

# EDID Emulator for 4K HDR HDMI Signals



## Version Information

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Version	Release Date	Notes
6	Jan 2024	Updated warranty information

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## Operating Notes

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**IMPORTANT:** Visit <http://www.atlona.com/product/AT-ETU-SYNC> for the latest firmware updates and User Manual.

## Warranty

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To view the product warranty, use the following link or QR code:

<https://atlona.com/warranty/>.

## Safety and Certification



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT OPEN ENCLOSURE OR EXPOSE TO RAIN OR MOISTURE. NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the product.



The information bubble is intended to alert the user to helpful or optional operational instructions in the literature accompanying the product.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this product near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install or place this product near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of a polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the product.
11. Only use attachments/accessories specified by Atlona.
12. To reduce the risk of electric shock and/or damage to this product, never handle or touch this unit or power cord if your hands are wet or damp. Do not expose this product to rain or moisture.
13. Unplug this product during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the product has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the product, the product has been exposed to rain or moisture, does not operate normally, or has been dropped.



## FCC Compliance

FCC Compliance and Advisory Statement: This hardware 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. 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 in a commercial installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed or used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1) reorient or relocate the receiving antenna; 2) increase the separation between the equipment and the receiver; 3) connect the equipment to an outlet on a circuit different from that to which the receiver is connected; 4) consult the dealer or an experienced radio/TV technician for help. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Where shielded interface cables have been provided with the product or specified additional components or accessories elsewhere defined to be used with the installation of the product, they must be used in order to ensure compliance with FCC regulations.

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## Introduction

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The Atlona Etude™ Sync (AT-ETU-SYNC) provides EDID emulation and Hot Plug Detect communication between HDMI® sink and source devices. It detects and corrects for signal integrity issues associated with cabling or connections, and can resolve compatibility problems between a source and sink. The Etude Sync is compatible with high dynamic range (HDR) formats and is HDCP 2.2 compliant. It supports 4K/UHD video @ 60 Hz with 4:4:4 chroma sampling, as well as HDMI data rates up to 18 Gbps. In addition to addressing HDMI signal and device-related issues, the Etude Sync reports HDCP compliance at the source and destination, and can manage EDID communication with the source. This device is ideal for AV system troubleshooting as well as ensuring reliable, consistent performance.

The Etude Sync is for residential and commercial applications with the latest as well as emerging 4K/UHD and HDR sources and displays. It is compatible with all video resolutions, audio formats, and color space formats supported in the HDMI 2.0a specification, plus the ability to pass metadata for HDR content. The Etude Sync includes Atlona's award-winning 10-year limited product warranty and customer support services, so that integrators can specify, purchase, and install with confidence.

## Features

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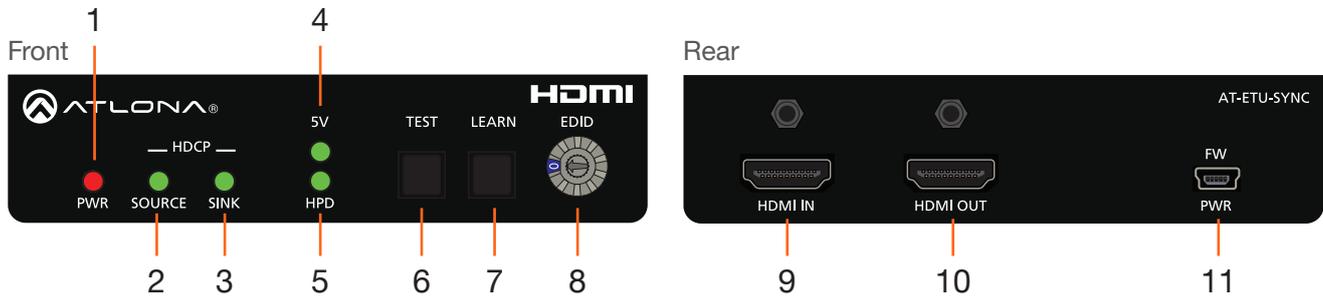
- 4K/UHD capability @ 60 Hz with 4:4:4 chroma sampling, plus support for HDR (High Dynamic Range) formats
- Supports video, audio, and color space formats in the HDMI 2.0a specification
- HDCP 2.2 and 1.4
- LPCM 7.1 audio, Dolby® Digital, Dolby Digital Plus, Dolby Atmos®, Dolby TrueHD, DTS:X™, and DTS-HD Master Audio™
- 3D pass through
- 10 EDID modes
- Allows “learning” of EDID from a sink device
- Essential tool for testing and troubleshooting connectivity issues in any system
- Front-panel indicators provide power and signal status information for +5 volt source supply, hot plug detect, and HDCP
- Restores +5 volt and HPD signals
- Compact and portable

## Package Contents

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- 1 x AT-ETU-SYNC
- 1 x USB to mini-USB cable
- 1 x 5V DC / 1.2A power supply
- 1 x Mounting brackets (pair)
- 1 x Installation Guide

## Panel Description



- 1 PWR**  
Glowes red when the unit is powered.
- 2 SOURCE**  
Indicates the source status. Refer to [Performing System Tests \(page 12\)](#) for more information.
- 3 SINK**  
Indicates the sink status. Refer to [Performing System Tests \(page 12\)](#) for more information.
- 4 5V**  
Reports the status of the 5V signal from the source device. Refer to [Performing System Tests \(page 12\)](#) for more information.
- 5 HPD**  
Reports the Hot-Plug Detect (HPD) status from the sink device. Refer to [Performing System Tests \(page 12\)](#) for more information.
- 6 TEST**  
Press this button to begin the test procedure. Refer to [Performing System Tests \(page 12\)](#) for more information.
- 7 LEARN**  
This LED indicator will glow bright green when the switcher is powered. Refer to [Learning an EDID \(page 10\)](#) for more information.
- 8 EDID**  
Turn this dial to select the desired EDID mode. Refer to [Selecting an EDID \(page 9\)](#) for more information.
- 9 HDMI IN**  
Connect an HDMI cable from the source to this port.
- 10 HDMI OUT**  
Connect an HDMI cable from the sink (display) to this port.
- 11 FW / PWR**  
Connect the included USB cable from a computer to this port. This port is used to power the AT-ETU-SYNC and to update firmware.

## Installation

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1. Connect an HDMI cable from the source to the **HDMI IN** port on the AT-ETU-SYNC.
2. Connect an HDMI cable from the sink (display) to the **HDMI OUT** port on the AT-ETU-SYNC.

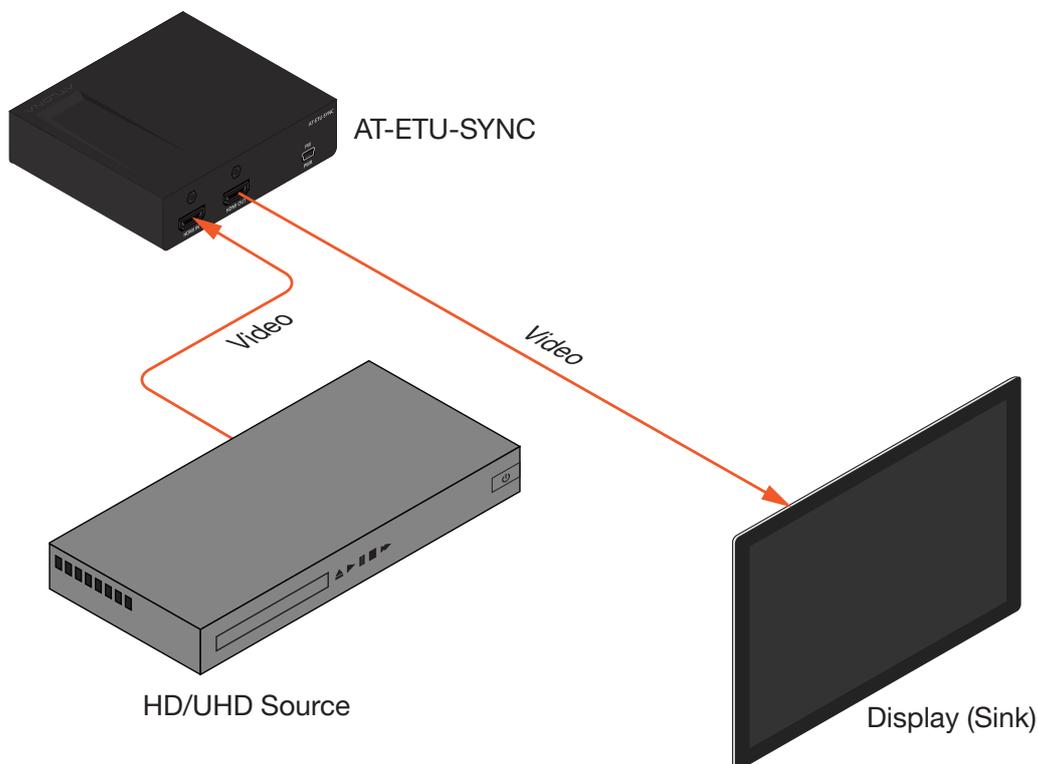


**IMPORTANT:** The AT-ETU-SYNC is a High Dynamic Range (HDR) device. For best performance, use premium HDMI cables that are HDR-certified. The HDMI cable between the AT-ETU-SYNC and the display (sink) and the should not exceed 15 feet (4.5 meters).

3. Connect the included 5V DC power supply to the **FW / PWR** port on the AT-ETU-SYNC.
4. Connect the 5V DC power supply to an available AC outlet.

### Connection Diagram

The illustration below, shows the proper location of the AT-ETU-SYNC in a basic source-sink setup. The location of the AT-ETU-SYNC will vary, depending on the system. Before using the AT-ETU-SYNC as an EDID emulator, an EDID must be selected or learned. Refer to [Selecting an EDID \(page 9\)](#) and [Learning an EDID \(page 10\)](#) for more information.



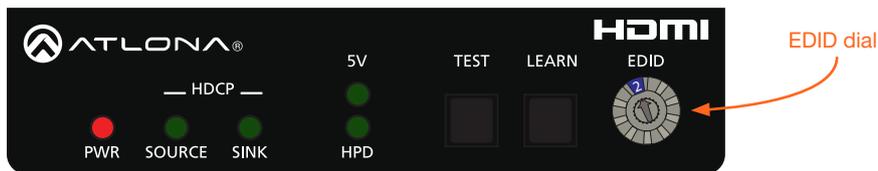
## Device Operation

### Selecting an EDID

The AT-ETU-SYNC includes 10 EDID modes, which can be selected using the **EDID** dial.

Mode	Description	Mode	Description
0	Learn mode	5	4K 60 4:2:0 / multichannel (HD lossless)
1	1080p 3D / 2 channel	6	4K 60 4:2:0 HDR / 2 channel
2	1080p 3D / multichannel (lossless)	7	4K 60 4:2:0 HDR / multichannel (HD lossless)
3	1080p DVI	8	4K 60 4:4:4 8-bit / 2 channel
4	4K 60 4:2:0 / 2 channel	9	4K 60 4:4:4 8-bit / multichannel (HD lossless)

1. Power the AT-ETU-SYNC.
2. Rotate the **EDID** dial to the desired EDID mode (0 - 9). Refer to the table above for a listing of available EDID modes.



**IMPORTANT:** By default, EDID mode 0 is blank. If an EDID has not been saved to mode 0, then refer to [Learning an EDID \(page 10\)](#) for information.

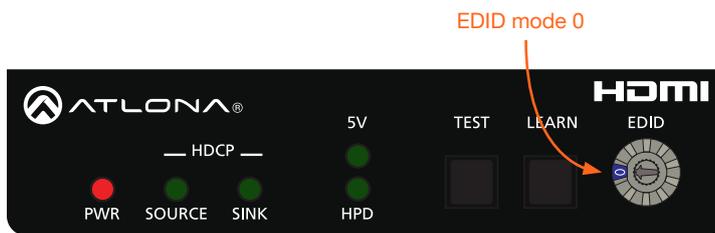
3. Connect an HDMI cable from the display to the **HDMI OUT** port on the AT-ETU-SYNC.
4. Connect another HDMI cable from the source to the **HDMI IN** port on the AT-ETU-SYNC.
5. Power the source.
6. Power the sink device.
7. The source will use the selected EDID mode when sending audio/video data to the sink device.

**NOTE:** The **EDID** dial can be set to any EDID mode, while the AT-ETU-SYNC is powered and connected to the system.

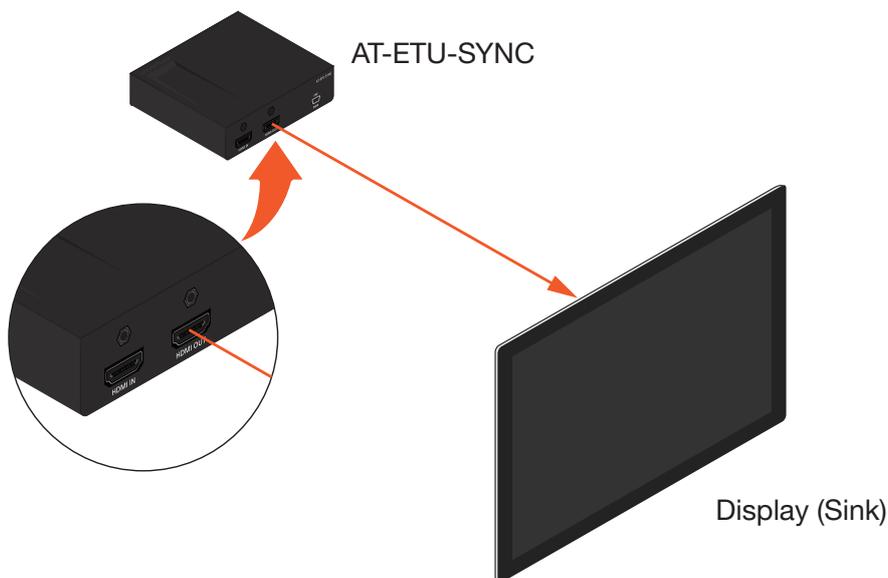
### Learning an EDID

The AT-ETU-SYNC has the ability to learn the EDID from another device, using EDID mode 0. Once learned, the EDID data will be read by the source, providing all the necessary details of the type of signal that will be sent to the sink device.

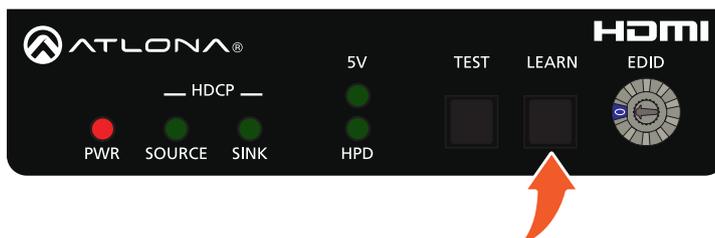
1. Disconnect the AT-ETU-SYNC from the system.
2. Power the AT-ETU-SYNC.
3. Rotate the **EDID** dial to EDID mode 0, as shown.



4. Connect an HDMI cable from the sink device to the **HDMI OUT** port on the AT-ETU-SYNC. Make sure that the sink device is powered-on.



5. Press and hold the **LEARN** button on the AT-ETU-SYNC until the **HPD** light glows green.



6. Release the **LEARN** button.

During the process, the **LEARN** button will flash blue as the EDID data is copied into memory.



Flashes blue while learning EDID

If the EDID was successfully learned, then the **LEARN** button will turn off. If an error was encountered during the operation, then the **LEARN** button will flash red.

If an error is encountered, disconnect the power from the AT-ETU-SYNC, power-cycle the sink device, then repeat steps 4 through 6. If after several attempts, the error is encountered, then this may indicate that the sink device has a bad or corrupt EDID.

LED/Button	State		Description
LEARN	Flashing blue		EDID being learned.
	Off		EDID learned successfully.
	Flashing red		Error learned EDID. <ul style="list-style-type: none"> <li>• Bad or corrupt EDID on sink.</li> <li>• No sink device present or detected.</li> <li>• Make sure sink is powered.</li> <li>• Check for proper connection between sink device and AT-ETU-SYNC.</li> <li>• Possible bad cable.</li> </ul>
HPD	Solid green		Sink device OK.
	Off		Sink device not detected.

7. Reconnect the source (or other intermediate device) to the **HDMI IN** port on the AT-ETU-SYNC. The source will read the EDID data stored in EDID mode 0 and use this information to send the proper audio and video formats to the sink device.

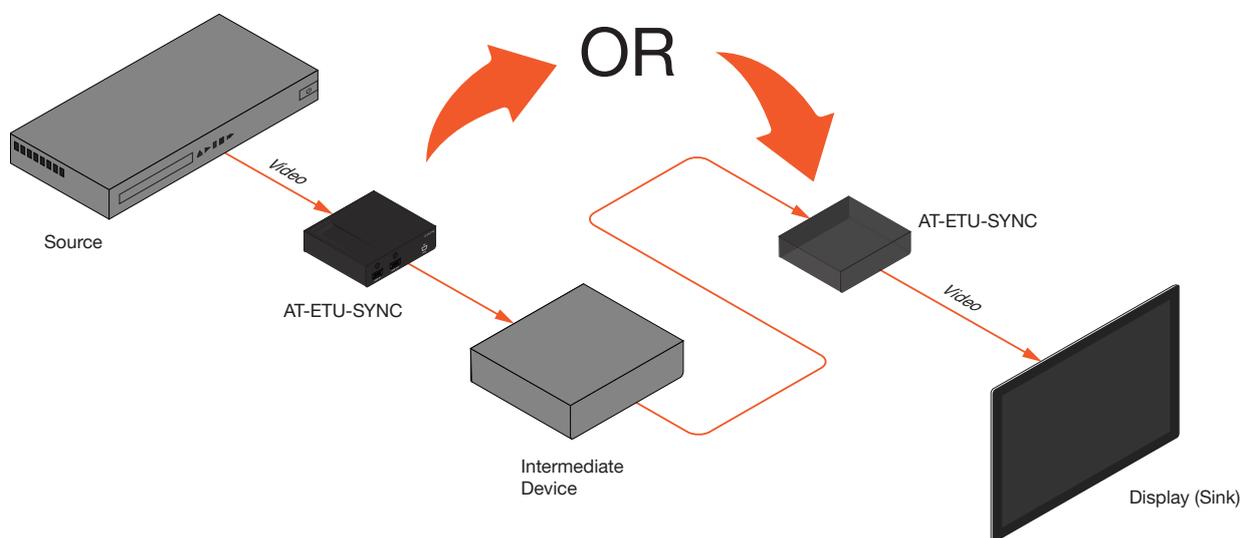
**NOTE:** EDID data will remain in EDID mode 0, even after power is disconnected. To learn a new EDID and overwrite the existing EDID data in mode 0, repeat steps 1 through 6.

### Performing System Tests

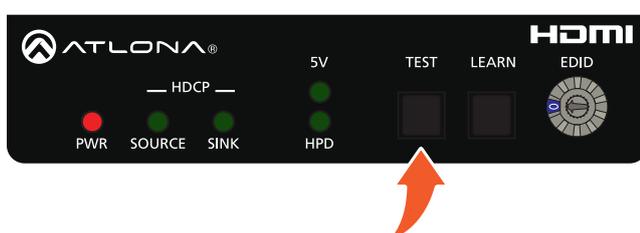
The AT-ETU-SYNC features a **TEST** button which tests the source, sink, or the entire system to aid in troubleshooting connectivity issues.

#### In-Line Testing

1. Power the AT-ETU-SYNC.
2. Position the AT-ETU-SYNC between the source and sink. The actual position of the AT-ETU-SYNC will depend upon the setup. In the illustration, below, an intermediate device (such as a switcher, splitter, or matrix) has been introduced. If no intermediate devices are present, then connect the AT-ETU-SYNC between the source and the display (sink).
  - Problem is suspected between the sink and any upstream devices:
    - a. Connect an HDMI cable from the intermediate device to the **HDMI IN** port on the AT-ETU-SYNC.
    - b. Connect an HDMI cable from the **HDMI OUT** port on the AT-ETU-SYNC to the display (sink).
  - If the problem is suspected between the source and the intermediate device(s):
    - a. Connect an HDMI cable from the source to the **HDMI IN** port on the AT-ETU-SYNC.
    - b. Connect an HDMI cable from the **HDMI OUT** port on the AT-ETU-SYNC to the intermediate device.



3. Press and release the **TEST** button on the front panel of the AT-ETU-SYNC.



4. The **SOURCE**, **SINK**, **5V**, and **HPD** indicators will display the current testing results. Refer to the table, below.



LED	State		Description
SOURCE	Solid green		Source is HDCP 2.2.
	Flashing green		Source is HDCP 1.4.
	Solid red		The source is not HDCP-compliant.
SINK	Solid green		Sink is HDCP 2.2.
	Flashing green		Sink is HDCP 1.4.
	Solid red		Sink is not HDCP-compliant.
5V	Solid red		Signal is out of range.
	Solid green		Signal from the source is present and is within the range of 4.7 V to 5.3 V DC.
	Off		No source detected. <ul style="list-style-type: none"> <li>• Check that a source device is connected</li> <li>• Verify the integrity of the HDMI cable connected to the source device</li> </ul>
HPD	Solid red		HPD is “low” and in the range of 0 V to 0.8 V DC.
	Solid green		HPD is “high” and in the range of 2.0 V to 5.3 V DC.
	Off		No sink device is detected. <ul style="list-style-type: none"> <li>• Check that a sink device is connected.</li> <li>• Verify the integrity of the HDMI cable connected to the sink.</li> </ul>

**NOTE:** If either the **HPD** or **5V** LED indicator alternates between green and red, then this indicates that the voltage level is on the edge of acceptance. If this occurs, try using shorter HDMI cables (on both ends). It is also possible that the remote device is not providing the sufficient voltage levels. The minimum requirement is 4.7 V DC for the 5 V signal and 2.0 V DC for HPD.

5. After the test procedure is complete all LED indicators, except for the **PWR** indicator, will turn off.

### Source Testing

1. Power the AT-ETU-SYNC.
2. Connect an HDMI cable from the source to the **HDMI IN** port on the AT-ETU-SYNC.
3. Press and release the **TEST** button on the front panel of the AT-ETU-SYNC.
4. The **SOURCE** and **5V** indicators will display the testing results. Note that since a sink device is not present, the **HPD** and **SINK** indicators are ignored. Refer to the table on the previous page.

### Sink Testing

1. Power the AT-ETU-SYNC.
2. Connect an HDMI cable from the sink to the **HDMI OUT** port on the AT-ETU-SYNC.
3. Press and release the **TEST** button on the front panel of the AT-ETU-SYNC.
4. The **SINK** and **HPD** indicators will display the testing results. Note that since a source device is not present, the **5V** and **SOURCE** indicators are ignored. Refer to the table on the previous page.

 **NOTE:** When the EDID dial is set to EDID mode 0, during a test procedure, the **LEARN** button will glow blue. If the EDID dial is set to any other mode, then the **LEARN** button will remain “off”. Setting the EDID mode will not affect the results of the test procedure.

## DDC Reclocking

DDC relocking, sometimes referred to as “clock stretching”, is method for correcting sync issues on the DDC line. The DDC line (also known as the I<sup>2</sup>C bus) is part of the HDMI interface and is responsible for transmitting EDID and HDCP information from the sink to the source. The DDC line contains two signal lanes: SDA (data) and SCL (clock). Most of the time, the timing between these two lanes is correct. However, lengthy cables and/or intermediate devices between the source and sink, can introduce synchronization problems between these two lanes. This can result in a variety of issues, such as flashing picture, drop-outs, artifacts, and incorrect resolution.

Placing the AT-ETU-SYNC in-line, between the source and sink, will usually correct these issues. Experimenting with the position of the AT-ETU-SYNC, within the system - particularly when intermediate devices are installed - may be necessary to obtain the correct results. If the problem persists, contact an Atlona Technical Support Engineer for assistance.

 **NOTE:** Some HDMI devices do not support clock-stretching.

## Command Line

This section provides a short list of commands available for the AT-ETU-SYNC.

### Configuration

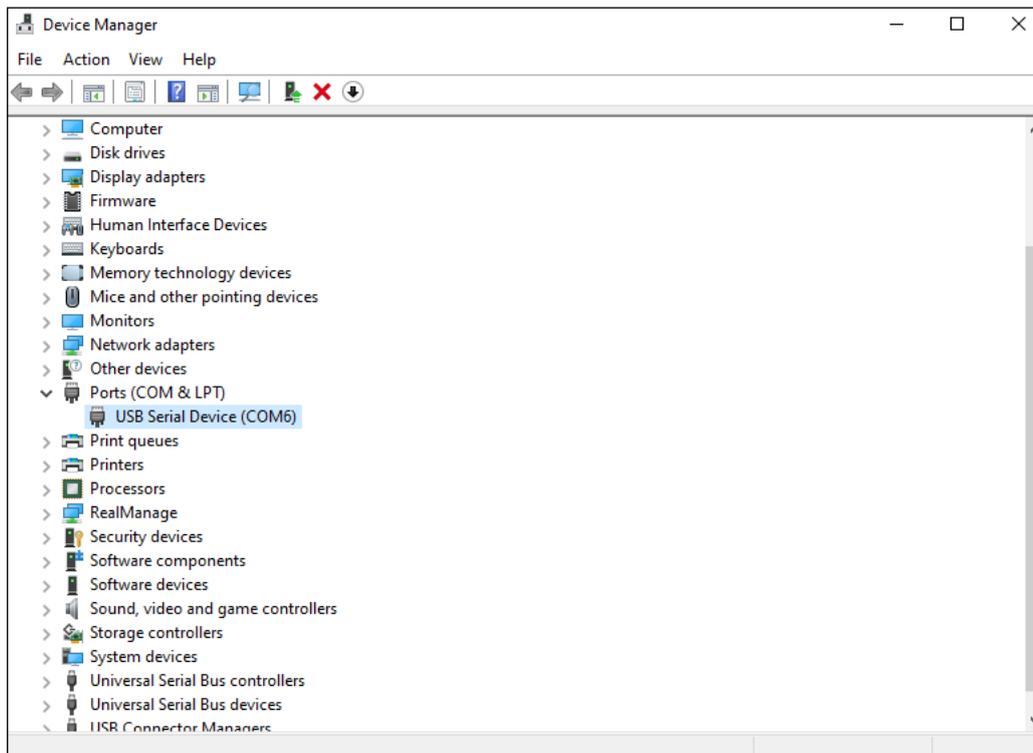
In order to use these commands, the AT-ETU-SYNC must be connected to a computer from which the commands are issued.

1. Connect a USB-A to mini-USB cable between the computer and the **FW** port on the AT-ETU-SYNC.

 **IMPORTANT:** The USB type-A port on the computer must be able to provide 5V 1A of power.



2. Once connected to the computer a COM port will be created, as shown in the example below.



3. Launch the desired client. Atlona recommends the Hercules client, available here:

<https://www.hw-group.com/software/hercules-setup-utility>

4. Configure the following RS-232 settings in the client:

Baud rate:	115200
Data bits:	8
Parity:	1
Flow control:	None

### Command List

Commands are case-sensitive. If the command fails or is entered incorrectly, then the feedback is “Command FAILED”. Commands are sent using RS-232. There should be a least a 500 millisecond delay between each command sent to the unit.



**IMPORTANT:** Each command is terminated with a carriage-return (0x0d) and the feedback is terminated with a carriage-return and line-feed (0x0a).

Command	Description
EDIDRead	Reads the EDID saved to the AT-ETU-SYNC mode 0 memory bank.
EDIDWrite	Writes the specified EDID to the AT-ETU-SYNC mode 0 memory bank.
Version	Displays the current firmware version of the unit.

### EDIDRead

Reads the EDID saved to the AT-ETU-SYNC mode 0 memory bank.

#### Syntax

```
EDIDRead
```

This command does not require any parameters

#### Feedback

```
EDIDRead
```

#### Feedback

```
EDIDRead
00FFFFFFFFFFFFFF004C2DCB0B0000000000D180103
804728782AD691A7554EA0250C5054BFEF80714F
810081C081809500A9C0B3000101565E00A0A0A0
295030203500C48E2100001A023A801871382D40
582C4500C48E2100001E000000FD00184B1B5A19
000A20202020202020000000FC0053333244383530
0A2020202020011802031CF148900411F1303122
022230907078301000066030C00100080023A801
871382D40582C4500C48E2100001E023A80D0723
82D40102C4580C48E2100001E011D007251D01E2
06E285500C48E2100001E011D00BC52D01E20B82
85540C48E2100001E000000000000000000000
00000000000000000000000000000000A2
```

### EDIDWrite

Writes the specified EDID to the AT-ETU-SYNC mode 0 memory bank. If the operation is successful, the raw EDID data will be displayed as feedback. Otherwise, the “Command FAILED” message will be returned with the feedback.

#### Syntax

```
EDIDWrite X
```

Parameter	Description	Range
X	EDID data	Hexadecimal (256 characters)

#### Example

```
EDIDWrite
00FFFFFFFFFFFFFFFF004C2DCB0B000000000D180103
804728782AD691A7554EA0250C5054BFEF80714F
810081C081809500A9C0B3000101565E00A0A0A0
295030203500C48E2100001A023A801871382D40
582C4500C48E2100001E000000FD00184B1B5A19
000A20202020202020000000FC0053333244383530
0A2020202020011802031CF148900411F1303122
022230907078301000066030C00100080023A801
871382D40582C4500C48E2100001E023A80D0723
82D40102C4580C48E2100001E011D007251D01E2
06E285500C48E2100001E011D00BC52D01E20B82
85540C48E2100001E0000000000000000000000
00000000000000000000000000000000A2
```

#### Feedback

```
EDIDWrite
00FFFFFFFFFFFFFFFF004C2DCB0B000000000D180103
804728782AD691A7554EA0250C5054BFEF80714F
810081C081809500A9C0B3000101565E00A0A0A0
295030203500C48E2100001A023A801871382D40
582C4500C48E2100001E000000FD00184B1B5A19
000A20202020202020000000FC0053333244383530
0A2020202020011802031CF148900411F1303122
022230907078301000066030C00100080023A801
871382D40582C4500C48E2100001E023A80D0723
82D40102C4580C48E2100001E011D007251D01E2
06E285500C48E2100001E011D00BC52D01E20B82
85540C48E2100001E0000000000000000000000
00000000000000000000000000000000A2
```

### Version

Displays the current firmware version of the AT-ETU-SYNC.

#### Syntax

```
Version
```

**This command does not require any parameters**

#### Example

```
Version
```

#### Feedback

```
V2.0.6
```

## Appendix

### Updating the Firmware

Requirements:

- AT-ETU-SYNC
- Firmware file
- Computer
- USB-A to USB mini-B cable

1. Check the bottom of the AT-ETU-SYNC and identify the hardware revision:



- If the **Rev** letter (shown on the sticker on the bottom of the unit) is **A**, then update using the 1.x firmware.
- If the **Rev** letter is **B** or later, then update using the 2.x firmware.



2. Disconnect power from the AT-ETU-SYNC.
3. While holding down the **TEST** button, Connect a USB-A to USB mini-B cable between the PC and the firmware port on the AT-ETU-SYNC. The unit will be powered by the USB cable.

4. A virtual USB drive will be created and the folder of this drive will be displayed. If this folder is not displayed automatically, then select the drive from within Windows Explorer (Windows) or the Finder (Mac).
5. Delete all files from the drive, if any are present.
6. Drag-and-drop the firmware file to the drive. The folder will automatically close after the firmware file has been copied to the drive. The **LEARN** button will flash during the update procedure.
7. After the **LEARN** button stops flashing, disconnect the USB cable from both the computer and the AT-ETU-SYNC.
8. The firmware update process is complete.

## Specifications

Video		
Signal	Input - HDMI Output - HDMI	
Copy Protection	HDCP 1.4 / 2.2	
Pixel Clock	600 MHz	
UHD/HD/SD	4096x2160@24/25/30/50/60Hz 3840x2160@24/25/30/50/60Hz 2048x1080p 1920x1080p@23.98/24/25/29.97/30/50/ 59.94/60Hz 1920x1080i@50/59.94/60Hz	1280x720p@50/59.94/60Hz 720x576p 720x576i 720x480p 720x480i
VESA All resolutions are 60Hz	2560x1600 2048x1536 1920x1200 1680x1050 1600x1200 1440x900 1400x1050 1366x768	1360x768 1280x1024 1280x800 1152x768 1024x768 800x600 640x480
Color Space	YUV, RGB	
Chroma Subsampling	4:4:4, 4:2:2, 4:2:0	

Audio			
HDMI Output	PCM 2.0 LPCM 5.1 LPCM 7.1	Dolby® Digital Dolby Digital Plus™ Dolby TrueHD Dolby Atmos®	DTS® Digital Surround™ DTS-HD Master Audio™ DTS:X®
Bit Rate	24 Mbits/s max		
Sample Rate	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz		

Resolution / Distance	4K/UHD - Feet / Meters		1080p - Feet / Meters	
HDMI IN/OUT	15	5	30	10

Buttons and Indicators	
<b>Buttons:</b> TEST, LEARN EDID	2 x buttons, momentary, tact-type 1 x Rotary switch
<b>Indicators:</b> POWER SOURCE, SINK, 5V, HPD	1 x RED 4 x GREEN

Connectors	
HDMI IN	1 x Type A, 19-pin female
HDMI OUT	1 x Type A, 19-pin female
FW / PWR	1 x Mini-USB

Environmental	Fahrenheit	Celsius
Operating Temperature	+32 to +122	0 to +50
Storage Temperature	-4 to +140	-20 to +60
Operating Humidity (RH)	20% to 90%, non-condensing	

Power	
Consumption	5.2 W
External Power Supply	100 - 240 V AC, 50/60 Hz Output: 5 V / 1.2 A DC

Dimensions (H x W x D)	Inches	Millimeters
Unit	1.02 x 4.29 x 3.50	26 x 109 x 89
Unit (w/feet)	1.02 x 4.29 x 3.74	26 x 109 x 95
Power Supply (AT-PS-51-U)	2.3 x 4.4 x 2.8	58 x 111 x 71

Weight	Pounds	Kilograms
Device	0.6	0.27

Certification	
Device	CE, FCC
Power Supply	CE, FCC, cULus, RoHS, CCC, RCM

Compliance	
NDA-899	Yes
TAA	Yes

Warranty	
Device	To view the product warranty, use the following link: <a href="https://atlon.com/warranty">https://atlon.com/warranty</a>

