



VM51616H

16 x 16 HDMI Matrix Switch with Scaler
User Manual

Compliance Statements

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Warning

Operation of this equipment in a residential environment could cause radio interference.

Achtung

Der Gebrauch dieses Geräts in Wohnumgebung kann Funkstörungen verursachen.



KCC Statement

유선 제품용 / A 급 기기 (업무용 방송 통신 기기)
이 기기는 업무용 (A 급) 전자파적합기기로서 판매자 또는 사용자는 이
점을 주의하시기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로
합니다.

Industry Canada Statement

This Class A digital apparatus complies with Canadian ICES-003.

CAN ICES-003 (A) / NMB-003 (A)

HDMI Trademark Statement

The terms HDMI, HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.



RoHS

This product is RoHS compliant.

User Information

Online Registration

Be sure to register your product at our online support center:

International	http://eservice.aten.com
---------------	---

Telephone Support

For telephone support, call this number:

International	886-2-8692-6959
China	86-400-810-0-810
Japan	81-3-5615-5811
Korea	82-2-467-6789
North America	1-888-999-ATEN ext 4988 1-949-428-1111

User Notice

All information, documentation, and specifications contained in this manual are subject to change without prior notification by the manufacturer. The manufacturer makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties as to merchantability or fitness for any particular purpose. Any of the manufacturer's software described in this manual is sold or licensed *as is*. Should the programs prove defective following their purchase, the buyer (and not the manufacturer, its distributor, or its dealer), assumes the entire cost of all necessary servicing, repair and any incidental or consequential damages resulting from any defect in the software.

The manufacturer of this system is not responsible for any radio and/or TV interference caused by unauthorized modifications to this device. It is the responsibility of the user to correct such interference.

The manufacturer is not responsible for any damage incurred in the operation of this system if the correct operational voltage setting was not selected prior to operation. PLEASE VERIFY THAT THE VOLTAGE SETTING IS CORRECT BEFORE USE.

Product Information

For information about all ATEN products and how they can help you connect without limits, visit ATEN on the Web or contact an ATEN Authorized Reseller. Visit ATEN on the Web for a list of locations and telephone numbers:

International	http://www.aten.com
North America	http://www.aten-usa.com

Package Contents

The VM51616H package consists of:

- ◆ 1 VM51616H 16 x 16 HDMI Matrix Switch with Scaler
- ◆ 1 power cord
- ◆ 1 mounting kit
- ◆ 1 user instructions

Contents

Compliance Statements	ii
User Information	iv
Online Registration	iv
Telephone Support	iv
User Notice	iv
Product Information	v
Package Contents	v
Contents	vi
About this Manual	x
Conventions	xi

1. Introduction

Overview	1
Features	2
Requirements	3
Source Devices	3
Display Devices	3
Cables	3
Source Device Operating Systems	4
Browsers	4
Components	5
VM51616H Front View	5
VM51616H Rear View	6

2. Hardware Setup

Rack Mounting	7
Grounding	8
Cable Connection	9
Installation Diagram	10

3. Front Panel Configuration

Overview	11
Front Panel Pushbuttons	11
Enter Password	13

Main Screen	14
Port Switching	14
Input Port Selection	14
Output Port Selection	16
LCD Menu Organization	18
Menu Pushbutton	19
IP Setting	19
IP Address / Subnet Mask / Gateway	19
Serial Port Setting	21
Baud Rate	21
Operation Mode	22
EDID Mode	22
CEC	23
OSD	24
Output Status	25
Security Mode	28
Mode	28
Change Password	29
Play/Stop the Profile Schedule	31
Breaking Output Groups	31
Profile Pushbutton	32
Array Pushbutton	33
Audio Pushbutton	34

4. Browser Operation

Overview	35
Logging In	35
Main Page	36
Menu Bar	36
Profiles	37
Understanding Profiles and Profile List	37
Understanding Display Zones	38
Example	38
Creating a Profile	39
Configuring Video Settings of a Profile	42
Configuring Video Settings in Normal View	44
Profile Layout Settings	44
Display Preferences	45

Video Wall Settings	46
Configuring Video Settings in Grid View	50
Configuring Audio Output Settings	53
Playing a Profile	54
Apply Multiple Profiles by Batch	54
Apply A Single Profile	55
Change Input	57
Exporting a Profile	58
Importing a Profile	58
Profile Scheduling	59
System Settings	63
General	65
Basics	65
Fan Status	65
Serial Setting	65
Port Setting	66
OSD/CEC.....	66
HDCP	67
Scaler	68
Port Name	70
EDID Settings	71
EDID Mode	72
EDID & CEA Description	73
Customized Mode	74
Customized EDID Parameters	75
CEA Settings	79
Video Data	80
Audio Data	81
HDMI Forum Vendor Specific Block	82
YCBCR 4:2:0 Video Data Block	83
YCBCR 4:2:0 Compatibility Map Data Block	84
Local Output	85
Status	86
Connections	86
System Information	88
Maintenance	89
System Setup	89
User Account	91
Add Account	92
Permission Level	93
Network	94

5. CLI Commands

Overview	95
Connecting to the Matrix Switch via Telnet	95
Connecting to the Matrix Switch via RS-232	96
Command Verification	97
Commands	97
Switch Port Command	97
EDID Mode Command	100
Mute Command	101
CEC Command	103
Scaling Command	104
FrameSync Command	108
Fan Speed Command	109
Echo Command	110
Black Screen Command	111
Read Command	112
Reset Command	113
Baud Rate Command	114
Load Profile Command	115
OSD Command	116
Local Output OSD Command	117
Array Command	118
Alert Command	120
Schedule Command	121

Appendix

Safety Instructions	123
General	123
Rack Mounting	125
Technical Support	126
International	126
North America	126
Specifications	127
Telnet Operation	129
Configuration Menu	129
ATEN Warranty Policy	132

About this Manual

This User Manual is provided to help you get the most from your VM51616H system. It covers all aspects of installation, configuration and operation. An overview of the information found in the manual is provided below.

Chapter 1 Introduction introduces you to the VM51616H system. Its purpose, features and benefits are presented, and its front and back panel components are described.

Chapter 2 Hardware Setup describes how to set up your VM51616H installation.

Chapter 3 Front Panel Configuration explains the fundamental concepts involved in operating the VM51616H at the local site via the front panel LCD display using pushbuttons.

Chapter 4 Browser Operation provides a complete description of the VM51616H's Browser Graphical User Interface (GUI), and how to use it to remotely configure and operate the VM51616H.

Chapter 5 CLI Commands provides a complete list of the serial control protocol commands used when utilizing the RS-232 Serial Port so that an extra source device can be utilized in the installation.


Appendix which provides specifications and other technical information regarding the VM51616H.

Note:

- ◆ Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damage to the unit and/or connected devices.
 - ◆ The product may be updated, with features and functions added, improved, or removed since the release of this manual. For an up-to-date user manual, visit <http://www.aten.com/global/en/>.
-

Conventions

This manual uses the following conventions:

- | | |
|---|--|
| Monospaced | Indicates text that you should key in. |
| [] | Indicates keys you should press. For example, [Enter] means to press the Enter key. If keys need to be chorded, they appear together in the same bracket with a plus sign between them: [Ctrl+Alt]. |
| 1. | Numbered lists represent procedures with sequential steps. |
| ◆ | Bullet lists provide information, but do not involve sequential steps. |
| > | Indicates selecting the option (on a menu or dialog box, for example), that comes next. For example, Start > Run means to open the <i>Start</i> menu, and then select <i>Run</i> . |
|  | Indicates critical information. |

This Page Intentionally Left Blank

Chapter 1

Introduction

Overview

The ATEN VM51616H 16 x 16 HDMI Matrix Switch with Scaler is a versatile solution that provides an easy way to route high definition video and audio from any of 16 HDMI sources to any of 16 HDMI displays at the same time. As a Matrix Switch, each input can be independently connected to any or all outputs, giving you the ultimate in flexibility and control in any multi-display audio/video installation.

The VM51616H features Seamless Switch™, which employs FPGA matrix system architecture to seamlessly switch between multiple sources and multiple displays. With EDID Expert technology, the VM51616H selects the optimum EDID settings for smooth power-up and the highest quality display. It also features a high-performing scaling engine that converts the video resolution into the display's native resolution for the best image quality.

You can easily configure the VM51616H via the front panel LCD display and pushbuttons. The LCD provides a quick view of all port connections, and lets operators access the unit's built-in configuration utility. Furthermore, the VM51616H allows convenient configuration and operation via an intuitive Graphical User Interface (GUI). The web GUI provides you with advanced features which include easy setup of custom Video Wall and Digital Signage configurations that can be saved and recalled. Because your VM51616H can be controlled over a standard TCP/IP connection, it conveniently integrates into any existing network for easy remote access. For complete system integration, serial control is standard through the built-in RS-232 port that allows the switch to be controlled through a high-end controller or PC. You can also have mobile access to frequently used features such as switching of profile and AV inputs using the Video Matrix Control App. For more information, see *Video Matrix Control App User Manual*.

The VM51616H is designed with a local HDMI output port that allows users to monitor the input sources in real time. Through the HDMI connection, users can directly preview up to 16 sources over one single display to quickly check on source status anytime from the local side. The viewing mode of the local display can be easily set as array of 1 × 1, 2 × 2, or 4 × 4 via the web GUI according to different application demand.

The VM51616H is an ideal solution for applications that require HDMI outputs from multiple sources to be conveniently delivered to multiple destinations, such as for stage presentations, competitions, control centers, and system installations that require real-time reports.

Features

- ◆ Connects any of 16 HDMI sources to any of to 16 HDMI displays
- ◆ Multiple Control Methods – system management via front-panel pushbuttons, RS-232 control, and Ethernet connections (Telnet / Web GUI)
- ◆ Supports free mobile control using the Video Matrix Control App
- ◆ Seamless Switch™ – ATEN FPGA design unifies video formats to provide continuous video streaming, real-time switching and stable signal transmissions*
- ◆ Scaler – features a video scaling function to convert input resolutions to the optimum display resolutions
- ◆ Video Wall – allows you to create custom video wall layouts via intuitive web GUI*
- ◆ EDID Expert™ – selects optimum EDID settings for smooth power-up, high-quality display, and use of the best resolution across different screens
- ◆ FrameSync – prevents image tearing by synchronizing the scaler output frame rate to the input signal frame rate
- ◆ Superior video quality – HDTV resolution of 480p, 720p, 1080i and 1080p (1920 × 1080)
- ◆ HDMI (3D, Deep color); HDCP 1.4 compatible
- ◆ Consumer Electronics Control (CEC) support
- ◆ Local HDMI output – allows multiple preview of 16 video sources
- ◆ Audio-enabled; HDMI audio can be extracted to stereo audio
- ◆ Supports Dolby True HD and DTS HD Master audio
- ◆ Built-in bi-directional RS-232 serial port for high-end system control
- ◆ ESD protection for HDMI
- ◆ Firmware upgradeable
- ◆ Rack-mountable (2U design)

Note:When Seamless Switch™ is enabled, mind the following:

- ◆ Video outputs will not display 3D, Deep Color, or interlace (i.e., 1080i) resolutions correctly. To use these features, make sure to first disable Seamless Switch™.
 - ◆ Videos may not display within range, in which case make sure to adjust the display settings on your device.
 - ◆ For more information on the Video Matrix Control app, see *Video Matrix Control App User Manual*.
-

Requirements

The following devices are required for a complete VM51616H installation:

Source Devices

- ◆ Computer or A/V source device with HDMI Type A output connector(s)
-

Note: A DVI/HDMI adapter is required when connecting a DVI source device.

Display Devices

- ◆ Display devices or receivers with an HDMI Type A input connector

Cables

- ◆ 1 HDMI cable for each source device you will be connecting
 - ◆ 1 HDMI cable for each display device you will be connecting
 - ◆ 1 Cat 5e cable
 - ◆ 1 RS-232 serial cable
 - ◆ 1 audio cable
-

Note: No cables are included in this package. We strongly recommend that you purchase high-quality cables of appropriate length since this will affect the quality of the audio and video display. Contact your dealer to purchase the correct cable sets.

Source Device Operating Systems

Supported operating systems are shown in the table below:

OS		Version
Windows		2000 and higher
Linux	RedHat	6.0 and higher
	SuSE	8.2 and higher
	Mandriva (Mandrake)	9.0 and higher
UNIX	AIX	4.3 and higher
	FreeBSD	3.51 and higher
	Sun	Solaris 8 and higher
Novell	Netware	5.0 and higher
Mac		OS 9 and higher
DOS		6.2 and higher

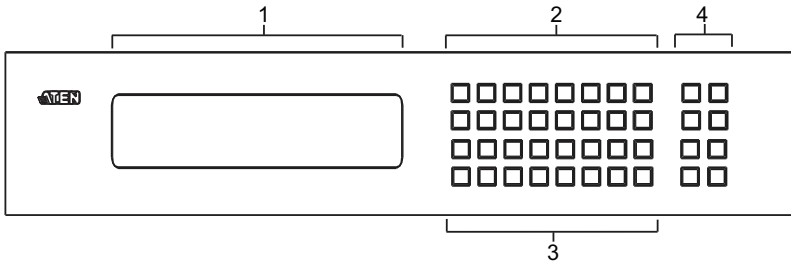
Browsers

Supported web browsers are shown in the table below:

OS	Java Version	Browser	Version
Windows 8.1	V1.8.0_60	Chrome	45.0.2454.85 m
		Firefox	40.0.3
		Safari	5.1.7
		Opera	31.0.1889.174
		IE11	11
Windows 2012 R2 (64bit)	V1.8.0_60 (64bit)	IE11	11 (64bit)
Windows 2008 R2 (64bit)	V1.8.0_60 (64bit)	IE8	8
Windows 7 SP1(64bit)	V1.8.0_60 (64bit)	IE10	10 (64bit)
Windows XP	V1.8.0_60	IE8	8
CentOS 7.0 (64Bit)	V1.8.0_60 (64bit)	Firefox	40.0.3
Ubuntu 12.04	V1.8.0_60	Chrome	45.0.2454.85
Solaris 11(64bit)	V1.8.0_25	Firefox	33
Mac 10.10	V1.8.0_25	Safari	8

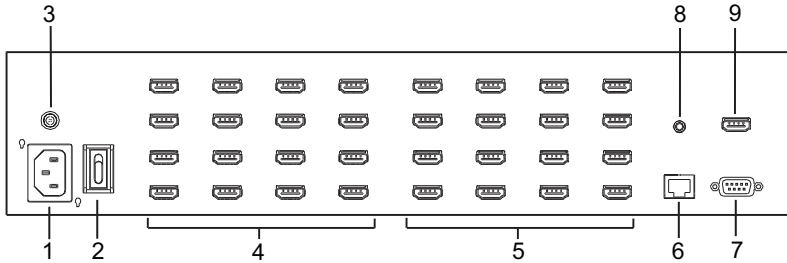
Components

VM51616H Front View



No.	Component	Description
1	LCD display	The LCD display gives a quick view of all port connections, and shows the various options for configuring and operating the VM51616H. For full details, see <i>Main Screen</i> , page 14.
2	input pushbuttons	These pushbuttons refer to the HDMI input ports found on the VM51616H rear panel. Press to select the input port. These pushbuttons may also correspond to menu options, connection profiles (P1–P16) and so on. Note: The INPUT (1–16) front panel pushbuttons have built-in LEDs that light to indicate they have been selected.
3	output pushbuttons	These pushbuttons refer to the HDMI output ports found on the VM51616H rear panel. Press to select the output port. These pushbuttons may also correspond to connection profiles (P17–P32). Note: The OUTPUT (1–16) front panel pushbuttons have built-in LEDs that light to indicate they have been selected.
4	function pushbuttons	The function pushbuttons (ARRAY , AUDIO , MENU , PROFILE , Λ , V , ENTER and CANCEL) are for navigating the LCD built-in configuration utility. For full details, see <i>Front Panel Pushbuttons</i> , page 11. Note: The function pushbuttons (except for ENTER and CANCEL pushbuttons) have built-in LEDs that light to indicate they have been selected.

VM51616H Rear View



No.	Component	Description
1	power socket	This is a standard 3-pin AC power socket. The power cord from an AC source plugs in here.
2	power switch	This is a standard rocker switch that powers the unit on and off.
3	grounding terminal	The grounding wire attaches here. See <i>Grounding</i> , page 8, for further details.
4	HDMI output ports	The cables from your HDMI display devices plug into these ports.
5	HDMI input ports	The cables from your HDMI source devices plug into these ports.
6	Ethernet port	In order to access the VM51616H's Browser Graphical User Interface (GUI), the VM51616H must be connected to your network. The cable that connects the VM51616H to your LAN plugs in here. See <i>Cable Connection</i> , page 9, for further details.
7	RS-232 serial port	Connect a computer or serial controller via this serial port.
8	audio output port	The audio output port allows you to extract HDMI audio to stereo audio. The cable from a speaker plugs in here.
9	local HDMI output port	The local HDMI output port allows you to preview the multiple view from the connected source device(s). The cable from a HDMI display plugs in here.

Chapter 2

Hardware Setup

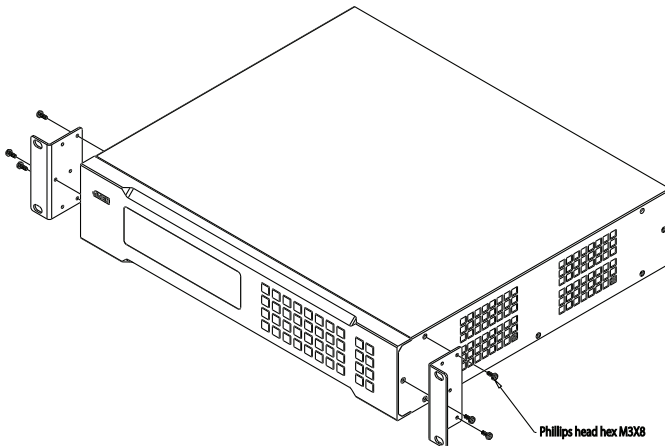


1. Important safety information regarding the placement of this device is provided on page 123. Please review it before proceeding.
2. Make sure that the power to all devices connected to the installation are turned off. You must unplug the power cords of any computers that have the Keyboard Power On function.

Rack Mounting

The VM51616H can be mounted in a 19" (2U) system rack. For the most convenient front panel pushbutton configuration and operation at the local site, mount the unit at the front of the rack, as follows:

1. Use the M3 x 8 Phillips head hex screws supplied with the Mounting Kit to screw the rack mounting brackets onto the front of the unit.

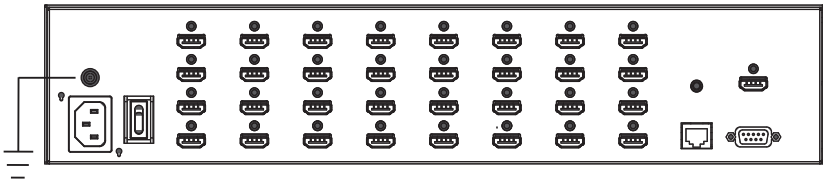


2. Position the unit in the front of the rack and align the holes in the mounting brackets with the holes in the rack.
3. Screw the mounting brackets to the rack.

Grounding

To prevent damage to your installation, it is important that all devices are properly grounded.

1. Use a grounding wire to ground the VM51616H by connecting one end of the wire to the grounding terminal, and the other end of the wire to a suitable grounded object.



2. Make sure that all devices in your VM51616H installation are properly grounded.

Cable Connection

Installation of the VM51616H is simply a matter of connecting the appropriate cables. Refer to the installation diagram on the following page (the numbers in the diagram correspond to the steps below), and do the following:

1. Use a grounding wire to ground the unit by connecting one end of the wire to the grounding terminal, and the other end of the wire to a suitable grounded object.

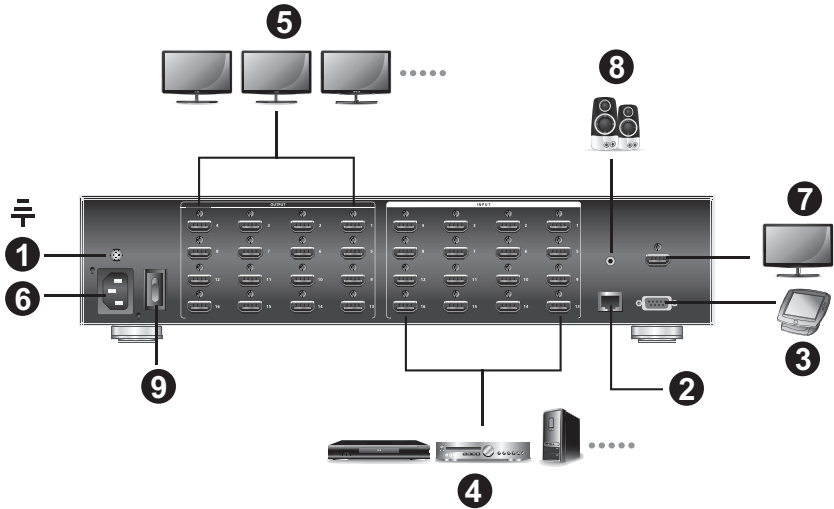
Note: Do not omit this step. Proper grounding helps to prevent damage to the unit from surges or static electricity.

2. To access the features in the web GUI or use the Video Matrix Control App, plug a Cat 5e cable from the LAN into the VM51616H's **Ethernet** port.

Note: For more information, see *Browser Operation*, page 35 and *Video Matrix Control App User Manual*.

3. If you are using the serial control function, use an appropriate RS-232 serial cable to connect the computer or serial controller to the VM51616H's female **RS-232 Serial** port.
4. Connect up to 16 HDMI video sources to the **HDMI Input** ports.
5. Connect up to 16 HDMI display devices to the **HDMI Output** ports.
6. Plug the power cord supplied with the package into the VM51616H's 3-prong AC socket, and then into an AC power source.
7. (Optional) Connect a display to the local HDMI output port to enable multi-view preview from the connected source device(s).
8. (Optional) Connect a speaker to extract HDMI audio.
9. Power on the VM51616H and all devices in the installation.

Installation Diagram



Chapter 3

Front Panel Configuration

Overview

The VM51616H can be configured and operated locally via the front panel LCD/pushbuttons; remotely over a standard TCP/IP connection via graphical user interface (GUI) using a web browser; via a remote terminal session using Telnet; or by a RS-232 serial controller.

The local front panel operation is discussed in this chapter. Web GUI Operation is discussed in Chapter 4, and RS-232 serial control is discussed in Chapter 5.

Front Panel Pushbuttons

The front panel features an LCD display and pushbuttons for convenient operation locally. This allows users to perform operations such as selecting which source shows on which display, viewing the IP settings, configuring the serial port, setting the EDID Mode / CEC / OSD /Output Status, setting the Array Mode for the local display, selecting security settings, and loading/saving profiles.

Note the following front panel pushbutton functions:

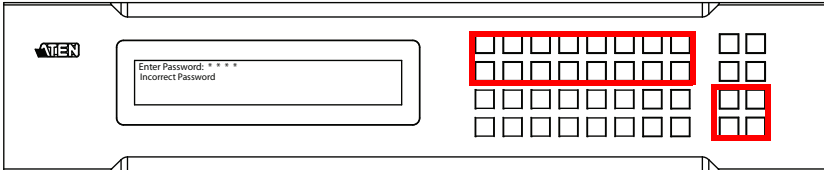
- ◆ Use the **MENU** pushbutton to access the Menu page options: IP Setting, Serial Port Setting, Operation Mode, and Security Mode (see *LCD Menu Organization*, page 18).
- ◆ Use the **PROFILE** pushbutton to switch between the connection profiles which have been added to the Profile List (see *Profiles*, page 37).
- ◆ Use the **CANCEL** pushbutton to go back to a previous page, return to the Main Screen, stop or exit an operation.
- ◆ Use the **ENTER** pushbutton to select options and confirm operations.
- ◆ Use the **ARRAY** pushbutton to select a viewing mode and the input sources for the local display (See *Array Pushbutton*, page 33).
- ◆ Use the **AUDIO** pushbutton to select an Input source for the stereo audio output or mute it (see *Audio Pushbutton*, page 34).

- ◆ Use the **INPUT / OUTPUT (1–16)** pushbuttons to select the Input/Output port. These pushbuttons may also correspond to menu options, connection profiles, and so on.
- ◆ The VM51616H provides **Prev / Next** pushbuttons to navigate the menus.

Enter Password

Upon VM51616H startup, check the front panel LCD to view the loading progress. If the Password screen / LCD Menu fails to load, an error message displays. Reset the unit and try again.

If you are accessing the VM51616H for the first time, the Password screen appears as soon as the LCD loading process is done. Enter the default password 1234 to continue to the Main Screen (see *Main Screen*, page 14).



Additionally, the Password Screen appears if the VM51616H has been configured to require a password for Front Panel operation (see *Security Mode*, page 28).

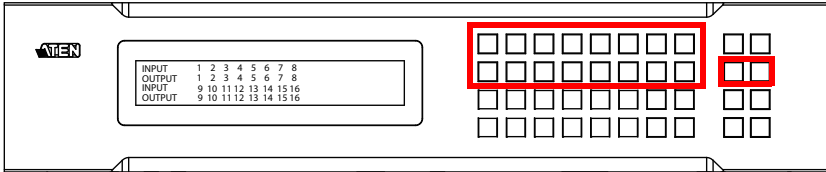
To enter a password, do the following:

1. In the **Enter Password** field, check that the cursor is at the first asterisk (*) and flashing.
2. Use the front panel Input Port pushbuttons (1–9) to enter the 4-digit password. After the fourth digit has been entered correctly, the Main Screen displays.
3. Press **Cancel** to clear the password. The digits revert to 4 asterisks and the cursor goes back to the first asterisk.

-
- Note:**
1. The VM51616H password can be any four digit combination between 1111 to 9999. The default password is 1234.
 2. If you enter an incorrect password, the cursor goes back to the first digit and reverts to flashing. The Incorrect Password message displays at the bottom of the screen, but clears as soon as a new password is entered.
 3. If Password option is Enabled (see *Security Mode*, page 28), the LCD display time-out is 5 minutes by default.
-

Main Screen

The Main Screen shows the Input ports in the top row, which are tied to the Output ports shown in sequential order (1–16) at the bottom row.



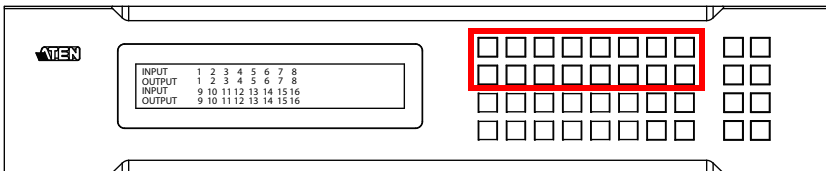
- The front panel pushbutton label (1–16) corresponds to the **Input** ports and **Output** ports on the unit’s rear panel.
- Use the **Menu** pushbutton to view the LCD Menu (see *LCD Menu Organization*, page 18).
- Use the **Profile** pushbutton to switch between profile connections (see *Profiles*, page 37).

Port Switching

From the Main Screen, users can configure the Input-to-Output port connections to associate an Input source device to an Output display.

Input Port Selection

Use the Input Port pushbuttons to select the Input port you want to configure.



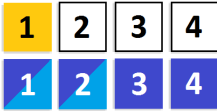
To select which input source displays on each output port, do the following:

1. Press an Input pushbutton. The outputs already assigned with this input light up. To assign this input to more outputs, press the Output pushbutton.

(Continues on next page.)

(Continued from previous page.)

In the example below, pressing Input port **1** shows it is tied to Output ports **1** and **2**.



- To deselect an output, press the pushbutton again.

In the example below, Output port **2** has been disconnected from Input port **1**.



- To switch to another Input port, press any Input port pushbutton. The Output port LED(s) tied to the said Input port will flash.

In the example below, pressing Input port **2** shows it is tied to Output ports **3** and **4**.



- To connect Output port **2** to Input port **2** in the example above, then press the Output port **2** pushbutton. The Output port **2** LED will also begin to flash (0.5 sec on, 0.2 sec off). This indicates that Input port **2** is now connected to Output ports **2**, **3** and **4**.



Once the signal from the selected Input port is successfully tied to the Output port, the LEDs turn off and the LCD information is updated.

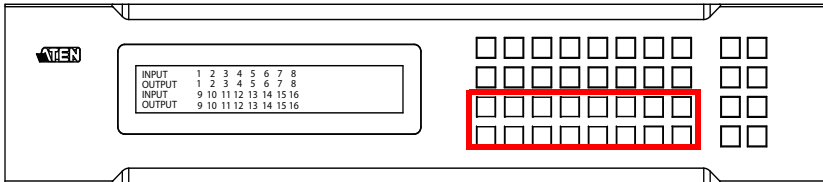
Note: 1. Pressing an Input port a second time deselects it.

- Input ports that are not configured or tied to any output port do not in the LCD screen.

3. Pressing the **Cancel** pushbutton once stops the Input Port Selection operation and the LCD displays the active setting. Pressing the **Cancel** pushbutton again turns all LEDs off.
4. After 10 seconds of inactivity, all the LEDs turn off.

Output Port Selection

Use the Output Port pushbuttons to select the Output port you want to configure.



To select which output display corresponds to each input source device, do the following:

1. Press any Output port pushbutton (1–16).

In the example below, Output port **1** pushbutton has been pressed. Available Input ports light up. Because no Input LEDs are flashing, no ports have already been assigned to Output port **1**.



2. If an Output port pushbutton is pressed a second time, it is deselected and the LED turns off.
3. To connect the selected Output port(s) to an Input port, press the Input port pushbutton. to which you want the Output port(s) tied. The newly selected Input port LED flashes (0.5 sec on, 0.2 sec off), and the LCD information is updated.

In the example below, pressing Input port **2** ties it to Output ports **2, 3** and **4**.



- To switch Output ports **2**, **3** and **4** to another Input port (and disconnect it from Input port **2**), press another Input port pushbutton to which you want them tied.

In the example below, Input port **3** has been pressed and is now connected to Output ports **2**, **3** and **4**.



-
- Note:**
- Pressing an Output port a second time deselects it.
 - Pressing the **Cancel** pushbutton once stops the Output Port Selection operation, and the LCD displays the active setting. Pressing the **Cancel** pushbutton again turns all LEDs off.
 - After 10 seconds of inactivity, all the LEDs turn off.
-

LCD Menu Organization

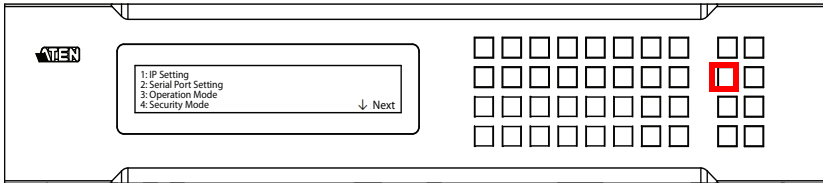
The VM51616H has a built-in configuration utility via the front panel LCD, which can be controlled by pressing the **MENU** and front panel Input pushbuttons (1–16). User can cycle through the menu options, starting from IP Setting page, in the order shown in the table below:

Menu Page	Sub-Menu Page(s)			
IP Setting	IP Address			
	Subnet Mask			
	Gateway			
Serial Port Setting	Baud Rate	9600 / 19200 / 38400 / 115200		
Operation Mode	EDID	Default / Port1 / Remix / Customized		
	CEC	On / NA		
	OSD	On / NA		
	Output Status	Video	On / NA	
		Audio Extract Mute	01-16 On / NA	
Output Resolutions		01-16		
Security Mode	Mode	None		
		Password Enable		
		Lock Screen		
	Change Password	Old Password	New Password	
Play/Stop the Profile Schedule				
Turn Video Wall Off				

Note: The highlighted values are the default settings of the VM51616H.

Menu Pushbutton

Press the **MENU** pushbutton to switch between the Main Screen and LCD Menu page. When the Menu is active, the MENU pushbutton's built-in LED lights up:



From the Menu page:

- ◆ Press **1** to go to the IP Setting page (see *IP Setting*, page 19)
- ◆ Press **2** to go to the Serial Port Setting page (see page 21)
- ◆ Press **3** to go to the Operation Mode Setting page (see page 22)
- ◆ Press **4** to go to the Security Mode Setting page (see page 28)
- ◆ Press **Next** to go to the next page(s) for the sub-menu pages
- ◆ Press **Menu** or **Cancel** to return to the Main Screen

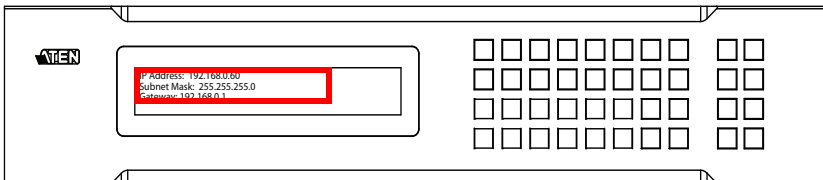
IP Setting

The IP Setting page displays the VM51616H's IP configuration. The values in the LCD Menu are read-only and can be edited via the Browser GUI (*Network*, page 94).

IP Address / Subnet Mask / Gateway

To view the VM51616H's IP address, Subnet Mask, and Gateway, do the following:

From the Menu page, press **1** to see the IP Setting submenu. The IP address, Subnet Mask, and Gateway are then shown.

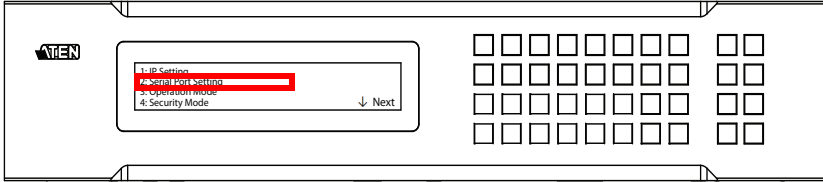


Note: The VM51616H default IP address is 192.168.0.60. The default Subnet Mask is 255.255.255.0. The default Gateway is 192.168.0.1.

4. Press **Next** to go to the next page.
5. Press **Menu** to return to the Menu page.
6. Press **Cancel** to return to the previous page without saving.

Serial Port Setting

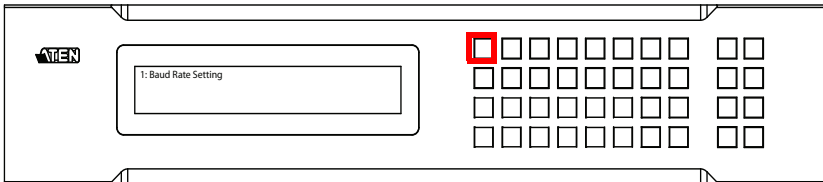
To configure the VM51616H's baud rate for its serial port connection, press 2 to select Serial Port Setting from the Menu page.



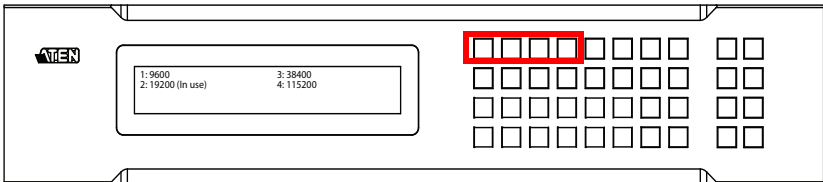
Baud Rate

To set the VM51616H's baud rate, do the following:

1. Select **Baud Rate Setting** from the Serial Port Setting submenu by pressing **1**:



2. Press pushbuttons 1–4 to make your selection.



Baud Rate options are:

- ◆ 1: 9600
- ◆ 2: 19200
- ◆ 3: 38400
- ◆ 4: 115200

Note: The default baud rate is 19200.

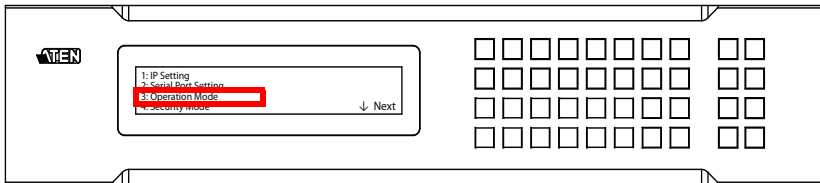
3. Press **Menu** to return to the Menu page.
4. Press **Cancel** to return to the previous step without saving.

Operation Mode

The EDID Mode, CEC, OSD and Output Status features can be configured from the Operation Mode page.

- ◆ EDID (Extended Display Identification Data) is used to have the VM51616H automatically apply a preset video configuration or EDID Mode, which utilizes the best resolution across different monitors
- ◆ Consumer Electronics Control (CEC) allows interconnected HDMI devices to communicate and respond to one remote control
- ◆ The OSD, when enabled for a port, lets an attached display/monitor show real-time port switching information
- ◆ The Output Status shows whether the video/audio of an Output port is turned on or off and allows viewing and setting of the Output Resolution

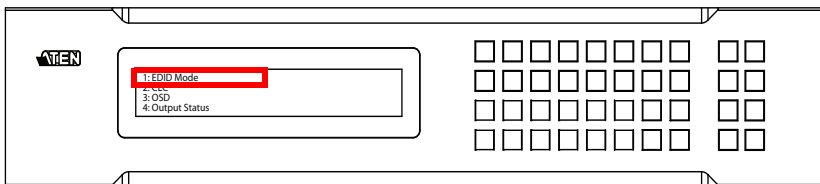
To configure the VM51616H's operation mode settings from the Main Screen, use the **Menu** pushbutton to access the Menu page, then press pushbutton **3** to access the Operation Mode page.



EDID Mode

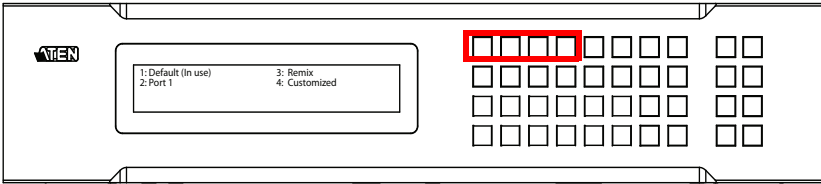
To configure the EDID Mode, do the following:

1. From the Operation Mode page, press pushbutton **1**:



(Continues on next page.)

2. Press pushbuttons 1–4 to make your selection.



EDID Mode options are:

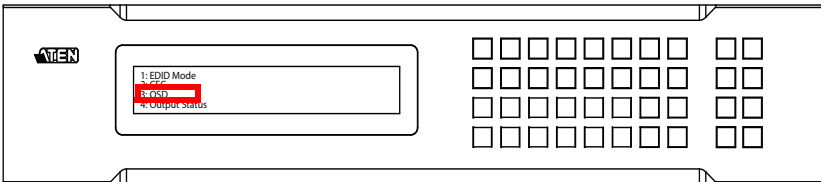
EDID Option	Description
1: Default	The default EDID is passed to all video sources.
2: Port1	The EDID from port1 is passed to all video sources.
3: Remix	Uses the EDID of each connected display according to its connection when the VM51616H is first powered on, or immediately after pressing 3 to select the Remix option.
4: Customized	Automatically retrieves and saves the EDID settings of a connected monitor/display device to an input source port. This can be configured using the Browser GUI. See <i>Customized EDID Parameters</i> , page 75.

3. Press **Menu** to return to the Menu page.
4. Press **Cancel** to return to the previous step without saving.

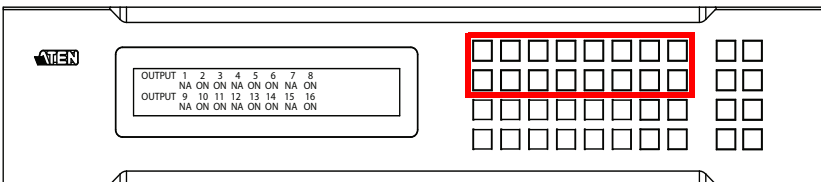
CEC

To configure the CEC setting, do the following:

1. From the Operation Mode page, press pushbutton 2:



2. Press pushbuttons (1–16) to enable (**ON**) or disable (**NA**) the CEC feature for the output port. If the port does not support CEC, an **NA** is shown.



Note: The default CEC setting is NA.

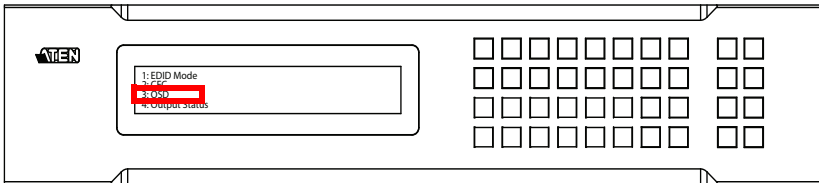
3. Press **Menu** to return to the Menu page.
4. Press **Cancel** to return to the previous step without saving.

OSD

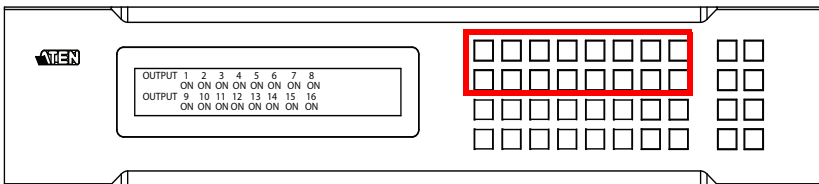
The On-Screen Display (OSD) feature enables real-time text updates to appear on the display device’s screen for any configuration changes made to the Output port via the VM51616H’s front panel or Browser GUI.

To configure the OSD setting for each output port, do the following:

1. From the Operation Mode page, press pushbutton **3**:



2. Press pushbuttons (1–16) to enable (**ON**) or disable (**NA**) the OSD feature for the output port.



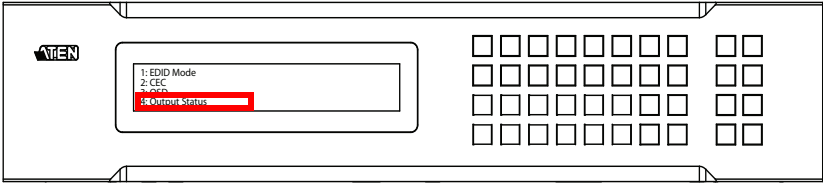
Note: The default OSD setting is On.

3. Press **Menu** to return to the Menu page.
4. Press **Cancel** to return to the previous step without saving.

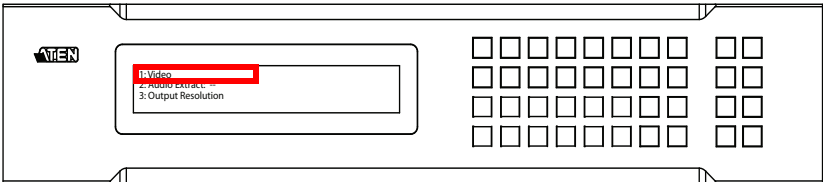
Output Status

To configure the Output Status settings for each output port, do the following:

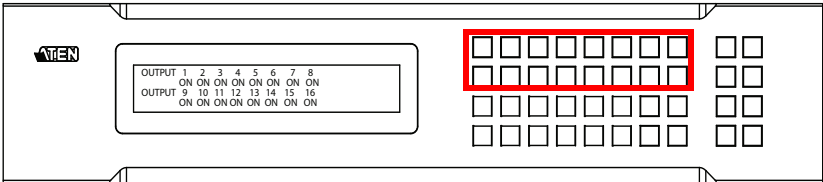
1. From the Operation Mode page, press pushbutton **4**:



2. Press **1** to select Video.



3. Press pushbuttons (1–16) to enable (**ON**) or disable (**NA**) the video/audio of the output port.



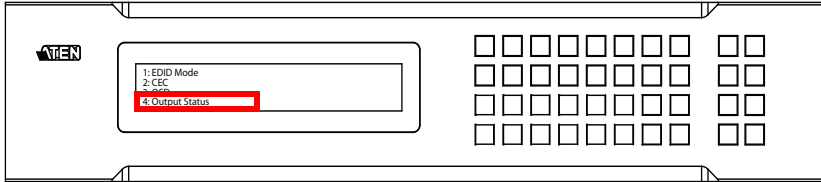
Note: The default Output Status setting is On.

4. Press **Menu** to return to the Menu page.
5. Press **Cancel** to return to the previous step without saving.

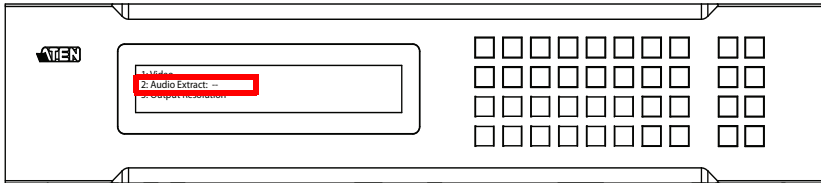
(Continues on next page.)

To configure the Audio Extract settings, do the following:

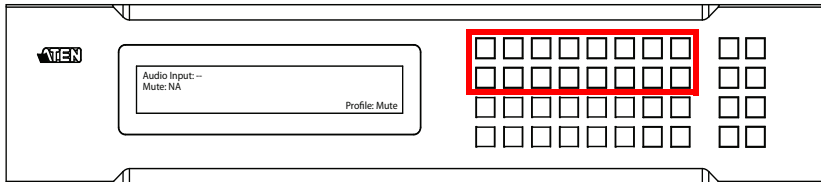
1. From the Operation Mode page, press pushbutton **4**:



2. Press **2** to select Audio Extract.

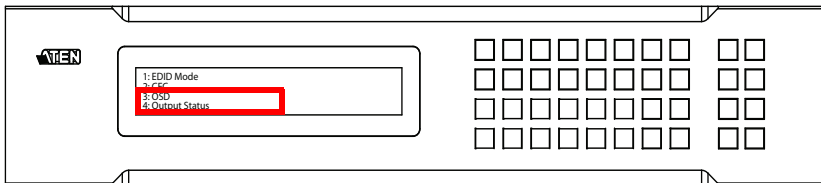


3. Press pushbuttons (1-16) to select an input port to the stereo audio output. To mute the audio, press the PROFILE pushbutton until it indicates ON.



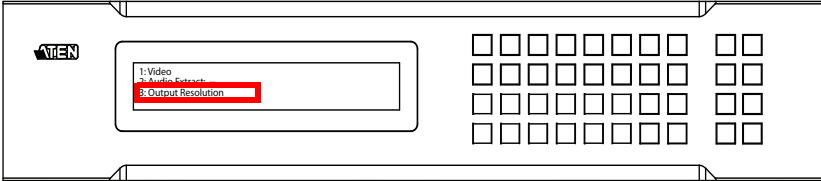
To configure the Output Resolution settings for each output port, do the following:

1. From the Operation Mode page, press pushbutton **4**:

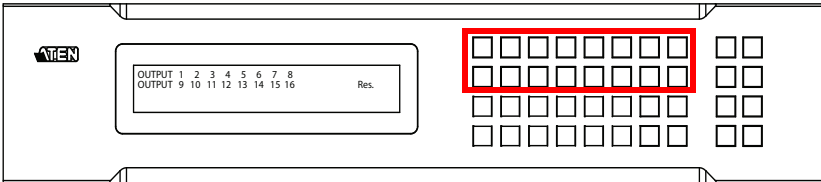


(Continues on next page.)

2. Press **3** to select Output Resolution.



3. Press pushbuttons (1–16) to select an output port whose resolution will be changed.

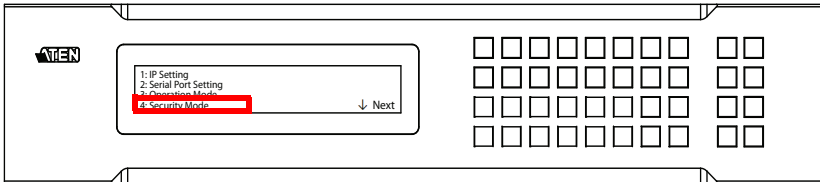


4. Available options include: Native Resolution, 1024 × 768@60Hz, 1280 × 720@60Hz, 1280 × 1024@60Hz, 1400 × 1050@60Hz, 1600 × 1200@60Hz, 1920 × 1080@60Hz, 1920 × 1200@60Hz, 1280 × 720@50Hz, 1920 × 1080@50Hz, 1280 × 800@60Hz, 720 × 576@50Hz, and 1600 × 900@60Hz.
5. Press **Menu** to return to the Menu page.
6. Press **Cancel** to return to the previous step without saving.

Security Mode

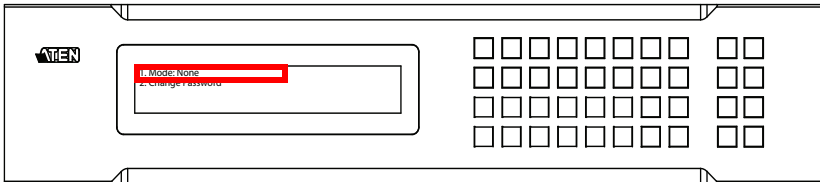
The Security Mode page allows users to manage the VM51616H’s security-related settings. Three security modes are available: None, Password Enable, and Lock Screen. The VM51616H’s password can also be changed here.

To configure the VM51616H’s security settings from the Main Screen, use the **Menu** pushbutton to access the Menu page, then press pushbutton **4** to access the Security Mode page.

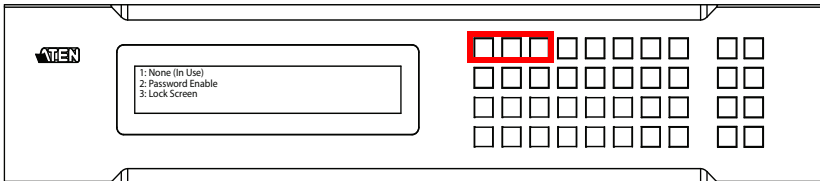


Mode

1. To change the VM51616H’s security mode, press pushbutton **1** in Security Mode.



2. In the Mode menu, to disable security settings, press pushbutton **1**. The menu will then return to Security Mode. To require a password after the LCD display times out or is powered off/on, press pushbutton **2**. The menu will then return to the home screen. To enable a lock screen, press pushbutton **3**. The menu will then return to the home screen. When Lock Screen is enabled, pressing any pushbutton from the home screen will trigger the following message: *Please press “Menu” to start.*

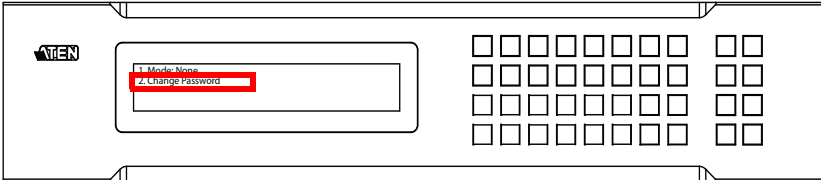


Note: If Password is Enabled, the LCD display’s default time-out is 5 minutes. The VM51616H’s default password is 1234.

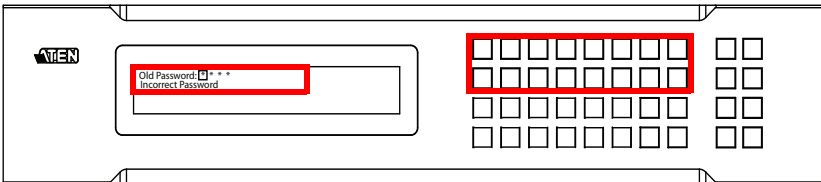
3. Press **Menu** to return to the Menu page.
4. Press **Cancel** to return to the previous step without saving.

Change Password

1. To change the password for accessing the unit, press pushbutton **2**.

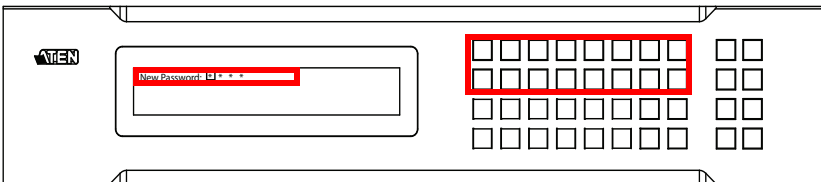


2. In the Old Password field, the cursor flashes at the first digit. Enter the old password (see *Enter Password*, page 13). If the old password is entered correctly, you can proceed to the next step.



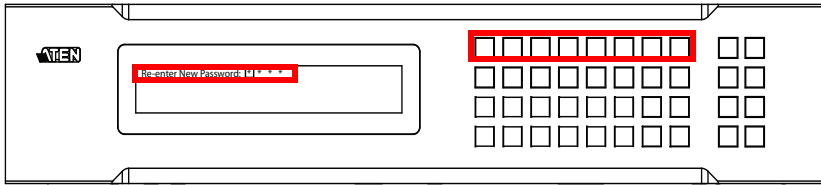
Note: If you entered an incorrect password, an error message appears and the cursor goes back to the first digit (flashing). The Incorrect Password message clears as soon as a new digit is entered.

3. In the New Password field, the cursor flashes at the first digit. Enter the new password (1111–9999) using the front panel number pushbuttons.



(Continues on next page.)

4. Re-enter the new password in the following screen. The new password is applied by the VM51616H immediately.

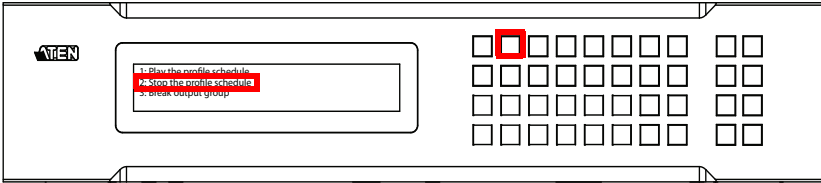


If the password you entered does not match the one entered in the previous screen, an error message appears. Enter the new password correctly.

5. Press **Menu** to return to the Menu page.
6. Press **Cancel** to return to the previous step without saving.

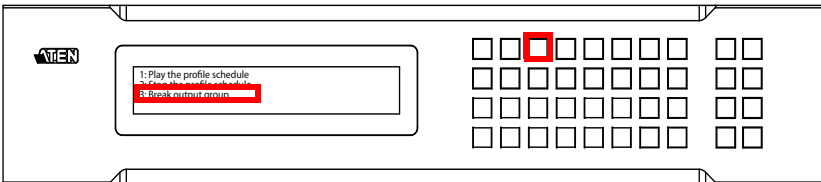
Play/Stop the Profile Schedule

Press port pushbutton **2** to Play or Stop the active Profile Schedule.



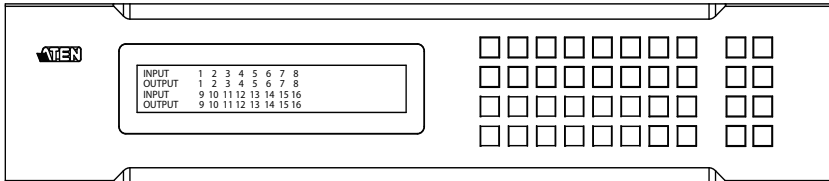
Breaking Output Groups

You can disintegrate a grouped display (video wall) into individual display. For example, if you have three 2×2 display zones (video wall) set up, and each is playing a profile, you can enable this function to have the assigned source displayed separated on each of the 4 monitors. Note this function is only available when a display zone is displaying a profile that contains grouped output. To enable this function, press pushbutton **3** to activate the function.



Profile Pushbutton

The **PROFILE** pushbutton lets users conveniently switch between connection profiles that have been saved or added to the Profile List (see *Profiles*, page 37).



The Profile pushbutton functions as follows:

- ◆ After pressing the Profile pushbutton, available profile numbers will light up. The active profile number will flash. Use the Input/Output pushbuttons to switch to a specific profile (P1 to P32). Note that:
 - ◆ **Input** ports 1–16 correspond to Profile **P1** to **P16**.
 - ◆ **Output** ports 1–16 correspond to Profile **P17** to **P32** (where Output Port 1=Profile 17, Output Port 2=Profile 18... Output Port 16=Profile 32).

The selected pushbutton's light flashes, and the VM51616H immediately applies the port connections configured in the selected profile. If the light changes to a steady state, it means the profile is valid.

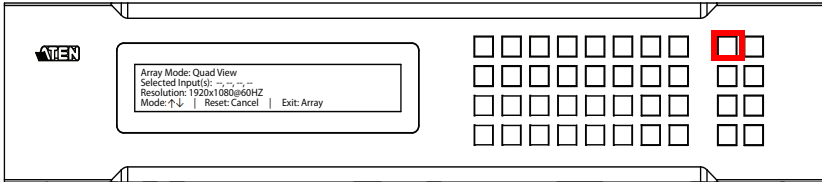
- ◆ After pressing the Profile pushbutton, pressing it again will change to next profile in Profile Scheduling (see page 62), not the profile list. This feature is only available while a schedule is playing.
- ◆ Press the **Cancel** pushbutton to exit.

Note: If there are no profiles configured on the VM51616H device, an error message “No Available Profile” is displayed when the Profile pushbutton is pressed.

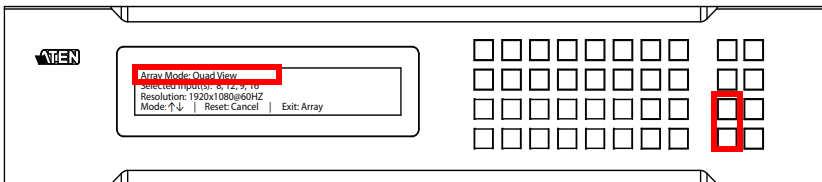
A Profile's port connections can be edited using the front panel pushbuttons (see *Port Switching*, page 14) or from the *Connections* page of the Browser GUI (see , page 62). Additionally, the Profile List can be configured via the Profile page of the Browser GUI (see *Profiles*, page 37).

Array Pushbutton

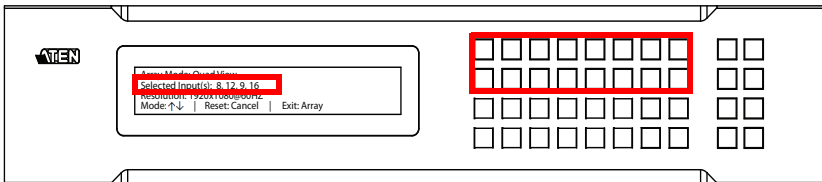
The **ARRAY** pushbutton allows users conveniently select the viewing mode and the input sources for the local display. Press the **Array** pushbutton to enter the setting page.



- ◆ Press the **Prev** or **Next** pushbutton to select a viewing mode for the display connected to the local HDMI Output Port. The available viewing modes are: Single (1 × 1), Side by Side (1 × 2), Quad View (2 × 2), and Show All (4 × 4).



- ◆ Use pushbuttons **1-16** to select the input sources to be shown on the local display. The selected sources will show on the display sequentially (from upper left to lower right).

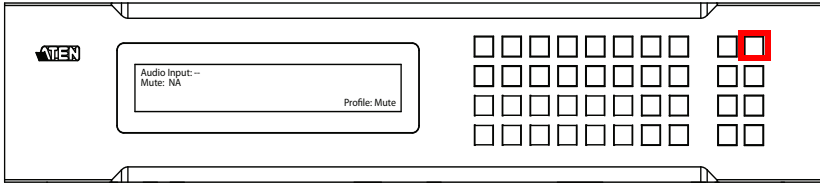


- ◆ Press the **Cancel** pushbutton to reset the settings.
- ◆ Press the **Array** pushbutton to exit.

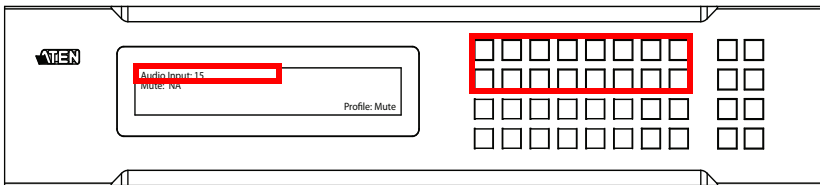
Note: The resolution cannot be set with the Front Panel Operation (default resolution: 1920 × 1080@60HZ). Users can select the resolution using the Browser GUI. See *Local Output*, page 85.

Audio Pushbutton

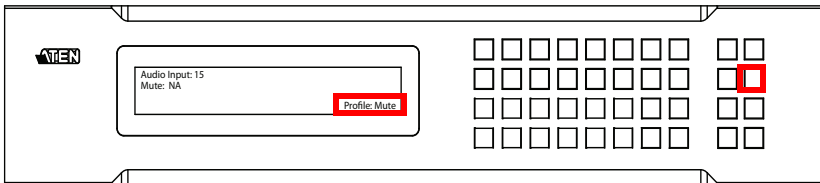
The HDMI audio of the VM51616H can be extracted to the stereo audio. The **AUDIO** pushbutton lets users easily select an Input source for the stereo audio output or mute it. Press the **Audio** pushbutton to enter the setting page.



- ◆ Use pushbuttons **1-16** to select an input source to the stereo audio output. Press the selected pushbutton again to deselect the output port.



- ◆ Press the **Profile** pushbutton to Mute or Unmute the audio.



- ◆ Press the **Cancel** pushbutton to reset the settings.
- ◆ Press the **Array** pushbutton to exit.

Chapter 4

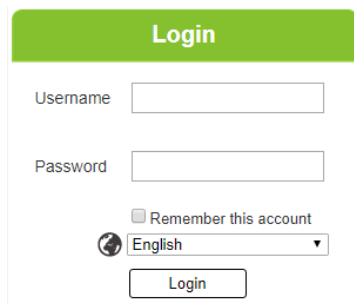
Browser Operation

Overview

The VM51616H can be configured over a standard TCP/IP connection via its built-in Graphical User Interface (GUI). Because it can be accessed from anywhere over a network or the Internet, operators can easily log in via web browser. Security is ensured by password protection and user-configurable time-out. The VM51616H supports three levels of remote users with various privileges, and up to 16 users can log into the GUI at one time. For full details, see the sections that follow.

Logging In

To access the GUI, type the VM51616H's IP address into the address bar of any browser. If a Security Alert dialog box appears, accept the certificate – it can be trusted. The login screen appears:

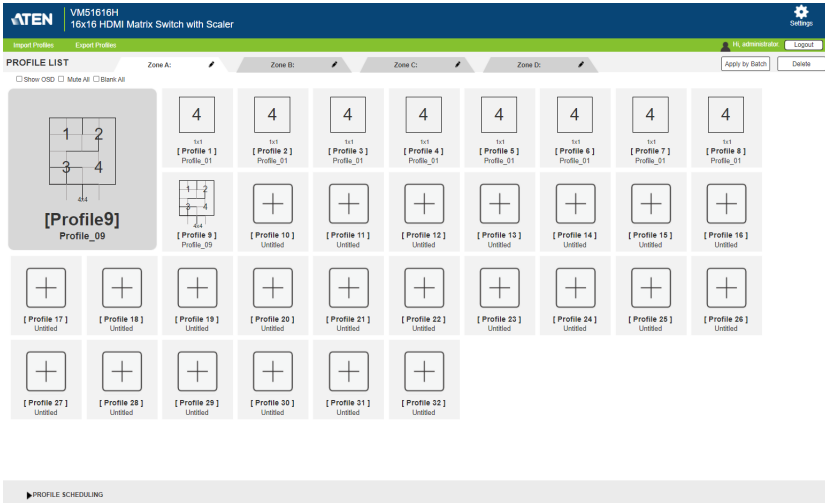


- ◆ The default IP address is **http://192.168.0.60**
- ◆ The default Username and Password are: **administrator / password**
- ◆ Enter the username and password, then click **Login**.
- ◆ The same user can not be logged in simultaneously.
- ◆ Use the drop-down menu to select the GUI language
 - ◆ English, French, German, Italian, Japanese, Korean, Portuguese, Russian, Spanish, Simplified Chinese and Traditional Chinese

Note: The username supports lower case letters only.

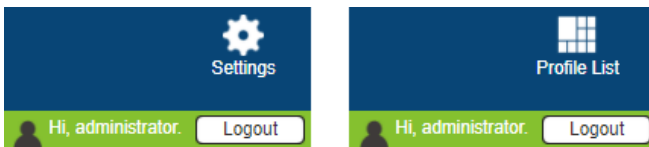
Main Page

The Main Page opens to the **Profile List**. This is where you configure the input to output connections by creating profiles. The page is divided into three parts: the *Menu Bar*, *Profile List*, and *Profile Scheduling*.



Menu Bar

The Menu Bar provides the following controls:



Control	Description
Settings	Click to access the system settings. For details, see <i>System Settings</i> , page 63.
Profile List	Click to access settings on adding or editing profile adding / editing, profile import / export, and profile scheduling. For details, see <i>Profiles</i> , page 37.
Logout	Click to log out of the VM51616H web GUI.

Profiles

Understanding Profiles and Profile List

A profile is a set of settings that specifies how audio and video sources are to be displayed or played on one or more video walls and speakers. You can create and save up to 32 profiles to the Profile List to be conveniently switched via the front panel, web console (GUI), or the Video Matrix Control app as needed.

Note: For more information on the Video Matrix Control app, see *Video Matrix Control App User Manual*.




The screenshot displays the ATEN VM51616H 16x16 HDMI Matrix Switch with Scaler web interface. The main section is titled "PROFILE LIST" and is divided into four zones: Zone A, Zone B, Zone C, and Zone D. Each zone contains a grid of profile icons. Profile 09 is selected and highlighted, showing a 2x2 matrix diagram with the number 1 in the top-left, 2 in the top-right, 3 in the bottom-left, and 4 in the bottom-right. Below the diagram, it is labeled "[Profile9] Profile_09". Other profiles in the list include Profile 1 through Profile 16, Profile 17 through Profile 26, Profile 27 through Profile 32. Profiles 1-8 have a "t11" setting and "Profile_01" label. Profiles 9-16 have a "+" icon and "Profile_09" label. Profiles 17-26 have a "+" icon and "Untitled" label. Profiles 27-32 have a "+" icon and "Untitled" label. The interface also includes a "Show OSD" checkbox, "Make All" and "Blank All" buttons, and "Apply to Batch" and "Delete" buttons.

Understanding Display Zones


In your modular matrix switch application, you may more than one video wall set up – for example, a 2 × 2 video wall, a 4 × 4 video wall, and a single-monitor display, all managed by one VM51616H. In this case, you have three display zones. To be able to switch profiles independently on just one display zone, instead of on all the display zones, use the zone tabs to help you organize and create profiles. You can create profiles for up to 4 display zones. A profile created for a display zone can only be configured under that display zone.

Example

In the illustrated Profile List below, the profiles are created for three display zones (A, B, and C). Three profiles (profile 1 to 3) are created for zone A, and profile 4 to 6, created under zone B and C are not configurable under zone A.




PROFILE LIST Zone A:  Zone B:  Zone C: 

Show OSD Mute All Blank All




Select a profile to play

<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center; font-size: 24px;">8</div> <p>1x1 [Profile 1] Profile_01</p>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td style="width: 50%; padding: 2px;">1</td><td style="width: 50%; padding: 2px;">2</td></tr> <tr><td style="width: 50%; padding: 2px;">3</td><td style="width: 50%; padding: 2px;">4</td></tr> </table> <p>2x2 [Profile 2] Profile_02</p>	1	2	3	4	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center; font-size: 24px;">1</div> <p>1x1 [Profile 3] Profile_01</p>				
1	2									
3	4									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td style="width: 50%; padding: 2px;">2</td><td style="width: 50%; padding: 2px;">3</td></tr> <tr><td style="width: 50%; padding: 2px;">4</td><td style="width: 50%; padding: 2px;">5</td></tr> </table> <p>2x2 Occupied by Zone B [Profile 4] Profile_04</p>	2	3	4	5	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td style="width: 50%; padding: 2px;">1</td><td style="width: 50%; padding: 2px;">2</td></tr> <tr><td style="width: 50%; padding: 2px;">3</td><td style="width: 50%; padding: 2px;">4</td></tr> </table> <p>2x2 Occupied by Zone B [Profile 5] Profile_04</p>	1	2	3	4	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center; font-size: 24px;">2</div> <p>1x1 Occupied by Zone C [Profile 6] Profile_06</p>
2	3									
4	5									
1	2									
3	4									

PROFILE LIST Zone A:  **Zone B:**  Zone C: 


Show OSD Mute All Blank All

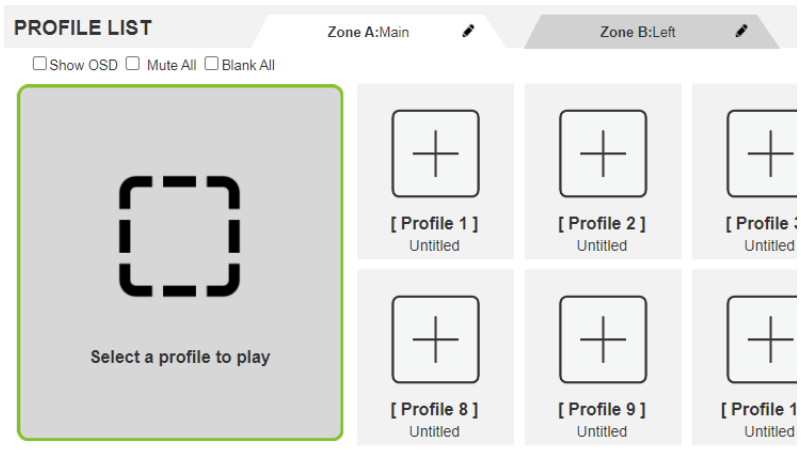



Select a profile to play

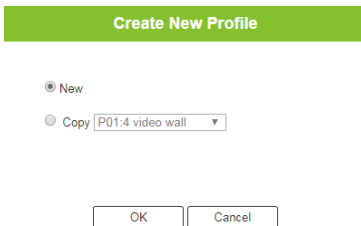
<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center; font-size: 24px;">3</div> <p>1x1 Occupied by Zone A [Profile 1] Profile_01</p>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td style="width: 50%; padding: 2px;">1</td><td style="width: 50%; padding: 2px;">2</td></tr> <tr><td style="width: 50%; padding: 2px;">3</td><td style="width: 50%; padding: 2px;">4</td></tr> </table> <p>2x2 Occupied by Zone A [Profile 2] Profile_02</p>	1	2	3	4	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center; font-size: 24px;">4</div> <p>1x1 Occupied by Zone A [Profile 3] Profile_01</p>				
1	2									
3	4									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td style="width: 50%; padding: 2px;">2</td><td style="width: 50%; padding: 2px;">3</td></tr> <tr><td style="width: 50%; padding: 2px;">4</td><td style="width: 50%; padding: 2px;">5</td></tr> </table> <p>2x2 [Profile 4] Profile_04</p>	2	3	4	5	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td style="width: 50%; padding: 2px;">1</td><td style="width: 50%; padding: 2px;">2</td></tr> <tr><td style="width: 50%; padding: 2px;">3</td><td style="width: 50%; padding: 2px;">4</td></tr> </table> <p>2x2 [Profile 5] Profile_04</p>	1	2	3	4	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center; font-size: 24px;">2</div> <p>1x1 Occupied by Zone C [Profile 6] Profile_06</p>
2	3									
4	5									
1	2									
3	4									

Creating a Profile

1. Prepare and gather the following information.
 - ◆ Know which display zone the profile is created for.
For information on the working of profiles on multiple display zones, see *Understanding Display Zones*, page 38.
 - ◆ For easier switching, create profiles for a particular zone in consecutive profile numbers. For example, you can reserve profile 1 to 10 for zone A, profile 11 to 20 for zone B, etc.
2. (Optional) To name or re-name a display zone, click  on the zone tab.
3. From the Profile List, click the zone tab of the display zone to which you want to apply the profile.



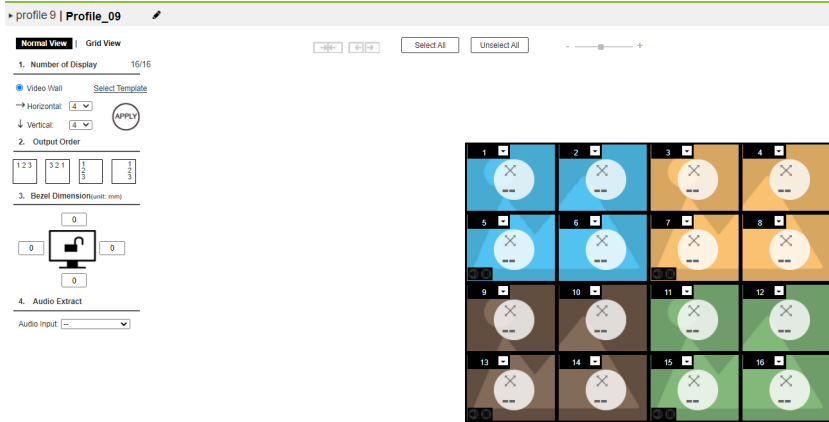
4. Click  from an empty profile. This window appears.



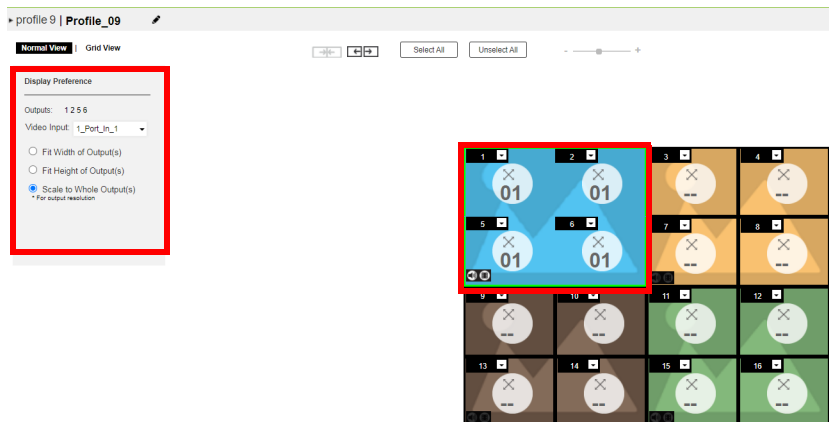
5. Follow the on-screen instructions to select a template and define the number of displays for the display zone.

- ◆ **New:** Select this option to configure a profile from scratch.
- ◆ **Copy:** Select this option to configure a profile based on an existing profile.

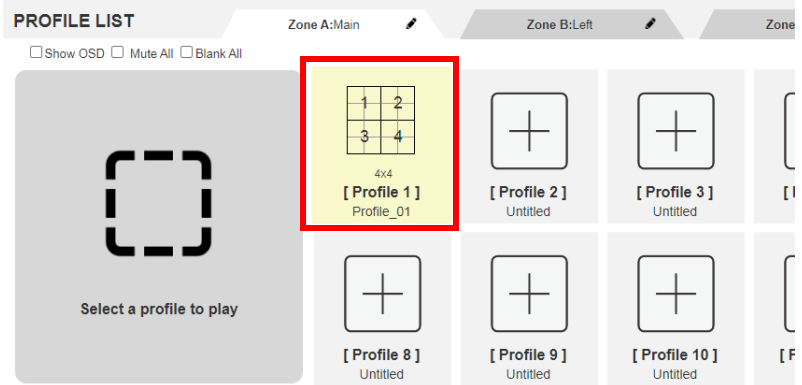
This screen appears. In this example, the profile is set to a quad view (2 × 2 divisions) using 16 displays.



6. Click on each display in the preview and specify its video input and scaling preference. The selected input port is immediately indicated as the big number in the selected display.

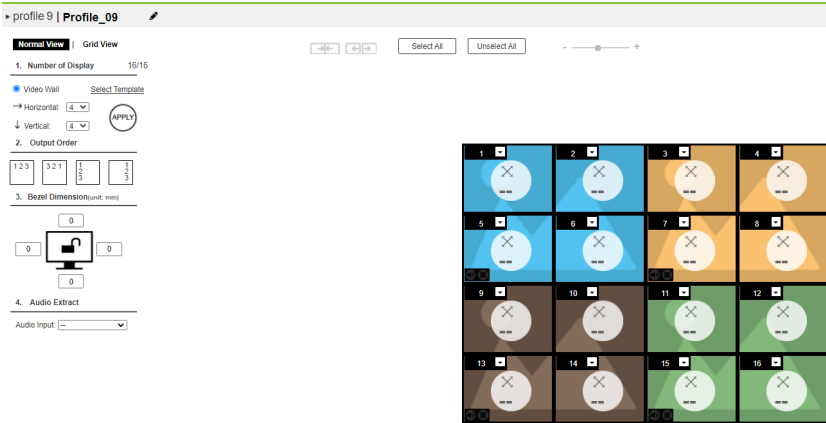


- Click **Save** to finish the configuration. The profile immediately appears in the Profile List.



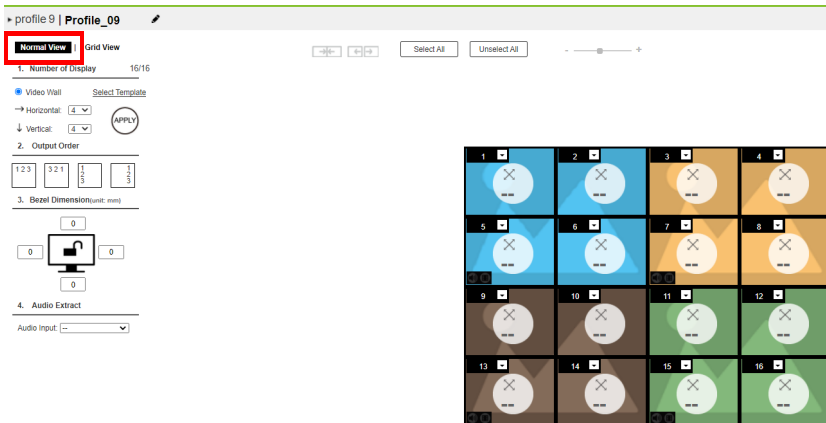
Configuring Video Settings of a Profile

1. In the Profile List, locate the profile you wish to configure by clicking the zone tab.
2. Click the profile and then click **Edit**. This screen appears.



3. You can choose either the **Normal View** or the **Grid View** to edit the profile.

Normal View



- ◆ On top of video and audio assignments, the Normal View also allows you to configure the number of monitors and the bezel dimensions of the profile.
- ◆ For detailed information, see *Configuring Video Settings in Normal View*, page 44.

Grid View

▶ profile 9 | Profile_09

Normal View

Grid View

	Output Port															
Input Port	o01	o02	o03	o04	o05	o06	o07	o08	o09	o10	o11	o12	o13	o14	o15	o16
<input type="radio"/> i01	█	█		█	█	█										
<input type="radio"/> i02		█	█	█			█	█								
<input type="radio"/> i03									█	█						
<input type="radio"/> i04											█	█		█	█	
<input type="radio"/> i05																
<input type="radio"/> i06																
<input type="radio"/> i07																
<input type="radio"/> i08																
<input type="radio"/> i09																
<input type="radio"/> i10																
<input type="radio"/> i11																
<input type="radio"/> i12																
<input type="radio"/> i13																
<input type="radio"/> i14																
<input type="radio"/> i15																
<input type="radio"/> i16																

- ◆ In grid view, the audio and video outputs are assigned by mapping the audio/video input on the vertical axis to the audio/video output on a horizontal axis.
 - ◆ For detailed information, see *Configuring Video Settings in Grid View*, page 50.
4. (Optional) Click **Test** to apply your configuration without saving it.
 5. To save your configuration, click **Save & Apply**, **Save**, or **Save As**.

Configuring Video Settings in Normal View

Profile Layout Settings

Normal View | Grid View

1. Number of Display 16/16

Video Wall [Select Template](#)


→ Horizontal: ↓

↓ Vertical: ↓

APPLY

2. Output Order


3. Bezel Dimension(unit: mm)



4. Audio Extract

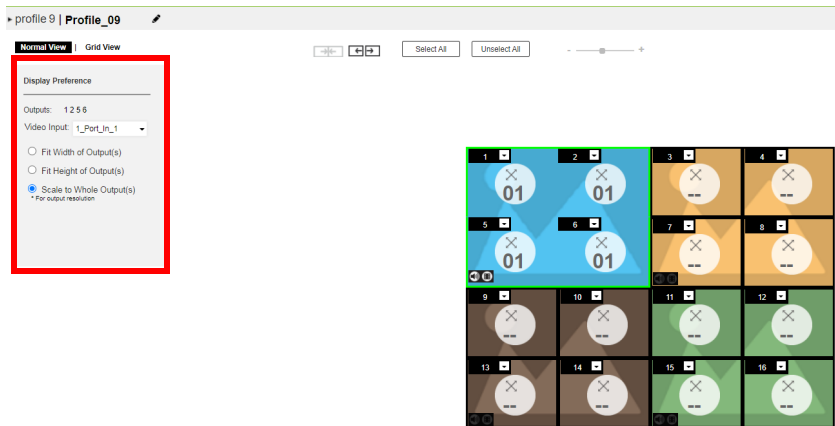
Audio Input:

Control	Description
Number of Displays	<p>Use the following controls to configure the layout type and the number of displays.</p> <ul style="list-style-type: none"> ◆ Video Wall: Select this option for displays that are tiled together, where multiple monitors form one large screen – in various arrangements. <p>Note: To ensure synchronized video outputs on your video wall, configure the Hold Time setting of the VM51616H if you are using any VE805R / VE816R with the VM8514. For detailed information, please visit ATEN's official website, go to Help Center (FAQ), and search for the information.</p> <ul style="list-style-type: none"> ◆ Select Template: Click to open a window that allows you to select a predefined video wall layout. ◆ Horizontal / Vertical: Use these drop-down lists to select the number of displays that make up the video wall (a maximum of 64 are supported). Match this to the physical layout of the displays. <p>Note: Click Apply to save the changes. A preview of the profile is shown on the right of the screen.</p>
Output Order	Click any of the listed options to automatically assign output ports.

Control	Description
Bezel Dimension	Use the four boxes to increase/decrease the frame size for each active display.
Monitor Lock / Unlock 	Click the monitor icon to Lock the (4) bezel settings, so that when one size is changed they all change. Click the monitor icon to Unlock the (4) bezel settings, so that each size can be set independently.
Audio Extract	Use the drop-down menu to select the input source to be extracted to stereo audio output. This Audio Extract option is only available for the profiles configured under Zone A.

Display Preferences

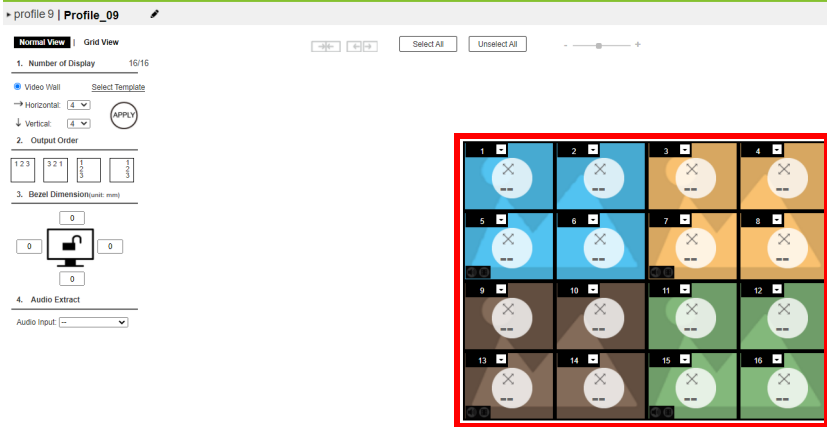
To configure the display preferences for one or more displays, click the display(s) in the preview, the Display Preference settings page appears. Configure the settings as required.




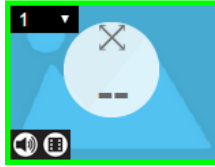
Option	Description
Output	This indicates the selected displays.
Video Input	Click to select a video source for the output(s). The chosen video source (port number) is indicated at the center of the output(s) in the preview.
Radio Button	<ul style="list-style-type: none"> ◆ Fit Width of Output(s): fits the video to the width of the display. ◆ Fit Height of Output(s): fits the video to the height of the display. ◆ Scale to Whole Output(s): fits the video on the entire display.

Video Wall Settings

Each icon represents an Output port and the connected display. Use the icons to create Independent and Grouped Outputs. **Independent** Outputs will display video on a single monitor. **Grouped** Outputs will display video across multiple monitors as one large screen.



- ◆ Click an icon to choose its **Output** and **Video Input** from the *Display Preference* menu (see *Display Preferences*, page 45).
- ◆ Click multiple icons to Group Outputs (see *Grouping*, page 48).
- ◆ Click **Select All** to select all outputs.
- ◆ Click **Unselect All** to unselect all outputs.
- ◆ Use the sidebar to zoom in and out of the display layout.
- ◆ On the *Top Bar* click:
 - ◆  to rename the profile

Null Input

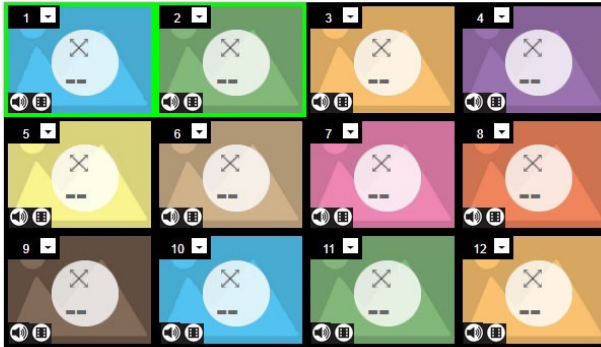
Option	Description
Null Icon	<p>Click Null Input icons to highlight icons in green and use the Display Preferences menu to set the video options (see <i>Display Preferences</i>, page 45).</p> <p>Select a single icon to set the Output and Video Input for an independent display (see <i>Independent Output</i>, page 47).</p> <p>Select multiple icons and set the Video Input to group displays as one screen (see <i>Grouping</i>, page 48). <i>You must first set the Output port for each icon.</i></p>
Drop-down Menu	Use the drop-down menu to select the Output port.

Independent Output

Option	Description
Independent	<p>Independent Outputs are displays that have their own Video Input and Output selected. Independent Outputs:</p> <ul style="list-style-type: none"> ◆ Display their own video ◆ Icons have their own color and Video Input <p>Select an Independent Output and use the <i>Display Preferences</i> menu to select the Video Input (see page 45).</p>
Drop-down Menu	Use the drop-down menu (top-right corner) to select the Output port.
Mute / Video	<p>Click the speaker icon to mute the audio on/off.</p> <p>Click the video icon to turn the video off/on.</p>



Grouping



Option	Description
Grouping	Click multiple icons to Group Outputs (highlighted in green) and click → ← to group the displays into one screen. Use the Display Preferences menu to select the Video Input for the group - each Output icon in the Group will appear with the same Video Input number and icon color (see page 45).
Ungroup	Select a group and click ← → to ungroup the displays.

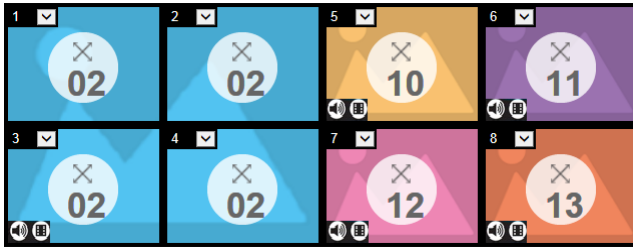
Group



Option	Description
Group	<p>A Group (of Outputs) shares the same Video Input and displays the video together as one large screen. A Group of Outputs:</p> <ul style="list-style-type: none"> ◆ Displays video across multiple monitors to form one screen ◆ Icons have the same color and Video Input number. ◆ Select a Group and use the <i>Display Preferences</i> menu to select the Video Input. ◆ To group outputs see <i>Grouping</i>, page 48.
Mute / Video	<p>Click the speaker icon to mute the audio on/off.</p> <p>Click the video icon to turn the video off/on.</p>

Video Wall Example 1

This example shows a video wall with 8 displays.



- ◆ This video wall has 1 **Group** and 4 **Independent** displays.
- ◆ Each *Group* and *Independent* Output has a unique color.
- ◆ The **Blue** Group will show video **Input 02** across all four displays as one large screen.
- ◆ The Independent displays will show the video from their own video **Input 10, 11, 12** and **13**.

Video Wall Example 2

This example shows a video wall with 16 displays.

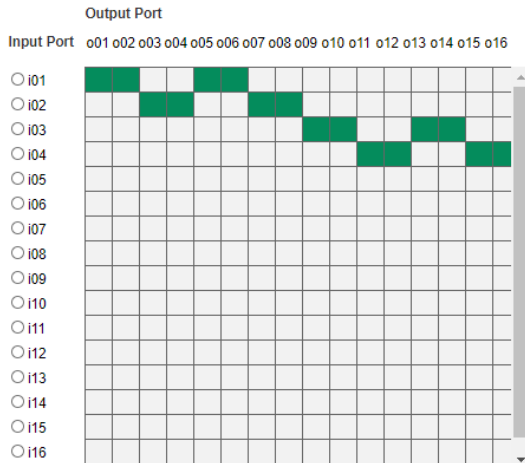
- ◆ This video wall has 3 **Groups** and 2 **Independent** displays.
- ◆ Each *Group* and *Independent* Output has a unique color.
- ◆ The **Blue** Group will show video **Input 02** across six displays as one large screen.
- ◆ The **Brown** Group will show video **Input 10** across six displays as one large screen with a section (video *Input 16*) of the viewing area missing.
- ◆ The **Yellow** Group will show video **Input 16** across two displays as one screen.
- ◆ The **Purple** and **Orange** Independent displays will show the video from their own video **Input 08** and **12**.

Configuring Video Settings in Grid View

In a grid view, the audio and video outputs are assigned by mapping the audio/video input on the vertical axis to the audio/video output on a horizontal axis.

▶ profile 9 | **Profile_09** 

Normal View | **Grid View**



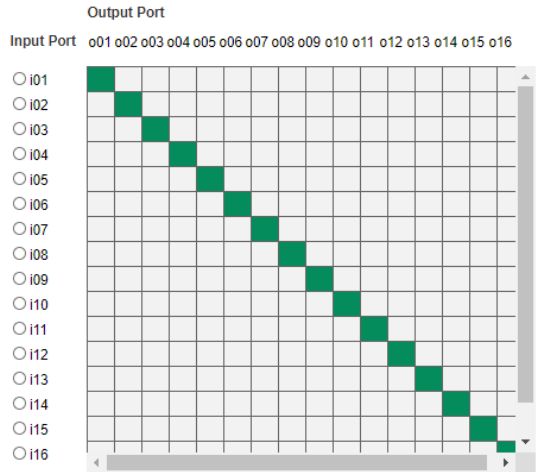
1. Click **Video Output, Digital Audio, Analog Audio** to select the type of settings.
2. Locate an input from the vertical axis and the output to which you wish from the horizontal axis, and then click the block in the grid where the input and output intercepts.

Example 1

In the following illustration, input 01 is assigned to output 01, and input 02 to output 02, and so forth.

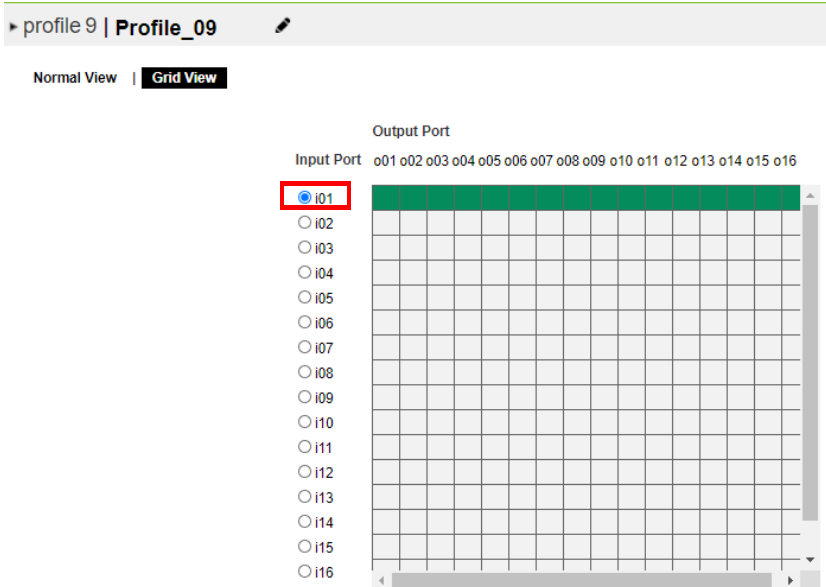
▶ profile 9 | Profile_09

Normal View | **Grid View**



Example 2

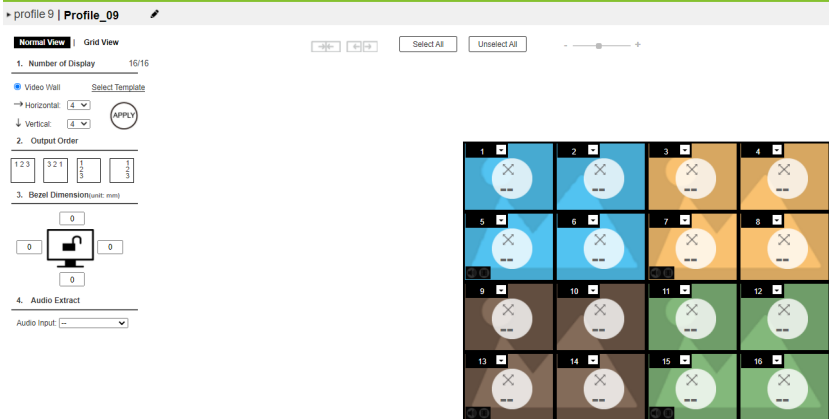
To assign the same input for all outputs, click the input from the vertical axis. In the following illustration, all output ports are assigned with input 01.



Note: To ensure synchronized video outputs on your video wall, configure the Hold Time setting of the VM51616H if you are using any VE805R / VE816R with the VM8514. For detailed information, please visit ATEN’s official website, go to Help Center (FAQ), and search for the information.

Configuring Audio Output Settings

1. In the Profile List, locate the profile you wish to configure by clicking the zone tab.
2. Click the profile and then click **Edit**. This screen appears.



Playing a Profile

Apply Multiple Profiles by Batch

1. In the Profile List page, click the **Apply by Batch** button (top-right corner). This dialog box appears.

Apply by Batch

Zone A:
Select profile ▼

Zone B:
Select profile ▼

Zone C:
Select profile ▼

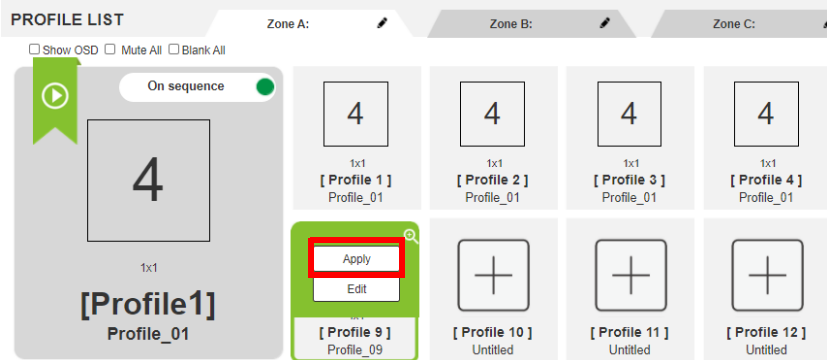
Zone D:
Select profile ▼

Apply Cancel

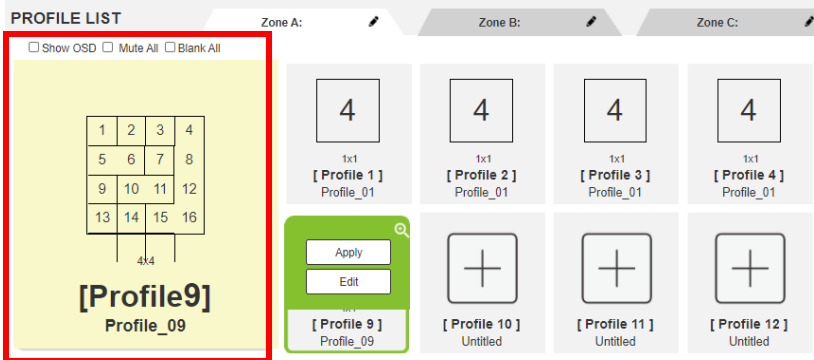
2. Use the drop-down menus to select the profile for each display zone and click **Apply**.

Apply A Single Profile

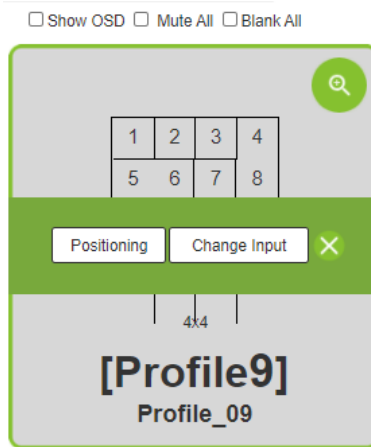
1. In the Profile List, locate the profile you wish to play by clicking the zone tab.
2. Click the profile and then click **Apply**.





3. The profile is immediately applied and appears in the large **Play** window.



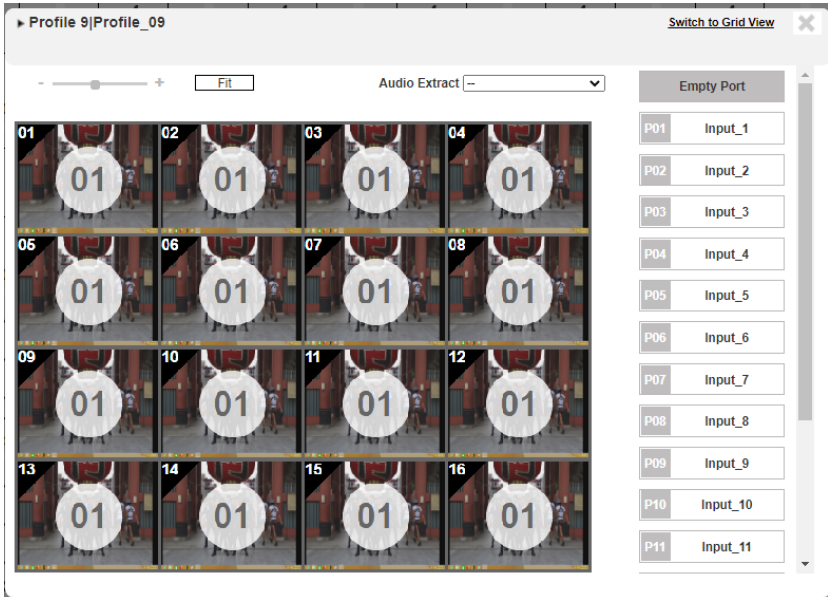
4. To adjust the played profile, click on the Play window. The following controls appear.




Option	Description
Show OSD	Check Show OSD to show the current connection status via OSD. When Show OSD is unchecked, the OSD will disappear.
Mute All	Check Mute All to mute the audio for all ports.
Blank All	Check Blank All to turn off the video to all displays.
	Click this icon to show a source assignment for this profile.
On Sequence	On Sequence appears when a profile schedule is playing.
Positioning	Click Positioning to open a window that allows you to adjust the image position on each display. For Video Wall profiles, you can also set the Bezel Dimension, which is the frame thickness between each display.
Change Input	Click Change Input to change the input for single and grouped outputs, as explained on the next page.
	Click this icon to delete the profile.

Change Input

The *Change Input* page gives you a preview of what's displayed on all screens, allows you to change the inputs and view a live stream of each input. To access this page, click **Change Input** from the Play Window (see *Change Input*, page 57).

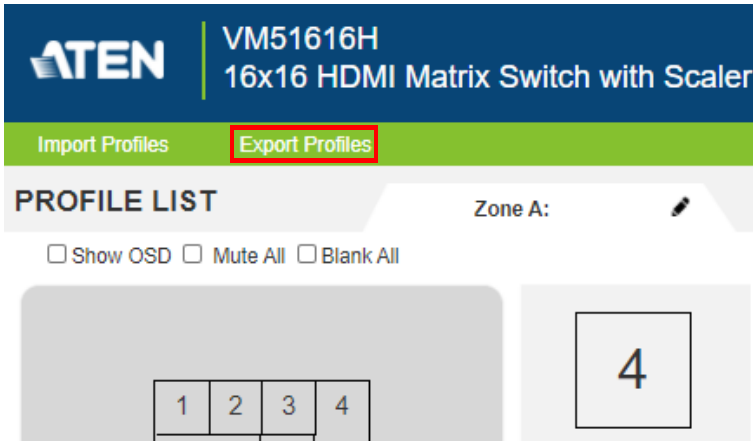


The *Change Input* page displays still image frames of output configuration, the left panel shows the profile's output configuration, and the right column lists the available inputs. The page provides the following options:

- ◆ To change the input of a display, **Drag and Drop** an input from the right column to any output in the left panel.
- ◆ Click **Switch to Grid View** to use the grid view to change the input and output connections. For details, see *Configuring Video Settings in Grid View*, page 50.
- ◆ Use the drop-down menu to show the input ports in **Snapshot** or **List mode**.
- ◆ Use the slide bar to zoom the layout in (+) or out (-). Click **Fit** to set the layout to the default view.
- ◆ Click any input in the right column to view a live stream of the video source.
- ◆ Click on the refresh icon,  to refresh the *Change Input* page.

Exporting a Profile

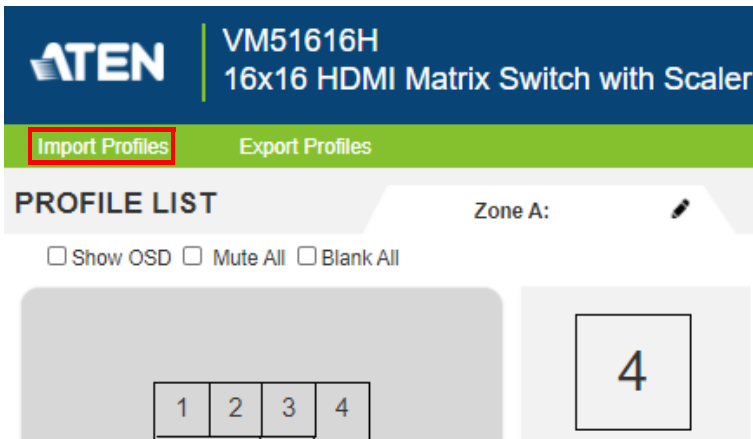
To export the VM51616H's connection profiles, click **Export Profiles** from the main screen. A configuration file starts downloading.



Importing a Profile

To import connection profiles to the VM51616H, do the following:

1. From the main screen, click **Import Profiles**.

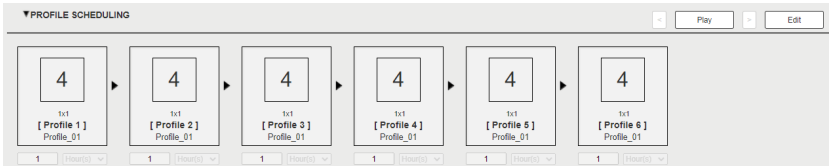






2. Browse to the configuration file, select it and click **Open**.

Note: Importing a connection profile database will overwrite the current profiles.

Profile Scheduling

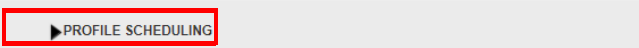
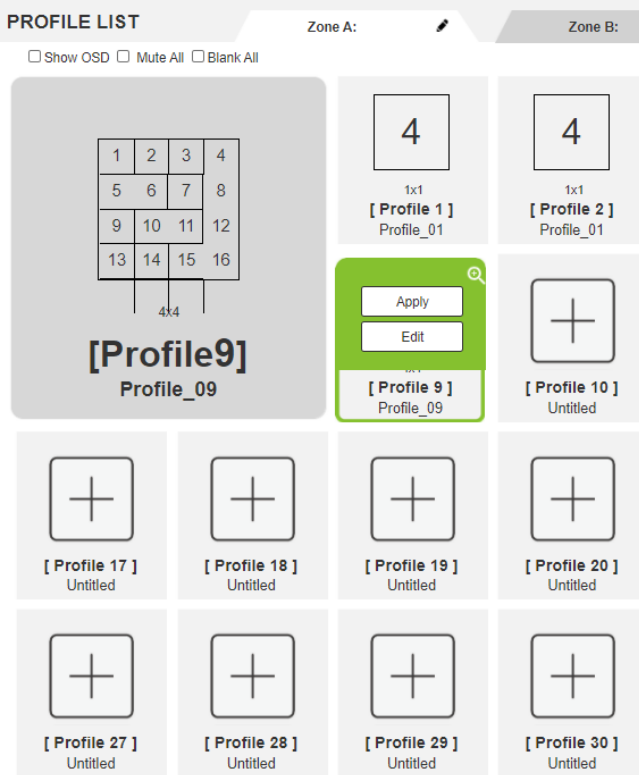
You can create one profile playlists that play periodically on specified time frames.



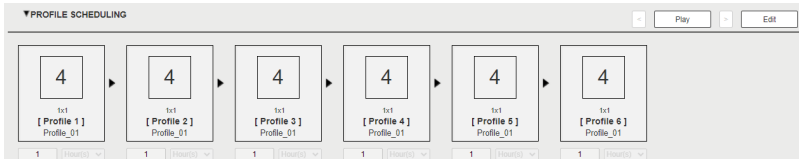
Option	Description
	Click to edit profile schedule.
	Click to play profile schedule.
	Click to stop profile schedule.
	Click to change to next or previous profile when a profile schedule is playing.

To have the VM51616H play profile playlists, follow the steps below.

1. Go to the Profile List page.
2. Configure profile playlists. For details, see *page 60*.
3. From the Profile List page, click the **PROFILE SCHEDULING**.




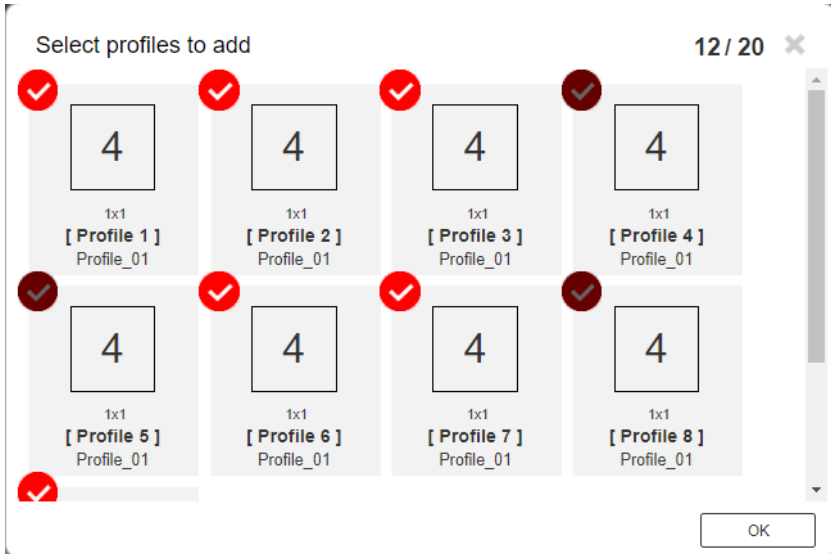
4. The profile scheduling page appears.



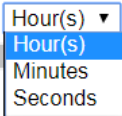
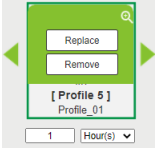
5. Click the display zone tab to select a display zone to which you wish to add a playlist.

6. Click **Edit** to edit profile schedule.


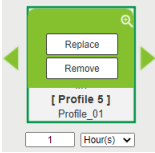
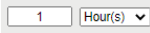
7. Click  to open the Select Profiles window. Click one or more profiles to add to the playlist, and click **OK**.



Adjust the play duration and the order of the added profiles if required. See the table below for more details.

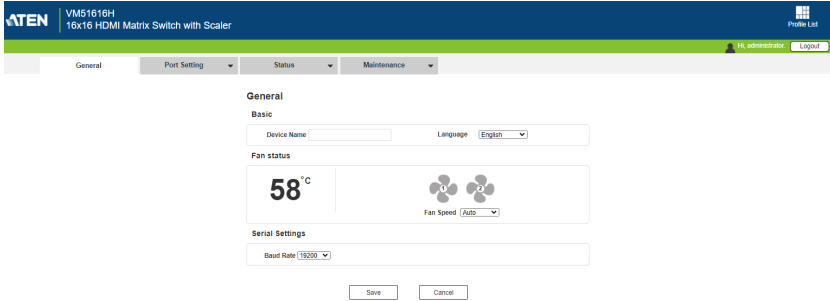
Option	Description
	<p>Use the drop-down menu to select Hour(s), Minutes, or Seconds and then enter a duration (1-999) for the profile to play.</p> <p>Note: When the the schedule switches to the next profile in the list.</p>
	<p>To replace, remove, or change the order of a profile, click on a profile to access the Replace, Remove, and the <> buttons.</p>

8. Click **Play** to play the playlist.

Option	Description
	<p>Click to add profiles to the schedule in the order to be played, left to right, then set the amount of time each profile plays.</p>
	<p>Click a profile for a pop-up menu to appear:</p> <ul style="list-style-type: none"> ◆ Select Startup to use the profile as the starting point for the schedule. ◆ Click Replace to replace the selected profile with another profile. ◆ Click Remove to delete the profile from the schedule. ◆ Use < > to change the profile's position in the schedule.
	<p>Use to drop-down menu to select the duration (Hours, Minutes, or Seconds) and enter the amount of time for the profile to play. After the time expires, the schedule switches to the next profile.</p>
<p>Save</p>	<p>Click Save to save the schedule as it appears. After saving, the Profile Scheduling window will close.</p> <p>When a Profile Schedule is playing the <i>On Sequence</i> box will appear in the Play window.</p>
<p>Cancel</p>	<p>Click Cancel to discard changes and return to the Profile Schedule page.</p>

System Settings

Click the **Settings** link from the Main page for the System Settings to open on the General page:



The table below provides an overview of the available settings for each tab.

Tab	Supported Functions	Detailed Information
General	<ul style="list-style-type: none"> ◆ Configure the device name. ◆ Select the interface language. ◆ Monitor the VM51616H's fan temperature and configure the fan speed. ◆ Configure the settings for serial communications. 	For more information, see <i>General</i> , page 65.
Port Settings	<ul style="list-style-type: none"> ◆ Configure the OSD and CEC port settings. ◆ Configure the HDCP key for input and output ports. ◆ Configure the Seamless Switch™ settings. ◆ Name the input and output ports. ◆ Select EDID modes. ◆ Configure the local output settings. 	For more information, see <i>Port Setting</i> , page 66.

Tab	Supported Functions	Detailed Information
Status	<ul style="list-style-type: none"> ◆ View statuses of the input/output boards installed to the VM51616H and enable/disable FrameSynce and Long Reach mode for the board. ◆ View system information such as network settings, firmware version, and the settings for audio/video assignment, volume, CEC, audio mode settings, and more. 	For more information, see <i>YCBCR 4:2:0 Video Data Block</i> , page 83.
Maintenance	<ul style="list-style-type: none"> ◆ Upgrade the firmware for the installed input and output boards ◆ Back up or restore the VM51616H's configuration ◆ Add, edit, or remove user accounts ◆ Configure the system network settings 	See <i>Maintenance</i> , page 89.

Option	Description
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Save</div>	Click Save to apply the settings.
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Cancel</div>	Click Cancel to discard changes and reset settings.

General

The *General* page has three sections: Basic, Fan Status, and Serial Settings.

Basics

- ◆ **Device Name:** Type to name your VM51616H.
- ◆ **Language:** Click to select a language for the web interface.

Fan Status

- ◆ **Fan Speed:** Click to select a fan speed.
- ◆ **Temperature and fan icons:** Indicates the internal temperature and status of the cooling fans. The fan icons rotate to indicate they are working.

Note: If the fans have stopped working or are switched off, they will appear as follows. The fan module will then need to be replaced or reset.



Serial Setting

- ◆ **Baud rate:** Defines the baud rate for the serial port.

Port Setting

OSD/CEC

The OSD/CEC page lets users view and set OSD and CEC settings for all ports.

OSD / CEC

Port	OSD		CEC	
	Apply to All ▼		Apply to All ▼	
1	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
2	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
3	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
4	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
5	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
6	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
7	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
8	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
9	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
10	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
11	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
12	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
13	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
14	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
15	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF
16	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF	<input type="checkbox"/> OFF

* The CEC setting is only for output boards, please make sure all devices have this capability.

- ◆ **OSD:** Sets the default OSD option for the port. When OSD is on, real-time text updates appear on the display for 10 seconds when configuration and port changes are made to its output.
 - ◆ Use the drop-down menu to apply options to all ports, or ON/OFF button to enable/disable the OSD for each port.
- ◆ **CEC:** Consumer Electronics Control (CEC) allows interconnected HDMI devices to communicate and respond to one remote control.
 - ◆ Use the drop-down menu to apply options to all ports, or On/Off button to enable/disable CEC for a port.

HDCP

The *HDCP* page lets users view and set HDCP key settings between input and output ports for digital copy protection and to ensure the VM51616H is used between different devices. This is an Administrator and Advanced User only function.

HDCP Configuration

The screenshot displays the HDCP Configuration interface. It is divided into three main sections: **Input**, **Connection**, and **Output**. At the top right, there is a legend for a green line representing the 'Connection Path' and a blue button labeled 'HDCP Check'.

- Input Section:** Features a 'Port' dropdown menu set to 'Apply to All'. Below it is a list of 16 ports, each with a dropdown menu currently showing 'HDCP 1.4'.
- Connection Section:** A central area with a grid of 16 input ports on the left and 16 output ports on the right. A green line connects the 4th input port to the 4th output port.
- Output Section:** Features a 'Port' dropdown menu set to 'Apply to All'. Below it is a list of 16 ports, each with a checked checkbox labeled 'Fix HDCP(Unknown)'.

Input

Here users can select whether input port content is HDCP 1.4 or non-HDCP enabled, either individually or by applying one setting to all ports.

Connection

Here users can find a visual display of connection paths between inputs and outputs. When selecting an input, its path is displayed in green.

Output

Here users can define whether or not HDCP settings are fixed, either by individual port or by applying one setting to all ports. By prearranging and fixing keys, this setting ensures that the VM51616H feature is possible even when switching between HDCP and non-HDCP enabled devices.

HDCP Check

The HDCP Check button allows you to check the HDCP capability of the connected displays at one time. The analyses are indicated in the brackets after the Fix HDCP check box for each port.

Scaler

The Video page allow you to set Seamless Switch™ options which determine how a display performs when the input port is changed.

Port	*Seamless Switch	Transition	Period	Scale Resolution
	Apply to All	Apply to All	Apply to All	Set all560x360@60HZ
1	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
2	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
3	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
4	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
5	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
6	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
7	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
8	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
9	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
10	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
11	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
12	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
13	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
14	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
15	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ
16	<input checked="" type="checkbox"/> ON	<input type="checkbox"/> OFF	--	1920x1080@60HZ

Note:

When VM51616H is enabled:

- ◆ The *Transition*, *Period* and *Scale Resolution* options can be enabled.
- ◆ Video outputs will not display 3D, Deep Color, or interlace (i.e., 1080i) resolutions correctly. To use these features, first disable Modular Matrix Switch.
- ◆ Videos may not display within range (fit on the screen), in which case, make sure to adjust the display settings on your device.

Enable VM51616H to remove the video distortion and delay seen when an input port is switched. Use the drop-down menu to apply options to all ports, or the On/Off button to enable/disable VM51616H per port. With VM51616H enabled, the following options are made available:

- ◆ **Transition:** Allows you to fade the video display when the Input port is changed. Use the period option to set the fade speed.
 - ◆ Use the drop-down menu to apply options to all ports, or On/Off button to enable/disable Transition per port.
- ◆ **Period:** Sets the fade speed for the Transition option.

- ◆ Use the drop-down menu to apply an option (*Slow, Normal, or Fast*) to all ports, or lower drop-down menus to apply options per port.
- ◆ **Scale Resolution:** Forces the port to scale the video displayed to the selected resolution.
- ◆ Use the top drop-down menu to apply an option to all ports, or lower drop-down menus to apply options per port.

Port Name

The *Port Name* page lets you name the input and output ports for easy identification.

Please enter characters without using *+/@=[:].", "<>? \()&

Input Port		Output Port	
1	<input type="text" value="Input_1"/>	1	<input type="text" value="Output_1"/>
2	<input type="text" value="Input_2"/>	2	<input type="text" value="Output_2"/>
3	<input type="text" value="Input_3"/>	3	<input type="text" value="Output_3"/>
4	<input type="text" value="Input_4"/>	4	<input type="text" value="Output_4"/>
5	<input type="text" value="Input_5"/>	5	<input type="text" value="Output_5"/>
6	<input type="text" value="Input_6"/>	6	<input type="text" value="Output_6"/>
7	<input type="text" value="Input_7"/>	7	<input type="text" value="Output_7"/>
8	<input type="text" value="Input_8"/>	8	<input type="text" value="Output_8"/>
9	<input type="text" value="Input_9"/>	9	<input type="text" value="Output_9"/>
10	<input type="text" value="Input_10"/>	10	<input type="text" value="Output_10"/>
11	<input type="text" value="Input_11"/>	11	<input type="text" value="Output_11"/>
12	<input type="text" value="Input_12"/>	12	<input type="text" value="Output_12"/>
13	<input type="text" value="Input_13"/>	13	<input type="text" value="Output_13"/>
14	<input type="text" value="Input_14"/>	14	<input type="text" value="Output_14"/>
15	<input type="text" value="Input_15"/>	15	<input type="text" value="Output_15"/>
16	<input type="text" value="Input_16"/>	16	<input type="text" value="Output_16"/>

- ◆ To name an Input/Output port, enter a descriptive name of up to 16 characters (including 0–9, a–z, A–Z, _, -) in the corresponding field.
- ◆ To change an Input/Output port's name, enter another value and click **Save**.

Note: The Input and Output port names can be the same.

EDID Settings

The EDID Setting page lets users view and select an EDID Mode so that the VM51616H can use the best resolution for its displays.

EDID Mode	EDID & CEA Description	
<input type="radio"/> ATEN Default <input type="radio"/> Port1 Mode <input type="radio"/> Remix <input checked="" type="radio"/> Customized <input type="button" value="Apply"/> Port EDID Status	EDID 1. Vendor/Product Identification 2. EDID Structure/Revision 3. Basic Display/Feature 4. Color Characteristics 5. Established Timings 6. Standard Timings 7. Detail Timing/Display Description 1 8. Detail Timing/Display Description 2 9. Monitor Description 10. Monitor Description	Model ID: 0x0001 Manufacturer ID: ATN Serial Number: 0x0000275C Manufacture Date: 2015 Week 42 Week of Manufacture: 42 Year of Manufacture: 2015
Port 1 Customized Port 2 Customized Port 3 Customized Port 4 Customized Port 5 Customized Port 6 Customized Port 7 Customized Port 8 Customized Port 9 Customized Port 10 Customized	CEA 1. Display Support 2. Video Data 3. Audio Data 4. Speaker Allocation 5. Vendor Specific Data 6. HDMI Forum Vendor Specific Block 7. YCBCR 4:2:0 Video Data Block 8. YCBCR 4:2:0 Capability Map Data Block 9. Detail Timing/Display Description 3 10. Detail Timing/Display Description 4 11. Detail Timing/Display Description 5	

Note: The EDID Mode can also be selected via the Front Panel pushbuttons – see *Operation Mode*, page 22.

Extended Display Identification Data (EDID) is a data format that contains a display's basic information and is used to communicate with the video source/system.

EDID Mode

In the left panel of the page, users can select a pre-configured EDID Mode using the **EDID Mode** radio buttons.

EDID Mode

ATEN Default

Port1 Mode

Remix

Customized

Apply

Port EDID Status

- Port 1 Customized
- Port 2 Customized
- Port 3 Customized
- Port 4 Customized
- Port 5 Customized
- Port 6 Customized
- Port 7 Customized
- Port 8 Customized
- Port 9 Customized
- Port 10 Customized

EDID & CEA Description

EDID	
1. Vendor/Product Identification	Model ID: 0x0001
2. EDID Structure/Revision	Manufacturer ID: ATN
3. Basic Display/Feature	Serial Number: 0x0000275C
4. Color Characteristics	Manufacture Date: 2015 Week 42
5. Established Timings	Week of Manufacture: 42
6. Standard Timings	Year of Manufacture: 2015
7. Detail Timing/Display Description 1	
8. Detail Timing/Display Description 2	
9. Monitor Description	
10. Monitor Description	

CEA	
1. Display Support	
2. Video Data	
3. Audio Data	
4. Speaker Allocation	
5. Vendor Specific Data	
6. HDMI Forum Vendor Specific Block	
7. YCBCR 4:2:0 Video Data Block	
8. YCBCR 4:2:0 Capability Map Data Block	
9. Detail Timing/Display Description 3	
10. Detail Timing/Display Description 4	
11. Detail Timing/Display Description 5	

Select the EDID Mode to use and click **Apply**. The VM51616H uses the settings configured for that EDID mode.

Options are:

- ◆ **ATEN Default:** All ports' EDID is the same as the hardware default EDID.
- ◆ **Port 1 Mode:** All ports' EDID is the same as Port1's EDID.
- ◆ **Remix:** All ports' EDID uses the best display resolution.
- ◆ **Customized:** See Customized Mode, see page 74.

EDID & CEA Description

The middle panel of the screen lets users view and configure the EDID or the CEA mode.

EDID Mode

ATEN Default
 Port1 Mode
 Remix
 Customized

Apply

Port EDID Status

Port 1 Customized

Port 2 Customized

Port 3 Customized

Port 4 Customized

Port 5 Customized

Port 6 Customized

Port 7 Customized

Port 8 Customized

Port 9 Customized

Port 10 Customized

EDID & CEA Description

EDID

1. Vendor/Product Identification
2. EDID Structure/Revision
3. Basic Display/Feature
4. Color Characteristics
5. Established Timings
6. Standard Timings
7. Detail Timing/Display Description 1
8. Detail Timing/Display Description 2
9. Monitor Description
10. Monitor Description

CEA

1. Display Support
2. Video Data
3. Audio Data
4. Speaker Allocation
5. Vendor Specific Data
6. HDMI Forum Vendor Specific Block
7. YCBCR 4:2:0 Video Data Block
8. YCBCR 4:2:0 Capability Map Data Block
9. Detail Timing/Display Description 3
10. Detail Timing/Display Description 4
11. Detail Timing/Display Description 5

Model ID: 0x0001

Manufacturer ID: ATN

Serial Number: 0x0000275C

Manufacture Date: 2015 Week 42

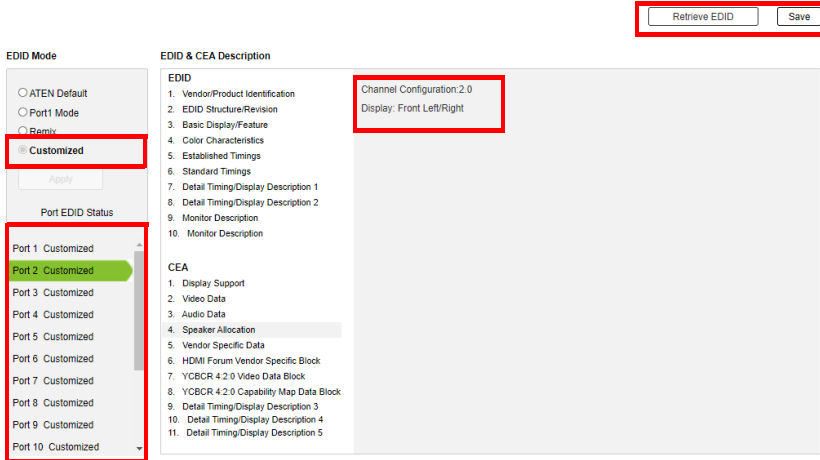
Week of Manufacture: 42

Year of Manufacture: 2015

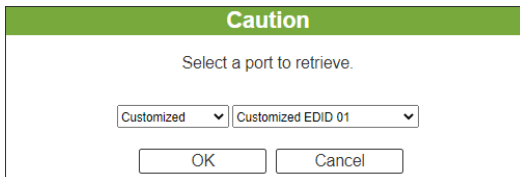
- ◆ From the middle column, click the option that you want to view and/or edit. There are two categories: **EDID** (Extended Display Identification Data) and **CEA** (Consumer Electronics Association).
- ◆ When you select the menu items on the middle column, the current settings for the selected EDID appear on the right column. Some of the screens are read-only.
- ◆ For more information, see *EDID Settings*, page 71.

Customized Mode

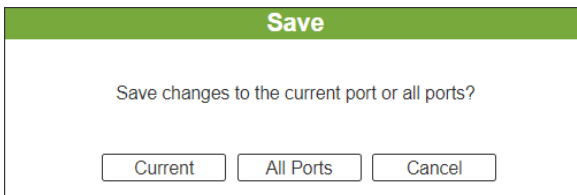
Use the **Customized** mode to automatically retrieve and save the EDID of a connected monitor/display device to an input source port.



- ◆ In the left panel, select **Customized** from the EDID Mode section and click **Apply**.
- ◆ **Port EDID Status:** Select the input source port to which you want to store the EDID configuration.
- ◆ **Retrieve EDID:** Click this button to retrieve the EDID of a selected port. Select a port using the pop-up screen.



- ◆ The right panel displays a summary of the acquired EDID settings that you can edit. Click **Save** and select the configuration for the **Current Port** or **All Ports** for the duration of the session.



Customized EDID Parameters

The EDID structure is comprised of 128 bytes in total – each heading shown in the left column corresponds to a specific number of bytes.

The pages for the pre-configured EDID Modes (Port 1, Default and Remix) cannot be edited. The pages for the Customized EDID, which can be edited, are discussed in the proceeding sections:

Established Timings

This page lists video resolutions/timings that display devices can support.

EDID Mode	EDID & CEA Description	
<input type="radio"/> ATEN Default <input type="radio"/> Port1 Mode <input type="radio"/> Remix <input checked="" type="radio"/> Customized <input type="button" value="Apply"/> Port EDID Status	EDID 1. Vendor/Product Identification 2. EDID Structure/Revision 3. Basic Display/Feature 4. Color Characteristics 5. Established Timings 6. Standard Timings 7. Detail Timing/Display Description 1 8. Detail Timing/Display Description 2 9. Monitor Description 10. Monitor Description CEA 1. Display Support 2. Video Data 3. Audio Data 4. Speaker Allocation 5. Vendor Specific Data 6. HDMI Forum Vendor Specific Block 7. YCBCR 4:2:0 Video Data Block 8. YCBCR 4:2:0 Capability Map Data Block 9. Detail Timing/Display Description 3 10. Detail Timing/Display Description 4 11. Detail Timing/Display Description 5	<input checked="" type="checkbox"/> 720x400 @ 70HZ <input type="checkbox"/> 720x400 @ 88Hz <input checked="" type="checkbox"/> 640x480 @ 60Hz <input checked="" type="checkbox"/> 640x480 @ 67Hz <input checked="" type="checkbox"/> 640x480 @ 72Hz <input checked="" type="checkbox"/> 640x480 @ 75Hz <input checked="" type="checkbox"/> 800x600 @ 56Hz <input checked="" type="checkbox"/> 800x600 @ 60Hz <input checked="" type="checkbox"/> 800x600 @ 72Hz <input checked="" type="checkbox"/> 800x600 @ 75Hz <input type="checkbox"/> 832x624 @ 75Hz (Apple Macintosh II) <input type="checkbox"/> 1024x768 @ 87Hz, interlaced(1024*768i) <input checked="" type="checkbox"/> 1024x768 @ 60Hz <input checked="" type="checkbox"/> 1024x768 @ 70Hz <input checked="" type="checkbox"/> 1024x768 @ 75Hz <input checked="" type="checkbox"/> 1280x1024 @ 75Hz <input type="checkbox"/> 1152x870 @ 75Hz(Apple Macintosh II)
Port 1 Customized Port 2 Customized Port 3 Customized Port 4 Customized Port 5 Customized Port 6 Customized Port 7 Customized Port 8 Customized Port 9 Customized Port 10 Customized	<input type="button" value="Clear"/> <input type="button" value="Select All"/>	

- ◆ Select the resolution(s) you want to use for the attached monitor/ display device.
- ◆ Click **Clear All** to unselect all the items.
- ◆ Click **Select All** to check all the items.
- ◆ Click **Save** to apply the changes.

Standard Timings

This page shows eight resolutions/timings that display devices can support in addition to those listed in the Established Timings page.

EDID Mode

ATEN Default
 Port1 Mode
 Remix
 Customized

Apply

Port EDID Status

Port 1 Customized

Port 2 Customized

Port 3 Customized

Port 4 Customized

Port 5 Customized

Port 6 Customized

Port 7 Customized

Port 8 Customized

Port 9 Customized

Port 10 Customized

EDID & CEA Description

EDID

- Vendor/Product Identification
- EDID Structure/Revision
- Basic Display/Feature
- Color Characteristics
- Established Timings
- Standard Timings
- Detail Timing/Display Description 1
- Detail Timing/Display Description 2
- Monitor Description
- Monitor Description

CEA

- Display Support
- Video Data
- Audio Data
- Speaker Allocation
- Vendor Specific Data
- HDMI Forum Vendor Specific Block
- YCBCR 4:2:0 Video Data Block
- YCBCR 4:2:0 Capability Map Data Block
- Detail Timing/Display Description 3
- Detail Timing/Display Description 4
- Detail Timing/Display Description 5

H Active Pixel	V Active Pixel	R Refresh Rate	Aspect Ratio
H 1600 ▼	V 1200	R 60	4:3 ▼
H 1280 ▼	V 1024	R 60	5:4 ▼
H 1400 ▼	V 1050	R 60	4:3 ▼
H 1440 ▼	V 900	R 60	16:10 ▼
H 1680 ▼	V 1050	R 60	16:10 ▼
H 1920 ▼	V 1080	R 60	16:9 ▼
H 1280 ▼	V 800	R 60	16:10 ▼
H 1920 ▼	V 1200	R 60	16:10 ▼

- ◆ Select the *H Active Pixel* from the drop-down menu.
- ◆ Select the *Aspect Ratio* from the drop-down menu.
- ◆ Click **Save** to apply the changes.

Detail Timing / Display Description

This screen gives more video resolution options, and provides resolution/timing details.

EDID Mode

ATEN Default

Port1 Mode

Remix

Customized

Port EDID Status

Port 1 Customized

Port 2 Customized

Port 3 Customized

Port 4 Customized

Port 5 Customized

Port 6 Customized

Port 7 Customized

Port 8 Customized

Port 9 Customized

Port 10 Customized

EDID & CEA Description

EDID

1. Vendor/Product Identification
2. EDID Structure/Revision
3. Basic Display/Feature
4. Color Characteristics
5. Established Timings
6. Standard Timings
7. Detail Timing/Display Description 1
8. Detail Timing/Display Description 2
9. Monitor Description
10. Monitor Description

CEA

1. Display Support
2. Video Data
3. Audio Data
4. Speaker Allocation
5. Vendor Specific Data
6. HDMI Forum Vendor Specific Block
7. YCBCR 4:2:0 Video Data Block
8. YCBCR 4:2:0 Capability Map Data Block
9. Detail Timing/Display Description 3
10. Detail Timing/Display Description 4
11. Detail Timing/Display Description 5

Resolution: ▼

Pixel Clock(MHz): 148.50

Stereo Display

Interlaced: Non-interlaced

Stereo Mode: none

Sync type: Digital Separate

Positive Vsync Polarity: yes

Positive Hsync Polarity: yes

Resolution Detail

	Horizontal	Vertical
Image Size :	mm	mm
Active PXL :	pixel	lines
Blanking Time :	pixel	lines
Sync Offset :	pixel	lines
Sync Width:	pixel	lines
Border:	pixel	lines

In the drop down menu, choose a resolution with values that fit the attached monitor/display device and click **Save**.

Monitor Description

This screen lets you specify the viewing specifications, namely horizontal and vertical scan ranges and pixel clock rate, of your monitor/display device.

EDID Mode

ATEN Default
 Port1 Mode
 Remix
 Customized

Port EDID Status

- Port 1 Customized
- Port 2 Customized
- Port 3 Customized
- Port 4 Customized
- Port 5 Customized
- Port 6 Customized
- Port 7 Customized
- Port 8 Customized
- Port 9 Customized
- Port 10 Customized

EDID & CEA Description

EDID

1. Vendor/Product Identification
2. EDID Structure/Revision
3. Basic Display/Feature
4. Color Characteristics
5. Established Timings
6. Standard Timings
7. Detail Timing/Display Description 1
8. Detail Timing/Display Description 2
9. Monitor Description
10. Monitor Description

CEA

1. Display Support
2. Video Data
3. Audio Data
4. Speaker Allocation
5. Vendor Specific Data
6. HDMI Forum Vendor Specific Block
7. YCBCR 4:2:0 Video Data Block
8. YCBCR 4:2:0 Capability Map Data Block
9. Detail Timing/Display Description 3
10. Detail Timing/Display Description 4
11. Detail Timing/Display Description 5

	Minutes	~	Max
Horizontal Scan Range:	15	~	102
Vertical Scan Range:	23	~	121
Pixel Clock Rate: (MHz)	210		(10~2550)

Enter the values that correspond to your device and click **Save** to apply the changes.

CEA Settings

CEA is an extension data of the EDID structure, which further extends the standard definitions of EDID to support advanced features of monitors/display devices.

Display Support

This screen describes the display's basic digital components.

EDID Mode	EDID & CEA Description	
<p> <input type="radio"/> ATEN Default <input type="radio"/> Port1 Mode <input type="radio"/> Remix <input checked="" type="radio"/> Customized </p> <p>Apply</p> <p>Port EDID Status</p>	<p>EDID</p> <ol style="list-style-type: none"> Vendor/Product Identification EDID Structure/Revision Basic Display/Feature Color Characteristics Established Timings Standard Timings Detail Timing/Display Description 1 Detail Timing/Display Description 2 Monitor Description Monitor Description 	<p>Revision: 0x03</p> <p>Underscan: no</p> <p>Basic Audio: yes</p> <p>YCbCr: <input checked="" type="checkbox"/> YCbCr444 <input checked="" type="checkbox"/> YCbCr422</p>
<p>Port 1 Customized</p> <p>Port 2 Customized</p> <p>Port 3 Customized</p> <p>Port 4 Customized</p> <p>Port 5 Customized</p> <p>Port 6 Customized</p> <p>Port 7 Customized</p> <p>Port 8 Customized</p> <p>Port 9 Customized</p> <p>Port 10 Customized</p>	<p>CEA</p> <ol style="list-style-type: none"> Display Support Video Data Audio Data Speaker Allocation Vendor Specific Data HDMI Forum Vendor Specific Block YCBCR 4:2:0 Video Data Block YCBCR 4:2:0 Capability Map Data Block Detail Timing/Display Description 3 Detail Timing/Display Description 4 Detail Timing/Display Description 5 	

Select the YCbCr mode applicable to your display and click **Save**.

Video Data

This screen lists additional video resolution/timing displays that may be supported by other devices, other than PC monitors (for example, 1080i).

EDID Mode

ATEN Default
 Port1 Mode
 Remix
 Customized

Apply

Port EDID Status

Port 1 Customized

Port 2 Customized

Port 3 Customized

Port 4 Customized

Port 5 Customized

Port 6 Customized

Port 7 Customized

Port 8 Customized

Port 9 Customized

Port 10 Customized

EDID & CEA Description

EDID

- Vendor/Product Identification
- EDID Structure/Revision
- Basic Display/Feature
- Color Characteristics
- Established Timings
- Standard Timings
- Detail Timing/Display Description 1
- Detail Timing/Display Description 2
- Monitor Description
- Monitor Description
- Monitor Description

CEA

- Display Support
- Video Data
- Audio Data
- Speaker Allocation
- Vendor Specific Data
- HDMI Forum Vendor Specific Block
- YCBCR 4:2:0 Video Data Block
- YCBCR 4:2:0 Capability Map Data Block
- Detail Timing/Display Description 3
- Detail Timing/Display Description 4
- Detail Timing/Display Description 5

Native : 1920 x 1080p @ 59.94/60Hz 16.9

Resolution:

Multiple selection(maximum 16)items

<input checked="" type="checkbox"/>	640 x 480p @ 59.94/60Hz 4:3
<input checked="" type="checkbox"/>	720 x 480p @ 59.94/60Hz 4:3
<input checked="" type="checkbox"/>	720 x 480p @ 59.94/60Hz 16:9
<input checked="" type="checkbox"/>	1280 x 720p @ 59.94/60Hz 16:9
<input checked="" type="checkbox"/>	1920 x 1080i @ 59.94/60Hz 16:9
<input type="checkbox"/>	720(1440) x 480i @ 59.94/60Hz 4:3
<input type="checkbox"/>	720(1440) x 480i @ 59.94/60Hz 16:9
<input type="checkbox"/>	720(1440) x 240p @ 59.94/60Hz 4:3
<input type="checkbox"/>	720(1440) x 240p @ 59.94/60Hz 16:9
<input type="checkbox"/>	2880 x 480i @ 59.94/60Hz 4:3
<input type="checkbox"/>	2880 x 480i @ 59.94/60Hz 16:9
<input type="checkbox"/>	2880 x 240p @ 59.94/60Hz 4:3
<input type="checkbox"/>	2880 x 240p @ 59.94/60Hz 16:9

Data Block Size: 10 Clear

- ◆ Select the native resolution of the attached display device.
- ◆ Select the resolutions that work with the attached monitor/display device.
- ◆ Click **Clear All** to deselect all the items.
- ◆ Click **Save** to apply the changes.

Audio Data

This screen lets you select advanced audio configurations for your device.

EDID Mode

ATEN Default
 Port1 Mode
 Remix
 Customized

Apply

Port EDID Status

Port 1 Customized
Port 2 Customized
Port 3 Customized
Port 4 Customized
Port 5 Customized
Port 6 Customized
Port 7 Customized
Port 8 Customized
Port 9 Customized
Port 10 Customized

EDID & CEA Description

EDID

1. Vendor/Product Identification
2. EDID Structure/Revision
3. Basic Display/Feature
4. Color Characteristics
5. Established Timings
6. Standard Timings
7. Detail Timing/Display Description 1
8. Detail Timing/Display Description 2
9. Monitor Description
10. Monitor Description

CEA

1. Display Support
2. Video Data
3. Audio Data
4. Speaker Allocation
5. Vendor Specific Data
6. HDMI Forum Vendor Specific Block
7. YCBCR 4:2:0 Video Data Block
8. YCBCR 4:2:0 Capability Map Data Block
9. Detail Timing/Display Description 3
10. Detail Timing/Display Description 4
11. Detail Timing/Display Description 5

Audio Format 1:
Linear PCM 2-channel

Audio Format 2:

Audio Format 3:

Audio Format 4:

Audio Format 5:

Audio Format 6:

Use the drop down menu to select the **Audio Format** (1–6) applicable to your audio output device, and click **Save** to apply the changes.

HDMI Forum Vendor Specific Block

This screen shows the display device's supported video parameters. Use the toggle button to enable or disable this function.

- ◆ **3D OSD Disparity:** Select this option to have Sink support receiving 3D OSD Disparity Indication in the HF-VSIF.
- ◆ **Dual View:** Select this option to have Sink support receiving 3D Dual View in the HF-VSIF.
- ◆ **Independent View:** Select this option to have Sink support receiving 3D Independent View in the HF-VSIF.
- ◆ **LTE 340Msc Scramble:** Select this option to have Sink support scrambling for TMDS Character Rates at or below 340 Mcsc.
- ◆ **RR Capable:** Select this option to have Sink initiate an SCDC Read Request.
- ◆ **SCDC Present:** Select this option to have Sink support SCDC functionality.
- ◆ **DC 30bit 420:** Select this option to have Sink support 10-bits/component Deep Color 4:2:0 Pixel Encoding.
- ◆ **DC 36bit 420:** Select this option to have Sink support 12-bits/component Deep Color 4:2:0 Pixel Encoding.
- ◆ **DC 48bit 420:** Select this option to have Sink support 16-bits/component Deep Color 4:2:0 Pixel Encoding.

Use the drop down menu to select the **Audio Format** (1–6) applicable to your audio output device, and click **Save** to apply the changes.

YCBCR 4:2:0 Video Data Block

Use this page to configure a list of supported YCBCR 4:2:0 video resolutions and select one to be applied. Use the toggle button at the top-right to enable or disable this feature.

The screenshot displays the configuration interface for the YCBCR 4:2:0 Video Data Block. On the left, the 'EDID Mode' is set to 'Customized'. The 'Port EDID Status' shows all ports from 1 to 10 are configured as 'Customized'. The 'EDID & CEA Description' section lists 11 items, with '7. YCBCR 4:2:0 Video Data Block' selected. The main configuration area for this block includes a 'Select' list of resolutions, 'Add' and 'Remove' buttons, and a 'Clear All' button. A 'Native' dropdown menu is set to 'Native', and a 'Selected' list shows three options with checkboxes. A toggle switch at the top right is turned on. At the bottom, it indicates 'Resolution: multi-selection under : 5' and 'Data Block size : 3'.

- ◆ To add a supported resolution, click an item in the Select column, and then click **Add**.
- ◆ Use the drop down menu **Native** to adjust the supported resolution of the display.

YCBCR 4:2:0 Compatibility Map Data Block

Use this page to configure a list of supported video resolutions for YCBCR 4:2:0 Compatibility Map Data Block and select one to be applied. Use the toggle button at the top-right to enable or disable this feature.

EDID Mode

ATEN Default

Port1 Mode

Remix

Customized

Apply

Port EDID Status

Port 1 Customized

Port 2 Customized

Port 3 Customized

Port 4 Customized

Port 5 Customized

Port 6 Customized

Port 7 Customized

Port 8 Customized

Port 9 Customized

Port 10 Customized

EDID & CEA Description

EDID

- Vendor/Product Identification
- EDID Structure/Revision
- Basic Display/Feature
- Color Characteristics
- Established Timings
- Standard Timings
- Detail Timing/Display Description 1
- Detail Timing/Display Description 2
- Monitor Description
- Monitor Description

CEA

- Display Support
- Video Data
- Audio Data
- Speaker Allocation
- Vendor Specific Data
- HDMI Forum Vendor Specific Block
- YCBCR 4:2:0 Video Data Block
- YCBCR 4:2:0 Capability Map Data Block
- Detail Timing/Display Description 3
- Detail Timing/Display Description 4
- Detail Timing/Display Description 5

YCBCR 4:2:0 Video Data Block 🔴

Select	Resolution	Size
<input type="checkbox"/>	640x480p @ 60Hz 4:3	1 size
<input type="checkbox"/>	720x480p @ 60Hz 4:3	1 size
<input type="checkbox"/>	720x480p @ 60Hz 16:9	1 size
<input type="checkbox"/>	1280x720p @ 60Hz 16:9	1 size
<input checked="" type="checkbox"/>	1920x1080i @ 60Hz 16:9	1 size
<input type="checkbox"/>	720(1440)x480i @ 60Hz 4:3	1 size
<input type="checkbox"/>	720(1440)x480i @ 60Hz 16:9	1 size
<input type="checkbox"/>	720(1440)x240p @ 60Hz 16:9	2 size
<input type="checkbox"/>	2880x480i @ 60Hz 4:3	2 size
<input type="checkbox"/>	2880x480i @ 60Hz 16:9	2 size

Clear All

Max size is: 1

Selected

<input type="checkbox"/>	1280x720p @ 60Hz 16:9	1 size
<input type="checkbox"/>	720(1440)x240p @ 60Hz 16:9	1 size
<input type="checkbox"/>	1920x1080i @ 60Hz 16:9	1 size

Add -->

Remove <--

Current size: 1

- ◆ To add a supported resolution, click an item in the Select column, and then click **Add**.
- ◆ Use the drop down menu **Native** to adjust the supported resolution of the display.

Local Output

The VM51616H is designed with a local HDMI output port that allows users to monitor multiple input sources in real time. The Local Output page allows users to configure the resolution, HDCP, and the Array Mode of the display device that is connected to the local HDMI port.

Resolution

Supported HDCP

Array Mode



- ◆ **Resolution:** Use the drop-down menu to apply a resolution for the display that is connected to the Local Output. Options are: 560 × 360@60HZ, 720 × 576@50HZ, 768 × 480@60HZ, 1024 × 768@60HZ, 1280 × 720@50HZ, 1280 × 720@60HZ, 1920 × 1080@30HZ, 1280 × 800@60HZ, 1280 × 1024@60HZ, 1366 × 768@60HZ, 1400 × 1050@60HZ, 1600 × 900@60HZ, 1600 × 1200@60HZ, 1920 × 1200@60HZ, 1920 × 1080@50HZ, and 1920 × 1080@60HZ.
- ◆ **Supported HDCP:** Click to check and show the HDCP capability of the connected display.
- ◆ **Array Mode:** Use the drop-down menu to select a viewing mode for the local display. Options are: 1 × 1, 1 × 2, 2 × 2, and 4 × 4.
- ◆ Use the drop-down menu to select the input source for the split screen.

Status

Connections

The connections tab provides a status summary of the input/output boards installed to the VM51616H and the devices that are connected to the ports on the input/output boards. If the connected devices support FrameSync and Long Reach mode, you can also enable/disable the function on this page.

Device List	Model Name	F/W Version	HDCP	FrameSync
Video Matrix	VM51616H	V4.1.405		
Input Slot				
Port1:Input_1	(No Connection)			
Port2:Input_2	(No Connection)			
Port3:Input_3	(No Connection)			
Port4:Input_4	(No Connection)			
Port5:Input_5	(No Connection)			
Port6:Input_6	(No Connection)			
Port7:Input_7	(No Connection)			
Port8:Input_8	(No Connection)			
Port9:Input_9	(No Connection)			
Port10:Input_10	(No Connection)			
Port11:Input_11	(No Connection)			
Port12:Input_12	(No Connection)			
Port13:Input_13	(No Connection)			
Port14:Input_14	(No Connection)			
Port15:Input_15	(No Connection)			
Port16:Input_16	(No Connection)			
Output Slot				
Port1:Output_1	(No Connection)			
Port2:Output_2	(No Connection)			
Port3:Output_3	(No Connection)			
Port4:Output_4	(No Connection)			
Port5:Output_5	(No Connection)			
Port6:Output_6	(No Connection)			
Port7:Output_7	(No Connection)			
Port8:Output_8	(No Connection)			
Port9:Output_9	(No Connection)			
Port10:Output_10	(No Connection)			
Port11:Output_11	(No Connection)			
Port12:Output_12	(No Connection)			
Port13:Output_13	(No Connection)			
Port14:Output_14	(No Connection)			
Port15:Output_15	(No Connection)			
Port16:Output_16	(No Connection)			

Use the Connections page to:



- ◆ Monitor input/output board temperatures.
 - ◆ Find out about HDCP settings of the input/output boards
 - ◆ Perform cable quality analysis by clicking the **Cable Quality Test** button.
-



Note:



- ◆ BER Test is only applicable to the following cable connections:
 - ◆ VM7814 with its source device
 - ◆ VE816R with VM8514
 - ◆ To test the quality of the cable connecting the VM7814 input board and its source device, unplug the cable from the source device and plug it into the corresponding port on the VM8814 output board, and then click the **BER Test** button to start the test. For example, if a cable plugs into port 1 of a VM7814 board, the other end should be plugged into port 1 of the VM8814 board before you start the test.
-
- ◆ To test the quality of all the cables connected to the Modular Matrix Switch, click **BER Test** at the top-right corner of the page.
 - ◆ Enable/disable FrameSync and/or Long Reach Mode


System Information


Use this page to look up system settings, including system network settings, firmware version, video/audio input assignments, output audio volumes, CED/OSD settings, output resolutions, HDMI audio mode settings, and power statuses.


Hint: Click  to view details and  to refresh the system.


System Network 		
IP Address	192.168.1.29	
Sub Mask	255.255.255.0	
Gateway	192.168.1.1	
MAC Address	00:10:74:C5:81:1D	
IP Assign	DHCP	


Device Info 		
FW Version	V4.1.405 Mar 02 2021 16:31:36	
FPGA SYS Version	V010	
FPGA MTX Version	V014	
FPGA RX Version	V017	
FPGA TX Version	V017	
Panel FW Version	V10R075	

Video Connection 

Audio Connection 

CEC 

OSD 

Output Resolution 

Maintenance

System Setup

You can use the System Setup page to do any of the following:

- ◆ Upgrade the VM51616H's mainboard, its streaming board, and any installed I/O boards
- ◆ Back up or restore the VM51616H's settings. Note that account settings cannot be backed up or restored.

Firmware upgrade

Mainboard I/O Board

Select a firmware file to begin

Backup / Restore

*User accounts cannot be backed up or restored.

Select a restore file to begin

To upgrade the VM51616H's firmware, do the following:

1. Download the firmware package from ATEN's official website.
2. In the VM51616H web interface, go to Maintenance > System Setup > Firmware Upgrade > Mainboard I/O Board, click **Browse** to locate the firmware upgrade package.
3. Click **Upgrade** to begin the upgrade.

Note: After updating the firmware, it's recommended that you clear your web browser's cache and then close and reopen the web browser. This will ensure the GUI refreshes and functions properly.

To upgrade the VM51616H's streaming board, do the following:

1. Download the firmware package from ATEN's official website. Select the one that indicates "streaming board" in the file name.
2. In the VM51616H web interface, go to Maintenance > System Setup > Firmware Upgrade > Streaming Board, click **Browse** to locate the firmware upgrade package.
3. Click **Upgrade** to begin the upgrade.

To back up the VM51616H's system settings, click **Backup**. A configuration file will then begin downloading.

To restore the VM51616H's system settings, do the following:

1. Use the **Browse** button to locate the configuration file. Make sure you have the correct file saved on your PC.
2. Click **Restore** to begin the restoration procedure.

Note: User accounts cannot be backed up or restored.

To reset the VM51616H to its default settings, click the **reset to default** button on the far right.

User Account

The *User Account* page lets you add, edit, or delete users and change the password for accessing the VM51616H's GUI.

Note: This is an Administrator only function.

User Account		
User Name	Level	Description
administrator	Administrator	
lanrun	Basic User	guest
surian	Basic User	guest

+ Add account Edit

- ◆ **Add account** – Click the *Add account* button to add another user to the list. The VM51616H supports up to 32 users and allows up to 16 concurrent logins (see page 92 for more details).
- ◆ **Edit** – Click the *Edit* button to change user information. This option allows an Administrator to edit individual accounts.

User Account		
User Name	Level	Description
administrator	Administrator	
lanrun	Basic User	guest
surian	Basic User	guest

Done

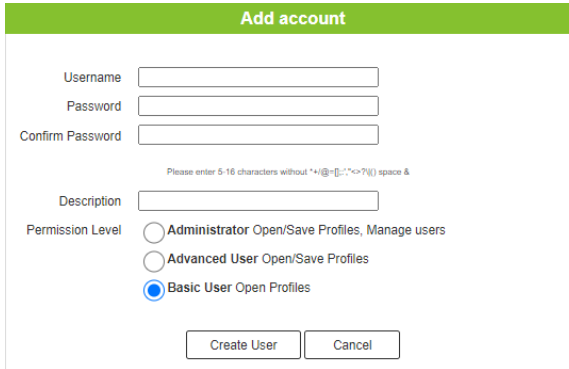
- ◆ **Edit** – Rename the user account, set the password, add a description, and set the user's permission level (see page 93 for more details).
- ◆ **Delete** – Removes the user account.



- ◆ The default username and password are: administrator/password.

Add Account

Use the Add Account / Edit buttons to create a user account, set the user's password, add a description, and set the user's permission level (see page 93) when accessing the VM51616H's GUI.



Add account

Username

Password

Confirm Password

Please enter 5-16 characters without *+!@#%&'>";=|)

Description

Permission Level

Administrator Open/Save Profiles, Manage users

Advanced User Open/Save Profiles

Basic User Open Profiles

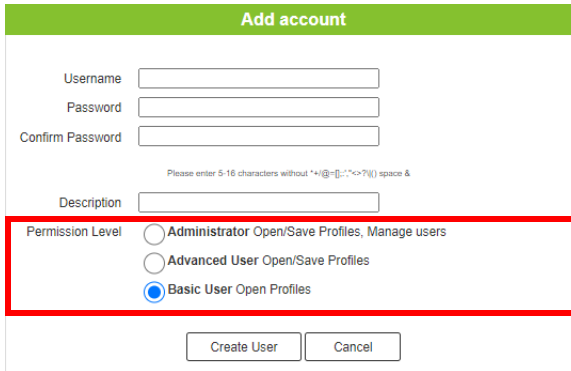
- ◆ Fill in a username or edit an existing one.
- ◆ Enter a password and re-type the password to confirm.

Note: Usernames and passwords accept multi-lingual characters, and must be 5–16 alphanumeric characters (excluding ;=|+/?\|). Passwords are case sensitive. Usernames only support lower case letters.

- ◆ Add or edit the description for the user.
- ◆ Select the permission level that you want to grant the user (see *Permission Level*, page 93).
- ◆ Click **Create User** to save the data.
- ◆ Click **Cancel** to discard the changes and exit.
- ◆ If a user is logged into the VM51616H's GUI, their user settings cannot be edited, and the fields in this screen are grayed out.

Permission Level

At the bottom of the New/Edit User page is the permission section, which is used to set a user's permission level.



The screenshot shows a web form titled "Add account" with a green header. The form contains several input fields: "Username", "Password", "Confirm Password", and "Description". Below the "Description" field is a small note: "Please enter 5-16 characters without '*+!@=#:~<->?() space &". The "Permission Level" section is highlighted with a red rectangular box and contains three radio button options: "Administrator Open/Save Profiles, Manage users", "Advanced User Open/Save Profiles", and "Basic User Open Profiles". The "Basic User" option is selected. At the bottom of the form are two buttons: "Create User" and "Cancel".

The three available permission levels are as follows:

- ◆ **Administrator** – this level provides full access and control of the VM51616H, in addition to full User Management privileges.
- ◆ **Advanced User** – this level provides full access and control with no User Management privileges.
- ◆ **Basic User** – this level only provides basic functions (connections and open profiles).

Network

The *Network* page lets you configure the VM51616H's IP settings for connecting to it via the web GUI, and enable/disable Telnet.

DHCP	<input checked="" type="radio"/> Enable	<input type="radio"/> Disable
IP Address	<input type="text" value="192.168.1.29"/>	
Subnet Mask	<input type="text" value="255.255.255.0"/>	
Default Gateway	<input type="text" value="192.168.1.1"/>	
Website Timeout	<input type="text" value="60 Minute"/>	
MAC Address	<input type="text" value="00:10:74:C5:81:1D"/>	
Telnet	<input checked="" type="radio"/> Enable	<input type="radio"/> Disable

Enable DHCP to allow the DHCP server to assign an IP address to the VM51616H. Select **Disable** to enter your own static IP address settings for the device.

Click **Reset** to use the following default values:

- ◆ IP Address – **192.168.0.60**
- ◆ Subnet Mask – **255.255.255.0**
- ◆ Default Gateway – **192.168.0.1**
- ◆ Website Timeout* – N/A, 5, 10, 30, 60 minutes
- ◆ Telnet Configuration enabled (checked)

Enter the values, then click **Save**. Changes may take a few seconds and after refreshing the page automatically redirects you to the IP address specified.

* This option controls how long an inactive web connection stays logged into the VM51616H. Any changes will take effect immediately. The default setting is 5 minutes.

Chapter 5

CLI Commands

Overview

The VM51616H can be configured and controlled via RS-232 or Telnet commands when connected to a host computer or other device, such as a control system. This chapter provides information on how to connect to the VM51616H via RS-232/Telnet and command syntax.

Connecting to the Matrix Switch via Telnet

To establish a Telnet session with the VM51616H, do the following:

1. Connect a host computer or control system to a shared network with the VM51616H.
2. Open a command-line interpreter program from your computer.
3. In the command-line interpreter, type the VM51616H's IP address in the following way:

```
telnet [IP address]:23
```

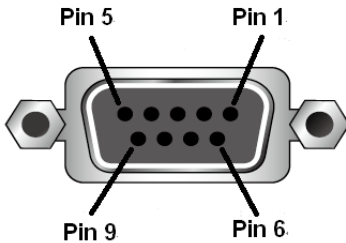
4. Press **Enter**. The login screen appears.
5. At the login prompt, type the login username and password for the VM51616H.
6. When a session is established with the VM51616H, you can control and configure the VM51616H via RS-232 commands. For more information on commands, see *Commands*, page 97

Note: If a user logs in using a username that is already in session, the newest login takes effect and the previous session will be replaced.

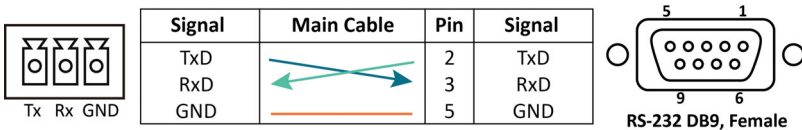
Connecting to the Matrix Switch via RS-232

You can control and operate the VM51616H using a high-end controller or PC. To connect to the VM51616H via RS-232, do the following:

1. Connect the RS-232 serial port on the VM51616H to the RS-232 serial port on your computer using a 9-wire straight cable, with only pin 2 to pin 2, pin 3 to pin 3, and pin 5 to pin 5 connected.



Pin	Description
1	Not connected
2	RXD
3	TXD
4	Not connected
5	GND
6	Not connected
7	Not connected
8	Not connected
9	Not connected



2. The controller’s serial port should be configured as follows:

RS-232 Protocol	
Baud Rate	19200
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

3. When a session is established with the VM51616H, you can control and configure the VM51616H via RS-232 commands. For more information on commands, see *Commands*, page 97.

Command Verification

After entering a command, a verification message appears at the end of the command line as follows:

- ◆ **Command OK**—indicates that the command is correct and successfully performed by the switch
- ◆ **Command incorrect**—indicates that the command has the wrong format and/or values.

Commands

After connecting to the VM51616H via Telnet or RS-232, you can operate the system using the following commands.

Switch Port Command

The Switch Port command allows you to switch ports on the VM51616H.

The formula for the Switch command is as follows:

```
Command + Input + Number + Output + Number + Group +
Control + [Enter]
```

1. For example, to switch input port 02 to output port 05, type:
`sw i02 o05 [Enter]`
2. To switch output port 04 to the next port, type:
`sw o04 [Enter]`
3. To turn off video output on port 03, type:
`sw o03 off [Enter]`
4. To switch audio from input port 06 to stereo audio output, type:
`sw i06 console audio [Enter]`

The following tables show the possible values for the **Switch Port** command:

Command	Description
sw	Switch command

Input Command	Description
i	Input command

Port number	Description
xx	01–16 port

Output Command	Description
o	Output command

Port number	Description
yy	01–16 port
*	All output ports

Group	Description
normal	default HDMI audio outputs
console audio	Switch the audio to the stereo audio output

Control	Description
on	Turn on the display
off	Turn off the display
+	Next Port
-	Previous Port

- Note:**
1. By default, input port 01 is tied to output port 01; input port 02 is tied to output port 02; and so on until port 04 (i.e., o01 i01, o02 i02).
 2. Each command string should be separated with a space.
 3. The **Port Number** can be skipped, and the default value will be used.
 4. The **Group** can be skipped, and the default value (normal; HDMI audio output) will be used.

The following table lists the available Switch Port commands:

Com-mand	Input Com-mand	Input Port	Output Com-mand	Out-put Port	Group	Con-trol	Enter	Description
sw	i	xx	o	yy *	normal console audio		[Enter]	Switch Input Port xx to Output Port yy (xx:01–16; yy:01–16, *)
sw			o	yy *		on off	[Enter]	Turn on Output Port yy Turn off Output Port yy (yy:01–16, *)

Com-mand	Input Com-mand	Input Port	Output Com-mand	Out-put Port	Group	Con-trol	Enter	Description
sw			o	yy *	normal console audio	+ -	[Enter]	Switch Output port yy to next Output port. Switch Output port yy to previous Output port. (yy:01-16, *)

EDID Mode Command

Extended Display Identification Data (EDID) is a data that contains a display's basic information and is used to communicate with the video source.

The formula for the EDID command is as follows:

Command + Control + [Enter]

1. For example, to use the Port1 EDID mode, type:

`edid port1 [enter]`

The following tables show the possible values for the **EDID** command:

Command	Description
<code>edid</code>	EDID Mode command

Control	Description
<code>port1</code>	Implement the EDID of the connected display to Port 1, and pass it to the video source.
<code>remix</code>	Implement the EDID of each connected display according to its connection when the VM51616H is first powered on, or immediately after selecting the Remix option.
<code>default</code>	Implements ATEN's default EDID. (default)
<code>custom</code>	Implements the customized mode as set in the EDID system settings. (See <i>Customized EDID Parameters</i> , page 75)

Note: Each command string should be separated with a space.

The following table lists the available EDID commands:

Command	Control	Enter	Description
<code>edid</code>	<code>port1</code>	[Enter]	The EDID from Port 1 is passed to the video source.
<code>edid</code>	<code>remix</code>	[Enter]	The VM51616H implements the EDID of each connected display according to its connection when the VM51616H is first powered on, or immediately after selecting the Remix option.
<code>edid</code>	<code>default</code>	[Enter]	ATEN's default EDID is passed to the video source.
<code>edit</code>	<code>custom</code>	[Enter]	Implements the customized mode.

Mute Command

Mute allows you to enable or disable an output port(s) audio.

The formula for the Mute command is as follows:

Command + Output + Number + Group + Control + [Enter]

- For example, to mute the audio coming from output port 1, type:

```
mute o01 on [enter]
```

The following tables show the possible values for the **Mute** command:

Command	Description
mute	Mute command
Output Command	Description
o	Output command
Port number	Description
yy	01–16 port (default is 01)
*	All output ports
Group	Description
normal	Mute the default HDMI audio outputs.
console	Mute the stereo audio output
Control	Description
on	Mute on; audio from HDMI output port is disabled
off	Mute off; audio output enabled (default)

- Note:**
- Each command string should be separated with a space.
 - Skip the output port command to mute or enable the audio of all output ports.
 - The **Group** can be skipped, and the default value (normal; HDMI audio output) will be used.

The following table lists the available Mute commands:

Com mand	Output Command	Port Number	Group	Cont rol	Enter	Description
mute	o	yy *	normal console	on	[Enter]	Audio on for output port yy (yy:01-16, *)
mute	o	yy *	normal console	off	[Enter]	Audio off for output port yy (default) (yy:01-16, *)

CEC Command

Consumer Electronics Control (CEC) allows interconnected HDMI devices to communicate and respond to the same remote control.

The formula for the CEC command is as follows:

Command + Output + Number + Control + [Enter]

- For example, to enable the CEC function on output port 1, type:

`cec o01 on [enter]`

The following tables show the possible values for the **CEC** command:

Command	Description
cec	CEC command
Output Command	Description
o	Output command
Port number	Description
yy	01–16 port (default is 01)
*	All output ports
Control	Description
off	Disable CEC (default)
on	Enable CEC

Note: Each command string should be separated with a space.

The following table lists the available CEC commands:

Command	Output Port	Control	Enter	Description
cec	yy *	off	[Enter]	CEC off for output port yy (default) (yy:01–16, *)
cec	yy *	on	[Enter]	CEC on for output port yy (yy:01–16, *)

Scaling Command

The Scaling command allows you to set a resolution for scaling the display connected to an output port.

The formula for the Scaling command is as follows:

Command + Output + Number 1 + Horizontal Resolution +
Number 2 + Vertical Resolution + Number 3 + Frequency +
Number 4 + Control + [Enter]

1. For example, to turn scaling off for output port 02, type:
`scaling o02 off [Enter]`
2. To set the scaling for output port 04 to 1920 × 1080@60Hz, type:
`scaling o04 1080p [Enter]`
3. To set the scaling for all output ports to the connected display's native resolution, type:
`scaling o* native [Enter]`

The following tables show the possible values for the **Scaling** command:

Command	Description
scaling	Scaling command

Output	Description
o	Output command

Port Number	Description
yy	01–16 port
*	All output ports

Horizontal Resolution	Description
hor	Horizontal resolution command for scaling

Resolution Number	Description
hhhh	Horizontal resolution

Vertical Resolution	Description
ver	Vertical resolution command for scaling

Resolution Number	Description
vvvv	Vertical resolution
Frequency	Description
freq	Frequency command for scaling
Frequency Number	Description
fff	Frequency resolution
Control	Description
off	Turn off the scaling function (by pass mode)
native	Map display's native resolution for scaling (default)

- Note:** 1. Each command string should be separated with a space.
2. The **Port Number** command string can be skipped, and the default value will be used.

The following table lists the available Scaling commands:

Command	Output	Port Number	Horizontal Resolution	Number	Vertical Resolution	Number	Frequency	Number	Control	Enter	Description
scaling	o	yy *							off	[Enter]	Turn off scaling for port yy (by pass mode) yy: 01-16 or *
scaling	o	yy *							native	[Enter]	Enable display's native resolution for scaling on output port yy (default) yy: 01-16 or *

Command	Output	Port Number	Horizontal Resolution	Number	Vertical Resolution	Number	Frequency	Number	Control	Enter	Description
scaling	o	yy*	hor	1920	ver	1080	freq	60		[Enter]	Scale output port yy to 1920 × 1080@60Hz yy: 01-16 or *
scaling	o	yy*	hor	1280	ver	720	freq	60		[Enter]	Scale output port yy to 1280 × 720@60Hz yy: 01-16 or *
scaling	o	yy*	hor	1920	ver	1200	freq	60		[Enter]	Scale output port yy to 1920 × 1200@60Hz yy: 01-16 or *
scaling	o	yy*	hor	1600	ver	1200	freq	60		[Enter]	Scale output port yy to 1600 × 1200@60Hz yy: 01-16 or *
scaling	o	yy*	hor	1400	ver	1050	freq	60		[Enter]	Scale output port yy to 1400 × 1050@60Hz yy: 01-16 or *
scaling	o	yy*	hor	1280	ver	1024	freq	60		[Enter]	Scale output port yy to 1280 × 1024@60Hz yy: 01-16 or *
scaling	o	yy*	hor	1024	ver	768	freq	60		[Enter]	Scale output port yy to 1024 × 768@60Hz yy: 01-16 or *

Command	Output	Port Number	Horizontal Resolution	Number	Vertical Resolution	Number	Frequency	Number	Control	Enter	Description
scaling	o	yy*	hor	1280	ver	800	freq	60		[Enter]	Scale output port yy to 1280 × 800@60Hz yy: 01–16 or *
scaling	o	yy*	hor	720	ver	576	freq	50		[Enter]	Scale output port yy to 720 × 576@50Hz yy: 01–16 or *
scaling	o	yy*	hor	1600	ver	900	freq	60		[Enter]	Scale output port yy to 1600 × 900@60Hz yy: 01–16 or *

FrameSync Command

The FrameSync command allows you enable or disable the Frame Synchronization function for VM51616H.

The formula for the Scaling command is as follows:

Command + Control + [Enter]

For example, to enable the Frame Synchronization function, type:

`frsync on [Enter]`

The following tables show the possible values for the **FrameSync** command:

Command	Description
<code>frsync</code>	Frame Synchronization command

Control	Description
<code>off</code>	Turn off the FrameSync
<code>on</code>	Turn on the FrameSync

Note: Each command string should be separated with a space.

The following table lists the available FrameSync commands:

Command	Control	Enter	Description
<code>frsync</code>	<code>off</code>	[Enter]	Turn off the Frame Synchronization function
<code>frsync</code>	<code>on</code>	[Enter]	Turn on the Frame Synchronization function

Fan Speed Command

The Fan Speed command allows you to set the internal fan speed that cools the VM51616H.

To set the fan speed, use the following command:

```
Command + Control + [Enter]
```

1. For example, to set the fan to low speed, type:

```
fan low [Enter]
```

The following tables show the possible values for the **Fan Speed** command:

Command	Description
fan	Fan Speed Command

Control	Description
low	Set internal fan to low speed (default)
mid	Set internal fan to normal speed
high	Set internal fan to high speed
Auto	Set internal fan to auto speed

Note: Each command string should be separated with a space.

The following table lists the available Fan Speed commands:

Command	Control	Enter	Description
fan	low	[Enter]	Sets fan speed to low
fan	mid	[Enter]	Sets fan speed to normal
fan	high	[Enter]	Sets fan speed to high
fan	auto	[Enter]	Sets fan speed to auto

Echo Command

The Echo function updates the RS232 controller when operations are made via the front panel pushbuttons, web browser, or telnet. The changes echo back to the RS232 controller to keep the settings in sync with the device.

The formula for the Echo command is as follows:

Command + Control + [Enter]

1. For example, to enable the echo feature, type:

echo on [Enter]

The following tables show the possible values for the **Echo** command:

Command	Description
echo	Echo command

Control	Description
on	Turns Echo function on
off	Turns Echo function off (default)

Note: Each command string should be separated with a space.

The following table lists the available Echo commands:

Command	Control	Enter	Description
echo	on	[Enter]	Turn on Echo function
echo	off	[Enter]	Turn off Echo function

Black Screen Command

The Black Screen command turns a display screen black when no source signal is detected. This prevents the display from showing the default blue or other color used when no source signal is detected.

The formula for the Black Screen command is as follows:

Command + Control + [Enter]

1. For example, to enable the Black Screen function, type:

`blackscreen on [Enter]`

The following tables show the possible values for the **Black Screen** command:

Command	Description
<code>blackscreen</code>	Black Screen command

Control	Description
<code>on</code>	Turns Black Screen function on (default)
<code>off</code>	Turns Black Screen function off

Note: Each command string should be separated with a space.

The following table lists the available Black Screen commands:

Command	Control	Enter	Description
<code>blackscreen</code>	<code>on</code>	[Enter]	Turn on Black Screen function
<code>blackscreen</code>	<code>off</code>	[Enter]	Turn off Black Screen function

Read Command

The Read command allows you to view the current configuration, firmware and other information about the device.

The formula for the Read command is as follows:

Command + [Enter]

1. To view information about the device, type:

read [Enter]

The following table shows the possible values for the **Read** command:

Command	Description
read	Read command

Note: Each command string should be separated with a space.

The following table lists the available Read commands:

Command	Enter	Description
read	[Enter]	View information about the device

Reset Command

The Reset command allows you to reset the VM51616H to the default factory settings.

The formula for the Reset command is as follows:

Command + [Enter]

The following tables show the possible values for the **Reset** command:

Command	Description
reset	Reset command

- Note:**
1. Each command string should be separated with a space.
 2. User account settings will not be reset to the factory defaults.
-

The following table lists the available Reset commands:

Command	Enter	Description
reset	[Enter]	Resets the device settings

Baud Rate Command

The Baud Rate command allows you to set the RS-232 data rate for the VM51616H to use. Options are 9600, 19200 (default) 38400 and 115200.

The formula for the Baud Rate command is as follows:

Command + Control + [Enter]

1. For example, to set 38400 as the baud rate, type:

baud 38400 [Enter]

The following tables show the possible values for the **Baud Rate** command:

Command	Description
baud	Sets the RS-232 baud rate

Control	Description
9600	Use 9600 baud rate
19200	Use 19200 baud rate (default)
38400	Use 38400 baud rate
115200	Use 115200 baud rate

Note: Each command string should be separated with a space.

The following table lists the available Baud Rate commands:

Command	Control	Enter	Description
baud	9600 / 19200 / 38400 / 115200	[Enter]	Sets the RS-232 baud rate

Load Profile Command

The Load Profile command allows you to apply one or multiple profiles to the display zones.

The formula for the Load Profile command is as follows:

```
Profile f + Number 1+ Control + [Enter]
```

1. For example, to load connection profile 04, type:

```
profile f 04 load [Enter]
```

2. For example, to load multiple profile, type:

```
profile f1, 2, 4 load [Enter]
```

Note: Each specified profile will be applied to the associated display zone. If two or more profiles associated with the same display zone are included in the command, the last one will be applied.

The following tables show the possible values for the **Load Profile** commands:

Command	Description
profile	Load profile

Profile	Description
f	Profile command

Profile Number	Description
yy	01–32 (default is 01)

Control	Description
load	Load a saved profile

Note: Each command string should be separated with a space.

The following table lists the available Load Profile commands:

Command	Profile	Profile Number	Control	Enter	Description
profile	f	yy *	load	[Enter]	Load profile yy. yy:01–32, *

OSD Command

To enable or disable the On-Screen Display (OSD) for displays, use the following command:

Command + Output + Number + Control + [Enter]

1. For example, to enable the OSD for output 07, type:

```
osd o07 on [Enter]
```

2. For example, to disable the OSD for all outputs, type:

```
osd o* off [Enter]
```

The following tables show the possible values for the **OSD** command:

Command	Description
osd	OSD command

Output	Description
o	Output port command

Number	Description
yy	Output port 01–16 port (default is 01)
*	All output ports

Control	Description
on	Enable OSD function
off	Disable OSD function (default)

Note: Each command string should be separated with a space.

The following table lists the available OSD commands:

Command	Output Command	Output Port	Control	Enter	Description
osd	o	yy *	on	[Enter]	OSD on for output yy yy:01–16, *
osd	o	yy *	off	[Enter]	OSD off for output yy (default) yy:01–16, *

Local Output OSD Command

To turn on or off the local OSD, use the following command:

Command + Parameter + Control + [Enter]

1. For example, to turn on the local OSD, type:

```
osd olocal on [Enter]
```

2. For example, to turn off the local OSD, type:

```
osd olocal off [Enter]
```

The following tables show the possible values for the **Local Output OSD** command:

Command	Description
osd	OSD command
Parameter	Description
olocal	Local output port command
Control	Description
on	Turn on the local output port OSD
off	Turn off the local output port OSD

Note: Each command string can be separated with a space.

The following table lists the available OSD commands:

Command	Parameter	Control	Enter	Description
osd	olocal	on	[Enter]	Turn on the local output OSD.
osd	olocal	off	[Enter]	Turn off the local output OSD.

Array Command

To set up an viewing mode (1×1 , 1×2 , 2×2 , or 4×4) for the local display, use the following command:

Command + Vertical + Number + Horizontal + Number + Input + Sequence + [Enter]

1. For example, to set up the viewing mode to a 2×2 array with video inputs from Input Port 7, 8, 2, and 3 sequentially, type:

```
array ver 2 hor 2 i7,8,2,3 [Enter]
```

2. For example, to set up a single view with video from Input Port 9, type:

```
array ver 1 hor 1 i9 [Enter]
```

3. For example, to set up the viewing mode to a 4×4 array with all 16 video inputs, type:

```
array ver 4 hor 4 [Enter]
```

The following tables show the possible values for the **Array** command:

Command	Description
array	array viewing mode command

Vertical	Description
ver	vertical command

Vertical Number	Description
m	numbers of vertical inputs 1, 2, or 4

Horizontal	Description
hor	horizontal command

Horizontal Number	Description
n	numbers of horizontal inputs 1, 2, or 4

Input	Description
i	input command

Input Sequence	Description
yy	sequence of input ports to show 01–16 port

-
- Note:** 1. Each command string should be separated with a space.
2. The viewing array supports modes of 1×1 (single), 1×2 (side by side), 2×2 (quad mode), or 4×4 (show all) only.
3. Use commas to separate the Input Ports when setting the Input Sequence. The Input Sequence can be omitted in the 4×4 mode, which all 16 Input Ports will show on the local screen.
-

The following table lists the available **Array** commands:

Command	Vertical Command	Vertical Number	Horizontal Command	Horizontal Number	Input	Input Sequence	Enter	Description
array	ver	m	hor	n	i	yy	[Enter]	Show an $m \times n$ array on the local display with sequence yy yy:01-16
array	ver	m	hor	n			[Enter]	Show all Input sources in a 4×4 array mode m:4; n:4

Alert Command

To trigger a warning when issues arise for a specific input port, use the following command:

Command + Input + Number + Control + [Enter]

1. For example, to enable the basic Alert function for input port 1, type:

```
alert i01 m1 [enter]
```

The following tables show the possible values for the **Alert** command:

Command	Description
alert	Alert command

Input	Description
i	Input command

Port number	Description
yy	01–16 port

Control	Description
off	Disable Alert (default)
m1	Show basic Alert (flashing border)
m2	Show detailed Alert (flashing border and port information)

Note: Each command string should be separated with a space.

The following table lists the available Alert commands:

Command	Input Command	Input Port	Control	Enter	Description
alert	i	yy	off	[Enter]	Alert off for input port yy (yy:01–16)
alert	i	yy	m1	[Enter]	Basic Alert on for input port yy (yy:01–16)
alert	i	yy	m2	[Enter]	Detailed Alert on for input port yy (yy:01–16)

Schedule Command

The Schedule command allows you enable or disable the schedule function for VM51616H.

The formula for the Schedule command is as follows:

Command + Input + Number + Control + [Enter]

1. For example, to enable the Schedule function for zone A, type:
`schedule task01 on [enter]`
2. For example, to enable the Schedule function for all zones, type:
`schedule task* on [enter]`
3. For example, to disable the Schedule function for all zones, type:
`schedule off [enter]`

The following tables show the possible values for the **Alert** command:

Command	Description
schedule	Schedule command

Schedule	Description
task	Task command

Zone Number	Description
yy	01–04 schedule zone. <ul style="list-style-type: none"> ◆ 01 = Zone A ◆ 02 = Zone B ◆ 03 = Zone C ◆ 04 = Zone D
*	All schedule zones (default)

Control	Description
on	Turns Schedule function on
off	Turns Schedule function off (default)

Note: Each command string should be separated with a space.

The following table lists the available **Alert** commands:

Command	Schedule	Zone Number	Control	Enter	Description
schedule	task	yy *	on	[Enter]	Schedule for zone number yy (yy:01-04, *)
schedule	task	yy	off	[Enter]	Schedule for zone number yy (default) (yy:01-04)

Safety Instructions

General

- ◆ Read all of these instructions. Save them for future reference.
- ◆ Follow all warnings and instructions marked on the device.
- ◆ This product is for indoor use only.
- ◆ Do not place the device on any unstable surface (cart, stand, table, etc.). If the device falls, serious damage will result.
- ◆ Do not use the device near water.
- ◆ Do not place the device near, or over, radiators or heat registers.
- ◆ The device cabinet is provided with slots and openings to allow for adequate ventilation. To ensure reliable operation, and to protect against overheating, these openings must never be blocked or covered.
- ◆ The device should never be placed on a soft surface (bed, sofa, rug, etc.) as this will block its ventilation openings. Likewise, the device should not be placed in a built in enclosure unless adequate ventilation has been provided.
- ◆ Never spill liquid of any kind on the device.
- ◆ Unplug the device from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
- ◆ The device should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- ◆ The device is designed for IT power distribution systems with 230V phase-to-phase voltage.
- ◆ To prevent damage to your installation it is important that all devices are properly grounded.
- ◆ The device is equipped with a 3-wire grounding type plug. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not attempt to defeat the purpose of the grounding-type plug. Always follow your local/national wiring codes.
- ◆ Do not allow anything to rest on the power cord or cables. Route the power cord and cables so that they cannot be stepped on or tripped over.

- ◆ If an extension cord is used with this device make sure that the total of the ampere ratings of all products used on this cord does not exceed the extension cord ampere rating. Make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
- ◆ To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or un-interruptible power supply (UPS).
- ◆ Position system cables and power cables carefully; Be sure that nothing rests on any cables.
- ◆ Never push objects of any kind into or through cabinet slots. They may touch dangerous voltage points or short out parts resulting in a risk of fire or electrical shock.
- ◆ Do not attempt to service the device yourself. Refer all servicing to qualified service personnel.
- ◆ If the following conditions occur, unplug the device from the wall outlet and bring it to qualified service personnel for repair.
 - ◆ The power cord or plug has become damaged or frayed.
 - ◆ Liquid has been spilled into the device.
 - ◆ The device has been exposed to rain or water.
 - ◆ The device has been dropped, or the cabinet has been damaged.
 - ◆ The device exhibits a distinct change in performance, indicating a need for service.
 - ◆ The device does not operate normally when the operating instructions are followed.
- ◆ Only adjust those controls that are covered in the operating instructions. Improper adjustment of other controls may result in damage that will require extensive work by a qualified technician to repair.
- ◆ Avoid circuit overloads. Before connecting equipment to a circuit, know the power supply's limit and never exceed it. Always review the electrical specifications of a circuit to ensure that you are not creating a dangerous condition or that one does not already exist. Circuit overloads can cause a fire and destroy equipment.

Rack Mounting

- ◆ Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- ◆ Always load the rack from the bottom up, and load the heaviest item in the rack first.
- ◆ Make sure that the rack is level and stable before extending a device from the rack.
- ◆ Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- ◆ Make sure that all equipment used on the rack – including power strips and other electrical connectors – is properly grounded.
- ◆ Ensure that proper airflow is provided to devices in the rack.
- ◆ Ensure that the operating ambient temperature of the rack environment does not exceed the maximum ambient temperature specified for the equipment by the manufacturer.
- ◆ Do not step on or stand on any device when servicing other devices in a rack.

Technical Support

International

- ◆ For online technical support – including troubleshooting, documentation, and software updates: <http://eservice.aten.com>
- ◆ For telephone support, see *Telephone Support*, page iv:

North America

Email Support		support@aten-usa.com
Online Technical Support	Troubleshooting Documentation Software Updates	http://www.aten-usa.com/support
Telephone Support		1-888-999-ATEN ext 4988

When you contact us, please have the following information ready beforehand:

- ◆ Product model number, serial number, and date of purchase.
- ◆ Your computer configuration, including operating system, revision level, expansion cards, and software.
- ◆ Any error messages displayed at the time the error occurred.
- ◆ The sequence of operations that led up to the error.
- ◆ Any other information you feel may be of help.

Specifications

Function		VM51616H
Video Input	Interface	16 × HDMI Type A Female (Black)
	Impedance	100 Ω
	Max. Distance	up to 5 m
Video Output	Interface	16 × HDMI Type A Female (Black) (Array Mode): 1 × HDMI Type A Female (Black)
	Impedance	100 Ω
	Max. Distance	up to 15 m
Video	Max. Data Rate	6.75 Gbps (2.25 Gbps per Lane)
	Max. Pixel Clock	225 MHz
	Compliance	HDMI (3D, Deep Color) HDCP 1.4 Compatible Consumer Electronics Control (CEC)
	Max. Resolution	Up to 1080p
Audio	Output	1 × Mini Stereo Jack Female (Green)
Control	RS-232	Connector: 1 × DB-9 Female (Black) Baud rate and protocol: Baud Rate: 19200, Data Bits: 8, Stop Bits: 1, Parity: No, Flow Control: No
	Ethernet	1 × RJ-45 Female
EDID Settings		EDID Mode: Default / Port1 / Remix / Customized (EDID Wizard support)
Switches	Power	1 × Rocker Switch
Power	Connector	1 × 3-Prong AC Socket
	I/P Rating	100–240VAC; 50–60Hz; 1.0A
	Consumption	AC110V; 124.5W; 584BTU/h AC220V; 121.8W; 571BTU/h Note: ◆ The measurement in Watts indicates the typical power consumption of the device with no external loading. ◆ The measurement in BTU/h indicates the power consumption of the device when it is fully loaded.
Environment	Operating Temp.	0–40°C
	Storage Temp.	-20–60°C
	Humidity	0–80% RH, Non-condensing

Function		VM51616H
Physical Properties	Housing	Metal
	Weight	7.86 kg
	Dimensions (L x W x H)	43.24 x 38.18 x 8.80 cm (17.02 × 15.03 × 3.46 in.)
	Rack Height (U Spaces)	2U
Carton Lot		1 pc

Telnet Operation

To connect to VM51616H via Telnet, follow the steps in *Connecting to the Matrix Switch via Telnet*, page 95.

Configuration Menu

Once a Telnet connection to the VM51616H is established, the device's text-based Configuration Menu comes up, with the following items:

1. H – Call up the command list for help

Command list:

IP – Set IP address

LO – Load connections from profile *nn*

PW – Change password

RI – Read what input is connected to *nn* output

RO – Read what output is connected to *nn* input

SB – Set the serial port baud rate

SS – Switch input to specified port

TI – Set timeout

VR – Software version information

Ctrl-Q – Quit

2. IP – Set network settings

◆ Set IP Address

IP

Old IP Address: 192.168.0.60

Old IP Subnet Mask: 255.255.255.0

Old Gateway Address: 192.168.0.1

New IP Address:

◆ Set Subnet Mask

IP

Old IP Address: 192.168.0.60

Old IP Subnet Mask: 255.255.255.0

Old Gateway Address: 192.168.0.1

New IP Address: 10.3.52.220

New IP Subnet Mask:

◆ **Set Gateway Address**

IP

Old IP Address: 192.168.0.60

Old IP Subnet Mask: 255.255.255.0

Old Gateway Address: 192.168.0.1

New IP Address: 10.3.52.220

New IP Subnet Mask: 255.255.254.0

New Gateway Address:

Note: After the New IP Address, Subnet Mask, and Gateway Address are entered, the Video Matrix Switch will automatically reboot to apply the new network settings.

3. LO – Load connections from profile

LO 01

Load profile 01 OK.

4. PW – Change password

PW

Old password: *****

New password:

5. RI – Read what input is connected to *nn* output

RI 01

Input port 02 04 is connected to output port 01

6. RO – Read what output is connected to *nn* input

RO 01

Output port 02 is connected to input port 01

7. SB – Set serial port baud rate

SB 96

Serial port baud rate is set to 9600

8. SS – Switch input to specified output

SS 01,03

Switch input 01 to output 03

9. TI – Set timeout

TI 30

Set 30 minute timeout

10. VR – Software version information

VR

Software version 1.0.

ATEN Warranty Policy

The warranty policy may vary by product category and region of purchase. For details, please visit ATEN's official website, select your purchase counties/regions and then go to the Support Center, or contact your local ATEN sales representative for further assistance.

© Copyright 2024 ATEN® International Co., Ltd.
Released: 2024-11-21

ATEN and the ATEN logo are registered trademarks of ATEN International Co., Ltd. All rights reserved. All other brand names and trademarks are the registered property of their respective owners.