

RS-232 Control

Your processor is equipped with an RS-232 serial communications port for control and FLASH memory updates. This document outlines the interconnection, protocol, and commands available for control.

Please note that not all commands are supported by earlier software versions. Please be sure to download and install the latest software if your unit does not respond to a particular command.

Protocol: 9600 baud, 8N1 format, no flow control

Cabling: The RS-232 connector is a standard female DB-9. For use with a typical PC, a straight-through cable with a DB-9 male on one end and a DB-9 female on the other is called for. That is, pin #1 on one end is connected to pin #1 on the other end, pin #2 to pin #2, and so on. Such a cable can be fabricated or purchased from most computer stores. Radio Shack sells an appropriate cable as their part number 26-117. Note that a 'null modem' cable crosses over the receive and transmit wiring and will not work.

The DB-9 connector on the units has 'hardwired' handshaking, with pins 1, 4, and 6 tied together internally, and pins 7 and 8 tied together internally. Pin 2 is data from the processor to your controller. Pin 3 is data from your controller to the processor. Pin 5 is ground/common. Pin 9 is not connected.

The following is a list of supported serial commands. Note that the data you send to the processor is what you see between the " quotes in the 'Command Data' column below. The asterisk is part of the string. This is standard ASCII text. You can actually use a terminal program to control the processor by typing these commands on your keyboard. To toggle power, for example, you would send an asterisk ('@') followed by three ones, or '@111'.

Function	Command Data	Description
POWER TOGGLE	'@111'	Main Zone Power Toggle
POWER ON	'@112'	Main Zone Power On
POWER OFF	'@113'	Main Zone Power Off
CD	'@114'	Main Zone Source CD
TAPE	'@115'	Main Zone Source TAPE
SAT	'@116'	Main Zone Source SAT
DVD	'@117'	Main Zone Source DVD
PHONO	'@118'	Main Zone Source PHONO
TUNER	'@119'	Main Zone Source TUNER
VID1	'@11A'	Main Zone Source VID1
VCR	'@11B'	Main Zone Source VCR
VID2	'@11C'	Main Zone Source VID2
8-CHANNEL	'@133'	Main Zone Source 8-CHANNEL
DSP MODE UP	'@11D'	Main Zone Next DSP Mode Up
DSP MODE DOWN	'@13W'	Main Zone Next DSP Mode Down
STEREO	'@11E'	Main Zone DSP Mode Stereo
PRO LOGIC	'@11F'	Main Zone DSP Mode Pro Logic
JAZZ-CLUB	'@11K'	Main Zone DSP Mode Jazz Club
PARTY	'@134'	Main Zone DSP Mode Party
Neo:6	'@13H'	Main Zone DSP Mode Neo:6
SOURCE DIRECT	'@13J'	Main Zone DSP Mode Source Direct
MUTE TOGGLE	'@11P'	Main Zone Mute Toggle
MUTE ON	'@11Q'	Main Zone Mute On
MUTE OFF	'@11R'	Main Zone Mute Off

VOLUME UP	'@11S'	Main Zone Volume Up (one increment)
VOLUME DOWN	'@11T'	Main Zone Volume Down (one increment)
VOL ABSOLUTE	'@11U' +2EXT.	Main Zone Set Volume Level Absolute '@11U00' MEANS ZERO VOLUME, 99=MAX VOL. Limited by Main Zone Max Volume Setting on Menu
REAR GROUP UP	'@11g'	Surround and Surround Back Trim Up (one increment)
REAR GROUP 0dB	'@11h'	Surround and Surround Back Trim Zeroed
REAR GROUP DOWN	'@11j'	Surround and Surround Back Trim Down (one increment)
CENTER UP	'@11k'	Center Trim Up (one increment)
CENTER 0dB	'@11m'	Center Trim Zeroed
CENTER DOWN	'@11n'	Center Trim Down (one increment)
SUB UP	'@11p'	Sub Trim Up (one increment)
SUB 0dB	'@11q'	Sub Trim Zeroed
SUB DOWN	'@11r'	Sub Trim Down (one increment)
BASS UP	'@11s'	Bass Up (one increment)
BASS 0dB	'@11t'	Bass Zeroed
BASS DOWN	'@11u'	Bass Down (one increment)
TREBLE UP	'@11v'	Treble Up (one increment)
TREBLE 0dB	'@11w'	Treble Zeroed
TREBLE DOWN	'@11x'	Treble Down (one increment)
AM	'@11y'	Tuner – go to AM band
FM	'@11z'	Tuner – go to FM band
TUNE STEP UP	'@121'	Tuner – tune frequency up one step
TUNE STEP DWN.	'@122'	Tuner – tune frequency down one step
TUNE SCAN UP	'@123'	Tuner – start/stop scan down
TUNE SCAN DWN.	'@124'	Tuner – start/stop scan down
PRESET UP	'@125'	Tuner – go to next preset number up
PRESET DOWN	'@126'	Tuner – go to next preset number down
FM DIRECT WITH MODE	'@147' + 6 EXT.	'@127101701' FOR 101.7 FM STEREO NR, '@127088500' FOR 88.5 FM STEREO
FM DIRECT	'@127' + 5 EXT.	'@12710170' FOR 101.7 FM, '@12708850' FOR 88.5
AM DIRECT	'@128' + 4 EXT.	'@1281020' FOR 1020 AM, '@1280610' FOR 610
RECALL PRESET	'@129' + 2 EXT.	'@12901' FOR PRESET 1, '@12935' FOR PRESET 35
PROGRAM PRESET	'@12A' + 2 EXT.	'@12A01' TO STORE IN PRESET 1 – STORES current tuner setting
PROGRAM PRESET DIRECT	'@135' + 9 EXT.	'@135PPFFFFFMM' PP = Preset (1-40) FFFFF = AM or FM frequency (5 digits) MM = Mode (00=MONO; 01=STEREO; 02=STEREO_NR)
SIDE AXIS SPKRS ON	'@12G'	Main Zone Side Axis On
SIDE AXIS SPKRS OFF	'@12H'	Main Zone Side Axis Off

RESET SYSTEM	'@12L' + 3 EXT.	System Reset '@12L321' TO RESET ("3-2-1-Reset!")
PURGE EEPROM	'@12M' + 3 EXT.	'@12M123' To purge contents of EEPROM and set back to factory defaults ("1-2-3-Purge!")
ANALOG SOURCE	'@12N'	Broadcast only – Analog source detected and/or selected
DIGITAL SOURCE	'@12P'	Broadcast only – Digital source detected and/or selected
DOLBY-D DETECTED	'@12Q'	Broadcast only – Dolby Digital lock detected
DTS DETECTED	'@12R'	Broadcast only – DTS lock detected
PCM ONLY ACTIVE	'@12S'	Broadcast only – PCM only is active (not DTS/AC-3, etc.)
SET MON2	'@12T'	Change VCR2/MON2 setting to MON2
SET VCR2	'@12U'	Change VCR2/MON2 setting to VCR2
SET S-VIDEO	'@14B'	Set Video Default to S-Video
SET COMPOSITE	'@14C'	Set Video Default to Composite
Reserved	'@132'	Reserved for FLASH downloads
DOLBY EX ON	'@13K'	Main Zone Dolby EX On
DOLBY EX OFF	'@13L'	Main Zone Dolby EX Off
DTS ES ON	'@13K'	Main Zone DTS ES On (Currently unused)
DTS ES OFF	'@13L'	Main Zone DTS ES Off (Currently unused)
POWER TOGGLE Z2	'@13M'	Zone 2 Power Toggle
POWER ON Z2	'@13N'	Zone 2 Power On
POWER OFF Z2	'@13P'	Zone 2 Power Off
ZONE TOGGLE	'@137'	Toggle Front Panel between Main Zone and Zone 2
Z2 BALANCE LEFT	'@13X'	Zone 2 Balance Go Left One Increment
Z2 BALANCE RIGHT	'@13Y'	Zone 2 Balance Go Right One Increment
Z2 BALANCE CENTER	'@13Z'	Zone 2 Balance Centered
MUTE TOGGLE Z2	'@13Q'	Zone 2 Mute Toggle
MUTE ON Z2	'@13R'	Zone 2 Mute On
MUTE OFF Z2	'@13S'	Zone 2 Mute Off
VOLUME UP Z2	'@13T'	Zone 2 Volume Up (one increment)
VOLUME DOWN Z2	'@13U'	Zone 2 Volume Down (one increment)
VOL ABSOLUTE Z2	'@13V' + 2 EXT.	Zone Set Volume Level Absolute '@11U00' MEANS ZERO VOLUME, 99=MAX VOL. Limited by Zone 2 Max Volume Setting on Menu
CD Z2	'@138'	Zone 2 Source CD
TAPE Z2	'@139'	Zone 2 Source TAPE
SAT Z2	'@13A'	Zone 2 Source SAT
DVD Z2	'@13B'	Zone 2 Source DVD
PHONO Z2	'@13C'	Zone 2 Source PHONO
TUNER Z2	'@13D'	Zone 2 Source TUNER
VID1 Z2	'@13E'	Zone 2 Source VID1

VCR Z2	'@13F'	Zone 2 Source VCR
VID2 Z2	'@13G'	Zone 2 Source VID2
MAIN COPY Z2	'@14A'	Zone 2 Source MAIN COPY
MENU	'@141'	Menu (Brings up on-screen menu)
UP ARROW	'@142'	Up Arrow (Same as up arrow on remote)
DOWN ARROW	'@143'	Down Arrow (Same as down arrow on remote)
RIGHT ARROW	'@144'	Right Arrow (Same as right arrow on remote)
LEFT ARROW	'@145'	Left Arrow (Same as left arrow on remote)
ENTER	'@146'	Enter/Select (Same as 'enter' on remote)
EXIT	'@147'	Exit (Exit the on-screen menu)
AMP ON	'@14D'	(Ultimate Receiver Only) Receiver Amp On
AMP OFF	'@14E'	(Ultimate Receiver Only) Receiver Amp Off
AMP AUX SURB	'@14F'	(Ultimate Receiver Only) Receiver Amp Aux Channels to Surround Back
AMP AUX SIDE	'@14G'	(Ultimate Receiver Only) Receiver Amp Aux Channels to Side Axis
AMP AUX ZONE2	'@14H'	(Ultimate Receiver Only) Receiver Amp Aux Channels to Zone 2
GET TUNER FREQ	'@14J'	Returns Tuner Frequency and Band with an ASCII string response of the format: '@14Jbbffff', where: bb: Band: 'AM' or 'FM' ffff: Frequency in kHz.
GET MAIN VOL LEVEL	'@14K'	Returns Main Volume Level with an ASCII string response of the format: '@14Kxx', where: xx: 00 = -96 dB ... 50 = -48 dB ... 99 = 0 dB
GET ZONE 2 VOL LEVEL	'@14L'	Returns Zone 2 Volume Level with an ASCII string response of the format: '@14Kxx', where: xx: 00 = -96 dB ... 50 = -48 dB ... 99 = 0 dB
GET MAIN ZONE STATUS	'@14M'	Returns Main Zone Status with an ASCII string response of the format: '@14MPxSxDxPxxMxVxxIxxOxx', where: P – Power State, where 'x': 0=off, 1=on. S – Source, where 'x': 0=CD, 1=TAPE, 2=TUNER, 3=PHONO, 4=8CHAN, 5=VCR, 6=VID2, 7=VID1, 8=SAT, 9=DVD. D – Active Decoder, where 'x': 0=Source Direct, 1=Analog, 2=PCM Digital, 3=Dolby Digital, 4=DTS. P – Sound Processor Mode, where 'xx': 00=Source Direct, 01=Mono, 02=Stereo, 03=Stereo 2, 04=Pro Logic II, 05=Party, 06=Jazz Club, 07=NEO:6 Music, 08=NEO:6 Cinema, 09=DOLBY D, 10=DOLBY EX, 11=DTS, 12=DTS ES Matrix, 13=DTS ES Discrete. M – Mute State, where 'x': 0=Unmuted, 1=Muted. V – Volume Level, where 'xx': 00=-96 dB ... 50=-48 dB ... 99=0 dB I – # of Channels in the Source material, where 'xx': 20=2.0, 21=2.1, 41=4.1, 51=5.1, etc O – # of Output Channels, where 'xx': 20=2.0, 21=2.1, 41=4.1, 51=5.1, etc.

GET ZONE 2 STATUS	'@14N'	Returns Zone 2 Status with an ASCII string response of the format: '@14NPxSxDxPxxMxVxxlxxOxx' Response values are the same as the Main Zone Status, except: Source #4 is Main Copy instead of 8-channel. Note that format is always two-channel.
PLII MUSIC	'@14P'	Main Zone DSP Mode PLII Music
PLII CINEMA	'@14Q'	Main Zone DSP Mode PLII Cinema
PLII MATRIX	'@14R'	Main Zone DSP Mode PLII Matrix
NEO:6 MUSIC	'@14S'	Main Zone DSP Mode Neo:6 Music
NEO:6 CINEMA	'@14T'	Main Zone DSP Mode Neo:6 Cinema
DTS LFE MUSIC	'@14U'	Main Zone DTS LFE Mode set to "Music"
DTS LFE CINEMA	'@14V'	Main Zone DTS LFE Mode set to "Cinema"
SUB NORMAL	'@14W'	Main Zone Subwoofer Mode set to "Normal"
SUB ENHANCED	'@14X'	Main Zone Subwoofer Mode set to "Normal"
MAIN SPKRS LARGE	'@14Y'	Main Zone Main Speakers set to "Large"
MAIN SPKRS SMALL	'@14Z'	Main Zone Main Speakers set to "Small"
SUR SPKRS LARGE	'@15A'	Main Zone Surround Speakers set to "Large"
SUR SPKRS SMALL	'@15B'	Main Zone Surround Speakers set to "Small"
SUR SPKRS OFF	'@15C'	Main Zone Surround Speakers set to "Off"
CENTER SPKR LARGE	'@15D'	Main Zone Center Speaker set to "Large"
CENTER SPKR SMALL	'@15E'	Main Zone Center Speaker set to "Small"
CENTER SPKR OFF	'@15F'	Main Zone Center Speaker set to "Off"
SUR BACK SPEAKERS 2 LARGE	'@15G'	Main Zone Surround Back Speakers set to "2 Large"
SUR BACK SPEAKERS 2 SMALL	'@15H'	Main Zone Surround Back Speakers set to " 2 Small"
SUR BACK SPEAKERS 1 LARGE	'@15J'	Main Zone Surround Back Speakers set to "1 Large"
SUR BACK SPEAKERS 1 SMALL	'@15K'	Main Zone Surround Back Speakers set to "1 Small"
SUR BACK SPKRS OFF	'@15L'	Main Zone Surround Back Speakers set to "Off"
SUBWOOFER ON	'@15M'	Main Zone Subwoofer set to "On"
SUBWOOFER OFF	'@15N'	Main Zone Subwoofer set to "Off"