# Rotel RA-1070 / RC-1090
# RS232 HEX Protocol

| Date | Version | Update Description |
|---|---|---|
| February 2, 2012 | 1.00 | Original Specification |

The RS232 protocol structure for the RA-1070 & RC-1090 is detailed below. This is a HEX based communication protocol.

### Connection Settings

| Baud Rate | Parity | Valid Data Bits | Stop Bit Value | Handshaking | Data Type |
|---|---|---|---|---|---|
| 2400 | 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 | 0x04 | 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

| RA-1070 HEX | Command Description |
|---|---|
| POWER & VOLUME COMMANDS | |
| FE 03 04 10 00 17 | Power Toggle |
| FE 03 04 10 01 18 | Power Off |
| FE 03 04 10 02 19 | Power On |
| FE 03 04 10 13 2A | Volume Up |
| FE 03 04 10 14 2B | Volume Down |
| FE 03 04 10 15 2C | Mute Toggle |
| SOURCE SELECTION COMMANDS | |
| FE 03 04 10 03 1A | Source Phono |
| FE 03 04 10 04 1B | Source CD |
| FE 03 04 10 05 1C | Source Tuner |
| FE 03 04 10 06 1D | Source Video |
| FE 03 04 10 07 1E | Source Aux 1 |
| FE 03 04 10 08 1F | Source Aux 2 |
| FE 03 04 10 09 20 | Source Tape 1 |
| FE 03 04 10 0A 21 | Source Tape 2 |
| RECORD SOURCE SELECTION COMMANDS | |
| FE 03 04 10 0B 22 | Record Source Phono |
| FE 03 04 10 0C 23 | Record Source CD |
| FE 03 04 10 0D 24 | Record Source Tuner |
| FE 03 04 10 0E 25 | Record Source Video |
| FE 03 04 10 0F 26 | Record Source Aux 1 |
| FE 03 04 10 10 27 | Record Source Aux 2 |
| FE 03 04 10 11 28 | Record Source Tape 1 |
| FE 03 04 10 12 29 | Record Source Tape 2 |
| FE 03 04 10 1A 31 | Record Function Select |
| FRONT PANEL SOURCE LABEL & DISPLAY COMMANDS | |
| FE 03 04 10 16 2D | Character Enter |
| FE 03 04 10 17 2E | Next Character |
| FE 03 04 10 18 2F | Previous Character |
| FE 03 04 10 19 30 | Source Label Change |
| FE 03 04 10 1B 32 | Front Panel Display On/Off |

## Section 2: Feedback String Format

### Standard Response String Format

| Start | Count | Device ID | Type | Data0 – Data10 (11 Bytes) | Checksum |
|---|---|---|---|---|---|
| 0xFE | 0xXX | 0x04 | 0x20 | ASCII Characters | 0xXX |

The ASCII data will contain the source and record source name information and should be parsed to obtain unit status.