

## Appendix C – RS-232 Serial Control Protocol Commands

You must set the external RS-232 control system serial port to match the data speed and format that the Maestro is expecting. If these settings are not correct, the Maestro will not respond to the commands.

Set your communication parameters as follows:

Baud Rate:	38,400
Data Bits:	8
Parity:	None
Stops Bits:	1
Flow Control:	None

The cable wiring to connect the Maestro to your control system will depend on the RS-232 output connection on the controller. Make certain that you wire the Transmit Data output on the serial controller to the Receive Data on the Maestro and vice versa on the Receive Data line on the controller system. Connect the signal grounds on the control system and the Maestro together. The RS-232 connection on the rear panel of the Maestro is a DB-9 Male wired as follows:

- Pin 2 Receive Data (RXD)
- Pin 3 Transmit Date (TXD)
- Pin 5 Ground

To connect the Maestro to a standard PC serial comm port; wire the cable in a 'null modem' arrangement.

### Wiring Diagram for DB-9 Null Modem Cable

#### Protocol Structure

The RS-232 serial control protocol structure of the Maestro is a string of ASCII characters terminated with an ASCII Line Feed (0x0A hexadecimal). Multiple commands can be linked together on one line separated by a semicolon, but the total command string cannot contain more than 64 characters (including spaces and the Line Feed terminator). In the following examples *<lf>* represents the ASCII Line Feed. How you actually enter that character into your serial control system varies by manufacturer. Check with their programming information about direct ASCII character entry.

#### Command Structure

In the following commands, one or more of the following parameters may apply:

Parameter	Description
?	Query the command status.
z	Zone Selection. Valid values for this parameter are Z1 for the main zone and Z2 for the second zone outputs.
x	On/Off setting for the command. Valid values are 0 for off/no and 1 for on/yes.
y	Value: Some commands will accept a range of inputs (i.e. Volume or Delay setting)
i	Input Source: Sets the command for a specific source input. Valid inputs for this parameter are: 0=None, 1=Source, 2=Aux, 3=CD, 4=Tuner, 5=DVD, 6=SAT, 7=AV, 8=Multi-channel, 9=Tape, A=VCR, B=Follow Zone 1.

Parameter	Description
s	Speaker: Sets the commands for specific speaker channels. Valid inputs for this parameter are: 0=Center, 1=Front Left, 2=Front Right, 3=Surround Left, 4=Surround Right, 5=Back Left, 6=Back Right, 7=Subwoofer, 8=All Channels.

**Table 1 Command Parameters**

To make a relative adjustment of a command parameter, use the + (plus) and – (minus) in place of the parameter value to increment or decrement that parameter. For example:

**Z1VOL+** Increment the volume in zone 1 by one step

**TRM7-** Decrease subwoofer output by 1dB

Note: ALL commands are entered in Uppercase. The parameters are shown in lowercase for clarity.

### General Commands

Command	Description	Parameters	Parameter Values
PWR	Power On/Off	?zPWRx	See table
MUT	Mute On/Off	?zMUTx	See table
FAN	Force Analog	zFANx	See table
EFF	Effect Mode Selection	?EFFy	Valid y values are: 0=off, 1=Music, 2=Party, 3=Club, 4=Hall, 5=Sport, 6=Church, 7=Increment to next effect
THX	THX Mode Selection	?THXy	Valid y values are: 0=Off, 1=THX Cinema, 2=THX Ultra2 Cinema, 3=THX Music Mode, 4=THX Surr EX
DEC	Decode/Downmix Mode Select		For analog or PCM source, valid y values are: 0=Mono, 1=Stereo, 2=ProLogicII Movie, 3=ProLogicII Music, 4=ProLogic, 5=Neo:6 Cinema, 6=Neo:6 Music  For digital sources, valid y values are: 0=Mono Downmix, 1=Stereo Downmix, 2=No Downmix
SIG	Current Audio Signal type	?zSIG	
TRM	Speaker Trim Levels	TRMsy	See table for s values. Valid inputs for y are –10 to +10

### Main Commands

Command	Description	Parameters	Parameter Values
VOL	Volume	?zVOLy	Valid values for y are” –53 to +19
PRE	Preset select	PREy	Valid values for y are: 1 to 5
AUD	Audio source select	?zAUDi	See table for values
VID	Video source select	?zVIDi	See table for values
DIR	Stereo Direct	?DIRix	See table for values
BAL	Balance	BALy	See table for values
RCT	Record to Tape	RCTi	See table for values
RCV	Record to VCR	RCVi	See table for values
COM	Compression	COMy	See table for values
LIP	Lip Sync Delay	LIPy	Valid values for y are: -1 to +21 -1=-5mS, +21=105mS

DIM	PLII Music Dimension	DIMy	Valid values for y are: 0 to 6
CTW	PLII Music Center Width	CTWy	Valid values for y are: 0 to 7
PAN	PLII Music Panorama	PANx	See table for values

### Basic Setup Commands

Command	Description	Parameters	Parameter Values
VDS	Volume display	VDSy	Valid values for y are: 0=Normal, 1=THX Ref, 3=Fine
MXV	Max Volume	zMXVy	Valid values for y are: -33 to +19
MXO	Max On Volume	zMXOy	Valid values for y are: -53 to +19
DYU	Delay Units	DYUy	Valid values for y are: 0=Feet, 1=Centimeters, 2=Milliseconds
OMD	OSD Mode	OMDy	Valid values for y are: 0=Full Page, 1=Mixed
AST	Auto Setup	ASYy	Valid values for y are: 0=THX, 1=THX Surr EX, 2=Config 1, 3=Config 2, 4=Config 3, 5=Custom
SSZ	Speaker Size	SSZsy	Valid values for y are: 0=None, 1=Small, 2=Large
5P1	5.1 Rears	5P1y	Valid values for y are: 0=Surr L/R, 1=SurrBack L/R, 2=Both
DLY	Speaker Delays	DLYsy	Valid values for y are: 0 to 99 depends on delay units set.
LVL	Speaker Level Settings	LVLsy	Valid values for y are: -10 to +10
CRF	Crossover frequency	CRFy	Valid values for y are: 0 to 11 0=40Hz, 11=150Hz in 10Hz steps
LFE	LFE Level	LFEy	Valid values for y are: -10 to 0
DLF	DTS LFE Gain	DLFy	Valid values for y are: 0=0dB nominal, 1=-10dB
SST	Sub Stereo	SSTy	Valid values for y are: -10 to 0
DAL	DVD-A Sub level	DALy	Valid values for y are: 0=0dB Normal, 1=+1-dB
NSW	Number of Subs	NSWy	Valid values for y are: 1 to 3
TEX	THX Surround EX Flag	TEXx	See table for values
U2S	THX Ultra2 Sub	U2Sx	See table for values
BGC	Boundary Gain Compen.	BGCx	See table for values
ASA	Advanced Spkr Array	ASAy	Valid values for y are: 0=0-12", 1=12-48", 2=+48"