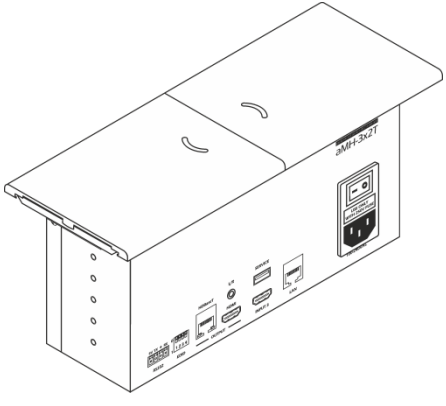
ABERMAN

PROFESSIONAL AUDIO-VIDEO SOLUTIONS

aMH-3x2T



Multifunctional Tabletop Unit with Seamless Switcher and MultiViewer

Table of Contents

1. Introduction

Aberman aMH-3x2T – is a multifunctional tabletop surface mount unit with integrated 4K HDMI seamless 4x1 switcher. The top panel is hided under the two slider doors. They could be manually slide out to give access to the unit's interfaces and control buttons. Two HDMI and one USB-C input ports placed on the top panel while the third HDMI input is accessible from the bottom side. Besides the video inputs the top panel is equipped with AC socket to power an equipment right on the desktop. The USB A port supports current up to 2A and allows mobile devices for charging. The loop through RJ45 port designed to support Network or other connections.

The Autoswitch feature detects the signal syncs on the inputs ports to switch to a newly connected source and return back to the previous input in case, if the signal on the current one is lost.

The video output enforced with scaler and supports resolutions up to 4K@60, the desired resolution could be set manually. The automatically 4K to 1080p downscale feature is also supported. The video mute function could be useful when the output should not display any content for some reason. The output video signal is mirrored on the HDMI and HDBaseT ports simultaneously.

The HDbaseT interface supports point-to-point extension up to 70 meters with maximum signal resolution up to 4K@60 4:2:0 with 10Gbps video bandwidth. It allows transmit video, audio and RS232 signals to a compatible HDBaseT Receiver.

The basic control functions are accessible by the top panel buttons, while the full control is available using the RS232 port and open API. Features like PIP sizes and positions, additional Multiview modes, EDID and HDCP management, audio source and volume settings and many other functions could be controlled by the RS232 commands.

The stereo audio output port is designed for an amplification system connection. The audio signal is de-embedded from the HDMI stream. The slider covers are made of aluminum while the unit chassis made of steel to protect the internal components. The strict and modern unit's design ensures suitable for any class or meeting room demands.

2. Features

- HDMI 1.4/2.0, HDCP 1.4/2.2, USB-C video and audio
- Seamless and Auto Switching Abilities
- Support 18 Gbps video bandwidth on HDMI
- Support signal video resolution up to 4K60 4:4:4
- Color space: RGB, YUV 4:4:4, 4:2:2, 4:2:0
- Scaled output with Mulitviewer Functions
- LPCM, Dolby Digital, DTS up to 7.1 channels for HDMI
- Output signal splitted on HDMI and HDBaseT Outputs
- HDBaseT Extension distance: 70m - 1080p@60, 40m - 4K
- Audio de-embedding feature
- EDID and HDCP management
- Open API for third party system control over RS232
- AC Euro and USB A Socket to power and charge equipment
- RJ45 loop through port for Network connection

3. Package Contents

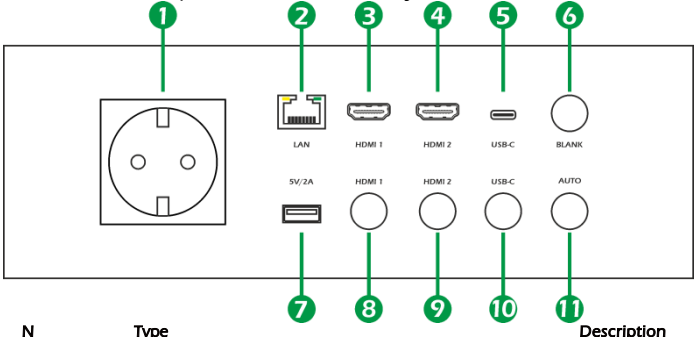
1× aMH-3x2T Tabletop Unit
1× 4-pin Phoenix Connector
1× Mounting Set (2x adapters and 6x screws)
1× Power Cable
1× User Manual

4. Warranty Information

Aberman warrants all units to be free from defects in workmanship and materials, under normal use and service, for a period of one (1) year from the date of purchasing from authorized reseller.
If a product does not work as it warranted during this period, Aberman will repair or replace the defective product or its part. Replacement products may be new or reconditioned.
Warranty ends if the product has been damaged due to abuse, misuse, neglect, accident, unusual physical or electrical stress, unauthorized modifications, tampering, alterations, or servicing other than by Aberman or its authorized centers, causes other than from ordinary use or failure to properly use the Product in the application for which said Product is intended.

5. Unit's interfaces
5.1 Top Panel

The top panel gives access to the input ports, AC and USB sockets, control buttons. Active indication of the button means this port is currently selected or function is active. By default the unit works in the Seamless Switching mode. Depending on the mode the button function may differs. The switching between the sources could be done manually by pressing the corresponding input port button or automatically.
When **AUTO** mode is activated, unit searches for the supported signal on the input ports and switches to the new one when it is found. In case of losing signal on the current input, unit will switch back to previous one.
BLANK feature allows muting the video output of the switcher. It can be used when the output should not show any content for some reasons.

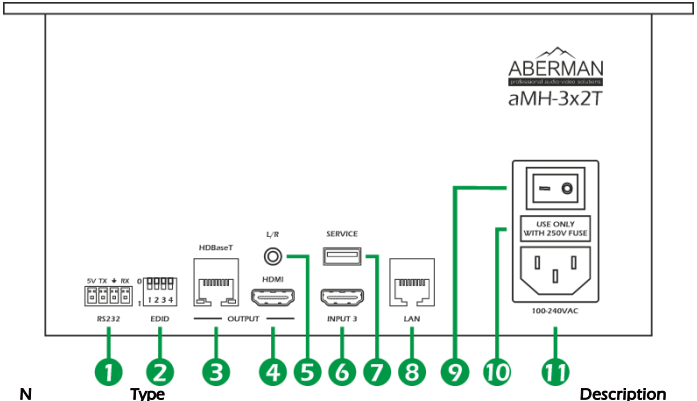


N	Type	Description
1	AC Euro Socket	AC Power Outlet - connect to power other device
2	RJ45 Socket	Loop through port – connect to Ethernet port of a device
3	HDMI Socket 19 pin	HDMI 1 input – connect to the 1st HDMI Source device
4	HDMI Socket 19 pin	HDMI 2 input – connect to the 2nd HDMI Source device
5	USB-C Socket	USB-C input – connect to an USB-C Source device
6	BLANK Button	Short press to mute/unmute video output, lit when active
7	USB A Socket	USB, 5V, 2A Charger Port – connect a mobile device
8	HDMI 1 Button	Short press to switch to HDMI 1 input, lit when active
9	HDMI 2 Button	Short press to switch to HDMI 2 input, lit when active
10	USB-C Button	Short press to switch to USB-C input, lit when active
11	AUTO Button	Short press to enable/disable autoswitch, lit when active

5.2 Buttons Functions

Button	Short Press	Long Press	Long Press +
HDMI 1	Select HDMI 1	Single Mode	
HDMI 2	Select HDMI 2	MultiView Cycle	
USB-C	Select USB-C	Show Window	Window Cycle
AUTO	AUTO	Select HDMI 3	
BLANK	BLANK	Show Resolution	Resolution Cycle

5.3 Bottom Side



N	Type	Description
1	Phoenix 4-pin	RS232 control & 5V Output – connect to control system
2	DIP switch	EDID mode settings – check the mode description below
3	RJ45 Socket	HDBaseT Output – connect CAT cable to Receiver
4	HDMI Socket 19 pin	HDMI Output – connect to Display
5	mJack 3.5mm Socket	Unbalanced Stereo Audio Output – connect to Speakers
6	HDMI Socket 19 pin	HDMI 3 input – connect to the 3nd HDMI Source device
7	USB A Socket	USB Service Port – used for firmware updates
8	RJ45 Socket	Loop through port – connect to Ethernet switch
9	AC Switch	AC Mains Switch – turn power on/off
10	AC Fuse	AC Mains 3.15A Fuse – use only with 250V fuses
11	IEC C14	AC Inlet Socket – connect to AC power line110-220V

5.4 RS232 Interface

The 4-pin Phoenix connector gives access to RS232 interface, while the 5V out pin could be used for powering external equipment. All the functions of the unit could be fully controlled by the API commands through the RS232 port. Connect PC with a terminal software or a third party control system to the Tx, Rx and ground pins.
The list and detailed description of the available commands could be found in the chapter 5.8 API Control on the page 9.
The bidirectional RS232 data extension is also supported when a compatible HDBaseT Receiver is connected.

5.5 EDID Management

When an HDMI video source is connecting to the display device it processes its EDID data. It ensures that source signal timings will match to supported modes and resolutions of the display. The EDID management of the aMH-3x2T unit allows selecting and configuring this information. The four positions DIP switch block used to set the desired mode. Upper position refers to 0, down position refers to 1. Check the table below for the details:

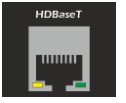
DIP	EDID Mode	DIP	EDID Mode
0 0 0 0	AUTO	1 0 0 0	1920x1080p60, 5.1Ch Audio
0 0 0 1	3840x2160@60, 2Ch Audio	1 0 0 1	1920x1080p60, 7.1Ch Audio
0 0 1 0	3840x2160@60, 5.1Ch Audio	1 0 1 0	1280x720p60, 2Ch Audio
0 0 1 1	3840x2160@60, 7.1Ch Audio	1 0 1 1	1920x1200@60, 2Ch Audio
0 1 0 0	3840x2160@30, 2Ch Audio	1 1 0 0	1600x1200@60, 2Ch Audio
0 1 0 1	3840x2160@30, 5.1Ch Audio	1 1 0 1	1360x768@60, 2Ch Audio
0 1 1 0	3840x2160@30, 7.1Ch Audio	1 1 1 0	1280x1024@60, 2Ch Audio
0 1 1 1	1920x1080p60, 2Ch Audio	1 1 1 1	1024x768@60, 2Ch Audio

AUTO EDID Mode allows using the Native Display Information and other data copied from the device connected to the units' outputs.
After the desired EDID mode is set by the DIP switch unit needs to be rebooted by power reset. After rebooting EDID information will be updated for the input ports.

NOTE: DIP switch settings are affecting on the EDID mode when it is enabled through the API (check the API EDID Settings on the page 18).

5.6 HDBaseT Interface

The HDBaseT interface is used for digital signal extension. The initial specification of the HDBaseT 1.0 is supported. It offers long-range extension for video, audio and RS232 signals to the compatible Receiver. The recommended model of Receiver is **EXT-4K-TRL-RX**.



The HDBaseT output RJ45 connector has two LEDs which are describing current statuses of the HDBaseT Link and HDCP protection for the transmitting signal.

LED	Status	Description
Orange	Constantly lit	HDBaseT interface linked, good connection
	Flashing	HDBaseT interface linked, poor connection
	Not lit	HDBaseT interface not linked, check CAT cable connection
Green	Constantly lit	HDMI signal is sending, HDCP protection enabled
	Flashing	HDMI signal is sending, no HDCP protection
	Not lit	HDMI signal is not sending

The maximum transmission distance depends on the signal resolution:

- 70 meters for Full HD 1080p@60
- 40 meters for Ultra HD 4K@30 4:4:4 or 4K@60 4:2:0

To achieve the maximum transmission distance, the highest resolution and stable signal processing it is recommended to use direct cable connections with shielded CAT6 cables and connectors, the CAT5e with patch panels and adapters can be used also, but the actual distance and supported resolutions will be lower.

NOTE: because of HDBaseT 1.0 limitations for 4K resolutions with frame rates more 30Hz, the color sub-sampling will be automatically converted to 4:2:0 on HDBaseT output to match 10Gbps bandwidth. This feature has no affect to HDMI output of the unit.

5.7 Audio De-embedding

Additionally to the video outputs, unit has separate analog audio port for stereo unbalanced signals. Audio automatically de-embedded from the HDMI digital stream. Simply connect an amplifier or any other external audio system to the 3.5mm mini Jack port of the aMH-3x2T unit. Only uncompressed 2 channels audio formats are supported.

5.8 API Protocol

Advanced Programming Interface ensures possibilities of controlling all the unit functions by the command line or an external third party control system over the RS232 connection. Available commands and their parameters depend on the API versions which could be different and rely to particular versions of firmware and hardware.

Default RS232 ports settings

Parameter	Value
Baud Rate	9600
Parity	None
Stop bit	8
Data bit	1
Flow Control	None

Thanks to using the real names of elements and functions, the ASCII API is pretty simple for understanding and easy to use. The ASCII commands are case sensitive. If a command is not recognized or contains an error – no any reply will be given by the unit.

Globally there are two types of command:

1) **GET** – used to read (request) specific parameter XXX value YYY

	Prefix	Parameter	Value	End
Sent to Unit	GET	XXX		<CR>
Reply from Unit		XXX	YYY	<CR>

2) **SET** - used to write (change) specific parameter XXX value YYY or do an action

	Prefix	Parameter	Value	End
Sent to Unit	SET	XXX	YYY	<CR>
Reply from Unit		XXX	YYY	<CR>

NOTE: each command sent to unit and each unit's reply contains **End** byte 0x0D – carriage return, (could not be shown) represent as <CR>.

Available ASCII commands list

System Parameters

These functions allow getting unit details and resetting its settings to the factory defaults.

Prefix	Parameter	Value	Description
GET			Request Parameter Value
	HELP		Show list of available commands
	MODEL TYPE		Show hardware model version
	VERSION		Show version of firmware
SET			Set Parameter Value
	RESET		Factory Defaults Reset

Examples:
Sent: GET VERSION<CR>
Received: VERSION 20221028-16<CR>

Sent: SET RESET<CR>
Received: RESET<CR>

Unit Modes

Unit could be used as Seamless Switcher (Single Window) or Multiviewer with different numbers of PIPs and available configurations.

Prefix	Parameter	Value	Description
GET SET			Request Parameter Value Set Parameter Value
	MULTIVIEW		Unit working mode
		SINGLE	Single Window (Seamless Switcher)
		PIP	Picture-In-Picture (PIP)
		PBP	Picture-By-Picture (Side-by-Side)
		3xWIN	Three Pictures Mode
		4xWIN	Four Pictures Mode

Examples:
Sent: GET MULTIVIEW<CR>
Received: MULTIVIEW SINGLE<CR>

Sent: SET MULTIVIEW 3xWIN<CR>
Received: MULTIVIEW 3xWIN<CR>

Seamless Switcher Mode

Functions below could be used only under the Seamless Switcher Mode. Auto switching function detects the signal sync on the unit's input ports, if a new connection is detected and resolution supported then unit will automatically switch to this input port. In case if the signal on the current input is lost then unit will switch to the previous input.

Prefix	Parameter	Value	Description
GET			Request Parameter Value
SET			Set Parameter Value
	AUTO SWITCH		Auto Switcher State
		ON	Auto Switcher Enabled
		OFF	Auto Switcher Disabled
	IN SOURCE		Input Source
		HDMI1	HDMI Port 1 Input
		HDMI2	HDMI Port 2 Input
		HDMI3	HDMI Port 3 Input
		USB-C	USB-C Port Input
	SHOWME		
		ON	Show Content Enabled (Video Mute Off)
		OFF	Show Content Disabled (Video Mute On)
GET			Request Parameter Value
	IN RESOLUTION		Measured Resolution of the Input Signal

Examples:
Sent: SET AUTO SWITCH ON<CR>
Received: AUTO SWITCH ON<CR>

Sent: GET IN SOURCE<CR>
Received: IN SOURCE HDMI1<CR>

Sent: GET SHOWME<CR>
Received: SHOWME ON<CR>

Sent: GET SHOWME<CR>
Received: SHOWME ON<CR>

Sent: SET SHOWME OFF<CR>
Received: SHOWME OFF<CR>

Multiviewer Modes

Switching the windows' sources

These functions could be used when unit configured in any multiview mode: PIP, PBP, 3xWIN or 4xWIN.

NOTE: if signal from an input is being route to more than one window – the picture in the windows which have already show this source may blink once. This is the normal behavior and caused by the scaler chip processing.

Prefix	Parameter	Value	Description
GET SET			Request Parameter Value Set Parameter Value
	WINDOW1 IN		Select Window 1
	WINDOW2 IN		Select Window 2
	WINDOW3 IN		Select Window 3
	WINDOW4 IN		Select Window 4
		HDMI1	Select HDMI Input Port 1
		HDMI2	Select HDMI Input Port 2
		HDMI3	Select HDMI Input Port 3
		USB-C	Select USB-C Input Port

Examples:
Sent: GET WINDOW1 IN<CR>
Received: WINDOW1 IN USB-C<CR>

Sent: SET WINDOW4 IN HDMI1<CR>
Received: WINDOW4 IN HDMI1<CR>

PIP Mode

Size and Position for PIP (Window 2)

Functions below could be used only under the PIP Mode.

Prefix	Parameter	Value	Description
GET			Request Parameter Value
SET			Set Parameter Value
	PIP POS		PIP Window Position
		LeftTop	PIP in Left Top Corner
		LeftBottom	PIP in Left Bottom Corner
		RightTop	PIP in Right Top Corner
		RightBottom	PIP in Right Bottom Corner
	PIP SIZE		Size of the Second Window in PIP
		SMALL	Small (25% of original size)
		MIDDLE	Middle (33% of original size)
		LARGE	Large (50% of original size)

Examples:
Sent: GET PIP POS<CR>
Received: PIP POS RightBottom<CR>

Sent: SET PIP SIZE MIDDLE<CR>
Received: PIP SIZE MIDDLE<CR>

PBP Mode

Windows Positions Modes and Aspects

Functions below could be used only under the PBP Mode.

Prefix	Parameter	Value	Description
GET			Request Parameter Value
SET			Set Parameter Value
	PBP MODE		Mode Settings for PBP
		1	Same Size for Window 1&2 50%+50%
		2	Window1 66% & Window2 33%
	PBP ASPECT		Select Aspect for Windows
		FULL	Scale and Fill Full Vertically
		16:9	Keep 16:9 Ratio

Examples:
Sent: GET PBP MODE<CR>
Received: PBP MODE 2<CR>

Sent: SET PBP ASPECT 16:9<CR>
Received: PBP ASPECT 16:9<CR>

3xWIN Mode

Windows Positions Modes and Aspects

Functions below could be used only under the 3x Mode.

Prefix	Parameter	Value	Description
GET			Request Parameter Value
SET			Set Parameter Value
	3xWIN MODE		Mode Settings for 3xWIN
		1	Window1 50% & Window2,3 50%
		2	Window1 66% & Window2,3 33%
	3xWIN ASPECT		Select Aspect for Windows
		FULL	Scale and Fill Full Vertically
		16:9	Keep 16:9 Ratio

Examples:
Sent: GET 3xWIN MODE<CR>
Received: 3xWIN MODE 1<CR>

Sent: SET 3xWIN MODE 2<CR>
Received: 3xWIN MODE 2<CR>

4xWIN Mode

Windows Positions Modes and Aspects

Functions below could be used only under the 4x Mode.

Prefix	Parameter	Value	Description
GET			Request Parameter Value
SET			Set Parameter Value
	4xWIN MODE		Mode Settings for 4xWIN
		1	Quad View, Same Size for Window1,2,3,4 25%
		2	Window1 66% & Window2,3,4 33%
	4xWIN ASPECT		Select Aspect for Windows
		FULL	Scale and Fill Full Vertically
		16:9	Keep 16:9 Ratio

Examples:
Sent: GET 4xWIN MODE<CR>
Received: 4xWIN MODE 2<CR>

Sent: SET 4xWIN ASPECT FULL<CR>
Received: 4xWIN ASPECT FULL<CR>

Output Signal Control

Output Resolution Settings

Unit keeps selected signal timings on its outputs regardless to inputs state. Scaler allows to manually set a desired resolution for output signals. Additionally, unit can automatically downscale 4K resolutions when display connected to the unit's output doesn't support 4K. In this case, selected resolution will be converted from 4K to 1080p, while the refresh rate will not be changed.

Prefix	Parameter	Value	Description
GET SET			Request Parameter Value Set Parameter Value
	OUT RESOLUTION		Resolution Settings
		1024x768p60	VESA XGA 60Hz
		1280x800p60	VESA WXGA 60Hz
		1360x768p60	VESA FWXGA 60Hz
		1920x1200p60RB	VESA WUXGA Reduced Blacking
		1280x720p50	CE 720p50
		1280x720p60	CE 720p60
		1920x1080p50	CE 1080p50
		1920x1080p60	CE 1080p60
		3840x2160p25	CE 4K25
		3840x2160p30	CE 4K30
		3840x2160p50	CE 4K50
		3840x2160p60	CE 4K60
		4096x2160p50	DCI 4K50
		4096x2160p60	DCI 4K60
	4K-AUTO		Downscale Function
		ON	Enable
		OFF	Disable

Examples:
Sent: SET OUT RESOLUTION 3840x2160p60<CR>
Received: OUT RESOLUTION 3840x2160p60<CR>

Sent: GET OUT 4K-AUTO<CR>
Received: OUT 4K-AUTO OFF<CR>

Video and Graphic Content Processing

Depends on the type of the video content the output signal might

needs to be scaled more precise to keep all the small details clean or processed faster to keep moving objects on video smooth. IT Content (ITC) feature allows setting which way picture scaling should be processed.

Prefix	Parameter	Value	Description
GET SET			Request Parameter Value Set Parameter Value
	OUT ITC		Picture Scaling Mode
		ON	for PC Graphics
		OFF	for Video Content

Examples:
Sent: GET OUT ITC<CR>
Received: OUT ITC OFF<CR>

Sent: SET OUT ITC ON<CR>
Received: OUT ITC ON<CR>

No Source Signal Handling

When signal on the unit's input lost or disappeared by some reason and the Auto switching feature is disabled, unit is still outputs video signal with selected resolution. Video Keep Alive (VKA) feature allows selecting the handling for such situations.

Prefix	Parameter	Value	Description
GET SET			Request Parameter Value Set Parameter Value
	VKA		No Source Video
		BLACKSCREEN	Show Black field
		BLUESCREEN	Show Blue field

Examples:
Sent: GET OUT VKA<CR>
Received: OUT ITC OFF<CR>

Sent: SET OUT VKA BLUESCREEN<CR>
Received: OUT VKA BLUESCREEN<CR>

HDCP Output Control

Unit can be used as HDCP encoding version converter. This feature could be highly required for the complex system, where many types of source and sink devices with HDMI interfaces may support different HDCP revisions. The output HDCP settings could be made regardless to input HDCP signal state. Simply set the desired mode to provide stability for the whole system.

Prefix	Parameter	Value	Description
GET SET			Request Parameter Value Set Parameter Value
	OUT HDCP		HDCP Encoding
		FORCE-1.4	Enable HDCP 1.4
		FORCE-2.2	Enable HDCP 2.2
		FORCE-OFF	Disable HDCP

Examples:
Sent: GET OUT HDCP<CR>
Received: OUT HDCP FORCE-OFF<CR>

Sent: SET OUT HDCP FORCE-2.2<CR>
Received: OUT HDCP FORCE-2.2<CR>

EDID Settings

There are two ways for setting the EDID mode for the unit's inputs. First one is done by the DIP switches and the second by the API commands. Use Follow Switch command to setup desired control way.
When EDID mode is controlled through the API, user can select which native resolution should be used on the unit's inputs by the corresponding command.

Prefix	Parameter	Value	Description
GET SET			Request Parameter Value Set Parameter Value
	FOLLOW SWITCH		EDID Control Source
		ON	Controlled by DIP Switch
		OFF	Controlled by API Command
	IN EDIDMODE		Input EDID Settings
		1024x768	1024x768@60
		1280x1024	1280x1024@60
		1360x768	1360x768@60
		1440x900	1440x900@60
		1600x1200	1600x1200@60
		1680x1050	1680x1050@60
		1920x1200	1920x1200@60
		720p	1280x720p60 2Ch Audio
		1080p60-2.0	1920x1080p60 2Ch Audio
		1080p60-5.1	1920x1080p60 5.1Ch Audio
		1080p60-7.1	1920x1080p60 7.1Ch Audio
		4K30-2.0	3840x2160@30 2Ch Audio
		4K30-5.1	3840x2160@30 5.1Ch Audio
		4K30-7.1	3840x2160@30 7.1Ch Audio
		4K60-2.0	3840x2160@60 2Ch Audio
		4K60-5.1	3840x2160@60 5.1Ch Audio
		4K60-7.1	3840x2160@60 7.1Ch Audio
		AUTO	Based on Connected Displays

Examples:
Sent: GET FOLLOW SWITCH<CR>
Received: FOLLOW SWITCH ON<CR>

Sent: SET FOLLOW SWITCH OFF<CR>
Received: FOLLOW SWITCH OFF<CR>

Sent: SET IN EDIDMODE 4K30-5.1<CR>
Received: IN EDIDMODE 4K30-5.1<CR>

Audio Control

System allows controlling several audio parameters including audio source selection, gain volume settings and muting function. The volume control could be done only for LPCM formats. All these settings affect to audio content which is outputting embedded into HDMI stream and de-embedded on the analog stereo audio mJack port.

Prefix	Parameter	Value	Description
GET			Request Parameter Value
SET			Set Parameter Value
	AUDIO SOURCE		Selecting the Audio Source for Output
		HDMI1	Use HDMI 1 Port
		HDMI2	Use HDMI 2 Port
		HDMI3	Use HDMI 3 Port
		USB-C	Use USB-C Port
		WIN1	Use Windows 1
	AUDIO-MUTE		
		ON	Mute Audio
		OFF	Unmute Audio
	AUDIO VOL		Gain Value
		N	Range for N (0 .. 100)
	AUDIO VOL-		Decrease Gain, Step -1
	AUDIO VOL+		Increase Gain, Step +1

Examples:
Sent: GET AUDIO SOURCE<CR>
Received: AUDIO SOURCE HDMI2<CR>

Sent: SET AUDIO SOURCE HDMI1<CR>
Received: AUDIO SOURCE HDMI1<CR>

Sent: SET AUDIO VOL 50<CR>
Received: AUDIO VOL 50<CR>

Sent: SET AUDIO VOL-<CR>
Received: AUDIO VOL 49<CR>

Sent: SET AUDIO-MUTE ON<CR>
Received: AUDIO-MUTE ON<CR>

6. Best Practice

Aberman engineers design products at the highest quality standards. To

get the best results from our products, please read this manual carefully. We recommend using the best quality connectors, cables, and adapters. Consider the points below when you choose accessories and position equipment.

For best results with HDMI/DVI, use good quality cables up to 5 meters long for 4K and up to 15 meters for 1080p, or shorter if you are using any connection adapters. If you need to place your equipment more than 15 meters apart, we recommend using a signal extender. See Aberman Smart Extension product line of signal extenders to find correct one. Use only graded Speed HDMI cables.

In industrial environments, use shielded CAT cables (STP, FTP, F/UTP or S/FTP) with digital extenders. To achieve best performance and maximum distance use appropriate fiber optical types (Multi or Single Mode) and grades for optical extenders.

7. Safety Instructions

WARNING: To reduce the risk of fire or electric shock, do not expose this device to rain or moisture. Do not use this device near water. Clean only with a dry cloth.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the device. This unit must be connected to an earthed mains socket outlet with the supplied cable. The AC wall outlet should be installed near to the unit and be easily accessible.

If using extenders which run a long distance, the protective earth circuit of the socket should be verified by a skilled person to ensure equipotential earth bonding. Do not use unit on objects or installations where power lines have grounding and/or different phase issues.

Unplug units during lightning storms or when unused for long periods of time.

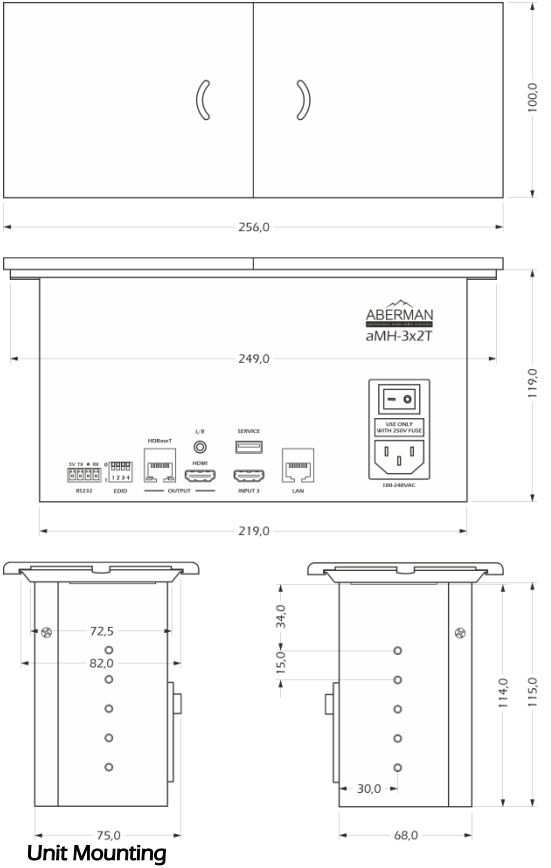
Do not install unit near any heat sources such as radiators, heat registers, stoves, or devices (including amplifiers) that produce heat. Do not block any ventilation openings. This unit uses active cooling with fans. Do not install unit in dusty and/or dirty places. Use professional equipment racks with air condition and filters.

8. Specifications

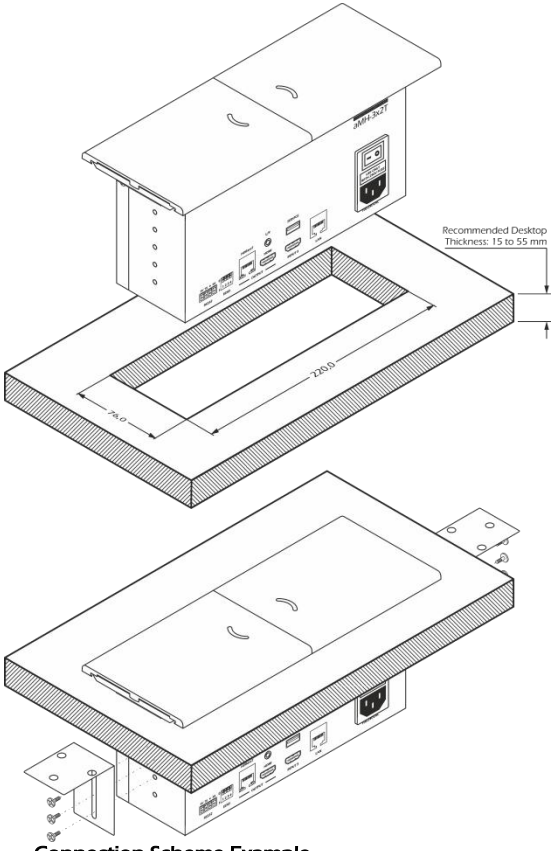
SKU	aMH-3x2T

Type	Table Top Unit
HDMI Compliance	HDMI1.4/2.0
HDCP Compliance	HDCP1.4/2.2
Video Bandwidth	18Gbps
Resolutions supported	480p, 576p, 720p, 1080i, 1080p, 3840x2160, 4096x2160
Color Scales, Sub Sampling	RGB, YUV, 4:4:4, 4:2:2, 4:2:0
Color Depth Resolution	8 , 10, 12-bit
HDMI Audio Formats	LPCM up to 7.1, Dolby Digital, Dolby TrueHD, Dolby Digital Plus, DTS, DTS-ES, DTS HD Master, DTS HD-HRA, DTS-X
USB-C	Video & Audio, LPCM 2.0 only
HDBaseT Compliance	Valens Gen1, VS010TX
HDBaseT Bandwidth	10.2Gbps
Transmission Distance	up to 70 meters for 1080p60, up to 40 meters for 4K60
Inputs	
HDMI	3x HDMI up to 3840x2160@60Hz, 4:4:4, HDMI type A ,19-pin
USB-C	1x USB-C up to 3840x2160@60Hz, 4:4:4, USB-C Connector
Network Pass Through	1x RJ45 Connector
Outputs	
Video	1x HDMI up to 3840x2160@60Hz, 4:4:4, HDMI type A ,19-pin
Extension Link	1x HDBaseT, RJ45 Connector
Analog Audio	1x Unbalance Stereo Audio, mJack 3.5 mm connector
Control	
Local	Top Panel Buttons with active LED Status
EDID Settings	1x DIP Switch
Remote	1x RS232, Open API, Phoenix 4-pin Connector
Firmware update port	1x USB, USB A Connector
Power and Charging	
AC Socket	1x AC Euro Socket
USB	1x USB, 5V/2A, USB A Connector
DC Out	1x 3.3-5V/2A, Phoenix 4-pin Connector
Electrically	
Power Supply	AC 110-240V, 50-60Hz,
AC Inlet	IEC C14, Fused, 3.15A
Power Consumption	25W
ESD Protection	±8kV air-gap, ±4kV contact (human body model discharge)
Mechanical	
Cover Slide Doors Material	Aluminum Alloy
Body Enclosure Material	Metal
Body Finished colour	Black
Dimension (LxWxH)	256x100x125mm (with closed doors)
Cutout Size (LxW)	222x76mm (minimal)
Weight (each unit)	0,16 kg
Environments	
Operating Temperature	0°C ~ 40°C
Storage Temperature	-20°C ~ 60°C
Relative Humidity	20%~90% RH (non-condensing)

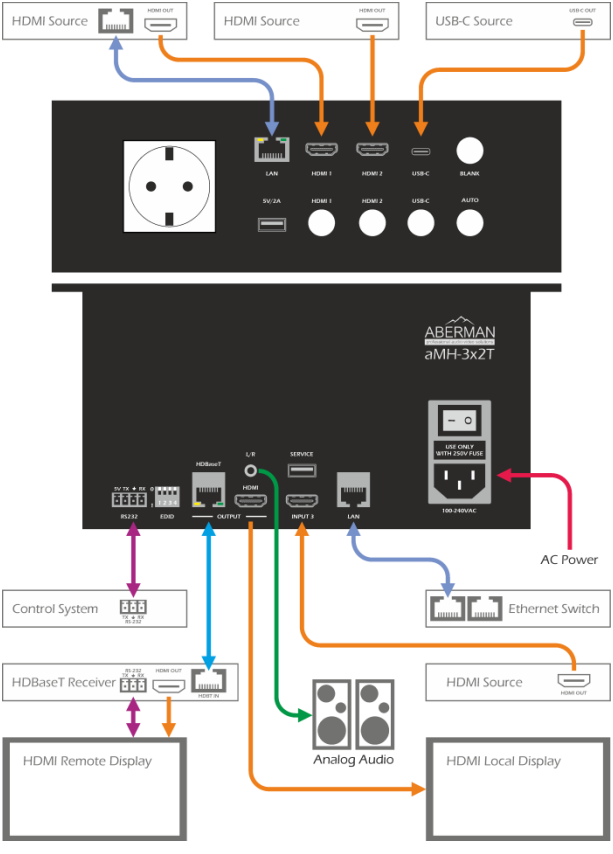
9. Sizes and Dimensions



10. Unit Mounting



11. Connection Scheme Example


HDMI Source
HDMI OUT
HDMI Source
HDMI OUT
USB-C Source
USB-C OUT
LAN
HDMI 1
HDMI 2
USB-C
BLANK
5V/2A
HDMI 1
HDMI 2
USB-C
AUTO
ABERMAN
aMH-3x2T
USE ONLY WITH 250V FUSE
100-240VAC
AC Power
HDBaseT
I/R
SERVICE
HDMI
5V TX RX
RS232
EDID
OUTPUT
INPUT 3
LAN
Control System
Ethernet Switch
HDBaseT Receiver
HDMI OUT
HDBT IN
HDMI Source
HDMI OUT
Analog Audio
HDMI Remote Display
HDMI Local Display