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SIMPLE, EASY

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HDMI™ v1.3 over Single CAT5E/6 Distribution Series

USER'S MANUAL

AT-HD50SS

AT-HD50RSL

AT-HDRS

AT-HD15SRS

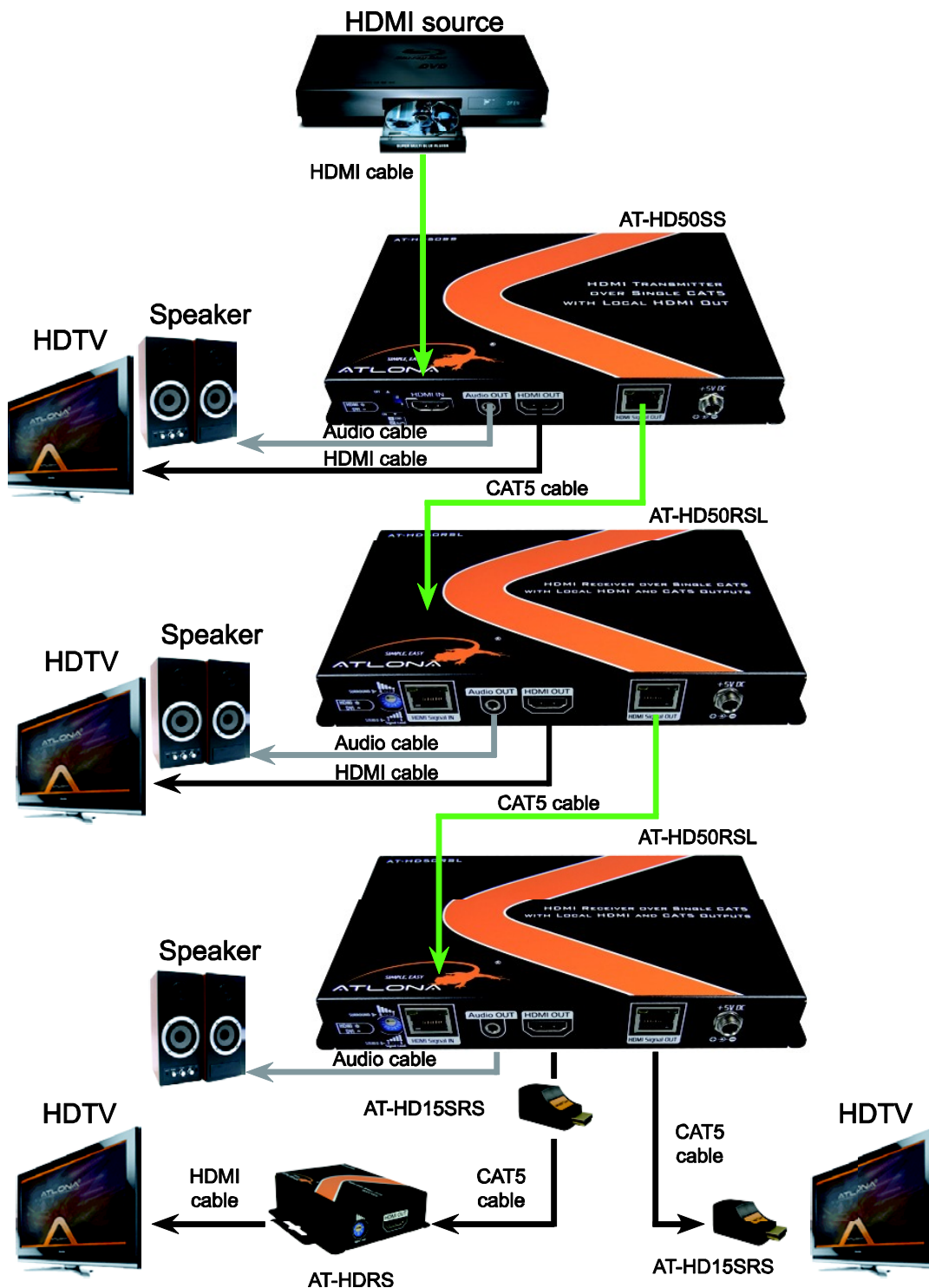Rev.1007

TABLE OF CONTENTS

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INTRODUCTION

The Atlona HDMI over Single CAT5 Distribution Series provides the most flexible solution by which the high definition video and high quality audio can be transmitted to different locations over a long distance. The devices are cascadable, allowing you to extend HDMI/DVI compliant displays almost anywhere.

Note: *The AT-HD50SS is only a sender/transmitter unit and requires a receiver unit to work. Compatible receives are: AT-HDRS (CAT5/6 in and HDMI out) or AT-HD50RSL (Cat5/6 input, CAT5/6 loop-out for further cascading, HDMI output)*

Diagram:

FEATURES

★ Silicon Image Chip-Sets allow 99.99% compatibility with all the AV gear (we only use Best)

★ HDMI 1.3c compliant

★ HDCP compliant

★ Regenerates the HDMI signal, so there is no signal loss

★ Supports Analog and Digital Audio

★ Supports default HDMI EDID and has the ability to learn the EDID of displays

★ Extends up to 60m (200ft) (720p / 1080i) of output CAT5/6 cable

★ Extends up to 40m (130ft) (1080p) of output CAT5/6 cable

★ Minimizes the cable skew by adjustable 8-level equalization control

★ Pure unaltered uncompressed 7.1ch digital HDMI over CAT5/6 cable transmission

★ Allows cascading

★ Compatible with different receiver options: AT-HDRS and AT-HD50RSL

Note: Atlona recommends to use Cat6 or Cat5e cables for better performance. Atlona recommends to always use "Type B" termination for the Cat6 or Cat5 Cables to extend the distance.

PACKAGE CONTENTS

AT-HD50SS

★ 1x AT-HD50SS unit

★ 1x 5V DC locking power supply unit (universal)

★ 1x User's manual

AT-HD50RSL

★ 1x AT-HD50RSL unit

★ 1x 5V DC locking power supply unit (universal)

★ 1x User's manual

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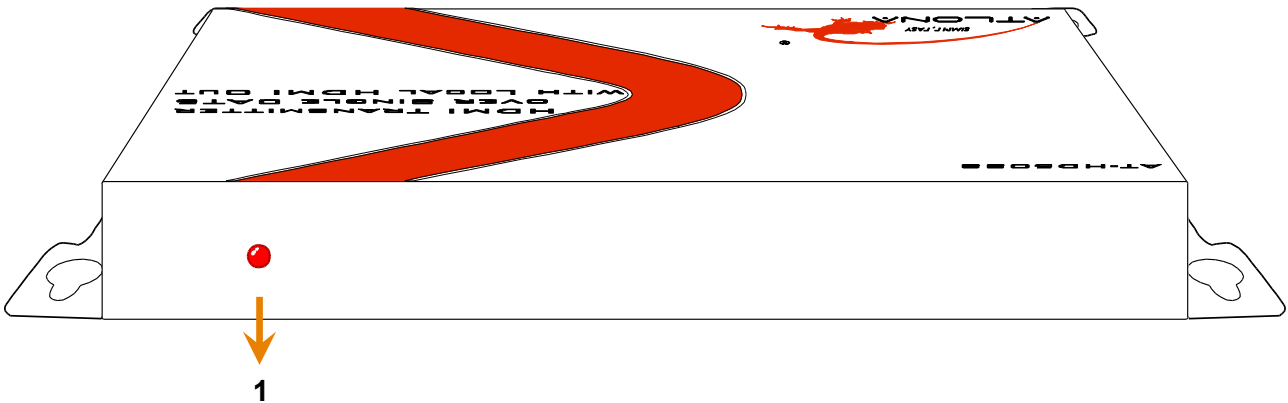WWW.ATLONA.COM

SPECIFICATIONS

Model Name		AT-HD50SS	AT-HD50RSL
Technical			
Role of usage		Sender (TX)	Sender / Receiver (TRX)
HDMI compliance		HDMI 1.3c	
HDCP compliance		Yes	
Video bandwidth		Single-link 225MHz (6.75Gbps)	
Video support		480i / 480p / 720p / 1080i / 1080p60 24/30/36-bit color	
HDMI transmission (24-bit)		Full HD (1080p) − 40m (130ft) [CAT5e] / 50m (165ft) [CAT6] HD (720p/1080i) − 50m (165ft) [CAT5e] / 60m (200ft) [CAT6]	
Audio support		Surround sound (up to 7.1ch) or stereo digital audio	
Equalization		None	8-level digital control
Input TMDS signal		1.2 Volts (peak-to-peak)	
Input DDC signal		5 Volts (peak-to-peak, TTL)	
ESD protection		[1] Human body — ±19kV (air-gap discharge) & ±12kV (contact discharge) [2] Core chipset — ±8kV	
PCB stack-up		4-layer board (impedance control — differential 100Ω; single 50Ω)	
Input		1 x HDMI	1 x RJ-45
Output		1 x HDMI 1 x RJ45 1 x 3.5mm audio socket	1 x HDMI 1 x RJ-45 1 x 3.5mm audio socket
HDMI connector		Type A (19-pin female)	
RJ45 connector		WE/SS 8P8C with 2 LED indicators	
DIP switch		2-pin for EDID & audio/video setting	None
Rotary control switch		None	Signal equalization
Mechanical			
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	180 x 108 x 27mm (7" x 4.3" x 1.1")	
	Package	330 x 200 x 95mm (1'1" x 8" x 4")	
Weight	Model	515g (1.1 lbs)	515g (1.1 lbs)
	Package	970g (2.1 lbs)	970g (2.1 lbs)
Fixedness		Wall-mounting case with screws	
Power supply		5V DC	
Power consumption		1 Watt [max]	
Operation temperature		0~40°C (32~104°F)	
Storage temperature		-20~60°C (-4~140°F)	
Relative humidity		20~90% RH (no condensation)	

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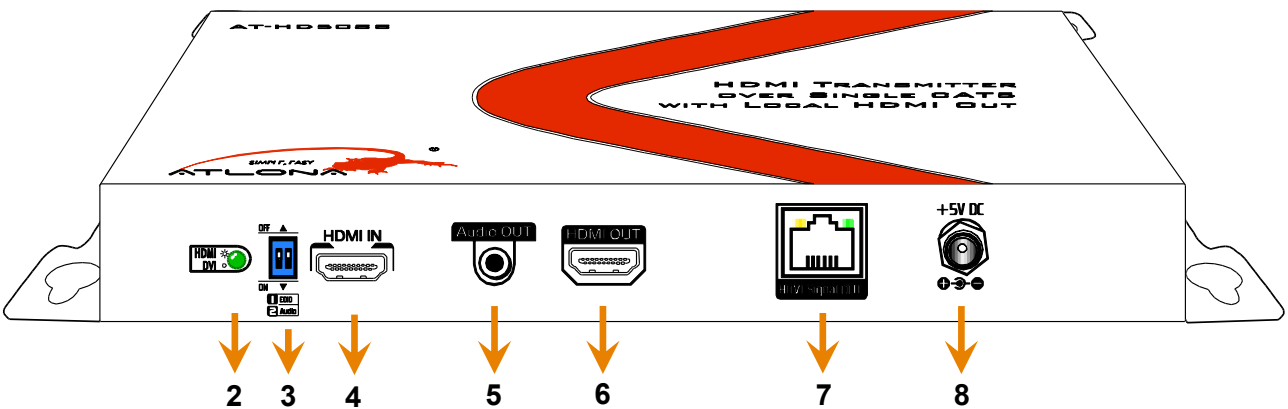| Model Name		AT-HDRS	AT-HD15SRS
Technical			
Role of usage		Receiver (long range RX)	Receiver (short range RX)
HDMI compliance		HDMI 1.3c	
HDCP compliance		Yes	
Video bandwidth		Single-link 225MHz (6.75Gbps)	
Video support		480i / 480p / 720p / 1080i / 1080p60 24/30/36-bit color	
HDMI transmission (24-bit)		Full HD (1080p) ▬ 40m (130ft) [CAT5e] / 50m (165ft) [CAT6] HD (720p/1080i) ▬ 50m (165ft) [CAT5e] / 60m (200ft) [CAT6]	
Audio support		Surround sound (up to 7.1ch) or stereo digital audio	
Equalization		8-level digital control	None
Input TMDS signal		1.2 Volts (peak-to-peak)	
Input DDC signal		5 Volts (peak-to-peak, TTL)	
ESD protection		[1] Human body — ±19kV (air-gap discharge) & ±12kV (contact discharge) [2] Core chipset — ±8kV	
PCB stack-up		4-layer board (impedance control — differential 100Ω; single 50Ω)	
Input		1 x RJ-45	
Output		1 x HDMI	
HDMI connector		Type A (19-pin female)	Type A (19-pin male)
RJ45 connector		WE/SS 8P8C with 2 LED indicators	
Rotary control switch		Signal equalization	None
Mechanical			
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	85 x 90 x 25mm (3.3" x 3.5" x 1")	45 x 25 x 20mm (1.8" x 1" x 0.8")
	Package	175 x 270 x 80mm (6.9"x10.6"x3.2")	115 x 170 x 40mm (4.5"x6.7"x1.6")
Weight	Model	175g (6.2 oz)	22g (0.8 oz)
	Package	475g (1 lb)	90g (3.2 oz)
Fixedness		Wall-mounting case with screws	Direct plug-in
Power supply		5V DC	None
Power consumption		1 Watt (max)	0.5 Watt (max)
Operation temperature		0~40°C (32~104°F)	
Storage temperature		-20~60°C (-4~140°F)	
Relative humidity		20~90% RH (no condensation)	

Sender Unit – AT-HD50SS

Front Panel

Rear Panel

1. Power on/off indicator

2. Input video format indicator (ON: HDMI signal / OFF: DVI signal)

3. DIP switch (see the table in the next page)

4. **HDMI IN:** Connect to a HDMI source with a HDMI male-male cable

5. **Audio OUT:** Plug in a local speaker

6. **HDMI OUT:** Local HDMI for connecting to a HDMI display with a HDMI male-male cable, or cascade to the **HDMI IN** of another AT-HD50SS, AT-HD14SS, or AT-HD19SS, or link to a remote display with AT-HDRS or AT-HD15SRS via a Cat.5e/6 cable

7. **HDMI Signal OUT:** Link to AT-HD50RSL for cascading; or link to AT-HDRS or AT-HD15SRS to another HDMI display via a Cat.5e/6 cable

8. **+5V DC:** Connect to a 5V 4A DC power supply unit

DIP Switch

Pin Position		Video	Audio	Description
Pin-1	Pin-2			
OFF (⬆)	OFF (⬆)	Up to 1080p	Surround[1]	**Default Mode**[2] – Up to 1080p & surround sound audio output up to 7.1ch (DTS-HD Master & Dolby TrueHD)
OFF (⬆)	ON (⬇)	Up to 1080p	Stereo	**Safe Mode**[3] **–** Make the system output at 1080p video and stereo audio for basic compatibility
ON (⬇)	OFF (⬆)	Bypass[4]	Bypass[4]	**EDID Learning Mode**[5] – for learning EDID from the display while playing any received HDMI audio format
ON (⬇)	ON (⬇)	Bypass	Stereo	**EDID Learning & Stereo mode**[5] – for learning EDID from the display while enforcing stereo output if any HDTV cannot play surround sound normally

Note

[1] *If the HDTV shows video but without audio, set audio mode to stereo by dial pin-2 to* ON[⬇]*.*

[2] *Factory default: pin-1 at* OFF (⬆) *and pin-2 at* OFF (⬆) *for 1080p with surround sound audio.*

[3] *If you encounter any unsolved audio/video output problem during system installation, please dial the DIP switch to pin 1 at* OFF (⬆)*, pin 2 at* ON (⬇) *for safe mode to enforce 1080p stereo output for system check. However, the safe mode cannot be initiated if your HDMI sources are set to enforce output at fixed resolution. In this case, please reconfigure your HDMI source to all resolutions output for troubleshooting.*

[4] *Bypass means this device will maintain playing the original format of HDMI signals in video and perhaps audio. By setting at this mode, the users may encounter compatibility issue among different kinds of HDMI sources and displays. If you cannot get the audio and/or video output normally at the system installation, please change the DIP switch setting to default mode or even safe mode to verify the functionality of the device.*

[5] *Steps for EDID (Extended Display Identification Data) learning*

A. Power off the AT-HD50SS.

B. Connect the display which you want to read EDID to **HDMI OUT** *port on the AT-HD50SS.*
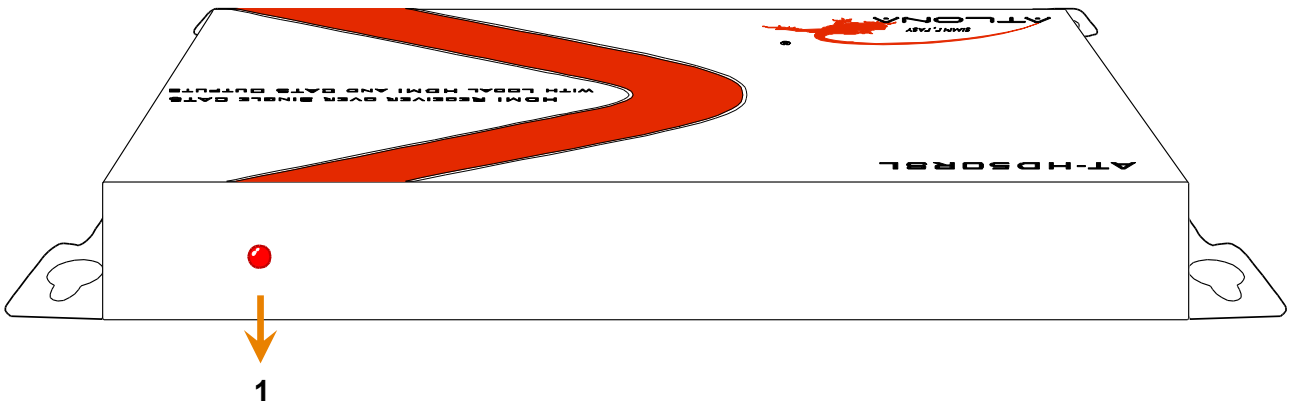
C. Set DIP pin-1 at ON (⬇)*.*

D. Power on the AT-HD50SS and wait up to 20 seconds. The green LED will dim and light to indicate the EDID learning process is complete.
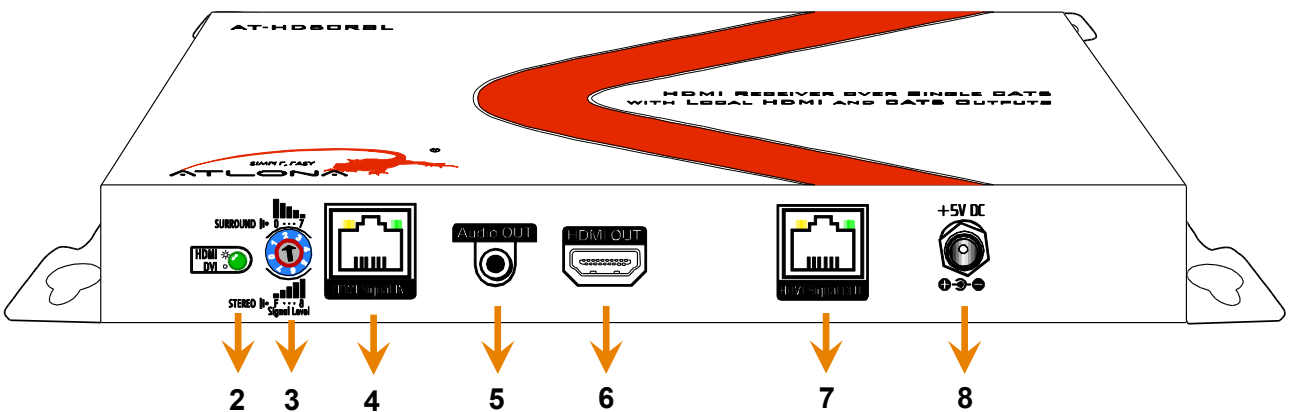
E. DON'T pull up the DIP switch again unless you want to learn another EDID by pulling DIP switch pin-1 up and down.

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Sender/Receiver Unit – AT-HD50RSL

Front Panel

1

Rear Panel

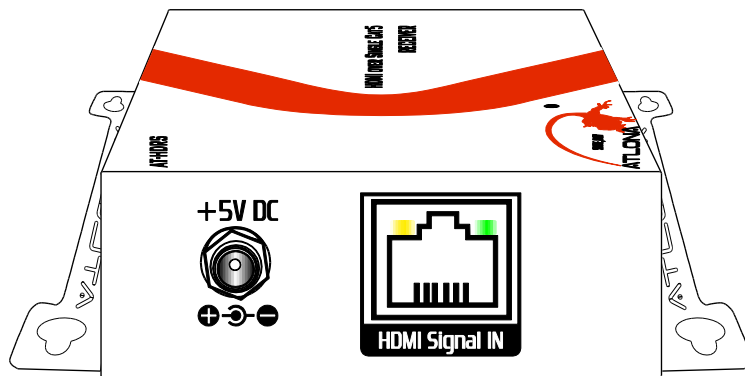**2** **3** **4** **5** **6** **7** **8**

1. Power on/off indicator

2. Input video format indicator (ON: HDMI signal / OFF: DVI signal)

3. **Signal Level:** Adjust the 16-level equalization control corresponding to the transmission distance of receiving HDMI signals. For surround sound audio output, please adjust from 0-to-7 (longest-to-shortest transmission length). For stereo audio output, please adjust from 8-to-F (longest-to-shortest transmission length). It is recommended to adjust from 7-to-0 or from F-to-8 to find the optimal visual experience.

4. **HDMI Signal IN:** Link to AT-HD14SS, AT-HD19SS, AT-HD50SS, AT-HD50RSL, or AT-HD-V40SS with a Cat-5/5e/6 cable.

5. **Audio OUT:** Plug in a local speaker

6. **HDMI OUT:** Local HDMI for connecting to a HDMI display with a HDMI male-male cable here or cascade to the **HDMI IN** of another AT-HD50SS, AT-HD14SS, or AT-HD19SS.

7. **HDMI Signal OUT:** Link to AT-HD14SS, AT-HD19SS, AT-HD50SS, or AT-HD50RSL for cascading; or link to AT-HDRS or AT-HD15SRS to a HDMI display with a Cat-5e/6 cable.

8. **+5V DC:** Connect to 5V 4A DC power supply.
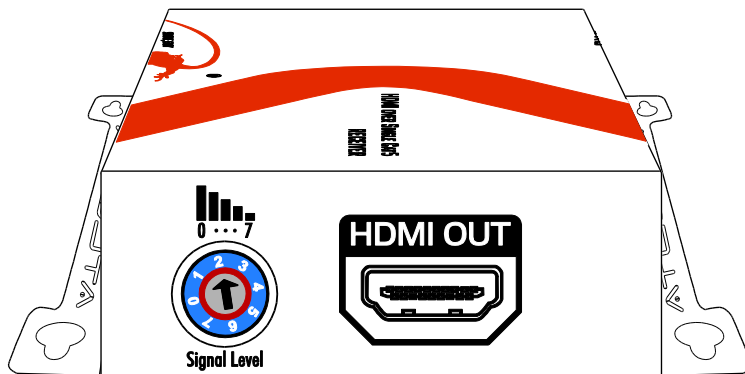
Receiver Unit – AT-HDRS

Input Panel

+5V DC: Connect to 5V DC power supply unit.

HDMI Signal IN: Connect to the **HDMI Signal OUT** on the sender unit AT-HD50SS or AT-HD50RSL with a solid Cat-5/5e/6 UTP/STP cable.
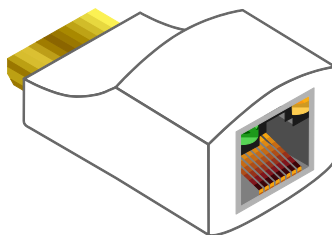
Output Panel

Signal Level: Adjust the 8-level signal equalization control to the received HDMI signals. The HDMI signal level varies from 0 (strongest) to 7 (weakest) for respective transmission length from longest possible range to short distance. Dial the **Signal Level** from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issues that would shorten the product's life significantly!

HDMI OUT: Connect to a HDMI display or projector with a HDMI male-male cable.

Receiver Unit – AT-HD15SRS

Connect to the RJ-45 port of the AT-HD15SRS to the **HDMI Signal OUT** on the sender unit AT-HD50SS or AT-HD50RSL with a solid Cat-5/5e/6 UTP/STP cable and plug the HDMI port to a HDMI display/projector or the HDMI output port on AT-HD50SS or AT-HD50RSL for HDMI over CAT5e/6 transmission.

AT-HD50SS

Extends HDMI signals to next cascading device with one local display
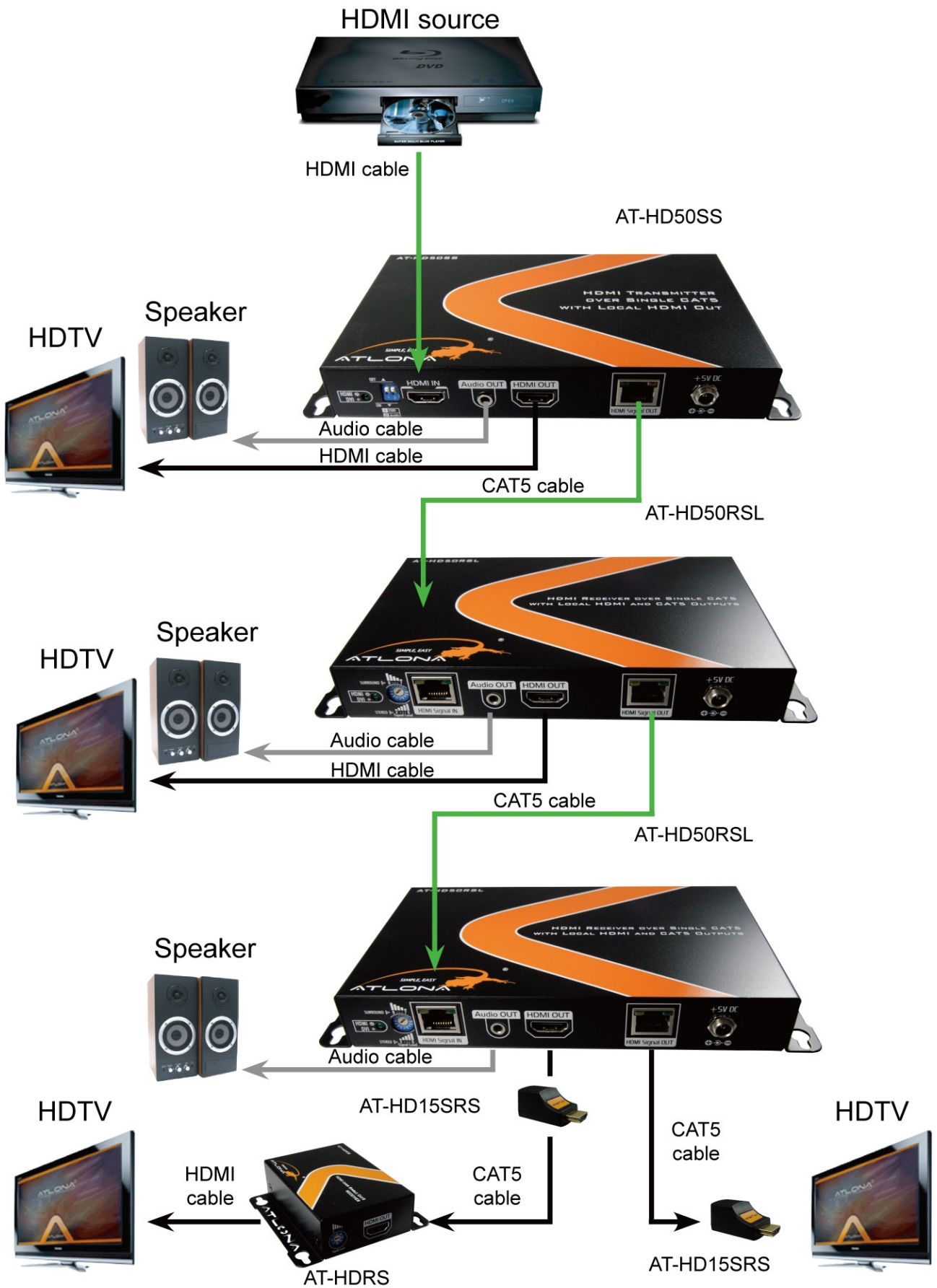
1. Switch off all devices, including monitors.

2. Connect a local HDMI display to the HDMI out of the AT-HD50SS and then connect a speaker to the 3.5mm audio socket.

3. Connect to a HDMI source (such as a Blu-ray Disc player)

4. Connect AT-HD50SS to AT-HD50RSL (for cascading), to AT-HDRS (to HDTV at long range), or AT-HD15SRS (to HDTV at mid range) via **HDMI Signal Out** RJ-45 port by a Cat-5e/6 cable.

5. Plug in the 5V 4A DC power supply.

6. Power on the HDTV.

7. Power on the HDMI source.

AT-HD50RSL

Relays HDMI signals to next cascading device with one local display

1. Switch off all devices, including monitors.

2. Connect a local HDMI display to the HDMI Out of the AT-HD50RSL and then connect a speaker to the 3.5mm audio socket.

3. Connect to AT-HD50RSL via RJ-45 in by a CAT5 cable.

4. Connect to next AT-HD50RSL (for cascading), to AT-HD40RS (to HDTV at long range), or AT-HD15SRS (to HDTV at mid range) via RJ-45 out by a CAT5 cable.

5. Plug in 5V 4A DC power supply.

6. Power on the HDTV.

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Diagram:

1. When adjusting the signal level on the receiver unit, dial the rotary control switch from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issues that would shorten the product's life significantly!

2. If the DVI or HDMI device requires the EDID information, please use AT-DVISync EDID Reader/Writer to retrieve and provide EDID information of the DVI or HDMI display or AV receiver.

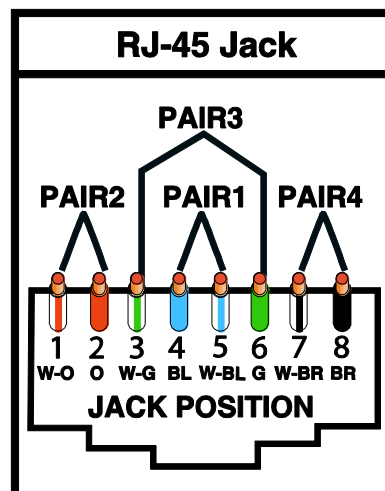3. All HDMI over CAT5 transmission distances are measured using Belden CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C.

4. The transmission length is largely affected by the type of category cables, the type of HDMI sources, and the type of HDMI displays. The testing result shows solid UTP cables (usually in the form of 300m or 1,000ft bulk cables) can transmit a lot longer signals than stranded UTP cables (usually in the form of fixed length patch cords). A solid UTP Cat-5e cable shows longer transmission range than a stranded STP Cat-6 cable. For long extension applications, solid UTP/STP cables are the only viable choice.

5. EIA/TIA-568-B termination (T568B) for category cables is recommended.

6. To reduce the interference among the unshielded twisted pairs of wires in a category cable, doubled shielded STP cables are better suited than unshielded UTP cables to improve EMI problems, which is worse in long transmission.

7. Because the quality of the category cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of Cat-5/5e/6 cables. For desired resolutions greater than 1080i or 1280x1024, a Cat-6 cable is recommended.

8. If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input [HDMI input #1] generally can produce better transmission performance among all HDMI inputs.

RJ45 / CAT5 REFERENCE

Data Link TIA/EIA-568-B		
PIN	Color	Function
1	W-O	TX0-
2	O	TX0+
3	W-G	TX1-
4	BL	TX2-
5	W-BL	TX2+
6	G	TX1+
7	W-BR	TXC-
8	BR	TXC+

RJ-45 Jack

PAIR3

PAIR2   PAIR1   PAIR4

1 2 3 4 5 6 7 8
W-O O W-G BL W-BL G W-BR BR

JACK POSITION

Safeguards

To reduce the risk of electric shock, do not expose this product to rain or moisture.

If the wall plug does not fit into your local power socket, hire an electrician to replace your obsolete socket.

Do not modify the wall plug.
Doing so will void the warranty and safety features.

This equipment should be installed near the socket outlet and the device should be easily accessible in case it requires disconnection.

Precautions

FCC Regulations state that any unauthorized changes or modifications to this equipment not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Operate this product using only the included external power supply. Use of other power supplies could impair performance, damage the product or cause fires.

In the event of an electrostatic discharge, this device may automatically turn off. If this occurs, unplug the device, and plug it back in.

Protect and route power cords so they will not be stepped on or pinched by anything placed on or against them. Be especially careful of plug-ins, or cord exit points from this product.

Avoid excessive humidity, sudden temperature changes or temperature extremes.

Keep this product away from wet locations such as bathtubs, sinks, laundries, wet basements and swimming pools.

Use only accessories recommended by ATLONA to avoid fire, shock or other hazards.

Unplug the product before cleaning. Use a damp cloth for cleaning. Do not use cleaning fluid or aerosols, which could enter the unit and cause damage, fire or electrical shock. Some substances may also mar the finish of the product.

Never open or remove unit panels or make any adjustments not described in this manual. Attempting to do so could expose you to dangerous electrical shock or other hazards. It may also cause damage to your AT-HD50SS or AT-HD50RSL. Opening the product will void the warranty.

Do not attempt to service the unit. Instead disconnect it and contact your Authorized ATLONA reseller or contact ATLONA directly.

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1. LIMITED WARRANTY

Atlona Technologies warrants that (a) its products (the "Product") will perform substantially in accordance with the accompanying written materials for a period of 3 years from the date of receipt and (b) that the Product will be free from defects in materials and workmanship under normal use and service for a period of 3 years. In the event applicable law imposes any implied warranties, the implied warranty period is limited to 3 years from the date of receipt. Some jurisdictions do not allow such limitations on duration of an implied warranty, so the above limitation may not apply to Customer.

2. CUSTOMER REMEDIES

Atlona Technologies and its suppliers' entire liability and Customer's exclusive remedy shall be, at Atlona Technologies' option, either return of the price paid for the Product, or repair or replacement of the Product that does not meet this Limited Warranty and which is returned to Atlona Technologies with a copy of Customer's receipt. This Limited Warranty is void if failure of the Product has resulted from accident, abuse, or misapplication. Any replacement Product will be warranted for the remainder of the original warranty period or 3 year, whichever is longer.

3. NO OTHER WARRANTIES

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, ATLONA TECHNOLOGIES AND ITS SUPPLIERS DISCLAIM ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE PRODUCT AND ANY RELATED WRITTEN MATERIALS. THIS LIMITED WARRANTY GIVES CUSTOMER SPECIFIC LEGAL RIGHTS. CUSTOMER MAY HAVE OTHER RIGHTS DEPENDING ON THE JURISDICTION.

4. NO LIABILITY FOR DAMAGES

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL ATLONA TECHNOLOGIES OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER (INCLUDING WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUEN-TIAL, OR INDIRECT DAMAGES FOR PERSONAL INJURY, LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR INABILITY TO USE THIS PRODUCT, EVEN IF ATLONA TECHNOLOGIES HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY CASE, ATLONA TECHNOLOGIES' AND ITS SUPPLIERS' ENTIRE LIABILITY UNDER ANY PROVISION OF THIS AGREEMENT SHALL BE LIMITED TO THE AMOUNT ACTUALLY PAID BY YOU FOR THE PRODUCT. BECAUSE SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

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At Atlona, we respect and protect your privacy and assure you that your registration information is completely secure. Of course, Atlona product registration is totally voluntary and failure to register will not diminish your limited warranty rights.

To register go to **http://www.atlona.com/Product-Registration/**

PERFORMANCE GUIDE

Performance rating		Type of category cable		
Wiring	Shielding	CAT5	CAT5e	CAT6
Solid	Unshielded (UTP)	★★★	★★★★	★★★★★
Solid	Shielded (STP)	★★★	★★★	★★★★
Stranded	Unshielded (UTP)	★	★★	★★
Stranded	Shielded (STP)	★	★	★★
Termination		Please use **EIA/TIA-568-B** termination (**T568B**) at any time		

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