

# Azur 640R Serial Control Protocol V1.13

## 1.1 RS232 Protocol

The protocol is accessed via COM1 i.e. the rear panel RS232C port.

	Header	Command Group	Command Number	Command Data	Footer		
	#	1 to 11	,	01 to 19	,	XXXX	CR
byte num:	1	1	1	2	1	XX	1

**Notes:**

- 1) All data consists of ASCII bytes.
- 2) Settings for RS232 comm port are 9600,N,8,1 with no handshaking.
- 3) CR is carriage return, ASCII value 13 decimal.

## 1.2 Command Groups

Commands are split into the following groups:

Command Group	Description
1	Amplifier Commands
2	Source Commands
3	Tuner Commands
4	Audio Processing Commands
5	Version Commands
6	Replies from Amplifier Commands
7	Replies from Source Commands
8	Replies from Tuner Commands
9	Replies from Audio Processing Commands
10	Replies from Version Commands
11	Error Messages

## 1.4 Commands and Messages

### 1.4.1 Group 1 - Amplifier Commands

Command Number	Command Description	Command Data	Example
01	Power State	0 - Standby, 1 - On	#1,01,0\r - Put 640R in standby
02	Volume Up	No Data	#1,02\r - Volume up
03	Volume Down	No Data	#1,03\r -Volume down
04	Bass Up	No Data	#1,04\r - Bass up
05	Bass Down	No Data	#1,05\r - Bass down
06	Treble Up	No Data	#1,06\r - Treble up
07	Treble Down	No Data	#1,07\r - Treble down
08	Sub On	No Data	#1,08\r - Sub woofer on
09	Sub Off	No Data	#1,09\r - Sub woofer Off
10	Set LFE trim	0 = 0db, 1 = -1db... -10 = -10dB	#1,10, 03\r - LFE trim set to -3dB
11	Mute State	00 - Off, 01 - On	#1,11,00\r - 640R mute off
12	Dynamic Range Set	0 - 0/4, 1 - 1/4, 2 - 2/4, 3 - 3/4, 4 - 4/4	#1,12, 02\r - Set dynamic range limit to 2/4
13	OSD On	No Data	#1,13\r - OSD On
14	OSD Off	No Data	#1,14\r - OSD Off
15	OSD Up	No Data	#1,15\r - OSD up
16	OSD Down	No Data	#1,16\r - OSD down
17	OSD Left	No Data	#1,17\r - OSD Left
18	OSD Right	No Data	#1,18\r - OSD Right
19	OSD Enter	No Data	#1,19\r - OSD Enter

## 1.4.2 Group 2 - Source Commands

Command Number	Command Description	Command Data	Example
01	Input Select	00 = Tuner, 01 - DVD, 02 - Video 1, 03 - Video 2, 04 - Video3, 05 - Rec 1,06 - Aux, 07 - CD, 08 - Rec 2, 09 - #####, 10 - 7.1 Direct In	#2,01,02\r - Select Video 1
02	Input Select Up	No Data	#2,02\r - Next input up
03	Input Select Down	No Data	#2,03\r -Next input down
04	Set input mode	00 - analogue, 01 - Digital	#2,04,01\r - digital source selected
05	Set Video Source	0 - S Video, 1 - Component, 2 - Composite	#2,05,01\r - Component video source

### 1.4.3 Group 3 – Tuner Commands

Command Number	Command Description	Command Data	Example
01	Tuner Stereo/Mono	0 - Stereo, 1 = Mono	#3,01,01r - tuner in mono
02	Frequency Up	No Data	#3,02r - Frequency up
03	Frequency down	No Data	#3,03r - Frequency down
04	Up	No Data	#3,04r - Tuner up
05	Down	No Data	#3,05r - Tuner down
06	Tuner Mode	1 - Frequency up/down, 2 - search up/down, 3 - Preset up/down	#3,06,03r - Tuner up/down control presets
07	Tuner Search Stop	No Data	#3,07r - Tuner search stop
08	Tuner Auto Search	No Data	#3,08r - Tuner auto search
09	Tuner Band	0 - FM, 1 = AM	#3,09,01r - tuner in AM mode
10	Tuner PTY select	1- News, 2-Affairs, 3-Info, 4-Sport, 5-Educate, 6-Drama, 7-Culture, 8-Science, 9-Variety, 10-Pop, 11-Rock, 12-MOR, 13-Light, 14-Classics, 15-Other	#3,10,11r - PTY Rock selected
11	Store Station	1 - preset 1, 2 - preset 2, ..... 15 - preset 15	#3,11,12r - Store current frequency in preset 12
12	Get Preset	1 - preset 1, 2 - preset 2, ..... 15 - preset 15	#3,12,6r - Set tuner to preset 6
13	Tuner Display mode	1-Frequency, 2-Program name, 3-Program Type, 4-Clock time, 5-Radiotext	#3,13, 04r - Display in clock time mode
14	Get Frequency	No Data	#3,14r
15	Get Station name	No Data	#3,15r
16	Get PTY	No Data	#3,16r
17	Stop PTY Select	No Data	#3,17r

#### 1.4.4 Group 4 - Audio Processing Commands

Command Number	Command Description	Command Data	Example
01	Set Audio to Stereo	00 = Stereo, 01 = Stereo+ SW	#4,01,01\r - Audio set to stereo mode plus sub
02	Set PLII/Neo/DSP	No Data	#4,02\r - cycles to next mode (same as pressing the PLII/Neo/DSP button)
03	DD/DTS	No Data	#4,03\r - cycles to next mode (same as pressing the DD/DTS button)
04	Get current PLII/Neo/DSP mode	No Data	#4,04,\r
05	Get current DD/DTS mode	No Data	#4,05\r

#### 1.4.5 Group 5 - Version Commands

Command Number	Command Description	Command Data	Example
01	Get Main Software Version	No Data	#5,01,\r - Get software version
02	Get Protocol Version	No Data	#5,02,\r - Get protocol version

### 1.4.6 Group 6 - Replies from Amplifier Commands

Command Number	Command Description	Command Data	Example
01	Power State	0 - Standby, 1 - On	#6,01,0\r - Put 640R in standby
02	Volume Up	-90 to 00 (where -90 = mute, 00 = max volume)	#6,02,-16\r - Vol = -16dB
03	Volume Down	-90 to 00 (where -90 = mute, 00 = max volume)	#6,03,-16\r - Vol = -16dB
04	Bass Up	-10 to 10	#6,04,-6\r - Bass = -6db
05	Bass Down	-10 to 10	#6,05,-6\r - Bass = -6db
06	Treble Up	-10 to 10	#6,06,-7\r - treble = -7db
07	Treble Down	-10 to 10	#6,07,-7\r - treble = -7db
08	Sub On	No Data	#6,08\r - Sub woofer on
09	Sub Off	No Data	#6,09\r - Sub woofer off
10	Set LFE trim	0 = 0db, 1 = -1db... -10 = -10dB	#6,10, 03\r - LFE trim set to -3dB
11	Mute State	0 - Off, 1 - On	#6,11,00\r - 640R mute off
12	Dynamic Range Set	0 - 0/4, 1 - 1/4, 2 - 2/4, 3 - 3/4, 4 - 4/4	#6,12, 02\r - Set dynamic range limit to 2/4
13	OSD On	No Data	#6,13\r - OSD On
14	OSD Off	No Data	#6,14\r - OSD Off
15	OSD Up	No Data	#6,15\r - OSD up
16	OSD Down	No Data	#6,16\r - OSD down
17	OSD Left	No Data	#6,17\r - OSD Left
18	OSD Right	No Data	#6,18\r - OSD Right
19	OSD Enter	No Data	#6,19\r - OSD Enter

### 1.4.7 Group 7 - Replies from Source Commands

Command Number	Command Description	Command Data	Example
01	Input Select	1 - DVD, 2 - Video 1, 3 - Video 2, 4 - Video3, 5 - Rec 1, 6 - Aux, 7 - CD, 8 - Rec 2, 9 - Tuner, 10 - 7.1 Direct In	#7,01,2\r - Video 1 selected
02	Input Select Up	No Data	#7,02\r - Next input up
03	Input Select Down	No Data	#7,03\r -Next input down
04	Set input mode	0 - analogue, 1 - Digital	#7,04,01\r - digital input selected
05	Set Video Source	0 - S Video, 1 - Component, 2 - Composite	#7,05,02\r - Composite video source selected

### 1.4.8 Group 8 - Replies from Tuner Commands

Command Number	Command Description	Command Data	Example
01	Tuner Stereo/Mono	0 - Stereo, 1 = Mono	#8,01,01\r - tuner in mono
02	Frequency Up	No Data	#8,02\r - Frequency up
03	Frequency down	No Data	#8,03\r - Frequency down
04	Up	1 - command complete, 2 - tuner searching	#8,04,02\r - Tuner searching
05	Down	1 - command complete, 2 - tuner searching	#8,05,01\r - Tuner down executed
06	Tuner Mode	1 - Frequency up/down, 2 - search up/down, 3 - Preset up/down	#8,06,03\r - Tuner up/down control presets
07	Tuner Search Stop	xxx.xx	#8,07,09525\r - Current frequency is 95.25MHz
08	Tuner Auto Search	No Data	#8,08\r - Tuner auto search
09	Tuner Band	0 - FM, 1 = AM	#8,09,01\r - tuner in AM mode
10	Tuner PTY select	1- News, 2-Affairs, 3-Info, 4-Sport, 5-Educate, 6-Drama, 7-Culture, 8-Science, 9-Varied, 10-Pop, 11-Rock, 12-MOR, 13-Light, 14-Classics, 15-Other, 16-Searching in progress, 17-Search failed	#8,10,11\r - PTY Rock selected
11	Store Station	1 - preset 1, 2 - preset 2, ..... 15 - preset 15	#8,11,12\r - Store current frequency in preset 12
12	Get Preset	1 - preset 1, 2 - preset 2, ..... 15 - preset 15	#8,12,6\r - Set tuner to preset 6
13	Tuner Display mode	1-Frequency, 2-Program name, 3-Program Type, 4-Clock time, 5-Radiotext	#8,13, 04\r - Display in clock time mode
14	Tuner Display mode	1-Frequency, 2-Program name, 3-Program Type, 4-Clock time, 5-Radiotext	#8,14, 04\r - Display in clock time mode
14	Get Frequency	xxx.xx	#8,14,09525\r - Current frequency is 95.25MHz
15	Get station name	xxxxxxxx	#8,15,Radio666\r - Current station name is Radio666. If no RDS station name available, return with string of stars, i.e. *****
16	Get PTY	0-No Pty, 1- News, 2-Affairs, 3-Info, 4-Sport, 5-Educate, 6-Drama, 7-Culture, 8-Science, 9-Varied, 10-Pop, 11-Rock, 12-MOR, 13-Light, 14-Classics, 15-Other	#8,16,11\r - Current PTY is Rock Music
17	Stop PTY Select	No Data	#8,17\r

#### 1.4.9 Group 9 - Replies from Audio Processing Commands

Command Number	Command Description	Command Data	Example
01	Set Audio to Stereo	00 = Stereo, 01 = Stereo+ SW	#9,01,01\r - Audio set to stereo mode plus sub
02	Set PLII/Neo/DSP	xxxxxxx	#9,02, PCM + PLIIx Movie \r - Describes the mode it's just switched to exactly as on front panel
03	DD/DTS	xxxxxxx	#9,03, Dolby Digital (2/0) \r - Describes the mode it's just switched to, exactly as displayed on the front panel
04	Get current PLII/Neo/DSP mode	xxxxxxx	#9,04, PCM + PLIIx Movie \r - Describes the current mode
05	Get current DD/DTS mode	xxxxxxx	#9,05, Dolby Digital (2/0) \r - Describes the current mode

#### 1.4.10 Group 10 - Replies from Version Commands

Command Number	Command Description	Command Data	Example
01	Get Main Software Version	X.X	#10,01,1.2\r - Software is version 1.2
02	Protocol Version	X.X	#10,03,1.6\r - Protocol is version 1.6

#### 1.4.11 Group 11 - Error Messages

Command Number	Command Description	Command Data	Example
01	Command Group Unknown	No Data	#5,01,\r - Command group error
02	Command Number in Group Unknown	No Data	#5,02,\r - Command number error
03	Command Data Error	No Data	#5,03,\r - Command data error

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 email us at: [support@cambridgeaudio.com](mailto:support@cambridgeaudio.com). This document contains proprietary information protected by copyright. All rights are reserved. No part of this document may be reproduced by any mechanical, electronic or other means, in any form, without prior written permission of the manufacturer. © Copyright Cambridge Audio Ltd 2007