Rotel RSP-1068
RS232 HEX Protocol

Date	Version	Update Description
February 2, 2012	1.00	Original Specification

The RS232 protocol structure for the RSP-1068 is detailed below. This is a HEX based communication protocol.

Connection Settings

Baud Rate	Parity	Valid Data Bits	Stop Bit Value	Handshaking	Data Type
19200	N	8	1	None	String

All commands sent to the attached Rotel device must follow the command structure detailed below, unless specified otherwise. Send only the bytes only, no spaces, delimeter, etc.

Standard Command String Format

Start	Count	Device ID	Type	Key	Checksum
0xFE	0x03	0xA1	0x10	0xXX	0xXX

Note: *The count byte only includes the ID, Type, and Key bytes; it does not include the Start or Checksum bytes.*

Note 2: *Do not include any carriage returns or line feeds after the commands*

Communication Protocol

Command and response messages are included on the following pages. The standard response string of the unit mirrors the data that would be available on the front panel of the unit.

Any change to the status of the front display on the unit will prompt a feedback string mirroring that change.

Note that the spaces shown between hex bytes below are for clarity only; do not include spaces in the actual command sent to the unit.

Meta Encoding

The start byte for all command and response strings is FE. To keep the device from encountering the start byte FE in any position other than as the start byte, any occurrence of the byes FD or FE in a command string must be converted to either FD 00 (for FD), or FD 01 (for FE). This will allow the string to pass while masking any occurrence of the byte FE except as the start byte. Commands that have Meta Encoding applied will be highlighted in red.

Section 1: Control Command List

Table 1 - Type 10 Primary Commands

RSP-1068 HEX	Command Description
POWER & VOLUME COMMANDS	
FE 03 A1 10 0A BE	Power Toggle
FE 03 A1 10 4A FD 01	Power Off
FE 03 A1 10 4B FF	Power On
FE 03 A1 10 0B BF	Volume Up
FE 03 A1 10 0C C0	Volume Down
FE 03 A1 10 1E D2	Mute Toggle
SOURCE SELECTION COMMANDS	
FE 03 A1 10 02 B6	Source CD
FE 03 A1 10 03 B7	Source Tuner
FE 03 A1 10 04 B8	Source Tape
FE 03 A1 10 05 B9	Source Video 1
FE 03 A1 10 06 BA	Source Video 2
FE 03 A1 10 07 BB	Source Video 3
FE 03 A1 10 08 BC	Source Video 4
FE 03 A1 10 09 BD	Source Video 5
FE 03 A1 10 15 C9	Source Multi Input
SURROUND MODE COMMANDS	
FE 03 A1 10 11 C5	Stereo
FE 03 A1 10 12 C6	Dolby 3 Stereo
FE 03 A1 10 13 C7	Dolby Pro Logic
FE 03 A1 10 14 C8	DSP Music Mode Toggle
FE 03 A1 10 53 07	Dolby 3 Stereo / Pro Logic Toggle
FE 03 A1 10 54 08	dts Neo:6 Music/Cinema Toggle
FE 03 A1 10 57 0B	Music 1
FE 03 A1 10 58 0C	Music 2
FE 03 A1 10 59 0D	Music 3
FE 03 A1 10 5A 0E	Music 4
FE 03 A1 10 5B 0F	5 Channel Stereo
FE 03 A1 10 5C 10	7 Channel Stereo
FE 03 A1 10 5D 11	Dolby PLII Cinema
FE 03 A1 10 5E 12	Dolby PLII Music

RSP-1068 HEX	Command Description
FE 03 A1 10 74 28	Dolby PLII Game
FE 03 A1 10 5F 13	Dolby Pro Logic
FE 03 A1 10 60 14	dts Neo:6 Music
FE 03 A1 10 61 15	dts Neo:6 Cinema
FE 03 A1 10 62 16	PLII Panorama Toggle
FE 03 A1 10 63 17	PLII Dimension Up
FE 03 A1 10 64 18	PLII Dimension Down
FE 03 A1 10 65 19	PLII Center Width Up
FE 03 A1 10 66 1A	PLII Center Width Down
FE 03 A1 10 68 1C	Dolby Digital EX Toggle
FE 03 A1 10 22 D6	Next Surround Mode
TONE CONTROL COMMANDS	
FE 03 A1 10 0D C1	Treble Up
FE 03 A1 10 0E C2	Treble Down
FE 03 A1 10 0F C3	Bass Up
FE 03 A1 10 10 C4	Bass Down
FE 03 A1 10 67 1B	Tone Control Select
OSD MENU COMMANDS	
FE 03 A1 10 18 CC	OSD Menu
FE 03 A1 10 19 CD	Enter
FE 03 A1 10 1A CE	Cursor Right
FE 03 A1 10 1B CF	Cursor Left
FE 03 A1 10 1C D0	Cursor Up
FE 03 A1 10 1D D1	Cursor Down
OTHER COMMANDS	
FE 03 A1 10 17 CB	Record Function Select
FE 03 A1 10 16 CA	Dynamic Range
FE 03 A1 10 1F D3	Digital Input Select
FE 03 A1 10 23 D7	Zone 2 / Main
FE 03 A1 10 4C 00	Temporary Center Trim
FE 03 A1 10 4D 01	Temporary Subwoofer Trim
FE 03 A1 10 4E 02	Temporary Surround Trim
FE 03 A1 10 4F 03	Cinema EQ Toggle
FE 03 A1 10 52 06	Front Display On/Off
FE 03 A1 10 FF B3	Display Refresh

Table 2 - Type 14 Main Zone Commands

NOTE: *These commands are duplicate functions of the primary commands in the table above bearing the same name, but are discrete for the main zone only. For multi-zone installation applications, it is recommended that the below commands be used where applicable rather than the type 10 commands to avoid zone conflicts.*

RSP-1068 HEX	Command Description
MAIN ZONE POWER & VOLUME COMMANDS	
FE 03 A1 14 0A C2	Main Zone Power Toggle
FE 03 A1 14 4A 02	Main Zone Power Off
FE 03 A1 14 4B 03	Main Zone Power On
FE 03 A1 14 00 B8	Main Zone Volume Up
FE 03 A1 14 01 B9	Main Zone Volume Down
FE 03 A1 14 1E D6	Main Zone Mute Toggle
FE 03 A1 14 6C 24	Main Zone Mute On
FE 03 A1 14 6D 25	Main Zone Mute Off
MAIN ZONE SOURCE SELECTION COMMANDS	
FE 03 A1 14 02 BA	Main Zone Source CD
FE 03 A1 14 03 BB	Main Zone Source Tuner
FE 03 A1 14 04 BC	Main Zone Source Tape
FE 03 A1 14 05 BD	Main Zone Source Video 1
FE 03 A1 14 06 BE	Main Zone Source Video 2
FE 03 A1 14 07 BF	Main Zone Source Video 3
FE 03 A1 14 08 C0	Main Zone Source Video 4
FE 03 A1 14 09 C1	Main Zone Source Video 5

Table 3 - Type 15 Record Source Commands

RSP-1068 HEX	Command Description
RECORD SOURCE SELECTION COMMANDS	
FE 03 A1 15 02 BB	Record Source CD
FE 03 A1 15 03 BC	Record Source Tuner
FE 03 A1 15 04 BD	Record Source Tape
FE 03 A1 15 05 BE	Record Source Video 1
FE 03 A1 15 06 BF	Record Source Video 2
FE 03 A1 15 07 C0	Record Source Video 3
FE 03 A1 15 08 C1	Record Source Video 4
FE 03 A1 15 09 C2	Record Source Video 5
FE 03 A1 15 6B 24	Record Follow Main Zone Source

Table 4 - Type 16 Zone 2 Commands

RSP-1068 HEX	Command Description
ZONE 2 POWER & VOLUME COMMANDS	
FE 03 A1 16 0A C4	Zone 2 Power Toggle
FE 03 A1 16 4A 04	Zone 2 Power Off
FE 03 A1 16 4B 05	Zone 2 Power On
FE 03 A1 16 00 BA	Zone 2 Volume Up
FE 03 A1 16 01 BB	Zone 2 Volume Down
FE 03 A1 16 1E D8	Zone 2 Mute Toggle
FE 03 A1 16 6C 26	Zone 2 Mute On
FE 03 A1 16 6D 27	Zone 2 Mute Off
ZONE 2 SOURCE SELECTION COMMANDS	
FE 03 A1 16 02 BC	Zone 2 Source CD
FE 03 A1 16 03 BD	Zone 2 Source Tuner
FE 03 A1 16 04 BE	Zone 2 Source Tape
FE 03 A1 16 05 BF	Zone 2 Source Video 1
FE 03 A1 16 06 C0	Zone 2 Source Video 2
FE 03 A1 16 07 C1	Zone 2 Source Video 3
FE 03 A1 16 08 C2	Zone 2 Source Video 4
FE 03 A1 16 09 C3	Zone 2 Source Video 5
FE 03 A1 16 6B 25	Zone 2 Follow Main Zone Source

Table 5 - Type 30 Volume Direct Commands

NOTE: Volume direct commands range from hex 00 – 60; below is a sample of the commands available.

RSP-1068 HEX	Command Description
VOLUME DIRECT COMMANDS	
FE 03 A1 30 00 D4	Volume Min
FE 03 A1 30 01 D5	Volume 1
FE 03 A1 30 02 D6	Volume 2
FE 03 A1 30 03 D7	Volume 3
FE 03 A1 30 04 D8	Volume 4
FE 03 A1 30 05 D9	Volume 5
FE 03 A1 30 06 DA	Volume 6
FE 03 A1 30 10 E4	Volume 16
FE 03 A1 30 20 F4	Volume 32
FE 03 A1 30 2A FD 01	Volume 42
FE 03 A1 30 40 14	Volume 64
FE 03 A1 30 50 24	Volume 80
FE 03 A1 30 5F 33	Volume 95
FE 03 A1 30 60 34	Volume Max

Table 6 - Type 32 Zone 2 Volume Direct Commands

RSP-1068 HEX	Command Description
ZONE 2 VOLUME DIRECT COMMANDS	
FE 03 A1 32 00 D6	Zone 2 Volume Min
FE 03 A1 32 01 D7	Zone 2 Volume 1
FE 03 A1 32 02 D8	Zone 2 Volume 2
FE 03 A1 32 03 D9	Zone 2 Volume 3
FE 03 A1 32 04 DA	Zone 2 Volume 4
FE 03 A1 32 05 DB	Zone 2 Volume 5
FE 03 A1 32 06 DC	Zone 2 Volume 6
FE 03 A1 32 10 E6	Zone 2 Volume 16
FE 03 A1 32 20 F6	Zone 2 Volume 32
FE 03 A1 32 28 FD 01	Zone 2 Volume 40
FE 03 A1 32 40 16	Zone 2 Volume 64
FE 03 A1 32 50 26	Zone 2 Volume 80
FE 03 A1 32 5F 35	Zone 2 Volume 89
FE 03 A1 32 60 36	Zone 2 Volume Max

Section 2: Feedback String Format

Standard Response String Format

Start	Count	ID	Type	Data						Checksum
0xFE	0x31	0xA1	0x20	Char1	...	Char42	Flag1	...	Flag5	0xXX

The feedback string is a representation of the display of the unit. The Char1 - Char42 data bytes contain ASCII data representing the text that appears across the 2 lines of the front display. It can contain source input, volume, and surround mode data and should be parsed to obtain this information. The Flag1 - Flag5 data bytes contain data on which of the various icons on the front display are currently illuminated. The display status uses 2 bits in Flag3 to confirm if the front display is On or Off.

Flag1 – Flag5 Data

	Flag1	Flag2	Flag3	Flag4	Flag5
Bit0	A		Display Mode0	SB	CBL
Bit1	5		Display Mode1		CBR
Bit2	4	DSP			SW
Bit3	3	EX	Standby LED	<	SR
Bit4	2	THX		>	SL
Bit5	1	dts		7.1	FR
Bit6	Coaxial	Pro Logic		5.1	C
Bit7	Optical	Dolby Digital		Zone	FL

Display Status

	Display On	Display Off
Display Mode 1	0	1
Display Mode 0	0	0