

MA9000 RS232 and IR Control. 4-20-18 Version 1

This document outlines the RS232 and IR command protocol for the McIntosh MA9000 Integrated Amp.

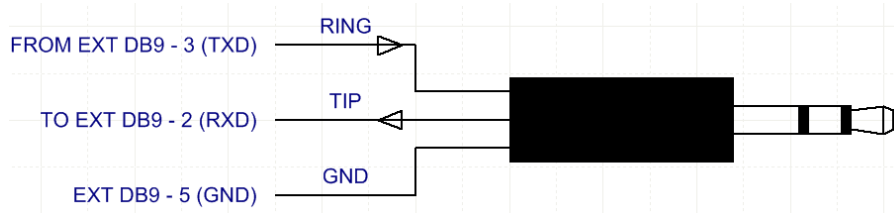
These protocols are compatible with Crestron, AMX, Savant, Control 4 and other RS232 based control systems.

The MA9000 has a 1/8" mini phone plug for RS232C serial control.

Tip: MA9000 TXD (Data Being Transmitted by MA9000)

Ring: MA9000 RXD (Data Being Received by MA9000)

Sleeve: Ground



A DB9 Female to 3.5mm adapter cable may be used, like this one: <http://www.sfcable.com/D935-06.html>

The default Baud rate is 115200 bps and is adjustable through the Integrated Amp setup menus to include 57600, 38400, 19200, and 9600 bps rates.

Data Bits = 8, Parity = None, Stop Bits = 1, Flow Control = None.

Command Protocol Structure:

Command Prefix / Command Name / Command Parameter(s) / Command Suffix / Carriage Return

Spaces are used to separate Command Name and Parameters

Command Prefix: {

Command Name: 3-character unique name

Command Parameter(s): 0,1,2,etc...

Command Suffix: }

Carriage Return: CR (Only required to format terminal for best readability)

All parameter data will be sent as ASCII data.

After processing a command, the Integrated Amp will typically echo the same command structure as an acknowledge

If the command is invalid or corrupt, the Integrated Amp will send an appropriate error code.

When status changes occur in the Integrated Amp, updates will be automatically transmitted to the host control system.

This will allow RS232 control software to maintain internally the current state of the Integrated Amp allowing proper command and event execution.

When the MA9000 is first connected to AC, it will reply with the Model Number, Serial Number, and Control Firmware version:

(MA9000)

(Serial Number AFK #####)

(FW Version 1.04)

Please note that the Turn On process takes about 6 seconds.

Commands sent to the MA9000 during this Turn On period will be buffered and acted upon after Turn On has completed.

MA9000 USER RS232 MESSAGES				
Function	Command	Parameter	Examples	Comments
Power	(PWR <i>par.</i>)	1 = ON 0 = OFF NONE = Return Power Status (PWR)	(PWR 1) (PWR)	NOTE: If Power is Off all RS232 Cmds sent except PWR will return Invalid Command Error Code
Volume	(VOL <i>par.</i>)	U = VOL UP 1% D = VOL DOWN 1% 0 to 100 = % Level NONE = Return Volume Status (VOL)	(VOL 30) (VOL)	
Mute	(MUT <i>par.</i>)	1 = ON 0 = OFF NONE = Return Mute Status (MUT)	(MUT 1) (MUT)	
Output 1	(OP1 <i>par.</i>)	1 = ON 0 = OFF NONE = Return Output1 Status (OP1)	(OP1 1) (OP1)	
Output 2	(OP2 <i>par.</i>)	1 = ON 0 = OFF NONE = Return Output2 Status (OP2)	(OP2 1) (OP2)	
Headphone State	(HPS)	NONE	(HPS)	0: Headphones Unplugged 1: Headphones Plugged 2: No Headphone Jack (China Version)

Input Select	(INP <i>par.</i>)	U = INPUT UP D = INPUT DOWN 1 = BAL 1 2 = BAL 2 3 = UNBAL1 4 = UNBAL2 5 = UNBAL3 6 = UNBAL4 7 = UNBAL5 8 = UNBAL6 9 = MM PHONO 10 = MC PHONO 11 = COAX1 12 = COAX2 13 = OPT11 14 = OPT12 15 = USB 16 = MCT NONE= Return Input Status (INP)	(INP 6) (INP)	NOTE: If source is configured as "Off" in setup menu an Invalid Parameter error code will be returned. NOTE: For 'AE' (Analog Edition) Units Parameters 11-16 will return an error code
Trim (Balance)	(TBA <i>par.</i>)	L = 1dB Left R = 1dB Right -50 to +50 = Balance Level NONE: Return Bal Status (TBA)	(TBA -20) (TBA)	Number Indicates dB Left (-) or Right (+)
Trim (Input Trim)	(TIN <i>par.</i>)	U = 0.5 Up D = 0.5 Down -12 to +12 = Trim Level NONE = Return Trim Status (TIN)	(TIN -11) (TIN)	Note: -12=-6.0, -11=-5.5, -10=-5.0, etc.
Trim (Equalizer)	(TEQ <i>par.</i>)	1 = ON 0 = OFF NONE = Return Eq Status (TEQ)	(TEQ 1) (TEQ)	
Trim (Phono Resistance)	(TPR <i>par.</i>)	U = Up (Next Value) D = Down (Prev Value) 1-5: indexed Value NONE = Return Res Status (TPR)	(TPR 1) (TPR)	MUST Have MC PHONO (INP 10) Selected 1 = 50, 2 = 100, 3 = 200, 4 = 400, 5 = 1000 Ohms
Trim (Phono Capacitance)	(TPC <i>par.</i>)	U = Up (Next Value) D = Down (Prev Value) 1-8: indexed Value NONE = Return Res Status (TPC)	(TPR 1) (TPR)	MUST Have MM PHONO (INP 9) Selected 1 = 50, 2 = 100, 3 = 150, 4 = 200, 5 = 250, 6=300, 7=350, 8=400
Trim (Mono)	(TMO <i>par.</i>)	1 = Mono 0 = Stereo NONE= Return Mono Status (TMO)	(TMO 1) (TMO)	

Trim (Meter Lights)	(TML <i>par.</i>)	1 = ON 0 = OFF NONE= Return Meter Light Status (TML)	(TML 0) (TML)	
Trim (Display Brightness)	(TDB <i>par.</i>)	1 - 4 NONE= Return Bright Status (TDB)	(TDB 3) (TDB)	1 Dimmest / 4 Brightest
Trim (Headphone HXD)	(THH <i>par.</i>)	1 = ON 0 = OFF NONE= Return HXD Status (THH)	(THH 0) (THH)	Must Have Headphones Plugged In
Trim (Off)	(TOF)		(TOF)	Turns Trim Menu Off (Otherwise wait to timeout)
Status	(STA <i>par.</i>)	1 = ON (Default) 0 = OFF NONE = Return Status state (STA)	(STA 0) (STA)	Enables and Disables Status feedback Messages NOTE: Default value will be restored to ON every power cycle
System Query	(QRY)		(QRY)	Returns Status of all Commands

MA9000 RS232 Error MESSAGES

Error Classification	Error Desc	Message	Example
Unknown	Default Value for all Unclassified Errors	(ERROR - Unknown Error)	NA
Command	Unknown RS232 Command	(ERROR - Invalid Command)	(FFF) Undefined Command
Parameter	Invalid Command Parameter	(ERROR - Invalid Parameter)	(TTN 2): Parameter 1 is out of Range
Model	Command is Invalid for Current Integrated Amp Model	(ERROR - Invalid Model)	(TTN) Model = MA9000
Input	Command is Invalid for the Current Input	(ERROR - Invalid Input)	(TPR) Input != MC Phono

MA9000 DIRECT IR INPUT SELECTION CODES

Sixteen IR codes are available for direct Input selection. This allows a third-party programmable IR remote controllers to directly select each MA9000 input.

These IR codes are contained in hidden pre-programmed pages of the HR085 Remote Control. See HR085 Learning Guide, part number 041613, for more information. These commands can be transmitted by the HR085 and captured by other learning remotes.

<u>Hex Code</u>	<u>Source</u>	<u>HR085 Page & Button name</u>
05H	MM PH	Page 5, #1 button
06H	MC PH	Page 7, #2 button
08H	MCT	Page 7, #4 button
09H	OPT1	Page 7, #5 button
0AH	OPT2	Page 7, #6 button
0CH	COAX1	Page 7, #8 button
0DH	COAX2	Page 7, #9 button
12H	BAL1	Page 7, PWROFF button
13H	BAL 2	Page 7, AM button
14H	UNBAL5	Page 7, PRESET button
15H	UNBAL6	Page 5, SETUP button
17H	USB	Page 7, FM button
41H	UNBAL1	Use old RC, SYS OFF button
49H	UNBAL2	Page 5, AM button
4CH	UNBAL3	Use old RC, SPEAKER 1 button
4DH	UNBAL4	Use old RC, SPEAKER 2 button



HR085 Hex Code Table

Before implementing the procedures below, it is important to make sure the HR085 is in the McIntosh Mode:

1. Press and hold in the DEVICE Push-button for about 4 seconds, the **McIntosh** LED will flash twice.

The following HR085 information (and the table on the next page) is intended to be used by McIntosh Dealers and Professional A/V Custom Installers. While most McIntosh models utilize the “Normal” Remote Control Codes, a few models utilize the “Alternate” Remote Control Codes. To change the HR085 from “**Normal (page 1)**” to “**Alternate (page 2)**” Control Codes perform the following step:

1. Press and hold the SELECT and number 2 Push-buttons simultaneously (for about 8 seconds) until the Device Select **McIntosh** LED flashes twice.

To change the HR085 back to the Normal Control Codes perform the following step:

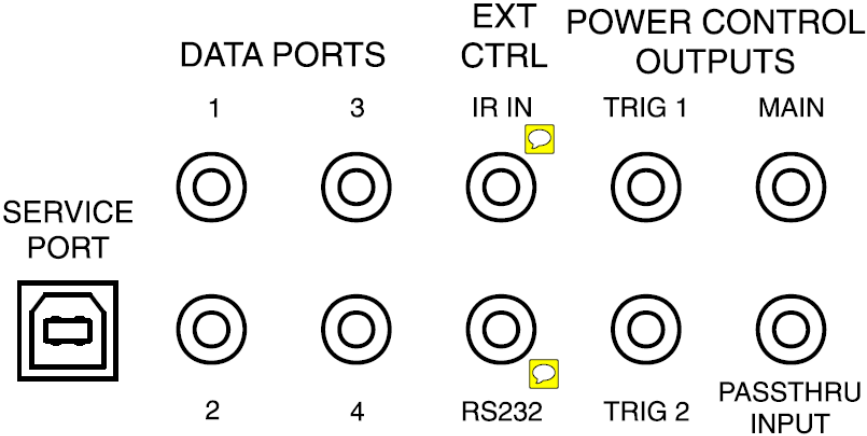
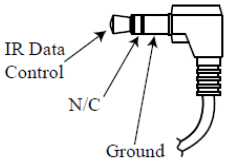
2. Press and hold the SELECT and number 1 Push-buttons simultaneously (for about 8 seconds) until the Device Select **McIntosh** LED flashes twice.

KEY	HEX CODE	Command List (BOLD = Source Commands) (Not used by MA9000)
1	00H	-----
2	01H	PLAY
3	02H	NEXT
4	03H	BACK
5	04H	STOP
6	05H	MM PH
7	06H	MC PH
8	07H	PAUSE
9	08H	MCT
10	09H	OPT1
11	0AH	OPT2
12	0BH	
13	0CH	COAX1
14	0DH	COAX2
15	0EH	TRIM
16	0FH	PRESET
17	10H	
18	11H	
19	12H	BAL1
20	13H	
21	14H	UNBAL5
22	15H	UNBAL6
23	16H	
24	17H	USB
25	18H	LEFT
26	19H	UP
27	1AH	RIGHT
28	1BH	DOWN
29	1CH	SELECT
30	1DH	INFO(TITLE)
31	1EH	DISPLAY
32	1FH	MENU
33	40H	POWER (Cycle)
34	41H	SYSTEM-OFF UNBAL1
35	42H	VOLUME UP
36	43H	VOLUME DN
37	44H	LEVEL UP
38	45H	LEVEL DN
39	46H	MUTE
40	47H	MODE
41	48H	SETUP (Blue button for Output 1, 2)
42	49H	TAPE MON1 UNBAL2

43	4AH	RECORD
44	4BH	POWER ON
45	4CH	SPEAKER1 UNBAL3
46	4DH	SPEAKER2 UNBAL4
47	4EH	INPUT UP
48	4FH	INPUT DN
49	50H	1
50	51H	2
51	52H	3
52	53H	4
53	54H	5
54	55H	6
55	56H	7
56	57H	8
57	58H	9
58	59H	0
59	5AH	CHAN DN (REW) <<
60	5BH	CHAN UP (FF) >>
61	5CH	BAND
62	5DH	AM, DISC OUT1, after Blue button
63	5EH	FM, TRACK OUT2, after Blue button
64	5FH	POWER OFF

IR IN Port Connectors

The IR IN Port also uses a 3.5mm stereo mini phone plug and allows the connection of other brand IR Receivers to the MA8900.



NEC IR Format (Custom Code CA55 hex):

