

General Message Format:

Byte	1	2	3	4	5	6	7	8	...	
	#	g	g	,	n	n	,	d	d	\r

Each byte contains an ASCII character.

All transmissions start with the '#' character (ASCII decimal 35).

gg = two byte Command Group.

There is a comma (ASCII decimal 44) separating the Group code from the command Number.

nn = two byte Command Number.

There is a comma separating the command Number and any Data bytes.

dd = Variable number of Data bytes.

Message terminated with a Carriage Return (ASCII decimal 13).

RS232 port settings

9600 Baud

no parity bits

8 data bits

1 stop bit

Group Commands

Command group	Description
00	Error Messages
01	Amplifier Command
02	Replies from Amplifier Commands
03	Source Commands
04	Replies from Source Commands
05	Media Commands
06	Replies from Media Commands
07	Tuner Commands
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09	Audio Processing Commands
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13	Version Commands
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15	Zone 2 Commands
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Error Messages are only ever sent from the CXR.

- These are used to inform the user when the CXR does not understand the received message correctly, or the command is valid but cannot be executed.
- Each message that is sent to the CXR will have a response of either a Reply message or an Error message.

Command Groups occur in pairs.

- The first Group, eg Group 01 "Amplifier Commands", is for messages that may be sent to the CXR from external control equipment.
- The second Group, eg Group 02 "Replies from Amplifier Commands", are responses from the CXR following a command being received. These Reply messages should not be sent to the CXR.

Power/Mute/Volume/Source changes

- When the power state, mute state, volume or source is changed in the CXR by any means, eg IR remote control, Connect app through the StreamMagic module, or front panel buttons, a Reply message will be sent out indicating the new changed state without the external control equipment needing to send a request.
- Volume change messages are not sent for every volume step, only when the volume has stabilised at a new level.

Source Selection

Where a source is specified, the numbering for the selection is shown below

00	Source 1
01	Source 2
02	Source 3
03	Source 4
04	Source 5
05	Source 6
06	Source 7
07	Source 8
08	TV ARC
09	Stream Magic
10	MP3
11	FM
12	AM
13	Spotify
14	Bluetooth

Commands

Error Messages

Group	Number	Data	Description	Example	
00	01	No Data	Command group unknown	#0,01\r	The Command Group is invalid
00	02	No Data	Command number unknown	#0,02\r	The Command Number is invalid for this Group
00	03	No Data	Command data error	#0,03\r	The data is not in the expected range
00	04	No Data	Command not available	#0,04\r	The command is valid, but can't be actioned

An Error Message is only sent from the CXR if there is a problem with the received message or the message is valid but cannot be actioned, otherwise a normal Reply Message will be sent.

Amplifier Commands

Group	Number	Data	Description	Example	
01	01	No Data	Get current power state	#1,01\r	
01	02	0 - Standby 1 - On	Set power state	#1,02,0\r	Put unit into standby
01	03	No Data	Get current mute state	#1,03\r	
01	04	0 - Off 1 - On (Muted)	Set mute state	#1,04,0\r	Mute off
01	05	No Data	Get current volume level	#1,05\r	
01	06	No Data	Set volume up by 1dB	#1,06\r	
01	07	No Data	Set volume down by 1dB	#1,07\r	
01	08	-xx (dB)	Set absolute volume level	#1,08,-53\r	Set volume to -53dB
01	09	No Data	Get current bass level	#1,09\r	
01	10	No Data	Set bass up by 1dB	#1,10\r	
01	11	No Data	Set bass down by 1dB	#1,11\r	
01	12	-xx (dB)	Set absolute bass level	#1,12,-09\r	Set bass to -09dB
01	13	No Data	Get current treble level	#1,13\r	
01	14	No Data	Set treble up by 1dB	#1,14\r	
01	15	No Data	Set treble down by 1dB	#1,15\r	
01	16	-xx (dB)	Set absolute treble level	#1,16,+10\r	Set treble to +10dB
01	17	No Data	Get Dolby volume state	#1,17\r	
01	18	0 - Off 1 - On	Set Dolby volume state	#1,18,1\r	Set Dolby volume on
01	19	No Data	Get Dolby volume level	#1,19\r	
01	20	xx	Set Dolby volume level	#1,20,09\r	Set Dolby volume level to 9
01	21	No Data	Get current lip sync	#1,21\r	
01	22	No Data	Increase lip sync by 5ms	#1,22\r	
01	23	No Data	Reduce lip sync by 5ms	#1,23\r	

Replies from Amplifier Commands

Group	Number	Data	Description	Example	
02	01	0 - Standby 1 - On	Get current power state	#2,01,1\r	Unit is currently on
02	02	0 - Standby 1 - On	Set power state	#2,02,0\r	Unit is in standby
02	03	0 - Off 1 - On (Muted)	Get current mute state	#2,03,0\r	Mute is currently off
02	04	0 - Off 1 - On (Muted)	Set mute state	#2,04,0\r	Mute has turned off
02	05	-xx (dB)	Get current volume level	#2,05,-05\r	volume is currently set to -5dB
02	06	-xx (dB)	Set volume up by 1dB	#2,06,+01\r	volume is set to +1dB
02	07	-xx (dB)	Set volume down by 1dB	#2,07,-00\r	volume is set to 0dB
02	08	-xx (dB)	Set absolute volume level	#2,08,-53\r	volume is set to -53dB
02	09	-xx (dB)	Get current bass level	#2,09,-00\r	bass is currently set at 0dB
02	10	-xx (dB)	Set bass up by 1dB	#2,10,-09\r	bass is set to -09dB
02	11	-xx (dB)	Set bass down by 1dB	#2,11,-09\r	bass is set to -09dB
02	12	-xx (dB)	Set absolute bass level	#2,12,-09\r	bass is set to -09dB
02	13	-xx (dB)	Get current treble level	#2,13,+10\r	treble is currently +10dB
02	14	-xx (dB)	Set treble up by 1dB	#2,14,+10\r	treble is set to +10dB
02	15	-xx (dB)	Set treble down by 1dB	#2,15,+10\r	treble is set to +10dB
02	16	-xx (dB)	Set absolute treble level	#2,16,+10\r	treble is set to +10dB
02	17	0 - Off 1 - On	Get Dolby volume state	#2,17,1\r	Dolby volume is currently on
02	18	0 - Off 1 - On	Set Dolby volume state	#2,18,1\r	Dolby volume is now on
02	19	xx	Get Dolby volume level	#2,19,06\r	Dolby volume level is 6
02	20	xx	Set Dolby volume level	#2,20,09\r	Set Dolby volume level to 9
02	21	xxx	Get current lip sync	#2,21,100\r	Lip sync is 100ms
02	22	xxx	Increase lip sync by 5ms	#2,20,060\r	Lip sync decreased to 60ms
02	23	xxx	Reduce lip sync by 5ms	#2,21,150\r	Lip sync increased to 150ms

Source Commands

Group	Number	Data	Description	Example	
03	01	No Data	Get current source	#3,01\r	
03	02	No Data	Select next source	#3,02\r	
03	03	No Data	Select previous source	#3,03\r	
03	04	Source	Set source	#3,04,02\r	Select Source 3

Replies from Source Commands

Group	Number	Data	Description	Example	
04	01	Source	Current source	#4,01,02\r	Current source is source 3
04	02	No Data	Select next source	#4,02,05\r	Source 6 now selected
04	03	No Data	Select previous source	#4,03,02\r	Source 3 now selected
04	04	Source	Set source	#4,04,02\r	Source 3 now selected

Media Commands

Group	Number	Data	Description	Example	
05	01	No Data	Play	#5,01\r	
05	02	No Data	Pause	#5,02\r	
05	03	No Data	Stop	#5,03\r	
05	04	No Data	Skip next	#5,04\r	
05	05	No Data	Skip previous	#5,05\r	
05	06	0 - Off 1 - On	Set random	#5,06,1\r	Set random on
05	07	0 - Off 1 - On	Set repeat	#5,07,0\r	Set repeat off

Replies from Media Commands

Group	Number	Data	Description	Example	
06	01	No Data	Play	#6,01\r	Unit is now playing
06	02	No Data	Pause	#6,02\r	Unit has paused the source
06	03	No Data	Stop	#6,03\r	Unit has stopped playing the source
06	04	No Data	Skip next	#6,04\r	Unit has skipped to the next track
06	05	No Data	Skip previous	#6,05\r	Unit has skipped to the previous track
06	06	0 - Off 1 - On	Set random	#6,06,0\r	Random is now off
06	07	0 - Off 1 - On	Set repeat	#6,07,1\r	Repeat is now on

Tuner Commands

Group	Number	Data	Description	Example	
07	01	No Data	Get tuner stereo/mono state	#7,01\r	
07	02	0 - Stereo 1 - Mono	Set tuner stereo/mono	#7,02,1\r	Set tuner to mono
07	03	No Data	Get frequency	#7,03\r	
07	04	No Data	Go to the next frequency step up	#7,04\r	
07	05	No Data	Go to the next frequency step down	#7,05\r	
07	06	xxxx	Set AM frequency	#7,06,0594\r	Tune to 594kHz
07	07	xxx.xx	Set FM frequency	#7,07,100.45\r	Tune to 100.45MHz
07	08	No Data	Get current preset number	#7,08\r	
07	09	No Data	Tuner to next preset	#7,09\r	
07	10	No Data	Tuner to previous preset	#7,10\r	
07	11	nn	Set tuner to specified preset	#7,11,06\r	Set tuner to preset 6
07	12	nn	Store current station in preset	#7,12,12\r	Store current frequency in preset 12

Replies from Tuner Commands

Group	Number	Data	Description	Example	
08	01	0 - Stereo 1 - Mono	Get tuner stereo/mono state	#8,01,0\r	Tuner is stereo
08	02	0 - Stereo 1 - Mono	Set tuner stereo/mono	#8,02,0\r	Tuner has been set to mono
08	03	frequency	Get frequency	#8,03,0594\r	Tuner is on 594kHz
08	04	frequency	Frequency up	#8,04,100.45\r	Tuner is now 100.45MHz
08	05	frequency	Frequency down	#8,05,0594\r	Tuner is now 594kHz
08	06	xxxx	Set AM frequency	#8,06,0594\r	Tuner is now 594kHz
08	07	xxx.xx	Set FM frequency	#8,07,100.45\r	Tuner is now 100.45MHz
08	08	nn	Get current preset number	#8,08,06\r	Tuner is currently on preset 6
08	09	nn	Tuner to next preset	#8,09,01\r	Tuner has changed to preset 1
08	10	nn	Tuner to previous preset	#8,10,08\r	Tuner has changed to preset 8
08	11	nn	Set tuner to specified preset	#8,11,06\r	Tuner has changed to preset 6
08	12	nn	Store current station in preset	#8,12,12\r	Current station has been stored in preset 12

Audio Processing Commands

Group	Number	Data	Description	Example	
09	01	No Data	Set listening mode for 2.0 source	#9,01\r	cycles round to next mode
09	02	No Data	Set listening mode for 5.1 source	#9,02\r	cycles round to next mode
09	03	No Data	Get current surround mode	#9,03\r	

Replies from Audio Processing Commands

Group	Number	Data	Description	Example	
10	01	text	Stereo mode has been set	#10,01, All Channels \r	Describes the current Surround mode exactly as on front panel
10	02	text	Surround mode has been set	#10,02, Dolby PLIIX Movie \r	Describes the current Surround mode exactly as on front panel
10	03	text	Get surround mode	#10,03, Dolby PLIIX Movie \r	Describes the current Surround mode exactly as on front panel

Advanced Commands

Group	Number	Data	Description	Example	
11	01	0 - Off 1 - Dim 2 - Bright	Set front panel display brightness	#11,01,0\r	Set front panel off
11	02	0 - Off 1 - On	Set on screen info display	#11,02,1\r	Set on screen info display on
11	03	0 - Off 1 - On	Menu	#11,03,1\r	Switch on Setup Menu
11	04	No Data	Cursor Up	#11,04\r	Up
11	05	No Data	Cursor Right	#11,05\r	Right
11	06	No Data	Cursor Down	#11,06\r	Down
11	07	No Data	Cursor Left	#11,07\r	Left
11	08	No Data	Back	#11,08\r	Back
11	09	No Data	Enter/Select	#11,09\r	Select item
11	11	0 - Output low 1 - Output high	Set Trigger A	#11,11,0\r	Set trigger A low
11	12	0 - Output low 1 - Output high	Set Trigger B	#11,12,1\r	Set trigger B high
11	13	0 - Output low 1 - Output high	Set Trigger C	#11,13,0\r	Set trigger C low

When in the OSD Setup menu, the Cursor Up/Down/Left/Right commands act the same as if the IR remote navigation button had been pressed.

Replies from Advanced Commands

Group	Number	Data	Description	Example	
12	01	0 - Off 1 - Dim 2 - Bright	Front panel brightness has been set	#12,01,1\r	Front panel set dim
12	02	0 - Off 1 - On	OSD on/off	#12,02,1\r	The OSD is now on
12	03	0 - Off 1 - On	Menu	#12,03,1\r	The OSD setup menu is now on
12	04	No Data	Cursor Up	#12,04\r	The cursor has moved up one item
12	05	No Data	Cursor Right	#12,05\r	The cursor has moved right
12	06	No Data	Cursor Down	#12,06\r	The cursor has moved down one item
12	07	No Data	Cursor Left	#12,07\r	The cursor has moved left
12	08	No Data	Back	#12,08\r	The cursor has moved back
12	09	No Data	Enter/Select	#12,09\r	The menu item has been selected
12	11	0 - Output low 1 - Output high	Trigger A set	#12,11,0\r	The trigger output A is now low
12	12	0 - Output low 1 - Output high	Trigger B set	#12,12,1\r	The trigger output B is now high
12	13	0 - Output low 1 - Output high	Trigger C set	#12,13,0\r	The trigger output C is now low

Version Commands

Group	Number	Data	Description	Example	
13	01	No Data	Get Protocol Version	#13,01\r	Get protocol version
13	02	No Data	Get MCU Software Version	#13,02\r	Get software version

Replies from Version Commands

Group	Number	Data	Description	Example	
14	01	x.x	Protocol Version	#14,01,1.0\r	This RS232 Protocol is version 1.0
14	02	x.x.x	Get MCU Software Version	#14,02,0.3.2\r	MCU Software is version 0.3.2

Zone 2 Commands (CXR200 only)

Group	Number	Data	Description	Example	
15	01	No Data	Get current Zone 2 power state	#15,01\r	
15	02	0 - Off 1 - On	Set Zone 2 power state	#15,02,1\r	Turn Zone 2 On
15	03	No Data	Get current mute state	#15,03\r	
15	04	0 - Off 1 - On (Muted)	Set mute state	#15,04,0\r	Switch mute off
15	05	No Data	Get current volume level	#15,05\r	
15	06	No Data	Volume up by 1dB	#15,06\r	
15	07	No Data	Volume down by 1dB	#15,07\r	
15	08	-xx (dB)	Set volume Level	#15,08,-53\r	Set volume to -53dB
15	11	No Data	Get current source	#15,11\r	
15	12	No Data	Input Select Up	#15,12\r	
15	13	No Data	Input Select Down	#15,13\r	
15	14	Source	Input Select	#15,14,02\r	Select Source 3

Replies from Zone 2 Commands

Group	Number	Data	Description	Example	
16	01	0 - Off 1 - On	Current Zone 2 power state	#16,01,01\r	Zone 2 is currently on
16	02	0 - Off 1 - On	Set Zone 2 Power State	#16,02,01\r	Zone 2 has now turned on
16	03	0 - Off 1 - On (Muted)	Get current Mute state	#16,03,1\r	Mute is currently on
16	04	0 - Off 1 - On (Muted)	Set Mute State	#16,04,0\r	Mute is now off
16	05	-xx (dB)	Get current volume level	#16,05,-64\r	Volume is now -64dB
16	06	-xx (dB)	Volume up by 1dB	#16,06,-34\r	Volume is now -34dB
16	07	-xx (dB)	Volume down by 1dB	#16,07,-79\r	Volume is now -79dB
16	08	-xx (dB)	New volume level	#16,08,-64\r	Volume is now -64dB
16	11	Source	Current source	#16,11,02\r	Current source is source 3
16	12	Source	Select next source	#16,12,05\r	Source 6 now selected
16	13	Source	Select previous source	#16,13,02\r	Source 3 now selected
16	14	Source	Set source	#16,14,02\r	Source 3 now selected

Information in this document has been carefully checked for accuracy; however, Cambridge Audio's policy is one of continuous improvement, therefore design and specifications are subject to change without prior notice. If you notice any errors please feel free to contact us at: <http://support.cambridgeaudio.com/>

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