

Cary Audio Design

Cinema 11 Digital Surround Sound Processor

RS-232 Protocol and Control Details

Com Port Setup:

Use standard communications settings. The default that most devices use/accept is:

Baud Rate : 9600bps
Data Bits : 8
Parity : None
Stop Bits : 1 bit
Handshaking : None

Com Port Pin Configuration:

Use standard pin configuration. A configuration that allows direct connection to a PC via 9-pin straight through serial cable is best. Use of only 3 pins (Transmit, Receive, Ground) is best.

9 pin female D connector

Pin 2 = Transmit
Pin 3 = Receive
Pin 5 = Ground

Command Packets :

The Command Packets are provided for the Host Controller request the Cinema 11 to perform a specific action.

Start character : '@'
COMMAND : see Data Packet 'COMMAND List'.
End character (CR) : 0Dh

Start '@'	COMMAND	End 0Dh
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Status Feedback Packets:

The Cinema 11 will send to the HOST asynchronous status feedback data packets when Cinema 11 receive the Query Commands.

Start character : '@'
Answer character : see Data Packet 'Start Answer List'.
End character (CR) : 0Dh

Start '@'	Status answer	End 0Dh
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RS232-Interface Usage Details:

The RS-232 interface has a first-in-first-out (FIFO) buffer which will allow each commands to be received in direct succession. Commands are executed in the order in which they are received with approximately a 1/2 second delay between each command. If a longer string of commands is necessary, a minimum of 1/2 second delay should be added before sending additional commands.

The Cinema 11 will send a NAK Response packet if the Cinema 11 has received an incorrect HOST command packet.

Start character : '@' NAK : ERR End character (CR) : 0Dh

Start '@'	NAK ERR	End 0Dh
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Main Zone Specific Commands

Command	Parameters	Description
Z1P	x	Main Zone Power on/off where x = 0,1 (off, on)
Z1AS	x	Main Zone Auto setup on/off where x = 0,1 (off, on)
Z1S	x	Main zone source selection where x = 0,1,2,3...10 (0=7.1IN, 1=INPUT 1, 2=INPUT 2, 3=INPUT 3, 4=INPUT 4, 5=INPUT 5, 6=INPUT 6, 7=INPUT 7, 8=INPUT 8, 9=FM 10=AM)
Z1M	x	Mute/un-mute the Main zone where x = 0,1 (un-mutes, mutes)
Z1VM	sxx.x	Set Main master volume to sxx.x dB where sxx.x = Main -90. to +16. dB in 1 dB steps
Z1VMU		Increase Main master volume (similar to vol up on remote)
Z1VMD		Decrease Main master volume (similar to vol down on remote)
Z1EQL	syxx.x	Set Main front left EQ to syxx.x dB, where y=0,1,2,3,4(0=100Hz 1=500Hz 2=2.0kHz 3=8.0Hz 4=16.0Hz and where sxx.x = +15.0 to -15.0 dB in .5 dB steps
Z1EQC	syxx.x	Set Main front center EQ to syxx.x dB, where y=0,1,2,3,4(0=100Hz 1=500Hz 2=2.0kHz 3=8.0kHz 4=16.0kHz and where sxx.x = +15.0 to -15.0dB in .5dB steps
Z1EQR	syxx.x	Set Main front right EQ to syxx.x dB, where y=0,1,2,3,4(0=100Hz 1=500Hz 2=2.0kHz 3=8.0kHz 4=16.0kHz and where sxx.x = +15.0 to -15.0dB in .5dB steps
Z1EQSR	syxx.x	Set Main front surround right EQ to syxx.x dB, where y=0,1,2,3,4(0=100Hz 1=500Hz 2=2.0kHz 3=8.0kHz 4=16.0kHz and where sxx.x = =15.0 to -15.0dB in .5dB steps
Z1EQBSR	syxx.x	Set Main front back surround right EQ to syxx.x dB, where y=0,1,2,3,4(0=100Hz 1=500Hz 2=2.0kHz 3=8.0kHz 4=16.0kHz and where sxx.x = =15.0 to -15.0dB in .5dB steps
Z1EQBSL	syxx.x	Set Main front back surround left EQ to syxx.x dB, where y=0,1,2,3,4(0=100Hz 1=500Hz 2=2.0Hz 3=8.0kHz 4=16.0kHz and where sxx.x = =15.0 to -15.0dB in .5dB steps
Z1EQSL	syxx.x	Set Main front surround left EQ to syxx.x dB, where y=0,1,2,3,4(0=100Hz 1=500Hz 2=2.0kHz 3=8.0kHz 4=16.0kHz and where sxx.x = =15.0 to -15.0dB in .5dB steps
Z1EQ	x	Set Main EQ controls where x = 0,1 (bypassed, enabled)
Z1E	x	Set stereo input effects (applies to stereo and normal Dolby Digital 2.0 inputs) to effect x where x = 0,1,2,...9,a,b,c,d (off, ProLogic II-Music,ProLogic II-Movie,ProLogic IIx-Music,ProLogic IIx-Movie,Pro Logic, Neo:6-Music,Neo:6-Cinema, all channel stereo, all channel mono, ProLogic IIx-Matrix,CES 7.1.....)
Z1EF	x	Set Dolby Digital 2.0 surround encoded (i.e. flagged) input effects to effect x where x = 0,1,2,...9,a,b,c,d (off, ProLogic II-Music,ProLogic II-Movie,ProLogic IIx-Music,ProLogic IIx-Movie,Pro Logic, Neo:6-Music,Neo:6-Cinema, all channel stereo, all channel mono, ProLogic IIx-Matrix,CES 7.1.....)

Z1EX	x	Set Dolby D 5.1/6 Ch input effects to x=0,1,2,...,4(0=Off,1=, 2=+PLIIX Movie,3=+PLIIX Music,4=+PLIIX Matrix,)
Z1ED	x	Set DTS-5.1 input effects to x=0,1 (0=Off,1=+CES 7.1)
Z1C	x	Set amount of dynamic range compression in Dolby Digital modes where x = 0,1,2 (normal, reduced, late night)
Z1SS	x	Source seek in Main zone where x = +,- (seek up, seek down)

Main Zone Query Specific Commands

Command	Parameters	Description
Z1P?		query main zone power: returns Z1Px
Z1S?		query main zone source: returns Z1Sx
Z1VM?		query main zone volume: returns Z1VMsxx.x
Z1?		query main zone status: returns Z1SVsyy.yMnDuEv where syy.y is volume, n is mute state, u is decoder status (see Z1D? command) and v is stereo effect
Z1E?		query current main zone stereo input surround effect: returns Z1Ex
Z1EF?		query current main zone Dolby Digital 2.0 surround encoded (i.e. flagged) input surround effect: returns Z1EFyx
Z1EE?		query current main zone Dolby Digital EX encoded (i.e. flagged) input effect status: returns Z1EEyx
Z1ES?		query current main zone DTS ES encoded input effect status: returns Z1ESyx
Z1EU?		query current main zone Dolby Digital 2.0 surround encoded (i.e. flagged) : returns Z1EUyx
Z1EX?		query current main zone DD-5.1/6 Ch input effect status: returns Z1EXyx
Z1ED?		query current main zone DTS-5.1 input effect status: returns Z1EDyx
Z1C?		query current main zone dynamic range compression in Dolby Digital modes: returns Z1Cx
Z1D?		query main zone decoder status: returns Z1Dyx where current decoder mode where x = 0,1,2,3...6 (0=stereo source, 1=Dolby AC-3 source, 2=DTS source,3=LPCM source,4=7.1 source,5=2-ch analog direct source,6=no signal)
Z1DF?		query main zone decoder surround flagged status: returns Z1DFx where current decoder mode where x=0,1,2...9 (0=no signal, 1=mono,2=2ch not surround flagged, 3=2ch flagged eg DD-2.0 flagged for PL on, 4=more than 2 ch not flagged DD eg DD-5.1, 5=DD-5.1 EX flagged, 6=more than 2 ch not flagged DTS eg DTS-5.1, 7=DTS ES Matrix, 8=DTS ES Discrete, 9=7.1ch analog)
Z1A?		query main zone AC3 status: returns Z1Ayx where current AC3 status is x and x=0,1,2(0=source not AC3,1=source 2 channel AC3,2=source multichannel (surround) AC3)
Z1AD?		query main zone AC3 dialog normalization status: returns Z1ADx where current AC3 status is x and x=dialog normalization in dB (0=source not AC3...)

Main Zone Specific Commands

Command	Parameters	Description
HV	sxx.x	Set headphone volume to sxx.x dB where sxx.x= -90.0 to -16 dB in 1.0 dB steps
HVU		Increase headphone volume (similar to vol up on remote)
HVD		Decrease headphone volume (similar to vol down on remote)
HM	x	Mutes/un-mutes headphone where x= 0,1 (un-mutes, mutes)

Zone2 Specific Commands

Command	Parameters	Description
Z2P	x	Zone2 Power on/off where x = 0,1 (off, on)
Z2S	x	Zone2 source selection where x = 0,1,3,4...10 (0=7.1 IN, 1=INPUT 1, 2=INPUT 2.. 9=FM, 10=AM)
Z2X	x	Zone2 digital output source selection where x is TOSLINK digital source =2,3...8 (2=INPUT 2, 3=INPUT 3, 4=INPUT 4, ... 8=INPUT 8)
Z2Z	x	Zone2 analog output selection where x is analog source = 0,1,2,3...10 (0=7.1IN, 1=INPUT 1, 2=INPUT 2, ... 9=FM, 10=AM)
Z2V	sxx.x	Set Zone2 volume to sxx.x dB where sxx.x= Zone2Vol to -90.0 dB to +16.0 dB in 1.0 dB steps
Z2VU		Increase Zone2 volume (similar to vol up on remote)
Z2VD		Decrease Zone2 volume (similar to vol down on remote)
Z2M	x	Mute/un-mute Zone2 where x= 0,1 (un-mutes, mutes)

Zone2 Query Specific Commands

Command	Parameters	Description
Z2P?		query Zone2 power: returns Z2Px
Z2S?		query Zone2 source: returns Z2Sx
Z2V?		query Zone2 volume: returns Z2Vsxx.x
Z2?		query Zone2 status: returns Z2SVsyyy.yMn where syyy.y is volume and n is mute state

Main & Zone2 Common Commands

Command	Parameters	Description
		Note that all tuner commands work regardless of the main power state. If the main power is on each command operates as described. If the main power is off then each command will return an additional string, "Main Off", after any other return string.
TAT	xxxx	Set tuner to AM band, frequency xxxx KHz where xxxx = 540 to 1600, in 10 KHz step
TATU		Tune up one step on AM band (will switch to AM if on FM band)
TATD		Tune down one step on AM band (will switch to AM if on FM band)
TFT	xxx.x	Set tuner to FM band, frequency xxx.x MHz where xxxx = 87.5 to 107.9, in 0.1 MHz step
TFTU		Tune up one step on current FM band (will switch to FM1 if on AM)
TFTD		Tune down one step on current FM band (will switch to FM1 if on AM)
TAP	y	Set tuner to AM band, using preset y (1,2...30)
TFP	y	Set tuner to FM band, using preset y (1,2...30)
TAS	y=zzzz	Set preset y of tuner AM band to zzzz KHz where xxxx = 540 to 1600, in 10 KHz step

Main & Zone2 Common Commands

Command	Parameters	Description
TASy?		Query AM preset, where y is AM preset (1,2,3,4,5,6....30). Returns TASy=zzzz where z is station frequency
TFS	y=zzz.z	Set FM band, preset y to zzz.z MHz where xxxx = 87.5 to 107.9, in 0.1 MHz step
TFSy?		Query FM preset, where y=FM preset. Returns TFSy=zzz.z where z is station frequency.
TT?		query current station: returns TATxxxx or TFTxxx.x
T	+	Tuner seek up from current station
T	-	Tuner seek down from current station
TH	x	Set tuner mode where x=0,1,2 (stereo, mono, auto)
TH?		Query tuner mode Returns THx where x=0(stereo), 1(mono), 2(auto)
FP	x	Set front panel display intensity where x =0,1,2,3 (Off, low, med, hi)

Setup Commands

Rename Sources

Command	Parameters	Description
RSN	xnnnnnnn	Source name where x= 0,1,2,3,5,6...8 (0=7.1 IN, 1=INPUT 1, 2=INPUT 2, 3=INPUT 3, ..8 =INPUT 8) where nnnnnnn = any alphanumeric characters (up to 12) except ';' which is a command separator

Speaker Configuration

Command	Parameters	Description
SZFL	x	Set Front Speaker setup where x = 0,1 (0=Off, 1=On)
SZFR	x	Set Front Speaker setup where x = 0,1 (0=Off, 1=On)
SZSL	x	Set Surround (Side) Speaker setup where x = 0,1 (0=Off, 1=On)
SZSR	x	Set Surround (Side) Speaker setup where x = 0,1 (0=Off, 1=On)
SZBL	x	Set Rear (Back) Speaker setup where x = 0,1 (0=Off, 1=On)
SZBR	x	Set Rear (Back) Speaker setup where x = 0,1 (0=Off, 1=On)
SZC	x	Set Center Speaker setup where x = 0,1 (0=Off, 1=On)
SZSW	x	Set Subwoofer setup where x= 0,1 (0=Off, 1=On)
SZX	xxx	Set Subwoofer crossover frequency for bass manager configuration where xxx=0,40, 50, 60, 70, 80, 90,100, 110,120, 130,150 is crossover frequency in Hertz
SZXFL	xxx	Set Front left Speaker crossover frequency where xxx=0,40, 50, 60, ...130,150 (crossover frequency in Hertz) Note that xxx=0 bypasses the crossover
SZXFC	xxx	Set Front center Speaker crossover frequency where xxx=0,40, 50, 60, ...130,150 (crossover frequency in Hertz) Note that xxx=0 bypasses the crossover
SZXFR	xxx	Set Front right Speaker crossover frequency where xxx=0,40, 50, 60, ...130,150 (crossover frequency in Hertz) Note that xxx=0 bypasses the crossover
SZXSR	xxx	Set surround right Speaker crossover frequency where xxx=0,40, 50, 60, ...130,150 (crossover frequency in Hertz) Note that xxx=0 bypasses the crossover
SZXSBR	xxx	Set surround back right Speaker crossover frequency where xxx=0,40, 50, 60, ...130,150 (crossover frequency in Hertz) Note that xxx=0 bypasses the crossover
SZXSBL	xxx	Set surround back left Speaker crossover frequency where xxx=0,40, 50, 60, ...130,150 (crossover frequency in Hertz) Note that xxx=0 bypasses the crossover
SZXSL	xxx	Set surround left Speaker crossover frequency

where xxx=0,40, 50, 60, ...130,150 (crossover frequency in Hertz) Note that xxx=0 bypasses the crossover

SHP x

Set Headphone mutes Main speakers

where x = 0,1 (no, yes)

Listener Position

Command	Parameters	Description
SPU	x	Set units for Delay manager where x = 0,1 (ft,m)
SPL	xx.x	Set listener position from front left speaker where xx.x is from 0.0 to 99.0 (in 1.0 ft or 0.3 m increment)
SPC	xx.x	Set listener position from center speakers where xx.x is from 0.0 to 99.0 (in 1.0 ft or 0.3 m increment)
SPR	xx.x	Set listener position from front right speaker where xx.x is from 0.0 to 99.0 (in 1.0 ft or 0.3 m increment)
SPSR	xx.x	Set listener position from rear (surrounds) right speaker where xx.x is from 0.0 to 99.0 (in 1.0 ft or 0.3 m increment)
SPSL	xx.x	Set listener position from rear (surrounds) left speaker where xx.x is from 0.0 to 99.0 (in 1.0 ft or 0.3 m increment)
SPBR	xx.x	Set listener position from back right speaker where xx.x is from 0.0 to 99.0 (in 1.0 ft or 0.3 m increment)
SPBL	xx.x	Set listener position from back left speaker where xx.x is from 0.0 to 99.0 (in 1.0 ft or 0.3 m increment)
SPs	xx.x	Set listener position from subwoofer where xx.x is from 0.0 to 99.0 (in 1.0 ft or 0.3 m increment)
SPG	xxx.	Set group delay to x ms and xxx. is 0 ms<=x<=100 ms

Speaker Level Calibration (Balance)

Command	Parameters	Description
SLL	sxx.x	Set front left speaker calibration level (Balance) where sxx.x = +15.0 to -15.0 dB in 0.5 dB steps
SLC	sxx.x	Set front center speaker calibration level (Balance) where sxx.x = +15.0 to -15.0 dB in 0.5 dB steps
SLR	sxx.x	Set front right speaker calibration level (Balance) where sxx.x = +15.0 to -15.0 dB in 0.5 dB steps
SLSR	sxx.x	Set surround right speaker calibration level (Balance) where sxx.x = +15.0 to -15.0 dB in 0.5 dB steps
SLSL	sxx.x	Set surround left speaker calibration level (Balance) where sxx.x = +15.0 to -15.0 dB in 0.5 dB steps
SLBR	sxx.x	Set surround back right speaker calibration level (Balance) where sxx.x = +15.0 to -15.0 dB in 0.5 dB steps
SLBL	sxx.x	Set Surround back left speaker calibration level (Balance) where sxx.x = +15.0 to -15.0 dB in 0.5 dB steps
SLSW	sxx.x	Set Sub woofer speaker calibration level (Balance) where sxx.x = +15.0 to -15.0 dB in 0.5 dB steps