4K-4x4 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 4K-4x4 matrix.

Serial port control:

Baud Rate: 57600
Data Bits: 8
Parity: None
Stop Bits: 1

Ethernet port:

TCP, IP: 192.168.1.239

Port: 23

Command Structure

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

>@<command><data><CR>

The general format is:

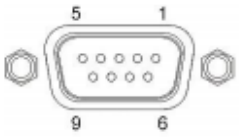
1) >@ (Header)
2) Command
3) Data
4) Carriage Return (CR) Decimal = 13, Hex = 0D

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.

Establishing communication

Once a D9 serial cable has been attached from the 4K-4x4 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 4K-4x4 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 4K-4x4 matrix range can be broken down in to the following categories:

1. General System Commands
2. Crosspoint Selection Commands
3. Audio Output Commands
4. EDID Commands
5. Network Setup Commands
6. Status Reading Commands

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

1. ***General System Commands –*** *control unit power and reset unit settings*

Function	Command Example	Response	Description
Power Off	>@WSPF(CR)	<@WSPF..	Place the unit in to low power/standby mode
Power On	>@WSPN(CR)	<@WSPN..	Bring unit out of low power/standby mode
Factory Reset	>@WSDF(CR)	<@WSDF..	Restore matrix to factory default settings

2. ***Crosspoint Control –*** *Switch, enable or disable the video, audio and infra-red crosspoint settings. [x] in range 01-04, [y] in range 01-04. ON = Enabled, OFF = Disabled.*

Function	Command Example	Response	Description
Single Crosspoint Selection	>@WVSO[04]I[02](CR)	<@WVSO[04]I[02]..	Set output [y] to input [x]. Example shown setting output 4 to input 2.
Set all outputs to single input	>@WVSOA[01](CR)	<@WVSOA[01]..	Set all outputs to input [x]. Example shown to set all outputs to input 1
Enable Single Video Output	>@WVSO[03]ON(CR)	<@WVSO[03]ON..	Enable video output [y]. Example shown to enable output 3
Disable Single Video Output	>@WVSO[02]OFF(CR)	<@WVSO[02]OFF..	Disable video output [y]. Example shown to disable output 2
Enable All video outputs	>@WVSOAON(CR)	<@WVSOAON..	Enable all video outputs
Disable all video outputs	>@WVSOAOFF(CR)	<@WVSOAOFF..	Disable all video outputs

3. ***Audio Output Control*** *– Enable/Disable the local audio outputs from the 4K-4x4. [y] in range 01-04. EN = enable output, DIS = disable output. NOTE: This will only control local audio output, embedded audio will still pass through HDBaseT output.*

Function	Command Example	Response	Description
Enable a single audio output	>@WASO[04]EEN(CR)	<@WASO[04]EEN..	Enable audio on output [y]. Example shown to enable audio output from output 4
Disable a single audio output	>@WASO[01]EDIS(CR)	<@WASO[01]EDIS..	Disable audio on output [y]. Example shown to disable audio output from output 1
Enable all audio outputs	>@WASOAEEN(CR)	<@WASOAEEN..	Enable audio from all output ports
Disable all audio outputs	>@WASOAEDIS(CR)	<@WASOAEDIS..	Disable audio from all output ports

4. ***EDID setting –*** *Edit input settings by reading from default settings held in 4K-4x4 or reading from remote screens. [x] in range 01-04, [y] in range 01-04. Table of default EDID values (D) shown below command table, [D] in range 01-12.*

Function	Command Example	Response	Description
Read EDID from output to single input	>@WECO[04]I[01](CR)	<@WECO[04]I[01].	Read EDID from HDBaseT output [y] to input [x]. Example shown to read EDID from output 4 to input 1
Read EDID from output to all inputs	>@WECO[04]A(CR)	<@WECO[04]A..	Read EDID from HDBaseT output [y] to all inputs. Example shown to read EDID from output 4 to all inputs
Set single input to default EDID value	>@WECD[10]I[02] (CR)	<@WECD[10]I[02].	Write default EDID value [D] to input [x]. Example shown to write default EDID value 10 to input 2
Set all outputs to a default EDID value	>@WECD[01]A(CR)	<@WECD[01]A..	Write default EDID value [D] to all inputs. Example shown to write default EDID value 01 to all inputs

DEFAULT EDID NUMBER	EDID SETTING
01	1080p_2CH(PCM)
02	1080p_audio5.1
03	1080p_audio7.1
04	1080p_3D_2CH(PCM)
05	1080p_audio5.1
06	1080p_audio7.1
07	4K30Hz_3D_2CH(PCM)
08	4K30Hz_3D_audio5.1
09	4K30Hz_3D_audio7.1
10	4K60Hz(Y420)_3D_2CH(PCM)
11	4K60Hz(Y420)_3D_audio5.1
12	4K60Hz(Y420)_3D_audio7.1

5. ***Network Setting Commands –*** *Change network parameters of 4K-4x4 matrix. [xxx] in range 000-255, [zzzz] in range 0001-9999. ON = Enabled, OFF = Disabled.*

Function	Command Example	Response	Description
Enable DHCP	>@WIPDPON(CR)	<@WIPDPON..	Enable the matrix to be automatically assigned IP address by server/router
Disable DHCP	>@WIPDPOFF(CR)	<@WIPDPOFF..	Disable DHCP functionality, unit will use static IP address. User configurable as shown below
Manual IP address set	>@WIPH192.168.001.080 (CR)	<@WIPH192.168.001.080..	Set matrix to IP address [xxx].[xxx].[xxx].[xxx]. Example shown to set IP address to 192.168.1.80
Manually set Sub Net Mask	>@WIPN255.255.255.000 (CR)	<@WIPN255.255.255.000..	Set Sub Net Mask to [xxx].[xxx].[xxx].[xxx]. Example shown to set Sub Net Mask to 255.255.255.0

Manually set route IP address	>@WIPR192.168.001.254 (CR)	<@WIPR192.168.001.254..	Set IP address of server/router to [xxx].[xxx].[xxx].[xxx]. Example shown to set route IP address to 192.168.1.254
Manually set TCP/IP Port	>@WIPP0023(CR)	<@WIPP0023..	Set TCP/IP to port [zzzz]. Example shown setting TCP/IP port to 23

6. ***Read Status Commands –*** *Commands which can be sent to query status' of various components within the 4K-4x4. [x] in range 01-04, [y] in range 01-04. Response with [D <x>] means default EDID value, response with [O <x>] means output EDID value. Y = Video or HDBaseT link present, N = Video or HDBaseT link not present*

Function	**Command Example**	**Response**	**Description**
Read HDMI Input status	>@R8001(CR)	IN LINK[Y][N][N][N]..	Ask for HDMI input status. Response in example shown shows HDMI present on input 1 but no HDMI present on any other input
Read HDBaseT output link status	>@R8002(CR)	OUT LINK[N][N][N][Y]..	Ask for HDBaseT output link status. Response in example shown shows HDBaseT link is present on output 4 but no links are present on any other output
Check input HDCP status	>@R8003(CR)	IN HDCP[Y][N][N][N]..	Query which video inputs have HDCP content present. Response in example shows only input 1 has HDCP content present
Check output HDCP status	>@R8004(CR)	OUT HDCP[Y][Y][Y][Y]..	Query which HDBaseT outputs have HDCP compliance
Check output crosspoint status	>@R8006(CR)	OUT CHANGE SET[01][02][02][03]..	Query current crosspoint settings. Example response shows output 1 set to input 1, outputs 2 & 3 set to input 2 and output 4 is set to input 3

Query output enable/disable state	>@R8007(CR)	OUT STATE[Y][Y][N][N]..	Query which outputs are enabled/disabled. Example response shows outputs 1 & 2 are enable and outputs 3 & 4 are disabled
Query which audio outputs are enabled/disabled	>@R8008(CR)	External Audio Output[N][N][Y][Y]..	Query which audio outputs are enabled/disabled. Example response shows outputs 1 & 2 have their audio disabled and outputs 3 & 4 have their audio enabled
Query input EDID settings	>@R8009(CR)	INPUT EDID[D 01][O 02][O 03][D 08]..	Query the current input EDID settings. Example response shown shows input 1 is set to default EDID 1, input 2 is set to EDID as read from output 2, input 3 is set to EDID as read from output 3 and input 4 is set to default EDID 8
Read input EDID data	>@R8010[01] (CR)	IN[1] EDID DATA(H):{128/256 bytes of data}..	Read EDID from input [x]. Example shown reading from input 1, within {} of response would appear either 128 or 256 hex bytes of data
Read Output EDID data	>@R8011[04] (CR)	OUT[4] EDID DATA(H):{128/256 bytes of data}..	Read EDID from output [y]. Example shown reading from output 4, within {} of response would appear either 128 or 256 hex bytes of data
Query Network Status	>@R8012(CR)	IPH[192][168][001][080] IPR[192][168][001][254] IPN[255][255][255][000] IPHW[60][89][B1][21][00][01] IPP[23]IPDP[Y]..	Query current network settings of matrix. Response in order: • Current IP address • Route IP address • Sub Net Mask • Mac Address • TCP/IP port • DHCP status

