



## Rotel RSX-1056 RS232 HEX Protocol

Date	Version	Update Description
February 2, 2012	1.00	Original Specification

The RS232 protocol structure for the RSX-1056 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	0xC5	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

RSX-1056 HEX	Command Description
<b>POWER &amp; VOLUME COMMANDS</b>	
FE 03 C5 10 0A E2	Power Toggle
FE 03 C5 10 4A 22	Power Off
FE 03 C5 10 4B 23	Power On
FE 03 C5 10 0B E3	Volume Up
FE 03 C5 10 0C E4	Volume Down
FE 03 C5 10 1E F6	Mute Toggle
<b>SOURCE SELECTION COMMANDS</b>	
FE 03 C5 10 02 DA	Source CD
FE 03 C5 10 03 DB	Source Tuner
FE 03 C5 10 04 DC	Source Tape
FE 03 C5 10 05 DD	Source Video 1
FE 03 C5 10 06 DE	Source Video 2
FE 03 C5 10 07 DF	Source Video 3
FE 03 C5 10 08 E0	Source Video 4
FE 03 C5 10 09 E1	Source Video 5
FE 03 C5 10 15 ED	Source Multi Input
<b>SURROUND MODE COMMANDS</b>	
FE 03 C5 10 11 E9	Stereo
FE 03 C5 10 12 EA	Dolby 3 Stereo
FE 03 C5 10 13 EB	Dolby Pro Logic
FE 03 C5 10 14 EC	DSP Music Mode Toggle
FE 03 C5 10 53 2B	Dolby 3 Stereo / Pro Logic Toggle
FE 03 C5 10 54 2C	dts Neo:6 Music/Cinema Toggle
FE 03 C5 10 57 2F	Music 1
FE 03 C5 10 58 30	Music 2
FE 03 C5 10 59 31	Music 3
FE 03 C5 10 5A 32	Music 4
FE 03 C5 10 5B 33	5 Channel Stereo
FE 03 C5 10 5C 34	7 Channel Stereo
FE 03 C5 10 5D 35	Dolby PLII Cinema
FE 03 C5 10 5E 36	Dolby PLII Music
FE 03 C5 10 74 4C	Dolby PLII Game

<b>RSX-1056 HEX</b>	<b>Command Description</b>
FE 03 C5 10 5F 37	Dolby Pro Logic
FE 03 C5 10 60 38	dts Neo:6 Music
FE 03 C5 10 61 39	dts Neo:6 Cinema
FE 03 C5 10 62 3A	PLII Panorama Toggle
FE 03 C5 10 63 3B	PLII Dimension Up
FE 03 C5 10 64 3C	PLII Dimension Down
FE 03 C5 10 65 3D	PLII Center Width Up
FE 03 C5 10 66 3E	PLII Center Width Down
FE 03 C5 10 68 40	Dolby Digital EX Toggle
FE 03 C5 10 22 FA	Next Surround Mode
<b>TONE CONTROL COMMANDS</b>	
FE 03 C5 10 0D E5	Treble Up
FE 03 C5 10 0E E6	Treble Down
FE 03 C5 10 0F E7	Bass Up
FE 03 C5 10 10 E8	Bass Down
FE 03 C5 10 67 3F	Tone Control Select
<b>OSD MENU COMMANDS</b>	
FE 03 C5 10 18 F0	OSD Menu
FE 03 C5 10 19 F1	Enter
FE 03 C5 10 1A F2	Cursor Right
FE 03 C5 10 1B F3	Cursor Left
FE 03 C5 10 1C F4	Cursor Up
FE 03 C5 10 1D F5	Cursor Down
<b>TUNER COMMANDS</b>	
FE 03 C5 10 28 00	Tune Up
FE 03 C5 10 29 01	Tune Down
FE 03 C5 10 27 FF	Memory
FE 03 C5 10 24 FC	Band Toggle
FE 03 C5 10 56 2E	AM
FE 03 C5 10 55 2D	FM
FE 03 C5 10 20 F8	Tune / Preset
FE 03 C5 10 69 41	Tuning Mode Select
FE 03 C5 10 6A 42	Preset Mode Select
<b>FE 03 C5 10 25 FD 00</b>	Frequency Direct
FE 03 C5 10 21 F9	Preset Scan
FE 03 C5 10 44 1C	Tuner Display
FE 03 C5 10 45 1D	RDS PTY
FE 03 C5 10 46 1E	RDS TP
FE 03 C5 10 47 1F	RDS TA
<b>FE 03 C5 10 26 FD 01</b>	FM Mono
<b>NUMERIC KEY COMMANDS</b>	
FE 03 C5 10 2A 02	Number 1

RSX-1056 HEX	Command Description
FE 03 C5 10 2B 03	Number 2
FE 03 C5 10 2C 04	Number 3
FE 03 C5 10 2D 05	Number 4
FE 03 C5 10 2E 06	Number 5
FE 03 C5 10 2F 07	Number 6
FE 03 C5 10 30 08	Number 7
FE 03 C5 10 31 09	Number 8
FE 03 C5 10 32 0A	Number 9
FE 03 C5 10 33 0B	Number 0
<b>OTHER COMMANDS</b>	
FE 03 C5 10 17 EF	Record Function Select
FE 03 C5 10 16 EE	Dynamic Range
FE 03 C5 10 1F F7	Digital Input Select
FE 03 C5 10 23 FB	Zone 2 / Main
FE 03 C5 10 4C 24	Temporary Center Trim
FE 03 C5 10 4D 25	Temporary Subwoofer Trim
FE 03 C5 10 4E 26	Temporary Surround Trim
FE 03 C5 10 4F 27	Cinema EQ Toggle
FE 03 C5 10 52 2A	Front Display On/Off
FE 03 C5 10 FF D7	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-1056 HEX	Command Description
<b>MAIN ZONE POWER &amp; VOLUME COMMANDS</b>	
FE 03 C5 14 0A E6	Main Zone Power Toggle
FE 03 C5 15 4A 27	Main Zone Power Off
FE 03 C5 15 4B 28	Main Zone Power On
FE 03 C5 14 00 DC	Main Zone Volume Up
FE 03 C5 14 01 DD	Main Zone Volume Down
FE 03 C5 14 1E FA	Main Zone Mute Toggle
FE 03 C5 14 6C 48	Main Zone Mute On
FE 03 C5 14 6D 49	Main Zone Mute Off
<b>MAIN ZONE SOURCE SELECTION COMMANDS</b>	
FE 03 C5 14 02 DE	Main Zone Source CD
FE 03 C5 14 03 DF	Main Zone Source Tuner
FE 03 C5 14 04 E0	Main Zone Source Tape
FE 03 C5 14 05 E1	Main Zone Source Video 1
FE 03 C5 14 06 E2	Main Zone Source Video 2

RSX-1056 HEX	Command Description
FE 03 C5 14 07 E3	Main Zone Source Video 3
FE 03 C5 14 08 E4	Main Zone Source Video 4
FE 03 C5 14 09 E5	Main Zone Source Video 5

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

RSX-1056 HEX	Command Description
<b>RECORD SOURCE SELECTION COMMANDS</b>	
FE 03 C5 15 02 DF	Record Source CD
FE 03 C5 15 03 E0	Record Source Tuner
FE 03 C5 15 04 E1	Record Source Tape
FE 03 C5 15 05 E2	Record Source Video 1
FE 03 C5 15 06 E3	Record Source Video 2
FE 03 C5 15 07 E4	Record Source Video 3
FE 03 C5 15 08 E5	Record Source Video 4
FE 03 C5 15 09 E6	Record Source Video 5
FE 03 C5 15 6B 48	Record Follow Main Zone Source

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

RSX-1056 HEX	Command Description
<b>ZONE 2 POWER &amp; VOLUME COMMANDS</b>	
FE 03 C5 16 0A E8	Zone 2 Power Toggle
FE 03 C5 16 4A 28	Zone 2 Power Off
FE 03 C5 16 4B 29	Zone 2 Power On
FE 03 C5 16 00 DE	Zone 2 Volume Up
FE 03 C5 16 01 DF	Zone 2 Volume Down
FE 03 C5 16 1E FC	Zone 2 Mute Toggle
FE 03 C5 16 6C 4A	Zone 2 Mute On
FE 03 C5 16 6D 4B	Zone 2 Mute Off
<b>ZONE 2 SOURCE SELECTION COMMANDS</b>	
FE 03 C5 16 02 E0	Zone 2 Source CD
FE 03 C5 16 03 E1	Zone 2 Source Tuner
FE 03 C5 16 04 E2	Zone 2 Source Tape
FE 03 C5 16 05 E3	Zone 2 Source Video 1
FE 03 C5 16 06 E4	Zone 2 Source Video 2
FE 03 C5 16 07 E5	Zone 2 Source Video 3
FE 03 C5 16 08 E6	Zone 2 Source Video 4
FE 03 C5 16 09 E7	Zone 2 Source Video 5
FE 03 C5 16 6B 49	Zone 2 Follow Main Zone Source
<b>ZONE 2 TUNER COMMANDS</b>	
FE 03 C5 16 28 06	Zone 2 Tune Up
FE 03 C5 16 29 07	Zone 2 Tune Down

RSX-1056 HEX	Command Description
FE 03 C5 16 24 02	Zone 2 Band Toggle
FE 03 C5 16 56 34	Zone 2 AM
FE 03 C5 16 55 33	Zone 2 FM
FE 03 C5 16 20 FD 01	Zone 2 Tune / Preset
FE 03 C5 16 69 47	Zone 2 Tuning Mode Select
FE 03 C5 16 6A 48	Zone 2 Preset Mode Select
FE 03 C5 16 21 FF	Zone 2 Preset Scan
FE 03 C5 16 26 04	Zone 2 FM Mono
<b>ZONE 2 NUMERIC KEY COMMANDS</b>	
FE 03 C5 16 2A 08	Zone 2 Number 1
FE 03 C5 16 2B 09	Zone 2 Number 2
FE 03 C5 16 2C 0A	Zone 2 Number 3
FE 03 C5 16 2D 0B	Zone 2 Number 4
FE 03 C5 16 2E 0C	Zone 2 Number 5
FE 03 C5 16 2F 0D	Zone 2 Number 6
FE 03 C5 16 30 0E	Zone 2 Number 7
FE 03 C5 16 31 0F	Zone 2 Number 8
FE 03 C5 16 32 10	Zone 2 Number 9
FE 03 C5 16 33 11	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-1056 HEX	Command Description
<b>VOLUME DIRECT COMMANDS</b>	
FE 03 C5 30 00 F8	Volume Min
FE 03 C5 30 01 F9	Volume 1
FE 03 C5 30 02 FA	Volume 2
FE 03 C5 30 03 FB	Volume 3
FE 03 C5 30 04 FC	Volume 4
FE 03 C5 30 05 FD 00	Volume 5
FE 03 C5 30 06 FD 01	Volume 6
FE 03 C5 30 07 FF	Volume 7
FE 03 C5 30 08 00	Volume 8
FE 03 C5 30 09 01	Volume 9
FE 03 C5 30 0A 02	Volume 10
FE 03 C5 30 0B 03	Volume 11
FE 03 C5 30 0C 04	Volume 12
FE 03 C5 30 0D 05	Volume 13
FE 03 C5 30 0E 06	Volume 14
FE 03 C5 30 0F 07	Volume 15
FE 03 C5 30 10 08	Volume 16

RSX-1056 HEX	Command Description
FE 03 C5 30 20 18	Volume 32
FE 03 C5 30 30 28	Volume 48
FE 03 C5 30 40 38	Volume 64
FE 03 C5 30 50 48	Volume 80
FE 03 C5 30 5F 57	Volume 95
FE 03 C5 30 60 58	Volume Max

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

RSX-1056 HEX	Command Description
<b>ZONE 2 VOLUME DIRECT COMMANDS</b>	
FE 03 C5 32 00 FA	Zone 2 Volume Min
FE 03 C5 32 01 FB	Zone 2 Volume 1
FE 03 C5 32 02 FC	Zone 2 Volume 2
FE 03 C5 32 03 FD 00	Zone 2 Volume 3
FE 03 C5 32 04 FD 01	Zone 2 Volume 4
FE 03 C5 32 05 FF	Zone 2 Volume 5
FE 03 C5 32 06 00	Zone 2 Volume 6
FE 03 C5 32 07 01	Zone 2 Volume 7
FE 03 C5 32 08 02	Zone 2 Volume 8
FE 03 C5 32 09 03	Zone 2 Volume 9
FE 03 C5 32 0A 04	Zone 2 Volume 10
FE 03 C5 32 0B 05	Zone 2 Volume 11
FE 03 C5 32 0C 06	Zone 2 Volume 12
FE 03 C5 32 0D 07	Zone 2 Volume 13
FE 03 C5 32 0E 08	Zone 2 Volume 14
FE 03 C5 32 0F 09	Zone 2 Volume 15
FE 03 C5 32 10 0A	Zone 2 Volume 16
FE 03 C5 32 20 1A	Zone 2 Volume 32
FE 03 C5 32 30 2A	Zone 2 Volume 48
FE 03 C5 32 40 3A	Zone 2 Volume 64
FE 03 C5 32 50 4A	Zone 2 Volume 80
FE 03 C5 32 5F 53	Zone 2 Volume 89
FE 03 C5 32 60 54	Zone 2 Volume Max

## Section 2: Feedback String Format

### Standard Response String Format

Start	Count	ID	Type	Data						Checksum
0xFE	0x17	0xC5	0x20	Char1	...	Char13	Flag1	...	Flag 8	0xXX

The feedback string is a representation of the display of the unit.

The Char1 - Char13 data bytes contain ASCII data representing the text that appears across the front display. It can contain source input, volume, and surround mode data and should be parsed to obtain this information.

The Flag1 - Flag8 data bytes contain data on which of the various icons on the front display are currently illuminated.

The display status uses 2 bits in Flag6 to confirm if the front display is On or Off.

#### Flag1 - Flag4 Data

	Flag1	Flag2	Flag3	Flag4
Bit0	char1_dot	char8_dot	TAPEM	Tuned
Bit1	char2_dot	char9_dot	MULTI	St (Tuner)
Bit2	char3_dot	char10_dot	4	PTY
Bit3	char4_dot	char11_dot	3	TA
Bit4	char5_dot	char12_dot	2	TP
Bit5	char6_dot	char13_dot	1	RT
Bit6	char7_dot	char8_colon	Coaxial	RDS
Bit7			Optical	RBDS

#### Flag5 - Flag8 Data

	Flag5	Flag6	Flag7	Flag8
Bit0	Zone	Display Mode 1	SBR	CB
Bit1	Dynamic Range	Display Mode 0	SBL	S
Bit2	DSP		EX	LFE
Bit3	HDCD	Standby LED	Sur	SR
Bit4	Dolby 3 Stereo	OSD	THX	SL
Bit5	Dolby PLII	Auto	dts ES	FR
Bit6	Dolby Pro Logic	Memory	dts	C
Bit7	Dolby Digital	Preset	MPEG	FL

#### Display Status

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