dCS Verdi La Scala
Upsampling SACD Transport

User Manual
Software Release 1.0x

September 2004

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[1]   *dCS* is Data Conversion Systems Ltd. Company registered in England No. 2072115.

PRODUCT OVERVIEW

The *dCS Verdi La Scala* Upsampling SACD Transport is a logical development of the critically acclaimed *dCS Verdi*.

La Scala plays SACD or Hybrid discs and outputs the DSD data onto an IEEE 1394 bus, ready for conversion to wide-band, high quality audio by a *dCS Elgar Plus* or a 1394-equipped *dCS Delius*[2].

La Scala also plays standard CDs and the CD layer of Hybrid discs, upsampling the data to DSD internally, without the need for a separate upsampler. This is ideal for audiophiles who do not use other digital audio sources, as the equipment set-up is much simpler.

DSD (Direct Stream Digital) is single bit data, sampled at 2.822MS/s. This data format increases the available audio band-width to well over 100kHz, well in excess of the 20kHz available from a standard CD system. The extra band-width sharpens the transient response and improves the phase response, resulting in a more natural sound and more precise stereo imaging.

CD data at 16 bits / 44.1kS/s is always available from the AES interface (XLR connector), three SPDIF interfaces (RCA, BNC and Toslink optical and an SDIF-2 interface. When playing and SACD, the data is down-sampled to provide these outputs.

La Scala features a Wordclock Input, allowing the transport to be synchronised to a Master Clock or a *dCS* DAC running in master mode. This arrangement reduces system jitter – a major source of sound degradation in digital audio systems.

In common with all *dCS* converters, *La Scala* is based on our flexible digital audio platform which makes extensive use of software configurable chips – FPGA's and DSP's. This allows the internal software to be updated from time to time, either from a *dCS* CD or from a PC, adding extra features and facilities to your system with a minimum of fuss.

Laser Radiation Hazard

dCS Verdi La Scala is a Class 1 Laser Product, it complies with U.S. FDA 21CFR subchapter J. The U.S. FDA Accession number is 0211117. In normal use, there is no risk of exposure to laser radiation.

IMPORTANT!   *The metal top cover must only be removed by authorised service personnel. The cover protects the user from indirect exposure to visible and invisible laser radiation, as well as risk of electric shock.*

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[2]   To comply with the licence arrangements for SACD, this data is encrypted in the *Verdi La Scala* and is decrypted in the receiving unit.

GIUSEPPE VERDI (1813 –1901)

The *dCS Verdi* is named after Giuseppe Verdi, the 19th century Italian composer. He was born in the village of Roncole in the province of Parma on October 10th, 1813. From an early age he showed a strong interest in music and commenced his formal musical studies at the age of 7, tutored by the organist in his village church.

When he was 10, Verdi moved to the nearby town of Busseto, where he attended the music school run by Ferdinando Provesi. In Busseto he made the acquaintance of Antonio Barezzi, a local merchant and passionate music lover. Barezzi provided Verdi with financial assistance during the remainder of his musical studies and many years later in 1836, Verdi married Barezzi's daughter, Margherita.

In 1832 he applied to study at the prestigious Milan Conservatory, but was turned down. Instead, he studied in Milan under the private tuition of Vincenzo Lavingna, a composer and former harpsichordist at the La Scala theatre. During his stay in Milan, Verdi spent a great deal of time attending the theatre and this almost certainly accounts for his work being heavily biased towards opera.

On Provesi's death in 1833, Verdi returned to Busseto with the aim of taking over his position as head of the town's music school. However, this was delayed until 1836 by political squabbling between the clergy and his supporters in the local Philharmonia.

In 1838, Verdi moved to Milan where the following year he presented his first opera, **Oberto, conte di San Bonifacio** at the La Scala theatre, where it was received to moderate acclaim.

1840 must have been the worst year of his life. First his two children and then his wife died in quick succession. His misery was further compounded when his second opera, **Un Giorno di Regno**, closed after only one performance. At this point Verdi seriously considered giving up composing altogether. At the insistence of Bartolomeo Merelli, the impresario of the La Scala theatre, Verdi read a libretto written by Solera. The biblical themes deeply moved him and motivated him to write his second opera, **Nabucco**, which was hailed as a triumph when it was performed for the first time at La Scala in 1842. **Nabucco** firmly established Verdi as one of the leading Italian composers of the day.

Verdi then commenced a period of prodigious creativity. Between 1843 and 1858 he wrote a total of 20 operas. Of these, 3 are especially of note and are still regularly performed: **Rigoletto** - written in 1851, **Il trovatore** and **La traviata** - both written in 1853.

In 1859 he married his second wife, the soprano Giuseppina Strepponi, whom he had known since 1842 when she sang the female lead in **Nabucco** at La Scala.

Verdi's works often contained strong political themes. This interest in politics was carried over to his private life and, in 1861, he was elected as a deputy to the first Italian parliament.

His success had made him a wealthy as well as famous man. He used his considerable fortune to progressively increase the size of his farm holdings in Parma. By 1900, these had become the largest revenue producer in the province.

He continued to compose, albeit at a slower pace. In 1873 he wrote his **Requiem Mass**, which was dedicated to the memory of the poet Alessandro Manzoni, though its origins go back to a work he first composed as a homage to Rossini.

The most notable operas of his latter years are: **Aida** – written in 1871, **Otello** - written in 1887 and **Falstaff** - written in 1893. The last two were based on plays by Shakespeare and are widely regarded as masterpieces. His last major work, the **Four Sacred Pieces** (**Ave Maria**, **Stabat Mater**, **Te Deum** and **Laudi alla Vergine**), was written in 1898, a year after the death of his second wife Giuseppina.

Giuseppe Verdi died on January 27th 1901. In accordance with his wishes, he was given a simple funeral, without singing or music. The following month, he was entombed in a state ceremony with his second wife, at the rest home for musicians that he had helped to set up many years before, to care for singers and instrumentalists who had fallen on hard times in their old age. The procession was accompanied by members of Verdi's family, members of the Italian Royal family, members of Parliament, foreign diplomats and leading composers including Puccini, Mascagni and Leoncavello. Arturo Toscanini lead tens of thousands of mourners with the choruses of La Scala, in the singing of **Va, pensiero** from **Nabucco**.

Recommended recordings

Requiem
Philadelphia Orchestra conducted by Eugene Ormandy.
Sony SACD SS00707

Rigoletto
English National Opera
CHAN 3030

Otello
English National Opera conducted by Mark Elder
CHAN 3068(2)

Otello
Chicago Symphony Orchestra conducted by Sir George Solti
London 422 670-2

Il Trovatore
Berliner Philharmoniker conducted by Herbert von Karajan
EMI CMS7 69311/2

La Traviata
e Coro del Maggio Musicale, Florence conducted by Zubin Meta
Philips 438 238-2

Macbeth
Choir and Orchestra of the German Opera Berlin conducted by Giuseppe Sinopoli
Philips 412 133-2

Four Sacred Pieces and Requiem
Monteverdi Choir and Orchestre Revolutionnaire et Romantique conducted by John Eliot Gardener
Philips 442 142-2

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About this Manual

If you have not used a *La Scala* before, please read the section "Using your *dCS La Scala* for the first time" on page **48**.

This manual has been arranged with the most commonly used sections placed first:

- table of contents (page **6**)
- step-by-step (page **10**) and applications guides (page **16**)
- detailed software and hardware information (page **18**)
- technical information (page **38**)
- information for first time users (page **48**)
- options, maintenance and troubleshooting (page **50**)
- index section (page **64**)

What does the coloured text mean?

If you are reading a colour print or a soft copy of this manual, you will notice that some types of text are in colour:

- **Brown text in bold** is a reference to another section or page. Sometimes, if you are reading a soft copy of the manual, page numbers are hyperlinks – click on them and you will go there.
- **Blue text** is used for controls and connectors, described in the hardware section.
- **White text in bold on black** is used for alternative control functions, such as menu operation.
- Pink text is a menu page or setting.
- **Green text in bold** shows what appears on the display.
- **Purple text in bold** is used for indicators.

IMPORTANT!

Important information is presented like this - ignoring this may cause you to damage the unit, or invalidate the warranty.

The manual is designed to be helpful. If there are points you feel we could cover better, or that we have missed out - please tell us.

About Sample Rates

All references to sample rates in this manual use the unit kS/s (kilo Samples per second) rather than the technically incorrect kHz.

STEP-BY-STEP GUIDE

This section guides you through setting up the unit for basic operation. You may find this useful if you have not used the *La Scala* for a while.

Preliminaries

The **Control Summary** sheet details the menu structure and outlines the use of the front panel controls. For more information, see the Menu section on page **18**.

For digital interfaces, use with cables designed for digital audio:

- for AES/EBU interfaces use 110Ω screened, twisted pair cables fitted with one male XLR connector and one female XLR connector.
- for SDIF, Wordclock or SPDIF BNC interfaces, use 75Ω coax cables fitted with BNC plugs.
- for SPDIF RCA interfaces, use 75Ω coax cables fitted with RCA Phono plugs.
- for TOSLINK optical interfaces, use Toslink fibre-optic cables.
- for IEEE 1394 interfaces, use the IEEE 1394 cable provided with the unit.

do this: Connect the power cable supplied to the Power inlet on the *La Scala* rear panel, plug the other end into a convenient power outlet. Set the power switch beside the power inlet to the on position (I).

IMPORTANT!   *Please do not use an excessively thick power cable as this may damage the power inlet connector. Such damage is not covered by the warranty.*

do this: Press the **Power** button and wait about 5 seconds while *La Scala* configures itself.

The display will show in sequence: **La Scala**, **0** and **No Disc**.

If the unit is likely to be set in an unfamiliar state, you can reset it as follows:

do this: Press the **Menu** button once, then press the **Step Back** button so the display shows Factory. Press the **Select** button and wait a second.

The **PWR** indicator will be lit, the others should be off.

Step 1 – Connecting the System

There are only two connections needed between the *La Scala* and the DAC. The *La Scala* is compatible with the *dCS Elgar Plus* DAC or the *dCS Delius* DAC equipped with the 1394 option.

dCS Verdi La Scala SACD Transport

44.1kHz
Wordclock

1394

dCS Elgar Plus DAC

L   R   R   L

Balanced
Outputs   - or -   Unbalanced
Outputs

To Power Amplifier or Preamplifier
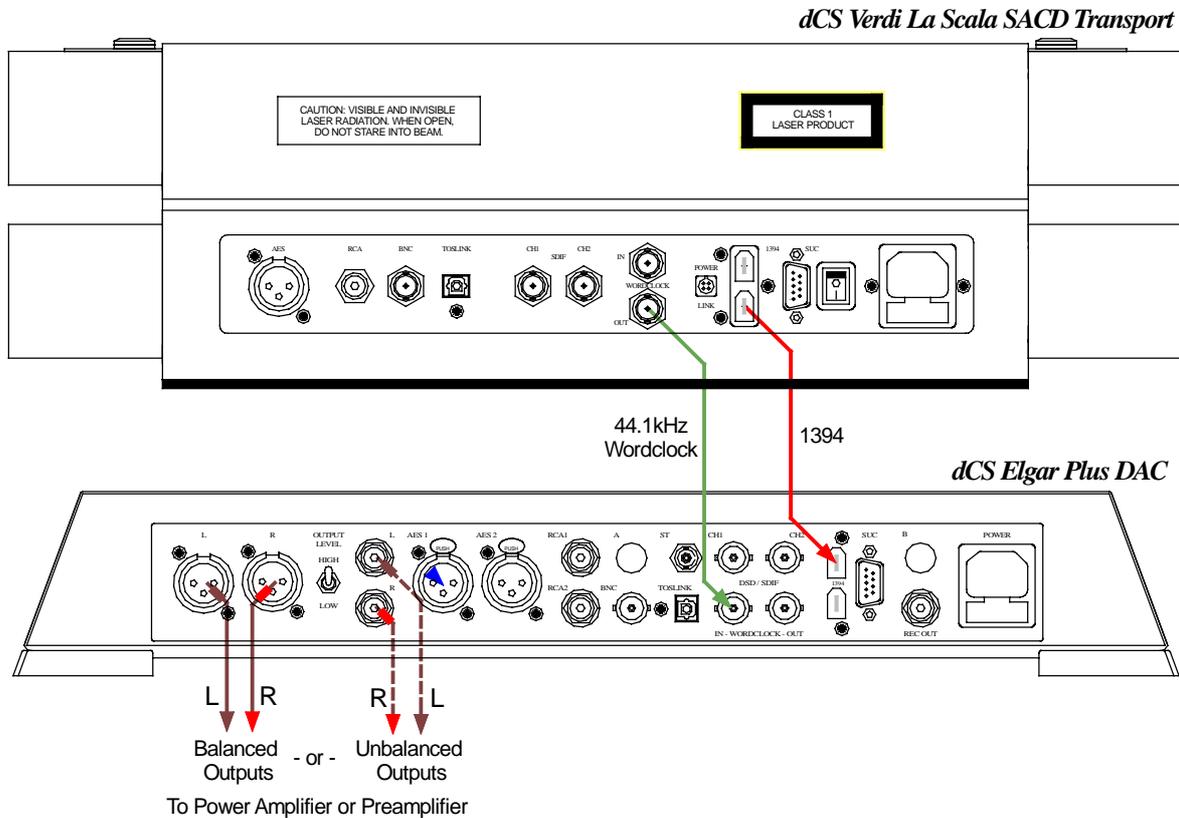
Figure 1 – Connecting *La Scala* to *Elgar Plus*

Connecting the 1394 Interface

While playing an SACD, Hybid disc or CD, DSD data is available from either of the 1394 connectors. This can be decoded by a 1394–equipped *dCS Elgar Plus* or *Delius* DAC.

do this: Set the DAC to **1394** mode first.

do this: Connect ONE of the **1394** connectors on *La Scala's* rear panel to the DAC using the IEEE 1394 cable supplied.

do this: Also connect *La Scala*'s **Wordclock Out** to Wordclock In on the DAC.

IMPORTANT!   *Do not connect both of La Scala's 1394 connectors to the DAC – this prevents the IEEE 1394 interfaces synchronising.*

Connecting the DAC Outputs

do this: Connect the DAC analogue outputs to matching inputs on your preamplifier / power amplifier. Connect the power amplifier outputs to your loudspeakers.

do this: Set the preamplifier or DAC Volume control to a low level.

do this: Ensure all system components are switched on.

This set-up is shown in **Figure 1**.

Connecting a PCM Output

For the best sound quality, use the 1394 interface. Standard CD data is available from all of the PCM outputs, if you want to use them.

do this: Connect any of the **AES, RCA, BNC** or **Toslink** outputs on the *La Scala* rear panel to the matching inputs on the DAC using suitable cables.

do this: If you want to use **SDIF-2** instead, connect the **CH1** and **CH2** outputs on the *La Scala* rear panel to the matching inputs on the DAC using suitable cables. Also connect the **Wordclock Out** output on the *La Scala* rear panel to the Wordclock In connector on the DAC.

Step 2 – Playing a Disc

do this: Press the **Stop/Eject** button.

The display will show **Opening** then **Open**.

do this: Load a disc into the tray and either push the tray in gently or press the **Eject** button again.

The display will show **Loading**, then **Read TOC** (reading the table of contents from the disc). The disc will be identified as a CD, SACD or hybrid. Either the **CD** or the **SACD** indicator will light, along with the **CONT** indicator (play all tracks in a continuous sequence).

If the disc is a hybrid, the **HYBD** indicator and either the **SACD** or the **CD** indicator will light. You can select the other layer by pressing the **SACD/CD** button on the Remote Control – the indicator will change to match this.

If the disc has disc text, the **TEXT** indicator will light, the disc title and artist's name will scroll across the display. For all discs, the number of tracks / total playing time will be displayed, followed by **0** (stopped).

do this: Select the 1394 input on the DAC.
do this: Allow the DAC to lock and un-mute.
do this: Press the **Play** button. Turn up the Volume to a comfortable level.

You should have audio.

If the disc has disc text, the track name will scroll across the display. For all discs, the track number and elapsed time will be displayed.

do this: Press the **Play/Pause** button to pause playing, press again to resume playing.
do this: Press the **Next Track** or **Previous Track** buttons to skip to another track.
do this: Hold down the **Next Track** or **Previous Track** buttons to fast forward or fast reverse through the track. Alternatively, turn the **Rotary Control**.
do this: Press the **Stop/Eject** button to stop the disc. Press it again to open the tray.

Step 3 – Track Selection

To change to a particular track:

do this: Press the **Keypad** button on the Remote Control.

do this: While the white LED is lit, press the track number on the **0–9** buttons.

do this: For example, for track number 15, press **1**, then press **5** within the next three seconds.

Programming a Track Sequence

If you wish, you can program a sequence of up to 31 tracks in any order. If not, go to Step 4.

do this: Load a disc, ensure it is not playing and wait for any disc text to scroll across the display.

do this: Press the **Program** button on the Remote Control. While the white LED is lit, enter the first track number on the **0-9** buttons (e.g. **05**).

The **PROG** indicator will light and the display will change to **Prog 05**, then **Pg 1: 5**.

do this: You can also use the **Previous Track** / **Next Track** buttons to choose a track number.

do this: Press the **Program** button again and select the second track (e.g. **12**). The display will show: **Prog 12**, then **Pg 2: 12**. Continue programming as many tracks as you like, up to a maximum of 31.

If you try to program a track number that is not on the disc, the display shows: **No Trk!**

do this: To delete the last track in the sequence, press the **Clear** button.

The display will change back to the previous entry and that will become the last track in the sequence.

do this: Press the **Play** button to play the programmed sequence of tracks.

do this: Press the **Play Mode** button if you want to stop playing your programmed sequence and change to Random or Continuous play modes.

The programmed sequence is cleared when the CD tray is opened.

Playing all Tracks in a Random Order

If you wish, *La Scala* can play all the tracks on the disc in a random order, then stop.

do this: Press the **Play** button.

do this: Press the **Play Mode** button on the Remote Control once or twice until the display shows **Shuffle** and the **RAND** indicator lights.

Step 4 – Setting a Repeat Sequence

If you wish, *La Scala* can repeat the whole disc, one track or part of a track. Otherwise, proceed to "Other settings".

Repeating the Whole Disc

do this: While playing a disc in Continuous mode (**CONT** indicator lit), press the **Repeat** button on the Remote Control to repeat the whole disc.

The display will show **Rept All** and the **REPT** indicator will light.

Repeating a Track

do this: While playing a track disc in Continuous mode (**CONT** indicator lit), press the **Repeat** button on the Remote Control twice to repeat the track.

The display will show **Rept Trk** and the **REP1** indicator will light.

Repeating Part of a Track

do this: To select part of a track to repeat, play the track through until you reach the start point. Press the **A-B** button on the Remote Control, the display will show (for example) **AB 0:20** with the **B** flashing. When you reach the end point (for example, 10 seconds later), press the **A-B** button again. The **B** will stop flashing, the unit will skip back to the start point (A) then continuously repeat the section up to stop point (B). You can select new start and stop points by pressing the **A-B** button at the new start point and again at the new stop point.

Cancelling Repeat Mode

do this: To stop repeating, press the **Repeat** button on the Remote Control once or twice until the display shows **Rept Off**.

Other Settings

More features are available through the Menu. See the Menu section starting on page **18** for more information.

TYPICAL APPLICATIONS

Using a DAC in Master Mode

You can reduce the jitter in your system by using a *dCS* DAC in Master mode to clock the Transport.

dCS Verdi La Scala SACD Transport

dCS Elgar Plus DAC

44.1kHz Wordclock   1394

L   R   R   L

Balanced Outputs   - or -   Unbalanced Outputs

To Power Amplifier or Preamplifier
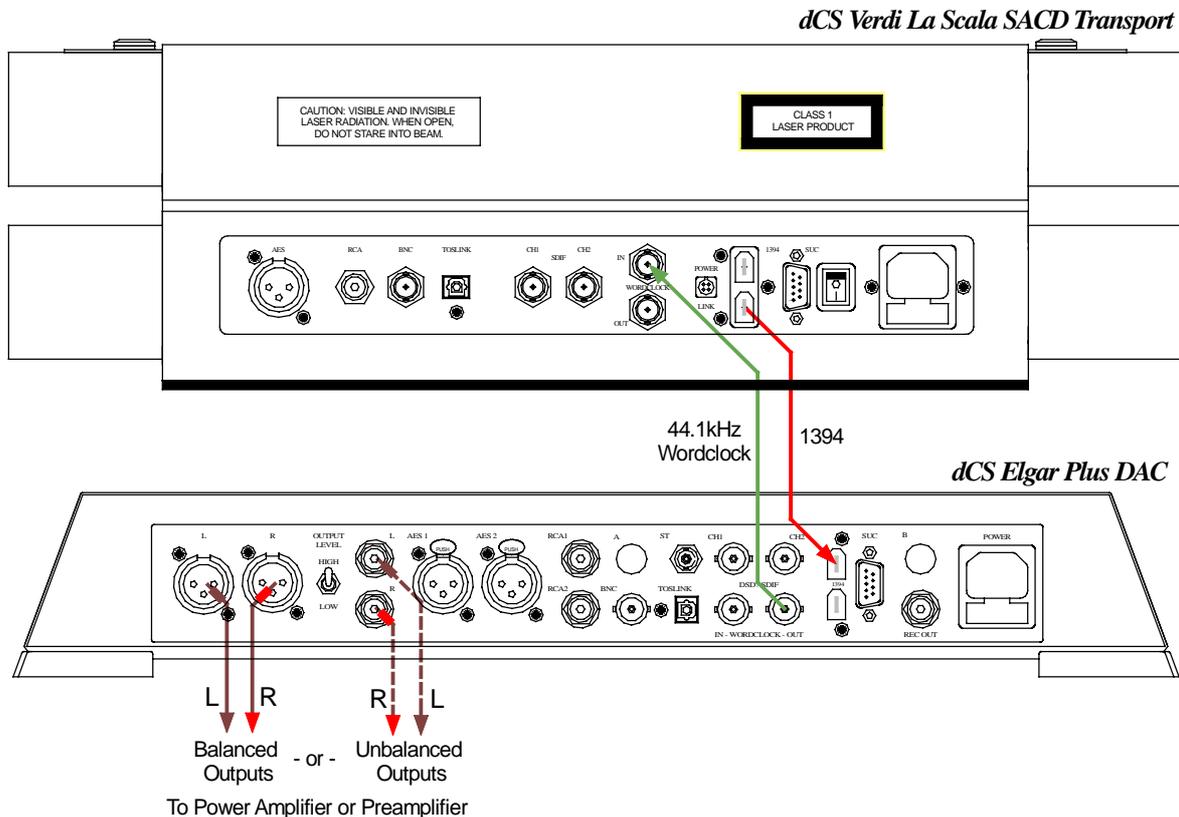
Figure 2 – Using a DAC in Master mode

do this: Connect up as shown in **Figure 2**.

IMPORTANT!   *Note that the Wordclock connections are different to those in* **Figure 1**.

Elgar Plus setup for software version 4.2x or later:

do this: The first time you use this arrangement, open the menu and run the Factory routine.

do this: While playing an SACD, use the **Input** button to select the **1394** input and allow the unit to settle. Open the menu again, choose a Filter if you wish, then set the MS page to MS:Mastr.

do this: When the system has re-locked, use the **Volume** control to set a comfortable listening level.

THE SOFTWARE – THE MENU

Press "Step >" to move along the Menu, press "< Step" to move back.
Press "Select" to set a menu option or change options.

Menu	**SACD/CD**	**Transmit**	**1394 ID**	**Bright x**	**Timeout**
First page of the Menu	Selects format for playing hybrid discs	Turns off 1394 data feed (DSD mode only)	Sets the 1394 source identifying number	Sets the display brightness	Sets the Function Menu time-out delay

	SACD / CD	Active / Inactive	0 … 8	Bright 7 / .... / Bright 0	Normal / Long

Temp	**Issue**	**Test**	**Burn In**	**Ph.Check**	**Ch.Check**
Displays the internal temperature	Displays the software version number	Runs a display test routine	Outputs modulated pink noise to burn-in your system	Outputs noise on both channels then inverts R	Outputs tone on L channel only then R channel only
Celsius / Fahrenheit	1.0x / Db 2.06		**CAUTION! LOUD!**		

Serial	**Contact**	**FavLayer**	**SessTime**	**Easy Play**	**CDUpdate**
Displays the unit full serial number	Displays dCS email address	Sets the default layer when playing a Hybrid disc	Sets the time-out for overriding the FavLayer choice	Sets the mode of the automatic input switching (La Scala only)	Starts software update from a dCS CD
VER-?-?-?-?-?-?		SACD / CD	0 / 1 hour / 2 hours / 4 hours / 8 hours	Normal / Verdi / Off	

| **End**	**Factory**
Closes the Function Menu	Restores standard factory settings

☐ = feature is not available from 1394 outputs.

Figure 3 – Menu flow chart

Using the Menu

The Menu gives the user access to a wide range of additional features. It also allows new features and performance enhancements to be added at a later date by software upgrades.

Opening the Menu

The Menu is controlled by three buttons:

- the **Menu** button opens the menu and doubles as the **Select** button.
- the **Step →** button pages forward through the Menu – the **Step** button.
- the **← Step** button pages backward through the Menu – the **Step Back** button.

When you first open the Menu, the display will show **Menu**.

Successive presses of the **Step** button page through the Menu. You cannot go directly to any particular page, but must enter at the top of the Menu and then page through until you reach the page you want.

Types of Menu Page

There are three types of page in the Menu - Parameter Pages, Information Pages and Test Pages.

Parameter pages allow the user to check and also change the current settings of the operating parameters, for example Bright. When a parameter page is displayed, the first press of the **Select** button shows the current setting. Subsequent presses of the **Select** button change the page setting.

Information pages display information about the unit, for example Software Issue. When an information page is displayed, pressing the **Select** button displays the information held on that page.

Test pages allow the user to initiate a number of useful routines, for example Test. When a Test page is displayed, pressing the **Select** button starts the test routine.

Closing the Menu

There are two ways to close the menu and return to normal operation. The easiest way is to wait 5 seconds for the unit to time-out and revert to the standard display. Alternatively, use the **Step** button to page forward until the display shows **End** and then press the **Select** button once.

If the unit times out before the operation in hand has been completed, simply re-enter the menu, page forward (or backward) and continue where you left off. If you find the 5 second time-out difficult to use, you can extend it by changing the TimeOut setting.

Menu Sequence

Use the flow chart (**Figure 3**) or the **Control Summary** sheet to guide you through the Menu more quickly.

The following explanation deals with the Menu pages in the sequence they occur in the Menu[3]. The use of each page is shown on an individual basis, with the last operation being closing the Menu. After you have become more familiar with the Menu, you will find it more convenient to perform all the Menu operations in one go before finally closing the Menu.

SACD/CD – Selecting the layer on a hybrid disc

With a hybrid disc loaded or playing (the **HYBD** indicator will be lit), you can select either the SACD or the CD layer using this menu. This duplicates the **SACD/CD** button on the Remote Control.

do this: Open the Menu and step through until the display shows SACD/CD.

do this: Press the **Select** button to flip between SACD or CD.

do this: When you have the option you want, wait for the Menu to time-out and the display to revert to its normal mode.

If the disc is not a hybrid, the menu will display the disc type but you will not be able to change the setting.

Transmit – Activating the 1394 Outputs

At present, the IEEE 1394 interface supports up to eight active DSD sources at any time. If more are connected to the bus, no more than eight may be active. This situation will improve as industry standards stabilise. The Transmit page allows *La Scala* to be left in DSD/SACD output mode but with the **1394** interface inactive. With most set-ups, you will not have to worry about this setting.

do this: Set up the unit in DSD/SACD mode, with the **1394** interface connected to at least one other unit.

do this: Open the Menu and step through until the display shows **Transmit**.

do this: Press the **Select** button to flip between Active and Inactive.

do this: When you have the option you want, wait for the Menu to time-out and the display to revert to its normal mode.

1394 ID – 1394 Source Identification

This page sets a number between 1 and 8 to identify each *La Scala* you have connected to the 1394 system.

do this: Open the Menu and step through until the display shows **1394ID:x**, where x is a number between 0 and 8.

do this: Press the **Select** button repeatedly, allowing the unit to settle for a few seconds each time. The display cycles through 1394ID:0, 1394ID:1, ..., 1394ID:7, 1394ID:8, and back to 1394ID:0.

If you set 1394ID:2 for example, when the DAC is selected to this *La Scala*, it will display **La Scala 2**. You can set any other *La Scala*s connected to the 1394 system to a different number. If you set 1394ID:0, the DAC displays **La Scala**, without a number.

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[3] A minor software update may change the order of the menu items or add an option. If this happens, the Control Summary sheet may be updated before the manual.

Bright x **- Display Brightness**

This adjusts the brightness of the main display, with settings between 7 (brightest) and 0 (off, unless something is touched).

do this: Open the Menu and step through until the display shows **Bright x**, where x is a number between 7 and 0.

do this: Press the **Select** button repeatedly and the display cycles through Bright 7, Bright 6, ..., Bright 1, Bright 0 and back to Bright 7.

After time-out, a setting of Bright 0 blanks the display unless the unit is not locked. Operating any control or locking to a source while in this mode turns the display back on momentarily.

TimeOut **– Menu Time Out Setting**

If you find the 5 second time out period for the menu is too short, use this option to change the time out period to 30 seconds.

do this: Open the Menu and step through until the display shows **Timeout**.
do this: Press the **Select** button once and the display will show **Normal**.
do this: Press the **Select** button again and the display will change to **Long**.
do this: Repeat this if you want to change back.

Ch.Check **- Channel Check Test**

Use this feature to check if the stereo outputs on your system are swapped. It is disabled when in DSD/SACD mode.

do this: Set up your system to play music at a comfortable level.
do this: Open the Menu and step through until the display shows:

> **Ch.Check**

do this: Press the **Select** button once to start the test. After briefly displaying **Wait**, the following sequence occurs:

> **Left**

A modulated tone should appear on the left channel only for several seconds.

> **None**

Both outputs are muted for a second.

> **Right**

A modulated tone should appear on the right channel only for several seconds.

> **Done**

This is displayed briefly at the end of the test.

If the channels are swapped, check for wiring errors from the unit output onwards. If you correct this temporarily using the Swap function on a *dCS* DAC, note that the Swap setting is **NOT** remembered at power down.

Ph.Check - Phase Check Test

Use this feature to check if one channel in your system is phase inverted[4]. It is disabled when in DSD/SACD mode.

do this: Set up your system to play music at a comfortable level.

do this: Open the Menu and step through until the display shows:

> **Ph.Check**

do this: Press the **Select** button once to start the test.

After briefly displaying **Wait**, the following sequence occurs:

> **Normal**

In-phase noise appears on both channels for several seconds.

> **None**

Both outputs are muted for a second.

> **Inverted**

A second burst of noise appears on both channels with the right channel inverted for several seconds.

> **Done**

This is displayed briefly at the end of the test.

If both channels are in-phase the first burst of noise will produce a stable central image but the second burst will not. If one channel is out of phase, the second burst will produce a stable stereo image but the first will not.

If there is a phasing error, check for wiring errors from the unit output onwards. You cannot correct this error on a *dCS* DAC using the Phase feature as this inverts both channels.

Burn In - Burn-In Signal Generation

IMPORTANT! *Read all the steps in this section before starting the System Burn-in routine. The Burn-in routine outputs a signal at maximum volume.*

IMPORTANT! *This routine is NOT suitable for burning-in loudspeakers. Ensure your loudspeakers are disconnected, or your power amplifier is switched off before starting this routine.*

Use this feature to burn-in your system components with modulated pink noise. It is disabled when in DSD/SACD mode.

do this: Set up your system volume control to the usual setting.
do this: Open the Menu and step through until the display shows:

> **Burn In**

do this: Press the **Select** button once to start the burn-in routine.

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[4] The ear responds to positive pressure substantially more than it does to negative pressure for low frequencies, so it is worth getting the phasing correct.

La Scala will show the warning messages **Caution** and **Loud** in the main display for 20 seconds and then the burn-in signal will ramp-up from zero to maximum level over a period of about 10 seconds.

The display cycles through **Burn in**, **Caution** and **Loud** while the Burn In routine is running.

do this: To stop the Burn-in signal, press either a **Step** or **Select** button once. The display will briefly show:

> **Done**

Test - Display Test

This runs a test routine to ensure the display is working correctly.

do this: Open the Menu and step through until the display shows **Test**.
do this: Press the **Select** button once to start the test.

- The main display lights up then fades from bottom to top.
- The indicator LEDs light up briefly in sequence.
- All indicators light up, along with small squares on the main display. This flashes off and on once.
- The display shows **Done**.

Issue – Software Issue State

This displays the issue number of the software fitted to your unit. You will need to check this if you are considering a software upgrade or if your unit malfunctions.

do this: Open the Menu and step through until the display shows **Issue**.
do this: Press the **Select** button once to display the software issue.
do this: For units fitted with a **1394** interface, press the **Select** button again to display the 1394 interface software issue.

Temp – Unit Internal Temperature

This displays the temperature inside the unit, close to the crystal oscillators.

do this: Open the Menu and page through until the display shows **Temp**.
do this: Press the **Select** button once to display the temperature in degrees Fahrenheit. Press **Select** again to change to degrees Celsius.

Serial – Unit Serial Number

This displays the full serial number, including the hardware configuration code. We will need this information to assemble upgraded software to suit your unit.

do this: Have a pen and paper handy to note down the number. Open the Menu and step through until the display shows **Serial**.
do this: Press the **Select** button once and the serial number will scroll across the display.

Contact - Contact information

This displays *dCS'* email address and web-site URL.

do this: Open the Menu and step through until the display shows **Contact**.
do this: Press the **Select** button once and the contact information will scroll across the display.

FavLayer – Favourite Layer on a Hybrid Disc

Hybrid discs have two layers – an SACD layer and a CD layer. If you are playing a hybrid disc, this menu setting allows you to choose which layer is played automatically.

do this: Open the Menu and step through until the display shows **FavLayer**.
do this: Press the **Select** button once and the display will show **SACD**.
do this: Press the **Select** button again and the display will change to **CD**.
do this: Repeat this if you want to change back.

Most users will set this to SACD.

SessTime – Session Time Out Setting

When playing a hybrid disc, you can over-ride the FavLayer setting temporarily by pressing the **SACD/CD** button on the Remote Control. The FavLayer setting is restored next time you power up the unit, or at the end of the session time set by this menu.

do this: Open the Menu and step through until the display shows **SessTime**.
do this: Press the **Select** button repeatedly and the display will cycle through **0, 1 hour, 2 hours, 4 hours, 8 hours, 30 mins**, etc.
do this: Choose the setting you want and wait for the Menu to timeout.

Easy Play – Automatic Source Selection

The Easy Play system automatically selects the active source in your system. There are 3 options:

Normal	*La Scala* selects the 1394 input on the DAC. This is the usual setting.
Verdi	*La Scala* operates in the same way as a standard *Verdi*. The DAC will select the 1394 input if *La Scala* is playing an SACD, and select the active PCM input if *La Scala* is playing a CD.
Off	All source selection must be done manually. Choose this setting if you have several digital sources connected to your DAC.

do this: Open the Menu and step through until the display shows **EasyPlay**.
do this: Press the **Select** button repeatedly and the display cycles through the three options. Stop when you reach the option you want.

CDUpdate – Software Update By CD

Current software for *dCS Elgar Plus*, *Elgar*, *Delius* or *Purcell* and all *Verdi, La Scala* or *Verona* software features a CD Update menu page. You can update the software inside any of these products loaded with CD Update software quickly and easily from a CD supplied by *dCS*.

IMPORTANT!   *Please follow the latest update instructions supplied with the CD. The following is for guidance only.*

You will need a standard CD Transport, a CD player or a *dCS Verdi* to play the CD. A few CD players are not suitable because they upsample to 48kS/s or change some of the data bits in other ways (one example is the ML37). Don't worry - the CD Update routine detects these and stops, preventing any changes to the internal software.

If you are updating a *dCS* Upsampler or DAC:
do this: Connect an AES or RCA digital output from the Transport to the Upsampler or DAC and select the input you have just connected. Disconnect any **1394** interface cables.

If you are updating a *dCS* DAC connected to the Transport through another device:
do this: Connect an AES or RCA digital output from the other device to the DAC and select the input you have just connected. Set the other device to bit-for-bit mode (Cloning on a *dCS* Upsampler). Disconnect any **1394** interface cables.
If in doubt, connect the DAC directly to the transport.

If you are updating a *dCS Verona*:
do this: Disconnect ALL cables from the unit, except the power cable. Open the Menu on the unit to be updated and step through until the display shows **CDUpdate**.
do this: Make sure the transport is in **STOP** mode.
do this: Press the Select button to start the routine.
do this: When the unit displays **Cable**, connect a BNC cable from the **Ext Ref In**put to a BNC SPDIF digital output on the transport. The unit will lock to the transport, then display **Wait**.

If you are updating a *dCS* Transport, the Transport plays the CD and updates itself, missing out some of the early steps. Disconnect any **1394** interface cables.

For all *dCS* units:
do this: **RELAX!** The update procedure is easy.
do this: Mute your power amplifier.
do this: Insert a *dCS* CD (containing software for the unit you want to update) into the transport, making sure it is in **STOP** mode.
do this: Open the Menu on the unit to be updated and step through until the display shows **CDUpdate**.
do this: Press the Select button to start the routine.

The unit will display **Wait** while it prepares the flash memory for the update. After 3-4 minutes, the unit will scroll **Please Start CD**.

do this: Press **PLAY**.

IMPORTANT!   *Do not press **PLAY** before the unit to be updated is ready. This can cause the download to fail. Use only **dCS** CDs.*

The unit will now inspect the CD, and will display **Scanning**, while it reads administrative data.

If there is anything wrong with the *dCS* CD that has been loaded or it does not match the product, the unit will display **Wrong!** or **Wrong CD** or **No Index** and revert to normal operation. Don't worry – the internal software is unchanged. Check the CD for dust or scratches.

If it is not a *dCS* CD at all, the unit will keep repeating **Please Start CD**, for about 30 seconds or display **Wrong CD** and then revert to normal operation.

If the data is correct, the unit will display **Track n**, where n is a number.

do this: You can move the Transport on to track n, or wait for it to get there of its own accord.

If the unit has to wait for the right track, it will display **Found Track 1**, then **Found Track 2**, etc, until it finds the right one. **Vx.xx** will appear on the display (this is the new software issue number). If the unit displays **No Track**, repeat the procedure but manually advance the transport to track n.

Next, the update progress is displayed in one of the following formats:

- The display counts up from **0% 0/7** to **99% 0/7**, displays **Copying**, counts up from **0% 1/7** to **99% 1/7**, displays **Copying** and so on until the last section is loaded and copied. Some models may use less than 8 sections.
- A moving dot counts down slowly from about **3** to **0**.

After about 15 minutes, the update is complete and the unit will reboot itself.

do this: If the CD is still playing, you can stop it now.
do this: If the unit being updated has a 1394 interface, wait until the unit has settled (about 30 seconds), switch it off for 10 seconds, then on again.

If the unit detects no change in the 1394 interface code, it will boot up as usual and be ready for use.

If the 1394 interface code has been updated, the unit will load the new code into the flash memory on the 1394 interface board – **this takes about 10 minutes**. While this is taking place, the unit will display a progress bar. Next the unit will display in sequence: **Done 5**, **Done 4**, …, **Done 1** then reboot itself again.

The unit is ready for use.

OOPS!   *If the CD transport stops or becomes disconnected during an update, don't worry! The original software is backed up inside the unit. Proceed as follows:*

The checking routine will find a sequencing error and **Non Seq** or **Bad CD!** will appear on the display.

do this: Turn the power off and on to reboot. This message will scroll across the display:
          Bad CheckSum – Press Function button to attempt recovery
or   **Bad CheckSum – Press Mute button to attempt recovery**
or   **Bad CheckSum – Press Menu button to attempt recovery,**

depending on the model.

do this: Press the appropriate button once.

The original software is retrieved from the internal backup while displaying **Wait...** . This may take a few minutes. When recovery is complete, the unit re-boots.

do this: Run the CD Update routine again to load the new software.

Factory **– Restoring Factory Defaults**

This feature sets most of the parameters back to the factory default settings. This can be useful if the settings are accidentally changed and you need to reset the unit to a standard configuration, or your children play with it.

do this: Open the Menu and step through until the display shows **Factory**.

do this: Press the **Select** button and leave the menu to time out.

After re-booting, the unit will return to normal operation set up as follows:

- Transmit to Active
- Brightness to Bright 4
- 1394ID to 0
- Timeout to Normal
- FavLayer to SACD
- SessTime to 0

THE HARDWARE – CONTROLS AND CONNECTORS

Front Panel
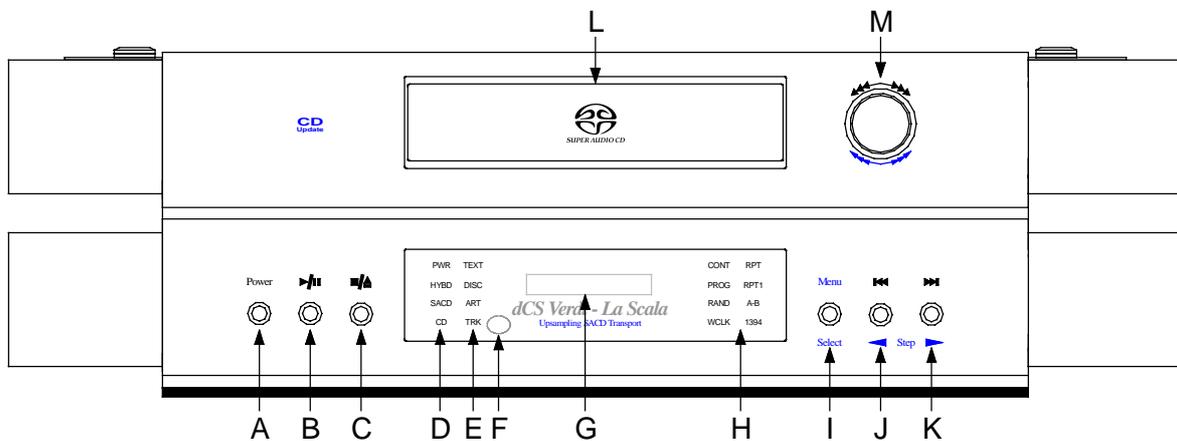
Figure 4 – *dCS La Scala* Front Panel

Key to Front Panel

A	**Power** / Standby button
B	**Play / Pause** button
C	**Stop / Eject** button
D	**Status** indicator
E	**Display mode** indicator
F	Remote Control sensor
G	**Main Display**
H	**Mode** indicator
I	**Menu** or **Select** button
J	**Previous Track** / **Fast Reverse** or Menu **Step Back** button
K	**Next Track** / **Fast Forward** or Menu **Step** button
L	SACD/CD tray
M	Rotary control

Power Button

This button doubles as a power on / off switch and a standby mode switch.

do this: To switch on, press the **Power** button briefly. If power is available, the **PWR** indicator will light and *La Scala* will run through the power up routine.

Note that the **Power** button will not click when turning power on – this is normal.

do this: When you have finished listening, press the **Power** button briefly to set the unit to standby mode.

The outputs will mute, all displays will turn off except the **PWR** indicator. In this mode, *La Scala* uses little power. If power is switched off or fails, Standby mode is cancelled.

do this: To restore normal operation, press the **Power** button briefly again.

La Scala will power up ready for use.

do this: To switch off completely, press the **Power** button and hold it for a few seconds until the **Main Display** shows **Power Dn**, then release it.

Play / Pause Button ▶ / ‖

do this: With a disc loaded, press this button to start it playing. Press it to pause and press again to resume playing.

Stop / Eject Button ■ / ▲

do this: With a disc playing, press this button to stop playing. Press again to open or close the CD tray and change the disc.

Status Indicator

This consists of 4 indicators:

- **PWR** is lit when power is connected and the unit is turned on or is in standby mode.
- **HYBD** is lit when the unit detects that a hybrid SACD / CD is loaded.
- **SACD** is lit when the unit detects that a SACD is loaded, or that a hybrid disc is loaded and the unit is set to SACD mode.
- **CD** is lit when the unit detects that an ordinary CD is loaded, or that a hybrid disc is loaded and the unit is set to CD mode.

Display Mode Indicator

This consists of 4 indicators:

- **TEXT** is lit while text from the disc is displayed.
- **DISC** is lit while the disc title is displayed.
- **ART** is lit while the artist's name is displayed.
- **TRK** is lit while the track title is displayed.

Remote Control Sensor

Point the end of the **Remote Control** unit towards the sensor for best control range.

Main Display

The main display tells you what *La Scala* is doing.

After pressing **Eject**, the display will show **Opening**, then **Open**. While the tray is closing the display will show **Loading**.

While playing a disc, use the **Display** button on the Remote Control to display either:
- the track number and the elapsed time of the current track.
- the track name, if you are playing an SACD with Text Data.
- the track number and the remaining time for the current track.
- the remaining time on the disc.

While a disc is loaded but not playing, you can choose to display either:
- the total tracks and run time for the disc.
- the disc title, if you are playing an SACD with Text Data.
- the artist's name, if you are playing an SACD with Text Data.

When accessing the Menu (see page **18**), menu options are displayed here.

If an error occurs during power up or normal use, the details of the fault will be displayed. See "Fault Indication" on page **58**.

Mode Indicator

The upper block of 6 indicators shows which play mode has been selected from the Remote Control:

- **CONT** - In Continuous mode, the unit plays the disc from the beginning to the end.
- **PROG** – In Program mode, the unit is being set up with a program or is playing a programmed sequence of tracks.
- **RAND** – The unit plays all the tracks on the disc in a Random order, then stops.
- **REPT** – The unit is repeating the whole disc or the programmed sequence.
- **RPT1** – The unit is repeating the current track.
- **A-B** – The unit is repeating the specified part of the current track or disc.

When a 44.1kHz Wordclock is connected to **Wordclock In**, *La Scala* automatically slaves to it. The **WCLK** indicator flashes while the unit is locking then remains on while locked. It will ignore wordclocks at frequencies other than 44.1kHz.

When playing an SACD, the IEEE **1394** interface is active and the **1394** indicator lights up.

Menu Button   (Select)

Press the **Menu** button to open the Menu (see page **18**) and change or **Select** settings in the menu.

Previous Track Button   ◄◄   (Step Back)

Next Track Button   ►►   (Step)

Press the **Previous Track** button briefly to skip to the previous track. Hold down the **Previous Track** button to fast reverse through the current track.

Press the **Next Track** button briefly to skip to the next track. Hold down the **Next Track** button to fast forward through the current track.

When the Menu is open, these two buttons are used for paging backwards and forwards through the Menu (see page **18**).

CD Tray

When the tray is open, a gentle push will close it.

If the tray is open when the unit is on and you press the **Power** button, the tray will close automatically before the unit enters standby mode or powers down.

Rotary Control

While the disc is stopped, turn the **Rotary Control** clockwise to skip to a later track or anti-clockwise to skip to an earlier track.
While the disc is playing, turn the **Rotary Control** clockwise to fast forward through the track or anti-clockwise to fast reverse.
While the Menu is open, use the **Rotary Control** to page forwards and backwards through the menu.

Rear Panel
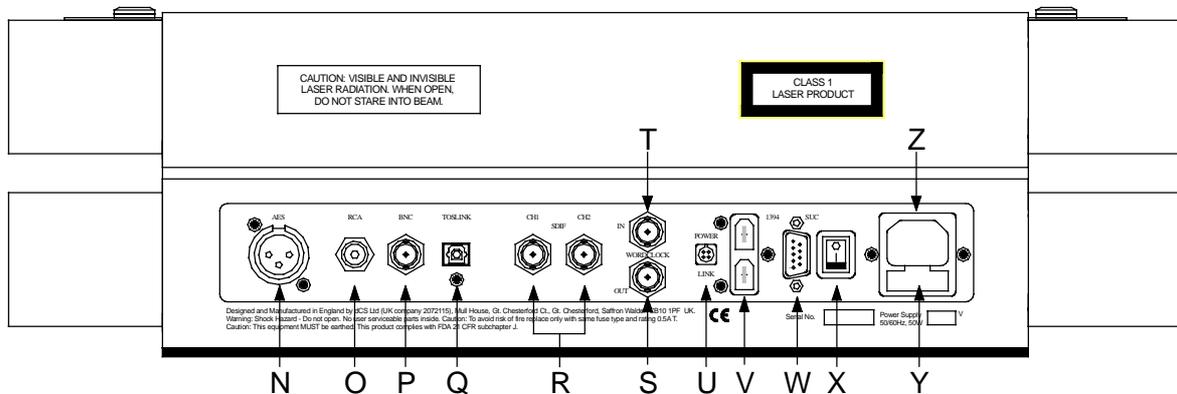
Figure 5 – *dCS La Scala* Rear Panel

Key to Rear Panel

N	**AES**/EBU digital output on XLR male connector
O & P	SPDIF digital outputs on **RCA** & **BNC** connectors
Q	SPDIF optical output on **TOSLINK** connector
R	**SDIF** interface on 2 BNC connectors
S	**Wordclock** digital **Out**put
T	**Wordclock** digital **In**put
U	**Power Link** connector
V	IEEE **1394** interface on two 6-way connectors
W	**S**oftware **U**pgrade **C**onnector, 9-way 'D' type
X	Power switch
Y	Mains fuse holder
Z	IEC **Power** inlet

AES/EBU Digital Output

The **AES 1** output carries AES/EBU digital signals, sampled at 44.1kS/s. The data format is AES3. Data from SACDs is also available, down-sampled to 16 bit / 44.1kS/s.

Use with 110 ohm screened, twisted pair cable designed for digital audio or RF. Unscreened cables must not be used as they may pick up interference from other appliances.

SPDIF Digital Outputs

The SPDIF outputs (**RCA** or **BNC**) carry identical digital signals, sampled at 44.1kS/s. The data format is IEC60958, otherwise known as SPDIF. Data from SACDs is also available, down-sampled to 16 bit / 44.1kS/s. RCA connectors are the type commonly found on consumer equipment.

Use with 75 ohm co-axial cables designed for digital audio or RF use. Some types of audio cable are not suitable and may cause crackling noises or other malfunctions.

IMPORTANT!   *If the Copy Prohibit flag in the source data on the disc is set, you will not be able to record the data from the SPDIF outputs.*

SPDIF Optical Output

The optical output carries optically transmitted digital signals, sampled at 44.1kS/s. The data format is IEC60958, otherwise known as SPDIF. Data from SACDs is also available, down-sampled to 16 bit / 44.1kS/s.

Use the **Toslink** output with Toslink fibre optic cables designed for digital audio use. Pull off the plastic cover before use.

SDIF Interface

This consists of two data outputs, **CH1** & **CH2** and the **Wordclock Out**, all on BNC sockets. The interface carries digital signals, sampled at 44.1kS/s. The data format is SDIF-2. Data from SACDs is also available, down-sampled to 16 bit / 44.1kS/s.

Connect up the three BNC sockets with 75Ω co-axial cables designed for digital audio or RF use. A.C. coupled cables are not suitable.

IMPORTANT!

Please ensure the 3 cables are correctly connected to the DAC (or other destination equipment), otherwise the interface may malfunction or the channels may be swapped.

When playing a disc, **Wordclock Out** carries a 44.1kHz Wordclock.

Wordclock Digital Input

Wordclock In accepts a 44.1kHz Wordclock. It allows *La Scala* and the rest of your system to be synchronised to a master clock. This arrangement helps reduce jitter, which can degrade the audio output. When a 44.1kHz Wordclock is connected, *La Scala* will automatically slave to it. The **WClk** indicator will flash while locking and stay on while *La Scala* is locked.

There is no data on the wordclock interface. Use with 75 ohm co-axial cables designed for digital audio or RF use. A.C. coupled cables are not suitable.

1394 Interface

All units feature an IEEE **1394** multi-channel interface, available on two 6-way 1394 connectors. If there are more than eight 1394 sources in the chain, *La Scala* can be made inactive using the Transmit menu item, see page **20**.

In this release, the unit generates DSD data at 2.822MS/s from either **1394** connector. For correct operation, the DAC must be locked to the 44.1kHz signal on *La Scala*'s **Wordclock Out** connector (or the system must be locked to a master clock running at 44.1kHz). We recommend using the 1.8 metre long, 6-way IEEE 1394 cable assembly and the BNC cable assembly provided. The **1394** indicator lights when the interface is active. See "IEEE 1394 Overview" on page **42** for more information.

IMPORTANT!

Do not connect both **1394** *outputs to the same DAC or other destination equipment - the interface system will be stuck in an endless loop and will not work.*

Power Link

This can be linked to similar connectors on other *dCS* units using a link cable. All units linked in this way may be turned on or off or set to standby by pressing a single **Power** button or sending one Remote Control command. Link cables are available from *dCS*.

SUC

The Software Upgrade Connector is intended to be used by *dCS* service agents to load new software into *La Scala*.

IMPORTANT!

Do not connect any other equipment to the SUC connector as this may damage both **La Scala** *and the equipment so connected. Do not operate* **La Scala** *with a PC connected. Failure to observe this warning will void the unit's warranty, and may cause unpleasant effects in your system.*

Power switch

The Power switch completely isolates the unit from the power supply. In normal use, set it to the On position (**I**). Set it to Off (**0**) during electrical storms, or while you are away for a long period.

IEC Power Inlet

Use with a 3 - pin IEC type power cable.

Mains Fuse

Replace only with a 20 x 5mm 500mA T HRC fuse. Please see page **52** for replacement details.

Additional Information

The rear panel displays the following information about the unit:

- The manufacturer's name and address.
- Supply voltage setting, frequency range and rated power.
- Model: *dCS La Scala*
- The short form of the unit serial number.

We will need the serial number (preferably the full serial number from the menu) to give you support over the phone, or to ship you software updates.

Remote Control

The Remote Control unit supplied with *dCS Verdi* and *La Scala* also allows control of some features on *dCS Elgar Plus* or *Delius* DACs and the *Purcell* Upsampler. These buttons are identified by blue text or symbols on the Remote Control unit.
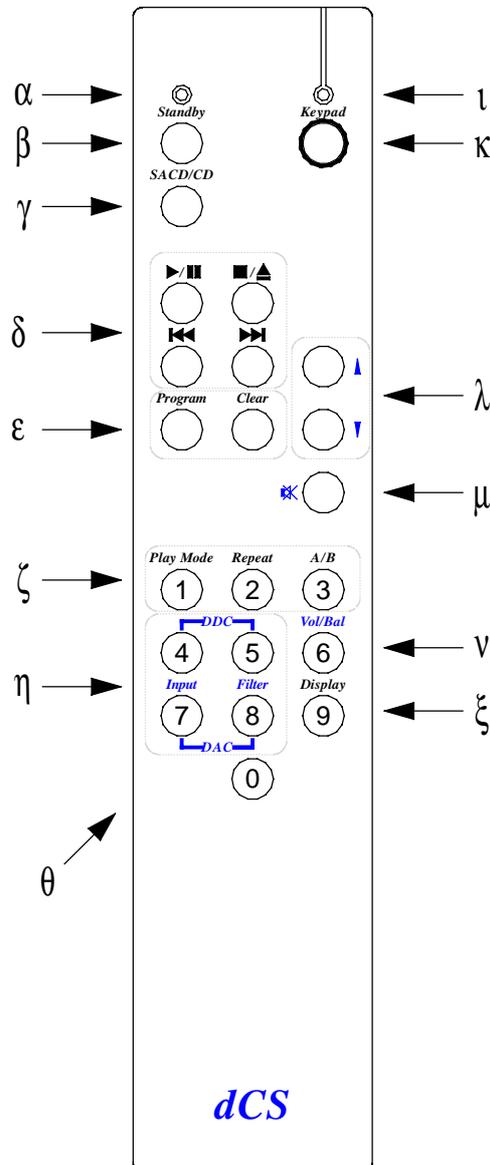
Figure 6 – Transport Remote Control

Blue LED

(α) The blue LED flashes briefly when the remote control sends a DAC or DDC command.

Standby button

(β) Pressing the **Standby** button normally sets *La Scala* to standby mode. Press again to restore normal operation.

If you press the **Standby** button while the white LED (ι) is lit, all *dCS* units in range of the remote control will be toggled in or out of standby mode.

SACD/CD button

(γ) While playing a hybrid disc, press this button to select either the **SACD** layer or the standard **CD** layer. The layer selected will be displayed on the **Status** indicator. If the disc is not a hybrid disc, this button has no effect.

Transport controls

(δ) The **Play/Pause**, **Stop/Eject**, **Previous Track** and **Next Track** buttons control the transport in the same way as the buttons on the front panel.

While the white LED (ι) is lit, the **Previous Track** and **Next Track** buttons skip to the previous or next track index, if the disc being played has indexing.

Program and Clear buttons

(ε) These two buttons are used to set up or change a sequence of tracks.

do this: Press the **Program** button to enter **PROG** mode, then enter the first track number on the **0-9** buttons (e.g. **05**) while the white LED (ι) is lit. Repeat this to program more tracks, up to a maximum of 31.

do this: To delete the last track in the sequence, press the **Clear** button.

For more details, see "Track Selection" on page **14**.

Mode control buttons

do this: (ζ) Press the **Play Mode** button repeatedly to cycle through the 3 modes:
- **Continue** – plays the whole disc in a continuous sequence then stops. The **CONT** indicator is lit.
- **Program** – plays the programmed sequence of tracks then stops. The **PROG** indicator is lit.
- **Shuffle** – plays all the tracks on the disc in a random sequence then stops. The **RAND** indicator is lit.

do this: Press the **Repeat** button repeatedly to cycle through the 3 modes:
- **Rept All** - repeats the whole disc, depending on the **Play Mode**. In **Continuous** mode, the whole disc is repeated from start to finish. In **Program mode**, the programmed sequence is repeated. In **Shuffle** mode, the whole disc is replayed in a different random sequence.
- **Rept Trk** – repeats the current track, even if it is already playing.
- **Rept Off** – returns to normal playing mode.

do this: To select part of a track to repeat, play the track through until you reach the start point. Press the **A-B** button, the display will show (for example) **AB 0:20** with the **B** flashing. When you reach the end point (for example, 10 seconds later), press the **A-B** button again. The **B** will stop flashing, the unit will skip back to the start point then continuously repeat the section up to stop point. You can select new start and stop points by pressing the **A-B** button at the new start point and again at the new stop point.

Input and **Filter** buttons

(η) This group of buttons change the selected **Input** and **Filter** settings for *dCS* DDCs (buttons **4** and **5**) or *dCS* DACs (buttons **7** & **8**), if either of these are used in your system. They do not affect *La Scala*. Press the button repeatedly to cycle through the options.

0 – 9 buttons

(θ) The ten numbered buttons form the numeric keypad, used to enter track numbers while the white LED is lit. Most of these buttons have other functions. To set the Remote Control in keypad mode, either:

- press the **Keypad** button,
- press the **0** button or
- hold down one of the **1-9** buttons until the white LED lights.

The white LED goes out after 5 seconds, returning the Remote Control to normal operation. Pressing a number button while the white LED is lit keeps the white LED on for another 5 seconds.

White LED

(ι) The white LED lights to indicate that the numeric keypad and some alternative functions are active.

Keypad button

(κ) The **Keypad** button toggles the Remote Control in and out of keypad mode.

Up/Down buttons

Vol/Bal button

(λ) Use the **Up/Down** buttons to alter the Volume setting of a *dCS* DAC.

(ν) Pressing the **Vol/Bal** button puts a *dCS* DAC in Balance mode – use the **Up/Down** buttons to adjust the Balance. Balance mode times out after 5 seconds if no adjustment is made.

These buttons do not affect *La Scala*.

Mute button

(μ) Press the **Mute** button to mute or un-mute a *dCS* DAC. This button does not affect *La Scala*.

Display button

(ξ) Press the **Display** button to cycle through the display options:

- disc title (discs with disc text only),
- artist's name (discs with disc text only),
- track number and elapsed time.

The display mode indicators show what is being displayed.

LA SCALA TECHNICAL INFORMATION

Mechanism

Dual laser, 2 channel, SACD/CD compatible
Vibration absorbing elastomer suspension
Drawer type loader

Digital Interface Specifications

IEEE 1394	I/O	
Type	200Mbit	
Data format	*dCS* Encrypted DSD	
Connectors	6-way x 2	

Table 1 – IEEE 1394 Interface Electrical Characteristics

AES/EBU (AES3)		Output	
Type		Balanced, differential	
Impedance		110	Ω
Level (unloaded)		7	V pk-pk
Connector		XLR3 male x 3	
Connections	Pin 1	Ground or shield	
	Pin 2	+Signal	
	Pin 3	-Signal	

Table 2 – AES/EBU Interface Electrical Characteristics

SPDIF (electrical)	Output	
Type	Single ended, ground referred	
Impedance	75	Ω
Level (unloaded)	1.0	V pk-pk
Connector	RCA Phono or BNC	

Table 3 – SPDIF Interface Electrical Characteristics

SPDIF (optical)	Toslink Output	
Type	Optical	
Wavelength	660	nm
Connector	Toslink EIAJ CP-340	

Table 4 – Optical Interfaces Electrical Characteristics

SDIF-2 / Wordclock	WClk Input	Outputs	
Type	Single ended, ground referred		
Impedance	100	25	Ω
Level (unloaded)	TTL	TTL	
Connector	BNC	BNC x 3	

Table 5 – SDIF / Wordclock Interface Electrical Characteristics

Sample Rates

2.822MS/s DSD on the IEEE **1394** interface, upsampled when playing a standard CD. Use with a 44.1kHz wordclock.
16 bit / 44.1kS/s on **AES, RCA, BNC, Toslink** and **SDIF**-2 interfaces, downsampled when playing an SACD.
The Wordclock interface generates / accepts a 44.1kHz wordclock.

Clocking

The sample clock quality significantly determines the output performance of the unit. The highest quality clocks that are available are crystals, so we use these. *La Scala* uses on-board voltage controlled crystal oscillators (VCXO's) as clock sources. In master mode, this clocks the outputs and controls the mechanism.

When slaving to **Wordclock In**, the VCXO is synchronised to the clock signal extracted from the input by a phase locked loop (PLL). This PLL is of a special narrow bandwidth type, that provides a significant degree of "clock cleaning". The PLL is also very robust, and will lock to very poor signals if necessary.

Accuracy   Typically ± 3 parts per million at time of shipping

Synchronising to Wordclock In

The unit will slave to a 44.1kHz Wordclock on the **Wordclock In** connector.

Pull-in range   ± 300 parts per million about nominal frequency
Lock-in time   < 6 seconds for most situations

Power requirements

Units may be set for 100, 115/120, 200, 215/220 or 230/240V (+/-10%), 50/60Hz AC operation.

	Typical power consumption	**Maximum power consumption**
Purcell & *Verona*	16W	20W
Delius	21W	25W
Elgar Plus	34W	40W
Verdi & *La Scala*	25W	50W

Table 6 – Power consumption for consumer products

Size and Weight

	Length	**Depth**	**Height**	**Weight**
Purcell & *Verona*	461mm (18.15")	413mm (16.18")	69mm (2.70")	8.5kg (18.7lbs)
Delius	461mm (18.15")	413mm (16.18")*	69mm (2.70")	8.8kg (19.4lbs)
Elgar Plus	461mm (18.15")	406mm (16.0")	75mm (2.94")	12.0kg (26.4lbs)
Verdi & *La Scala*	461mm (18.15")	415mm (16.34")**	137mm (5.39")	17kg (37.4lbs)

Table 7 – Size and weight for consumer products

- **Delius* only: the control knob protrudes out of the front by 20mm (0.79").
- ***Verdi* & *La Scala* only: the control knob protrudes out of the front by 13mm (0.51").
- Allow extra depth for cable connectors.

Operating Conditions

- Ambient temperature range: 0°C (32°F) to 50°C (122°F), non-condensing.
- Do not install the unit near heat sources such as radiators, air ducts, power amplifiers or direct strong sunlight.
- If in doubt, the easy test is - *La Scala* is happy to work anywhere a human is.

GENERAL TECHNICAL INFORMATION

IEEE 1394 Overview

The IEEE 1394 interface is a high speed multi-channel system. It has the capacity to carry over 50 channels of DSD (Direct Stream Digital) or over 30 channels of 24 bit / 192kS/s audio data through a single cable.

From October 2001 onwards, a pair of 6-way electrical IEEE 1394 interfaces running at 200Mbit/s are available on the following *dCS* products:

- *dCS Elgar Plus* DAC, standard fit with software version 4.10 or later.
- *dCS Delius* DAC, optional fit with software version 2.10 or later.
- *dCS Purcell* Upsampler, optional fit with software version 2.11 or later.
- *dCS Verdi* SACD/CD Transport, standard fit.
- *dCS Verdi La Scala* Upsampling SACD/CD Transport, standard fit.

In the current implementation, *Purcell* can upsample standard digital formats (such as CD at 44.1kS/s 16 bits) to DSD at 2.822MS/s and output a stereo pair of DSD data onto its 1394 interface. *Verdi* can read DSD data from an SACD and output a stereo pair of DSD data onto its 1394 interface. The data is encrypted to conform to the conditions of the DSD licensing arrangements. Either *Elgar Plus* or *Delius* will accept DSD data from the 1394 interface and convert it to high quality analogue.

The hardware interface is very flexible and software configurable. We will add other features and data formats at a later date, adopting industry standard formats as they stabilise.

Synchronising IEEE 1394 interfaces

The IEEE 1394 system is great for carrying large amounts or digital audio data – but is inherently very jittery. To ensure low-jitter conversion to analogue, each unit linked by the 1394 system must be synchronised to the others by another connection.

- A DAC in slave mode should be sync'ed to *Verdi* by connecting *Verdi*'s **WClk Out** to the DAC's **WClk In**.
- A DAC in master mode should sync *Verdi* by connecting the DAC's **WClk Out** to *Verdi*'s **WClk In**.
- An Upsampler should be slaved to *Verdi*, usually by the selected PCM input (**AES** or **RCA**).

Automatic Input Selection

From October 2002 onwards, the software on the following products has been enhanced to automatically select the interface carrying data from *Verdi*:

- *dCS Elgar Plus* DAC, standard fit with software version 4.20 or later.
- *dCS Delius* DAC, optional fit with software version 2.20 or later.
- *dCS Verdi* SACD/CD Transport, standard fit with software version 1.20 or later.
- *dCS Verdi La Scala* Upsampling SACD/CD Transport, standard fit, with the Easy Play menu set to Verdi.

The system relies on a 1394 link between *Verdi* and the DAC. The DAC will automatically change inputs whenever *Verdi* changes layer or starts playing.

If the *Verdi* starts playing an SACD, the DAC selects that 1394 channel.

If the *Verdi* starts playing a CD and:

- there is a second source on the 1394 bus (such as a *Purcell*), the DAC will select the other source.
- there are more than two other sources on the 1394 bus (such as a *Purcell* or another *Verdi*), the DAC will select one of the other sources. You may have to manually select the source you want.
- *Verdi* is the only source on the 1394 bus, the DAC will scan the PCM inputs and select the first active one it finds. The priority order is: **AES1** (and **Dual AES**) first, **AES2**, **RCA1**, **RCA2**, **TOS**, **ST**, **BNC**. If the active input is not derived from *Verdi*, you may have to manually select the source you want. If none of the PCM inputs are active, the DAC will remain selected to the original 1394 channel.

This arrangement works best with only two inputs connected to the DAC – *Verdi*'s 1394 feed for SACD's and either a PCM feed from *Verdi* or an upsampled feed from *Verdi*. The DAC can be in master or slave mode – we recommend master mode.

If you are using a *Purcell* in Dual AES mode (rather than DSD mode), you should set the DAC's Dual AES menu page to either Lock or Auto.

The DAC has enough information about the system set-up to report connection and setting errors. These are:

- **Verdi Wordclock Missing**
- **Please Check Source Slaved to Delius / Elgar Plus Wordclock Out**
- **Missing Wordclock between ClkOut and Verdi Clk In**
- **Wrong Fs @ Verdi Clk In**

dCS IR Remote Control Codes

This section gives details of the Remote Control codes generated by *dCS* IR Remote Control units, for use with programmable remote controls. All *dCS* Remote Control units use the RC5 system and a carrier frequency of 37.9kHz. For more information on the use of *dCS* Remote Control units, please refer to the manual for that unit.

IMPORTANT!

*Please note that **dCS** cannot accept responsibility for any difficulties experienced with other manufacturer's remote control units.*

Upsampler

For *Purcell*, the category code is **29** (decimal).

These Upsampler codes are in use on the *Elgar Plus / Delius* Remote v2.0 and Transport Remote v2.0.

Button Code		*Purcell*
Decimal	**Hexadecimal**	**RC button**
1	01	RCA1 / RCA2
3	03	AES1 / AES2
6	06	BNC
7	07	Display
12	0C	Standby
14	0E	Filter
16	10	(up)
17	11	(down)
26	1A	Function
27	1B	Input
32	20	32kS/s out
33	21	44.1kS/s out
34	22	48kS/s out
35	23	88.2kS/s out
36	24	96kS/s out
37	25	176.4kS/s out
38	26	192kS/s out
39	27	DSD/1394 out
41	29	Standby ON
42	2A	Standby OFF
43	2B	Power OFF
44	2C	Filter 1
45	2D	Filter 2
46	2E	Filter 3
47	2F	Filter 4

DACs

For all DACs, the category code is **13** (decimal).

These DAC codes up to decimal 27 are in use on the *Elgar Plus / Delius* Remote v2.0, Transport Remote v2.0 and *Elgar* Remote v1.0. *Elgar Plus* v4.20 or later and *Delius* v2.20 or later will respond to codes over decimal 27.

Button or Function Code		*Elgar Plus / Delius*	*Elgar*
Decimal	**Hexadecimal**	**RC function**	**RC button**
1	01	RCA1	Coax1
2	02	-	Opt2
3	03	AES1	AES1
4	04	AES2	AES2
5	05	-	Opt1
6	06	BNC	Coax2
7	07	Display	Display
8	08	Vol/Bal	Vol/Bal
9	09	Phase	Phase
12	0C	Standby	Standby
13	0D	Mute	Mute
14	0E	Filter	Filter
15	0F	RCA2	-
16	10	(up)	(up)
17	11	(down)	(down)
26	1A	Function	-
27	1B	Input	Input
32	20	Dual AES	-
33	21	SDIF	-
34	22	1394 CH 0	-
35	23	1394 CH 1	-
36	24	1394 CH 2	-
37	25	1394 CH 3	-
38	26	1394 CH 4	-
39	27	Mute On	-
40	28	Mute Off	-
41	29	Standby On	-
42	2A	Standby Off	-
43	2B	Power Off	-
44	2C	Filter 1	-
45	2D	Filter 2	-
46	2E	Filter 3	-
47	2F	Filter 4	-
48	30	Filter 5	-
49	31	Filter 6	-
50	32	Master	-
51	33	Slave	-

Transports

For *Verdi* & *La Scala*, the category code is **20** (decimal).

These Transport codes are in use on the Transport Remote v2.0.

| Button Code | | *Verdi* |
Decimal	Hexadecimal	RC button
0	00	Keypad 0/10
1	01	Keypad 1
2	02	Keypad 2
3	03	Keypad 3
4	04	Keypad 4
5	05	Keypad 5
6	06	Keypad 6
7	07	Keypad 7
8	08	Keypad 8
9	09	Keypad 9
10	0A	Standby ON
11	0B	Standby OFF
12	0C	Standby (toggle)
15	0F	Display
25	19	Stop Rewind
26	1A	Stop Fast Forward
29	1D	Repeat
32	20	Next Track
33	21	Previous Track
34	22	Next Index
35	23	Previous Index
36	24	Play Mode
41	29	Program
43	2B	Fast Forward
50	32	Rewind
53	35	Play
54	36	Stop/Eject
55	37	Power OFF [5]
58	3A	Clear
59	3B	A/B
60	3C	SACD/CD
61	3D	Select CD layer
62	3E	Select SACD layer

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[5] The Power Off code was 63 decimal in *Verdi* v1.20 – 1.25. Some Pronto units were found to send code 20-63 for no apparent reason, so we changed the code to 55 decimal.

USING YOUR *dCS LA SCALA* FOR THE FIRST TIME

Thank you for purchasing this *dCS La Scala*. Before attempting to use your *La Scala*, please read at least the rest of this section and the "Step-by-Step Guide" on page **10.** This will enable you to set the unit up quickly with your hi-fi system.

What's in the Box?

The box should contain the following:

- *dCS La Scala*
- User Manual
- Control Summary
- Power Cable
- Spare Fuses (2)
- Remote Control unit
- Remote Control guide
- 3 x AAA batteries
- 1 pt Pozidriv screwdriver (for fitting the Remote Control unit batteries)
- IEEE 1394 cable assembly
- BNC cable
- 2.5mm hex key (for removing the transit screws)
- Top glass plate
- 4 x bolts and plastic washers (for fitting the top glass plate)
- 4mm hex key (for fitting the top glass plate)

IMPORTANT!

*To reduce the risk of transit damage, the mechanism is clamped with 4 transit screws before shipping. These MUST be removed before use. See page **53** or the "**Read This Before Using Your dCS Verdi!**" sheet for details. Also, the top glass plate should be fitted before use. (Your dealer may have done this for you.)*

IMPORTANT!

*For safety reasons, the Remote Control is shipped with the batteries packed separately. For fitting details, see page **55**.*

Check the contents of the inner carton very carefully against the list above. Notify your dealer as soon as possible if anything is missing or damaged. *dCS* suggest that all of the original packaging is retained for use when transporting any units. Replacement packaging can be ordered from *dCS* or our distributors.

Safety Notice

La Scala contains no user serviceable parts. Do not attempt to open the case as there are potentially dangerous voltages present inside. In the event of the unit developing a fault, please consult your dealer.

IMPORTANT!

This equipment MUST be connected to a safety earth (or ground) via the power cable.

Mains Voltage Setting

Before connecting the power cable to your *La Scala* for the first time, please check that it has been set to the correct operating voltage for your local mains supply. 50Hz or 60Hz operation is not important – the unit can use either. The unit's present voltage setting is shown on the label beneath the mains inlet on the rear panel. If this does not match your local supply voltage, DO NOT attempt to use the unit. Contact your dealer to arrange to have the unit reset. Using the *La Scala* with the wrong mains setting for your local supply may result in serious damage to the unit and will invalidate the warranty. DO NOT attempt to reset the unit yourself.

IMPORTANT!

Please use a sensible power cable, such as the one supplied with the unit. Some audiophile power cables presently available are excessively heavy, their weight can damage the power inlet connector. Such damage is not covered by the warranty.

Positioning the Unit

Place *La Scala* on a firm, vibration free base so as to allow convenient connection to the other parts of your other system. We suggest that you avoid siting *La Scala* either directly above or below preamplifiers or tuners, if either of these will be used in your system at the same time as *La Scala*.

OPTIONS

The following options may be fitted to new units or retrofitted at a later date.

Option code	Option
V5	Mains voltage set to 230/240V
V4	Mains voltage set to 215/220V
V3	Mains voltage set to 200V
V2	Mains voltage set to 115/120V
V1	Mains voltage set to 100V

Table 8 – Options available

Mains Supply Voltage

Any unit may be set for operation from 230/240V, 215/220V, 200V, 115/120V or 100V A.C. Units are shipped set for the mains supply voltage according to the destination. The voltage setting can be updated later by your dealer, if necessary. Specify the new country of use or the new voltage setting.

Having Your Options Changed

dCS support modifications, updates and option changes to supplied units. Major changes are normally carried out at *dCS,* as we have extensive test facilities and can verify the changes. Please contact your dealer for details.

IMPORTANT!

Please do not attempt the changes yourself. The unit's performance or reliability may be impaired and the warranty will be invalidated.

MAINTENANCE AND SUPPORT

Service & Maintenance

dCS audio products are designed not to need regular maintenance, and contain no user serviceable parts apart from the mains fuse.

Obtaining Service

If you experience problems with your *La Scala*, you should check the "Troubleshooting" section on page **58**. You may be able to resolve the situation yourself (for example, by changing a menu setting).

If this does not resolve the problem, contact your authorised *dCS* dealer for advice, quoting the model, the full serial number (see Serial on page **23**), the software version number (see Issue on page **23**) and giving a detailed description of the fault. If further action is necessary, your dealer will advise you fully.

Mains Fuse

There is a mains fuse below the power inlet, accessible from the outside of the unit. If the fuse blows, it may be changed by the user. The current consumption of the unit is very low, so it only blows if power surges occur, or there is a fault in the unit. Usually, power surges cause no other damage, but if the fuse blows repeatedly on replacement, some other damage will have been done and the unit must be returned to *dCS* for repair.

Fuse Type: 20 x 5mm 0.5 amp T HRC fuse

IMPORTANT!

If the fuse should fail, it is essential that it be replaced with one of the same type and rating. Failure to do so could result in damage to the unit, risk of fire or electric shock and will invalidate the guarantee.

Replacing a Blown Fuse

Referring to **Figure 7**, remove the power cable, use a small flat bladed screwdriver to pry up the tab on the fuse carrier (A) and pull it out. Push the blown fuse out of the clip in the carrier (B) and dispose of it. Fit a new fuse in the clip (C) and push the carrier back into the unit so that it clicks home. Spare fuses are provided with the unit.
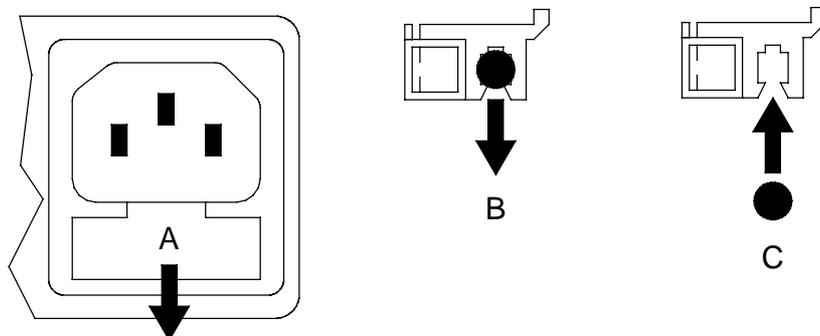
Figure 7 – Changing the Mains Fuse

IMPORTANT!

Disconnect the power cable before changing the fuse.

Removing the Transit Screws

The transit screws clamp the mechanism to reduce the risk of shipping damage. They must be removed before the unit is used.

do this: Lift the unit out of the packaging and place it on a table top. Remove the rubber mat from the top of the unit. Identify the four transit screws from the drawing below – they are coloured red for easy identification.
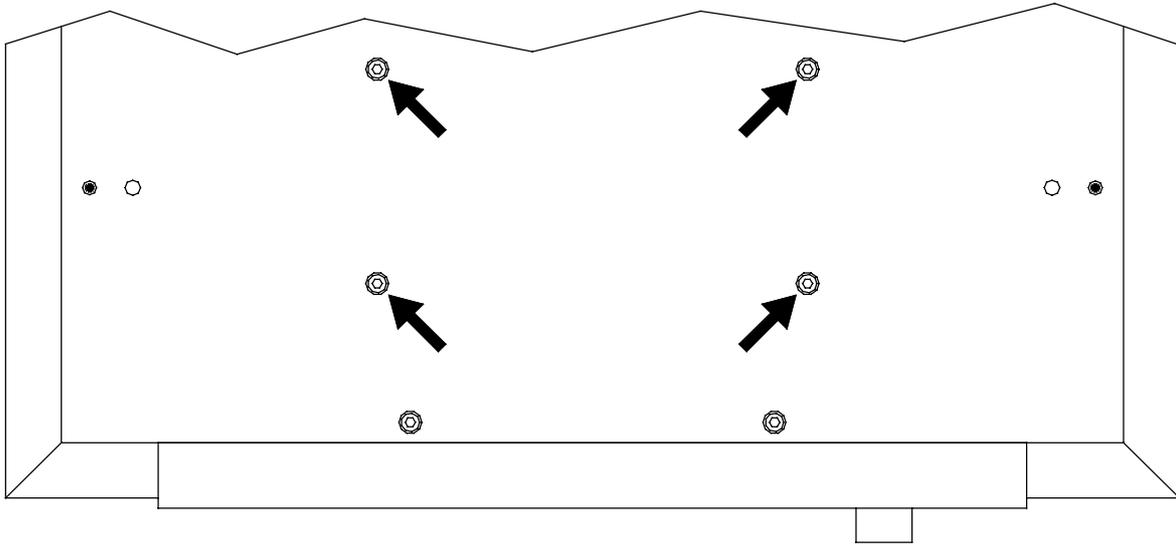
Figure 8 – View of the top of the unit showing the transit screws

do this: Using the 3mm hex key, unscrew the red transit screws and put them in a safe place.

IMPORTANT!   *If you intend to transport the unit over large distances, replace the transit screws – they need to be secure **BUT NOT OVER-TIGHT**.*

Fitting the Top Glass Plate

do this: Lay the black rubber mat flat in the top of the unit so that the 4 screw holes are visible through the holes in the mat.

do this: Remove the glass plate from its plastic bag. The plastic sheet attached to the underside of the glass is a safety feature and must not be removed.

do this: Find the *dCS* logo on the top face of the glass. Fit the glass with the logo in the front left corner of the unit as shown in **Figure 9**.

do this: Carefully locate the right hand edge of the glass in the well in the top of the unit (step 1 in **Figure 9**).

do this: Lower the glass down on the left hand side until it can be safely dropped into place (step 2 in **Figure 9**). Centralise the glass plate.
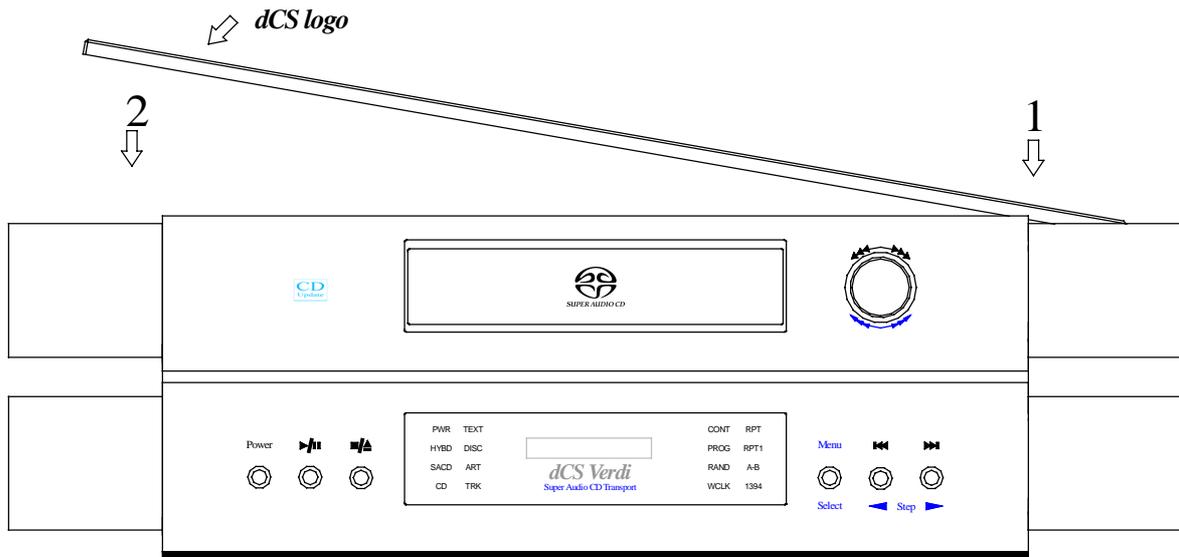
Figure 9 – Locating the Top Glass Plate

do this: Fit a black top-hat washer onto each screw, fit the 4 screws through the holes in the glass (step 3 in **Figure 10**).
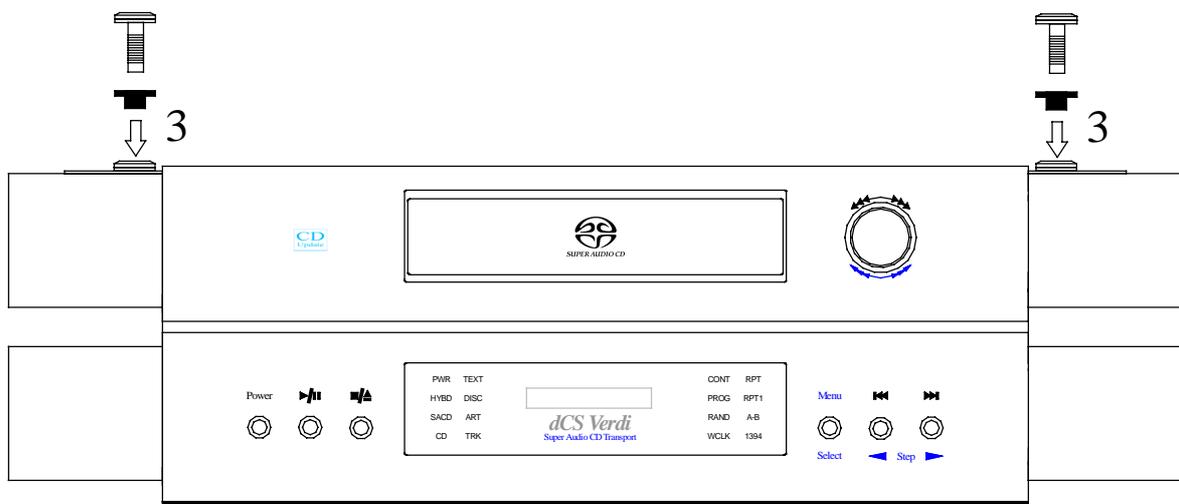
Figure 10 – Securing the Top Glass Plate

do this: Locate the top-hat washers into the holes and at first tighten up the screws FINGER TIGHT ONLY. Use the 4mm hex key provided to tighten up the screws at most ONE QUARTER OF A TURN ONLY.

IMPORTANT! *DO NOT OVER-TIGHTEN THE SCREWS – this can compress the rubber mat and spoil its' sound dampening performance.*

Fitting or Replacing the Batteries in the Remote Control

For safety reasons, the Remote Control is supplied with the 3 batteries packed separately. Any replacement batteries must be type AAA, MN2400 or equivalent alkaline leak-proof batteries.

Opening the battery compartment and removing batteries

do this: Turn the Remote Control unit over and remove the 2 screws shown in **Figure 11** using the 1-point Pozidriv screwdriver supplied. Please do not use a Philips head screwdriver as this will damage the screw heads. Lift off the battery cover.
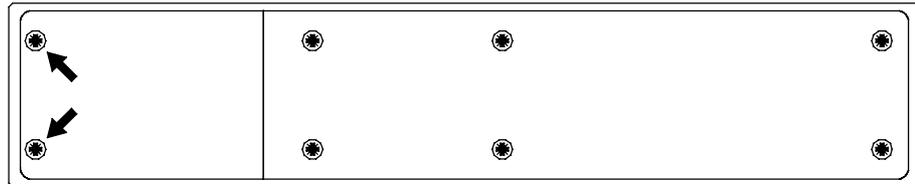
Figure 11 – Removing the Remote Control battery cover

do this: To remove discharged batteries, press the + end back against the spring and pull that end out of the unit. A small key or screwdriver may be used if the battery is a tight fit. Dispose of the discharged batteries safely.

Fitting new batteries and closing the case

do this: To fit a new battery, press the - end (the flat end) against one of the spring contacts in the battery holder then press the battery into its slot. Battery polarity is indicated on the battery holder and on the diagram below. Always fit a complete set of 3 new batteries.
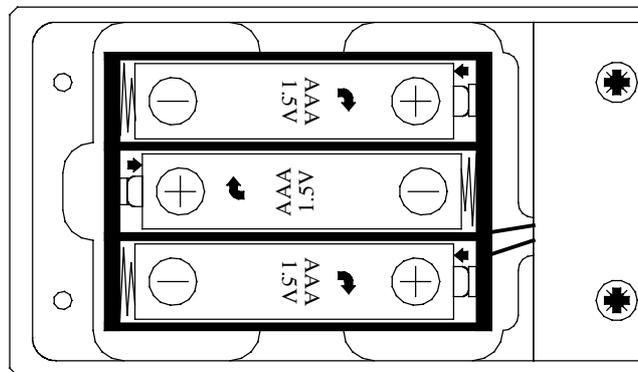
Figure 12 – Changing the Remote Control unit batteries

IMPORTANT!   *Please ensure the batteries are fitted the right way around – failure to do so may damage the Remote Control and invalidate the warranty. Damage caused by leaking batteries is not covered by the warranty.*

do this: To re-assemble the case, fit the battery cover, ensuring the side with the recessed holes is outward. Replace the 2 screws, taking care not to over-tighten them. The Remote Control is ready for use.

Updating your *La Scala*

dCS products make extensive use of software configurable chips – FPGAs and DSPs. This gives us the ability to update our products to add extra features, update digital interface standards or make performance improvements by loading new software. Occasionally, a hardware update may be necessary also to increase the "capacity" of the electronics, add extra connectors or extra front panel controls.

Software Updates

Please note that not all software updates make an earth-shattering change. You should have a clear idea of what you expect to gain before updating to the latest issue.

If the software loaded in your unit is (for example) version 3.45:

- A change to version 3.46 indicates a minor update for internal *dCS* use – to make testing easier, or more thorough, or to cater for some minor hardware change. Do not update your unit.
- A change to version 3.50 is a more serious update, offering extra functionality. If you want to use the extra features, update your unit. The manual will be updated for this (check the web-site).
- A change to version 4.00 is a major update. It will require updated hardware and the manual will be updated

If you have older hardware, some of the features added by new software may not be available due to (for example) a missing connector. For **recent** hardware, this is mentioned in the "Upgrader's notes" in this manual. If you need the missing feature, contact your dealer or *dCS* to arrange a hardware update.

- If the software currently loaded includes a CD Update page, you can update the software yourself. Contact *dCS* for a CD and follow the instructions in the CD Update section on page **25**, or the instructions supplied with the CD. The update program will check your hardware configuration and install the latest software compatible with it.
- If you do not have the CD Update feature loaded or have difficulty with it, a *dCS* distributor can download files from a PC into any unit fitted with a **SUC** connector. Contact your dealer for details.
- For older units without a **SUC** connector, your distributor can install new firmware in your unit. Firmware updates are low-cost from *dCS*. Contact your dealer for details.

Hardware Updates

You may wish to have your hardware updated from time to time to take advantage of new features in the latest software. *dCS* offer this service - we will retest, reset any adjustable items to current shipping standards, and install any modifications or updates that have occurred since your unit was first shipped.

The price will depend on the hardware changes necessary – please contact your dealer or *dCS* for details and pricing. In order to ensure speedy turn around, please contact us prior to returning the unit to get a **Service Return** number.

Safety and Electrical Safety

There are no user serviceable parts inside *La Scala* and so there is no need to remove the covers. If for some reason you do:

IMPORTANT!   *Disconnect the power cable before removing any covers or changing the fuse.*

There are no substances hazardous to health inside *La Scala*.

Cleaning the Case

Do not apply any of the following cleaning products to the case as they will damage or alter the finish:

- Corrosive or abrasive agents
- Spirit or alcohol based cleaners
- Wax polish

do this: To remove dust, wipe with a moist, soft cloth.

do this: To remove deposits from the case, first disconnect the power cable then spray very lightly with a proprietary glass cleaner containing ammonia and wipe off gently with a soft cloth, taking care to avoid scratches. Do not spray the cleaner onto the connectors or the rear panel.

TROUBLESHOOTING

Fault Indication

La Scala detects the following fault conditions:

Power interruption

If the AC supply is momentarily interrupted or is more than 20% below it's rated voltage, the unit displays **PowerDn** and mutes the audio outputs to protect your loudspeakers from damage. This may be caused by loose AC power wiring, local power-line overloads or heavy-duty appliances like air conditioners. If this message appears frequently (other than when switching the unit off), please consult your dealer.

Power up test errors

If *La Scala* detects a fault during its power up test routine, it will remain muted and display one of these messages:

- **DSPs Not Loaded (#01)**
- **FPGAs Not loaded (#02)**
- **Bad Checksum. Press any key to attempt recovery (#03)**
- **DSP-Err1 (#04)**

This can be caused by power line transients occurring during system configuration. For **Bad Checksum**, press any button to try to clear the fault. Otherwise, try switching off, waiting 20 seconds, then switching on again. If the fault persists, please consult your dealer.

Troubleshooting Guide

If you experience difficulties when using your *La Scala*, the following suggestions may help resolve the problem.

The unit fails to power up

- Ensure there is power available on the mains cable. Connect the power cable, ensure it is pushed all the way in and press the **Power** button. If there is a Power switch on the back panel, ensure this is set to the On (I) position.
- Check the rated supply voltage shown on the rear of the unit matches the local supply voltage.
- Check that the fuse has not blown - if so, correct any obvious cause then replace the fuse as described on page **52**.

The DAC/DDC suddenly mutes, *La Scala* repeats its' power-up sequence

- This may be caused by short drop-outs or brown-outs on the AC supply. When the disturbance has passed, normal operation should be restored.
- Check for loose mains wiring.

The DAC/DDC fails to lock to *La Scala* or displays "No Input"

- Ensure the correct DAC/DDC input is selected.
- Check that the digital audio cable is of the correct type, correctly connected and not damaged. Damaged cables are a VERY common cause of malfunctions!
- Check that *La Scala* is switched on.
- If you are using a Master Clock, check it is set to 44.1kHz and try disconnecting the Wordclock cable. If the DAC/DDC locks, check the Wordclock connections.
- When using the **1394** interface, you must also connect a 44.1kHz Wordclock feed to the DAC (or from the DAC if the DAC is in Master mode).
- If using the **SDIF-2** interface, ensure all 3 cables are connected correctly.
- If using a BNC SPDIF interface, ensure it is connected to the **BNC** output, not the **SDIF** interface.

The DAC/DDC locks but no signal is received

- *Verdi* only: When playing an ordinary CD or the CD layer of a hybrid disc, *Verdi* generates digital silence from the **1394** interface and signal on all other interfaces.
- If playing an SACD, open the Menu and check the Transmit page is set to Active. Ensure the DAC is selected to the *Verdi* or *La Scala* channel.

Playing a CD, the DAC output is monophonic

- The source disk / tape may actually be monophonic.

Channel Check, Phase Check and Burn-In do not work

- *Verdi* only: Check that the unit is set to **CD** mode and the DAC is NOT set to 1394 mode. These features are disabled in **SACD** mode.

The Remote Control fails to control the unit

- The Remote Control is normally shipped with the batteries packed separately for safety reasons. If you are using the Remote Control for the first time, you must fit the batteries first - see page **55**.
- If the Remote Control has not been used for a long time or has gradually lost range, the batteries should be replaced - see page **55**.
- If you have just replaced the batteries but the unit still does not work, check that the batteries are fitted the right way around - see page **55**. If two or more batteries were fitted the wrong way around, the Remote Control may be permanently damaged. If this occurs, contact your dealer for advice.
- For correct operation, there must be a clear line of sight between the infrared transmitter at the end of the Remote Control and the remote control sensor in the main unit, located on the left hand side of the display. If the line of sight is blocked (for example by a coffee table) the Remote Control may operate erratically or not at all.

Menu Timeout does not work

- Someone has turned the menu timeout off, using remote software running on a PC. Open the Menu and run the Factory routine to reset everything to ex-factory settings.

The Display turns on briefly when a control is operated, then turns off

- This happens when the display brightness is set to Bright 0. Open the Menu and change Bright to a different setting.

CD-R does not play correctly

- *Verdi* and *La Scala* are CD-R compatible but some brands of disks are more reliable than others due to differences in design. *dCS* recommend Traxdata TXS-1680 disks – we have used these without difficulty for some years.
- The CD-R must be formatted as a music CD, rather than a data CD.
- You can burn and update an incomplete music CD on a CD Re-Writer, but the disk must be finalised before it can be played on an audio CD transport. Finalising creates a Table Of Contents (TOC) at the start of the disk. If the TOC is missing, the transport will keep trying to find it for about 2 minutes, displaying **Read TOC**. During this time, you will not be able to stop or eject the disk. Wait until the unit displays **TOC Erro**, then open the tray and remove the disk.

A disc is trapped in the unit

- If the unit has problems reading the disc and the tray does not open after 2 minutes, power down the unit (completely off, not just standby), hold down the **Stop / Eject** button then switch on. If the front panel is frozen, pull out the power cord for 10 seconds, hold down the **Stop / Eject** button, then replace the cable. When the unit has booted up, the tray should open and you can release the button.
- In normal use, wait for the transport to finish displaying **Read TOC** before trying to eject the disc.

Troubleshooting the IEEE 1394 Interface

This section covers difficulties that may be encountered using a *dCS Verdi* SACD Transport (v1.20 or later), a *dCS Verdi La Scala* Upsampling SACD Transport or a *dCS Purcell* Upsampler to drive a *dCS Elgar Plus* DAC (v4.20 or later) or *Delius* DAC (v2.20 or later) with DSD data over an IEEE 1394 interface.

Upsampler or Transport displays "Inactive"
- This can happen momentarily during locking. If it does not change to **Active**, open the Transport or Upsampler's menu and ensure the Transmit page is set to Active.

The Unit keeps displaying "No Comms"
- This will appear briefly while the 1394 system is checking for connections.
- If the **No Comms** message does not clear, ensure that all units in the 1394 chain are switched on and securely connected by 1394 cables.

The Unit keeps displaying "Search.."
- This will appear briefly after the 1394 system has established communications.
- If the **Search** message does not clear, ensure that you have not connected both 1394 connectors from one unit to both 1394 connectors on another unit or set up a loop. This prevents the 1394 bus settling.
- Check that the 1394 cables are correctly fitted.

The DAC displays "Verdi Wordclock Missing"
- With the DAC in slave mode, check there is an undamaged BNC cable connecting *Verdi*'s **WClk Out** to the DAC's **WClk In**.
- Ensure the cable is D.C. coupled. A.C. coupled cables are not suitable for use with Wordclock or SDIF.

The DAC displays "Missing Wordclock between Clk Out & Verdi Clk In"
- With the DAC in master mode, check there is an undamaged BNC cable connecting the DAC's **WClk Out** to *Verdi*'s **WClk In**.
- Ensure the cable is D.C. coupled. A.C. coupled cables are not suitable for use with Wordclock or SDIF.

The DAC displays "Please check source slaved to DAC Wordclock Out"
- With the DAC in master mode, check there is an undamaged BNC cable connecting the DAC's **WClk Out** to the source's **WClk In**.
- Ensure the cable is D.C. coupled. A.C. coupled cables are not suitable for use with Wordclock or SDIF.

The DAC displays "Wrong Wordclock @ Verdi Clk In"
- *Verdi* / *La Scala* has detected a clock frequency other than 44.1kHz on it's **WClk In** connector. Ensure the clock source is set to 44.1kHz.
- With the DAC in master mode, check there is an undamaged BNC cable connecting *Verdi* / *La Scala*'s **WClk Out** to the DAC's **WClk In**.
- Ensure the cable is D.C. coupled. A.C. coupled cables are not suitable for use with Wordclock or SDIF.

The DAC remains muted

- If the DAC is displaying the **Volume** setting, change the Disp menu page setting to Disp:Fs and check for error messages.
- If all else is in order, switch off the Transport, the Upsampler and the DAC then switch them on again. If this situation keeps recurring, please consult your dealer.

The DAC takes a long time to unmute

- The **1394** interface can take around 30 seconds to settle and unmute.
- Try setting the DAC to **1394** mode before setting the Upsampler to DSD mode.
- If your system is in standby mode or switched off, try turning the DAC on before the Upsampler or Transport.

If this information does not resolve the problem, please contact your dealer for advice.

IF YOU NEED MORE HELP

In the first instance, you should contact your dealer. If they cannot resolve the issue, contact *dCS*. Our office hours are 8:30 a.m. to 5:00 p.m. Monday to Friday, UK time (GMT in Winter or GMT + 1hr in Summer). Contact us by phone or fax on:

	Inside the UK	**Outside the UK**
Telephone	01799 531 999	+44 1799 531 999
Fax	01799 531 681	+44 1799 531 681

Table 9 – *dCS* Contact Information

You can write to us at:

> *dCS* Ltd
> Mull House
> Great Chesterford Court
> Great Chesterford
> Saffron Walden CB10 1PF
> UK

Our email address: more@dcsltd.co.uk

Our web-site is: www.dcsltd.co.uk

The web-site is regularly updated. You will find full details of all *dCS* products here, plus the latest *dCS* news.

Other Information

dCS produce technical notes from time to time, on issues related to ADCs, DACs and DDCs. If you are interested in these, please check our web-site.

INDEXES AND SOFTWARE VERSION NUMBERS

Software History

This manual is for *Verdi La Scala* software version 1.0x.

Definitions and Abbreviations

ADC	Analogue to Digital Converter, sometimes referred to as an A/D Converter.
AES3	A standard professional stereo digital audio format consisting of one serial PCM data line. It uses a balanced cable to extend transmission distance and includes a comprehensive messaging system.
DAC	Digital to Analogue Converter, sometimes referred to as a D/A Converter.
dB	A relative signal level or ratio in decibels. The context may indicate the reference level.
dB0	Level in decibels, referred to a full scale sine wave in a sampled system. So, 0dB0 is full scale.
dBu	A signal level relative to 0.775V rms, making no allowance for external loading.
DDC	Digital to Digital Converter, sometimes referred to as a D/D Converter.
DSD	Direct Stream Digital - a single bit digital audio format, sampled at 2.822MS/s.
kS/s	Sample rate in kilo-samples per second. This replaces kHz, which is technically incorrect when referring to sample rates.
SDIF-2	Sony Digital InterFace – a stereo digital audio format consisting of 2 serial PCM or DSD data lines. Usually used with a Word Clock.
SPDIF	Sony / Philips Digital InterFace – a stereo digital audio format for consumer equipment, consisting of one serial PCM data line. Similar to AES3, but unbalanced and with different messaging.
Word Clock	A synchronisation signal consisting of a square-wave, the frequency of which is the sample rate. Usually transmitted through co-axial cable and BNC connectors.

Key to Cable Identification

If you are reading a colour print or a soft copy of this manual, cable types shown in figures can be identified from **Table 10**.

Cable Type	Colour / Style	
XLR Analogue	Brown, solid	
RCA Phono Analogue	Brown, long dash	
XLR Digital (AES3)	Blue, solid	
BNC Digital	Pale blue, solid	
RCA Phono Digital (SPDIF)	Pale blue, short dash	
Optical (SPDIF)	Dark magenta, solid	
IEEE 1394	Red, solid	
Sync Link	Green, solid	
Wordclock	Dark green, solid	
AES Reference	Dark green, long dash	
GPS Reference	Dark green, short dash	
RS-232	Purple, solid	

Table 10 – Cable colours and styles

Where more than one cable of any type is used in a drawing, they can be identified by a coloured sleeve at the source and a coloured arrow head at the destination.

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Keywords and Phrases