

# ***dCS* Remote Control Codes User Manual**

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## Disclaimer



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If you need assistance, please consult an experienced A/V installer.

## IR COMMAND CODES

The following codes are in the Philips RC5 protocol, where each command code consists of two parts: a category (e.g. 14 hex, for CD Player / Transport) and a command (e.g. 36 hex, for STOP). For reliable operation, send the command 3 times.

All commands are **hexadecimal**.

The IR carrier frequency is 37.9kHz.



Many of the IR commands in this document will operate the *dCS* "Classic" range also, but not all commands are supported by "Classic" range software. Make sure the unit software is up to date.

### Debussy DAC USB Player section

These Debussy DAC commands are currently not recognised by the *dCS* Windows USB Class 2 driver.

Category code is **14** hex.

Function	Debussy DAC USB mode Command
Play/Pause	5000000000000000100140035
Previous Track	5000000000000000100140021
Next Track	5000000000000000100140020
Fast Forward	5000000000000000100140034**
Fast Reverse	5000000000000000100140032**

\*\* Fast Forward and Fast Reverse codes are not well supported by music streaming programs at present.

## Scarlatti / Paganini / Vivaldi Transport, Puccini Player CD section

Category code is **14** hex.

Function	Transport / Player Command
'0'	500000000000000100140000
'1'	500000000000000100140001
'2'	500000000000000100140002
'3'	500000000000000100140003
'4'	500000000000000100140004
'5'	500000000000000100140005
'6'	500000000000000100140006
'7'	500000000000000100140007
'8'	500000000000000100140008
'9'	500000000000000100140009
Stop/Eject	500000000000000100140036
Play/Pause	500000000000000100140035
Previous Track	500000000000000100140021
Next Track	500000000000000100140020
Fast Forward	50000000000000010014003B
Fast Reverse	500000000000000100140024
Repeat	50000000000000010014001D
Program	500000000000000100140029
Clear	50000000000000010014003A
Display Mode	50000000000000010014000F
Select CD Layer	50000000000000010014003D
Select SACD Layer	50000000000000010014003E
Toggle Layer	50000000000000010014003C
Menu Select	50000000000000010014001A
Menu forward	500000000000000100140020
Menu back	500000000000000100140021
Display On/Off	500000000000000100140038
Sleep	50000000000000010014000A
Wake	50000000000000010014000B
Toggle Sleep/Wake	50000000000000010014000C
Power Off*	500000000000000100140037

\* All models must be in **Sleep Mode** before the **Power Off** button will operate.

### Scarlattini / Paganini / Debussy / Vivaldi DACs, Puccini Player DAC Section

Category code is **0D** hex.

Function	DAC Command	Command is supported by:				
		Scarlattini DAC	Paganini DAC	Puccini (DAC Section)	Debussy DAC	Vivaldi DAC
Volume +	5000000000000001000D0010	✓	✓	✓	✓	✓
Volume -	5000000000000001000D0011	✓	✓	✓	✓	✓
Volume/Balance	5000000000000001000D0008	✓	✓	✓		✓
Change Filter +	5000000000000001000D000E	✓	✓	✓	✓	✓
Change Filter -	5000000000000001000D001D		✓	✓		✓
Change Phase	5000000000000001000D0009	✓	✓	✓	✓	✓
Select next Input	5000000000000001000D001B	✓	✓	✓	✓	✓
Select previous Input	5000000000000001000D001C		✓	✓	✓	✓
Select AES1 input	5000000000000001000D0003	✓	✓		✓	✓
Select AES2 input	5000000000000001000D0004	✓	✓		✓	✓
Select Dual AES 1+2 input	5000000000000001000D0020	✓	✓		✓	✓
Select RCA1/SPDIF1 input	5000000000000001000D0001	✓	✓	✓	✓	✓
Select BNC/SPDIF3 input	5000000000000001000D0006	✓			✓	✓
Select RCA2/SPDIF2 input	5000000000000001000D000F	✓	✓	✓		✓
Select Toslink input	5000000000000001000D0005	✓				✓
Select USB/USB1 input	5000000000000001000D0002				✓	✓
Select 1394 channel 0	5000000000000001000D0022	✓	✓			
Select AES3 input	5000000000000001000D0022					✓
Select 1394 channel 1	5000000000000001000D0023	✓	✓			
Select AES4 input	5000000000000001000D0023					✓
Select 1394 channel 2	5000000000000001000D0024	✓	✓			
Select Dual AES 3-4 input	5000000000000001000D0024					✓
Select 1394 channel 3	5000000000000001000D0025	✓	✓			
Select 1394 channel 4	5000000000000001000D0026	✓	✓			
Select SDIF-2 input	5000000000000001000D0021	✓				✓
Select Filter 1	5000000000000001000D002C	✓	✓			✓
Select Filter 2	5000000000000001000D002D	✓	✓			✓
Select Filter 3	5000000000000001000D002E	✓	✓			✓
Select Filter 4	5000000000000001000D002F	✓	✓			✓
Select Filter 5 (see manual)	5000000000000001000D0030	✓	✓			✓
Select Filter 6 (see manual)	5000000000000001000D0031	✓	✓			✓
Mute ON	5000000000000001000D0027	✓	✓			✓
Mute OFF	5000000000000001000D0028	✓	✓			✓
Mute toggle	5000000000000001000D000D	✓	✓	✓	✓	✓

Function	DAC Command	Command is supported by:				
		Scarlatti DAC	Paganini DAC	Puccini (DAC Section)	Debussy DAC	Vivaldi DAC
Sync to MASTER	5000000000000001000D0032	✓	✓			✓
Sync to AUDIO	5000000000000001000D0033	✓	✓			✓
Sync to WORD CLOCK 1	5000000000000001000D0036					✓
Sync to WORD CLOCK1/2	5000000000000001000D0034	✓	✓			✓
Sync to WORD CLOCK 2	5000000000000001000D0039					✓
Sync to WORD CLOCK 3	5000000000000001000D0035					✓
Menu Forward	5000000000000001000D0037	✓	✓			✓
Menu Back	5000000000000001000D0038	✓	✓			✓
Menu Select	5000000000000001000D001A	✓	✓			✓
Display On/Off	5000000000000001000D0007	✓	✓			✓
Wake	5000000000000001000D002A	✓	✓		✓	✓
Sleep	5000000000000001000D0029	✓	✓		✓	✓
Toggle Sleep/Wake	5000000000000001000D000C	✓	✓			✓
Power Off*	5000000000000001000D002B	✓	✓		✓	✓
Select Disc mode	5000000000000001000D0025			✓		

\* All models must be in **Sleep Mode** before the **Power Off** button will operate.

## Scarlatti / Paganini / Vivaldi Upsamplers

Category code is **1D** hex.



You cannot set an output rate that is less than the input rate.  
You cannot select a filter that does not exist, or change the filter if the current input / output combination has only 1 filter choice, or if the unit is not locked.

Function	Upsampler Command	Command is supported by:		
		Scarlatti Upsampler	Paganini Upsampler	Vivaldi Upsampler
Select next input	50000000000000001001D001B	✓	✓	✓
Select previous input	50000000000000001001D001C			✓
Select AES input	50000000000000001001D0003	✓	✓	✓
Select SPDIF1-RCA input	50000000000000001001D0001	✓	✓	✓
Select SPDIF2-RCA input	50000000000000001001D000F	✓	✓	✓
Select SPDIF3-BNC input	50000000000000001001D0006	✓		✓
Select Toslink input	50000000000000001001D0005	✓		✓
Select SDIF input	50000000000000001001D000B			✓
Select USB1 input	50000000000000001001D0002	✓	✓	✓
Select USB2 input	50000000000000001001D0008			✓
Select iPod input	50000000000000001001D0009			✓
Select Network input	50000000000000001001D000A			✓
Output rate up	50000000000000001001D0010	✓	✓	✓
Output rate down	50000000000000001001D0011	✓	✓	✓
Select 32kS/s output	50000000000000001001D0020	✓	✓	✓
Select 44.1kS/s output	50000000000000001001D0021	✓	✓	✓
Select 48kS/s output	50000000000000001001D0022	✓	✓	✓
Select 88.2kS/s output	50000000000000001001D0023	✓	✓	✓
Select 96kS/s output	50000000000000001001D0024	✓	✓	✓
Select 176.4kS/s output	50000000000000001001D0025	✓	✓	✓
Select 192kS/s output	50000000000000001001D0026	✓	✓	✓
Select 352.8kS/s output	50000000000000001001D001E			✓
Select 384kS/s output	50000000000000001001D001F			✓
Select DSD output	50000000000000001001D0027	✓	✓	✓
Change Filter +	50000000000000001001D000E	✓	✓	✓
Change Filter -	50000000000000001001D001D			✓
Select Filter 1	50000000000000001001D002C			✓
Select Filter 2	50000000000000001001D002D			✓
Select Filter 3	50000000000000001001D002E			✓
Select Filter 4	50000000000000001001D002F			✓
Select Filter 5	50000000000000001001D0030			✓
Select Filter 6	50000000000000001001D0031			✓

Function	Upsampler Command	Command is supported by:		
		Scarlatti Upsampler	Paganini Upsampler	Vivaldi Upsampler
Sync to MASTER	50000000000000001001D0032			✓
Sync to AUDIO	50000000000000001001D0033			✓
Sync to WORD CLOCK 1	50000000000000001001D0036			✓
Sync to WORD CLOCK 2	50000000000000001001D0039			✓
Sync to WORD CLOCK 1/2	50000000000000001001D0034			✓
Menu select	50000000000000001001D001A	✓	✓	✓
Menu forward	50000000000000001001D0011	✓	✓	✓
Menu back	50000000000000001001D0010	✓	✓	✓
Display on/off	50000000000000001001D0007	✓	✓	✓
Sleep	50000000000000001001D0029	✓	✓	✓
Wake	50000000000000001001D002A	✓	✓	✓
Toggle Sleep/Wake	50000000000000001001D000C	✓	✓	✓
Power Off*	50000000000000001001D002B	✓	✓	✓

\* All models must be in **Sleep Mode** before the **Power Off** button will operate.



## Scarlatti / Paganini / Vivaldi Clocks

Category code is **1C** hex.

			Command is supported by:	
	Function	Clock Command	Scarlatti & Paganini Clock	Vivaldi Clock
Output Group 1	Next Frequency	5000000000000001001C0000	✓	✓
	Set to 44.1kHz	5000000000000001001C0001	✓	✓
	Set to 48kHz	5000000000000001001C0002	✓	✓
	Set to 88.2kHz	5000000000000001001C0006	✓**	✓
	Set to 96kHz	5000000000000001001C0008	✓**	✓
	Set to 176.4kHz	5000000000000001001C0009		✓
	Set to 192kHz	5000000000000001001C000A		✓
	Dither on/off	5000000000000001001C0003	✓	✓
Output Group 2	Next Frequency	5000000000000001001C000B		✓
	Set to 44.1kHz	5000000000000001001C000D		✓
	Set to 48kHz	5000000000000001001C000E		✓
	Set to 88.2kHz	5000000000000001001C000F		✓
	Set to 96kHz	5000000000000001001C0010		✓
	Set to 176.4kHz	5000000000000001001C0011		✓
	Set to 192kHz	5000000000000001001C0012		✓
	Dither on/off	5000000000000001001C0013		✓
	Menu select	5000000000000001001C001A	✓	✓
	Menu forward	5000000000000001001C0004	✓	✓
	Menu back	5000000000000001001C0005	✓	✓
	Display on/off	5000000000000001001C0007	✓	✓
	Lock on/off	5000000000000001001C0014		✓
	Sleep	5000000000000001001C0029	✓	✓
	Wake	5000000000000001001C002A	✓	✓
	Toggle Sleep/Wake	5000000000000001001C000C	✓	✓
	Power Off*	5000000000000001001C002B	✓	✓

\* All models must be in **Sleep Mode** before the **Power Off** button will operate.

\*\* 88.2 & 96kHz are supported by Scarlatti Clock Plus (SCP) and Paganini Clock Plus (PCP), but not by the original SCK & PCK versions.

Note that the Puccini U-Clock and the Rossini Clock do not feature IR remote control.

## Rossini Player and DAC

These models use a mix of DAC commands and Transport commands.

DAC mode commands - Category code is **0D** hex.

Function	DAC Command	Command is supported by:	
		Rossini Player	Rossini DAC
Volume +	5000000000000001000D0010	✓	✓
Volume -	5000000000000001000D0011	✓	✓
Volume/Balance	5000000000000001000D0008	✓	✓
Change Filter +	5000000000000001000D000E	✓	✓
Change Phase	5000000000000001000D0009	✓	✓
Select next Input	5000000000000001000D001B	✓	✓
Select previous Input	5000000000000001000D001C	✓	✓
Select AES1 input	5000000000000001000D0003	✓	✓
Select AES2 input	5000000000000001000D0004	✓	✓
Select Dual AES 1+2 input	5000000000000001000D0020	✓	✓
Select SPDIF1 input	5000000000000001000D0001	✓	✓
Select SPDIF2 input	5000000000000001000D0006	✓	✓
Select Toslink input	5000000000000001000D0005	✓	✓
Select USB1 input	5000000000000001000D0002	✓	✓
Select CD player mode	5000000000000001000D0025	✓	
Mute ON	5000000000000001000D0027	✓	✓
Mute OFF	5000000000000001000D0028	✓	✓
Mute toggle	5000000000000001000D000D	✓	✓
Sync to MASTER	5000000000000001000D0032	✓	✓
Sync to AUDIO	5000000000000001000D0033	✓	✓
Sync to WORD CLOCK 1	5000000000000001000D0036	✓	✓
Sync to WORD CLOCK1/2	5000000000000001000D0034	✓	✓
Sync to WORD CLOCK 2	5000000000000001000D0039	✓	✓
Menu Forward	5000000000000001000D0037	✓	✓
Menu Back	5000000000000001000D0038	✓	✓
Menu Select	5000000000000001000D001A	✓	✓

Player mode commands - Category code is **14** hex.

Function	Player Command	Command is supported by:	
		Rossini Player	Rossini DAC
'0'	500000000000000100140000	✓	
'1'	500000000000000100140001	✓	
'2'	500000000000000100140002	✓	
'3'	500000000000000100140003	✓	
'4'	500000000000000100140004	✓	
'5'	500000000000000100140005	✓	
'6'	500000000000000100140006	✓	
'7'	500000000000000100140007	✓	
'8'	500000000000000100140008	✓	
'9'	500000000000000100140009	✓	
Stop/Eject	500000000000000100140036	✓	✓ #
Play/Pause	500000000000000100140035	✓	✓ #
Previous Track	500000000000000100140021	✓	✓ #
Next Track	500000000000000100140020	✓	✓ #
Fast Forward	50000000000000010014003B	✓	
Fast Reverse	500000000000000100140024	✓	
Repeat	50000000000000010014001D	✓	
Program	500000000000000100140029	✓	
Clear	50000000000000010014003A	✓	
Sleep	50000000000000010014000A	✓	✓
Wake	50000000000000010014000B	✓	✓
Toggle Sleep/Wake	50000000000000010014000C	✓	✓
Power Off*	500000000000000100140037	✓	✓

\* All models must be in **Sleep Mode** before the **Power Off** button will operate.

# Rossini DAC playing from network or flash drive.

## RS232 COMMAND CODES

### General

While most *dCS* products may be controlled via RS232, the Binary protocol is included primarily to facilitate automatic testing, so the commands available may be limited.

Vivaldi and Rossini have a Text mode designed for 3<sup>rd</sup> party control systems.

Numbers are in **decimal**.

### Physical Connection

Most *dCS* equipment features a male 9-way D-type connector, often labelled **SUC**. This should be wired to a PC as "straight through" - each pin on one connector should be connected to the same pin on the other connector.

The interface is designed to work at 4800 baud, 1 start bit, 1 stop bit, no parity, no handshaking.

### Binary Protocol

The *dCS* RS232 Binary protocol is defined as follows:

All communications are packetised, with a general packet structure of the form:

Byte	Name	Description
0	ID	The identity of the unit you are attempting to talk to. For audiophile products, this id is fixed as follows: <b>1</b> = dCS Clock – Scarlatti, Paganini, Vivaldi & Verona Master Clocks <b>9</b> = dCS DAC – Scarlatti, Paganini, Vivaldi & Debussy DACs, Elgar Plus, Delius. <b>5</b> = dCS Upsampler – Scarlatti, Paganini & Vivaldi Upsamplers, Purcell. <b>10</b> = dCS Transport – Scarlatti, Paganini & Vivaldi Transports, Puccini Player, Verdi, Verdi LS, Verdi Encore, P8i Player. dCS pro products support daisy-chaining the RS232, where each unit can have its own id.
1	Cmd	The command you are attempting to execute (e.g. change input, filter etc.) This varies by product, please see the tables below
2	Length	The number of bytes in the payload.
3	Payload[0]	The payload for a command. The number of bytes and the content varies by command and by unit, please see the tables below.
...	Payload[n]	
4+n	Payload checksum	Add together all bytes in payload, modulo by 255.

If the unit is being addressed and the checksum is OK, it will return a single byte ACK of 170 (0xAA in hex). Otherwise it will not transmit anything.

There is no returned payload unless specifically stated.



The data packets are in binary, so you cannot use HyperTerminal.

Vivaldi and Rossini units have two RS232 modes: set the RS232 menu page to B for Binary or T for Text (see page **23**).

Note that some of the Vivaldi-only commands are implemented in Control software version 1.10 or later and are not supported by earlier versions.

## Scarlatti / Paganini / Vivaldi / Debussy DAC Binary Commands

### RS\_STATUS

Requests Status from the unit

ID	Cmd	Length	Payload	Checksum	Description
9	76	1	2	2	Returns the 5-byte "Page" specified by the Payload (Page 2 in this example).

**Page 0:**

Byte 0	Sample Rate – see Sample Rate Table
Byte 1	0 = Not muted, 4 = Muted
Byte 2	0 – fixed
Byte 3	0 – fixed
Byte 4	0 - fixed

**Page 1:**

Byte 0	0 - fixed
Byte 1	0 – fixed
Byte 2	0 – fixed
Byte 3	De-Emphasis Mode
Byte 4	Unit ID – 14=Vivaldi DAC – fixed (ask dCS for other models)

**Page 2:**

Byte 0	255 - fixed
Byte 1	0 – fixed
Byte 2	Volume setting in –dB (Vivaldi only), 0 = 0dB, 80 = -80dB
Byte 3	Balance setting (-61 to 61) in 0.1dB steps (Vivaldi only) 194 = balance to left, 0 = balance central, 61 = balance to right
Byte 4	0 – fixed

**Page 3:**

Byte 0	0 = Phase Normal, 1 = Phase Inverted						
Byte 1	Currently Selected Input: Scarlatti	0	RCA1	3	Toslink	7	SDIF-2
		1	BNC	4	AES2	8	1394
		2	AES1	6	AES1+2	9	RCA2
Byte 1	Currently Selected Input: Paganini	0	RCA1	3	AES2	8	1394
		2	AES1	4	AES1+2	9	RCA2
	Currently Selected input: Debussy	0	SPDIF1	2	AES1	4	AES1+2
		1	SPDIF2	3	AES2	6	USB
Byte 1	Currently Selected Input: Vivaldi	0	SPDIF1	4	AES1+2	9	SPDIF2
		1	SPDIF3	5	USB	10	AES3
		2	AES1	6	TOSLINK	11	AES4
		3	AES2	7	SDIF-2	12	AES3+4
Byte 2	Physical Lock Frequency – see Sample Rate Table						
Byte 3	32 – fixed						
Byte 4	Filter: 0 = Filter1, 1 = Filter2, 2 = Filter3, 3 = Filter4, 4 = Filter5, 5 = Filter6						

### Sample Rate Table

<b>Payload</b>	0	1	4	5	6	9	10	20	21	22	255
<b>Rate</b>	96k	88.2k	44.1k	48k	32k	176.4k	192k	352.8k	384k	DSD	Unlocked/ Unknown

Note: the 2 rates relate to the data sample rate and the physical lock frequency. For example, a typical scenario has the DAC locked to a 44.1kHz Word Clock while decoding 176.4kS/s data.

### RS\_INPUT

ID	Cmd	Length	Payload	Checksum	Description
9	113	1	9	9	Selects the Audio Input (RCA2 / SPDIF2 in this example)

Payloads: See RS\_STATUS, Page 3, Byte 1 for valid inputs.

### RS\_FILTER

ID	Cmd	Length	Payload	Checksum	Description
9	33	1	3	3	Selects the anti-image Filter for the <u>current sample rate</u> (Filter4 in this example).

<b>Payload</b>	0	1	2	3	4	5
<b>Filter</b>	Filter1	Filter2	Filter3	Filter4	Filter5	Filter6



All 6 Filters may not be available at all sample rates – see the User Manual. You cannot select a filter that does not exist or if the DAC is not locked.

### RS\_EMPH

Selects the De-Emphasis Mode (applies at 32, 44.1 or 48kS/s only).

ID	Cmd	Length	Payload	Checksum	Description
9	34	1	0	0	Auto Select De-Emphasis
9	34	1	1	1	Select 50/15 De-Emphasis
9	34	1	2	2	Select CCITT J.17 De-Emphasis
9	34	1	3	3	No De-emphasis

### RS\_PHASE

Sets the phase for all analogue outputs.

ID	Cmd	Length	Payload	Checksum	Description
9	112	1	0	0	Phase normal
9	112	1	1	1	Phase inverted

**RS\_MUTE** (Vivaldi DAC only)

Mutes or un-mutes the analogue outputs.

ID	Cmd	Length	Payload	Checksum	Description
9	43	1	0	0	Not muted
9	43	1	1	1	Muted

**RS\_OUT\_LEV** (Vivaldi DAC only)

Sets the output level.

ID	Cmd	Length	Payload	Checksum	Description
9	80	1	0	0	2V rms at full scale.
9	80	1	1	1	6V rms at full scale.

**RS\_VOL** (Vivaldi DAC only)

Sets the DAC Volume. Payload is between 0 (0dB) and 80 (-80dB).

ID	Cmd	Length	Payload	Checksum	Description
9	111	1	0	0	Sets the Volume to 0dB (maximum).
9	111	1	65	65	Sets the Volume to -65dB.

**RS\_BAL** (Vivaldi DAC only)

Sets the DAC Balance. Payload is between 194 (Balance to Left) and 61 (Balance to right) in 0.1dB steps. The fully Left and fully Right settings mute the other channel.

ID	Cmd	Length	Payload	Checksum	Description
9	206	1	194	194	Sets the Balance fully Left.
9	206	1	223	223	Sets the Balance 3.2dB to the Left.
9	206	1	0	0	Sets the Balance central.
9	206	1	30	30	Sets the Balance 3dB to the Right.
9	206	1	61	61	Sets the Balance fully Right.

**RS\_SYNC** (Vivaldi DAC only)

Sets the Sync Mode for the selected input.

ID	Cmd	Length	Payload	Checksum	Description
9	114	1	0	0	Audio sync.
9	114	1	1	1	Master Mode.
9	114	1	2	2	Sync to Word Clock 1 input.
9	114	1	3	3	Sync to Word Clock 2 input.
9	114	1	4	4	Sync to Word Clock 3 input.
9	114	1	5	5	Automatically syncs to Word Clock 1 or 2.
9	114	1	6	6	Universal Master Mode (see manual).

**RS\_SLEEP\_OFF**

ID	Cmd	Length	Payload	Checksum	Description
9	218	0		0	Wakes the unit from Sleep mode.

**RS\_SLEEP\_ON**

ID	Cmd	Length	Payload	Checksum	Description
9	217	0		0	Sets the unit to Sleep mode.

**RS\_POWER\_DOWN**

When the unit is in Sleep mode, this command powers down completely.

ID	Cmd	Length	Payloads	Checksum	Description
9	219	0		0	Vivaldi DAC
9	219	5	1 2 3 5 7	18	Scarlatti, Paganini & Debussy DACs



## Scarlatti / Paganini / Vivaldi Transport Binary Commands

### RS\_TRANSPORT\_COMMAND

Description: Performs a Transport Action.

ID	Cmd	Length	Payloads	Checksum	Description
10	210	1	1	1	Play (Vivaldi Transport only)
10	210	1	2	2	Stop
10	210	2	3 5	8	Selects the track specified by Payload[1] (track 5 in this example) and plays it.
10	210	1	4	4	Changes to the other layer for a hybrid disc
10	210	1	5	5	Open / close the CD tray
10	210	1	6	6	Pause (Vivaldi Transport only)

### RS\_SLEEP\_OFF

ID	Cmd	Length	Payload	Checksum	Description
10	218	0		0	Wakes the unit from Sleep mode.

### RS\_SLEEP\_ON

ID	Cmd	Length	Payload	Checksum	Description
10	217	0		0	Sets the unit to Sleep mode.

### RS\_POWER\_DOWN

When the unit is in Sleep mode, this command powers down completely.

ID	Cmd	Length	Payloads	Checksum	Description
10	219	0		0	Vivaldi Transport
10	219	5	1 2 3 5 7	18	Scarlatti & Paganini Transports

## Scarlatti / Paganini / Vivaldi Clock Binary Commands

### RS\_SEL\_FS

Selects the clock frequency - Vivaldi, Scarlatti Clock Plus SCP\* & Paganini Clock Plus PCP\* only

ID	Cmd	Length	Payloads	Checksum	Description
1	66	2	0 4	4	Group1 – Sets the frequency to 44.1kHz.
1	66	2	1 10	11	Group2 – Sets the frequency to 192kHz.

\* For Scarlatti Clock Plus or Paganini Clock Plus, the only valid commands are Group 1, 44.1kHz or 48kHz.

Payload	0	1	4	5	9	10
Group Payload[0]	Group1	Group2				
Frequency Payload[1]	96kHz	88.2kHz	44.1kHz	48kHz	176.4kHz	192kHz

Selects the clock frequency - Scarlatti SCK & Paganini PCK

ID	Cmd	Length	Payload	Checksum	Description
1	32	1	4	4	Sets the frequency to 44.1kHz.
1	32	1	0	0	Sets the frequency to 96kHz.

Payload	0	1	4	5
Frequency	96kHz	88.2kHz	44.1kHz	48kHz

### RS\_DITHER (Vivaldi only)

ID	Cmd	Length	Payloads	Checksum	Description
1	69	2	0 0	0	Group1 – Dither Off
1	69	2	0 1	1	Group1 – Dither On
1	69	2	1 0	1	Group2 – Dither Off
1	69	2	1 1	2	Group2 – Dither On

### RS\_SLEEP\_OFF (Vivaldi only)

ID	Cmd	Length	Payload	Checksum	Description
1	218	0		0	Wakes the unit from Sleep mode.

### RS\_SLEEP\_ON (Vivaldi only)

ID	Cmd	Length	Payload	Checksum	Description
1	217	0		0	Sets the unit to Sleep mode.

### RS\_POWER\_DOWN (Vivaldi only)

ID	Cmd	Length	Payload	Checksum	Description
1	219	0		0	When the unit is in Sleep mode, this command powers down completely.

## Scarlatti / Paganini / Vivaldi Upsampler Binary Commands

### RS\_STATUS

ID	Cmd	Length	Payload	Checksum	Description
5	76	1	1	1	Returns the 5-byte Status "Page" specified by the Payload (Page 1 in this example).

<b>Page 0:</b>	Byte 0	Input Sample Rate	See RS_OUT_FREQ below. 255 = Unlocked / Unknown
	Byte 1	Output Sample rate	See RS_OUT_FREQ below.
	Byte 2	0 – fixed	
	Byte 3	Input Selected	See RS_INPUT below.
	Byte 4	0 - fixed	

<b>Page 1:</b>	Byte 0	0 - fixed
	Byte 1	0 – fixed
	Byte 2	0 – fixed
	Byte 3	24
	Byte 4	97 = Paganini, 98 = Scarlatti or Vivaldi

### RS\_INPUT

ID	Cmd	Length	Payload	Checksum	Description
5	113	1	0	0	Selects the Audio Input (AES in this example)

<b>Payload</b>	0	3	4	5
<b>Paganini Inputs</b>	AES	RCA1	RCA 2	USB

<b>Payload</b>	0	3	4	5	9	10
<b>Scarlatti Inputs</b>	AES	RCA1	BNC	USB	Toslink	RCA 2

<b>Payload</b>	0	3	4	5	9	10	6	7	11	12
<b>Vivaldi Inputs</b>	AES	SPDIF 1	SPDIF 3	USB1	Toslink	SPDIF 2	SDIF-2	USB2	iPod	Network

### RS\_OUT\_FREQ

ID	Cmd	Length	Payload	Checksum	Description
5	32	1	1	1	Sets the Output Sample Rate (to 176.4kS/s in this example).

<b>Payload</b>	0	1	2	3	4	5	6	17	18	19
<b>Output Rate</b>	192k	176.4k	96k	88.2k	48k	44.1k	32k	352.8k	384k	DSD



You cannot set an output rate that is less than the input rate.

### RS\_FILTER

ID	Cmd	Length	Payload	Checksum	Description
5	33	1	1	1	Selects the anti-alias Filter <u>for the current input / output sample rate combination</u> (Filter2 in this example).

Payload	0	1	2	3	4	5
Filter	Filter1	Filter2	Filter3	Filter4	Filter5	Filter6



You cannot select a filter that does not exist, or change the filter if the current input / output sample rate combination has only 1 filter choice, or if the Upsampler is not locked.

### RS\_OUT\_MODE

ID	Cmd	Length	Payload	Checksum	Description
5	42	1	0	0	Sets the Output Mode to Single AES.
5	42	1	1	1	Sets the Output Mode to Dual AES.
5	42	1	2	2	Sets the Output Mode to DSD.

RS\_OUT\_MODE > DSD applies to obsolete pro products only. Use the RS\_OUT\_FREQ command to select DSD output mode.

### RS\_SYNC (Vivaldi Upsampler only)

Sets the Sync Mode for the selected input.

ID	Cmd	Length	Payload	Checksum	Description
5	114	1	0	0	Audio sync.
5	114	1	1	1	Master Mode.
5	114	1	2	2	Sync to Word Clock 1 input.
5	114	1	3	3	Sync to Word Clock 2 input.
5	114	1	5	5	Automatically syncs to Word Clock 1 or 2.

### RS\_SLEEP\_OFF (Vivaldi only)

ID	Cmd	Length	Payload	Checksum	Description
5	218	0		0	Wakes the unit from Sleep mode.

### RS\_SLEEP\_ON (Vivaldi only)

ID	Cmd	Length	Payload	Checksum	Description
5	217	0		0	Sets the unit to Sleep mode.

### RS\_POWER\_DOWN (Vivaldi only)

ID	Cmd	Length	Payload	Checksum	Description
5	219	0		0	When the unit is in Sleep mode, this command powers down completely.

## Puccini Player Binary Commands

### RS\_STATUS

Requests Status from the unit.

ID	Cmd	Length	Payload	Checksum	Description
10	76	1	0	0	Returns the 5-byte "Page" specified by the Payload (Puccini Player has only Page 0).

#### Page 0:

Byte 0	Sample Rate – see Player Sample Rate Table
Byte 1	99 - fixed
Byte 2	1 – fixed
Byte 3	0 – fixed
Byte 4	1 = SACD layer, 0 = CD layer

#### Player Sample Rate Table

<b>Payload</b>	0	1	4	5	6	9	10	22	255
<b>Rate</b>	96k	88.2k	44.1k	48k	32k	176.4k	192k	DSD	Unknown / not locked

The unit will return 44.1k while in disc mode.

### RS\_INPUT

Selects the source for the Player's DAC.

ID	Cmd	Length	Payload	Checksum	Description
10	113	1	128	128	Selects Disc Mode.
10	113	1	3	3	Selects the RCA1 input.
10	113	1	4	4	Selects the RCA2 input.

### RS\_TRANSPORT\_COMMAND

Performs a Transport Action.

ID	Cmd	Length	Payloads	Checksum	Description
10	210	1	2	2	Stops the CD mechanism
10	210	2	3 5	8	Selects the track specified by Payload[1] (track 5 in this example) and plays it.
10	210	1	4	4	Changes to the other layer for a hybrid disc
10	210	1	5	5	Open / close the CD tray

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**RS\_STANDBY\_OFF**

ID	Cmd	Length	Payload	Checksum	Description
10	218	0		0	Wakes the unit from Sleep mode.

**RS\_SLEEP\_ON**

ID	Cmd	Length	Payload	Checksum	Description
10	217	0		0	Sets the unit to Sleep mode.

**RS\_POWER\_OFF**

ID	Cmd	Length	Payloads	Checksum	Description
10	219	6	1 2 0 3 5 7	18	When the unit is in Sleep mode, this command powers down completely.

Note that the Puccini U-Clock does not feature IR or RS232 remote control.

## Vivaldi Text Protocol

The 4 units in the Vivaldi series feature an RS232 **Text** mode in the **Settings** menu. This mode allows control of the units by typing text commands into HyperTerminal / TeraTerminal (open source) or with a household control system.

The interface is wired pin 1 to pin 1, etc and must be set to 4800 baud, 1 stop bit, no parity, no handshaking (the same as for Binary mode).

## Vivaldi Transport Text Commands

Units loaded with 1.20 software or later.

COMMAND	ACTION	VALUES (n)
HELP	Lists the commands	
STATUS	Reports the unit status	
TRACK n	Select track 'n'	
PLAY	Play	
PAUSE	Pause	
STOP	Stop	
EJECT	Open / close the CD tray	
NEXT	Next track	
BACK	Previous track	
FF	Fast forward	
RW	Fast reverse	
LAYER	Changes hybrid layer	
PROG	Program mode on/off	
CLEAR	Clear a programmed track	
DISP	Change Display Mode	
REPEAT	Repeat track / disc / off	
SLEEP n	Sets the sleep mode to 'n'	0 Wake 1 Sleep 2 Switch off (Set to Sleep mode first)

## Vivaldi DAC Text Commands

Units loaded with 1.20 software or later.

COMMAND	ACTION	VALUES (n)
HELP	Lists the commands	
STATUS	Reports the unit status	
INPUT = n	Select input 'n'	0 AES1      4 AES4      8 SPDIF3 1 AES2      5 AES3+4    9 Toslink 2 AES1+2    6 SPDIF1    10 SDIF-2 3 AES3      7 SPDIF2    11 USB
INPUT INC	Selects the next active input	
MUTE = n	Sets the Mute mode to 'n'	0 Not muted    1 Mute
MUTE TOGGLE	Changes the Mute setting	
PHASE = n	Set Phase to 'n'	0 Normal      1 Inverted
PHASE TOGGLE	Changes the Phase setting	
GAIN = n	Set gain to 'n'	0 2V          1 6V
SLEEP n	Sets the sleep mode to 'n'	0 Wake        2 Switch off 1 Sleep        (Set to Sleep mode first)
SYNC = n	Set Sync Mode for the selected input to 'n'	0 Audio        2 W1          5 Auto W1/2 1 Master       3 W2          6 Universal 4 W3                    Master
FILTER = n	Sets the Filter for the current sample rate to 'n'	1, 2, 3, 4, 5, or 6 See manual – some Filter settings may not be valid
FILTER INC	Selects the next Filter	
VOL = n	Sets the volume to 'n' dB	0, -0.5, -1, -1.5,..., -49, -49.5, -50, -51, -52,..., -79, -80
VOL MOD n	Changes the volume setting by 'n' dB	80 to -80 The volume setting must be in the range 0 to -80.
BAL = n	Changes the balance setting to 'n' dB	6, 5.9, 5.8,...,0.1, 0, -0.1,..., -5.8, -5.9, -6 (e.g. '6' sets -6dB Left, 0dB Right)
BAL MOD n	Changes the balance setting by 'n' dB	6, 5.9, 5.8,...,0.1, 0, -0.1,..., -5.8, -5.9, -6 The balance setting must be in the range 6 to -6.
NAME n = name	Rename input 'n', up to 8 letters / numbers. (e.g. SACD, TV, COMPUTER)	Values as for the INPUT command. Valid name characters: A-Z, 0-9 or + - / = . : ? ! @ &



## Vivaldi Upsampler Text Commands

Units loaded with 1.20 software or later.

COMMAND	ACTION	VALUES (n)		
HELP	Lists the commands			
STATUS	Reports unit status			
SYNC = n	Set Sync Mode to 'n'	0 Audio 1 Master	2 W1 3 W2	4 Auto W1/2
INPUT = n	Select input 'n'	0 AES1 1 SPDIF1 2 SPDIF2 3 SPDIF3	4 Toslink 5 SDIF-2 6 USB1	7 USB2 (flash drive) 8 iPod (USB2) 9 Network
INPUT INC	Selects the next active input			
OUT = n	Set Output Rate to 'n'	32000 44100 48000 88200	96000 176400 192000 352800	384000 2822400 (DSD)
OUT INC	Selects the next Output rate			
DUAL = n	Sets Single/Dual AES out	0 Single	1 Dual	
FILTER = n	Sets the Filter for the current sample rate in/out combination to 'n'	1, 2, 3, 4, 5, or 6 See manual – some Filter settings may not be valid. Only 11 in/out combinations have more than 1 Filter.		
FILTER INC	Selects the next Filter			
SLEEP n	Sets the sleep mode to 'n'	0 Wake 1 Sleep	2 Switch off (Set to Sleep mode first)	
NAME n = name	Rename input 'n', up to 8 letters/numbers. (e.g. CD1, TV, COMPUTER)	Values as for the INPUT command. Valid name characters: A-Z, 0-9 or + - / = . : ? ! @ &		

### Vivaldi Clock Text Commands

Units loaded with 1.20 software or later.

COMMAND	ACTION	VALUES (n)		
HELP	Lists the commands			
STATUS	Reports the unit status			
BANK1 = n	Set Group 1 Frequency to 'n'	44100 48000	88200 96000	176400 192000
BANK2 = n	Set Group 2 Frequency to 'n'	44100 48000	88200 96000	176400 192000
DITHER1 = n	Set Group 1 Dither on/off	0 Off	1 On	
DITHER2 = n	Set Group 2 Dither on/off	0 Off	1 On	
SLEEP n	Sets the sleep mode to 'n'	0 Wake 1 Sleep	2 Switch off (Set to Sleep mode first)	

## Rossini Text Protocol

The Rossini Player and DAC also feature an RS232 **Text** mode on the **Unit Settings** menu page. This mode allows control of the units by typing text commands into HyperTerminal / TeraTerminal (open source) or with a household control system (e.g. Crestron, Savant, AMX).

The interface is wired pin 1 to pin 1, etc and must be set to **115200** baud, 1 stop bit, no parity, no handshaking (the same as for Binary mode).

### Rossini Player / DAC Text commands

CD / Network playback

COMMAND	ACTION	
PLAY	Play	CD or Network
PAUSE	Pause	
STOP	Stop	
NEXT	Next track	
BACK	Previous track	
TRACK n	Select track 'n'	CD mode on Player only
EJECT	Open / close the CD tray	
FF	Fast forward	
RW	Fast reverse	
PROG	Program mode on/off	
CLEAR	Clear a programmed track	
DISP	Change Display Mode	
REPEAT	Repeat track / disc / off	

Basic UPnP commands are covered by the control system.

DAC mode

COMMAND	ACTION	VALUES (n)
HELP	Lists the commands	
STATUS	Reports the unit status	
INPUT = n	Select input 'n'	0 AES1      3 SPDIF1      6 Network 1 AES2      4 SPDIF2      7 USB1 2 AES1+2    5 Toslink      8 CD
INPUT INC	Selects the next active input	
MUTE = n	Sets the Mute mode to 'n'	0 Not muted    1 Mute
MUTE TOGGLE	Changes the Mute setting	
PHASE = n	Set Phase to 'n'	0 Normal      1 Inverted
PHASE TOGGLE	Changes the Phase setting	
GAIN	Set Output Level to 'n'	0 2V          1 6V
SLEEP n	Sets the sleep mode to 'n'	0 Wake          2 Switch off 1 Sleep          (Set to Sleep mode first)
SYNC = n	Set Sync Mode for the selected input to 'n'	0 Audio          2 W1            4 Auto W1/2 1 Master          3 W2
FILTER = n	Sets the Filter for the current sample rate to 'n'	1, 2, 3, 4, 5, or 6 See manual – some Filter settings may not be valid
FILTER INC	Selects the next Filter	
VOL = n	Sets the volume to 'n' dB	0, -0.5, -1, -1.5,..., -49, -49.5, -50, -51, -52,..., -79, -80
VOL MOD n	Changes the volume setting by 'n' dB	80 to -80 The volume setting must be in the range 0 to -80.
BAL = n	Changes the balance setting to 'n' dB	6, 5.9, 5.8,...,0.1, 0, -0.1,..., -5.8, -5.9, -6 (e.g. '6' sets -6dB Left, 0dB Right)
BAL MOD n	Changes the balance setting by 'n' dB	6, 5.9, 5.8,...,0.1, 0, -0.1,..., -5.8, -5.9, -6 The balance setting must be in the range 6 to -6.
NAME n = name	Rename input 'n', up to 8 letters / numbers. (e.g. SACD, TV, COMPUTER)	Values as for the INPUT command. Valid name characters: A-Z, 0-9 or + - / = . : ? ! @ &
VERBOSE = n	See below	0 Off    1 State changes    2 State & time changes

Verbosity is a new feature - it enables Rossini to autonomously output changes in e.g. filter, track etc. Autonomous outputs are indicated by being enclosed by '#' characters, e.g.

# Input = <int> 8 #

# Gain = <bool> false #

## Rossini Clock

The Clock normally powers up in Binary mode and reports the software version. To set the Clock to Text mode, switch off completely, hold down the Dither 1 button, power up, wait 5 seconds then release the button.

The RS232 interface details are the same as for the Player & DAC.

COMMAND	ACTION	VALUES (n)	
HELP	Lists the commands		
STATUS	Reports the unit status		
FREQ = n	Sets the frequency for Output 3 #	44	48
DITHER1 = n	Output 1 Dither setting	ON	OFF
DITHER2 = n	Output 2 Dither setting	ON	OFF
SLEEP n	Sets the sleep mode to 'n'	0 Wake 1 Sleep	2 Switch off (Set to Sleep mode first)
BACK SERIAL	Changes back to Binary mode		

# Output 3 is reset to 44.1kHz at power up.