

# HDMI Video Wall Extender over IP



Manual DS-55300 • DS-55301

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# 1. Introduction

Thanks for purchasing HDMI Video Wall Extender over IP. Please read this manual and retain for future reference.

### 1.1 Features

- Only one CAT5e/6 or Fiber Optic cable required
- Adoptive visually lossless compression algorithm
- HDMI Digital Audio/Video extended distance up to 100 meters (330 feet) between Transmitter and Receiver (point-to-point); up to 30 kilometers between Transmitter and Receiver over Fiber Optic cabling (based on the quality of Fiber Optic and Transceiver modules). Supports Full HD video 1080P Deep Color and PC resolution 1920x1200@60Hz signals, over CAT.5e/6 cabling
- Support Crosspoint & Daisy Chain connection for both Transmitter and Receiver units
- Mapping different TX source, even some grouping loop for each receiver by LINK ID
- Video wall function supported, easily configurable through web UI
- Built-in Ethernet switch, cost-effective with high flexibility for expansion
- Wall-mount housing design for easy and robust installation
- Automatic Display Mode Detection
- Supports both Interlaced and Progressive Display Modes
- Supports DDC/DDC2B, Hot-Plug Detection (HPD) and HDCP compliant functions
- Supports Default EDID and EDID copy function for optimal PC-to-Screen performance Infrared Remote (IR) signal control communication Supports Serial (RS-232) bi-directional

# 1.2 Package Contents

- 1. HDMI Extender Transmitter (TX) x 1
- 2. HDMI Extender Receiver (RX) x 1
- 3. Power Supply DC 5V / 2A (TX & RX pair units) or optional 1 (single unit)
- 4. IR cables (IR blaster cable x 1; IR receiver cable x 1)
- 5. User's Manual x 1

# 2. Specifications

		Transmitter	Receiver			
Consola Connectors	HDMI Output	HDMI (Female)	HDMI (Female)			
console connectors	RS-232 Control Port	RJ-45	RJ-45			
PC Connectors	DisplayPort Input	HDMI (Female)	N/A			
Extension Port	RJ-45	Full HD Video 1080p / Audio	Extension + IR + RS232			
RJ-45 Ports		3 (Line In or Line Out)	3 (Line In or Line Out)			
Fiber Link		1	1			
Cascaded-Chainable		up to 10 layers	up to 10 layers			
Audio		Supports High Definition Aud	io, Surround Sound			
IR		Uni-directional				
RS-232		Bi-directional				
	Local Power	Red LED				
LED Indicators	Local Link	Green LED				
	Remote Power	Red LED				
Remote Link		Green LED				
DDC supported		DDC, DDC2, DDC2B				
Extension Cable Type &	Length	Cat.5e / Cat.6, max. length: 100m, Fiber max. 30km				
Video resolution		<u>1920x1080@60Hz, Full HD 1080p, 48-bit</u>				
Wide screen supported		Yes				
OS compatibility		OS Independent				
Power supply		External DC 5V / 2A power adapter				
Dimensions (L x W x H)		155 x 90 x 28.5 mm				
Weight		430 g	425 g			
Housing material		Metal				
Operating temperature		0 - 50°C				
Humidity		0% - 80% RH				

# 3. Detail Picture

# Transmitter (TX):



- 1. **HDMI IN**: Connect to a HDMI source by using HDMI cable
- 2. **HDMI OUT**: Local HDMI output, connect to a display monitor by using HDMI cable
- 3. **IR**: IR blaster port, connect the IR blaster cable to this port (please refer to appendix 2)
- 4. LINK ID: ID selector, select AV Source (Max. 16 AV sources with ID 0 F per unit).
- 5. **RS-232 Port**: Connect a RS-232 to RJ-45 adapter (optional) to this port (please refer to appendix 3)
- 6. **Power LED** (Solid Red when power present)
- 7. Ready LED (Solid Green when link present)
- 8. **Reset Button** (push for device reset, please refer to the appendix 1)
- 9. Power Connector: Connected to Power Adapter DC 5V/2A
- 10. LINE Port: Connect to the LINE port of TX's or RX's or controlling system.
- 11. **Fiber in/out**: Connect to a SFP fiber module if user needs to extend signal for longer distance.
- 12. **Fiber link**: Solid green when device is powered on and ready and LED will turn blinking when data is being transmitted between two units via fiber optic cable.

# **Receiver (RX):**



- 1. **HDMI OUT**: Connect to a display monitor by using HDMI cable
- 2. **IR**: IR receiver port, connect the IR receiver cable to this port (please refer to appendix 2)
- LINK ID: ID selector, select AV Source (Max. 16 AV sources with ID 0 – F per unit).
- 4. **RS-232 Port**: Connect a RS-232 to RJ-45 adapter (optional) to this port (please refer to appendix 3)
- 5. Power LED (Solid Red when power present)
- 6. Ready LED (Solid Green when link present)
- 7. **Reset Button** (push for device reset, please refer to the appendix 1)
- 8. **Power Connector**: Connect the included 5V DC power supply to this receptacle.
- 9. LINE Port: Connect to the LINE port of TX's or RX's for signal extension.
- 10. Fiber: Connect to a SFP fiber module if user needs to extend longer distance.
- 11. **Fiber Link**: Solid green when device is powered on and ready and LED will turn blinking when data is being transmitted between two units via fiber optic cable.

# 4. Connection Diagram

# Broadcasting Model with one single source



# Broadcasting Model with multi source

The same ID



For multiple AV sources, adjust each RX's LINK ID to be same as the one of TX connected to the AV source which you want to display. And then push "RESET" button.



# Video Wall Model with single source



# Video Wall Model with multi source



# 5. Control system setup Preparation

Connect control PC to any one of the TX or RX as below, the whole broadcast or video wall system is an intranet system, hence the control PC just link to any one of the TX or TX, then the control PC can control the whole system.



#### **TCP/IP Setting**

Configure the control PC 's IP address setting as below: **IP address:** 169. 254. 10. 2 **Subnet mask:** 255. 255. 0. 0

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You can get IP settings assigned this capability. Otherwise, you ne for the appropriate IP settings.	automatically if you eed to ask your netv	r netw vork ad	ork su Iminist	pports trator
🔘 Obtain an IP address autom	atically			
• Use the following IP address				
IP address:	169.254.	10 .	2	
Subnet mask:	255 . 255 .	ο.	0	
Default gateway:				
Obtain DNS server address	automatically			
Use the following DNS serve	r addresses:			
Preferred DNS server:				
Alternate DNS server:				
2010/12/2010/06/2010/06/2010				

# "Bonjour SDK" Installation



Enable "Bonjour", open the IE of the controlling PC, Route: View -> Explore Bars -> Bonjour

Quick labs       Cirl Q         Explorer Bars       Favorites         Cont       Favorites         Go To       Favorites         Stop       Esc         Refresh       F5         Zoom       Favorites         Text Size       Favorites         Source       Favorites         Security Report       Imenational Website Address         Website Address       F11         Unit Screen       F11	ites To	olbars	,	net E	xplorer canno	ot di								• 🔊			Page -	Safety -	Tools •	•
If Per Go To   Stop   Esc   Feds   Com   Text Size   Encoding   Style   Syle   Caret Browsing   F7   Source   Security Report   International Webtite Address   Webpage Privacy Policy   Full Screen	out I Ex	plorer Bars	Ctri+Q		Favorites History	Ctrl+Shi	ift+I ft+H													
Zoom          • Step 1: Choose Wall Size (Reset Position Layout)          Text Size          • Decoding          Style          • Occurre         Source          • Occurre         Security Report          • Occurre         International Website Address          • Occurre         Webpage Privacy Policy          • Full Screen          Full Screen           • Full	TP c Go TP c Str TP c Re	o To op fresh	Esc F5	~	Feeds Bonjour	Ctrl+Sh	ift+J	Setup												
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# Video Wall setup procedure

For every Video Wall setup, just only three key points as below need to be clarified.

**Monitor size detail**, including monitor outside width **(OW)** and outside height **(OH)**, inner viewable

Width **(VW)** and viewable height **(VH)**, this is for the Gap Compensation function. The OW, OH, VW,

VH is a number or value with the unit based on every 0.1mm. For example, if the outside width is

56.5cm, then 56.5cm = 565mm = 5650 unit.



**Video Wall size**, such as matrix 1x1, 2x2, 3x3, 4x4...etc, or even the rectangle 1x2, 1x3, 2x3, 2x4, 3x2, 3x4,...etc.



3 x 3 Matrix

2 x 3 Rectangle







**Monitor Position,** each monitor has its own row number and column number which represent its "Monitor Position" in its belonging Video Wall Group. Besides, these row and column number are started from 0, users can refer to below examples:



# Example 1, 2 X 2 Video Wall setting, please follow below setting procedures:

Here we use monitor, Acer P246HL, as our model type.

1. Open the IE of the controlling PC. If the link is well, you will find the starting Page as below

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2. Double click any of the RX, then you can find the below chart, then click "Video Wall Setup"



3. Mark the "Show OSD" on the bottom, then you can see the OSD number showed on each display monitor, please be noted the OSD number is generated at random, not in order.



4. After then, we have to do the video wall setting one by one. There are four monitors in a 2x2 video wall group, which are the upper-left, upper-right, lower left and the lower right, user can find below structure chart:



5. We first set the upper-left monitor: Measure the Monitor outside width (OW) and outside height (OH), inner viewable width (VW) and viewable height (VH), here we use monitor, model: Acer P246HL as example, the OW and OH of P246HL are 56.5cm and 33.5cm, VW and VH of P246HL are 53.5cm and 30.0cm, then we can have the below detail:

OW: 56.5cm = 565mm = 5650 unit (the unit is 0.1mm) OH: 33.5cm = 335mm = 3350 unit VW: 53.5cm = 535mm = 5350 unit VH: 30.0cm = 300mm = 3000 unit Key in the detail in the block" Bezel and Gap Compensation" as below:



Then finish the next block "Wall Size and Position Layout" as below:



Finally, click the arrow and choose Clients: 0, then click "apply", Client: 0 represent the OSD number of the monitor.

:169.254.8.0	*	Apply
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6. Now we go to the monitor upper-right, key in the monitor detail in the block" Bezel and Gap Compensation" as below just like before:



Next is the block "Wall Size and Position Layout", please follow below chart.



Click the arrow and choose Clients: 2, then click "apply", Client: 2 represent the OSD number of the monitor.

#### 7. The monitor lower-left:



# Wall Size and Position Layout





8. The last one, monitor lower-right:



#### -Wall Size and Position Layout-



# Example 2, 3 X 3 Video Wall with single HDMI source setting, please follow below setting procedures:

Before begin to the setting, we have to know the 3 X 3 video wall structure and each monitor's position in the video wall group as below chart, and then we will do each monitor's setting one by one.





	Column 0	Column 1	Column 2	
	4	$\checkmark$	$\checkmark$	
	Upper-Left	Upper-Middle	Upper-Right	IT
Row 0 ->	Row: 0	Row: 0	Row: 0	
10000	Column: 0	Column: 1	Column: 2	Ś
	Monitor Position: (0,0)	Monitor Position: (0,1)	Monitor Position: (0,2)	rtic
	Middle-Left	Middle-Middle	Middle-Right	alN
	Row: 1	Row: 1	Row: 1	lon
Row 1 →	Column: 0	Column: 1	Column: 2	lor
	Monitor Position: (1,0)	Monitor Position: (1,1)	Monitor Position: (1,2)	ŝ
	LowerLeft	Lower-Middle	Lower-Right	Int
Row 2 ->	Row: 2	Row: 2	Row: 2	ι
100 2 7	Column: 0	Column: 1	Column: 2	
	Monitor Position: (2,0)	Monitor Position: (2,1)	Monitor Position: (2,2)	ļ
				•

— Horizontal Monitor Count: 3 –

Please follow the below procedure step by step:

1. Open IE of the controlling system, and key in http://ast-gateway0000.local/, you will find the below picture:

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2. Double click any one of the "RX", then click" Video Wall Setup"



3. Mark the "Show OSD" on the bottom, then you can see the OSD number showed on each display monitor, please be noted the OSD number is generated at random, not in sequence.



4. Then we first go to the Upper-Left monitor with OSD number:7



Please be noted the OW, OH, VW, VH value is always the same for the following each one setting.

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Column Posit	ion:	
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Click "Apply" after all the number setting is done.

5. The Upper-Middle monitor with OSD number 2:



6. The Upper-Right monitor with OSD number: 6



7. The Middle-Left monitor with OSD number: 8



8. The Middle-Middle monitor with OSD number: 0

3	Herizontal Monitor Count
Horizontal Monitor Count:	
3 💙	
Row Position:	
1	onitor C
Column Position:	
1	
Single Host Mode	UNIT: Panel
ply To:	
169.254.5.212	Apply
Show OSD	124

9. The Middle-Right monitor with OSD number: 3



10. The Lower-Left monitor with OSD number: 5



11. The Lower-Middle monitor with OSD number: 1



12. Finally, the Lower-Right with OSD number: 4



# Example 3, 2 X 4 Video Wall with 3 HDMI source setting, please follow below setting procedures:

A 2 x 4 video wall group can be shaped with different combination, such as below examples.



#### Example 1,

2X4 video wall is shaped from 1 of 2X2 video wall, and 2 of 1X2 video wall.



### Example 2,

2X4 video wall is shaped from 1 of 1X4 video wall, and 2 of 1X2 video wall.



#### Example 3,

2X4 video wall is shaped from 2 of 1X3 video wall, and 2 of 1X1 video wall.



#### Example 4,

2X4 video wall is shaped from 8 of 1X1 video wall

Here we take below example 2 and show you how to set a 2X4 video wall shaped from 1 of 1X4 video wall and 2 of 1X2 video wall. We first separate the 2X4 video wall into its basic component.





Group 1: 1X4 Video Wall



Group 2: 1X2 Video Wall



Group 3: 1X2 Video Wall

We now have 3 video groups: group 1, group 2, and group 3, we just set each video group one by one. Before we begin the set up, we have to know the hardware installation and connection please follow below hardware installation.



As below diagram showed, the video wall group 1 displays the video from HDMI source 1, and the group 2 displays the video from source 2, and the group 3 displays the video from source 3. The key matter is user have to turn the LINK ID to let each Receiver's(RX) ID number is the same as the one of the Transmitter (TX) of the HDMI source. User just follow the rule that the LINK ID's number must be the same as long as they are in the same video wall group, no matter Transmitter(TX) or Receiver(RX), just turn the "LINK ID" and push reset.



After all the hardware is settle down, then we can begin to set up the video wall, please follow the below procedure step by step:

1. Open the IE of the control system, and key in http://ast-gateway0000.local/, you will find the below picture:



2. Double click any of the RX, and click "Video Wall Setup"



3. Mark the "Show OSD" on the bottom, then you can see the OSD number showed on each display monitor, please be noted the OSD number is generated at random, not in order.

All	*	Apply
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4. Group 1 video wall setting: the Video Wall setting for multi-source is proceeding group by group. Let's start from group 1, the group one is a 1X4 video wall, we can have its structure and each monitor's position as below chart:



# Monitor 1 of group 1 setting:

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#### Monitor 2 of group 1setting:

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## Monitor 3 of group 1 setting:

Show OSD

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## Monitor 1 of group 2 setting:

Monitor 2 of group 2 setting:

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Single Host Mode	Engle Hest Mode
Apply To:	Apply Te:
3:169.254.5.250 × Apply	2:186.254.3.76 🗶 Apply
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6. Group 3 video wall setting:



Monitor 1 of group 3 setting:

Monitor 2 of group 3 setting:

Wall Size and Position Layout			Wall Size and Position Layout
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Herizontal Me	eniter Count:		Herizontal Meniter Count:
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Show 050	S1		🕐 Show OSD

## **Appendix 1: Reset button**

• Short press:

Short press is for device reset when "LINK ID: changed, user just push "RESET" button when turning the LINK ID for changing display source.

• Long Press:

Long press is for device default function, if user wants to make whole device back to default, please press the "RESET" button longer, and release when both Power LED (red) and Ready LED (green) lighted.

# **Appendix 2: IR Connection**

- Connect the IR blaster cable to the TX's IR connector.
- Connect the IR receiver cable to the RX's IR connector.
- Put the remote control pointed to the IR receiver eye.
- Put the IR Transmitter Blaster eye pointed to the IR sensor of the AV source which is intended to be controlled by the remote control.



Connect the IR blaster cable to TX

## Appendix 3: RS-232 connection

- Connect the device (e.g. PC, projector...etc.) to the RS-232 port of RX by a RS-232 to RJ-45 adapter.
- Connect the control system to the RS-232 port of TX by a RS-232 to RJ-45 adapter.

- Operating the control system.
- The RS-232 connection is bi-directional, the device and the control system are interchangeable and Control System is able to control the device at TX or RX.
- Please refer to below RS-232 pin assignment chart.



Hinweis: Bei falscher Installation und unsachgemäßem Gebrauch im Wohnbereich kann das Gerät Störungen bei Rundfunkgeräten und anderen elektronischen Geräten verursachen. Ein sachgemäßer Gebrauch liegt vor, wenn das Gerät, soweit durchführbar, mit geschirmten Anschlusskabeln betrieben wird (bei Netzwerkprodukten zusätzlich geschirmter Kabel der Kategorie 5e und höher). Das Gerät wurde getestet und liegt innerhalb der Grenzen für Computerzubehör der Klasse A gemäß den Anforderungen nach EN 55022. Warnung: Dieses Produkt entspricht der Prüfklasse A –es kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen. Konformitätserklärung: Das Gerät erfüllt die EMV-Anforderungen nach EN 55022 Klasse A für ITE und EN 55024. Geräte mit externer oder eingebauter Spannungsversorgung erfüllen weiterhin die Anforderungen nach EN 61000-3-2 und EN 61000-3-3. Damit sind die grundlegenden Schutzanforderungen der EMV-Richtlinie 2004/108/EC erfüllt. Die CE-Konformität wurde nachgewiesen. Die entsprechenden Erklärungen sind beim Hersteller hinterlegt.

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