General Safety

- This product is for indoor use only, do not expose to rain, moisture, very high and low temperatures, strong magnetic fields and dusty environments
- Disconnect power to the units before cleaning. Do not use abrasives or solvents to clean the surface of the unit, wipe with a clean soft cloth
- Do not disassemble any of the units in this kit they contain no user serviceable parts. Refer servicing to qualified personnel only
- This device should be operated using only the AC/DC adaptor supplied with it. Unplug the adaptor from the mains if the unit is not going to be used for a while
- Install the units in locations with adequate ventilation.
- This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Introduction

The HDMI Extender extends and splits Ultra HD, video signals at resolutions up to 4K2K@60Hz YUV 4:4:4, high definition audio signals and one way IR signals, over a distance of up to 35m over individual CAT6/7 cables to four receivers connected to Ultra HD TVs.
With only four individual cost effective CAT/6/7 cables, an HD source with HDMI output can be connected to four HD displays with HDMI inputs over long distances. HDR TV, DTS-HD or Dolby TrueHD audio are supported and compatible with the extender. In addition, the extender is also equipped with one way IR pass-through which allows for source control using a remote located near any of the four displays.

The extender comprises five main units: a transmitter and four receivers.
The transmitter is used to capture the HDMI input and splits and sends the signal over four individual Cat6/7 Ethernet cables to the receivers it also reconstructs any IR control signals from the receivers and outputs them to the IR blaster.
The receiver equalizes the transmitted HDMI signal and sends IR control signals back to the source via the Transmitter. Power for the Receiver is transmitted over the ethernet cable.

Four sets of IR Emitters and IR Receivers are also supplied to allow control of the source from any of the display locations.

Features

- HDMI 2.0, HDCP 2.2 / HDCP 1.4 and DVI 1.0 compliant
- Supports 18Gbps bandwidth
- Supports input and output video resolutions up to 4k2k@60Hz 4:4:4, extends distance up to 35m
- Supports HDR, HDR10+, HLG and Dolby vision
- HDMI loop output can be used to provide the source signal for a local display
- Supports one-way IR pass-through
- Supports PoC (Power over Cable), the transmitter is powered by a 12V/2.5A power adaptor, the four receiver units and connected IR receivers are powered by the transmitter via the connecting Ethernet cables (no additional power adaptors are required).
- Advanced EDID management allows manual setting or EDID copying to allow optimum settings for video resolutions and audio compatibility using the dip switches for all receiver displays and loop out display
- Supports audio formats up to PCM7.1, Dolby Digital, Dolby, TrueHD, Dolby Digital Plus(DD+), DTS-ES, DTS, HD Master, DTS HD-HRA, DTS-X.
- Supports up to 7.1CH HD audio pass-through
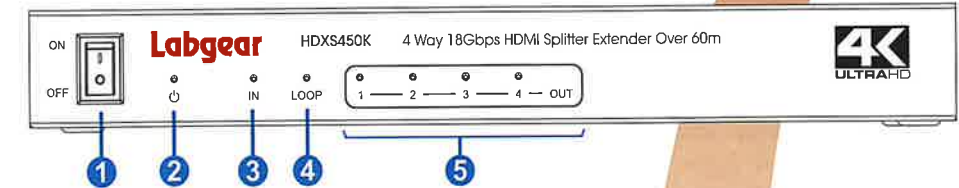- Supports digital and analog audio de-embedded output

Box contents

1x Ethernet Transmitter and Splitter
1x IR Blaster 1.5m Cable
1x Mains Adaptor Output 12V=2.5A
4x Ethernet Receivers
4x IR Receivers 1.5m Cable

PLEASE NOTE: It is essential to make **ALL** HDMI and ethernet cable connections **BEFORE** powering the transmitter unit.
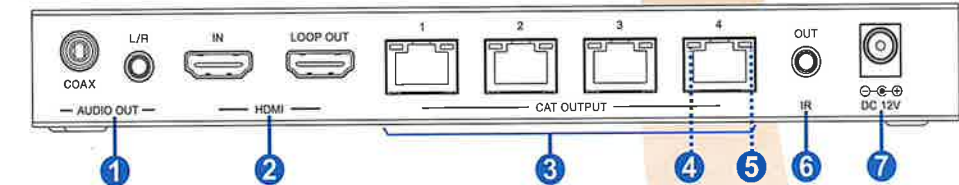
Transmitter unit

Front panel


❶ POWER Switch - switches the unit On/Off

❷ RED Power LED

❸ GREEN HDMI IN - indicates the unit is connected to an active HDMI signal source

❹ GREEN Loop LED - indicates the unit is connected via the Loop Out port to an active display

❺ GREEN Out LEDs - indicates CAT output ports connected to receiver units

Back panel

❶ Coaxial/analog audio output port, connects to an amplifer or speaker

❷ HDMI IN: Connects to HDMI source device
HDMI OUT: HDMI loop output, connects to local display

❸ RJ45 CAT OUT Ports: Connect to the Receivers over ethernet cables

❹ The Green indicators light up when the unit is connected to receiver units via this port

❺ The Orange LED indicators: **On:** indicates an HDMI signal with HDCP. **Flashing:** indicates an HDMI signal but no HDCP. **Off:** indicates no HDMI signal

❻ IR OUT: Connection for IR Blaster

❼ 12V=2.5A Socket for power supply (not used if Receiver is powered)

Side panel
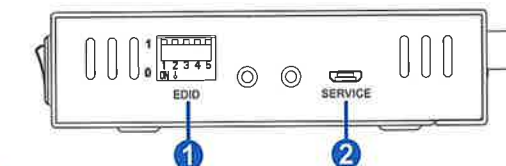
❶ EDID Dip switch - Used to set EDID mode. Please refer to pages 6-8 for settings

❷ SERVICE: USB connection for hardware update or control by PC

Receiver - Sockets and Switches

HDMI OUT

CAT IN   SERVICE   IR IN   DC 12V
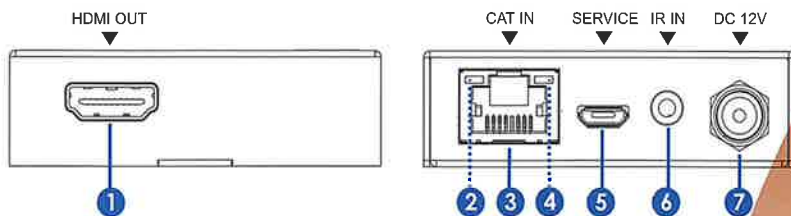
① HDMI OUT: HDMI output, connects to a display with an HDMI cable*
② The Green indicator lights up when the unit is powered
③ RJ45 CAT IN: Connects to the Transmitter over the ethernet cable
④ The Orange LED indicator: **On**: indicates an HDMI signal with HDCP.
Flashing: indicates an HDMI signal but no HDCP. **Off**: indicates no HDMI signal
⑤ SERVICE: USB Port for hardware update connection
⑥ IR IN: Connects to the wideband IR Receiver cable. The IR signal from the remote control is sent to the IR OUT port of the transmitter.
⑦ 12V⎓1A Socket for power supply but not needed when connected to the Transmitter by Ethernet cable (PoC powered)

IR Control - Using IR Blaster and IR Receiver

The IR Blaster cable is connected to the IR OUT socket on the HDMI Transmitter unit and the blaster is attached to the IR sensor window on the front panel of the source device (DVD or Blu-Ray player) or positioned close by in line of sight of the source's IR sensor.
The blaster emmits the reconstructed IR signal received from a remote control by an IR Receiver connected to one of the HDMI Receiver units (see the typical connection diagram opposite).

IR Blaster
Connects to Transmitter
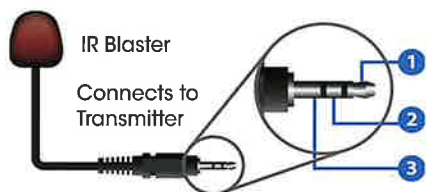
1. IR Blaster Signal, 2. Power, 3. NC
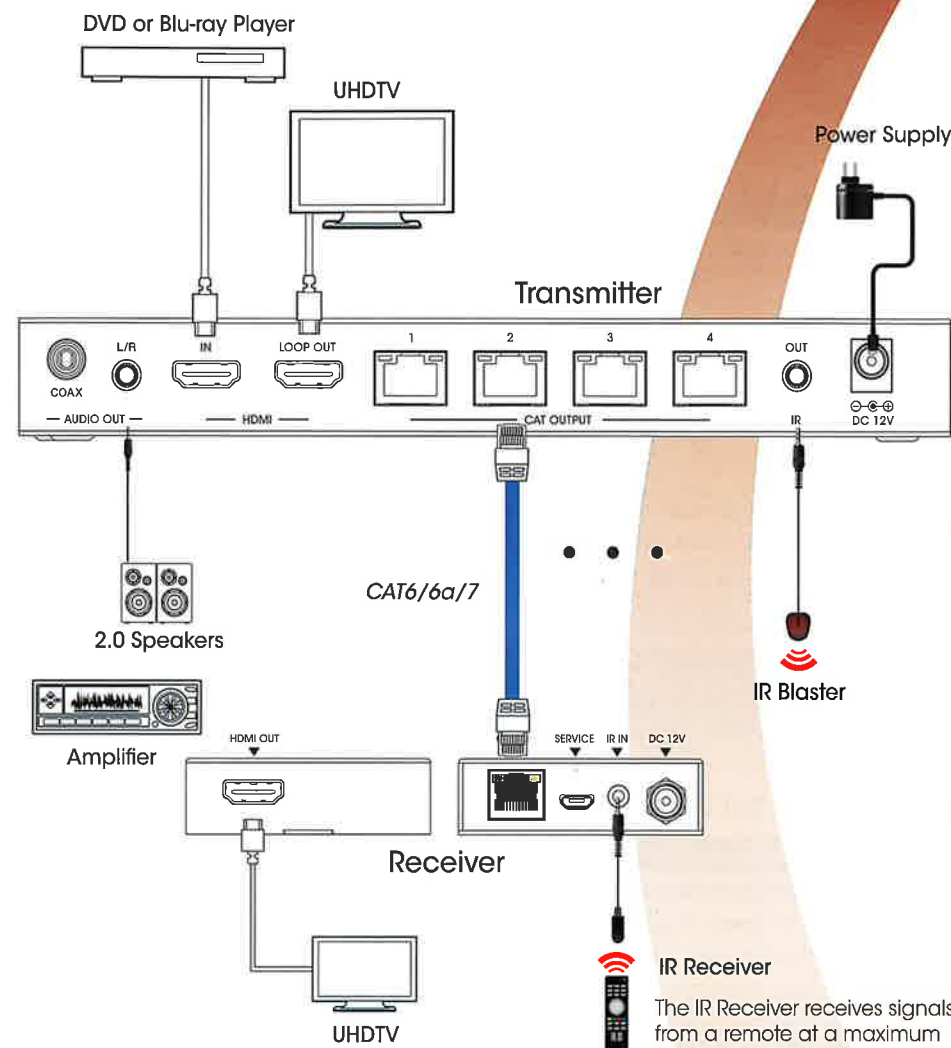
IR Receiver
Connects to Receiver

1. IR Signal, 2. Power, 3. Earth

Troubleshooting

Please make sure **ALL** HDMI and ethernet cable connections are made **BEFORE** powering the transmitter unit. Similarly if you need to change connections switch off or disconnect the power to the transmitter and make your connection changes. Once changes are complete reconnect or switchback on the power to the Transmitter unit.

For further information or any queries please contact
Technical Support:
www.labgear.co.uk/support

Typical Connection

DVD or Blu-ray Player

UHDTV

Power Supply

Transmitter

L/R   IN   LOOP OUT   1   2   3   4   OUT
COAX
— AUDIO OUT —   — HDMI —   — CAT OUTPUT —   IR   DC 12V

2.0 Speakers

CAT6/6a/7

IR Blaster

Amplifier

HDMI OUT   SERVICE   IR IN   DC 12V

Receiver

UHDTV

IR Receiver

The IR Receiver receives signals from a remote at a maximum distance of 5 to 8m, depending on the remote and the state of it's batteries, and within an arc of ± 45° in a vertical plane.

*PLEASE NOTE: To ensure the optimum transmission of video/audio signals and power, connection cables always use genuine CAT6, CAT6a or CAT7 Ethernet cable to connect the Transmitter to the receiver and Premium certified 4K HDMI cables to connect source and display equipment.

Specifications

	Transmitter	Receivers
Input Ports	1x HDMI	1x Ethernet (RJ45)
Output Ports	1x HDMI & 1x Ethernet (RJ45)	1x HDMI
Control	1x IR OUT/SERVICE/EDID	1x IR IN
Control Port/Switch	1x 3.5mm socket/USB/Dip Switch	1x 3.5mm socket
Dimensions (W*H*D):	210 x 25 x 100mm	61 x 18 x 88mm
Weight	617g	155g
General		
HDMI Standard	HDMI 2.0b, HDCP 2.2 & 1.x compliant	
Video Bandwidth	18Gbps/594MHz	
Video Resolution	Up to 4K@50/60Hz 4:4:4	
Color Space	RGB / YCbCr 4:4:4, YCbCr 4:2:2, YUV 4:2:0	
Color Depth	8-bit,10-bit,12-bit (1080p@60Hz), 8-bit (4K2K@60Hz YUV4:4:4) 8-bit,10-bit,12-bit (4K2K@60Hz YCbCr 4:2:2/4:2:0)	
HDMI Audio Formats	LPCM 2.0/2.1/5.1/6.1/7.1, Dolby Digital, Dolby TrueHD, Dolby Digital Plus(DD+), DTS-ES, DTS HD Master,DTS HD-HRA, DTS-X	
Coaxial/Analogue Audio Formats	Coaxial: PCM2.0, Dolby Digital/Plus, DTS 2.0/5.1, Analogue: PCM 2.0CH	
Transmission Distance for CAT6/6a/7	4K2K@60Hz ≤ 35m, 4K2K@30Hz ≤ 50m, 1080p@60Hz ≤ 60m	
Transmission Distance HDMI IN/OUT	4K2K@60Hz ≤ 3m, 4K@30/1080p@60Hz ≤ 10m	
EDID Management	Built-in Auto EDID	
Power Supply	Input: 100-240V~50/60Hz, Output: 12V⎓2.5A	
Total Power Consumption	30W max. (for Transmitter and Receivers)	
Work Temperature	0 ~ 40°C	
Relative Humidity	20% ~ 90%	

EDID Mode - set by dip switch

EDID Mode	EDID Description	EDID Mode	EDID Description
11111	1080P, Stereo Audio 2.0	01111	4K2K60Hz_444, Dolby/DTS 5.1
11110	1080P, Dolby/DTS 5.1	01110	4K2K60Hz_444, HD Audio 7.1
11101	1080P, HD Audio 7.1	01101	4K2K60Hz_444, Stereo Audio 2.0 HDR
11100	1080I, Stereo Audio 2.0	01100	4K2K60Hz_444, Dolby/DTS 5.1 HDR
11011	1080I, Dolby/DTS 5.1	01011	4K2K60Hz_444, HD Audio 7.1HDR
11010	1080I, HD Audio 7.1	01010	COPY_FROM_LOOP OUT
11001	1080P 3D, Stereo Audio 2.0	01001	COPY_FROM_CAT OUT1
11000	1080P 3D, Dolby/DTS 5.1	01000	COPY_FROM_CAT OUT2
10111	1080P 3D, HD Audio 7.1	00111	COPY_FROM_CAT OUT3
10110	4K2K30Hz_444, Stereo Audio 2.0	00110	COPY_FROM_CAT OUT4
10101	4K2K30Hz_444, Dolby/DTS 5.1	00101	1080P, Stereo Audio 2.0
10100	4K2K30Hz_444, HD Audio 7.1	00100	1080P, Stereo Audio 2.0
10011	4K2K60Hz_420, Stereo Audio 2.0	00011	1080P, Stereo Audio 2.0
10010	4K2K60Hz_420, Dolby/DTS 5.1	00010	1080P, Stereo Audio 2.0
10001	4K2K60Hz_420, HD Audio 7.1	00001	1080P, Stereo Audio 2.0
10000	4K2K60Hz_444, Stereo Audio 2.0	00000	PC control mode

ASCII Commands

Serial port protocol. Baud rate: 115200,   Data bits: 8bit,   Stop bits:1,   Check bit: 0

x - Parameter 1,   y - Parameter 2,   ! - Delimiter

Command Code	Function Description	Example	Feedback	Default Setting
Power				
s power z!	Power on/off the device,z=0~1 (z=0 power off, z=1 power on)	s power 1!	Power on, System Initializing... Initialization Finished! FW version x.xx.xx	power on
r power!	Get current power.state	r power!	power on/power off	
s reboot!	Reboot the device	s reboot!	reboot	
System Setup				
help!	List all commands	help!		
r type!	Get device model	r type!	HDC-SPB14D60	
r status!	Get device current status	r status!	Get the unit all status: power, in/out connection, edid mode	
r fw version!	Get Firmware version	r fw version!	MCU BOOT: Vx.xx.xx MCU APP: Vx.xx.xx	
r link in!	Get the connection status of the input port	r link in!	HDMI IN: connect	
r link out y!	Get the connection status of the y output port, y=0~4(0=all, 1~4=CAT 1~4)	r link out 1!	CAT OUT1: connect	
r link loop out y!	Get the connection status of the y loop output port, y=1	r link loop out 1!	HDMI LOOP OUT: connect	
s reset!	Reset to factory defaults	s reset!	Reset to factory defaults System Initializing... Initialization Finished! FW version x.xx.xx"	

Command Code	Function Description	Example	Feedback	Default Setting
Output Setting				
s hdmi stream z!	Set hdmi loop output stream on/off z=0~1 (0:disable,1:enable)	s hdmi stream 1 !	Enable hdmi loop out stream Disable hdmi loop out stream	enable
s cat y stream z!	Set cat output y stream on/off, y=0~4(0=all) z=0~1 (0:disable,1:enable)	"s cat 1 stream 1 ! s cat 0 stream 1 !"	Enable cat output 1 stream Disable cat output 1 stream Enable cat all outputs stream Disable cat all outputs stream	enable
r hdmi stream!	Get hdmi loop out stream status	r hdmi stream!	Enable hdmi loop output stream	
r cat y stream!	Get cat output y stream status, y=0~4(0=all)	r cat 1 stream!	Enable cat output 1 stream	
s hdmi hdcp z!	Set hdmi loop output port hdcp status	s hdmi hdcp 1!	hdmi loop out hdcp on	all hdmi out hdcp active
r hdmi hdcp!	Get HDCP status of loop out	r hdmi hdcp!	hdmi loop out hdcp on	
s cat y hdcp z!	Set cat output y port hdcp status y=0~2(0=all) z=0~1 (1=on,0=off)	s cat 1 hdcp 1!	cat out 1 hdcp on	all cat out hdcp active
r cat y hdcp!	Get HDCP status of cat out y, y=0~2(0=all)	r cat 1 hdcp!	cat out 1 hdcp on	
s cat y dsc mode z!	Set cat output y port dsc mode status y=0~4(0=all) z=1~3 (1=Cat cable distance normal Mode, 2= Cat cable distance 35M Mode,3= Cat cable distance 70M Mode)	s cat 1 dsc mode 2!	cat out 1 dsc mode 2	Cat cable distance 35M Mode(35M)
r cat y dsc mode!	Get dsc mode of cat out y,y=0~4(0=all)	r cat 1 dsc mode!	cat out 1 dsc mode 2	
s audio mute 1!	Set audio output port mute status (1-mute, 0-umute)	s audio mute 1!	s audio mute 1	s audio unmute (0)
r audio mute!	Get audio output mute status	r audio mute!	audio mute 1	

Command Code	Function Description	Example	Feedback	Default Setting
EDID Setting				
s edid in from z!	Set input EDID from default EDID z, z=1~26 1, 1080p,Stereo Audio 2.0 2, 1080p,Dolby/DTS 5.1 3, 1080p,HD Audio 7.1 4, 1080i,Stereo Audio 2.0 5, 1080i,Dolby/DTS 5.1 6, 1080i,HD Audio 7.1 7, 3D,Stereo Audio 2.0 8, 3D,Dolby/DTS 5.1 9, 3D,HD Audio 7.1 10, 4K2K30_444, Stereo Audio 2.0 11, 4K2K30_444, Dolby/DTS 5.1 12, 4K2K30_444,HD Audio 7.1 13, 4K2K60_420, Stereo Audio 2.0 14, 4K2K60_420, Dolby/DTS 5.1 15, 4K2K60_420,HD Audio 7.1 16, 4K2K60_444, Stereo Audio 2.0 17, 4K2K60_444, Dolby/DTS 5.1 18, 4K2K60_444,HD Audio 7.1 19, 4K2K60_444, 20, 4K2K60_444, Stereo Audio 2.0 HDR Dolby/DTS 5.1 HDR 21, 4K2K60_444, 22, copy from hdmi loop out HD Audio 7.1 HDR 23, copy from cat output 1 24, copy from cat output 2 25, copy from cat output 3 26, copy from cat output 4"	s edid in from1!	input EDID:1080p, Stereo Audio 2.0 Please toggle EDID dip switch to 00000!	1080p, Stereo Audio 2.0
r edid in!	Get EDID status of the input	r edid in!	input EDID: 4K2K60_ 444,Stereo Audio 2.0	
r edid in data!	Get the EDID data of the hdmi input	r edid in data!	EDID data : 00 FF FF FF FF FF FF 00	

Power Supply: ErP/EuP directive No. (EU) 2019 (1782)

Manufacturer Trademark Address	Philex Electronic Ltd. London Road, Bedford, MK42 0NX, UK. Registration No. 339123 **PHILEX**
Model identifier	NBS30E120250D5
Input voltage	100-240VAC
Input AC frequency	50/60Hz
Output voltage	12V DC
Output current	2.5A
Output power	30.0W
Average active efficiency (230V/50Hz)	88.81%
Efficiency at low load (10 %) (230V/50Hz)	86.65%
No-load power consumption (230V/50Hz)	0.07W

HDMI®
HIGH-DEFINITION MULTIMEDIA INTERFACE

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Waste electrical and electronic products should not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority for recycling advice.

Labgear, Philex House London Road, Bedford, MK42 0NX, U.K.

EU Distributor: Philex Electronic Ireland Ltd., Robwyn House, Corrintra, Castleblayney, Co. Monaghan, A75 YX76, Ireland.

Labgear

HDXS450K

18Gbps 60m 4 Way HDMI Splitter/Extender Kit

over CAT6/7 with IR control & POC

User Guide

HDMI™
HIGH DEFINITION MULTIMEDIA INTERFACE

| 18.0 Gbps | 4K30 50m | 4:4:4 lossless | V2.0 HDMI™ | V2.2 HDCP |