



## Rotel RA-11 / RA-12 V02 RS232 ASCII Controller Command List

Date	Version	Update Description
June 12, 2014	1.00	Original Specification

The RA-11 and RA-12 V02 support an ASCII based RS232 protocol. The RS232 hardware does not support flow control so care needs to be take when sending and receiving data to avoid packet loss.

The below protocol is effective starting with V02 units that have the rear panel RS232 connection. Earlier models with the rear panel mini USB connections do not support this protocol.

All commands sent to the attached Rotel device must have a terminating “!” character.

**Example Command:** power\_on!

**Note:** Do not include any spaces in the command, and do not include a carriage return or line feed after the command, only the “!” terminating character.

Status information from the attached Rotel product with either have a terminating “!” character or a byte count for variable length text data that may include a “!” in the returned message. It is up to the sending/receiving control application to properly parse and process the packets.

**Note:** The byte count only includes the text data and not the length or “,” character.

**Note about Rotel Link RCD feature:** The input that has been selected for the ROTEL LINK RCD option in the setup menu of the RA-11/12 will affect the response string from the unit for that input. If the input has been set as the Rotel Link RCD input, the response string for that input will be the second string listed in the table (i.e. if COAX1 has been set as the Rotel Link RCD input, the response string will be source=coax1\_cd! rather than the standard response string of source=coax1!).

### Connection Settings

Baud Rate	Parity	Valid Data Bits	Stop Bit Value	Handshaking	Data Type
115200	N	8	1	None	String

### Communication Protocol

Command and response messages are included on the following pages. Automatic display update information can be enabled/disabled using the “display\_update\_auto” and “display\_update\_manual” commands.

In automatic mode each time the display changes the new display line(s) will be sent.

In manual mode the display updates must be requested each time a refresh of the display information is desired. This primarily applies to Front USB metadata information. Basic status information such as volume, power or source changes will still be provided automatically.

## Section 1: Control Command List

RA-12 ASCII	Command Description	Unit Response
<b>POWER &amp; VOLUME COMMANDS</b>		
power_on!	Power On	power=on!
power_off!	Power Off	power=standby!
power_toggle!	Power Toggle	power=on/standby!
volume_up!	Volume Up	volume=##!
volume_down!	Volume Down	volume=##!
volume_max!	Set Volume to Max	volume=max!
volume_min!	Set Volume to Min	volume=min!
volume_n!	Set Volume to level n (n = 1 - 86)	volume=##!
mute!	Mute Toggle	mute=on/off!
mute_on!	Mute On	mute=on!
mute_off!	Mute Off	mute=off!
<b>SOURCE SELECTION COMMANDS</b>		
rcd!	Source Rotel CD	source=analog_cd! / source=coax1_cd! / source=coax2_cd!
cd!	Source CD	source=cd! / source=analog_cd!
coax1!	Source Coax 1	source=coax1! / source=coax1_cd!
coax2!	Source Coax 2	source=coax2! / source=coax2_cd!
opt1!	Source Optical 1	source=opt1!
opt2!	Source Optical 2	source=opt2!
aux1!	Source Aux 1	source=aux1!
aux2!	Source Aux 2	source=aux2!
tuner!	Source Tuner	source=tuner!
phono!	Source Phono	source=phono!
usb!	Source Front USB	source=usb!
<b>SOURCE CONTROL COMMANDS</b>		
play!	Play Source	play_status=play!
stop!	Stop Source	n/a
pause!	Pause Source	n/a
track_fwd!	Track Forward/Tune Up	n/a
track_back!	Track Backward/Tune Down	n/a
fast_fwd!	Fast Forward/Search Forward	n/a

RA-12 ASCII	Command Description	Unit Response
fast_back!	Fast Backward/Search Backward	n/a
random!	Random Play Mode Toggle	n/a
repeat!	Repeat Play Mode Toggle	n/a
<b>MENU CONTROL COMMANDS</b>		
menu!	Display the Menu	n/a
exit!	Exit Key	n/a
up!	Cursor Up	n/a
down!	Cursor Down	n/a
left!	Cursor Left	n/a
right!	Cursor Right	n/a
enter!	Enter Key	n/a
<b>NUMERIC KEY COMMANDS</b>		
1!	Number Key 1	n/a
2!	Number Key 2	n/a
3!	Number Key 3	n/a
4!	Number Key 4	n/a
5!	Number Key 5	n/a
6!	Number Key 6	n/a
7!	Number Key 7	n/a
8!	Number Key 8	n/a
9!	Number Key 9	n/a
0!	Number Key 0	n/a
<b>TONE CONTROL COMMANDS</b>		
tone_on!	Tone Controls On	tone=on!
tone_off!	Tone Controls Off	tone=off!
bass_up!	Bass Up	bass=000/+##/-##!
bass_down!	Bass Down	bass=000/+##/-##!
bass_-10!	Set Bass to -10	bass=-10!
bass_000!	Set Bass to 0	bass=000!
bass_+10!	Set Bass to +10	bass=+10!
treble_up!	Treble Up	treble=000/+##/-##!
treble_down!	Treble Down	treble=000/+##/-##!
treble_-10!	Set Treble to -10	treble=-10!
treble_000!	Set Treble to 0	treble=000!
treble_+10!	Set Treble to +10	treble=+10!
<b>BALANCE CONTROL COMMANDS</b>		
balance_right!	Balance Right	balance=000/L##/R##!
balance_left!	Balance Left	balance=000/L##/R##!
balance_L15!	Set Balance to Max Left	balance=L15!
balance_000!	Set Balance to 0	balance=000!
balance_R15!	Set Balance to Max Right	balance=R15!

RA-12 ASCII	Command Description	Unit Response
<b>OTHER COMMANDS</b>		
dimmer!	Toggle display dimmer	dimmer_#!
dimmer_0!	Set display to brightest setting	n/a
dimmer_1!	Set display to dimmer level 1	n/a
dimmer_2!	Set display to dimmer level 2	n/a
dimmer_3!	Set display to dimmer level 3	n/a
dimmer_4!	Set display to dimmer level 4	n/a
dimmer_5!	Set display to dimmer level 5	n/a
dimmer_6!	Set display to dimmest setting	n/a
<b>DISPLAY REFRESH COMMANDS</b>		
display_update_auto!	Set Display Update to Auto	display_update=auto!
display_update_manual!	Set Display Update to Manual	display_update=manual!

## Section 2: Feedback Request Command List

<b>Command:</b>	get_display!
<b>Description:</b>	Request the entire display to be sent
<b>Return String:</b>	display=###,text
<b>Return Description:</b>	Current display data; must include 3 digit length of text string at beginning followed by "," and text string (no terminating character)
<b>Example:</b>	display=040, Sample Text

<b>Command:</b>	get_display1!
<b>Description:</b>	Request display line #1 to be sent
<b>Return String:</b>	display1=##,text
<b>Return Description:</b>	Current display line 1, must include 2 digit length of text string at beginning followed by "," and text string (no terminating character)
<b>Example:</b>	display1=20, Sample Text

<b>Command:</b>	get_display2!
<b>Description:</b>	Request display line #2 to be sent
<b>Return String:</b>	display2=##,text
<b>Return Description:</b>	Current display line 2, must include 2 digit length of text string at beginning followed by "," and text string (no terminating character)
<b>Example:</b>	display2=20, Sample Text

<b>Command:</b>	get_product_type!
<b>Description:</b>	Request the product type
<b>Return String:</b>	product_type=##,text
<b>Return Description:</b>	Rotel product type name, must include 2 digit length of text string at beginning followed by "," and text string (no terminating character)
<b>Example:</b>	product_type=05,RA-12

<b>Command:</b>	get_product_version!
<b>Description:</b>	Request the main CPU software version
<b>Return String:</b>	product_version=##,text
<b>Return Description:</b>	Rotel main CPU software version, must include 2 digit length of text string at beginning followed by "," and text string (no terminating character)
<b>Example:</b>	product_version=06,V2.1.0

<b>Command:</b>	get_tc_version!
<b>Description:</b>	Request the front USB software version
<b>Return String(s):</b>	tc_version=##,text
<b>Return Description:</b>	Rotel front USB software version, must include 2 digit length of text string at beginning followed by "," and text string (no terminating character)
<b>Example:</b>	product_version=06,V500BT

<b>Command:</b>	get_display_size!
<b>Description:</b>	Request display size
<b>Return String:</b>	display_size=##,##!
<b>Return Description:</b>	Columns and rows on current display
<b>Example:</b>	display_size=20,02!

<b>Command:</b>	get_display_update!
<b>Description:</b>	Request display update
<b>Return String(s):</b>	display_update=auto! / display_update=manual!
<b>Return Description:</b>	Status of if the display refresh is automatic or manual
<b>Example:</b>	display_update=auto!

<b>Command:</b>	get_current_power!
<b>Description:</b>	Request current power status
<b>Return String(s):</b>	power=on! / power=standby!
<b>Return Description:</b>	Current power status
<b>Example:</b>	power=on!

<b>Command:</b>	get_current_source!
<b>Description:</b>	Request current source
<b>Return String(s):</b>	source=analog_cd! / source=cd! / source=coax1! / source=coax1_cd! / source=coax2! / source=coax2_cd! / source=opt1! / source=opt2! / source=tuner! / source=phono! / source=usb! / source=aux1! / source=aux2!
<b>Return Description:</b>	Current source
<b>Example:</b>	source=usb!

<b>Command:</b>	get_tone!
<b>Description:</b>	Request current tone control state
<b>Return String(s):</b>	tone=on! / tone=off!
<b>Return Description:</b>	Current tone control state
<b>Example:</b>	tone=off!

<b>Command:</b>	get_bass!
<b>Description:</b>	Request current bass level
<b>Return String(s):</b>	bass=###! (+01-10, -01-10, 000)
<b>Return Description:</b>	Current tone control bass level
<b>Example:</b>	bass=+02!

<b>Command:</b>	get_treble!
<b>Description:</b>	Request current treble level
<b>Return String(s):</b>	treble=###! (+01-10, -01-10, 000)
<b>Return Description:</b>	Current tone control treble level
<b>Example:</b>	treble=-01!

<b>Command:</b>	get_balance!
<b>Description:</b>	Request current balance setting
<b>Return String(s):</b>	balance=###! (L01-15, R01-15, 000)
<b>Return Description:</b>	Current balance setting
<b>Example:</b>	balance=L03!

<b>Command:</b>	get_current_freq!
<b>Description:</b>	Request current frequency for digital source input
<b>Return String(s):</b>	freq=off! / freq=32! / freq=44.1! / freq=48! / freq=88.2! / freq=96! / freq=176.4! / freq=192!
<b>Return Description:</b>	Current frequency for digital source input
<b>Example:</b>	freq=48!

<b>Command:</b>	get_play_status!
<b>Description:</b>	Request play status (front USB source)
<b>Return String(s):</b>	play_status=play! / play_status=stop! / play_status=pause!
<b>Return Description:</b>	Source play status
<b>Example:</b>	play_status=play!

<b>Command:</b>	get_volume_max!
<b>Description:</b>	Request Max volume value
<b>Return String(s):</b>	volume_max=##!
<b>Return Description:</b>	2 digit volume max level
<b>Example:</b>	volume_max=80!













<b>Command:</b>	get_volume_min!
<b>Description:</b>	Request Min volume value
<b>Return String(s):</b>	volume_min=0!
<b>Return Description:</b>	2 digit volume min level
<b>Example:</b>	volume_min=0!

<b>Command:</b>	get_volume!
<b>Description:</b>	Request current volume value
<b>Return String(s):</b>	volume=##!
<b>Return Description:</b>	2 digit current volume level
<b>Example:</b>	volume=40!

<b>Command:</b>	get_tone_max!
<b>Description:</b>	Request Max Tone value
<b>Return String(s):</b>	tone_max=10!
<b>Return Description:</b>	2 digit tone max level
<b>Example:</b>	tone_max=10!

### Section 3: Special Character Mapping

Certain characters on the RA-12 display may be represented by a combination of 2-3 hex bytes in the feedback string provided by the unit. Refer to the chart below for a mapping of the different characters.

Symbol	Hex Value	Symbol	Hex Value	Symbol	Hex Value
<b>A</b>	EE 82 85	<b>D</b>	EE 82 8A		EE 82 99
<b>C</b>	EE 82 84		EE 82 8B		EE 82 9A
<b>F</b>	EE 82 92	<b>  </b>	EE 82 81		EE 82 88
<b>G</b>	EE 82 87		EE 82 82		EE 82 95
<b>I</b>	EE 82 8E		EE 82 83		EE 82 96
<b>L</b>	EE 82 89		EE 82 94	*	EE 82 90
<b>M</b>	EE 82 93		EE 82 97		EE 82 91
<b>R</b>	EE 82 8C		EE 82 98	<b>Z</b>	EE 82 8D
<b>S</b>	EE 82 8F	<b>T</b>	EE 82 80	END	EE 80 80 EE 80 81 EE 80 82