Rotel RC-1590
RS232 / IP ASCII Controller Command List

Date	Version	Update Description
May 22, 2015	1.00	Original Specification
July 17, 2015	1.10	Updated with IP Control port information
September 16, 2016	1.11	Corrected volume scale from 1 - 86 to 1 - 96
July 16, 2019	2.00	Add V2.0 specification and details on change

The RC-1590 supports an ASCII based RS232 and IP protocol. The RS232 hardware does not support flow control so care needs to be take when sending and receiving data to avoid packet loss.

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 "!" or "$" character, depending on the protocol revision (see update below), 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.*

Important Protocol Revision

As of software V1.40, the RS232 and IP protocol was updated with changes to some commands as well as all feedback strings. This change **will impact** existing control systems so any connected control systems should be updated to utilize the new protocol before updating the software in the RC-1590.

The current commands and feedback strings are documented in Sections 1 & 2, while the legacy commands for older software is documented in Sections 3 & 4. A summary and list of specific changes is also provided in Appendix A.

The RS232 connection settings and IP control port remain unchanged with the 2.0 specification.

Connection Settings

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

IP Control Settings

The RC-1590 will accept and respond to IP control commands if the product is connected to a local network and has a valid IP address.

Commands will be accepted via TCP port 9590, and the unit will send responses back via the same port. The command and response format is identical to the serial commands.

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.

Note about Rotel Link RCD feature: *The input that has been selected for the ROTEL LINK RCD option in the setup menu of the RC-1590 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!).*

Note about PC-USB Transport control codes: *The basic transport functions (Play/Pause/Track etc) for PC-USB will ONLY function when the RC-1590 is set for USB 2.0 mode.*

Section 1: Control Command List V2.0

Applies to RC-1590 V1.40 and newer

RC-1590 ASCII	Command Description	Unit Response
POWER & VOLUME COMMANDS		
power_on!	Power On	power=on$
power_off!	Power Off	power=standby$
power_toggle!	Power Toggle	power=on/standby$
vol_up!	Volume Up	volume=##$
vol_dwn!	Volume Down	volume=##$
vol_min!	Set Volume to Min	volume=00$
vol_nn!	Set Volume to level n (01 - 96)	volume=##$
mute!	Mute Toggle	mute=on/off$
mute_on!	Mute On	mute=on$
mute_off!	Mute Off	mute=off$

RC-1590 ASCII	Command Description	Unit Response
SOURCE SELECTION COMMANDS		
cd!	Source CD	source=cd$
coax1!	Source Coax 1	source=coax1$
coax2!	Source Coax 2	source=coax2$
coax3!	Source Coax 3	source=coax3$
opt1!	Source Optical 1	source=opt1$
opt2!	Source Optical 2	source=opt2$
opt3!	Source Optical 3	source=opt3$
aux!	Source Aux	source=aux$
tuner!	Source Tuner	source=tuner$
phono!	Source Phono	source=phono$
usb!	Source Front USB	source=usb$
bluetooth!	Source Bluetooth	source=bluetooth$
bal_xlr!	Source XLR	source=bal_xlr$
pcusb!	Source PC-USB	source=pc_usb$
SOURCE CONTROL COMMANDS		
play!	Play Source	n/a
stop!	Stop Source	n/a
pause!	Pause Source	n/a
trkf!	Track Forward/Tune Up	n/a
trkb!	Track Backward/Tune Down	n/a
TONE CONTROL COMMANDS		
bypass_on!	Tone Bypass On	bypass=on$
bypass_off!	Tone Bypass Off	bypass=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$
BALANCE CONTROL COMMANDS		
balance_r!	Balance Right	balance=000/L##/R##$
balance_l!	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$

RC-1590 ASCII	Command Description	Unit Response
OTHER COMMANDS		
dimmer!	Toggle display dimmer	dimmer=#$
dimmer_0!	Set display to brightest setting	dimmer=0$
dimmer_1!	Set display to dimmer level 1	dimmer=1$
dimmer_2!	Set display to dimmer level 2	dimmer=2$
dimmer_3!	Set display to dimmer level 3	dimmer=3$
dimmer_4!	Set display to dimmer level 4	dimmer=4$
dimmer_5!	Set display to dimmer level 5	dimmer=5$
dimmer_6!	Set display to dimmest setting	dimmer=6$
pcusb_class_1!	Set PC-USB Audio Class to 1.0	pcusb_class=1$
pcusb_class_2!	Set PC-USB Audio Class to 2.0	pcusb_class=2$
RS232 FEEDBACK COMMANDS		
rs232_update_on!	Set RS232 Update to Auto (On)	update_mode=auto$
rs232_update_off!	Set RS232 Update to Manual (Off)	update_mode=manual$

Section 2: Feedback Request Command List V2.0

Applies to RC-1590 V1.40 and newer

Command:	power?
Description:	Request current power status
Return String(s):	power=on$ / power=standby$
Return Description:	Current power status
Example:	power=on$

Command:	source?
Description:	Request current source
Return String(s):	source=cd$ / source=coax1$ / source=coax2$ / source=coax3$ source=opt1$ / source=opt2$ / source=opt3$ / source=tuner$ / source=phono$ / source=usb$ / source=aux$ / source=pc_usb$ / source=bal_xlr$ / source=bluetooth$
Return Description:	Current source
Example:	source=usb$

Command:	volume?
Description:	Request current volume value
Return String(s):	volume=##$
Return Description:	2 digit current volume level
Example:	volume=40$

Command:	mute?
Description:	Request current mute status
Return String(s):	mute=on$ / mute=off$
Return Description:	Current mute status
Example:	mute=off$

Command:	bypass?
Description:	Request current tone bypass state
Return String(s):	bypass=on$ / bypass=off$
Return Description:	Current tone bypass state
Example:	bypass=off$

Command:	bass?
Description:	Request current bass level
Return String(s):	bass=###$ (+01-10, -01-10, 000)
Return Description:	Current tone control bass level
Example:	bass=+02$

Command:	treble?
Description:	Request current treble level
Return String(s):	treble=###$ (+01-10, -01-10, 000)
Return Description:	Current tone control treble level
Example:	treble=-01$

Command:	balance?
Description:	Request current balance setting
Return String(s):	balance=###$ (L01-15, R01-15, 000)
Return Description:	Current balance setting
Example:	balance=L03$

Command:	freq?
Description:	Request current frequency for digital source input
Return String(s):	freq=off$ / freq=32$ / freq=44.1$ / freq=48$ / freq=88.2$ / freq=96$ / freq=176.4$ / freq=192$ / freq=384$
Return Description:	Current frequency for digital source input
Example:	freq=48$

Command:	dimmer?
Description:	Request current front display dimmer level
Return String(s):	dimmer=0$ / dimmer=1$ / dimmer=2$ / dimmer=3$ / dimmer=4$ / dimmer=5$ / dimmer=6$
Return Description:	Current front display dimmer level
Example:	dimmer=3$

Command:	pcusb?
Description:	Request current PC-USB class
Return String(s):	pcusb_class=1$ / pcusb_class=2$
Return Description:	Current PC-USB class
Example:	pcusb_class=1$

Command:	version?
Description:	Request the main CPU software version
Return String:	version=#.##$
Return Description:	Rotel main CPU software version
Example:	version=1.39$

Command:	pc_version?
Description:	Request the PC-USB software version
Return String:	pc_version=#.##$
Return Description:	Rotel PC-USB software version
Example:	pc_version=1.13$

Command:	ip?
Description:	Request the IP address of the product
Return String:	ipaddress=###.###.###.###$
Return Description:	Current IP address
Example:	ipaddress =192.168.100.8$

Command:	mac?
Description:	Request the MAC address of the product
Return String:	mac=############$
Return Description:	MAC address (uppercase characters)
Example:	mac=0CEFAF90125E$

Command:	model?
Description:	Request the model number
Return String:	model=text$
Return Description:	Rotel model number
Example:	model=RC-1590$

Command:	discover?
Description:	Request the device to identify itself on the network
Return String:	discover=ip=###.###.###.### port=#### mac=############$
Return Description:	Device's IP address, port number and MAC address
Example:	discover=ip=192.168.100.25 port=9596 mac=0cefaf90125e$

Section 3: Control Command List V1.0

Applies to RC-1590 prior to V1.40

RC-1590 ASCII	Command Description	Unit Response
POWER & VOLUME COMMANDS		
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_min!	Set Volume to Min	volume=min!
volume_n!	Set Volume to level n (n = 1 - 96)	volume=##!
mute!	Mute Toggle	mute=on/off!
mute_on!	Mute On	mute=on!
mute_off!	Mute Off	mute=off!
SOURCE SELECTION COMMANDS		
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!
coax3!	Source Coax 3	source=coax3! / source=coax3_cd!
opt1!	Source Optical 1	source=opt1!
opt2!	Source Optical 2	source=opt2!
opt3!	Source Optical 3	source=opt3!
aux!	Source Aux	source=aux!
tuner!	Source Tuner	source=tuner!
phono!	Source Phono	source=phono!
usb!	Source Front USB	source=usb!
pc_usb!	Source PC-USB	source=pc_usb!
bal_xlr!	Source XLR	source=bal_xlr! / source=bal_xlr_cd!
bluetooth!	Source Bluetooth	source=bluetooth!
rcd!	Source Rotel CD	source=analog_cd! / source=coax1_cd! / source=coax2_cd! / source=bal_xlr_cd!
SOURCE CONTROL COMMANDS		
play!	Play Source	n/a
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

RC-1590 ASCII	Command Description	Unit Response
fast_back!	Fast Backward/Search Backward	n/a
MENU CONTROL COMMANDS		
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
NUMERIC KEY COMMANDS		
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
TONE CONTROL COMMANDS		
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!
BALANCE CONTROL COMMANDS		
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!
OTHER COMMANDS		
dimmer!	Toggle display dimmer	dimmer_#!
dimmer_0!	Set display to brightest setting	n/a

RC-1590 ASCII	Command Description	Unit Response
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
power_mode_quick!	Set power mode to quick	power_mode=quick!
power_mode_normal!	Set power mode to normal	power_mode=normal!
pcusb_class_1!	Set PC-USB Audio Class to 1.0	pcusb_class=1!
pcusb_class_2!	Set PC-USB Audio Class to 2.0	pcusb_class=2!
factory_default_on!	Reset unit to factory defaults	n/a
DISPLAY REFRESH COMMANDS		
display_update_auto!	Set Display Update to Auto	display_update=auto!
display_update_manual!	Set Display Update to Manual	display_update=manual!

Section 4: Feedback Request Command List V1.0

Applies to RC-1590 prior to V1.40

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

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

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

Command:	get_product_type!
Description:	Request the product type
Return String:	product_type=##,text
Return Description:	Rotel product type name, must include 2 digit length of text string at beginning followed by "," and text string (no terminating character)
Example:	product_type=07,RC-1570

Command:	get_product_version!
Description:	Request the main CPU software version
Return String:	product_version=##,text
Return Description:	Rotel main CPU software version, must include 2 digit length of text string at beginning followed by "," and text string (no terminating character)
Example:	product_version=06,V1.1.8

Command:	get_display_size!
Description:	Request display size (Requires Main Software V1.2.9 or later)
Return String:	display_size=##,##!
Return Description:	Columns and rows on current display
Example:	display_size=20,04!

Command:	get_display_update!
Description:	Request display update (Requires Main Software V1.2.9 or later)
Return String(s):	display_update=auto! / display_update=manual!
Return Description:	Status of if the display refresh is automatic or manual
Example:	display_update=auto!

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

Command:	get_current_source!
Description:	Request current source
Return String(s):	source=analog_cd! / source=cd! / source=coax1! / source=coax1_cd! / source=coax2! / source=coax2_cd! / source=coax3! / source=coax3_cd! / source=opt1! / source=opt2! / source=opt3! / source=tuner! / source=phono! / source=usb! / source=pc_usb! / source=aux! / source=bluetooth! / source=bal_xlr! / source=bal_xlr_cd!
Return Description:	Current source
Example:	source=pc_usb!

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

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

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

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

Command:	get_pcusb_class!
Description:	Request current PC-USB class
Return String(s):	pcusb_class=1! / pcusb_class=2!
Return Description:	Current PC-USB class
Example:	pcusb_class=1!

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

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

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

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

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

Command:	get_mute_status!
Description:	Request current mute status.
Return String(s):	mute=off! / mute=on!
Return Description:	Current mute state
Example:	mute=on!

Command:	get_power_mode!
Description:	Request current power mode. (Quick or Normal)
Return String(s):	power_mode=normal! / power_mode=quick!
Return Description:	Current power mode
Example:	power_mode=quick!

Section 5: Special Character Mapping

Certain characters on the RC-1590 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
A	EE 82 85	D	EE 82 8A	■	EE 82 99
C	EE 82 84	◖	EE 82 8B	□	EE 82 9A
F	EE 82 92	‖	EE 82 81	(	EE 82 88
G	EE 82 87	►	EE 82 82	→	EE 82 95
I	EE 82 8E	■	EE 82 83	←	EE 82 96
L	EE 82 89	◄	EE 82 94	*	EE 82 90
M	EE 82 93	►	EE 82 97	■	EE 82 91
R	EE 82 8C	◄	EE 82 98	Z	EE 82 8D
S	EE 82 8F	T	EE 82 80	END	EE 80 80 EE 80 81 EE 80 82

Appendix A: Summary of Changes V1.0 – V2.0

A list of the specific changed commands and feedback strings between the V1.0 and V2.0 specification is detailed here.

Global Changes

In addition to the specific changes below, the terminating character on all feedback strings has changed to the "$" character instead of the previous "!" character.

An example response string is provided below.

Unit Response V1.0	Unit Response V2.0
bypass=off!	bypass=off$

Control Command Changes

Command V1.0	Command V2.0	Response V1.0	Response V2.0
volume_up!	vol_up!	volume=##!	volume=##$
volume_down!	vol_dwn!	volume=##!	volume=##$
volume_max!	n/a	volume=max!	n/a
volume_min!	vol_min!	volume=min!	volume=00$
volume_n!	vol_nn!	volume=##!	volume=##$
track_fwd!	trkf!	n/a	n/a
track_back!	trkb!	n/a	n/a
tone_on!	bypass_off!	tone=on!	bypass=off$
tone_off!	bypass_on!	tone=off!	bypass=on$
display_update_auto!	rs232_update_on!	display_update=auto!	update_mode=auto$
display_update_manual!	rs232_update_off!	display_update=manual!	update_mode=manual$
balance_right!	balance_r!	balance=000/L##/R##!	balance=000/L##/R##$
balance_left!	balance_l!	balance=000/L##/R##!	balance=000/L##/R##$
balance_R15!	balance_r15!	balance=000/L##/R##!	balance=000/L##/R##$
balance_L15!	balance_l15!	balance=000/L##/R##!	balance=000/L##/R##$
rcd!	n/a	source=coax1_cd!	n/a
power_mode_quick!	n/a	power_mode=quick!	n/a
power_mode_normal!	n/a	power_mode=normal!	n/a
menu!	n/a	n/a	n/a
exit!	n/a	n/a	n/a
up!	n/a	n/a	n/a
down!	n/a	n/a	n/a
left!	n/a	n/a	n/a
right!	n/a	n/a	n/a
enter!	n/a	n/a	n/a

Feedback Request Command Changes

Note the listed responses below may not include all values – refer to the appropriate command in the main documentation sections for the full list of potential response values.

Command V1.0	Command V2.0	Response V1.0	Response V2.0
get_current_power!	power?	power=on!	power=on$
get_current_source!	source?	source=cd!	source=cd$
get_volume!	volume?	volume=##!	volume=##$
get_mute_status!	mute?	mute=off!	mute=off$
get_tone!	bypass?	tone=off!	bypass=on$
get_bass!	bass?	bass=###!	bass=###$
get_treble!	treble?	treble=###!	treble=###$
get_balance!	balance?	balance=###!	balance=###$
get_current_freq!	freq?	freq=44.1!	freq=44.1$
get_current_dimmer!	dimmer?	dimmer=#!	dimmer=#$
get_display!	n/a	display=###,text	n/a
get_display1!	n/a	display1=###,text	n/a
get_display2!	n/a	display2=###,text	n/a
get_product_type!	model?	product_type=##,text	model=text$
get_product_version!	version?	product_version=##,text	version=#.##$
get_display_size!	n/a	display_size=##,##!	n/a
get_display_update!	n/a	display_update=auto!	n/a
get_pcusb_class!	pcusb?	pcusb_class=2!	pcusb_class=2$
get_volume_max!	n/a	volume_max=##!	n/a
get_volume_min!	n/a	volume_min=0!	n/a
get_tone_max!	n/a	tone_max=10!	n/a
get_power_mode!	n/a	power_mode=quick!	n/a
n/a	pc_version?	n/a	pc_version=#.##$
n/a	ip?	n/a	ipaddress=###.###.###.###$
n/a	mac?	n/a	mac=############$
n/a	discover?	n/a	discover=ip=###.###.###.### port=#### mac=############$