



Rotel RSX-1057 RS232 HEX Protocol

Date	Version	Update Description
February 2, 2012	1.00	Original Specification

The RS232 protocol structure for the RSX-1057 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	0xC7	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-1057 HEX	Command Description
POWER & VOLUME COMMANDS	
FE 03 C7 10 0A E4	Power Toggle
FE 03 C7 10 4A 24	Power Off
FE 03 C7 10 4B 25	Power On
FE 03 C7 10 0B E5	Volume Up
FE 03 C7 10 0C E6	Volume Down
FE 03 C7 10 1E F8	Mute Toggle
SOURCE SELECTION COMMANDS	
FE 03 C7 10 02 DC	Source CD
FE 03 C7 10 03 DD	Source Tuner
FE 03 C7 10 04 DE	Source Tape
FE 03 C7 10 05 DF	Source Video 1
FE 03 C7 10 06 E0	Source Video 2
FE 03 C7 10 07 E1	Source Video 3
FE 03 C7 10 08 E2	Source Video 4
FE 03 C7 10 09 E3	Source Video 5
FE 03 C7 10 15 EF	Source Multi Input
SURROUND MODE COMMANDS	
FE 03 C7 10 11 EB	Stereo
FE 03 C7 10 12 EC	Dolby 3 Stereo
FE 03 C7 10 13 ED	Dolby Pro Logic
FE 03 C7 10 14 EE	DSP Music Mode Toggle
FE 03 C7 10 53 2D	Dolby 3 Stereo / Pro Logic Toggle
FE 03 C7 10 54 2E	dts Neo:6 Music/Cinema Toggle
FE 03 C7 10 57 31	Music 1
FE 03 C7 10 58 32	Music 2
FE 03 C7 10 59 33	Music 3
FE 03 C7 10 5A 34	Music 4
FE 03 C7 10 5B 35	5 Channel Stereo
FE 03 C7 10 5C 36	7 Channel Stereo
FE 03 C7 10 5D 37	Dolby PLII Cinema
FE 03 C7 10 5E 38	Dolby PLII Music
FE 03 C7 10 74 4E	Dolby PLII Game

RSX-1057 HEX	Command Description
FE 03 C7 10 5F 39	Dolby Pro Logic
FE 03 C7 10 60 3A	dts Neo:6 Music
FE 03 C7 10 61 3B	dts Neo:6 Cinema
FE 03 C7 10 62 3C	PLII Panorama Toggle
FE 03 C7 10 63 3D	PLII Dimension Up
FE 03 C7 10 64 3E	PLII Dimension Down
FE 03 C7 10 65 3F	PLII Center Width Up
FE 03 C7 10 66 40	PLII Center Width Down
FE 03 C7 10 68 42	Dolby Digital EX Toggle
FE 03 C7 10 22 FC	Next Surround Mode
TONE CONTROL COMMANDS	
FE 03 C7 10 0D E7	Treble Up
FE 03 C7 10 0E E8	Treble Down
FE 03 C7 10 0F E9	Bass Up
FE 03 C7 10 10 EA	Bass Down
FE 03 C7 10 67 41	Tone Control Select
OSD MENU COMMANDS	
FE 03 C7 10 18 F2	OSD Menu
FE 03 C7 10 19 F3	Enter
FE 03 C7 10 1A F4	Cursor Right
FE 03 C7 10 1B F5	Cursor Left
FE 03 C7 10 1C F6	Cursor Up
FE 03 C7 10 1D F7	Cursor Down
TUNER COMMANDS	
FE 03 C7 10 28 02	Tune Up
FE 03 C7 10 29 03	Tune Down
FE 03 C7 10 6F 49	Preset Up
FE 03 C7 10 70 4A	Preset Down
FE 03 C7 10 72 4C	Frequency Up
FE 03 C7 10 73 4D	Frequency Down
FE 03 C7 10 27 01	Memory
FE 03 C7 10 24 FD 01	Band Toggle
FE 03 C7 10 56 30	AM
FE 03 C7 10 55 2F	FM
FE 03 C7 10 20 FA	Tune / Preset
FE 03 C7 10 69 43	Tuning Mode Select
FE 03 C7 10 6A 44	Preset Mode Select
FE 03 C7 10 25 FF	Frequency Direct
FE 03 C7 10 21 FB	Preset Scan
FE 03 C7 10 44 1E	Tuner Display
FE 03 C7 10 45 1F	RDS PTY
FE 03 C7 10 46 20	RDS TP

RSX-1057 HEX	Command Description
FE 03 C7 10 47 21	RDS TA
FE 03 C7 10 26 00	FM Mono
NUMERIC KEY COMMANDS	
FE 03 C7 10 2A 04	Number 1
FE 03 C7 10 2B 05	Number 2
FE 03 C7 10 2C 06	Number 3
FE 03 C7 10 2D 07	Number 4
FE 03 C7 10 2E 08	Number 5
FE 03 C7 10 2F 09	Number 6
FE 03 C7 10 30 0A	Number 7
FE 03 C7 10 31 0B	Number 8
FE 03 C7 10 32 0C	Number 9
FE 03 C7 10 33 0D	Number 0
OTHER COMMANDS	
FE 03 C7 10 17 F1	Record Function Select
FE 03 C7 10 16 F0	Dynamic Range
FE 03 C7 10 1F F9	Digital Input Select
FE 03 C7 10 23 FD 00	Zone 2 / Main
FE 03 C7 10 4C 26	Temporary Center Trim
FE 03 C7 10 4D 27	Temporary Subwoofer Trim
FE 03 C7 10 4E 28	Temporary Surround Trim
FE 03 C7 10 4F 29	Cinema EQ Toggle
FE 03 C7 10 52 2C	Front Display On/Off
FE 03 C7 10 FF D9	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-1057 HEX	Command Description
MAIN ZONE POWER & VOLUME COMMANDS	
FE 03 C7 14 0A E8	Main Zone Power Toggle
FE 03 C7 14 4A 28	Main Zone Power Off
FE 03 C7 14 4B 29	Main Zone Power On
FE 03 C7 14 00 DE	Main Zone Volume Up
FE 03 C7 14 01 DF	Main Zone Volume Down
FE 03 C7 14 1E FC	Main Zone Mute Toggle
FE 03 C7 14 6C 4A	Main Zone Mute On
FE 03 C7 14 6D 4B	Main Zone Mute Off
MAIN ZONE SOURCE SELECTION COMMANDS	
FE 03 C7 14 02 E0	Main Zone Source CD

RSX-1057 HEX	Command Description
FE 03 C7 14 03 E1	Main Zone Source Tuner
FE 03 C7 14 04 E2	Main Zone Source Tape
FE 03 C7 14 05 E3	Main Zone Source Video 1
FE 03 C7 14 06 E4	Main Zone Source Video 2
FE 03 C7 14 07 E5	Main Zone Source Video 3
FE 03 C7 14 08 E6	Main Zone Source Video 4
FE 03 C7 14 09 E7	Main Zone Source Video 5

Table 3 - Type 15 Record Source Commands

RSX-1057 HEX	Command Description
RECORD SOURCE SELECTION COMMANDS	
FE 03 C7 15 02 E1	Record Source CD
FE 03 C7 15 03 E2	Record Source Tuner
FE 03 C7 15 04 E3	Record Source Tape
FE 03 C7 15 05 E4	Record Source Video 1
FE 03 C7 15 06 E5	Record Source Video 2
FE 03 C7 15 07 E6	Record Source Video 3
FE 03 C7 15 08 E7	Record Source Video 4
FE 03 C7 15 09 E8	Record Source Video 5
FE 03 C7 15 6B 4A	Record Follow Main Zone Source

Table 4 - Type 16 Zone 2 Commands

RSX-1057 HEX	Command Description
ZONE 2 POWER & VOLUME COMMANDS	
FE 03 C7 16 0A EA	Zone 2 Power Toggle
FE 03 C7 16 4A 2A	Zone 2 Power Off
FE 03 C7 16 4B 2B	Zone 2 Power On
FE 03 C7 16 00 E0	Zone 2 Volume Up
FE 03 C7 16 01 E1	Zone 2 Volume Down
FE 03 C7 16 1E FD 01	Zone 2 Mute Toggle
FE 03 C7 16 6C 4C	Zone 2 Mute On
FE 03 C7 16 6D 4D	Zone 2 Mute Off
ZONE 2 SOURCE SELECTION COMMANDS	
FE 03 C7 16 02 E2	Zone 2 Source CD
FE 03 C7 16 03 E3	Zone 2 Source Tuner
FE 03 C7 16 04 E4	Zone 2 Source Tape
FE 03 C7 16 05 E5	Zone 2 Source Video 1
FE 03 C7 16 06 E6	Zone 2 Source Video 2
FE 03 C7 16 07 E7	Zone 2 Source Video 3
FE 03 C7 16 08 E8	Zone 2 Source Video 4
FE 03 C7 16 09 E9	Zone 2 Source Video 5

RSX-1057 HEX	Command Description
FE 03 C7 16 6B 4B	Zone 2 Follow Main Zone Source
ZONE 2 TUNER COMMANDS	
FE 03 C7 16 28 08	Zone 2 Tune Up
FE 03 C7 16 29 09	Zone 2 Tune Down
FE 03 C7 16 6F 4F	Zone 2 Preset Up
FE 03 C7 16 70 50	Zone 2 Preset Down
FE 03 C7 16 72 52	Zone 2 Frequency Up
FE 03 C7 16 73 53	Zone 2 Frequency Down
FE 03 C7 16 24 04	Zone 2 Band Toggle
FE 03 C7 16 56 36	Zone 2 AM
FE 03 C7 16 55 35	Zone 2 FM
FE 03 C7 16 20 00	Zone 2 Tune / Preset
FE 03 C7 16 69 49	Zone 2 Tuning Mode Select
FE 03 C7 16 6A 4A	Zone 2 Preset Mode Select
FE 03 C7 16 21 01	Zone 2 Preset Scan
FE 03 C7 16 26 06	Zone 2 FM Mono
ZONE 2 NUMERIC KEY COMMANDS	
FE 03 C7 16 2A 0A	Zone 2 Number 1
FE 03 C7 16 2B 0B	Zone 2 Number 2
FE 03 C7 16 2C 0C	Zone 2 Number 3
FE 03 C7 16 2D 0D	Zone 2 Number 4
FE 03 C7 16 2E 0E	Zone 2 Number 5
FE 03 C7 16 2F 0F	Zone 2 Number 6
FE 03 C7 16 30 10	Zone 2 Number 7
FE 03 C7 16 31 11	Zone 2 Number 8
FE 03 C7 16 32 12	Zone 2 Number 9
FE 03 C7 16 33 13	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-1057 HEX	Command Description
VOLUME DIRECT COMMANDS	
FE 03 C7 30 00 FA	Volume Min
FE 03 C7 30 01 FB	Volume 1
FE 03 C7 30 02 FC	Volume 2
FE 03 C7 30 03 FD 00	Volume 3
FE 03 C7 30 04 FD 01	Volume 4
FE 03 C7 30 05 FF	Volume 5
FE 03 C7 30 06 00	Volume 6
FE 03 C7 30 07 01	Volume 7
FE 03 C7 30 08 02	Volume 8

RSX-1057 HEX	Command Description
FE 03 C7 30 09 03	Volume 9
FE 03 C7 30 0A 04	Volume 10
FE 03 C7 30 0B 05	Volume 11
FE 03 C7 30 0C 06	Volume 12
FE 03 C7 30 0D 07	Volume 13
FE 03 C7 30 0E 08	Volume 14
FE 03 C7 30 0F 09	Volume 15
FE 03 C7 30 10 0A	Volume 16
FE 03 C7 30 20 1A	Volume 32
FE 03 C7 30 30 2A	Volume 48
FE 03 C7 30 40 3A	Volume 64
FE 03 C7 30 50 4A	Volume 80
FE 03 C7 30 5F 59	Volume 95
FE 03 C7 30 60 5A	Volume Max

Table 6 - Type 32 Zone 2 Volume Direct Commands

RSX-1057 HEX	Command Description
ZONE 2 VOLUME DIRECT COMMANDS	
FE 03 C7 32 00 FC	Zone 2 Volume Min
FE 03 C7 32 01 FD 00	Zone 2 Volume 1
FE 03 C7 32 02 FD 01	Zone 2 Volume 2
FE 03 C7 32 03 FF	Zone 2 Volume 3
FE 03 C7 32 04 00	Zone 2 Volume 4
FE 03 C7 32 05 01	Zone 2 Volume 5
FE 03 C7 32 06 02	Zone 2 Volume 6
FE 03 C7 32 07 03	Zone 2 Volume 7
FE 03 C7 32 08 04	Zone 2 Volume 8
FE 03 C7 32 09 05	Zone 2 Volume 9
FE 03 C7 32 0A 06	Zone 2 Volume 10
FE 03 C7 32 0B 07	Zone 2 Volume 11
FE 03 C7 32 0C 08	Zone 2 Volume 12
FE 03 C7 32 0D 09	Zone 2 Volume 13
FE 03 C7 32 0E 0A	Zone 2 Volume 14
FE 03 C7 32 0F 0B	Zone 2 Volume 15
FE 03 C7 32 10 0C	Zone 2 Volume 16
FE 03 C7 32 20 1C	Zone 2 Volume 32
FE 03 C7 32 30 2C	Zone 2 Volume 48
FE 03 C7 32 40 3C	Zone 2 Volume 64
FE 03 C7 32 50 4C	Zone 2 Volume 80
FE 03 C7 32 5F 55	Zone 2 Volume 89
FE 03 C7 32 60 56	Zone 2 Volume Max

Section 2: Feedback String Format

Standard Response String Format

Start	Count	ID	Type	Data						Checksum
0xFE	0x17	0xC7	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