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PARASOUND

Zhd Owner's Manual Supplement
RS-232 and IR Protocol

Protocol Specs		Pin Connections	
Baud Rate:	9600 bps	TxD:	Pin 2
Data Bit:	8 bits	RxD:	Pin 3
Stop Bit:	1 bit	Gnd:	Pin 5
Parity:	None		
Flow Control:	No		

Basic RS-232 Control: ASCII and hexadecimal examples are shown below. The commas in the Hex code example are merely for your ease of reading and are not required in transmission. Spaces (line feed) are not required between any numbers or characters. All letters are upper case. The end of each string must have a carriage return after the last number or character with no space in-between, this is represented by "<CR>". In the Hex examples, the carriage return is already represented with code "0D". When the Zhd is used with a PC or Crestron system a straight-through Male DB9 cable is required.

Command Action	ASCII Character	Hex Code	Crestron Example (Hex)
Select Input 1	IN1<CR>	49,4E,31,0D	\x49\x4E\x31\x0D
Select Input 2	IN2<CR>	49,4E,32,0D	\x49\x4E\x32\x0D
Select Input 3	IN3<CR>	49,4E,33,0D	\x49\x4E\x33\x0D
Select Input 4	IN4<CR>	49,4E,34,0D	\x49\x4E\x34\x0D
Select Input 5	IN5<CR>	49,4E,35,0D	\x49\x4E\x35\x0D
Output Off (Mute)	IN0<CR>	49,4E,30,0D	\x49\x4E\x30\x0D
Boost On	BS1<CR>	42,53,31,0D	\x42\x53\x31\x0D
Boost Off	BS0<CR>	42,53,30,0D	\x42\x53\x30\x0D
RS Feedback On	RS1<CR>	52,53,31,0D	\x52\x53\x31\x0D
RS Feedback Off	RS0<CR>	52,53,30,0D	\x52\x53\x30\x0D
Full Status Request*	RI<CR>	52,49,0D	\x52\x49\x0D

 *Please note that the command for Full Status Request is RI not R1 (not R one)

RS-232 feedback: The Zhd will send unsolicited feedback anytime an IR, front panel or RS-232 command is issued as long as "RS Feedback" is turned on. Feedback must be turned on during initial setup with command "RS1<CR>". The start of a feedback string is indicated by an asterisk (*). The end of a feedback string is terminated by a carriage return. A Full Status Request will cause the Zhd to respond with current input, RS feedback status and Boost status.

*IN1<CR>	Input 1 Selected	*IN0<CR>	Output Off (Muted)
*IN2<CR>	Input 2 Selected	*BS1<CR>	Boost is On
*IN3<CR>	Input 3 Selected	*BS0<CR>	Boost is Off
*IN4<CR>	Input 4 Selected	*RS1<CR>	RS-232 Feedback is On
*IN5<CR>	Input 5 Selected	*RS0<CR>	RS-232 Feedback is Off

IR Protocol: The Zhd uses the following RC5 codes with system code 27.

Action	RC5 Code	Action	RC5 Code
Select Input 1	45	Select Input 4	55
Select Input 2	46	Select Input 5	58
Select Input 3	47	Output Off (Mute)	44