MDX Matrix RS232 Control Protocol

Document Conventions & Definitions

All commands are shown in ASCII and are not case sensitive

Angle brackets (and anything within them) <> represent 1 byte of data.

Port Configuration

These are the settings that are required for successful communication with a MDX matrix.

Serial port control:

Baud Rate: 9600
Data Bits: 8
Parity: None
Stop Bits: 1

Ethernet port:

TCP, IP: 192.168.1.190

Port: 6666

Command Structure

The general structure of commands to be sent to the matrix is detailed below:

<data><command><data><.>

The general format is:

1) Data
2) Command
3) Data
4) .

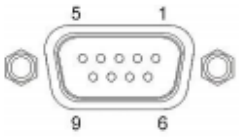
Please note this structure does vary dependent on the type of command being executed. Each command type is provided with an example instruction throughout this document.

Commands are applicable for all variants of matrix and cards within the MDX range

Establishing communication

Once a D9 serial cable has been attached from the MDX unit to a control device (i.e. PC, laptop or 3rd party control system) and mains power applied the link is active. Simply enable the port from the control device and the MDX will accept incoming commands.

D9 Port – Pin Functions



Female

PIN	Function	PIN	FUNTION
1	Not Used	6	Not Used
2	RS232 send data	7	Not Used
3	RS232 receive data	8	Not Used
4	Not Used	9	Not Used
5	Ground Earth	10	Not Used

Commands

Control of the MDX matrix range can be broken down in to the following 8 categories:

- General System Command
- Audio Format Selection
- IR/Serial selection and routing
- EDID Management
- Cross-point Control
- Adjustment of Single Output Resolutions
- Adjustment of All Output Resolutions
- VGA Card Control
- IP Port Configuration

The tables below step through each of these command types in turn providing command examples

1. ***General System Commands –*** *set fan activation temperatures and acquire input and output board statuses*

Function	Command Example	Response	Description
Query Software Version	/^Version;	<Ver1.0>	Check current version of control software
Return off	/:MessageOff;	<Closed The Message Return>	Disable RS232 return/response path
Return On	/:MessageOn;	<Enabled The Message Return>	Enable RS232 return/response path
Control Card Reset	$Default!	None	Resets settings of control card and restarts unit
Reset input [x] to default	$1DefaultIn!	<Set Succeed!>	Reset input channel [x] to default settings. Example for input 1
Reset output [y] to default	$4DefaultOut!	<Set Succeed!>	Reset output channel [y] to default settings. Example for output 4
Reset all inputs to default	$AllDefaultIn!	<Set Succeed!>	Reset all inputs to default settings
Reset all outputs to default	$AllDefaultOut!	<Set Succeed!>	Reset all outputs to default settings
Save State to memory location to [z]	Save5.	<Save to F1!>	Save current crosspoint configuration to memory location [z]. Example for memory location 5
Recall Sate from memory location [z]	Recall7.	<Recall from F1!>	Recall crosspoint configuration from memory location [z]. Example for memory location 7
Clear State from memory location [z]	Clear3.	<Clear F1!>	Clear data from memory location [z]. Example for memory location 3
Set Fan Temp	FanTemp25.	<Set Succeed!>	Set temperature at which fans will activate in degrees Celsius. Example for 25 degrees celsius

Please note that the following commands are the same for Audio format AND IR/Serial blade selection depending on whether the blade is HDMI or HDBaseT

2. ***Audio Format Selection –*** *Select between embedded or external audio sources (only applicable on DVI and HDMI blades)*

Function	Command Example	Response	Description
Select embedded audio for input [x]	$2AudioD!	<Set Succeed!>	Select embedded audio option for input [x]. Example for input 2
Select external audio for input [x]	$4AudioA!	<Set Succeed!>	Select external analogue audio for input [x]. Example for input 4
Select embedded audio for output [y]	$1AudioDOut!	<Set Succeed!>	Select embedded audio option for output [y]. Example for output 1
Select external audio for output [y]	$9AudioAOut!	<Set Succeed!>	Select external analogue audio for output [y]. Example for output 9

3. ***IR and Serial Blade selection –*** *Select between local or remote Infrared and RS232 signals (only applicable on HDBaseT blades). Please note that to route the control signals requires 2 commands – one for the input selection and the other for the output channel*

Function	Command Example	Response	Description
Select local IR and RS232 input number	$2AudioA!	<Set Succeed!>	Select local (Green Phoenix connector) IR and RS232 for input [x]. Example for input 2
Select remote IR and RS232 input number	$4AudioD!	<Set Succeed!>	Select remote (HDBT transmitter) IR and RS232 for input [x]. Example for input 4
Select local IR and RS232 output number	$1AudioAOut!	<Set Succeed!>	Select local (Green connector) IR and RS232 for output [x]. Example for input 1
Select remote IR and RS232 output number	$9AudioDOut!	<Set Succeed!>	Select remote (HDBT receiver) IR and RS232 for output [x]. Example for input 9

4. ***IR and Serial Routing –*** *Routes the IR or RS232 internal transmission path between the HDBaseT blades*

Function	Command Example	Response	Description
Enable RS232 routing and direction	1R2.	RS:1->2;	Enables RS232 path (either local or remote) from input to output. Example for input 1 to output 2
Enable RS232 routing and direction	1S2.	TS:1->2;	Enables RS232 path (either local or remote) from output to input. Example for output 1 to intput 2
Enable IR routing and direction	2Q1.	TR:2->1;	Enables IR path (either local or remote) from input to output. Example for input 2 to output 1
Enable IR routing and direction	5F8.	T:5->8;	Enables IR path (either local or remote) from output to input. Example for output 5 to input 8

5. ***EDID Management*** *– read EDID from outputs and/or to inputs. EDID read from source or displays will appear in centre of reply <EDID Start/…./EDID End>*

Function	Command Example	Response	Description
Acquire EDID from input [x]	GetInEDID3.	<EDID Start/…/EDID End>	Acquire EDID of source feeding input [x]. Example for input 3
Acquire EDID from output [y]	GetOutEDID6.	<EDID Start/…/EDID End>	Acquire EDID of screen/projector fed from output [y]. Example for output 6
Read EDID from output [y] and assign to input [x]	2EDIDTo3.	<Set EDID succeed!>	Read EDID from output device connected to output [y] and assign to EDID of input [x]. Example for reading EDID from output 2 to input 3

6. Cross-point Control

Function	Command Example	Response	Description
Single cross-point selection.	2v4.	v:2 -> 4;	Switch video and audio input [x] to output [y]. Example for switching input 2 to output 4
Multiple cross-point selection	3v1,4,6,7.	v:3 -> 1; v:3 -> 4; v:3 -> 6; v:3 -> 7;	Switch multiple outputs [y] to a single input [x]. Example for switching outputs 1, 4, 6 & 7 to input 3
Set all outputs to single input	4All.	v:4 -> 1; ⋮ v:4 -> n;	Switch all outputs to a single input. Example for switching all outputs to input 4 where n=max outputs possible for matrix size
Disable single output	3$.		Disable output from a single user defined port. Example to disable output 3
Disable all outputs	All$.		Disable all output ports

7. *Adjustment of single output resolutions – NOTE: SDI output blades cannot be scaled to resolutions other than 1920x1080*

Function	Command Example	Response	Description
Set output [y] to resolution 800x600@60Hz	$1->800x600x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 800x600@60Hz
Set output [y] to resolution 1024x768@60Hz	$1->1024x768x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1024x768@60Hz
Set output [y] to resolution 1280x720@60Hz	$1->1280x720x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1280x720@60Hz
Set output [y] to resolution 1280x768@60Hz	$1->1280x768x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1280x768@60Hz
Set output [y] to resolution 1280x800@60Hz	$1->1280x800x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1280x800@60Hz
Set output [y] to resolution 1280x960@60Hz	$1->1280x960x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1280x960@60Hz
Set output [y] to resolution 1280x1024@60Hz	$1->1280x1024x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1280x1024@60Hz
Set output [y] to resolution 1360x768@60Hz	$1->1360x768x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1360x768@60Hz
Set output [y] to resolution 1366x768@60Hz	$1->1366x768x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1366x768@60Hz
Set output [y] to resolution 1440x900@60Hz	$1->1440x900x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1440x900@60Hz
Set output [y] to resolution 1600x900@60Hz	$1->1600x900x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1600x900@60Hz
Set output [y] to resolution 1600x1200@60Hz	$1->1600x1200x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1600x1200@60Hz
Set output [y] to resolution 1920x1080@25Hz	$1->1920x1080x25Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1920x1080@25Hz
Set output [y] to resolution 1920x1080@30Hz	$1->1920x1080x30Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1920x1080@30Hz
Set output [y] to resolution 1920x1080@50Hz	$1->1920x1080x50Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1920x1080@50Hz
Set output [y] to resolution 1920x1080@60Hz	$1->1920x1080x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1920x1080@60Hz

Set output [y] to resolution 1920x1200@60Hz	$1->1920x1200x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1920x1200@60Hz
Set output [y] to resolution 1920x540@50Hz	$1->1920x540x50Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1920x540@50Hz
Set output [y] to resolution 1920x540@60Hz	$1->1920x540x60Hz!	<Set Resolution Succeed!>	Example to set output 1 to 1920x540@60Hz

8. Adjustment of all output resolutions - NOTE: SDI output blades cannot be scaled to resolutions other than 1920x1080

Function	Command Example	Response	Description
Set all outputs to resolution 800x600@60Hz	$All->800x600x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 800x600@60Hz
Set all outputs to resolution 1024x768@60Hz	$All->1024x768x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1024x768@60Hz
Set all outputs to resolution 1280x720@60Hz	$All->1280x720x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1280x720@60Hz
Set all outputs to resolution 1280x768@60Hz	$All->1280x768x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1280x768@60Hz
Set all outputs to resolution 1280x800@60Hz	$All->1280x800x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1280x800@60Hz
Set all outputs to resolution 1280x960@60Hz	$All->1280x960x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1280x960@60Hz
Set all outputs to resolution 1280x1024@60Hz	$All->1280x1024x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1280x1024@60Hz
Set all outputs to resolution 1360x768@60Hz	$All->1360x768x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1360x768@60Hz
Set all outputs to resolution 1366x768@60Hz	$All->1366x768x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1366x768@60Hz
Set all outputs to resolution 1440x900@60Hz	$All->1440x900x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1440x900@60Hz
Set all outputs to resolution 1600x900@60Hz	$All->1600x900x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1600x900@60Hz

Set all outputs to resolution 1600x1200@60Hz	$All->1600x1200x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1600x1200@60Hz
Set all outputs to resolution 1920x1080@25Hz	$All->1920x1080x25Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1920x1080@25Hz
Set all outputs to resolution 1920x1080@30Hz	$All->1920x1080x30Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1920x1080@30Hz
Set all outputs to resolution 1920x1080@50Hz	$All->1920x1080x50Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1920x1080@50Hz
Set all outputs to resolution 1920x1080@60Hz	$All->1920x1080x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1920x1080@60Hz
Set all outputs to resolution 1920x1200@60Hz	$All->1920x1200x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1920x1200@60Hz
Set all outputs to resolution 1920x540@50Hz	$All->1920x540x50Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1920x540@50Hz
Set all outputs to resolution 1920x540@60Hz	$All->1920x540x60Hz!	<Set Resolution Succeed!>	Example to set all outputs to 1920x540@60Hz

9. *VGA Card Control – Applicable only to VGA blades: MDX-OP4-VGA & MDX-IP4-VGA*

Firstly select the video type being input or output at each port

Function	Command Example	Response	Description
Set output [y] to VGA output	$3VGAOut!	<Set Succeed!>	Example to set output 3 to VGA mode
Set input [x] to VGA input	$3VGAIn!	<Set Succeed!>	Example to set input 3 to VGA mode
Set output [y] to YUV output	$8YUVOut!	<Set Succeed!>	Example to set output 8 to YUV mode
Set input [x] to YUV input	$8YUVIn!	<Set Succeed!>	Example to set input 8 to YUV mode

Now select the input or output you wish to control

Function	Command Example	Response	Description
Select input [x] for adjustment	SetVGAIn1.	<Set Succeed!>	Example to select input 1 for adjustment
Select output [y] for adjustment	SetVGAOut2.	<Set Succeed!>	Example to select output 2 for adjustment

Once input or output selected the following commands can be sent to adjust video parameters

Function	Command Example	Response	Description
Set brightness of channel	Bright50.	<Set Succeed!>	Set the brightness of previously selected channel to a specified value in the range 0-100
Set contrast of channel	Contrast50.	<Set Succeed!>	Set the contrast of previously selected channel to a specified value in the range 0-100
Set saturation level of channel	Saturation50.	<Set Succeed!>	Set the saturation level of previously selected channel to a specified value in the range 0-100
Set sharpness value of channel	Sharp50.	<Set Succeed!>	Set the sharpness value of previously selected channel to a specified value in the range 0-100
Set red level	Red128.	<Set Succeed!>	Set the red level of previously selected channel to a specified value in the range 0-255
Set green level	Green128.	<Set Succeed!>	Set the green level of previously selected channel to a specified value in the range 0-255

Set blue level	Blue128.	<Set Succeed!>	Set the blue level of previously selected channel to a specified value in the range 0-255

The following commands can only be executed for VGA inputs or outputs

Function	Command Example	Response	Description
Auto Set	AutoConfig.	<Set Succeed!>	Automatically configure settings for selected input or output channel selected
Shift Horizontal position up 1	HPosUp.	<Set Succeed!>	Shift horizontal position of VGA image up by 1 pixel
Shift Horizontal position down 1	HPosDown.	<Set Succeed!>	Shift horizontal position of VGA image down by 1 pixel
Shift Vertical position up 1	VPosUp.	<Set Succeed!>	Shift vertical position of VGA image up by 1 pixel
Shift Vertical position down 1	VPosDown.	<Set Succeed!>	Shift vertical position of VGA image down by 1 pixel
Increase Horizontal size by 1	HSizeUp.	<Set Succeed!>	Increase horizontal size of VGA image by 1 pixel
Decrease Horizontal size by 1	HSizeDown.	<Set Succeed!>	Decrease horizontal size of VGA image by 1 pixel
Increase Vertical size by 1	VSizeUp.	<Set Succeed!>	Increase vertical size of VGA image by 1 pixel
Decrease Vertical size by 1	VSizeDown.	<Set Succeed!>	Decrease vertical size of VGA image by 1 pixel
Position Reset	PosReset.	<Set Succeed!>	Automatically reset position of VGA image

10. IP Port Configuration

PLEASE NOTE: Placement of spaces in manual configuration commands

Function	Command Example	Response	Description
Query port number	<^SPORT>	<SPORT:[X]>	Query the current port number of the MDX unit
Query IP	<^SIPR>	<SIPR:[X1].[X2].[X3].[X4]>	Query the current IP address of the MDX unit
Query Subnet	<^SUBR>	<SUBR:[X1].[X2].[X3].[X4]>	Query the current Subnet mask of the MDX unit
Query Gateway	<^GAR>	<GAR:[X1].[X2].[X3].[X4]>	Query the current gateway of the MDX unit
Query MAC	<^SHAR>	<SHAR:[X1].[X2].[X3].[X4].[X5].[X6]>	Query the current MAC address of the MDX unit
Set Port Number	<#SPORT30>	<Set Network Succeed!>	Set port number of MDX unit. Example to set to port 30
Set IP	<#SIPR192. 168. 0. 12>	<Set Network Succeed!>	Set IP address of MDX unit. Example to set IP address to 192.168.0.12
Set Gateway	<#GAR192. 168. 0. 45>	<Set Network Succeed!>	Set gateway of MDX unit. Example to set gateway to 192.168.0.45
Set Subnet	<#SUBR255. 255. 255. 0>	<Set Network Succeed!>	Set subnet mask of MDX unit. Example to set gateway to 255.255.255.0
Set MAC	<#SHAR45. 46. 47. 48. 49. 50>	<Set Network Succeed!>	Set MAC address of MDX unit. Example to set MAC address to 45.46.47.48.49.50
Restore Network to default	<#NETDEFAULT>	<Set Network Succeed!>	Restore MDX unit to default network settings

