

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

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## Disclaimer



**Use this information ONLY if you agree to be bound by this 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 consists of 2 parts: A category (e.g. 20 decimal, for CD Player) and a command (e.g. 54 decimal, for STOP).

All numbers are **decimal**.

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.

### Scarlatti / Paganini TRANSPORT & Puccini / U-DAC PLAYER section

Category code is **20**.

Function	Transport / Player Command	U-DAC USB Player Command
'0'..'9'	00 ... 09	
Stop/Eject	54	
Play/Pause	53	53
Previous Track	33	33
Next Track	32	32
Fast Forward	59	
Fast Reverse	36	
Repeat	29	
Program	41	
Clear	58	
Display Mode	15	
Select CD Layer	61	
Select SACD Layer	62	
Toggle Layer	60	
Menu Select	26	
Menu forward	32	
Menu back	33	
Display On/Off	56	
Sleep	10	
Wake	11	
Toggle Sleep/Wake	12	
Power Off*	55	

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

## Scarlatti / Paganini DAC, Puccini DAC Section & U-DAC

Category code is 13.

Function	Scarlatti DAC Command	Paganini DAC Command	Puccini DAC Section Command	U-DAC Command
Volume +	16	16	16	16
Volume -	17	17	17	17
Volume/Balance	8	8	8	
Change Filter +	14	14	14	14
Change Filter -		29	29	
Change Phase	9	9	9	9
Select next Input	27	27	27	
Select previous Input		28	28	
Select AES1 input	3	3		3
Select AES2 input	4	4		4
Select Dual AES input	32	32		32
Select RCA1 input	1	1		1
Select BNC input	6			
Select RCA2 input	15	15		15
Select Toslink input	5			
Select USB input				2
Select 1394 channel 0	34	34		
Select 1394 channel 1	35	35		
Select SDIF-2 input	33			
Select Filter 1	44	44		
Select Filter 2	45	45		
Select Filter 3	46	46		
Select Filter 4	47	47		
Mute ON	39	39		
Mute OFF	40	40		
Toggle Mute	13	13	13	13
Sync to MASTER	50	50		
Sync to AUDIO	51	51		
Menu Forward	55	55		
Menu Back	56	56		
Menu Select	26	26		
Display On/Off	7	7		
Wake	42	42		42
Sleep	41	41		41
Toggle Sleep/Wake	12	12		
Power Off*	43	43		43

## Scarlatti / Paganini Upsampler

Category code is **29**.

Function	Scarlatti Upsampler Command	Paganini Upsampler Command
Select next input	27	27
Select AES input	03	03
Select SPDIF1-RCA input	01	01
Select SPDIF2-RCA input	15	15
Select SPDIF3-BNC input	06	
Select SPDIF4-TOS input	05	
Select USB input	02	02
Output rate up	16	16
Output rate down	17	17
Select 32kS/s output	32	32
Select 44.1kS/s output	33	33
Select 48kS/s output	34	34
Select 88.2kS/s output	35	35
Select 96kS/s output	36	36
Select 176.4kS/s output	37	37
Select 192kS/s output	38	38
Select DSD output	39	39
Change Filter +	14	14
Menu select	26	26
Menu forward	16	16
Menu back	17	17
Display on/off	07	07
Sleep	41	41
Wake	42	42
Toggle Sleep/Wake	12	12
Power Off*	43	43

## Scarlatti / Paganini Clock

Category code is **28**.

Function	Clock Command
Toggle Clock Frequency	00
Change to 44.1kHz	01
Change to 48kHz	02
Toggle Dither	03
Menu select	26
Menu forward	04
Menu back	05
Display on/off	07
Sleep	41
Wake	42
Toggle Sleep/Wake	12
Power Off*	43

## RS232 COMMAND CODES

### General

While most *dCS* products may be controlled via RS232, this feature is included primarily to facilitate automatic testing, so the commands available may be limited. We recommend using IR remote control instead.

Numbers are in **decimal**.

### Physical Connection

Most *dCS* equipment features a female 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.

### Protocol

The *dCS* RS232 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>9</b> = dCS DAC – Scarlatti & Paganini DACs, Elgar Plus, Delius. <b>5</b> = dCS Upsampler – Scarlatti & Paganini Upsamplers, Purcell. <b>10</b> = dCS Transport – Scarlatti & Paganini Transports, Puccini Player, Verdi, Verdi LS, Verdi Encore, P8i. dCS pro products support daisy-chaining the RS232, where each unit can have it's 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.



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

## Scarlatti / Paganini DAC Commands

### RS\_STATUS

Command: 76

Description: Requests Status from unit

Payload: 1 byte = Page number.

Returned Payload: The 5 byte "Page" specified by the Payload.

#### 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	10 – Unit ID - fixed

#### Page 2:

Byte 0	255 - fixed
Byte 1	0 – fixed
Byte 2	0 – fixed
Byte 3	0 – fixed
Byte 4	0 – fixed

#### Page 3:

Byte 0	0 = Phase Normal, 1 = Phase Inverted									
Byte 1	Currently Selected Input: (* = Scarlatti only)	0 RCA1	3 Toslink*	7 SDIF-2*	1 BNC*	4 AES2	8 1394	2 AES1	6 DUAL AES	9 RCA2
Byte 2	Physical Lock Frequency – see Sample Rate Table									
Byte 3	32 – fixed									
Byte 4	Current Filter: 0 = Filter1, 1 = Filter2, 2 = Filter3, etc.									

### Sample Rate Table

Payload	0	1	4	5	6	9	10
Rate	96k	88.2k	44.1k	48k	32k	176.4k	192k

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

### RS\_INPUT

Command: 113  
Description: Selects the Audio Input  
Payload: 1 byte new Input  
Returned Payload : None  
See RS\_STATUS, Page 3, Byte 1 for valid inputs

### RS\_FILTER

Command: 33  
Description: Selects the anti-image Filter  
Payload: 1 byte new Filter  
Returned Payload : None

Payload	0	1	2	3	4	5
Filter	Filter 1	Filter 2	Filter 3	Filter 4	Filter 5	Filter 6
					176.4k / 192k only	

### RS\_EMPH

Command: 34  
Description: Selects the Audio De-Emphasis  
(applicable @ 32, 44.1 & 48kS/s only)  
Payload: 1 byte new de-emphasis  
Returned Payload : None

Payload	De-Emphasis mode
0	Auto Select De-Emphasis
1	Select 50/15 De-Emphasis
2	Select CCITT J.17 De-Emphasis
3	Turn OFF de-emphasis

### RS\_PHASE

Command: 112  
Description: Selects the Audio Phase  
Payload: 1 byte, 0 = Phase Normal, 1 = Phase Inverted  
Returned Payload: None

### RS\_POWER\_DOWN

Command: 219  
Description: Powers down the unit. The unit must be in "Sleep" mode  
Payload: 6 bytes, must be 1,2,3,5,7  
Returned Payload : None

### RS\_SLEEP\_ON

Command: 217  
Description: Puts unit into "Sleep" Mode  
Payload: None  
Returned Payload : None

### RS\_SLEEP\_OFF

Command: 218  
Description: Wakes unit from "Sleep" Mode  
Payload: None  
Returned Payload : None

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## Scarlatti / Paganini Transport Commands

### RS\_TRANSPORT\_COMMAND

Command: 210

Description: Performs a Transport Action

Payload: Usually 1 byte, 2 bytes if selecting a track.

Returned Payload : None

Payload[0]	Command
2	Stops the CD mechanism
3	Selects the track specified by Payload[1] and plays it
4	Changes to the other layer for a hybrid disc
5	Open / close the CD tray

### RS\_POWER\_DOWN

Command: 219

Description: Powers down the unit. The unit must be in "Sleep" mode

Payload: 6 bytes, must be 1,2,3,5,7

Returned Payload : None

### RS\_SLEEP\_ON

Command: 217

Description: Puts unit into "Sleep" Mode

Payload: None

Returned Payload : None

### RS\_SLEEP\_OFF

Command: 218

Description: Wakes unit from "Sleep" Mode

Payload: None

Returned Payload : None

## Scarlatti / Paganini Clock Commands

### RS\_SEL\_FS

Command: 32

Description: Selects the clock frequency

Payload: 1 byte, 4 = 44.1kHz, 5 = 48kHz

Returned Payload: None

## Puccini Player Commands

### RS\_STATUS

Command: 76

Description: Requests Status from unit

Payload: 1 byte – page no. Selects the 5 byte “page” that is returned. Puccini only has page 0.

Returned Payload : (5 bytes)

#### 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

Payload	0	1	4	5	6	255
Rate	96k	88.2k	44.1k	48k	32k	Unknown / not locked

The unit will return 44.1k while in disc mode.

### RS\_INPUT

Command: 113

Description: Selects the DAC source

Payload: 1 byte

Returned Payload : None

Payload	DAC Source
128	Disc mode
3	RCA1 Input
4	RCA2 Input

### RS\_TRANSPORT\_COMMAND

Command: 210

Description: Performs a Transport Action

Payload: Usually 1 byte, 2 bytes if selecting a track.

Returned Payload: None

Payload[0]	Command
2	Stops the CD mechanism
3	Selects the track specified by Payload[1] and plays it
4	Changes to the other layer for a hybrid disc
5	Open / close the CD tray

### RS\_STANDBY\_ON

Command: 217

Description: Puts the unit to “sleep”

Payload: None

### RS\_STANDBY\_OFF

Command: 218

Description: Wakes the unit from “sleep”

Payload: None

## RS\_POWER\_OFF

Command: 219

Description: Powers down the unit

Payload must be: Byte 0 = 1, Byte 1 = 2, Byte 2 = 3, Byte 4 = 5, Byte 5 = 7

The unit must be in sleep mode and the Payload must be correct or it will ignore the command.

## Scarlatti / Paganini Upsampler Commands

### RS\_STATUS

Command: 76

Description: Requests Status from unit

Payload: 1 byte = Page number.

Returned Payload: The 5 byte "Page" specified by the Payload.

#### Page 0:

Byte 0	Input Sample Rate	0	None/Unlocked	3	88.2k	5	44.1k
		2	96k	4	48k	6	32k
Byte 1	Output Sample rate	0	192k	3	88.2k	5	44.1k (or DSD)
		1	176.4k	4	48k	6	32k
		2	96k				
Byte 2	0 – fixed						
Byte 3	Input Selected (* = Scarlatti only)	0	AES	5	USB	4	BNC*/RCA2
		3	RCA1			9	Toslink*
Byte 4	0 - fixed						

#### Page 1:

Byte 0	0 - fixed
Byte 1	0 – fixed
Byte 2	0 – fixed
Byte 3	24
Byte 4	97 = PUP, 98 = SUP

### RS\_INPUT

Command: 113

Description: Selects the Audio Input

Payload: 1 byte: new input

Returned Payload: None.

Payload	0	3	4	5	9
Input	AES	RCA1	BNC*/RCA2	USB	Toslink*

### RS\_OUT\_FREQ

Command: 32

Description: Selects the Output Sample rate

Payload: 1 byte: new Output Sample Rate

Returned Payload: None.

Payload	0	1	2	3	4	5	6
Output Rate	192k	176.4k	96k	88.2k	48k	44.1k	32k

### RS\_FILTER

Command: 33

Description: Selects the Filter

Payload: 1 byte: new Filter

Returned Payload: None.

Payload	0	1	2	3
Filter	Filter 1	Filter 2	Filter 3	Filter 4

### RS\_OUT\_MODE

Command: 42

Description: Selects the Output Mode

Payload: 1 byte: new Output Mode

Returned Payload: None.

Payload	0	1	2
Output Mode	Single AES	Dual AES	DSD