

Azur 651R/751R Serial Control Protocol V1.02

1.1 RS232 Protocol

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

	Header	Command		Command		Command	Footer
	#	Group		Number		Data	
		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
12	Display/Video Processing commands
13	Replies from Display/Video Processing Commands
16	Zone 2 Commands
17	Replies from Zone 2 commands

1.4 Commands and Messages

1.4.1 Group 1 - Amplifier Commands

Command Number	Command Description	Command Data	Example
01	Power State	00 - Standby, 01 - On	#1,01,00\r - Put unit into 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
11	Mute State	00 - Off, 01 - On	#1,11,00\r - mute off
12	Dynamic Range Set	00 - off, 01 - on, 02 - auto	#1,12, 02\r - Set dynamic auto
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
20	Lip Sync Up	No Data	#1,20\r - Lip Sync Up
21	Lip Sync Down	No Data	#1,21\r - Lip Sync Down
22	Set Volume Level	-xxx where xxx= -xx.xdB	#1,22,-535\r – set volume -53.5dB

1.4.2 Group 2 - Source Commands

Command Number	Command Description	Command Data	Example
01	Input Select	00 = Tuner, 01 – BD/DVD, 02 - Video 1, 03 - Video 2, 04 - Video3, 05 - Rec 1, 06 - Aux, 07 - CD, 08 - Rec 2, 09 - USB, 10 - 7.1 Direct In, 11-Expansion, 12 -ARC	#2,01,02\r - Select Video 1 Note USB is available on 751R only.
02	Input Select Up	No Data	#2,02\r - Next input up
03	Input Select Down	No Data	#2,03\r -Next input down

1.4.3 Group 3 – Tuner Commands

Command Number	Command Description	Command Data	Example
01	Tuner Stereo/Mono	00 - Stereo, 01 = Mono	#3,01,01\r - tuner in mono
02	Frequency Up	No Data	#3,02\r - Frequency up
03	Frequency down	No Data	#3,03\r - Frequency down
04	Up	No Data	#3,04\r - Tuner up
05	Down	No Data	#3,05\r - Tuner down
06	Tuner Mode	01 - Frequency up/down, 02 - search up/down, 03 - Preset up/down	#3,06,03\r - Tuner up/down control presets
09	Tuner Band	00 - AM, 01 = FM	#3,09,01\r - tuner in FM mode
11	Store Station	01 - preset 1, 02 - preset 2, 15 - preset 15	#3,11,12\r - Store current frequency in preset 12
12	Get Preset	01 - preset 1, 02 - preset 2, 15 - preset 15	#3,12,06\r - Set tuner to preset 6
13	Tuner Display mode	01-Frequency, 02-Program name,03-Program Type, 04-Clock time, 05-Radiotext	#3,13, 04\r – Set display to RDS clock time mode
14	Get Frequency	No Data	#3,14\r
15	Get Station name	No Data	#3,15\r
16	Get PTY	No Data	#3,16\r
17	Set AM Frequency	Frequency (comma separated value (4 digits))	#3,17,0,5,9,4\r – Tune to 594kHz
18	Set FM Frequency	Frequency (comma separated value (5 digits))	#3,18,1,0,0,4,5\r – Tune to 100.45MHz

1.4.4 Group 4 - Audio Processing Commands

Command Number	Command Description	Command Data	Example
01	Set Stereo Modes	00 = Stereo, 01 = Stereo+ SW	#4,01,01\r - Audio set to stereo plus sub mode
02	Cycle Surround Modes	No Data	#4,02\r - cycles to next mode (same as pressing the Surround Modes button)
04	Get current Surround Mode	No Data	#4,04,\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	00 - Standby, 01 - On	#6,01,00\r - Put unit into standby
02	Volume Up	-90.0 to 00.0 (where -90.0 = mute, 00.0 = max volume)	#6,02,-16.0\r - Vol = -16dB
03	Volume Down	-90.0 to 00.0 (where -90.0 = mute, 00.0 = max volume)	#6,03,-16.0\r - Vol = -16dB
04	Bass Up	-10 to +10	#6,04,-06\r - Bass = -6db
05	Bass Down	-10 to +10	#6,05,-06\r - Bass = -6db
06	Treble Up	-10 to +10	#6,06,-07\r - treble = -7db
07	Treble Down	-10 to +10	#6,07,-07\r - treble = -7db
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 - off, 1 - on, 2 - auto	#6,12, 02\r - Set dynamic auto
13	OSD On	No Data	#6,13\r - OSD On
14	OSD Off	No Data	#6,14\r - OSD Off
20	Lip Sync Up	xx = xms	#6,20,50\r - Lip Sync decreased to 50ms
21	Lip Sync Down	xx = xms	#6,21,50\r - Lip Sync increased to 50ms

1.4.7 Group 7 - Replies from Source Commands

Command Number	Command Description	Command Data	Example
01	Input Select	00 = Tuner, 01 – BD/DVD, 02 - Video 1, 03 - Video 2, 04 - Video3, 05 - Rec 1, 06 - Aux, 07 - CD, 08 - Rec 2, 09 - USB, 10 - 7.1 Direct In, 11-Expansion, 12 - ARC	#7,01,02\r - Video 1 selected Note USB available on 751R only
02	Input Select Up	No Data	#7,02\r - Next input up
03	Input Select Down	No Data	#7,03\r -Next input down

1.4.8 Group 8 - Replies from Tuner Commands

Command Number	Command Description	Command Data	Example
01	Tuner Stereo/Mono	00 - Stereo, 01 = Mono	#8,01,01\r - tuner in mono
02	Frequency Up	Frequency up + new frequency	#8,02,1,0,5,8,5\r - Frequency up + new frequency
03	Frequency down	Frequency down + new frequency	#8,03,1,0,5,8,5\r - Frequency down + new frequency
04	Up	01 - command complete, 02 - tuner searching	#8,04,02\r - Tuner searching
05	Down	01 - command complete, 02 - tuner searching	#8,05,01\r - Tuner down
06	Tuner Mode	01 - Frequency up/down, 02 - search up/down, 03 - Preset	#8,06,03\r - Tuner up/down control presets
09	Tuner Band	00 - AM, 01 = FM	#8,09,01\r - tuner in FM mode
11	Store Station	01 - preset 1, 02 - preset 2, 15 - preset	#8,11,12\r - Store current frequency in preset 12
12	Get Preset	01 - preset 1, 02 - preset 2, 15 - preset	#8,12,06\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 - RDS clock display mode
14	Get Frequency	x,x,x,x,x	#8,14,0,9,5,2,5\r - Current frequency is 95.25MHz
15	Get station name		#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		#8,16,11\r - Current PTY is Rock Music

1.4.9 Group 9 - Replies from Audio Processing Commands

Command Number	Command Description	Command Data	Example
01	Stereo Modes	00 = Stereo, 01 = Stereo+ SW	#9,01,01\r - Audio is set to stereo plus sub mode
02	Surround Modes	xxxxxxx	#9,02, PCM + PLIIx Movie \r - Describes the current Surround mode exactly as on front panel
04	Get Surround mode	xxxxxxx	#9,04, PCM + PLIIx Movie \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

1.4.12 Group 12 - Display Commands

* Scaler must be set to 'Process'

Command Number	Command Description	Command Data	Example
01	Set VFD Display Brightness	00-display off, 01- display low, 02- display middle, 03- display high	#12,01,01\r – Set VFD display brightness low
02	Set scaler output Resolution	00-480P, 01-576P, 02-720P@50HZ, 03-720P@60HZ, 04-1080i@50HZ, 05-1080i@60HZ, 06-1080P@50HZ, 07-1080P@60HZ,	#12,02,01\r – Set video resolution to 576P
03	Color Space	00-AUTO, 01-RGB, 02-YCbCr 422, 03-YCbCr 444	#12,03,01\r – Set Color Space to RGB
04	Aspect ratio	00-Auto, 01-16:9	#12,04,00\r – Set Aspect ratio to Auto
05	Colorimetry	00-Auto, 01-601, 02-709	#12,05,00\r – Set Colorimetry to Auto mode
06	Picture Brightness*	00-Minus 01-Plus	#12,06,00\r
07	Picture Contrast*	00-Minus 01-Plus	#12,07,00\r
08	Picture Color Saturation*	00-Minus 01-Plus	#12,08,00\r
09	Picture Sharpness *	00-Minus 01-Plus	#12,09,00\r
10	Picture YC Delay*	00-Minus 01-Plus	#12,10,00\r
11	HDMI out port select	00-portA, 01-portB, 02-portA and portB	#12,11,01\r – Set HDMI output to only port A

Group 13 – Replies from Display Commands

Command Number	Command Description	Command Data	Example
01	Set VFD dimmer	00-dimmer off, 01-dimmer low, 02-dimmer middle, 03-dimmer high	#13,01,01\r – VFD is set to dimmer low
02	Set Video Resolution	00-Bypass, 01-AutoScaler, 02-480P, 03-576P, 04-720P@50HZ, 05-720P@60HZ, 06-1080i@50HZ, 07-1080i@60HZ, 08-1080P@50HZ, 09-1080P@60HZ,	#13,02,01\r – Video resolution is set to Autoscaler
03	Color Space	00-AUTO, 01-RGB, 02-YCbCr 422, 03-YCbCr 444	#13,03,01\r – Color Space is set to RGB
04	Aspect ratio	00-Auto, 01-16:9	#13,04,00\r – Aspect ratio is set to Auto
05	Colorimetry	00-Auto, 01-601, 02-709	#13,05,00\r –Colorimetry is set to Auto mode
06	Picture Brightness	-100 to +100	#13,06,10\r – Brightness=10
07	Picture Contrast	-100 to +100	#13,07,10\r – Contrast=10
08	Picture Color Saturation	-100 to +100	#13,08,10\r – Color Saturation=10
09	Picture Sharpness	-100 to +100	#13,09,10\r –Sharpness =10
10	Picture YC Delay	-100 to +100	#13,10,10\r –YC Delay =10
11	HDMI out port select	00-portA, 01-portB, 02-portA and portB	#13,11,01\r – HDMI output is set to port A

1.4.12 Group 16 – Zone 2 Commands

Command Number	Command Description	Command Data	Example
01	Zone 2 Source Select*	00 = Tuner, 01 – BD/DVD, 02 - Video 1, 03 - Video 2, 04 - Video3, 05 - Rec 1, 06 - Aux, 07 - CD, 08 - Rec 2, 09 - USB, 10 - 7.1 Direct In, 11-Expansion, 12 -ARC	#16,01,02\r - Select Video 1 Note USB is available on 751R only.
02	Zone 2 Volume up*	No Data	#16,02\r - Step Zone Volume Up (by 1dB)
03	Zone 2 Volume Down*	No Data	#16,03\r - Step Zone Volume Down (by 1dB)
04	Zone 2 On/Off	00 = Off,01 = On	#16,04,01\r - Turn Zone 2 On
05	Zone 2 Mute On/Off*	00 = Off, 01 = On (Muted)	#16,05,01\r - Mute Zone 2
06	Zone 2 Preset Up*	No Data	#16,06\r - Forces Tuner to preset mode and then on further action steps one preset up
07	Zone 2 Preset Down*	No Data	#16,07\r - Forces Tuner to preset mode and then on further action steps one preset down
08	Zone 2 Set Volume Level*	-xx (dB)	#16,08,-83\r - Set Zone 2 Volume to -43dB

*Zone 2 must be on

1.4.12 Group 17 – Zone 2 Replies

Command Number	Command Description	Command Data	Example
01	Zone 2 Source Select*	00 = Tuner, 01 – BD/DVD, 02 - Video 1, 03 - Video 2, 04 - Video3, 05 - Rec 1, 06 - Aux, 07 - CD, 08 - Rec 2, 09 - USB, 10 - 7.1 Direct In, 11-Expansion, 12 -ARC	#17,01,02\r - Select Video 1 Note USB is available on 751R only.
02	Zone 2 Volume up*	02 + Current Volume level	#17,02,-45\r – Volume Up + Level (-45dB)
03	Zone 2 Volume Down*	03 + Current Volume level	#17,03,-46\r – Volume Down + Level (-46dB)
04	Zone 2 On/Off	00 = Off,01 = On	#17,04,01\r - Turn Zone 2 On
05	Zone 2 Mute On/Off*	00 = Off, 01 = On (Muted)	#17,05,01\r - Mute Zone 2
06	Zone 2 Preset Up*	06 + Current preset	#17,06,02\r - Up + Current Preset (2)
07	Zone 2 Preset Down*	07 + Current preset	#17,07,01\r - Down + Current Preset (1)
08	Zone 2 Set Volume Level*	-xx (dB)	#17,08,-83\r - Zone 2 Volume at -43dB

*Zone 2 must be on

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