



EXP-SP-0104-4K

WyreStorm Express™ 1x4 HDMI 4K Splitter



Instruction Manual



Thank you for choosing this WyreStorm Express product.
Please read these instructions carefully before installing to avoid complications later.

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Introduction

Ultra Slim, Ultra High Definition. The WyreStorm Express EXP-SP-0104-4K 1x4 4K Splitter enables lossless duplication and distribution of a single HDMI UltraHD or HD source to up to 4 connected outputs for simple, flexible and reliable content replication to multiple display devices supporting resolutions up to 4Kx2K.

Featuring HDMI 1.4a specification supporting data rates up to 10.2Gb/s, for lossless audio/video formats, full 3D and Lip Sync, the EXP-SP-0104-4K also includes 24bit True Color with chroma subsampling rate of 4:2:2 for 4K color palette and 36bit Deep Color for 1080p transmissions.

Automatic HDCP and EDID management continuously negotiates and authenticates communication between connected devices, ensuring simultaneous distribution of source content to all outputs, while also maintaining signal integrity via internal equalization and amplification to output devices.

Systems can be further expanded by cascading multiple EXP-SP-0104-4K units to create larger distributions; with 4K transmissions cascaded twice and 1080p signals up

to 12 times to the same model units for flexible, scalable solutions for residential and commercial applications.

Furthermore, with the addition of an in-line WyreStorm EXP-SCL-DAC-4K scaler/Dolby downmixer between splitter and display device, combined 4K, HD and multichannel or stereo audio distributions can be created without risking resolution or audio disparity between devices.

As such, the EXP-SP-0104-4K represents an ideal solution wherever simple-yet-reliable distribution of single HDMI source to multiple outputs is required, with the versatility and cost-efficiency to ensure systems are just as easily expanded or adjusted to meet the needs of any application.

Features

- 1 HDMI Input to 4 simultaneous HDMI Outputs
- Fully 4K compatible - 3840 (UHD) and 4096 (DCI) 2160 @ 30Hz with 4K color palette 4:2:2
- Plug and Play connectivity - automatic EDID and HDCP device communication
- Low profile 18mm/0.7 for greater installation convenience
- Create combined 4K/HD distributions with additional WyreStorm inline scaler (sold separately)
- Supports 4K resolutions up to 4096x2160@30Hz and HD resolutions up to 1080p@60Hz
- 4K 24bit True Color 4K chroma subsampling color palette 4:2:2, 1080p 36bit Deep Color
- Supports HD resolutions up to 1080p@60Hz
- Transmission distances up to 10m/33ft (4K/1080p input, 4K output), 15m/49ft (1080p output) using standard HDMI cables
- Multichannel audio supported (mirrors source)
- Full 3D compatibility up to 1080p - frame packing/sequential (Blu-ray) and interlaced stereoscopic (satellite/cable broadcasts)
- Threaded power port for locking or standard 5v DC connection
- Front panel LED indication for I/O and Power connectivity
- Slimline chassis for space-saving local installation
- Supports HDMI 1.4a with automatic HDCP and EDID management between devices
- Automatically adjusts signal feedback, equalization and amplification for easy, reliable installation
- Units cascable to create larger systems: 1080p up to 12 times, UHD 4K up to two times
- Easily create cost effective, scalable combined 4K/HD distributions by connecting WyreStorm EXP-SCL-DAC-4K scaler with Dolby downmixer (sold separately)

Safety Precautions



WARNING

To reduce the risk of fire, electric shock or product damage:

1. Do not expose this apparatus to rain, moisture, sprays, drips or splashes and ensure that no objects containing liquids are placed on the apparatus, including cups, glasses and vases.
2. Do not place this unit in a confined space such as enclosed shelving, cabinets or bookshelves. Ensure the unit is adequately ventilated.
3. To prevent the risk of electric shock or fire hazard due to overheating, do not cover the unit or obstruct ventilation openings with material, newspaper, cardboard or anything that may restrict airflow into the unit.
4. Do not install near external heat sources such as radiators, heat registers, boilers or any device that produces heat such as amplifiers or computers and

do not place near sources of naked flame.

5. Unplug apparatus from power supply during lightening storms or when unused for long periods of time.
6. Protect the power cable from being walked on, pinched or restricted in any way, especially at plug connections.
7. Only use attachments/accessories specified by the manufacturer.
8. Units contain non-servicable parts - Refer all servicing to qualified service personnel.

Package Contents

- 1 x EXP-SP-0104-4K WyreStorm Express™ 1x4 HDMI 4K Splitter
- 1 x Quickstart guide (Quickstart and full manual downloadable from wyrestorm.com)
- 1 x 5v DC 1A power adapter
- 2 x Mounting brackets

Specification

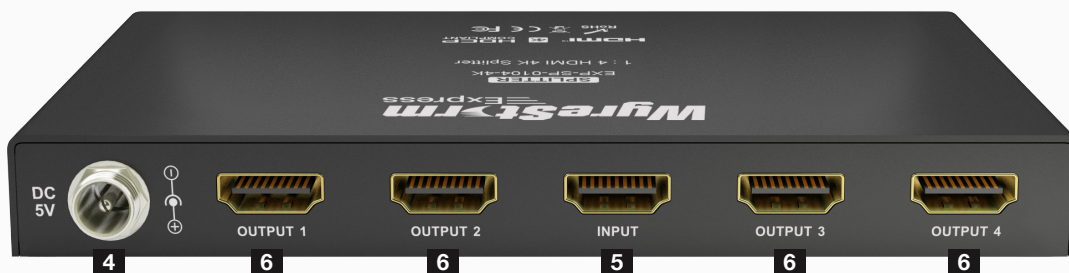
Input	1 x HDMI INPUT (Type A female connector)
Output	4 x HDMI OUTPUT (Type A female connector)
Input/Output Signal Type	HDMI 1.4a, 3D, DVI 1.0
Input/Output Resolution Support	480i, 480p, 576i, 576p, 720p, 1080i, 1920x1080p @ 60Hz, 3840 (UHD), 4096 (DCI) 2160 @ 30Hz
Color	4K 12bit/chroma subsampling color palette 4:2:2, 1080p 24bit
Maximum Data Rate	10.2 Gbps
Maximum Pixel Clock	340 MHz
Input Video Signal	0.5~1.2 V p-p
Input DDC Signal	5V
Video Impedance	100Ω
Power Supply	5V DC 1A
Power Consumption	1080p: 1.2 W (Max.), 4K: 1.7 W (Max.)
Operating Temperature	32°F ~ 95°F (0°C ~ 35°C), 10% ~ 90%, non-condensing
Storage Temperature	-4°F ~ 140°F (-20°C ~ 70°C), 10% ~ 90%, non-condensing
BTU Rating (British Thermal Unit)	25.59
ESD Protection	±4 kV (Contact discharge) , ±8 kV (Air discharge)
Product Dimension (WxHxD)	140mm/5.5" x 18mm/0.7" x 65mm/2.6"
Product Weight	0.26 kg
Certification	CE, FCC, RoHS

Panel Description - Front



- 1** LED - ON: HDMI source connected to input port and powered on
LED - OFF: No HDMI source connected or source powered off
- 2** LED ON: HDMI display device connected to output port and powered on
LED OFF: No display device connected or powered off
- 3** LED - ON: EXP-SP-0104-4K powered on
LED - OFF: EXP-SP-0104-4K powered off

Panel Description - Rear



- 4** Connects to a 5V DC 1A mains power adapter
- 5** Connects to HDMI Source device
- 6** Connects to an HDMI Display device

Connection & Operation

! Ensure power supplies are disconnected from all devices before installation.

1 Connect an HDMI 4K or HD source to the input port of the EXP-SP-0104-4K

2 Connect HDMI 4K or HD display device (LED/LCD screen, projector) to output ports.

! Care should always be taken when inserting/extracting HDMI cables – do not force connections should resistance be felt.

! Ensure HDMI transmission distance is within recommended ranges – see Specification

3 4K and 1080p HD sources and displays can be connected within the same distribution without causing resolution conflict by using the WyreStorm EXP-SCL-DAC-4K scaler with Dolby downmixer between the EXP-SP-0104-4K splitter and connected displays.

Transmission from a 4K source is scaled down to 1080p HD 24fps, while a 1080p source signal is upscaled to 4K at 30Hz.

Visit wyrestorm.com for more information on 4K/HD scaling and Dolby downmixing.

4 Insert the 5V power adaptor into EXP-SP-0104-4K Power port and connect to wall outlet mains supply.

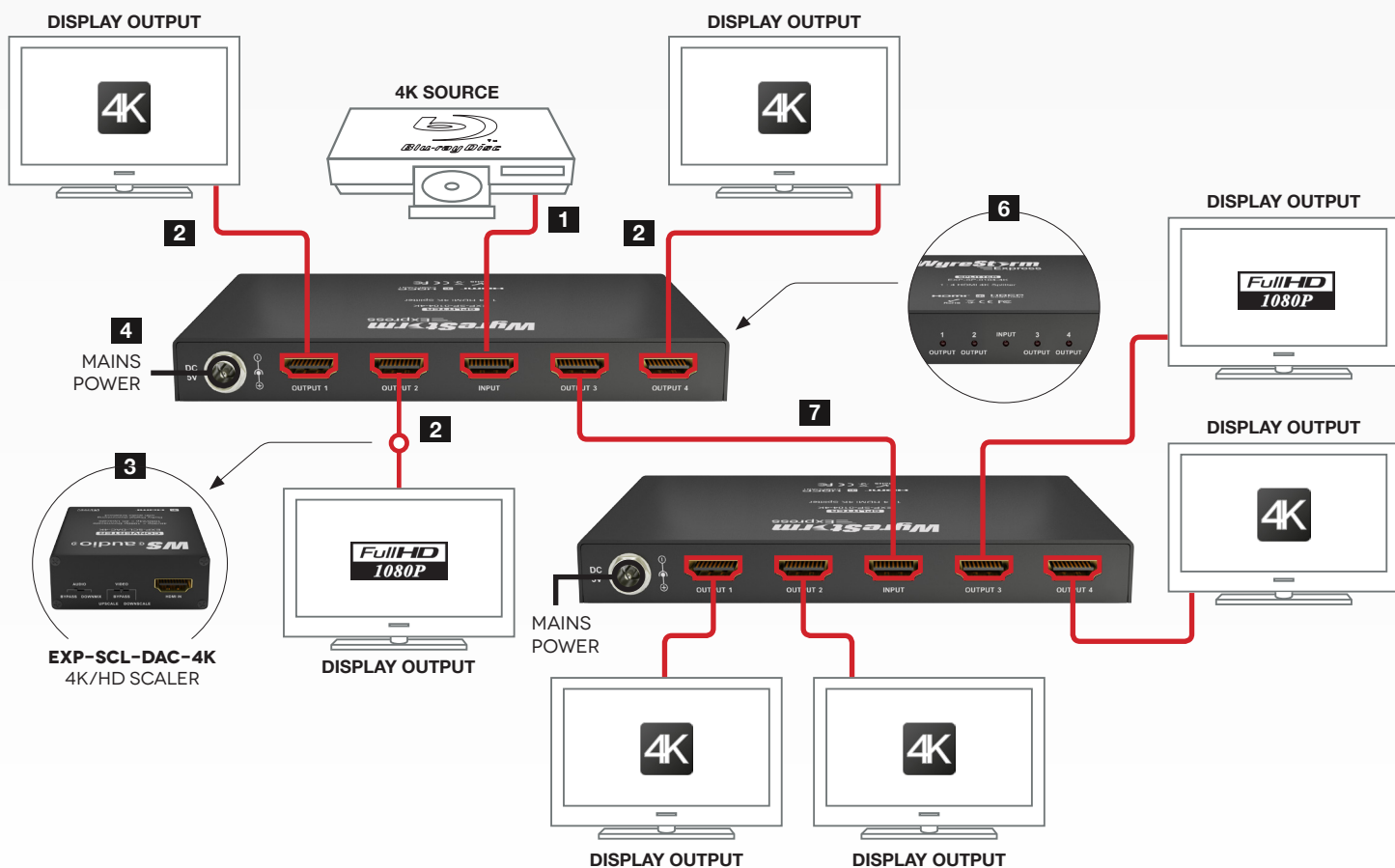
5 After ensuring all sources and displays are properly connected, turn on mains power supply.

6 Check Power and HDMI Input/Output LED indicators on the front panel are fully lit for correct connection. If not, check cable connections or follow the troubleshooting overleaf.

N Both source and display devices must be powered on for LED indicators to detect device connection

7 Multiple EXP-SP-0104-4K splitters can be cascaded to expand distribution if desired by simply connecting an HDMI Output of one unit to the HDMI Input of the cascaded unit to daisy-chain transmission.

N Units transmitting 4K content can be cascaded twice. Units transmitting 1080p content is capable of cascading up to 12 times to units of the same model.



Troubleshooting

Regardless of manufacturer or product, the majority of installation difficulties can typically be attributed to communication problems between devices or when high bandwidth transmissions are attempted with insufficient cable/connections. Should you find yourself in such a situation, we have drawn up the following checklist of general issues and causes that should help you shoot your way out of trouble without seeking further assistance.

No or poor quality picture?

1) Device Connection - Are you connected and powered? Double check all HDMI and 5v power connections are firmly inserted into correct ports and that all devices are powered.

2) Cable Length – Your signal could be struggling to transmit over the length of your HDMI cable? If possible, try using a shorter HDMI cable.

3) Signal strength – the use of cable joins, stranded patch panels, wall outlets and stranded patch leads as interconnects between them, can significantly reduce signal strength. Use solid core, straight-through connections wherever possible.

4) Resolution - If you reduce the resolution of the source, do you get a picture? If so, this suggests a conflicting resolution between source and display or a bandwidth capacity issue with your cable. Check all inputs and outputs share the same resolution and make sure the signal is being successfully transmitted the full length of your HDMI cable.

5) Cable quality and condition – HDMI cable/connectors can be easily damaged and the quality of material can vary, especially in lower price brackets. Successful transmission of video, audio and control can all be affected by cable and termination quality. Always use good quality leads and cables. Should transmission problems be experienced, try swapping cables/leads for those already working to see if this improves your image to identify cable issue as source of problem.

6) Blu-Ray, 3D - is the equipment used 3D enabled/compatible? Is a 3D disc being played in a 3D enabled Blu-ray player or through a compatible AV receiver?

Are resolutions between source and display compatible with adequate cable bandwidth for the larger 3D transmissions?

7) 4K - Are you trying to pass a 4K signal? Ensure connected devices are 4K enabled, correctly configured and outputting compatible transmissions
4K: 3840 (UHD) or 4096 (DCI) 2160 @ 30Hz with chroma (colour) subsampling rate of 4:2:2
1080p: 1920x1080p, 60Hz (if problems are experienced at 60Hz, try lowering to 50Hz)

8) Power LED off - Check power supply is on and cables are connected properly and of required specification

9) Input or Output LED off – Check power is supplied to all connected devices and cables are connected properly and of required specification

10) Display not showing image – Check all devices are turned on and cables are connected properly and of required specification and corresponding Output LED on splitter is lit. Also check display and source are operating properly and Source is outputting a signal, making sure devices support HDCP.
Ensure the length of HDMI cables between devices are within limits – see Specification section for details.
If compatibility issues are suspected between display and splitter, swap out for a display you know is fully functional with the system.

11) Display device displays 'HD 'noise' such as picture 'snow' or 'mosaic' – signifies a failure to fully establish a signal and can often be caused by excessive cable lengths.

Check power is supplied to all connected devices and cables are connected properly and of required specification.

Ensure the display device supports HDCP

Check input source does not have the same picture issues, if so, check settings of source device or replace source.

Ensure the length of HDMI cables between devices are within limits – see Specification section for details.

Try swapping or shortening your HDMI cable – if the problem continues on the same output, turn off all equipment and swap your signal carrying cables at both ends.

FAQs

Are WyreStorm products compatible with HDMI 1.4?

HDMI 1.4 refers to a list of 'features' that a device is capable of supporting, including Ethernet channel, return audio channel, 3D etc.

Due to the continuously evolving nature of the technology, HDMI Licensing LLC have now decided to simplify terminology by testing and referring to cable in terms of STANDARD or HIGH-SPEED rather than versions 1.3, 1.4 etc.

STANDARD (or "category 1") HDMI cables perform at speeds of 75Mhz or up to 6.75Gbps, which is the equivalent to a 720p/1080i signal – These HDMI cables are NOT recommended.

All WyreStorm equipment support HIGH-SPEED (or "category 2") HDMI cables that have been tested to perform at speeds of 340Mhz or up to 10.2Gbps, which is the highest bandwidth currently utilized over an HDMI cable and can successfully handle 1080p and 4K signals including those at increased color depths and/or increased refresh rates from the source. High-Speed cables are also able to accommodate higher resolution displays, such as WQXGA cinema monitors (resolution of 2560 x 1600).

What about screens with different resolution capabilities?

When sending a signal point to point a TV will communicate its capabilities to the source, which will then output a compatible signal the display can accept (i.e. 1080p Stereo audio). Switchers or splitters do not scale per output but instead negotiate with the source a signal that all screens are capable of supporting.

If a switcher or splitter distribution is used with different resolution combinations of 4K, 1080p or 1080i screens, the resultant image will likely be the lowest resolution capable of being received across all screens.

For combined 4K and 1080p HD distributions, a WyreStorm EXP-SCL-DAC-4K scaler between receiver and display is required to scale down 4K transmissions to 1080p 24fps for HD screens and upscale 1080p to 4K 30Hz for UHD displays. See wyrestorm.com for more details

How does the Transmission device handle HDCP?

HDCP (High Definition Copyright Protection) is a feature built in to HDMI devices to prevent theft of or illegal distribution of HD content.

Unlike competing products, WyreStorm equipment is legal and comply with HDCP regulations by assigning a "key" to any display connected to an HDMI device. This doesn't change when connecting to an extender, receiver splitter or matrix switch; rather keys are duplicated or more keys are assigned.

Maintenance

Clean this unit with a soft, dry cloth only. Never use alcohol, paint thinner or other harsh chemicals.

Provided Service

1. Damage requiring service: This unit should be serviced by a qualified service personnel if:

- The DC power supply or AC adaptor has been damaged.
- Objects or liquid have gotten into the unit.
- The unit has been exposed to rain.
- The unit does not operate normally or exhibits a marked change in performance.
- The unit has been dropped or the cabinet damaged.

2. Servicing Personnel: Do not attempt to service the unit beyond that described in these operating instructions. Refer all other servicing to authorised servicing personnel.

3. Replacement Parts: When parts need replacing, ensure parts approved by the manufacturer are used – either those specified by the manufacturer or parts possessing the same characteristics as the original parts. Be aware – unauthorised substitutes may result in fire, electric shock, or other hazards and will invalidate your warranty.

4. Safety Check: After repairs or service, ask the service personnel to perform safety checks to confirm the unit is in proper working condition.

Mail-in-Service

When shipping the unit, carefully pack and send it prepaid, with adequate insurance and preferably in the original packaging. Please include a document or letter detailing the reason for return and include a daytime telephone number and/or email address where you can be contacted.

If repair is required during the limited warranty period, the purchaser will be required to provide a sales receipt or other proof of purchase, indicating date and location of purchase as well as the price paid for the product. The customer will be charged for the repair of any unit received unless such information is provided.

Warranty

Should you feel your product does not function adequately due to defects in materials or workmanship, we (referred to as “the warrantor”) will, for the length of the period indicated below (starting from the original date of purchase) either:

- a) Repair the product with new or refurbished parts. or
- b) Replace it with a new or refurbished product.

Limited warranty period:

All WyreStorm Express products are covered by a 1 year PARTS and LABOR warranty. During this period there will be no charge for unit repair, replacement of unit components or replacement of product if necessary.

The decision to repair or replace will be made by the warrantor. The purchaser must mail-in the product during the warranty period. This limited warranty only covers the product purchased as new and is extended to the original purchaser only. It is non-transferable to subsequent owners, even during the warranty period.

Warranty Limits and Exclusions

A purchase receipt or other proof of original purchase date is required for the limited warranty service.

1. This Limited Warranty ONLY COVERS failures due to defects in materials or workmanship and DOES NOT COVER normal wear and tear or cosmetic damage.

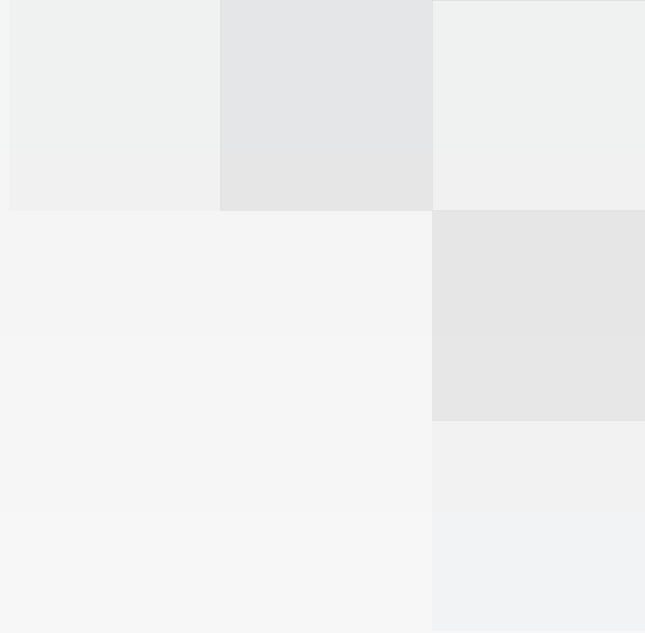
The limited warranty also DOES NOT COVER damage that occurs in shipment or failures caused by products not supplied by the warrantor, failures resulting from accident, misuse, abuse, neglect, mishandling, misapplication, alteration, incorrect installation, set-up adjustment, implementation of/to consumer controls, improper maintenance, power line surge, lightening damage, modification, service by anyone other than a manufacturer-approved service center or factory-authorized personnel, or damage attributable to acts of God.

2. There are no express warranties except as listed under “limited warranty coverage.” The warrantor is not liable for incidental or consequential damage resulting from the use of this product or arising out of any breach of this warranty.

For example: damages for lost time, the cost of having a person/persons remove or re-install previously installed equipment, travel to and from service location, loss of or damage to media, images, data or other recorded/stored content. The items listed here are not exclusive, but are for illustration only.

3. Parts and service not covered by this limited warranty are not the responsibility of the warrantor and should be considered the responsibility of the individual.

Installation Notes



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We reserve the right to change any specification or product dimensions at any time.