



## Rotel RSX-1067 RS232 HEX Protocol

Date	Version	Update Description
February 7, 2012	1.00	Original Specification

The RS232 protocol structure for the RSX-1067 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, delimiter, etc.

### Standard Command String Format

Start	Count	Device ID	Type	Key	Checksum
0xFE	0x03	0xC4	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.

## Section 1: Control Command List

Table 1 – Type 10 Primary Commands	2
Table 2 – Type 14 Main Zone Commands	4
Table 3 – Type 15 Record Source Commands	5
Table 4 – Type 16 Zone 2 Commands	5
Table 5 – Type 30 Volume Direct Commands	6
Table 6 – Type 32 Zone 2 Volume Direct Commands	7

### Table 1 - Type 10 Primary Commands

RSX-1067 HEX	Command Description
<b>POWER &amp; VOLUME COMMANDS</b>	
FE 03 C4 10 0A E1	Power Toggle
FE 03 C4 10 4A 21	Power Off
FE 03 C4 10 4B 22	Power On
FE 03 C4 10 0B E2	Volume Up
FE 03 C4 10 0C E3	Volume Down
FE 03 C4 10 1E F5	Mute Toggle
<b>SOURCE SELECTION COMMANDS</b>	
FE 03 C4 10 02 D9	Source CD
FE 03 C4 10 03 DA	Source Tuner
FE 03 C4 10 04 DB	Source Tape
FE 03 C4 10 05 DC	Source Video 1
FE 03 C4 10 06 DD	Source Video 2
FE 03 C4 10 07 DE	Source Video 3
FE 03 C4 10 08 DF	Source Video 4
FE 03 C4 10 09 E0	Source Video 5
FE 03 C4 10 15 EC	Source Multi Input
<b>SURROUND MODE COMMANDS</b>	
FE 03 C4 10 11 E8	Stereo
FE 03 C4 10 12 E9	Dolby 3 Stereo
FE 03 C4 10 13 EA	Dolby Pro Logic
FE 03 C4 10 14 EB	DSP Music Mode Toggle
FE 03 C4 10 53 2A	Dolby 3 Stereo / Pro Logic Toggle
FE 03 C4 10 54 2B	dts Neo:6 Music/Cinema Toggle
FE 03 C4 10 57 2E	Music 1
FE 03 C4 10 58 2F	Music 2
FE 03 C4 10 59 30	Music 3
FE 03 C4 10 5A 31	Music 4
FE 03 C4 10 5B 32	5 Channel Stereo
FE 03 C4 10 5C 33	7 Channel Stereo
FE 03 C4 10 5D 34	Dolby PLII Cinema
FE 03 C4 10 5E 35	Dolby PLII Music
FE 03 C4 10 74 4B	Dolby PLII Game

<b>RSX-1067 HEX</b>	<b>Command Description</b>
FE 03 C4 10 5F 36	Dolby Pro Logic
FE 03 C4 10 60 37	dts Neo:6 Music
FE 03 C4 10 61 38	dts Neo:6 Cinema
FE 03 C4 10 62 39	PLII Panorama Toggle
FE 03 C4 10 63 3A	PLII Dimension Up
FE 03 C4 10 64 3B	PLII Dimension Down
FE 03 C4 10 65 3C	PLII Center Width Up
FE 03 C4 10 66 3D	PLII Center Width Down
FE 03 C4 10 68 3F	Dolby Digital EX Toggle
FE 03 C4 10 22 F9	Next Surround Mode
<b>TONE CONTROL COMMANDS</b>	
FE 03 C4 10 0D E4	Treble Up
FE 03 C4 10 0E E5	Treble Down
FE 03 C4 10 0F E6	Bass Up
FE 03 C4 10 10 E7	Bass Down
FE 03 C4 10 67 3E	Tone Control Select
<b>OSD MENU COMMANDS</b>	
FE 03 C4 10 18 EF	OSD Menu
FE 03 C4 10 19 F0	Enter
FE 03 C4 10 1A F1	Cursor Right
FE 03 C4 10 1B F2	Cursor Left
FE 03 C4 10 1C F3	Cursor Up
FE 03 C4 10 1D F4	Cursor Down
<b>TUNER COMMANDS</b>	
FE 03 C4 10 28 FF	Tune Up
FE 03 C4 10 29 00	Tune Down
<b>FE 03 C4 10 27 FD 01</b>	Memory
FE 03 C4 10 24 FB	Band Toggle
FE 03 C4 10 56 2D	AM
FE 03 C4 10 55 2C	FM
FE 03 C4 10 20 F7	Tune / Preset
FE 03 C4 10 69 40	Tuning Mode Select
FE 03 C4 10 6A 41	Preset Mode Select
FE 03 C4 10 25 FC	Frequency Direct
FE 03 C4 10 21 F8	Preset Scan
FE 03 C4 10 44 1B	Tuner Display
FE 03 C4 10 45 1C	RDS PTY
FE 03 C4 10 46 1D	RDS TP
FE 03 C4 10 47 1E	RDS TA
<b>FE 03 C4 10 26 FD 00</b>	FM Mono
<b>NUMERIC KEY COMMANDS</b>	
FE 03 C4 10 2A 01	Number 1

RSX-1067 HEX	Command Description
FE 03 C4 10 2B 02	Number 2
FE 03 C4 10 2C 03	Number 3
FE 03 C4 10 2D 04	Number 4
FE 03 C4 10 2E 05	Number 5
FE 03 C4 10 2F 06	Number 6
FE 03 C4 10 30 07	Number 7
FE 03 C4 10 31 08	Number 8
FE 03 C4 10 32 09	Number 9
FE 03 C4 10 33 0A	Number 0
<b>OTHER COMMANDS</b>	
FE 03 C4 10 17 EE	Record Function Select
FE 03 C4 10 16 ED	Dynamic Range
FE 03 C4 10 1F F6	Digital Input Select
FE 03 C4 10 23 FA	Zone 2 / Main
FE 03 C4 10 4C 23	Temporary Center Trim
FE 03 C4 10 4D 24	Temporary Subwoofer Trim
FE 03 C4 10 4E 25	Temporary Surround Trim
FE 03 C4 10 4F 26	Cinema EQ Toggle
FE 03 C4 10 52 29	Front Display On/Off
FE 03 C4 10 FF D6	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.

RSX-1067 HEX	Command Description
<b>MAIN ZONE POWER &amp; VOLUME COMMANDS</b>	
FE 03 C4 14 0A E5	Main Zone Power Toggle
FE 03 C4 14 4A 25	Main Zone Power Off
FE 03 C4 14 4B 26	Main Zone Power On
FE 03 C4 14 00 DB	Main Zone Volume Up
FE 03 C4 14 01 DC	Main Zone Volume Down
FE 03 C4 14 1E F9	Main Zone Mute Toggle
FE 03 C4 14 6C 47	Main Zone Mute On
FE 03 C4 14 6D 48	Main Zone Mute Off
<b>MAIN ZONE SOURCE SELECTION COMMANDS</b>	
FE 03 C4 14 02 DD	Main Zone Source CD
FE 03 C4 14 03 DE	Main Zone Source Tuner
FE 03 C4 14 04 DF	Main Zone Source Tape
FE 03 C4 14 05 E0	Main Zone Source Video 1
FE 03 C4 14 06 E1	Main Zone Source Video 2

RSX-1067 HEX	Command Description
FE 03 C4 14 07 E2	Main Zone Source Video 3
FE 03 C4 14 08 E3	Main Zone Source Video 4
FE 03 C4 14 09 E4	Main Zone Source Video 5

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

RSX-1067 HEX	Command Description
<b>RECORD SOURCE SELECTION COMMANDS</b>	
FE 03 C4 15 02 DE	Record Source CD
FE 03 C4 15 03 DF	Record Source Tuner
FE 03 C4 15 04 E0	Record Source Tape
FE 03 C4 15 05 E1	Record Source Video 1
FE 03 C4 15 06 E2	Record Source Video 2
FE 03 C4 15 07 E3	Record Source Video 3
FE 03 C4 15 08 E4	Record Source Video 4
FE 03 C4 15 09 E5	Record Source Video 5
FE 03 C4 15 6B E6	Record Follow Main Zone Source

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

RSX-1067 HEX	Command Description
<b>ZONE 2 POWER &amp; VOLUME COMMANDS</b>	
FE 03 C4 16 0A E7	Zone 2 Power Toggle
FE 03 C4 16 4A 27	Zone 2 Power Off
FE 03 C4 16 4B 28	Zone 2 Power On
FE 03 C4 16 00 DD	Zone 2 Volume Up
FE 03 C4 16 01 DE	Zone 2 Volume Down
FE 03 C4 16 1E FB	Zone 2 Mute Toggle
FE 03 C4 16 6C 49	Zone 2 Mute On
FE 03 C4 16 6D 4A	Zone 2 Mute Off
<b>ZONE 2 SOURCE SELECTION COMMANDS</b>	
FE 03 C4 16 02 DF	Zone 2 Source CD
FE 03 C4 16 03 E0	Zone 2 Source Tuner
FE 03 C4 16 04 E1	Zone 2 Source Tape
FE 03 C4 16 05 E2	Zone 2 Source Video 1
FE 03 C4 16 06 E3	Zone 2 Source Video 2
FE 03 C4 16 07 E4	Zone 2 Source Video 3
FE 03 C4 16 08 E5	Zone 2 Source Video 4
FE 03 C4 16 09 E6	Zone 2 Source Video 5
FE 03 C4 16 6B 48	Zone 2 Follow Main Zone Source
<b>ZONE 2 TUNER COMMANDS</b>	
FE 03 C4 16 28 05	Zone 2 Tune Up
FE 03 C4 16 29 06	Zone 2 Tune Down

RSX-1067 HEX	Command Description
FE 03 C4 16 24 01	Zone 2 Band Toggle
FE 03 C4 16 56 33	Zone 2 AM
FE 03 C4 16 55 32	Zone 2 FM
FE 03 C4 16 20 FD 00	Zone 2 Tune / Preset
FE 03 C4 16 69 46	Zone 2 Tuning Mode Select
FE 03 C4 16 6A 47	Zone 2 Preset Mode Select
FE 03 C4 16 21 FD 01	Zone 2 Preset Scan
FE 03 C4 16 26 03	Zone 2 FM Mono
<b>ZONE 2 NUMERIC KEY COMMANDS</b>	
FE 03 C4 16 2A 07	Zone 2 Number 1
FE 03 C4 16 2B 08	Zone 2 Number 2
FE 03 C4 16 2C 09	Zone 2 Number 3
FE 03 C4 16 2D 0A	Zone 2 Number 4
FE 03 C4 16 2E 0B	Zone 2 Number 5
FE 03 C4 16 2F 0C	Zone 2 Number 6
FE 03 C4 16 30 0D	Zone 2 Number 7
FE 03 C4 16 31 0E	Zone 2 Number 8
FE 03 C4 16 32 0F	Zone 2 Number 9
FE 03 C4 16 33 10	Zone 2 Number 0

**Table 5 - Type 30 Volume Direct Commands**

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

RSX-1067 HEX	Command Description
<b>VOLUME DIRECT COMMANDS</b>	
FE 03 C4 30 00 F7	Volume Min
FE 03 C4 30 01 F8	Volume 1
FE 03 C4 30 02 F9	Volume 2
FE 03 C4 30 03 FA	Volume 3
FE 03 C4 30 04 FB	Volume 4
FE 03 C4 30 05 FC	Volume 5
FE 03 C4 30 06 FD 00	Volume 6
FE 03 C4 30 07 FD 01	Volume 7
FE 03 C4 30 08 FF	Volume 8
FE 03 C4 30 09 00	Volume 9
FE 03 C4 30 0A 01	Volume 10
FE 03 C4 30 0B 02	Volume 11
FE 03 C4 30 0C 03	Volume 12
FE 03 C4 30 0D 04	Volume 13
FE 03 C4 30 0E 05	Volume 14
FE 03 C4 30 0F 06	Volume 15
FE 03 C4 30 10 07	Volume 16

RSX-1067 HEX	Command Description
FE 03 C4 30 20 17	Volume 32
FE 03 C4 30 30 27	Volume 48
FE 03 C4 30 40 37	Volume 64
FE 03 C4 30 50 47	Volume 80
FE 03 C4 30 5F 56	Volume 95
FE 03 C4 30 60 57	Volume Max

**Table 6 - Type 32 Zone 2 Volume Direct Commands**

RSX-1067 HEX	Command Description
<b>ZONE 2 VOLUME DIRECT COMMANDS</b>	
FE 03 C4 32 00 F9	Zone 2 Volume Min
FE 03 C4 32 01 FA	Zone 2 Volume 1
FE 03 C4 32 02 FB	Zone 2 Volume 2
FE 03 C4 32 03 FC	Zone 2 Volume 3
FE 03 C4 32 04 FD 00	Zone 2 Volume 4
FE 03 C4 32 05 FD 01	Zone 2 Volume 5
FE 03 C4 32 06 FF	Zone 2 Volume 6
FE 03 C4 32 07 00	Zone 2 Volume 7
FE 03 C4 32 08 01	Zone 2 Volume 8
FE 03 C4 32 09 02	Zone 2 Volume 9
FE 03 C4 32 0A 03	Zone 2 Volume 10
FE 03 C4 32 0B 04	Zone 2 Volume 11
FE 03 C4 32 0C 05	Zone 2 Volume 12
FE 03 C4 32 0D 06	Zone 2 Volume 13
FE 03 C4 32 0E 07	Zone 2 Volume 14
FE 03 C4 32 0F 08	Zone 2 Volume 15
FE 03 C4 32 10 09	Zone 2 Volume 16
FE 03 C4 32 20 19	Zone 2 Volume 32
FE 03 C4 32 30 29	Zone 2 Volume 48
FE 03 C4 32 40 39	Zone 2 Volume 64
FE 03 C4 32 50 49	Zone 2 Volume 80
FE 03 C4 32 5F 52	Zone 2 Volume 89
FE 03 C4 32 60 53	Zone 2 Volume Max

## Section 2: Feedback String Format

### Standard Response String Format

Start	Count	ID	Type	Data						Checksum
0xFE	0x31	0xC4	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	Tuned	>	SL
Bit5	1	dtc	St (Tuner)	7.1	FR
Bit6	Coaxial	Pro Logic	RDS	5.1	C
Bit7	Optical	Dolby Digital	Preset	Zone	FL

#### Display Status

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