level

**MIX B**  Mix Bus B level

When setting the level of Mix A or Mix B, the dot that breaks up the LED ring will light red to indicate odB.

Push and hold the rotary encoder for two seconds, then release. The dimly lit LED ring now indicates that you are in **Fine** adjustment mode

**Coarse:**  level steps in 0.5 dB

**Fine:**  level steps in 0.1dB

Pushing and holding the rotary encoder again will return it to **Coarse** operation.

*The rotary encoder is speed-sensitive; slower turns will allow you to change gains more accurately.*

### App Control Panel



| Meter Source | Level Indicator | Level Assignment | **Mon** Box | Headphone (**H/P**) Box |

| **Insert** Selection | **User** Buttons | **MIDI** Learn | **DIM** Box | Footswitch (**F/S**) Box |

### Unit Front Panel
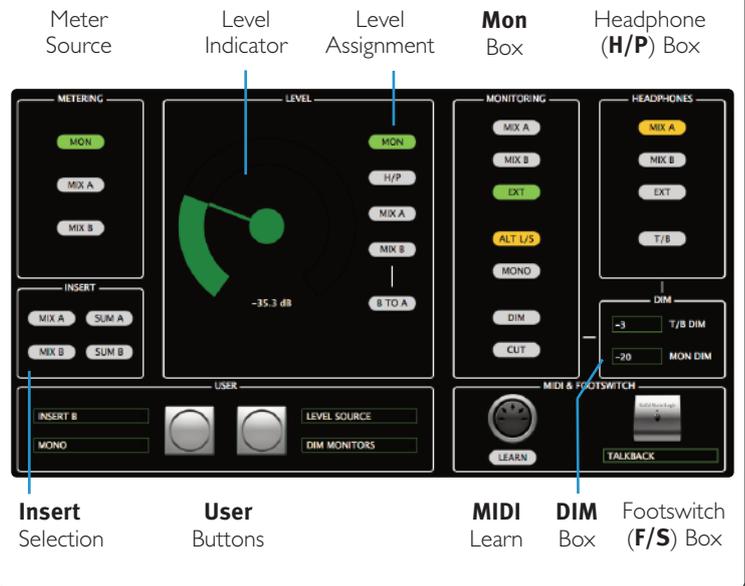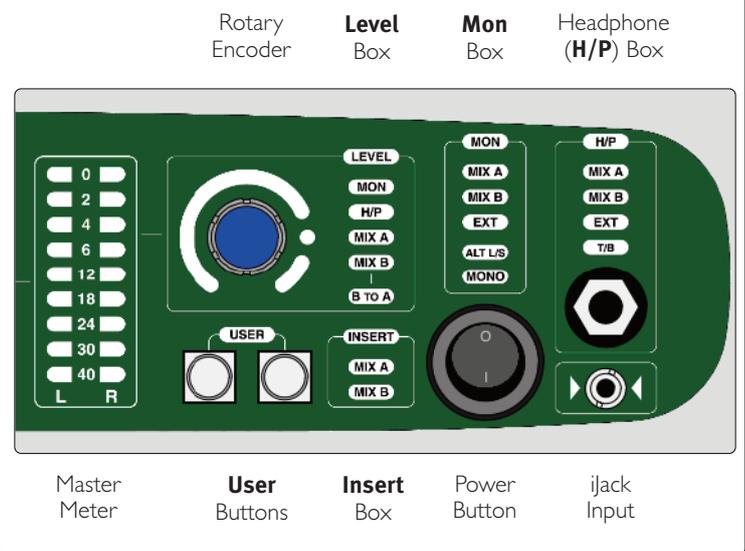


| Rotary Encoder | **Level** Box | **Mon** Box | Headphone (**H/P**) Box |

| Master Meter | **User** Buttons | **Insert** Box | Power Button | iJack Input |

| SOURCE | RANGE |
|--------|-------|
| **MON** | 0 to 12 |
| **H/P** | 0 to 12 |
| **MIX A** | -∞ to +10dB *(red dot indicates 0dB)* |
| **MIX B** | -∞ to +10dB *(red dot indicates 0dB)* |

# B TO A Function

The output of Mix Bus B can be injected into Mix A by engaging the **B TO A** button. This would be useful for applying parallel compression to drums on Mix B (using the Mix B insert point) before blending the compressed drums into Mix A (containing the uncompressed instruments).

Mix B is injected post the Mix A insert point but pre Mix A level control. If you wish to inject the output of Mix B pre Mix A insert point, we suggest you take one of these two alternative approaches:

1. Take the Mix B output and connect it back into a stereo input of Sigma, being sure only to route it to Mix A to avoid an unwanted feedback loop.

   E.g.: **MIX B OUTPUT › SIGMA STEREO CHANNEL › ROUTE TO MIX A › ENGAGE INSERT**

or:

2. Instead of using Mix A's insert point to connect your analogue processing equipment, simply connect the output of Mix A directly into any outboard equipment and take the output of this into your DAW to print back the mix. As a final step you can send the output of this stem out of your DAW into the EXT input of Sigma, to monitor your printed mix post D/A conversion.

   **ENGAGE B TO A FUNCTION › MIX A OUTPUT › ANALOGUE PROCESSING › DAW INPUT.**
   (Final Step) **DAW OUTPUT › EXT INPUT OF SIGMA › MONITOR EXT INPUT.**

## USER Buttons

Two User buttons on the front panel allow you to assign up to four functions. Each button has a *Push* and a *Push & Hold* operation.

By default the User buttons are set as follows:

### Left User Button

Push:              Toggles Alternate loudspeaker selection on/off
Push & Hold:   Toggles Mono check on/off

### Right User Button

Push:              Mutes loudspeaker outputs
Push & Hold:   Dims loudspeaker outputs

The drop-down boxes allow you to change these assignments.

## MON/MONITORING Box

The **MON** box on the front panel indicates the control room monitor source(s) currently selected. This could be any combination of **MIX A**, **MIX B** or **EXT** (front panel iJack input and line-level connection on rear panel D-Sub).

**ALT L/S** indicates if you have selected the alternate speaker set and **MONO** shows if you are listening to a mono foldown of the stereo mix.

> HINT: The **MON** LED on the front panel lights amber to indicate a monitor dim and lights red to indicate a monitor cut.

## H/P Box

The **H/P** box on the front panel indicates which sources are feeding the headphones on both the front panel 1/4" jack output and the line-level output on the rear panel D-Sub connection. This may be any combination of **MIX A**, **MIX B** or **EXT**.

Sigma's talkback input can be switched on/off with the **T/B** button. The talkback input is routed to both the front panel 1/4" headphone output and the rear panel line-level feed. Talkback is injected *post the H/P level control*, so you will need to use the output level of your talkback mic's preamp to control the overall talkback level.

---

*Sigma does not include an internal talkback preamp. The T/B input is line-level input from which you should connect the output of the external preamp you are using with your talkback microphone.*

---

*The line-level headphones feed provided on the rear D-Sub provides a useful method of running the headphones feed into a separate live room/vocal booth. Typically, you would connect this into a cue mixer system, which the artist would plug their headphones into. The level of the headphone signal is controlled by selecting H/P in the Level Box and using the rotary encoder to adjust accordingly.*

---

## MIDI LEARN

Clicking the **LEARN** button beneath the MIDI icon activates Sigma's MIDI Learn mode. **LEARN** allows you to use CC messages (generated by a CC MIDI control surface) to control various functions on the **MASTER** page. This is useful if Sigma is installed into a remote rack outside your immediate reach.

Use the **SETTINGS** page to select an ipMIDI port for Sigma to receive MIDI CC messages through.

Follow the on-screen instructions to learn/un-learn functions.

Assignable MIDI Learn functions include:

- ROTARY LEVEL ENCODER
- LEVEL SOURCE CYCLE
- ALT L/S
- MONO
- CUT MONITORS
- DIM MONITORS
- T/B
- MONITOR SOURCE CYCLE
- H/P SOURCE CYCLE
- INSERT A
- INSERT A SUM
- INSERT B
- INSERT B SUM
- MIX B TO MIX A
- METER SOURCE CYCLE

## FOOTSWITCH

On the rear panel of Sigma you will find a footswitch input, suitable for a 1/4" on/off (latching or non-latching) footswitch. SSL tested with a Digitech FS300 (non-latching) and a standard Marshall guitar footswitch (latching). By default, the footswitch is assigned to turn the talkback input on/off although this can be changed to any of the options available in the drop-down box.
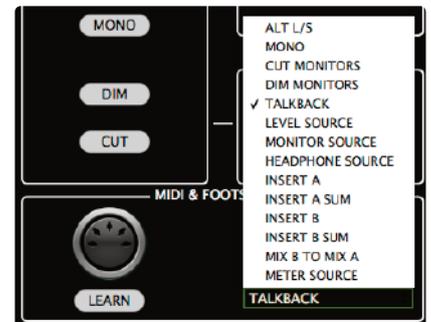
## DIM SETTINGS

**T/B DIM (for Headphones)** - When talkback is engaged, the **T/B DIM** level sets the amount of attenuation applied to the currently selected **MONITOR** source(s) in the headphones. A setting of 0dB will apply no attenuation and therefore simply sum the talkback input with the monitor sources. A setting of -∞ will apply maximum attenuation, completely muting the monitor source, leaving only the talkback input.

**MON DIM (for control room)** - Sets the level of DIM for the control room monitors, when the **DIM** button is engaged.

## iJack Input

The bottom-right of Sigma's front panel provides a 1/8" stereo jack input for connecting consumer products such as iPods. This input can be sent to the control room monitors or headphones by selecting **EXT** (External Input).

---

*If you wish to connect the output of a professional line-level source such as a CD player, there is a stereo external input available on the rear panel D-Sub connector. This will be summed with the front panel iJack input. See Appendix A for connection/pinout details.*

---

# CHANNELS
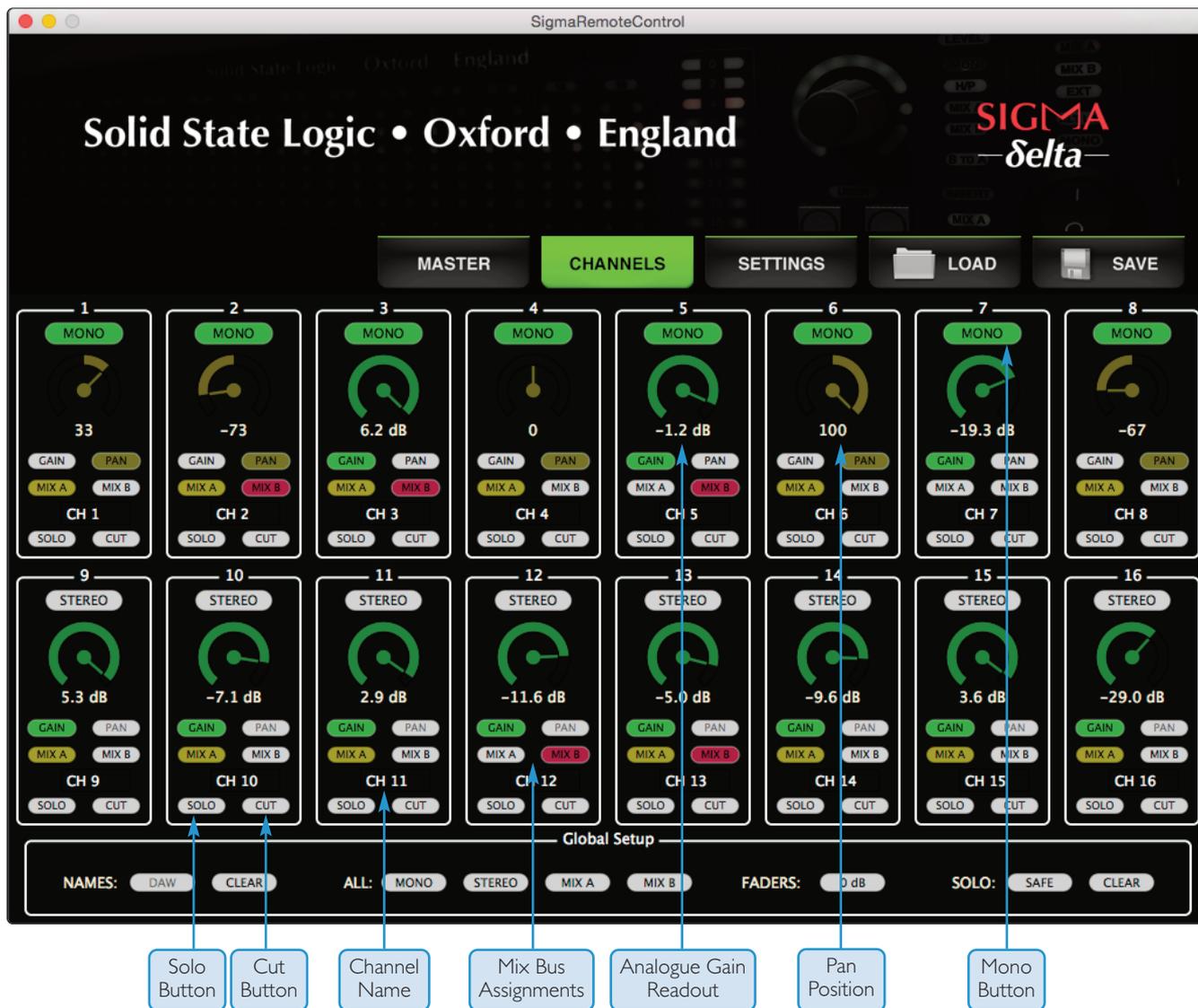


The **CHANNELS** page controls functions such as gain, pan, mix bus routing or mono/stereo selection for each channel. As with the MASTER page, many of these functions are reflected on Sigma δelta's front panel.

Each channel on the Sigma front panel displays the input level (pre-fader) with a six-segment LED display.

Sigma has 16 input channels that are individually switchable via the MONO button. When a channel is switched to MONO the display changes to show the pan control. The GAIN and PAN switches can be subsequently used to switch the display between these controls.

Double click on a GAIN or PAN control to reset it to 0dB or centre respectively.

Just above the mix bus buttons, you'll see a value in dBs for each channel. This is the analogue "fader" gain readout for each channel and is useful for checking that the DAW's faders are controlling the analogue gains of Sigma.

Sigma has 2 mix busses: **A** and **B**. Each channel can be routed to either or both busses using the **MIX A** and **MIX B** buttons.

Each channel can be renamed simply by clicking in and typing in the relevant box.

The **SOLO** button performs a solo-in-place, cutting all other channels. **CUT** mutes the channel's output.

*The SOLO function can be changed from solo-in-place to an AFL style solo, using Mix Bus B as an AFL bus. Please see the **SETTINGS** section for more information.*

# GLOBAL SETUP

The **GLOBAL SETUP** section at the bottom of the **CHANNELS** tab provides a number of useful quick functions.



## NAMES:

**DAW**    This button will automatically rename the channels of Sigma to be the same as the first 16 names in your DAW session. *This function will only work when using legacy HUI/MCU control (not MIDI or DELTA).*

**CLEAR**    Clears all track names.

## ALL:

**MONO**    Sets all channels of Sigma to mono.

**STEREO**    Sets all channels of Sigma to stereo.

**MIX A**    Assigns/de-assigns all channels to Mix Bus A.

**MIX B**    Assigns/de-assigns all channels to Mix Bus B.

## FADERS:

**0dB**    Sets all of Sigma δelta's analogue gains to unity (0dB). Useful for restoring Sigma to be a "flat" summing mixer.

## SOLO:

**SAFE**    This button enables you to protect channels in Sigma from cutting when a solo is made. For instance, you may not want your vocal reverb on channel 16 to be cut when soloing the dry vocal on channel 15. To configure a channel as 'solo safed' simply enable the **SAFE** button and then click (or touch if using a tablet) on a channel's **SOLO** button. This will show you a strikethrough line on the **SOLO** text to indicate it has been 'solo safed'. Clicking on the **SOLO** button a second time will disable it from being 'solo safed'. Exit this mode by clicking on the **SAFE** button once more.

**CLEAR**    Clears any active solos on Sigma's channels.

# SETTINGS
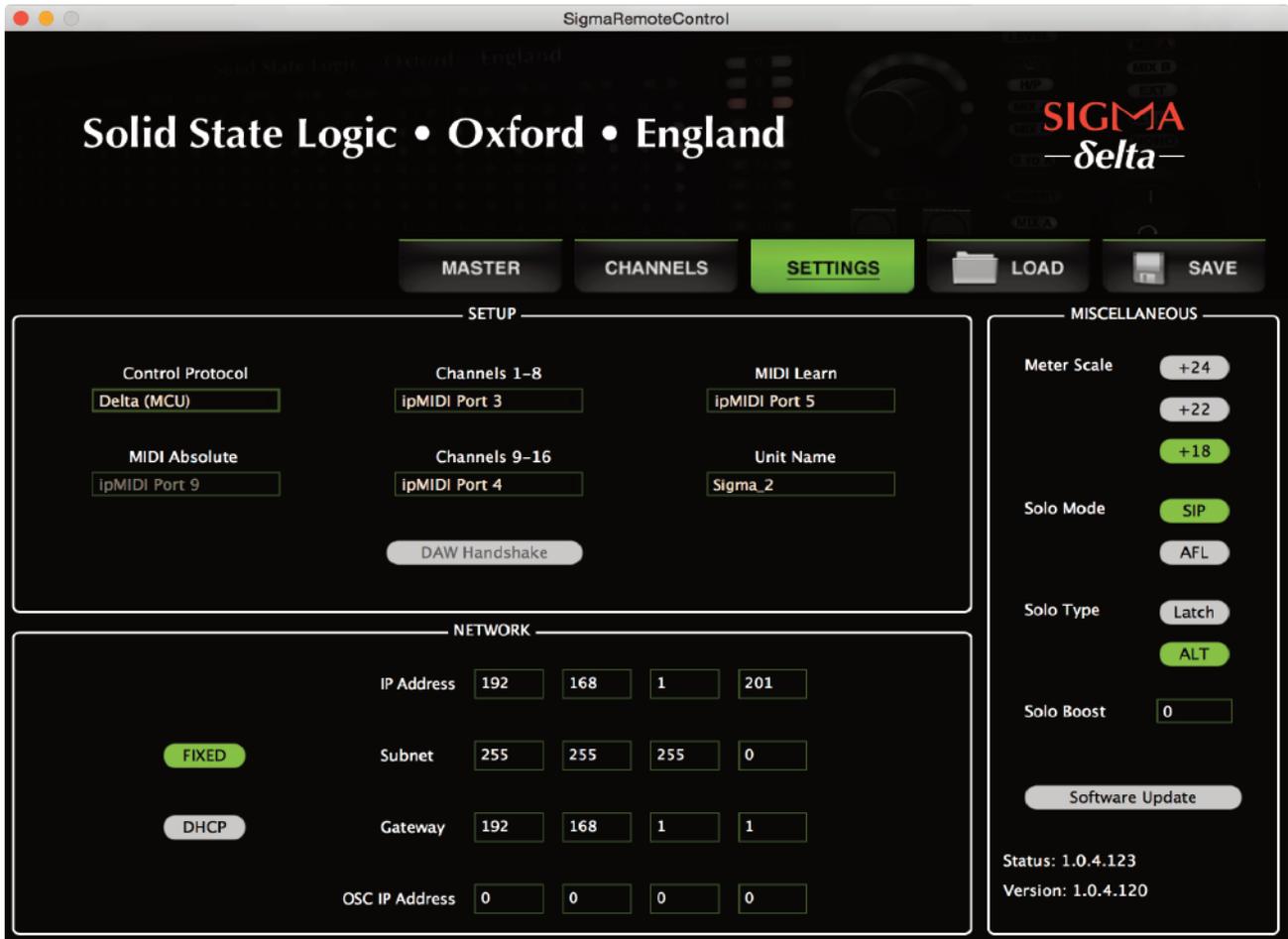


Unlike the **MASTER** and **CHANNELS** pages of Sigma, the **SETTINGS** page does not mirror any section of the front panel. This page contains many important setup aspects of Sigma.

## SETUP Box

### Unit Name
This box allows you to name your Sigma δelta unit. This will be useful if using more than one Sigma.

### DAW/Protocol Selection
This must be set in order to allow Sigma to correctly translate automation data from the DAW. There are seven options:

- **Delta (MCU)**
- **Pro Tools (HUI)**
- **Cubase/Nuendo (MCU)**
- **Ableton (MCU)**
- **OSC**
- **MIDI**

*'Delta' is now the default protocol. Further information on the MCU + HUI protocols can be found in the Sigma V1 manual – available as a download from SSL's website.*

## MIDI Ports

**CHANNELS 1-8**   Select the MIDI Port number corresponding to the master section and channels 1-8 of the MCU/EuCon controller layer designated for Sigma communication.

**CHANNELS 9-16**   Select the MIDI Port number corresponding to channels 9-16 of the MCU/EuCon controller layer designated for Sigma communication.

*In Delta (MCU) Protocol, these are matched to your control surface MIDI ports. In Pro Tools, Cubase, Nuendo and Ableton protocols, these are matched to the HUI/MCU units assigned in your DAW.*

*Note. If you connect another MIDI device to your setup during Sigma operation, restarting the Sigma Remote app will affect the chronology of your MIDI port settings for controlling Sigma. On restart of the Sigma Remote App, reassign the MIDI ports to there original settings.*

## MIDI Absolute

The **MIDI Absolute** box will become available if **MIDI** is selected in the **DAW/PROTOCOL** drop-down list. **MIDI Absolute** offers an alternative way of controlling Sigma's analogue gains directly from the DAW. Instead of using the $\delta$elta-control plugin or receiving volume messages over the HUI/MCU protocol, **MIDI Absolute** works by receiving MIDI volume messages directly from the outputs of MIDI tracks within the DAW. Set the MIDI Absolute ipMIDI port to be the same as the ipMIDI port that your 16 MIDI Track outputs are set to in the DAW.

*Note the **Channels 1-8** and **Channels 9-16** drop-down boxes have no effect when MIDI is being used.*

## MIDI Learn

Many functions on the **MASTER** page of Sigma can be enabled/disabled from an external MIDI controller sending CC messages (e.g. the CC layer available on an SSL Nucleus). You should set this drop-down to match the ipMIDI port number from which the MIDI CC messages are being sent on. For instance, if Nucleus' CC layer is setup on DAW Layer 3, this drop-down should be set to **ipMIDI Port 5**.
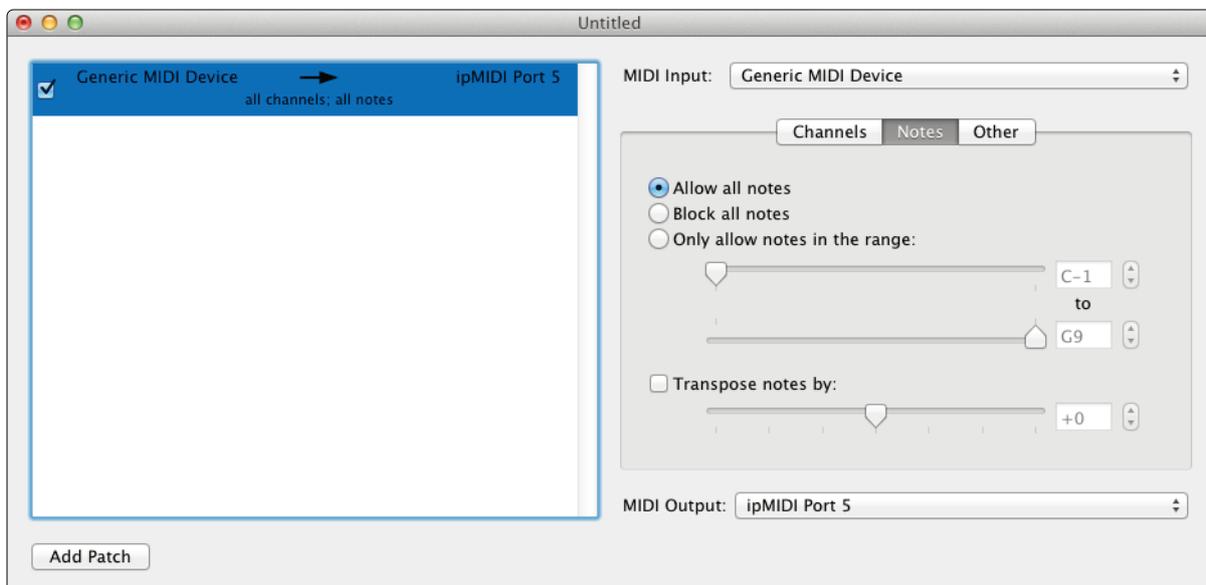
## NETWORK Box

You are able to choose between a **FIXED IP** address or **DHCP** configuration. The static IP address of Sigma defaults to 192.168.1.201. Please see **NETWORK SETUP** section for more information.

## MISCELLANEOUS Box

This section contains a number of miscellaneous settings.

### Meter Scale

Meter scaling is applied globally to all channel meters and the master meter. Set to match the 0dBFS reference of your A/D D/A converter. The three options are: +24dBu, +22dBu or + 18dBu. By default, Sigma is set to +24dBu = 0dBFS.

### Solo Mode

This controls how the **SOLO** function works in the **CHANNELS** page. If you are unfamiliar with different solo modes then the following explains the differences between the two:

**SIP (Solo-In-Place)**   Soloing a channel causes all other channels to be muted.

**AFL (After Fader Level)**   Soloing a channel moves that signal onto a separate stereo mix bus, normally known as the AFL bus.

Sigma does not have a dedicated AFL bus. However, selecting the **AFL** option in **SOLO MODE** will hijack Mix Bus B and use this as an AFL bus. Sigma will automatically switch the monitor source selection to Mix Bus B when soloing in this mode.

AFL is useful when you want to solo a channel just to check something whilst printing a mix back into the DAW. If you were to use SIP, you would disrupt the printing process as soloing in this mode mutes all other channels.

*Please note that if you are operating Sigma in AFL Solo Mode, you will be unable to route channels to Mix Bus B. Also, upon changing to AFL Solo Mode, any channels currently routed to Mix Bus B will be un-routed.*

By default, Sigma is set to **SIP (Solo-In-Place)**.

### Solo Type

**LATCH**   When one channel is in solo, pressing a second **SOLO** button adds this channel to the first rather than cancelling the original channel.

**ALT**   When **ALT** is selected the **SOLO** buttons are prevented from latching, introducing inter-cancellation between **SOLO** buttons: pressing a second **SOLO** button cancels the first **SOLO**.

By default, Sigma is set to **LATCH**.

### Solo Boost

Automatically increases the monitor level by the set amount when a **SOLO** is activated (range 0 - 10dB). This is useful when mixing to help reduce the level difference apparent when changing from listening to the whole mix to just one soloed channel.

## SOFTWARE UPDATE

The **Software Update** button is used to update Sigma's internal software. You must have the ethernet cable connected to perform the update. Below the button you will see the current version of Sigma software you are running. There may be infrequent updates provided for Sigma. The **NK.bin** file used to update Sigma's software will be available from the SSL website. Login to your SSL account (top-right hand side of the SSL website) and go to the **My Products** tab. You will see a **Downloads** link next to your registered Sigma listing in this section

After downloading the **NK.bin** file, Click on the **Software Update** button in the **SETTINGS** page and locate the downloaded **NK.bin** file. Follow the onscreen instructions.

## REBOOT BUTTON

When you make a change in the **SETTINGS** page that requires Sigma to be restarted in order for the change to have effect, a message will prompt you to perform a restart. The **Software Update** button will temporarily change to a **REBOOT** button. Click this to restart Sigma.
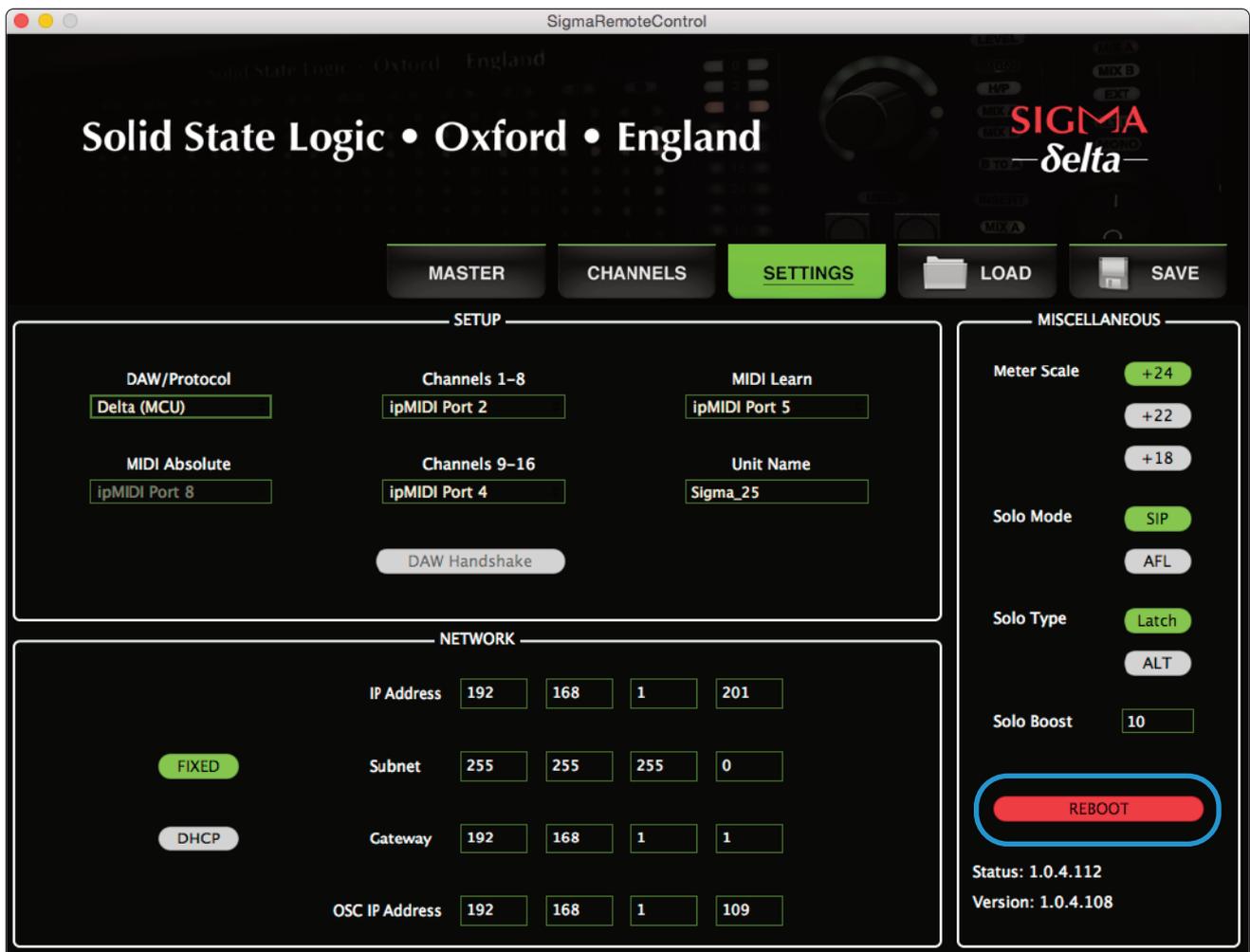


# SAVE AND LOAD BUTTONS

The **SAVE** button will save all of Sigma's settings across the three main pages - **MAIN**, **CHANNELS** and **SETTINGS**.



Upon clicking the **SAVE** button you will be presented with a pop-up asking you to name the file and choose a destination on your computer/network.

The **LOAD** button enables you to recall a previously saved Sigma setup.

Upon clicking the **LOAD** button you will be prompted to locate a saved Sigma file from your computer/network.

Sigma files are saved as .xml type files.

# 6. Sigma δelta-Control Automation

## OVERVIEW

δ-Ctrl is a native AAX/VST/VST3/AU plugin that allows the user to automate Sigma channel Volume and Mute data, as though they were standard DAW Plugin parameters. The δ-Ctrl plugin is inserted into a DAW mixer channel, which then receives and sends control data for the assigned Sigma channel via a high speed Network connection. Any associated audio on the track is unaffected and passes through the plugin slot unprocessed.

The channel volume and mutes are represented as plugin parameters and will have automation data saved in the associated plugin track automation playlist. This data together with any associated automation record enable commands generated from an MCU surface connected to Sigma are streamed via the same network connection that carries ipMidi and the Remote app messages using proprietary SSL Logictivity Network protocols. The plugin decodes the messages and converts them to conventional plugin parameter values, which can be saved as automation streams in the DAW track. In Automation Playback the plugin converts the stored automation data, from the DAW automation playlists, into δ-Ctrl messages and routes these back to Sigma via the Logictivity Network connection.

These automation playlists can be viewed and edited as normal plugin data in the DAW tracks and will be saved alongside the rest of the session data. The plugin's data values are expressed in dB units for faders or as text for the mutes, which relate directly to the parameter being controlled when automation moves are viewed in the track automation lanes for editing. Sigma Volume data is saved using the same dB law as Pro Tools Fader automation so that the 'Paste Special' command can be used to copy existing Pro Tools fader data into the plugin. This feature is DAW specific and may not necessarily be available with other systems.

## THE δELTA-CONTROL ADVANTAGE

- All fader moves are captured and played with the same accuracy as any other DAW automation parameter
- True 10 bit fader resolution.
- TCP/IP Network based UDP control protocol - not embedded MIDI messages.
- DAW editing tools can be used to draw and edit console fader and switch automation data.
- Sigma Channel levels and mutes are automatically reset when a DAW project is loaded.
- The system is class compliant, no driver installation is required.

# THE δELTA-CONTROL GUI

## δ-Ctrl Single Version



1 Drop-down **Console Type** menu. Options are: Duality, AWS or Sigma

2 Drop-down **Console Object** menu. For Sigma, *Channel* is the only option

3 Drop-down **Console Object Number** menu. Control-click to enable/disable the Auto Increment feature. Object number is greyed out when active

4 **Mute Switch** – Indicates the current switch state. Click on the switch to toggle console state and to write automation

5 **Plugin revision**

6 Current **Fader Level** (ABS) in dB

7 **Fader** – Click on fader to change level. Double-click to set to 0dB

8 **Fader Write Status** – Activated by clicking on the on-screen fader or, when a fader on an MCU controller has been touched

9 **Channel Label** – As displayed in the Remote app or on an MCU controller

## δ-Ctrl 16 Version



1  **Mono Switch** – Indicates the channel configuration (mono/stereo). Click to toggle. *When a channel is stereo, the Pan control will no longer function*

2  **Mix A/B Switches** – Indicates channel routing. Click to toggle

3  **Pan Pot** – Pan position for mono channels. Click-and-drag mouse left/right to control and write automation

4  **Channel Label** – As displayed in the Remote app or on an MCU controller

5  **Mute Switch** status indication. Click to toggle

6  **Solo Switch** status indication. Click to toggle

7  **Fader** – Click on fader to change level. Double-click to set to 0dB.

8  **Fader Write Status** – Activated by clicking on the fader, the Remote app gain control, or when a fader on an MCU controller has been touched. When the red status light turns on, the scribble strip naming will brighten up.

# DAW Setup guides

This section will provide a guide for how to configure Sigma in various setups. This section presumes you have installed the Sigma Remote app, δelta plugin, and ipMIDI software, and established a network connection to Sigma. Please see the relevant sections if you have not already done this.

## Pro Tools + Sigma

In this example we will configure control of all 16 channels of Sigma using the the δ-Ctrl plugin in Pro Tools.

### Sigma Remote Settings

1. Open the Sigma Remote application and go to the 'Settings' page.

2. Set 'Control Protocol' to **Delta (MCU)** from the drop-down box (see below). Note, this will prompt a reboot of your Sigma.

### Pro Tools Settings

Before mixing with the plugin, the following options should be enabled in the Pro Tools **Setup** › **Preferences** › **Mixing** menu :

1. Plugin Controls Default to **Auto-Enabled** – *Otherwise the parameters will need to be manually enabled for automation from each individual plugin window either manually or using the Command-Option-Control-click (MAC) or Control-Alt-Start-click (PC) short cut.*

2. Latching Behaviour for Switch Controls in **Touch** – *This ensure that console switch automation is recorded correctly when the track automation mode is set to Touch.*

3. Set the SSL δ-Ctrl Plugin as a **Favourite** by Command-click (Mac) or Control-click (PC) the **Insert Selector** and then selecting the SSL plugin from the **Other** category. It will then appear at the top of the Insert Selector pop-up menu for fast access.
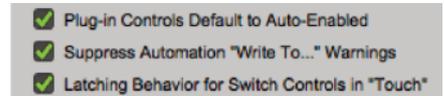
### Pro Tools Session Setup

The final step is to setup the δ-Ctrl plugin(s).

### δ-Ctrl Single Plugin Setup

1. Insert a δ-Ctrl single plugin on any track.

2. Set the Console Type to **SIGMA**, Console Object to **CHAN**, and Console Object Number to **1**. Ctrl-click on the Console Object Number (1) to use the auto-increment feature – the number will now be greyed out. *This feature can be disabled by a second Ctrl-click on the Console Object Number*.

3. Manually add 15 extra δ-Ctrl plugins to any channel inserts. The Console Object Number will be configured automatically if the auto-increment feature is enabled. Sigma channel names will be pulled from the Sigma Remote app to the corresponding δ-Ctrl plugin.

   *It is recommended that the δ-Ctrl plugins are added to channels with the corresponding output to Sigma (for example, the δ-Ctrl plugin that controls channel 4 of Sigma added to the insert of the Pro Tools audio track routed to output 4 on your audio interface). This is useful for writing automation over the waveform of the audio track.*

4. Make sure that your track automation status is set to either Read, Touch, or Latch. As the δ-Ctrl plugin uses standard DAW automation tracks, you can now automate Sigma using the Pro Tools automation system.

### $\delta$-Ctrl 16 Plugin Setup

1. Insert the $\delta$-Ctrl 16 plugin on any track.

2. Make sure that your track automation status is set to either Read, Touch, or Latch. As the $\delta$-Ctrl plugin uses standard DAW automation tracks, you can now automate Sigma using the Pro Tools automation system.

*The default state of the plugin is with all switches off and the absolute value of the fader at ∞, these are the initial breakpoints stored in the track automation playlists in the DAW. When the δelta-Ctrl mix system is enabled channels assigned to plugins will be reset to the values stored in the playlists, which if no mix data has been saved, will be the default settings. Double clicking the plugin Fader will reset the Sigma Volume back to 0dB which is the Sigma default value. Alternatively, the Remote app 0dB button can be used.*

# Pro Tools + Sigma + Control Surface + Tablet

This example will describe how to use a control surface & tablet with Sigma and Pro Tools. The control surface used in this example is a Nucleus using MCU protocol over ipMIDI ports; however, this setup will work with any MCU enabled controller.

*If your control surface is ip based like the Nucleus, you will need to use an Ethernet switch to connect both devices to one Ethernet port on your computer – we advise not using 2 ports on your computer. Please note that the Sigma and control surface will need to be in the same ip address range (for example, Sigma:192.168.1.201, Nucleus:192.168.1.5). A DHCP switch will assign this automatically.*

*To connect a tablet running the Sigma Remote app to the setup, the switch will need the ability to provide a wireless connection.*

### Boot Order

*Please note:* First turn on your control surface, then your Sigma, and then open the Sigma Remote Control app on your computer. Once all of these elements are talking, open the Sigma Control app on your tablet.

### Control Surface Settings

If your control surface can use multiple protocols, please ensure that the console is set to MCU protocol for control of Sigma. If using a multi-layer control surface (such as Nucleus), ensure that the layer for direct Sigma control is set to MCU; in this example, layer 1.

### Sigma Remote Settings

1. Open the Sigma Remote application and go to the 'Settings' page.

2. Set 'Control Protocol' to **Delta (MCU)** from the drop-down box (see image). This may prompt a reboot of your Sigma.

3. In this example we are assuming control of the Sigma on layer 1 of the Nucleus. Set the 'Channels 1-8' to **ipMIDI port 1,** and 'Channels 9-16' to **ipMIDI port 2**. If using a controller other than a Nucleus, set the appropriate MIDI ports to the channels you wish to control.



### Pro Tools Settings

The Pro Tools Settings are identical to that on page 37. If you have a multi-layer control surface like Nucleus, it is worth considering setting up a second layer of the controller to directly control Pro Tools.

## Pro Tools Session Setup

The Pro Tools Session Setup is identical to that on page 37. The control surface will send control messages directly to the Sigma Remote app, which will then relay them to the Sigma hardware and $\delta$-Ctrl plugin(s) (as shown in the diagram below).



## Tablet Sigma Remote Setup

1. To connect a tablet running the Sigma Remote app, make sure that both your computer, Sigma and tablet are all connected to the same wireless-enabled switch.

   *Both Sigma and the computer must be connected to the switch with Ethernet cables*

2. Boot the Sigma unit, and the Remote application on the computer.

3. Load the Sigma Remote app on the tablet. If it appears, click on the $\delta$ symbol in the center of the screen; this will refresh the connection between the tablet app and the computer app. You will now have control of the Sigma Remote 'Master' and 'Channels' sections on your tablet.

   *The Sigma Remote app must always be running on the computer for this setup to work correctly. Also, channel naming is not available on the tablet version of the app; this must be done from the computer remote application.*

# Logic + Sigma

In this example we will configure control of all 16 channels of Sigma using the the $\delta$-Ctrl 16 plugin in Logic.

## Sigma Remote Settings

1. Open the Sigma Remote application and go to the 'Settings' page.

2. Set 'Control Protocol' to **Delta (MCU)** from the drop-down box (see image). This may prompt a reboot of your Sigma.



## Logic Settings

Before mixing with the plugin, the following options should be enabled in the Logic Pro X › *Preferences* › *Automation* menu.

1. 'Write' Mode changes to **Latch** – *due to the way Logic's automation system works, automating switches is best done in latch. This setting ensures smoother operation of Sigma; If you wish to make fader moves in Touch mode, switch the channel automation parameter to 'Touch'.*

2. 'Write automation for': The **Plugin** option should be ticked. *This enables all parameters of the delta plugin for automation.*



3. If using Logic 10.1 or over, go to *Logic Pro X* › *Preferences* › *Plug-in Manager*. Locate the $\delta$-Ctrl 16 plugin under Manufacturers in the left hand pane. Drag and drop the $\delta$-Ctrl plugin on the 'Top Level' item in the left hand pane. When you go to enter an Audio FX unit on a track, the plugin will appear at the top of the list for quicker entry.

## Logic Session Setup

The final step is to setup the $\delta$-Ctrl plugin.

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*Note that due to the way Logic's automation system works, only the $\delta$-Ctrl 16 plugin is available for Logic users.*

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## $\delta$-Ctrl 16 plugin Setup

1. Insert the $\delta$-Ctrl 16 plugin on any track.

2. Make sure that your track automation status is set to either Read, Write, Touch, or Latch. As the $\delta$-Ctrl plugin uses standard DAW automation tracks, you can now automate Sigma using the Logic automation system.

---

*The default state of the plugin is with all switches off and the absolute value of the fader at ∞, these are the initial breakpoints stored in the track automation playlists in the DAW. When the δelta-Control mix system is enabled channels assigned to plugins will be reset to the values stored in the playlists, which if no mix data has been saved, will be the default settings. Double clicking the plugin Fader will reset the Sigma Volume back to 0dB which is the Sigma default value. Alternatively, the Remote app 0dB button can be used.*

---

# Logic + Sigma + Control Surface + Tablet

This example will describe how to use a control surface & tablet with Sigma and Logic. The control surface used in this example is a Nucleus using MCU protocol over ipMIDI ports; however, this setup will work with any MCU enabled controller.

*If your control surface is ip based like the Nucleus, you will need to use an Ethernet switch to connect both devices to one Ethernet port on your computer – we advise not using 2 ports on your computer. Please note that the Sigma and control surface will need to be in the same ip address range (for example, Sigma: 192.168.1.201, Nucleus: 192.168.1.5). A DHCP switch will assign this automatically.*

*To connect a tablet running the Sigma Remote app to the setup, the switch will need to provide a wireless connection.*

### Boot Order

*Please note:* First turn on your control surface, then your Sigma, and then open the Sigma Remote Control app on your computer. Once all of these elements are talking, open the Sigma Control app on your tablet.

### Control Surface Settings

If your control surface can use multiple protocols, please ensure that the console is set to MCU protocol for control of Sigma. If using a multi-layer control surface (such as Nucleus), ensure that the layer for direct Sigma control is set to MCU; in this example, layer 1.

### Sigma Remote Settings

1.  Open the Sigma Remote application and go to the 'Settings' page.

2.  Set 'Control Protocol' to **Delta (MCU)** from the drop-down box (see image). This may prompt a reboot of your Sigma.

3.  In this example we are assuming control of the Sigma on layer 1 of the Nucleus. Set the 'Channels 1-8' to **ipMIDI port 1,** and 'Channels 9-16' to **ipMIDI port 2**. If using a controller other than a Nucleus, set the appropriate MIDI ports to the channels you wish to control.



### Logic Settings

The Logic Settings are identical to that on page 41. If you have a multi-layer control surface like Nucleus, it is worth considering setting up a second layer of the controller to directly control Logic.

*Logic may automatically detect both layers of DAW control for MCU if the handshake is on and set them up as 2 control surfaces. Go to Logic Pro **menu › Control Surfaces › Setup** to delete the devices that are setup to control Sigma.*

## Logic Session Setup

The Logic Session Setup is identical to that on page 41. The control surface will send control messages directly to the Sigma Remote app, which will then relay them to the Sigma hardware and δ-Ctrl plugin(s) (as shown in the diagram below).



## Tablet Sigma Remote Setup

1. To connect a tablet running the Sigma Remote app, make sure that both your computer, Sigma and tablet are all connected to the same wireless-enabled switch.

   *Both Sigma and the computer must be connected to the switch with Ethernet cables.*

2. Boot the Sigma unit, and the Remote application on the computer.

3. Load the Sigma Remote app on the tablet. If it appears, click on the δ symbol in the center of the screen; this will refresh the connection between the tablet app and the computer app. You will now have control of the Sigma Remote 'Master' and 'Channels' sections on your tablet.

   *The Sigma Remote app must always be running on the computer for this setup to work correctly. Also, channel naming is not available on the tablet version of the app; this must be done from the computer remote application.*

# Cubase/Nuendo + Sigma

In this example we will configure control of all 16 channels of Sigma using the the δ-Ctrl plugin in Cubase/Nuendo.

## Sigma Remote Settings

1. Open the Sigma Remote application and go to the 'Settings' page.

2. Set 'Control Protocol' to **Delta (MCU)** from the drop-down box (see image). This may prompt a reboot of your Sigma.



## Cubase/Nuendo Settings

Before mixing with the plugin, the following options should be enabled in the **Devices** › **Plug-in Manager**:

1. Click on the downward arrow in the top right corner of this window, go to **New Collection** › **Copy Current Collection** and name this new collection (eg. 'Plugin Favourites').

2. Find the δ-Ctrl plugin from the list of plugins on the left of this window, and drag it to the top of the 'New Collection list' on the right (see picture below).

3. Close this window, and click on a channel insert. Click on the dropdown arrow in the right hand corner of the list and ensure the new collection is selected (eg. 'Plugin Favourites').

The SSL δ-plugin will appear at the top of the directory, and is therefor quicker to add to your session (particularly when using the 'Single' plugin).



## Cubase/Nuendo Session Setup

The final step is to setup the δ-Ctrl plugin(s).

## δ-Ctrl Single Plugin Setup

1. Insert a δ-Ctrl single plugin on any track.

2. Set the Console Type to **SIGMA,** Console Object to **CHAN,** and Console Object Number to **1**. Ctrl-click on the Console Object Number (1) to use auto-increment feature – the number will now be greyed out. *This feature can be disabled by a second Ctrl-click on the Console Object Number.*

3. Manually add 15 extra δ-Ctrl plugins to any channel inserts. The Console Object Number will be configured automatically if the auto-increment feature is enabled. Sigma channel names will be pulled from the Sigma Remote app to the corresponding δ-Ctrl plugin.

---

*It is recommended that the δ-Ctrl plugins are added to channels with the corresponding output to Sigma (for example, the δ-Ctrl plugin that controls channel 4 of Sigma added to the insert of the audio track routed to output 4 on your audio interface). This is useful for writing automation over the waveform of the audio track.*

---

4. Make sure that your track automation status is set to either Read, Touch, or Latch. As the $\delta$-Ctrl plugin uses standard DAW automation tracks, you can now automate Sigma using the Cubase/Nuendo automation system.



### $\delta$-Ctrl 16 Plugin Setup

1. Insert the $\delta$-Ctrl 16 plugin on any track.

2. Make sure that your track automation status is set to either Read, Touch, or Latch. As the $\delta$-Ctrl plugin uses standard DAW automation tracks, you can now automate Sigma using the Pro Tools automation system.

*The default state of the plugin is with all switches off and the absolute value of the fader at ∞, these are the initial breakpoints stored in the track automation playlists in the DAW. When the δelta-Ctrl mix system is enabled channels assigned to plugins will be reset to the values stored in the playlists, which if no mix data has been saved, will be the default settings. Double clicking the plugin Fader will reset the Sigma Volume back to 0dB which is the Sigma default value. Alternatively, the Remote app 0dB button can be used.*

# Cubase/Nuendo + Sigma + Control Surface + Tablet

This example will describe how to use a control surface & tablet with Sigma and Cubase/Nuendo. The control surface used in this example is a Nucleus using MCU protocol over ipMIDI ports; however, this setup will work with any MCU enabled controller.

*If your control surface is ip based like the Nucleus, you will need to use an Ethernet switch to connect both devices to one Ethernet port on your computer – we advise not using 2 ports on your computer. Please note that both the Sigma and control surface will need to be in the same ip address range (for example, Sigma:192.168.1.201, Nucleus:192.168.1.5). A DHCP switch will assign this automatically.*

*To connect a tablet running the Sigma Remote app to the setup, the switch will need the ability to provide a wireless connection.*

### Boot Order

*Please note:* First turn on your control surface, then your Sigma, and then open the Sigma Remote Control app on your computer. Once all of these elements are talking, open the Sigma Control app on your tablet.

### Control Surface Settings

If your control surface can use multiple protocols, please ensure that the console is set to **MCU** protocol for control of Sigma. If using a multi-layer control surface (such as Nucleus), ensure that the layer for direct Sigma control is set to MCU; in this example, layer 1.

### Sigma Remote Settings

1.  Open the Sigma Remote application and go to the 'Settings' page.

2.  Set 'Control Protocol' to **Delta (MCU)** from the drop-down box (see below). This may prompt a reboot of your Sigma.

3.  In this example we are assuming control of the Sigma on layer 1 of the Nucleus. Set the 'Channels 1-8' to **ipMIDI port 1,** and 'Channels 9-16' to **ipMIDI port 2**. If using a controller other than a Nucleus, set the appropriate MIDI ports to the channels you wish to control.



### Cubase/Nuendo Settings

The Cubase/Nuendo Settings are identical to that on page 44. If you have a multi-layer control surface like Nucleus, it is worth considering setting up a second layer of the controller to directly control Cubase/Nuendo.

## Cubase/Nuendo Session Setup

The Cubase/Nuendo Session Setup is identical to that on page 44. The control surface will send control messages directly to the Sigma Remote app, which will then relay them to the Sigma hardware and δ-Ctrl plugin(s) (as shown in the diagram below).



## Tablet Sigma Remote Setup

1.  To connect a tablet running the Sigma Remote app, make sure that both your computer, Sigma and tablet are all connected to the same wireless-enabled switch. (Please note that both Sigma and the computer must be connected to the switch with Ethernet cables)

2.  Boot the Sigma unit, and the Remote application on the computer.

3.  Load the Sigma Remote app on the tablet. If it appears, click on the δ symbol in the center of the screen; this will refresh the connection between the tablet app and the computer app. You will now have control of the Sigma Remote 'Master' and 'Channels' sections on your tablet.

*The Sigma Remote app must always be running on the computer for this setup to work correctly. Also, channel naming is not available on the tablet version of the app; this must be done from the computer remote application.*

# Ableton Live + Sigma

In this example we will configure control of all 16 channels of Sigma using the the $\delta$-Ctrl plugin in Ableton Live.

## Sigma Remote Settings

1. Open the Sigma Remote application and go to the 'Settings' page.

2. Set 'Control Protocol' to **Delta (MCU)** from the drop-down box (see image). This may prompt a reboot of your Sigma.



## Ableton Live Settings

Before mixing with the plugin, the following options should be enabled in Ableton Live.

Set the SSL $\delta$-Ctrl plugin as a 'Favourite' by opening your VST directory:

| | |
|---|---|
| **Mac:** | Library/Audio/plugins/VST/ |
| **Windows:** | C:\Program Files\Steinberg\Vstplugins\ |

1. Create a New Folder next to the VST folder, and name it (eg. 'Favourite VST's). Command-alt drag (Mac) or alt-drag (PC) the SSL $\delta$-plugin from the VST folder to this new folder. This will create an alias/shortcut for the $\delta$-plugin.

2. Now reload Ableton Live and go to the *Live menu* › *Preferences* › File/Folder. Next to 'VST plugin Custom Folder' click the 'Browse' option and double-click on the newly created 'Favourites' folder containing the alias.

3. Set 'Use VST Plugin Custom Folder' to **On**.
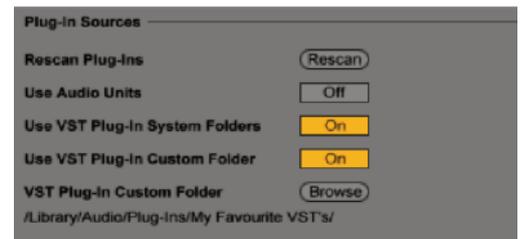


When inserting a plugin on a track, the 'Favourite Plugins' folder will appear in the Ableton plugins directory; therefore, the SSL $\delta$-plugin will be quicker to add to your session (particularly when using the 'Single' plugin).

## Ableton Live Session Setup

The final step is to setup the $\delta$-Ctrl plugin(s).

### $\delta$-Ctrl Single Plugin Setup

1. Drag a $\delta$-Ctrl single plugin onto any track.

2. Set the Console Type to **SIGMA,** Console Object to **CHAN,** and Console Object Number to **1**. Ctrl-click on the Console Object Number (1) to use auto-increment feature – the number will now be greyed out. *This feature can be disabled by a second Ctrl-click on the Console Object Number.*

3. Manually add 15 extra $\delta$-Ctrl single plugins to any channel inserts. The Console Object Number will be configured automatically if the auto-increment feature is enabled. Sigma channel names will be pulled from the Sigma Remote app to the corresponding $\delta$-Ctrl plugin.

*It is recommended that the $\delta$-Ctrl plugins are added to channels with the corresponding output to Sigma (for example, the $\delta$-Ctrl plugin that controls channel 4 of Sigma added to the insert of the audio track routed to output 4 on your audio interface). This is useful for writing automation over the waveform of the audio track.*

4. As the δ-Ctrl plugin uses standard DAW automation tracks, you can now automate Sigma using the Ableton Live automation system.



### δ-Ctrl 16 plugin Setup

1. Drag the δ-Ctrl 16 plugin onto any track.

2. As the δ-Ctrl plugin uses standard DAW automation tracks, you can now automate Sigma using the Ableton automation system.

*The default state of the plugin is with all switches off and the absolute value of the fader at ∞, these are the initial breakpoints stored in the track automation playlists in the DAW. When the δ-Ctrl mix system is enabled channels assigned to plugins will be reset to the values stored in the playlists, which if no mix data has been saved, will be the default settings. Double clicking the plugin Fader will reset the Sigma Volume back to 0dB which is the Sigma default value. Alternatively, the Remote app 0dB button can be used.*

# Ableton Live + Sigma + Control Surface + Tablet

This example will describe how to use a control surface & tablet with Sigma and Ableton Live. The control surface used in this example is a Nucleus using MCU protocol over ipMIDI ports; however, this setup will work with any MCU enabled controller.

*If your control surface is ip based like the Nucleus, you will need to use an Ethernet switch to connect both devices to one Ethernet port on your computer – we advise not using 2 ports on your computer. Please note that the Sigma and control surface will need to be in the same ip address range (for example, Sigma:192.168.1.201, Nucleus:192.168.1.5). A DHCP switch will assign this automatically.*

*To connect a tablet running the Sigma Remote app to the setup, the switch will need the ability to provide a wireless connection.*

### Boot Order

*Please note:* First turn on your control surface, then your Sigma, and then open the Sigma Remote Control app on your computer. Once all of these elements are talking, open the Sigma Control app on your tablet.

### Control Surface Settings

If your control surface can use multiple protocols, please ensure that the console is set to MCU protocol for control of Sigma. If using a multi-layer control surface (such as Nucleus), ensure that the layer for direct Sigma control is set to MCU; in this example, layer 1.

### Sigma Remote Settings

1.  Open the Sigma Remote application and go to the 'Settings' page.

2.  Set 'Control Protocol' to **Delta (MCU)** from the drop-down box (see below). This may prompt a reboot of your Sigma.

3.  In this example we are assuming control of the Sigma on layer 1 of the Nucleus. Set the 'Channels 1-8' to **ipMIDI port 1,** and 'Channels 9-16' to **ipMIDI port 2**. If using a controller other than a Nucleus, set the appropriate MIDI ports to the channels you wish to control.



### Ableton Live Settings

The Ableton Live Settings are identical to that on page 48. If you have a multi-layer control surface like Nucleus, it is worth considering setting up a second layer of the controller to directly control Ableton Live.

## Ableton Live Session Setup

The Ableton Live Session Setup is identical to that on page 48. The control surface will send control messages directly to the Sigma Remote app, which will then relay them to the Sigma hardware and $\delta$-Ctrl plugin(s) (as shown in the diagram below).
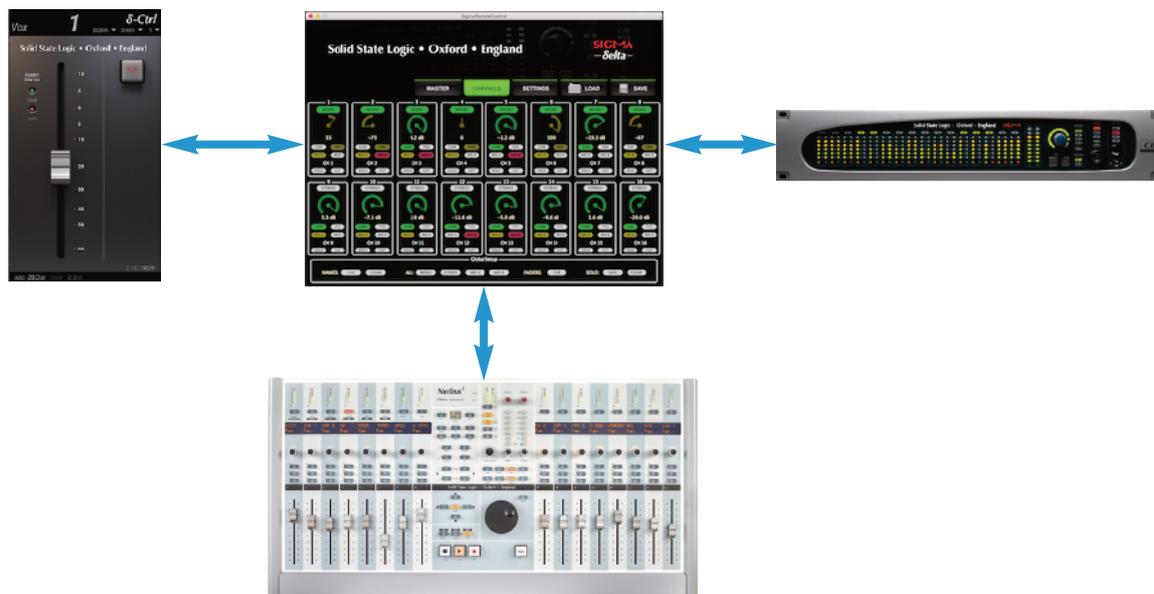


## Tablet Sigma Remote Setup

1. To connect a tablet running the Sigma Remote app: make sure that your computer, the Sigma and the tablet are all connected to the same wireless-enabled switch.

   *Both Sigma and the computer must be connected to the switch with Ethernet cables.*

2. Boot the Sigma unit, and the Remote application on the computer.

3. Load the Sigma Remote app on the tablet. If it appears, click on the $\delta$ symbol in the center of the screen; this will refresh the connection between the tablet app and the computer app. You will now have control of the Sigma Remote 'Master' and 'Channels' sections on your tablet.

   *The Sigma Remote app must always be running on the computer for this setup to work correctly. Also, channel naming is not available on the tablet version of the app; this must be done from the computer remote application.)*

# Other DAWs + Sigma

## Sigma Remote Settings

1. Open the Sigma Remote application and go to the 'Settings' page.

2. Set 'Control Protocol' to **Delta (MCU)** from the drop-down box (see image). This will prompt a reboot of your Sigma.



## DAW Settings

1. It is advised that you configure the $\delta$-Ctrl plugin to be easily accessible from your plugin menu for quicker mix setup.

2. Open the automation settings for your DAW, and configure them to best work with Sigma (default to latch, plugin parameters are all auto-enabled etc).
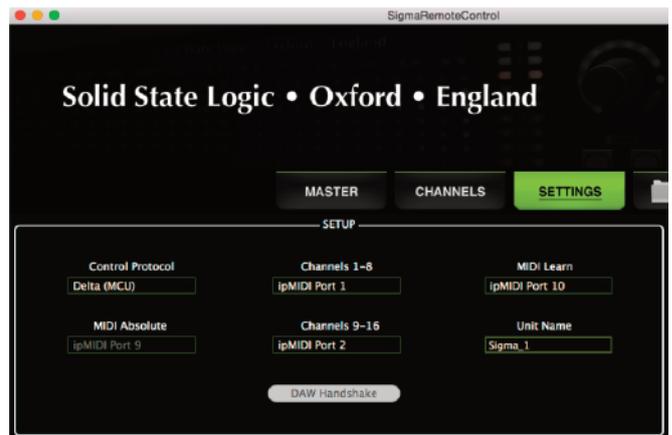
## Session Setup

The final step is to setup the $\delta$-Ctrl plugin(s).

## $\delta$-Ctrl Single Plugin Setup (Not available as AU)

1. Insert a $\delta$-Ctrl single plugin on any track.

2. Set the Console Type to **SIGMA**, Console Object to **CHAN**, and Console Object Number to **1**. Ctrl-click on the Console Object Number (1) to use auto-increment feature – the number will now be greyed out. This feature can be disabled by a second Ctrl-click on the Console Object Number.



3. Manually add 15 extra $\delta$-Ctrl single plugins to any channel inserts. The Console Object Number will be configured automatically if the auto-increment feature is enabled. Sigma channel names will be pulled from the Sigma Remote app to the corresponding $\delta$-Ctrl plugin.

*It is recommended that the $\delta$-Ctrl plugins are added to channels with the corresponding output to Sigma (for example, the $\delta$-Ctrl plugin that controls channel 4 of Sigma added to the insert of the Pro Tools audio track routed to output 4 on your audio interface). This is useful for writing automation over the waveform of the audio track.*

4. Make sure that your track automation status is set to either Read, Touch, or Latch. As the $\delta$-Ctrl plugin uses standard DAW automation tracks, you can now automate Sigma using the DAW automation system.

## $\delta$-Ctrl 16 plugin Setup

1. Insert the $\delta$-Ctrl 16 plugin on any track.

2. Make sure that your track automation status is set to either Read, Touch, or Latch. As the $\delta$-Ctrl plugin uses standard DAW automation tracks, you can now automate Sigma using the DAW automation system.

*The default state of the plugin is with all switches off and the absolute value of the fader at $\infty$, these are the initial breakpoints stored in the track automation playlists in the DAW. When the $\delta$elta-Ctrl mix system is enabled channels assigned to plugins will be reset to the values stored in the playlists, which if no mix data has been saved, will be the default settings. Double clicking the plugin Fader will reset the Sigma Volume back to 0dB which is the Sigma default value. Alternatively, the Remote app 0dB button can be used.*

# DAW + Sigma + Control Surface + Tablet

This example will describe how to use a control surface & tablet with Sigma and your DAW. The control surface used in this example is a Nucleus using MCU protocol over ipMIDI ports; however, this setup will work with any MCU enabled controller.

*If your control surface is ip based like the Nucleus, you will need to use an Ethernet switch to connect both devices to one Ethernet port on your computer – we advise not using 2 ports on your computer. Please note that the Sigma and control surface will need to be in the same ip address range (for example, Sigma:192.168.1.201, Nucleus:192.168.1.5). A DHCP switch will assign this automatically.*

*To connect a tablet running the Sigma Remote app to the setup, the switch will need the ability to provide a wireless connection.*

## Boot Order

*Please note:* First turn on your control surface, then your Sigma, and then open the Sigma Remote Control app on your computer. Once all of these elements are talking, open the Sigma Control app on your tablet.

## Control Surface Settings

If your control surface can use multiple protocols, please ensure that the console is set to **MCU** protocol for control of Sigma. If using a multi-layer control surface (such as Nucleus), ensure that the layer for direct Sigma control is set to MCU; in this example, layer 1.

## Sigma Remote Settings

1. Open the Sigma Remote application and go to the 'Settings' page.

2. Set 'Control Protocol' to **Delta (MCU)** from the drop-down box (see image). This may prompt a reboot of your Sigma.

3. In this example we are assuming control of the Sigma on layer 1 of the Nucleus. Set the 'Channels 1-8' to **ipMIDI port 1,** and 'Channels 9-16' to **ipMIDI port 2**. If using a controller other than a Nucleus, set the appropriate MIDI ports to the channels you wish to control.



## DAW Settings

The DAW Settings are identical to that on page 52. If you have a multi-layer control surface like Nucleus, it is worth considering setting up a second layer of the controller to directly control your DAW.

**DAW Session Setup**

The DAW Session Setup is identical to that on page 52. The control surface will send control messages directly to the Sigma Remote app, which will then relay them to the Sigma hardware and $\delta$-Ctrl plugin(s) (as shown in the diagram below).



**Tablet Sigma Remote Setup**

1. To connect a tablet running the Sigma Remote app, make sure that both your computer, Sigma and tablet are all connected to the same wireless-enabled switch. (please note that both Sigma and the computer must be connected to the switch with Ethernet cables)

2. Boot the Sigma unit, and the Remote application on the computer.

3. Load the Sigma Remote app on the tablet. If it appears, click on the $\delta$ symbol in the center of the screen; this will refresh the connection between the tablet app and the computer app. You will now have control of the Sigma Remote 'Master' and 'Channels' sections on your tablet.

*The Sigma Remote app must always be running on the computer for this setup to work correctly. Also, channel naming is not available on the tablet version of the app; this must be done from the computer remote application.*

# MIXING WITH δELTA-CONTROL

Automation data is created with the same tools as an other plugin parameter. Level rides can be entered via the fader on the GUI via a mouse or track ball, or by making use of the DAW editing tool set to draw automation breakpoints and curves. As with any plugin, δelta-Control follows the current DAW track automation status. If Sigma is being controlled from an MCU compatible control surface, then touching a fader will initiate automation write. The current DAW track automation status, Touch or Latch, will determine if the automation write state remains active when the fader is released.

# USING DAW EDITING TOOLS

As the δ-Ctrl plugin creates standard DAW automation tracks, all the DAW editing tools are available for use with the saved automation.

## For Pro Tools, Cubase, Nuendo, Ableton Live and Logic

A very powerful feature of δelta-Control is that the plugin stores its volume data in the track using the same dB law as the DAW fader volume data.

This means that the automation copy/paste edit commands in the above DAWs allow you to copy DAW fader automation into the δelta-Control plugin volume track, which will play out on the Sigma channels with an accuracy of better than 0.2 dB.

*Please note that only the δ-Ctrl 16 plugin is available for Logic.*

## Other DAWs

Other VST, VST3, AU and AAX-compatible DAWs still allow Sigma δelta to be automated from within the DAW. However, automation data that is copied and pasted from the DAW fader to the δelta-Control plugin fader will not be accurately translated.

# THIRD PARTY CONTROLLERS

## EuCon controllers

There are 2 ways to configure EuCon controllers to control Sigma; accessing the $\delta$-Ctrl plugins ($\delta$-Ctrl 16, $\delta$-Ctrl Monitoring, and $\delta$-Ctrl Mix Bus) directly via DAW control or setting up the EuCon surface to output MCU to the Sigma Remote Application directly (no DAW required).

- The benefit of controlling the $\delta$-Ctrl plugins via the DAW is that all parameters (including monitor switching and mix busses) can be accessed from the surface – useful if Sigma is positioned out of reach of the central listening position.
- The benefit of controlling the Sigma Remote application directly is that no DAW needs to be running to access Sigma levels and switches.

## EuCon Control of the $\delta$-Ctrl 16 Plugin

## Pro Tools + EuCon + Sigma

All EuCon enabled control surfaces use a standardized interface for controlling plug-in parameters consisting of an Encoder and two adjacent vertical positioned switches labeled **Sel** for the upper switch and **In** for the lower switch (as shown).
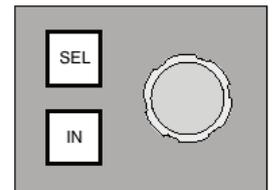
Left and Right page keys scroll through the available plugin parameters.

With the Sigma $\delta$-Ctrl 16 plug-in the number of parameters pages depends on the number of faders on the EuCon surface.

### Artist Mix / PT Control iPad app

For an Artist Mix, or PT Control iPad app with 8 faders, there are six pages of parameters:

| Control Page | Page 1 | Page 2 | Page 3 | Page 4 | Page 5 | Page 6 |
|---|---|---|---|---|---|---|
| Sigma Channel | 1 - 8 | 9 - 16 | 1 - 8 | 9 - 16 | 1 - 8 | 9 - 16 |
| Encoder | Level | | Pan | | Level | |
| SEL | CUT | | Mono | | Mix A | |
| IN | SOLO | | - | | Mix B | |

### Avid S3

For an S3 with 16 faders, there are 3 pages of parameters:

| Control Page | Page 1 | Page 2 | Page 3 |
|---|---|---|---|
| Encoder | Level | Pan | Level |
| SEL | CUT | Mono | Mix A |
| IN | SOLO | - | Mix B |

The Artist Mix and the S3 both have a fader FLIP function so that the fader can be used to control Sigma levels instead of the encoder.

---

*Note: the encoder is touch sensitive so can be used with the touch automation status to enter automation data.*

---

The S3 has two rows of encoders and switches: a lower row above the faders – the Channel Encoders which operate in a similar fashion as on the Artist mix, and a second upper row termed 'Channel Control' which are linked to the current 'attentioned channel' via the **Sel** key located next the fader. Only the lower row (channel encoders) have the FLIP function, but as the both sets of encoders can be assigned to the same plugin, and each have their own Page buttons, it is easy to have Sigma Level, Solo and Cut on the lower encoders and Pan with Mono Enable on the upper encoder row, with the option to use the faders for channel level via the FLIP button.

In this configuration, there is no requirement to have the Sigma App open.

### δ-Ctrl Mix Bus and EuCon

The δ-Ctrl Mix Bus plugin is mapped to page 1 of parameters as follows:

| Control | 1 | 2 | 3 |
|---|---|---|---|
| Encoder | Mix A Level | Mix B Level | |
| SEL | SUM (A) | SUM (B) | |
| IN | INSERT A | INSERT B | B to A |

### δ-Ctrl Monitoring and EuCon

The δ-Ctrl Mix Bus plugin is mapped to page 1 of parameters as follows:

| Control | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Encoder | Monitor Level | - | - | - | H/P Level | - |
| SEL | CUT | MONO | MIX A (Mon) | - | MIX A (H/P) | - |
| IN | DIM | ALT | MIX B (Mon) | EXT (Mon) | MIX B (H/P) | EXT (H/P) |

## Logic + EuCon + Sigma

Logic supports EuCon control; however, only the encoder on EuCon surfaces is used for plug-in parameter control (the two switches have no function).

As with Pro Tools there are pages of parameters which either contain all 16 channels or the parameters for channels 1-8 followed by a subsequent page for channels 9-16. The pages are in the following order.

| Volume | Trim | Pan | Cut | Mono | Mix A | Mix B | Solo |
|---|---|---|---|---|---|---|---|

Switches are controlled as variables. The OFF state is the encoder fully closed. Any level above OFF activates the function.

*Note: For 'Cut', it is the OFF state that 'turns on' the Cut switch.*

# EuCon Control of the Sigma Remote Application

## Artist Mix + Sigma

The Avid Artist Mix surface can be used to control Level and Pan (Mono channels only), Stereo/Mono mode and the Solo and Mute state for the 16 Sigma input channels, as well as display Channel names entered via the Sigma Remote Control App.

Assuming that EUCON has already been installed on the host computer, the first step is to set up EUCON for Mackie Control via the SSL Sigma Remote App as described in Appendix A of the EUCON Application Setup guide.

**Mac:**

- Open the EUCON preference pane in the System Preferences Folder.
- From the Applications Finder window drag the SSL Sigma Remote App into the list area.
- Set the Protocol to MackieControl, and the MIDI ports to 1-4 (as shown below).
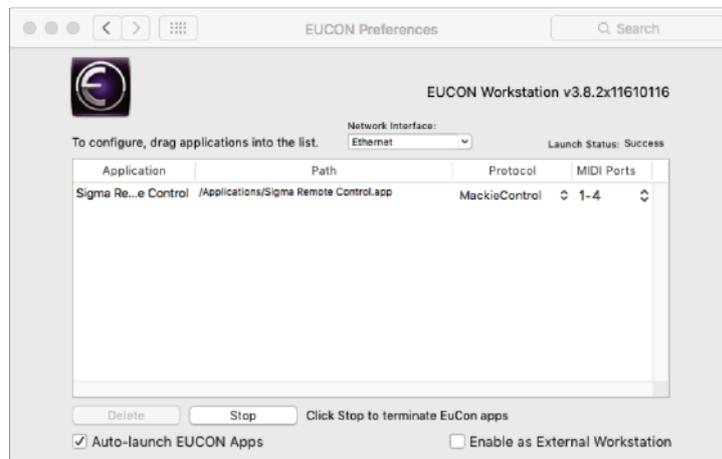


*Once the Sigma Remote Control App has been placed in the list, a system restart is required.*

**PC:**

*The Avid documentation makes no reference to this set up on a PC, however, there is a Eucon Control Panel for configuring EUCON Apps where the Sigma Remote can be added and assigned a Protocol and MIDI Ports similar to the Mac version. EuControl can be found in the taskbar hidden icons and again is functionally the same as on Mac.*

- As soon as the system has rebooted, open the Sigma Remote Control App and assign Euphonix MIDI Port 1 to Channels 1-8, leaving Channels 9-16 Unassigned. *This will require Sigma to be rebooted.*
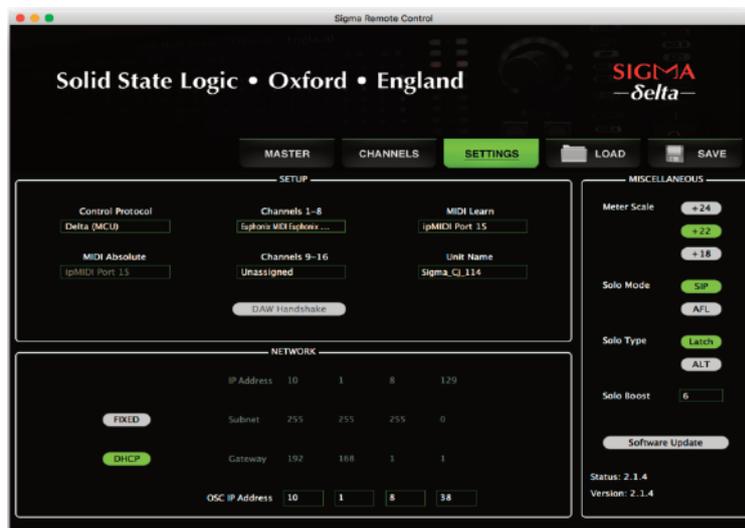
• Connect an Artist Mix and ensure it is shown in the My Surfaces list in the EuControl Settings App.
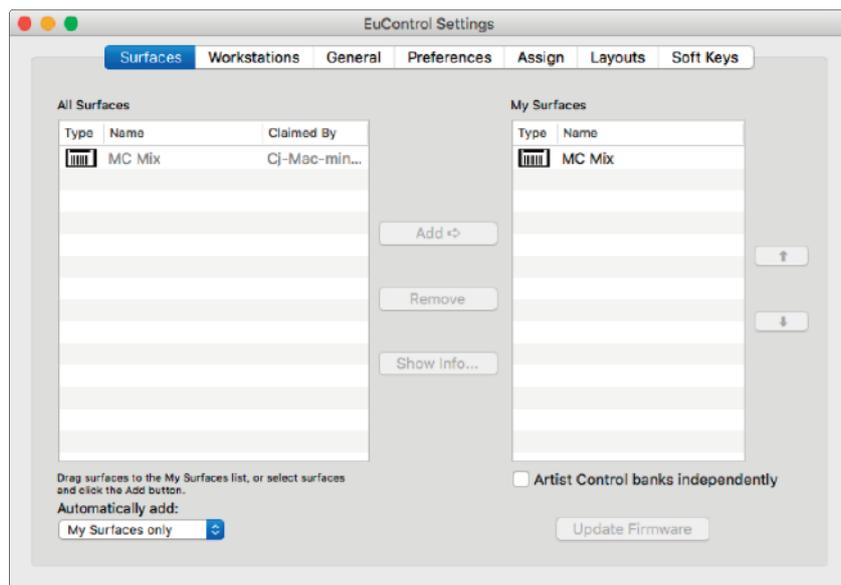


As soon as the Sigma Remote App is the current open application, the Artist Mix will be controlling Sigma Channels 1 - 8. Use the 'Nudge' and 'Bank' keys to access channels 9 - 16.

As soon the DAW window becomes the focused application, the Artist Mix will be controlling the DAW instead of Sigma if EuCon control has been enabled in the DAW software (this happens by default in Logic X).

It is possible to lock the Artist Mix to the Sigma Remote application via the EuControl Settings app.
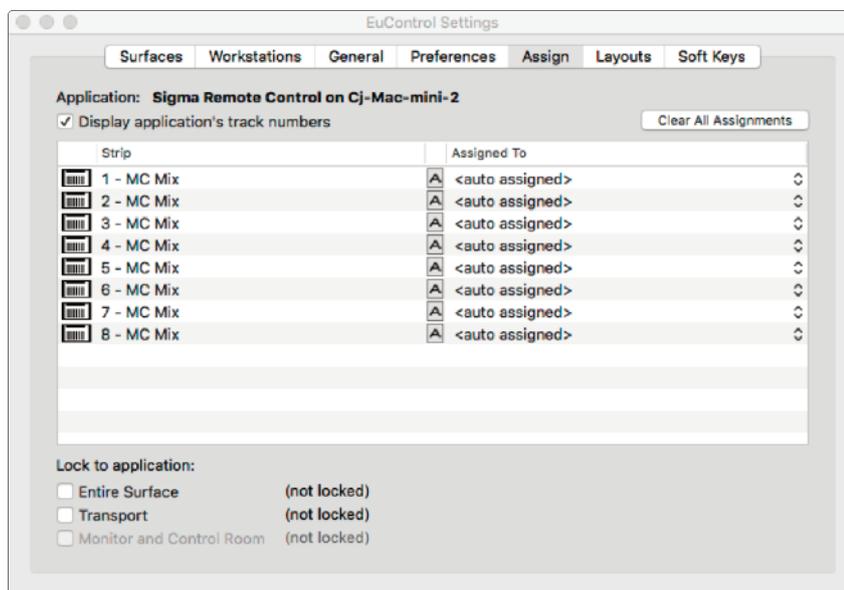


Open the Assign tab in the Setting app, then select the Sigma Remote as the open application and finally enable the 'Entire Surface' option. The Artist Mix will then be controlling Sigma regardless of what the open application is.

## Avid S3 + Sigma

Setup of EuCon preference pane for MCU control over the Sigma Remote App is the same for Artist Mix and the Avid S3 (as detailed previously).

• Connect an S3 surface and ensure it is shown in the My Surfaces list in the EuControl Settings App.
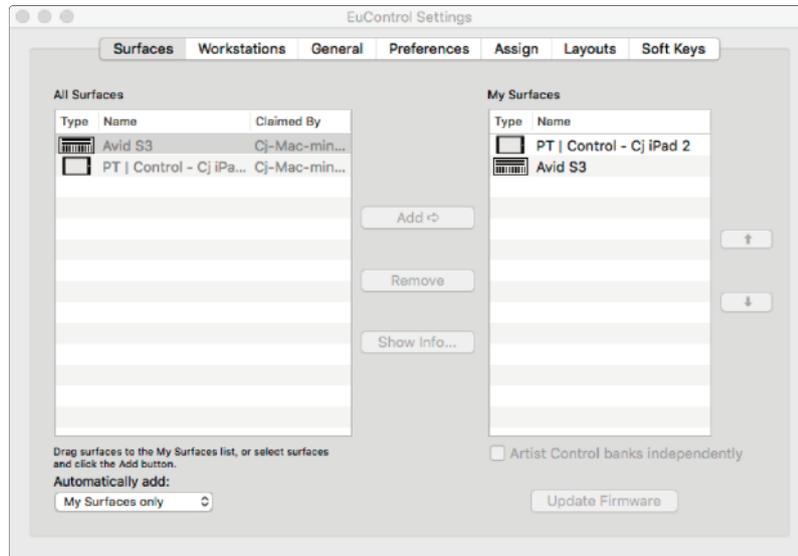


*Note that an S3 surface always uses DHCP and can not be set to a static IP address.*

• Open the Sigma Remote Control App and assign Euphonix MIDI Port 1 to Channels 1-8 and Euphonix MIDI Port 2 to Channels 9-16. This will require Sigma to reboot.

As soon as the Sigma Remote App is the current open application, the S3 will be controlling Sigma Channels 1 - 16. Just as with the Artist Mix, when the DAW window becomes the focused application on the computer, the Avid S3 will switch to control of the DAW instead of Sigma if EuCon control has been enabled in the DAW software.

To lock the S3 to the Sigma Remote application, follow the setup described for Artist Mix (as detailed previously).

## PT | Control (iPad app) + Sigma

The Avid iPad app can also be used to control Sigma via a wireless network linked to the host computer. The same functions as Artist Mix are supported with the exception of Panning and the Mono/Stereo mode.

Once the iPad app is running, PT | Control will be shown in the EuControl Settings Surface Tab.
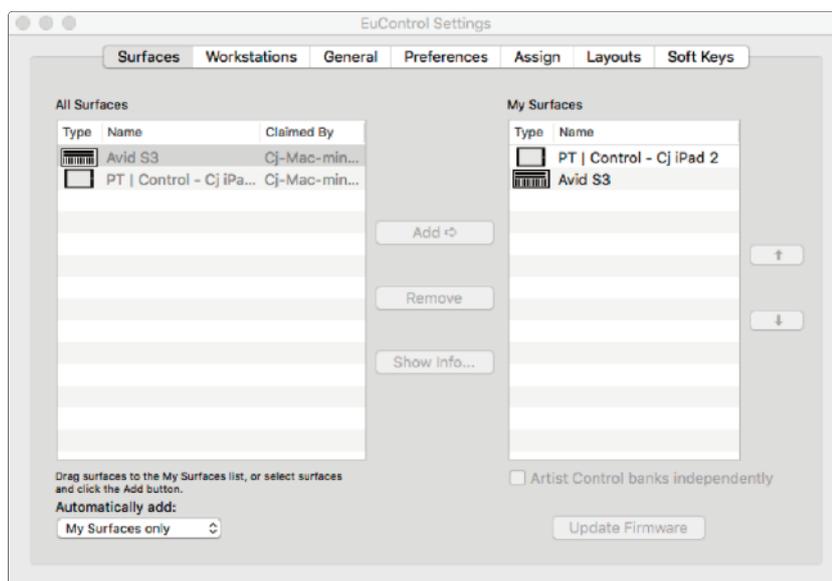
Ensure it is in the My Surfaces list.

Open the Sigma Remote Control App and assign Euphonix MIDI Port 1 to Channels 1-8, and Euphonix MIDI Port 2 to Channels 9-16. Sigma will now require a reboot.

As soon as the Sigma Remote Application is the open application, the iPad app will be controlling Sigma.

---

*Please note that this use of PT | Control is not qualified by Avid, who at the time of writing only specify the following software as compatible:*
- *PT 12.1 or later*
- *Logic Pro X*
- *Cubase 8*
- *Nuendo 6.5*

---

## Other Controllers

### PreSonus FaderPort + Sigma

In the Sigma Remote Control App SETTINGS page, choose FaderPort for Channels 1-8 and Unassigned for Channels 9 - 16.

Select MCU mode on the FaderPort by holding the 'Stop' key until the 'Output' key flashes, then select 'Output' to enable MCU mode. The Channel Select ‹ and › keys scroll the FaderPort up and down the Sigma channels; pressing the 'Bank' key followed by the arrow keys gives access to Sigma channels 9-16. The channel focus (the channel currently controlled by FaderPort) is indicated with a gold outline on the Remote App CHANNELS page.

---

*Note: the Stereo/Mono mode can not be toggled by FaderPort; this must be configured from the Remote application.*

---

# 7. Controlling Sigma Mix Busses & Monitoring from δelta plugins

For automating Sigma mix bus levels, or for direct control of your monitor section via the DAW (particularly using a EuCon surface), install the SSL δelta Control Mix Bus and SSL δelta Control Monitoring plugins.

The δ-Monitoring and δ-Mix Bus plugins have separate installers; both of which can be found in your SSL account under **My Products** › **AWS Downloads**. Run the installer of your plugin and follow the process described on page 13.

Both δ-Monitoring and δ-Mix Bus work with the 'SSL Delta Plugin' iLok license.

## SSL δ-Mix Bus Plugin

The δ-Mix Bus Plugin remotely controls your Sigma monitoring switches / levels. It is designed to be used alongside the δ-Monitoring plugin, and δ-Single/δ-16 plugin; all channel, mix bus and monitor settings will be stored within each DAW project for faster recall.

**GUI**



1. **Faders** – click on a fader to change the level of each mix bus. Double-click to set to 0dB

2. **Sums** – indicates the mix bus insert-sum switch positions. This sums together the pre insert and post insert signals in a 50/50 split for parallel processing. Click on switches to toggle

3. **Inserts** – indicates the mix bus insert switch positions. Click on switches to toggle

4. **B-to-A** – sums mix B into mix A. Click on switch to toggle

5. **Level indicator** – indicates level of each mix bus in dB. Brightens up when levels are changed /automated

**Workstation Setup**

1. Follow the steps outlined in the *Example Setups* for Sigma and your chosen DAW

2. Once the plugin has been installed, insert the δ-Mix Bus plugin into any track in your DAW

3. The plugin will connect to Sigma automatically. Set the track automation type to 'touch' or 'latch' to automate mix bus levels, and other parameters as desired

# SSL δ-Monitoring Plugin

The δ-Monitoring Plugin remotely controls your Sigma monitoring switches / levels. It is designed to be used alongside the δ-Mix Bus plugin, and δ-Single/δ-16 plugin; all channel, mix bus and monitor settings will be stored within each DAW project for faster recall.

**GUI**



1. **Monitor Source** buttons – switch the monitor output source between Mix A, Mix B, and the external input. Click on switches to select a source.

2. **Monitor level** – adjusts monitor level. Click and drag mouse to alter level.

3. **Monitor Control buttons** – these buttons switch monitor cut, dim, and mono, as well as switching to the alternate speaker output (ALT L/S). Click on switches to toggle.

4. **Headphone Source Buttons** – these buttons switch the headphone output source between Mix A, Mix B, and the external input. Click on switches to toggle between sources.

5. **Headphone level** – adjusts headphone level. Click and drag mouse to alter level.

6. **Level Indicator** – indicates the dB value of headphone and monitor levels.

**Workstation Setup**

1. Follow the steps outlined in the *Example setups* for Sigma and your chosen DAW

2. Once the plugin has been installed, insert the δ-Monitoring plugin into any track in your DAW

3. The plugin will connect to Sigma automatically.

# 8. Using Two Sigmas Together

Currently, the Delta Plugin and Sigma Remote support only one Sigma to be used at any time. However, there is still a way to automate two Sigma's: One will be controlled/automated using Delta (MCU) and another by your DAW / Midi Absolute (legacy mode).

If using two Sigmas, ensure that the following has been set up:

- Each Sigma has a different fixed IP address in the same range (eg. Sigma 1: 192.168.1.201, Sigma 2: 192.168.1.202) or, if your switch is able to, use DHCP. *All ip addresses will be automatically assigned to devices on the network when set to DHCP.*
- Set **Sigma 1** to **Delta (MCU)** control from the Sigma Remote application.
- Set **Sigma 2** to another control protocol from the **legacy web browser** interface. More details on how to set this up can be found in the legacy Sigma manual, available here: http://www2.solidstatelogic.com/studio/sigma/documents

*If using a control surface for Sigma 1 via 'Delta(MCU)' control protocol, make sure that the ipMIDI ports set to control Sigma 2 do not match those set for Sigma 1.*

# Appendices

## APPENDIX A – CONNECTORS & PINOUTS

### 'CHIP' – Channel Input Connectors †
Connector Type: 25-way D-type Female

| Pin | | Description |
|-----|-----|-------------|
| 1 | | Channel 4 Right (+ve) |
| | 14 | Channel 4 Right (–ve) |
| 2 | | 0V |
| | 15 | Channel 4 Left (+ve) |
| 3 | | Channel 4 Left (–ve) |
| | 16 | 0V |
| 4 | | Channel 3 Right (+ve) |
| | 17 | Channel 3 Right (–ve) |
| 5 | | 0V |
| | 18 | Channel 3 Left (+ve) |
| 6 | | Channel 3 Left (–ve) |
| | 19 | 0V |
| 7 | | Channel 2 Right (+ve) |
| | 20 | Channel 2 Right (–ve) |
| 8 | | 0V |
| | 21 | Channel 2 Left (+ve) |
| 9 | | Channel 2 Left (–ve) |
| | 22 | 0V |
| 10 | | Channel 1 Right (+ve) |
| | 23 | Channel 1 Right (–ve) |
| 11 | | 0V |
| | 24 | Channel 1 Left (+ve) |
| 12 | | Channel 1 Left (–ve) |
| | 25 | 0V |
| 13 | | n/c |

### 'CHOP' – Channel Output Connectors †
Connector Type: 25-way D-type Female

| Pin | | Description |
|-----|-----|-------------|
| 1 | | Channel 4 Right (+ve) |
| | 14 | Channel 4 Right (–ve) |
| 2 | | 0V |
| | 15 | Channel 4 Left (+ve) |
| 3 | | Channel 4 Left (–ve) |
| | 16 | 0V |
| 4 | | Channel 3 Right (+ve) |
| | 17 | Channel 3 Right (–ve) |
| 5 | | 0V |
| | 18 | Channel 3 Left (+ve) |
| 6 | | Channel 3 Left (–ve) |
| | 19 | 0V |
| 7 | | Channel 2 Right (+ve) |
| | 20 | Channel 2 Right (–ve) |
| 8 | | 0V |
| | 21 | Channel 2 Left (+ve) |
| 9 | | Channel 2 Left (–ve) |
| | 22 | 0V |
| 10 | | Channel 1 Right (+ve) |
| | 23 | Channel 1 Right (–ve) |
| 11 | | 0V |
| | 24 | Channel 1 Left (+ve) |
| 12 | | Channel 1 Left (–ve) |
| | 25 | 0V |
| 13 | | n/c |

### EXT, RTNS, T/B †
Connector Type: 25-way D-type Female

| Pin | | Description | D-sub to XLR-F Loom |
|-----|-----|-------------|---------------------|
| 1 | | n/c | |
| | 14 | n/c | XLR-8 |
| 2 | | 0V | |
| | 15 | Talkback Mic Input (+ve) | |
| 3 | | Talkback Mic Input (–ve) | XLR-7 |
| | 16 | 0V | |
| 4 | | Mix B Insert Return Right (+ve) | |
| | 17 | Mix B Insert Return Right (–ve) | XLR-6 |
| 5 | | 0V | |
| | 18 | Mix B Insert Return Left (+ve) | |
| 6 | | Mix B Insert Return Left (–ve) | XLR-5 |
| | 19 | 0V | |
| 7 | | Mix A Insert Return Right (+ve) | |
| | 20 | Mix A Insert Return Right (–ve) | XLR-4 |
| 8 | | 0V | |
| | 21 | Mix A Insert Return Left (+ve) | |
| 9 | | Mix A Insert Return Left (–ve) | XLR-3 |
| | 22 | 0V | |
| 10 | | External Input Right (+ve) | |
| | 23 | External Input Right (–ve) | XLR-2 |
| 11 | | 0V | |
| | 24 | External Input Left (+ve) | |
| 12 | | External Input Left (–ve) | XLR-1 |
| | 25 | 0V | |
| 13 | | n/c | |

### MIX B, SENDS, H/P †
Connector Type: 25-way D-type Female

| Pin | | Description | D-sub to XLR-M Loom |
|-----|-----|-------------|---------------------|
| 1 | | Headphone Right (+ve, line level) | |
| | 14 | Headphone Right (–ve, line level) | XLR-8 |
| 2 | | 0V | |
| | 15 | Headphone Left (+ve, line level) | |
| 3 | | Headphone Left (–ve, line level) | XLR-7 |
| | 16 | 0V | |
| 4 | | Mix B Insert Send Right (+ve) | |
| | 17 | Mix B Insert Send Right (–ve) | XLR-6 |
| 5 | | 0V | |
| | 18 | Mix B Insert Send Left (+ve) | |
| 6 | | Mix B Insert Send Left (–ve) | XLR-5 |
| | 19 | 0V | |
| 7 | | Mix A Insert Send Right (+ve) | |
| | 20 | Mix A Insert Send Right (–ve) | XLR-4 |
| 8 | | 0V | |
| | 21 | Mix A Insert Send Left (+ve) | |
| 9 | | Mix A Insert Send Left (–ve) | XLR-3 |
| | 22 | 0V | |
| 10 | | Mix B Output Right (+ve) | |
| | 23 | Mix B Output Right (–ve) | XLR-2 |
| 11 | | 0V | |
| | 24 | Mix B Output Left (+ve) | |
| 12 | | Mix B Output Left (–ve) | XLR-1 |
| | 25 | 0V | |
| 13 | | n/c | |

† : D-type connector wiring follows AES59 ('Tascam') standard and binding posts are 4-40 UNC thread.

**Main Monitor Output**

Connector Type:      XLR 3-pin Male

| Pin | Description |
| --- | --- |
| 1 | 0V (Chassis) |
| 2 | Signal +ve |
| 3 | Signal –ve |

**Alternate Monitor Output**

Connector Type:      XLR 3-pin Male

| Pin | Description |
| --- | --- |
| 1 | 0V (Chassis) |
| 2 | Signal +ve |
| 3 | Signal –ve |

**Mix A Output**

Connector Type:      XLR 3-pin Male

| Pin | Description |
| --- | --- |
| 1 | 0V (Chassis) |
| 2 | Signal +ve |
| 3 | Signal –ve |

**⌒ Headphones**

Connector Type:      0.25" Stereo Jack

| | Description |
| --- | --- |
| Tip | Signal Left |
| Ring | Signal Right |
| Sleeve | 0V (Chassis) |

**Foot Switch Input**

Connector Type:      0.25" Stereo Jack

| | Description |
| --- | --- |
| Tip | Signal |
| Ring | 0V (Chassis) |
| Sleeve | 0V (Chassis) |

**⋈ iJack Input**

Connector Type:      3.5mm Stereo Jack

| | Description |
| --- | --- |
| Tip | Signal Left |
| Ring | Signal Right |
| Sleeve | 0V (Chassis) |

# APPENDIX B – SIGNAL FLOW BLOCK DIAGRAM
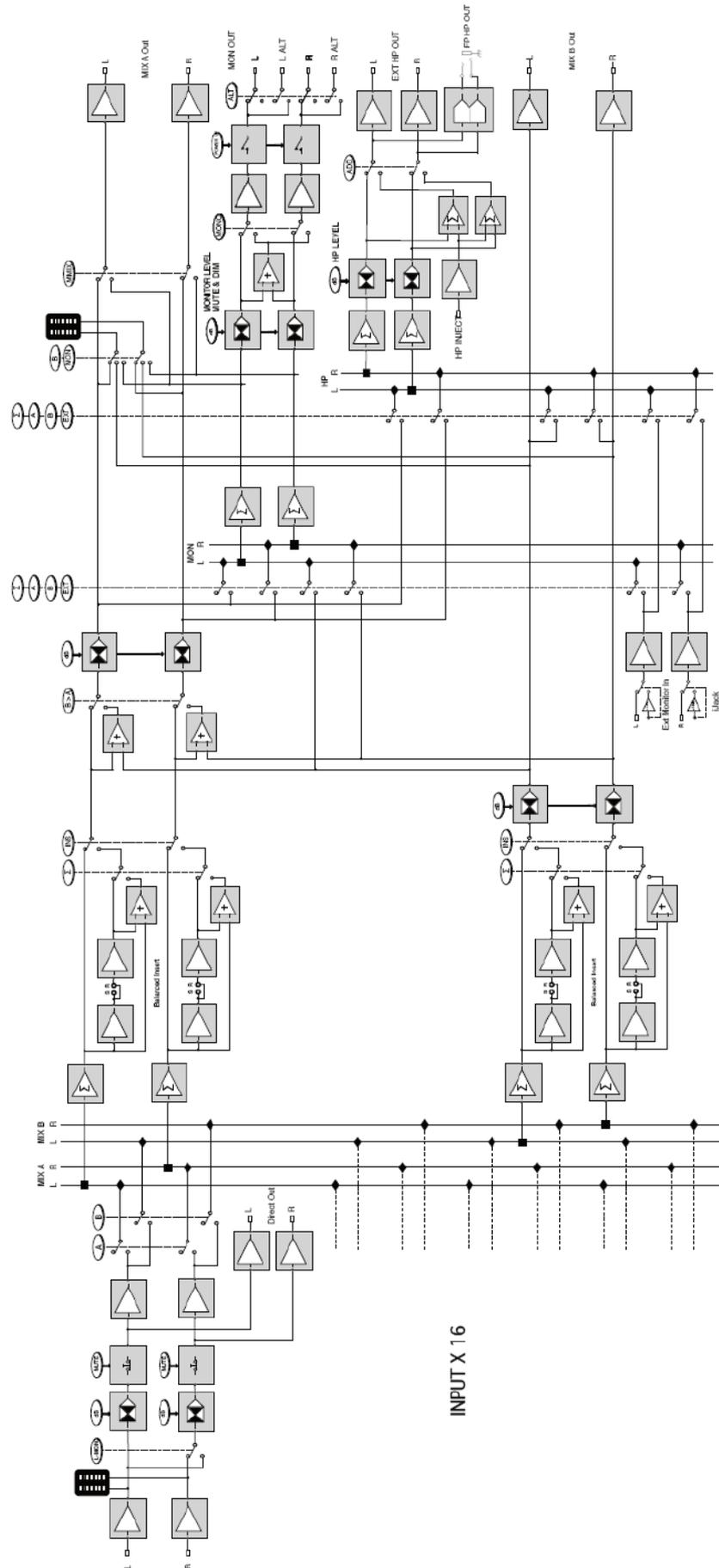
# APPENDIX C – SUPPORT

## FAQs

Support information for the entire SSL range is always available through our online support site:

www.solidstatelogic.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.

## Required Software

In order for Sigma to integrate with your DAW, ipMIDI software must be installed on your computer. Configuration of Sigma will require the use of the Remote app.

Please login to your SSL account via the website (top right-hand side) or create a new account by clicking 'Register' (also found at the top-right of the web page).
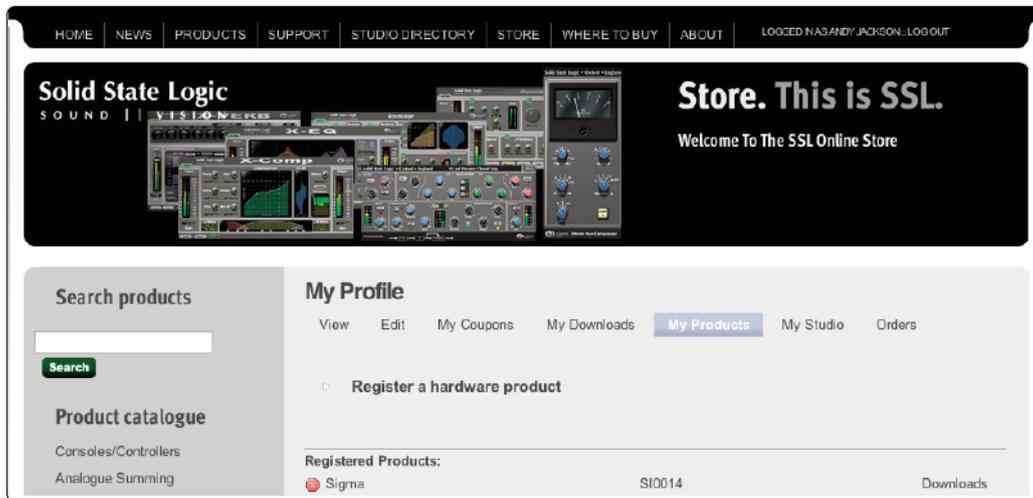


Once registered, you will be able to sign-in and download the ipMIDI software which allows Sigma to work with your DAW.

## Sigma's Internal Software

The **Software Update** button is used to update Sigma's internal software. The currently installed software version is shown below the button. *You will need to have the Ethernet cable connected to perform the update.*

- Login to your SSL account here: <u>User Login</u> and then select the **My Products** tab

- You will see a **Downloads** link next to your registered Sigma – download the **NK.bin** file

- Click on the **Software Update** button and locate the downloaded **NK.bin** file.

- Follow the on-screen instructions to install the update
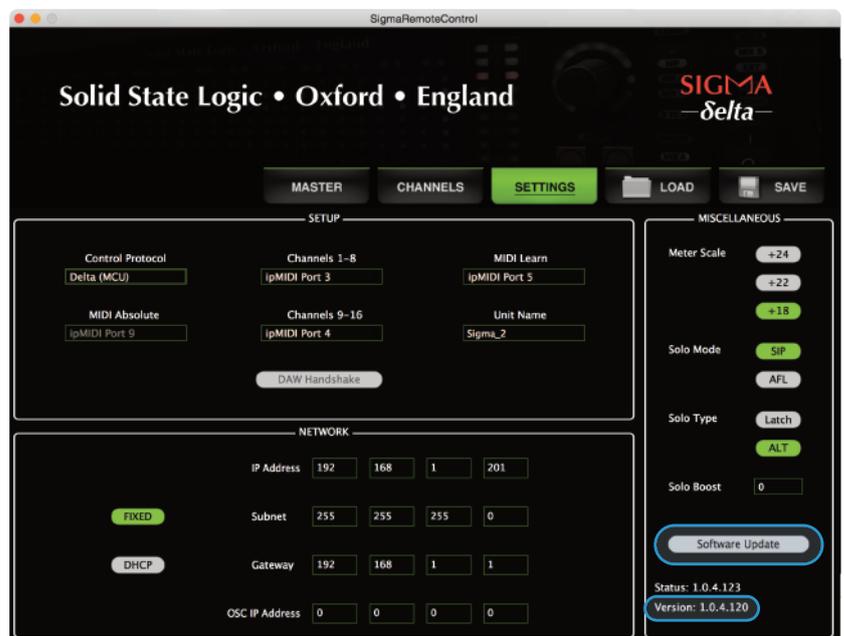
# Hardware

The diagram below can be used in conjunction with our troubleshooting support videos for replacing Sigma's hardware.
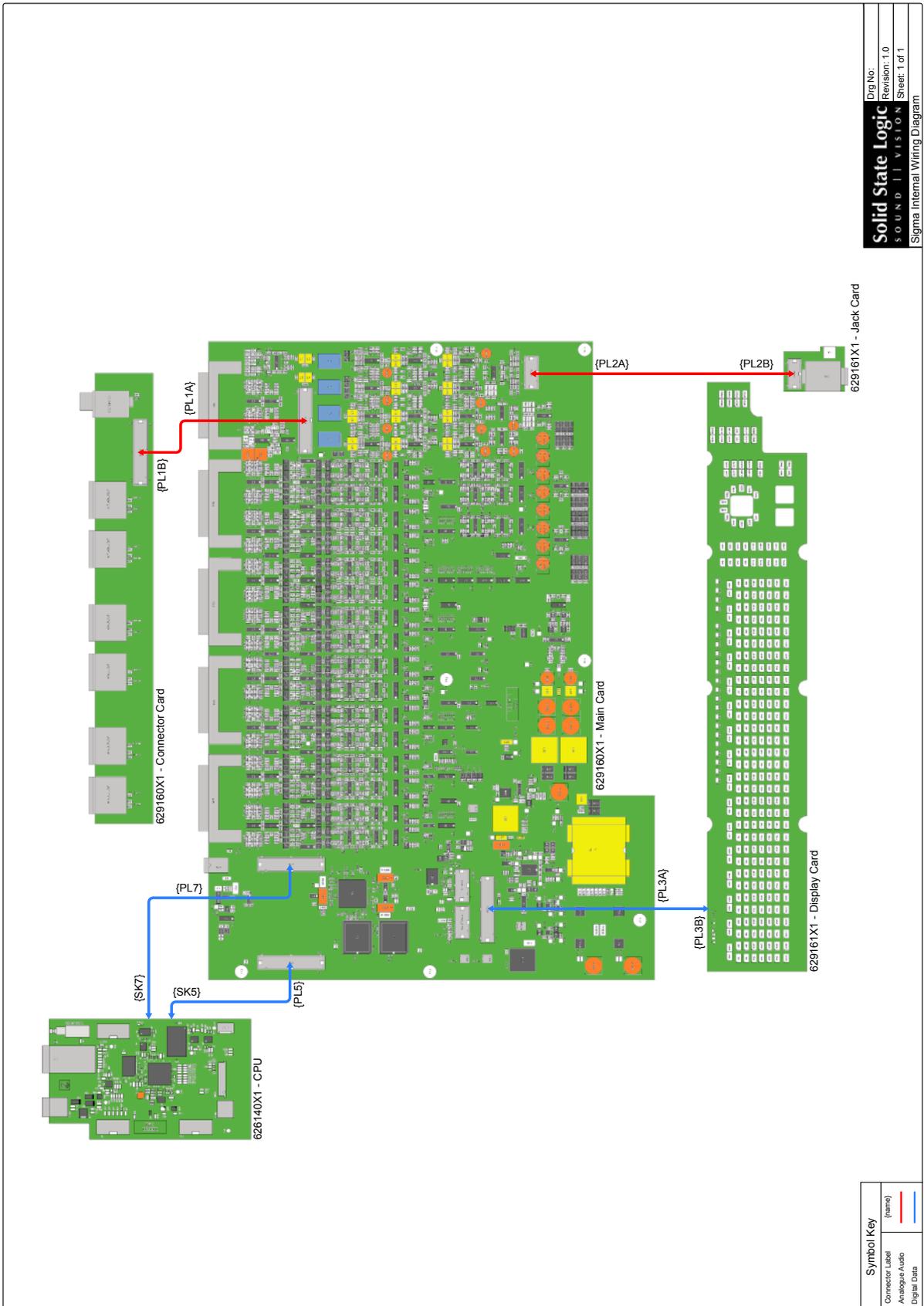
# APPENDIX D – SPECIFICATIONS

## Technical & Environmental

### Physical *

| | | |
|---|---|---|
| Depth | 320mm / 12.75" | *casing only* |
| Height | 89mm / 3.5" (2 RU) | |
| Width | 435mm / 17" | *casing only* |
| | 482mm / 19" | *inc' rack ears* |
| Weight | 5kg / 11 pounds | |
| Power | < 60 Watts | |
| Boxed size | 510mm x 570mm x 280mm | |
| | 20" x 22.5" x 11" | |
| Boxed weight | 10kg / 22 pounds | |

*\* All values are approximate*

### Environmental

| | | |
|---|---|---|
| Temperature | Operating: | +5 to 30 deg. C |
| | Non-operating: | −20 to 50 deg. C |
| | Max. gradient: | 15 deg. C/hour |
| Relative | Operating: | 20 to 80% |
| Humidity | Non-operating: | 5 to 90% |
| | Max. wet bulb: | 29 deg. C |
| | (non-condensing) | |
| Vibration | Operating: | < 0.2 G (3 – 100Hz) |
| | Non-operating: | < 0.4 G (3 – 100Hz) |
| Shock | Operating: | < 2 G (10ms max.) |
| | Non-operating: | < 10 G (10ms max.) |
| Altitude | Operating: | 0 to 3000m |
| (above sea level) | Non-operating: | 0 to 12000m |

### Connections

| | |
|---|---|
| **Power Supply** | IEC320 3-pin connector, 100 – 240 Vac, 50 – 60 Hz |
| **DC Power** | 2mm DC power jack, +12V, < 3A |
| **Analogue I/O** | 25-pin D-type socket, balanced, Zin > 10kΩ, Zo ≈ 100Ω |
| | 3-pin XLR-M, balanced, Zo ≈ 100Ω |
| **Headphones** | Stereo 1/4" jack socket, Zo ≈ 75Ω |
| **Footswitch** | Stereo 1/4" jack socket (1 circuit) |
| **iJack** | Stereo 3.5mm jack socket, Zi ≈ 10k |
| **Network** | 8P8c modular connector; 'RJ-45' type (100bT, Cat5) |
| **USB** | 1 x type-B chassis socket *(SSL diagnostic use only)* |

### Performance

| | |
|---|---|
| **Maximum I/O Level** | +18dBu, +22dBu or 24dBu |
| **Frequency Response** | 20Hz – 40kHz ±0.3dB |
| **THD + N** | < 0.025% (20Hz – 20kHz) |
| **Noise** | |
| CHIP to CHOP | < −83dBu @ +24dBu (20Hz – 20kHz) |
| CHIP to MIX A | < −75dBu @ +24dBu (20Hz – 20kHz) |
| | *(stereo, all channels routed)* |

### Electro Magnetic Compatibility

EN55103-1:2009, EN55103-2:2009
Environment E4

| | |
|---|---|
| Initial in-rush current | 10A |
| 5 sec in-rush current | 10A |

*Braid-screened cables should be used where applicable*
*Star Quad cables should be used where applicable*

### EMC Performance Criteria

Line level inputs and outputs
Measure at mid-gain, noise <−56dBu

# APPENDIX E – Limited Warranty

Warranty claims will only be accepted if the purchased product has been used for its intended purpose. Any purchased product used for an unintended purpose will not be eligible for warranty protection. For all warranty inquiries or claims please address your claim to the dealer that you purchased the product from – or to Solid State Logic if the purchase was directly from Solid State Logic – within a period of two months from the date on which you detected its lack of conformity with the terms of the warranty. **Please include your original proof of purchase when initiating the claim.**

- **Within the EU:** Pursuant to the Solid State Logic Terms and Conditions under European consumer law the purchaser has full statutory warranty rights for two years from the date of delivery of the product. The warranty is valid only in those Member States of the European Union (EU) who have adopted the applicable EU law into their national legislation. The applicable national legislation governing the sale of consumer goods is not affected by this warranty.

- **Outside of the EU:** Outside of the European Union a 12 month warranty from date of purchase is applicable.

### Out of Warranty Repairs

In the event of a fault arising after the warranty period has expired the unit should be returned to Solid State Logic either directly or via your local dealer. You will be charged for the time spent on the repair (at Solid State Logic's current repair rate) plus the cost of parts and shipping. Note that no units can be accepted for repair without prior arrangement (see below).

### All Returns

- No unit will be accepted for repair by Solid State Logic unless accompanied by a valid RMA (Return Material Authorisation) number, obtainable from Solid State Logic prior to shipping.
- All units should be shipped to Solid State Logic in suitable rigid packaging – Solid State Logic cannot be held responsible for any damage caused by shipping units in other packaging. In such cases Solid State Logic will return the unit in a suitable box, which you will be charged for.
- Do not include the power cable, manual or any other items – Solid State Logic can not guarantee to return them to you.

# Solid State Logic
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