



## Rotel RSP-1069 RS232 HEX Protocol

Date	Version	Update Description
February 3, 2012	1.00	Original Specification

The RS232 protocol structure for the RSP-1069 is detailed below. This is a HEX based communication protocol.

### Connection Settings

Baud Rate	Parity	Valid Data Bits	Stop Bit Value	Handshaking	Data Type
38400	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, delimiter, etc.

### Standard Command String Format

Start	Count	Device ID	Type	Key	Checksum
0xFE	0x03	0xA2	0x10	0xFF	0xFF

*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 bytes 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.

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### Table 1 - Type 10 Primary Commands

RSP-1069 HEX	Command Description
<b>POWER &amp; VOLUME COMMANDS</b>	
FE 03 A2 10 0A BF	Power Toggle
FE 03 A2 10 4A FF	Power Off
FE 03 A2 10 4B 00	Power On
FE 03 A2 10 0B C0	Volume Up
FE 03 A2 10 0C C1	Volume Down
FE 03 A2 10 1E D3	Mute Toggle
FE 03 A2 10 71 26	Power Off All Zones
<b>SOURCE SELECTION COMMANDS</b>	
FE 03 A2 10 02 B7	Source CD
FE 03 A2 10 03 B8	Source Tuner
FE 03 A2 10 04 B9	Source Tape
FE 03 A2 10 05 BA	Source Video 1
FE 03 A2 10 06 BB	Source Video 2
FE 03 A2 10 07 BC	Source Video 3
FE 03 A2 10 08 BD	Source Video 4
FE 03 A2 10 09 BE	Source Video 5
FE 03 A2 10 15 CA	Source Multi Input
<b>SURROUND MODE COMMANDS</b>	
FE 03 A2 10 11 C6	Stereo
FE 03 A2 10 12 C7	Dolby 3 Stereo
FE 03 A2 10 13 C8	Dolby Pro Logic
FE 03 A2 10 14 C9	DSP Music Mode Toggle
FE 03 A2 10 53 08	Dolby 3 Stereo / Pro Logic Toggle
FE 03 A2 10 54 09	dts Neo:6 Music/Cinema Toggle
FE 03 A2 10 57 0C	Music 1
FE 03 A2 10 58 0D	Music 2
FE 03 A2 10 59 0E	Music 3
FE 03 A2 10 5A 0F	Music 4
FE 03 A2 10 5B 10	5 Channel Stereo

<b>RSP-1069 HEX</b>	<b>Command Description</b>
FE 03 A2 10 5C 11	7 Channel Stereo
FE 03 A2 10 5D 12	Dolby PLII Cinema
FE 03 A2 10 5E 13	Dolby PLII Music
FE 03 A2 10 74 29	Dolby PLII Game
FE 03 A2 10 5F 14	Dolby Pro Logic
FE 03 A2 10 60 15	dts Neo:6 Music
FE 03 A2 10 61 16	dts Neo:6 Cinema
FE 03 A2 10 62 17	PLII Panorama Toggle
FE 03 A2 10 63 18	PLII Dimension Up
FE 03 A2 10 64 19	PLII Dimension Down
FE 03 A2 10 65 1A	PLII Center Width Up
FE 03 A2 10 66 1B	PLII Center Width Down
FE 03 A2 10 68 1D	Dolby Digital EX Toggle
FE 03 A2 10 22 D7	Next Surround Mode
<b>TONE CONTROL COMMANDS</b>	
FE 03 A2 10 0D C2	Treble Up
FE 03 A2 10 0E C3	Treble Down
FE 03 A2 10 0F C4	Bass Up
FE 03 A2 10 10 C5	Bass Down
FE 03 A2 10 67 1C	Tone Control Select
<b>OSD MENU COMMANDS</b>	
FE 03 A2 10 18 CD	OSD Menu
FE 03 A2 10 19 CE	Enter
FE 03 A2 10 1A CF	Cursor Right
FE 03 A2 10 1B D0	Cursor Left
FE 03 A2 10 1C D1	Cursor Up
FE 03 A2 10 1D D2	Cursor Down
<b>OTHER COMMANDS</b>	
FE 03 A2 10 17 CC	Record Function Select
FE 03 A2 10 16 CB	Dynamic Range
FE 03 A2 10 1F D4	Digital Input Select
FE 03 A2 10 23 D8	Zone 2 / Main
FE 03 A2 10 4C 01	Temporary Center Trim
FE 03 A2 10 4D 02	Temporary Subwoofer Trim
FE 03 A2 10 4E 03	Temporary Surround Trim
FE 03 A2 10 4F 04	Cinema EQ Toggle
FE 03 A2 10 52 07	Front Display On/Off
FE 03 A2 10 FF B4	Display Refresh
FE 03 A2 10 6E 23	Party Mode Toggle
FE 03 A2 10 75 2A	Output Resolution
FE 03 A2 10 78 2D	HDMI Amp Mode
FE 03 A2 10 79 2E	HDMI TV Mode

**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-1069 HEX	Command Description
<b>MAIN ZONE POWER &amp; VOLUME COMMANDS</b>	
FE 03 A2 14 0A C3	Main Zone Power Toggle
FE 03 A2 14 4A 03	Main Zone Power Off
FE 03 A2 14 4B 04	Main Zone Power On
FE 03 A2 14 00 B9	Main Zone Volume Up
FE 03 A2 14 01 BA	Main Zone Volume Down
FE 03 A2 14 1E D7	Main Zone Mute Toggle
FE 03 A2 14 6C 25	Main Zone Mute On
FE 03 A2 14 6D 26	Main Zone Mute Off
<b>MAIN ZONE SOURCE SELECTION COMMANDS</b>	
FE 03 A2 14 02 BB	Main Zone Source CD
FE 03 A2 14 03 BC	Main Zone Source Tuner
FE 03 A2 14 04 BD	Main Zone Source Tape
FE 03 A2 14 05 BE	Main Zone Source Video 1
FE 03 A2 14 06 BF	Main Zone Source Video 2
FE 03 A2 14 07 C0	Main Zone Source Video 3
FE 03 A2 14 08 C1	Main Zone Source Video 4
FE 03 A2 14 09 C2	Main Zone Source Video 5

**Table 3 - Type 15 Record Source Commands**

RSP-1069 HEX	Command Description
<b>RECORD SOURCE SELECTION COMMANDS</b>	
FE 03 A2 15 02 BC	Record Source CD
FE 03 A2 15 03 BD	Record Source Tuner
FE 03 A2 15 04 BE	Record Source Tape
FE 03 A2 15 05 BF	Record Source Video 1
FE 03 A2 15 06 C0	Record Source Video 2
FE 03 A2 15 07 C1	Record Source Video 3
FE 03 A2 15 08 C2	Record Source Video 4
FE 03 A2 15 09 C3	Record Source Video 5
FE 03 A2 15 6B 25	Record Follow Main Zone Source

**Table 4 - Type 16 Zone 2 Commands**

RSP-1069 HEX	Command Description
<b>ZONE 2 POWER &amp; VOLUME COMMANDS</b>	
FE 03 A2 16 0A C5	Zone 2 Power Toggle
FE 03 A2 16 4A 05	Zone 2 Power Off
FE 03 A2 16 4B 06	Zone 2 Power On
FE 03 A2 16 00 BB	Zone 2 Volume Up
FE 03 A2 16 01 BC	Zone 2 Volume Down
FE 03 A2 16 1E D9	Zone 2 Mute Toggle
FE 03 A2 16 6C 27	Zone 2 Mute On
FE 03 A2 16 6D 28	Zone 2 Mute Off
FE 03 A2 16 71 2C	Power Off All Zones
<b>ZONE 2 SOURCE SELECTION COMMANDS</b>	
FE 03 A2 16 02 BD	Zone 2 Source CD
FE 03 A2 16 03 BE	Zone 2 Source Tuner
FE 03 A2 16 04 BF	Zone 2 Source Tape
FE 03 A2 16 05 C0	Zone 2 Source Video 1
FE 03 A2 16 06 C1	Zone 2 Source Video 2
FE 03 A2 16 07 C2	Zone 2 Source Video 3
FE 03 A2 16 08 C3	Zone 2 Source Video 4
FE 03 A2 16 09 C4	Zone 2 Source Video 5
FE 03 A2 16 6B 26	Zone 2 Follow Main Zone Source
<b>ZONE 2 OTHER COMMANDS</b>	
FE 03 A2 16 6E 29	Party Mode Toggle

**Table 5 - Type 17 Zone 3 Commands**

RSP-1069 HEX	Command Description
<b>ZONE 3 POWER &amp; VOLUME COMMANDS</b>	
FE 03 A2 17 0A C6	Zone 3 Power Toggle
FE 03 A2 17 4A 06	Zone 3 Power Off
FE 03 A2 17 4B 07	Zone 3 Power On
FE 03 A2 17 00 BC	Zone 3 Volume Up
FE 03 A2 17 01 BD	Zone 3 Volume Down
FE 03 A2 17 1E DA	Zone 3 Mute Toggle
FE 03 A2 17 6C 28	Zone 3 Mute On
FE 03 A2 17 6D 29	Zone 3 Mute Off
FE 03 A2 17 71 2D	Power Off All Zones
<b>ZONE 3 SOURCE SELECTION COMMANDS</b>	
FE 03 A2 17 02 BE	Zone 3 Source CD
FE 03 A2 17 03 BF	Zone 3 Source Tuner
FE 03 A2 17 04 C0	Zone 3 Source Tape
FE 03 A2 17 05 C1	Zone 3 Source Video 1

RSP-1069 HEX	Command Description
FE 03 A2 17 06 C2	Zone 3 Source Video 2
FE 03 A2 17 07 C3	Zone 3 Source Video 3
FE 03 A2 17 08 C4	Zone 3 Source Video 4
FE 03 A2 17 09 C5	Zone 3 Source Video 5
FE 03 A2 17 6B 27	Zone 3 Follow Main Zone Source
<b>ZONE 3 OTHER COMMANDS</b>	
FE 03 A2 17 6E 2A	Party Mode Toggle

**Table 6 - Type 18 Zone 4 Commands**

RSP-1069 HEX	Command Description
<b>ZONE 4 POWER &amp; VOLUME COMMANDS</b>	
FE 03 A2 18 0A C7	Zone 4 Power Toggle
FE 03 A2 18 4A 07	Zone 4 Power Off
FE 03 A2 18 4B 08	Zone 4 Power On
FE 03 A2 18 00 BD	Zone 4 Volume Up
FE 03 A2 18 01 BE	Zone 4 Volume Down
FE 03 A2 18 1E DB	Zone 4 Mute Toggle
FE 03 A2 18 6C 29	Zone 4 Mute On
FE 03 A2 18 6D 2A	Zone 4 Mute Off
FE 03 A2 18 71 2E	Power Off All Zones
<b>ZONE 4 SOURCE SELECTION COMMANDS</b>	
FE 03 A2 18 02 BF	Zone 4 Source CD
FE 03 A2 18 03 C0	Zone 4 Source Tuner
FE 03 A2 18 04 C1	Zone 4 Source Tape
FE 03 A2 18 05 C2	Zone 4 Source Video 1
FE 03 A2 18 06 C3	Zone 4 Source Video 2
FE 03 A2 18 07 C4	Zone 4 Source Video 3
FE 03 A2 18 08 C5	Zone 4 Source Video 4
FE 03 A2 18 09 C6	Zone 4 Source Video 5
FE 03 A2 18 6B 28	Zone 4 Follow Main Zone Source
<b>ZONE 4 OTHER COMMANDS</b>	
FE 03 A2 18 6E 2B	Party Mode Toggle

**Table 7 - Type 30 Volume Direct Commands**

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

RSP-1069 HEX	Command Description
<b>VOLUME DIRECT COMMANDS</b>	
FE 03 A2 30 00 D5	Volume Min
FE 03 A2 30 01 D6	Volume 1
FE 03 A2 30 02 D7	Volume 2
FE 03 A2 30 03 D8	Volume 3
FE 03 A2 30 04 D9	Volume 4
FE 03 A2 30 05 DA	Volume 5
FE 03 A2 30 06 DB	Volume 6
FE 03 A2 30 07 DC	Volume 7
FE 03 A2 30 08 DD	Volume 8
FE 03 A2 30 09 DE	Volume 9
FE 03 A2 30 0A DF	Volume 10
FE 03 A2 30 10 E5	Volume 16
FE 03 A2 30 20 F5	Volume 32
FE 03 A2 30 28 FD 00	Volume 40
FE 03 A2 30 40 15	Volume 64
FE 03 A2 30 50 25	Volume 80
FE 03 A2 30 5F 34	Volume 95
FE 03 A2 30 60 35	Volume Max

**Table 8 - Type 32 Zone 2 Volume Direct Commands**

RSP-1069 HEX	Command Description
<b>ZONE 2 VOLUME DIRECT COMMANDS</b>	
FE 03 A2 32 00 D7	Zone 2 Volume Min
FE 03 A2 32 01 D8	Zone 2 Volume 1
FE 03 A2 32 02 D9	Zone 2 Volume 2
FE 03 A2 32 03 DA	Zone 2 Volume 3
FE 03 A2 32 04 DB	Zone 2 Volume 4
FE 03 A2 32 05 DC	Zone 2 Volume 5
FE 03 A2 32 06 DD	Zone 2 Volume 6
FE 03 A2 32 10 E7	Zone 2 Volume 16
FE 03 A2 32 26 FD 00	Zone 2 Volume 38
FE 03 A2 32 30 07	Zone 2 Volume 48
FE 03 A2 32 40 17	Zone 2 Volume 64
FE 03 A2 32 50 27	Zone 2 Volume 80
FE 03 A2 32 5F 36	Zone 2 Volume 95
FE 03 A2 32 60 37	Zone 2 Volume Max

**Table 9 - Type 33 Zone 3 Volume Direct Commands**

RSP-1069 HEX	Command Description
<b>ZONE 3 VOLUME DIRECT COMMANDS</b>	
FE 03 A2 33 00 D8	Zone 3 Volume Min
FE 03 A2 33 01 D9	Zone 3 Volume 1
FE 03 A2 33 02 DA	Zone 3 Volume 2
FE 03 A2 33 03 DB	Zone 3 Volume 3
FE 03 A2 33 04 DC	Zone 3 Volume 4
FE 03 A2 33 05 DD	Zone 3 Volume 5
FE 03 A2 33 06 DE	Zone 3 Volume 6
FE 03 A2 33 10 E8	Zone 3 Volume 16
FE 03 A2 33 26 FD 01	Zone 3 Volume 38
FE 03 A2 33 30 08	Zone 3 Volume 48
FE 03 A2 33 40 18	Zone 3 Volume 64
FE 03 A2 33 50 28	Zone 3 Volume 80
FE 03 A2 33 5F 37	Zone 3 Volume 95
FE 03 A2 33 60 38	Zone 3 Volume Max

**Table 10 - Type 34 Zone 4 Volume Direct Commands**

RSP-1069 HEX	Command Description
<b>ZONE 4 VOLUME DIRECT COMMANDS</b>	
FE 03 A2 34 00 D9	Zone 4 Volume Min
FE 03 A2 34 01 DA	Zone 4 Volume 1
FE 03 A2 34 02 DB	Zone 4 Volume 2
FE 03 A2 34 03 DC	Zone 4 Volume 3
FE 03 A2 34 04 DD	Zone 4 Volume 4
FE 03 A2 34 05 DE	Zone 4 Volume 5
FE 03 A2 34 06 DF	Zone 4 Volume 6
FE 03 A2 34 10 E9	Zone 4 Volume 16
FE 03 A2 34 20 F9	Zone 4 Volume 32
FE 03 A2 34 30 09	Zone 4 Volume 48
FE 03 A2 34 40 19	Zone 4 Volume 64
FE 03 A2 34 50 29	Zone 4 Volume 80
FE 03 A2 34 5F 38	Zone 4 Volume 95
FE 03 A2 34 60 39	Zone 4 Volume Max



## Section 2: Feedback String Format

### Standard Response String Format

Start	Count	ID	Type	Data						Checksum
0xFE	0x31	0xA2	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.

**Note:** The Zone 2/3/4 bits were added with Main software V1.1.8. These bits will toggle when their respective Zone is active so zone power status can be tracked.

#### Flag1 – Flag5 Data

	Flag1	Flag2	Flag3	Flag4	Flag5
Bit0	A	x	Display Mode0	SB	CBL
Bit1	5	II	Display Mode1	Zone 4	CBR
Bit2	4	HDMI	Zone 2	Zone 3	SW
Bit3	3	EX	Standby LED	<	SR
Bit4	2	ES		>	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