



## User Manual

2x1 USB3 Cat Extender Switch (Host-Side)

**Model PT-E-U321-H**

Designed in Germany

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## Preface

Read this user manual carefully before using this product. Pictures shown in this manual are for reference only. Different model layouts and specifications are subject to the physical product.

This manual is for operation instructions only, not for any maintenance usage.

In the constant effort to improve our product, we reserve the right to make changes in functions or parameters without prior notice or obligation.

## Trademarks

Product model and logo are trademarks. Any other trademarks mentioned in this manual are acknowledged as the properties of the trademark owner. No part of this publication may be copied or reproduced without prior written consent.

## FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class B 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.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.



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**REACH | 1907/2006/EU**

**ROHS | 2011/65/EU**

PureLink hereby declares that this product **PureTools PT-E-U321-H** complies with Directives 1907/2006/EU and 2011/65/EU.

**EMC / LVD (Electro Magnetic Compatibility / Low Voltage Directive)**

PureLink GmbH hereby declares that this product **PureTools PT-E-U321-H** complies with Directives 2014/30/EU and 2014/35/EU. The full text of the EU Declaration of Conformity is available at the following Internet address:

[http://www.purelink.de/ce/4251364745809\\_CE.pdf](http://www.purelink.de/ce/4251364745809_CE.pdf)



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## SAFETY PRECAUTIONS

To ensure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment
  - Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
  - Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
  - Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
  - Refer all servicing to qualified service personnel.
  - To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
  - Do not put any heavy items on the extension cable in case of extrusion.
  - Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
  - Install the device in a place with fine ventilation to avoid damage caused by overheating.
  - Keep the module away from liquids.
  - Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
  - Do not twist or pull by force ends of the optical cable. It can cause malfunction.
  - Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
  - Unplug the power cord when left unused for a long period of time.
  - Information on disposal for scrap devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.
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## 1. Product Introduction

### 1.1 Introduction

The PT-E-U321-H is a 2x1 USB3.2 Gen1 data only witch with Cat extension. The extender is designed to transmit USB3.x data up to 100m distance. It is the host side of the extender and it contains one Type-B and one Type-C for auto switching or manual switching of a PC or laptop. It also has two local USB-A ports with 5V 500mA shared power supply for local peripherals. The extender also supports two-way 24V PoC power supply. Applications include extending conferencing cameras, video capture devices, and audio devices for boardrooms and conference rooms or for any high bandwidth data device.

### 1.2 Feature

- 2x1 USB 3.2 Gen1 5Gbps extender switch;
- Extends USB signals up to \*100m with CAT6A cable;
- Supports RS232 pass-through/control/upgrade;
- Supports PD 3.0 100W charging to HOST;
- Auto/manual switching mode;
- Two-way 24V PoC power supply;

### 1.3 Package List

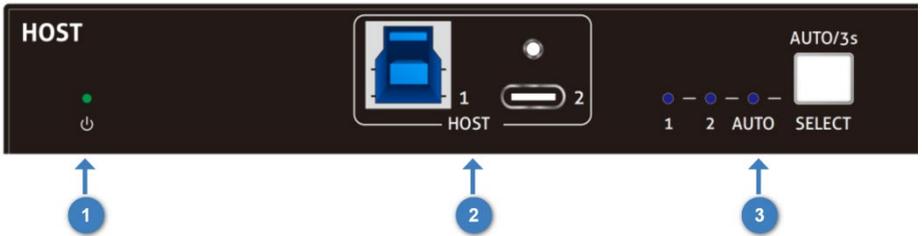
- 1x PT-E-U321-H
- 2x Mounting ears & 4x Screws
- 1x Manual
- 1x Power adapter (24V, 1.5A)
- 4x Rubber feet

**Note:** Please contact your distributor immediately if any damage or defect in the components are found.

\*100m range is the maximum possible range under ideal circumstances; it is recommended that around 80-90m be the limit when the quality or length of cable is unknown

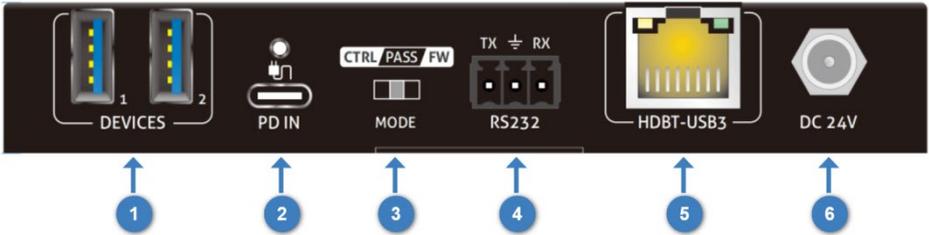
## 2. Panel Description

### Front Panel



No.	Name	Description
①	Power LED	The LED illuminates green when the unit is power on.
②	HOST	1x USB 3.2 Gen1 Type-B and 1x USB 3.2 Gen1 Type-C, connecting to the PC or Laptop.
③	SELECT	LED 1 & 2: The LED illuminates blue when switching to the corresponding host. Auto LED: The LED illuminates blue when in auto switching mode and is off when in manual switching mode. AUTO/3s: Press button to switch the host. Press and hold the button 3 seconds to switch the switching mode. Note that the factory default switching mode is AUTO.

## Rear Panel

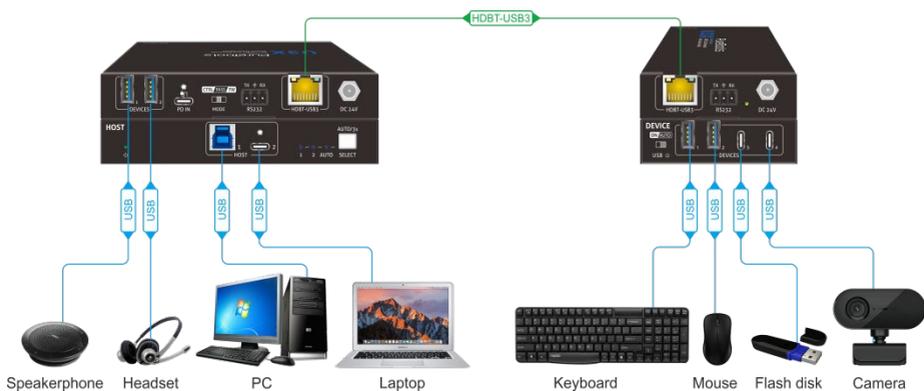


No.	Name	Description
①	DEVICES	2x USB 3.2 Gen1 Type-A , shared 5V 500mA total and limit 5V 500mA per port; Connecting to the speakerphone and headset.
②	PD IN	1x Type-C USB with PD 3.0 100W charging to HOST 2(USB-C).
③	MODE	1x 3-way DIP switch for selecting the RS232 port function. CTRL: Control the unit via RS232 commands. PASS: RS232 pass-through connection. FW: Firmware upgrade.
④	RS232	1x 3-pin terminal block.
⑤	HDBT-USB3	1x RJ45 port for connecting with the device unit of the extender pair. The yellow light indicates the connection status of the HDBT connection, and the green LED is the data light.
⑥	DC 24V	DC locking barrel port for power adapter connection.

### 3. Specification

USB	
Host Connector	1x Type-B USB, 1x Type-C USB
PD Connector	1x Type-C USB
Devices Connector	2x Type-A USB
Devices Power	5V 500mA total
USB Version	USB 3.2 Gen1
Number of Hub chips	1 internal +1 additional for extension
System example	PT-E-U321-H + PT-E-U34-D = 3 Hub chips total
Control	
Control	1x Host Select, 1x RS232, 1x RS232 Mode Switch
Control Connector	1x White Button, 1x 3-pin Terminal Block, 1x DIP Switch
General	
Transmit distance	Up to 100m with CAT6A cable
PoC standard	Two-way 24V PoC
Data Rate	5Gbps
Operation Temperature	-10 to +55°C
Storage Temperature	-25 to +70°C
Relative Humidity	10% ~ 90%
External Power Supply	DC24V 1.5A
Power Consumption	7.5W (Max)
Dimension (W*H*D)	133.0mm x 21.5mm x 105.0mm
Net Weight	320g

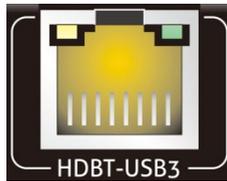
## 4. System Diagram



## 5. HDBT-USB3

The RJ45 port is used for data transmission and supports 24V PoC power supply and 12-48V power supply.

The yellow light indicates the connection status, and the green light indicates the data transmission status.



Status	Definition
Yellow light off	No CAT cable / active connection.
Yellow light blink	Connecting or unstable connection between host and device.
Yellow light lit	Stable connection between host and device.
Green light off	No USB data signal is transmitting.
Green light flashes regularly (for every 500ms)	USB 2.0 data transmitting.
Green light flashes irregularly (for uncertain interval)	USB data transmission fault.
Green light lit	USB 3.x data transmitting.

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## 6. Button Control

### 6.1 Manual Switching

When the switcher is in the manual switching mode, press the **SELECT** button repeatedly to cycle through the two video inputs, and the corresponding source LED illuminates blue immediately.

### 6.2 Automatic Switching

Press and hold the **SELECT** button for at least 3 seconds to enable automatic switching. The current host will not be changed, and the AUTO LED will turn blue.

When in AUTO mode, the switcher will switch according to the following rules:

- Press and hold the **SELECT** button at least three seconds to exit AUTO mode - host will not change and the AUTO LED will turn off.
- New host: Once detecting a new host, the unit will automatically select the new host.
- Press the **SELECT** button to forcibly change the host.
- Reboot: Once power is restored to the unit, it will automatically reconnect the the host that was connected before the reboot.
- Source removed: When an active host is removed, the switcher will switch to the other active host.

## 7. RS232 Control

RS232 can be transmitted bi-directionally between the PT-E-321-H and any compatible receiver, in order to control third party RS232 devices at either side of the extender pair. The supported baud rates are 2400, 4800, 9600(default), 19200, 38400, 57600 or 115200.

### 7.1 RS232 Control Software

Here take the software **Docklight** as an example.

- **Installation**

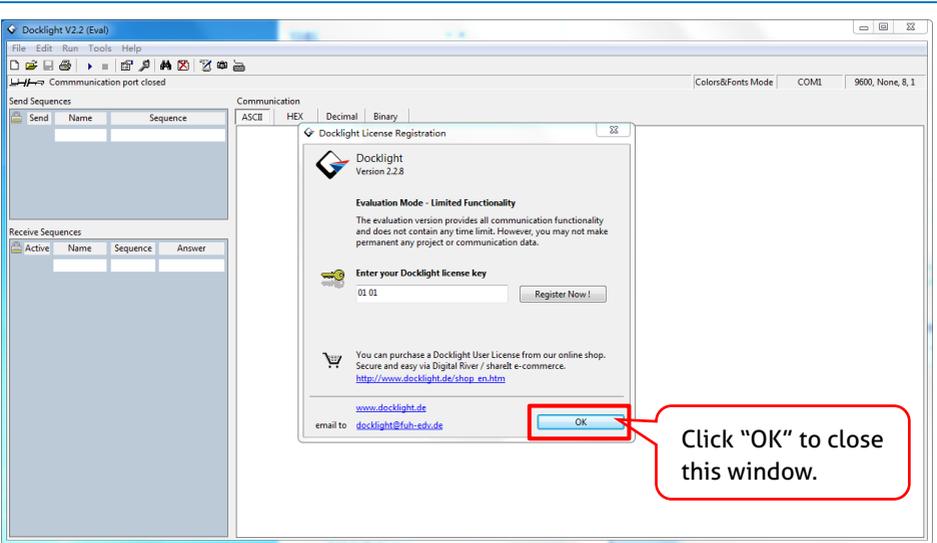
Please download the latest Software Version from the link below:

<https://docklight.de/download/Docklight.zip>

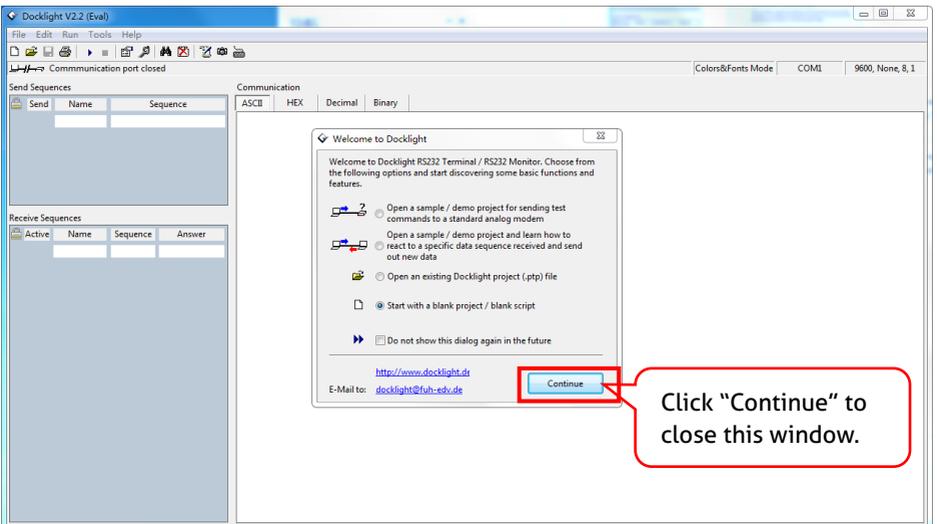
Then follow the installation wizard for installation on Windows 7 and 10.

After the installation, Docklight can be run for the first time and should look like the below screen shot:

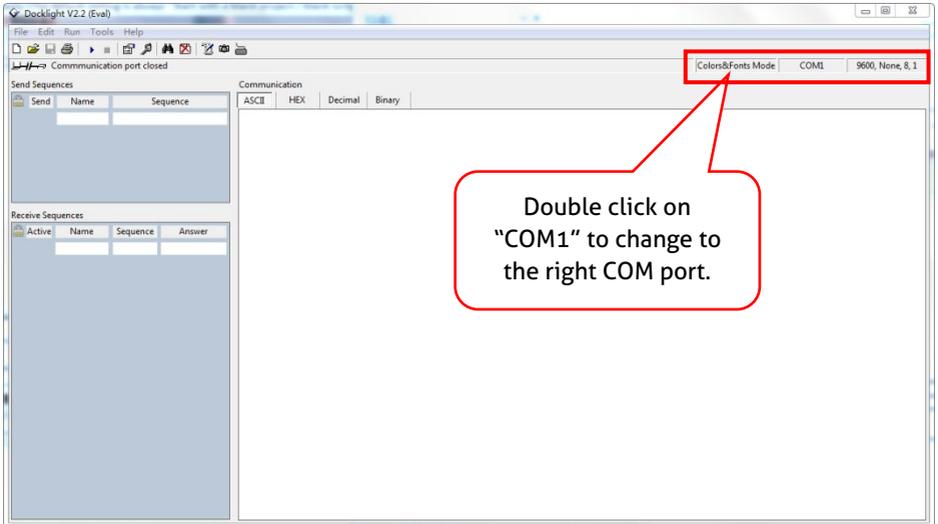
Registration is not necessary unless you wish to save settings on exit, so unless you wish to register click on "OK" to close the window.



The next pop-up window can also be closed with "Continue". An empty project is enough to send and receive commands easily (The default setting is always "Start with a blank project / blank script")

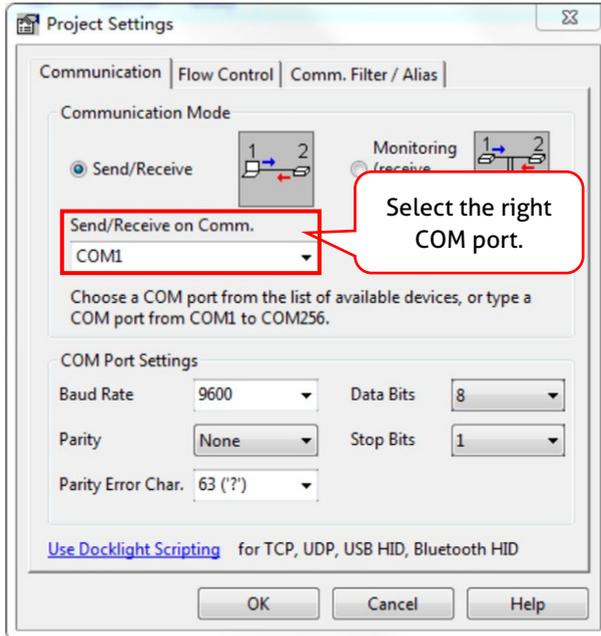


Now you are in the main view, where commands are sent and feedback is received. The next step is to select the correct COM port of the PC. To do this, double-click on "COM1" in the corresponding setup window.



In the following window, select the drop-down menu labeled "Send / Receive on Comm Channel", select the appropriate COM port and then click on "OK" at the bottom right corner.

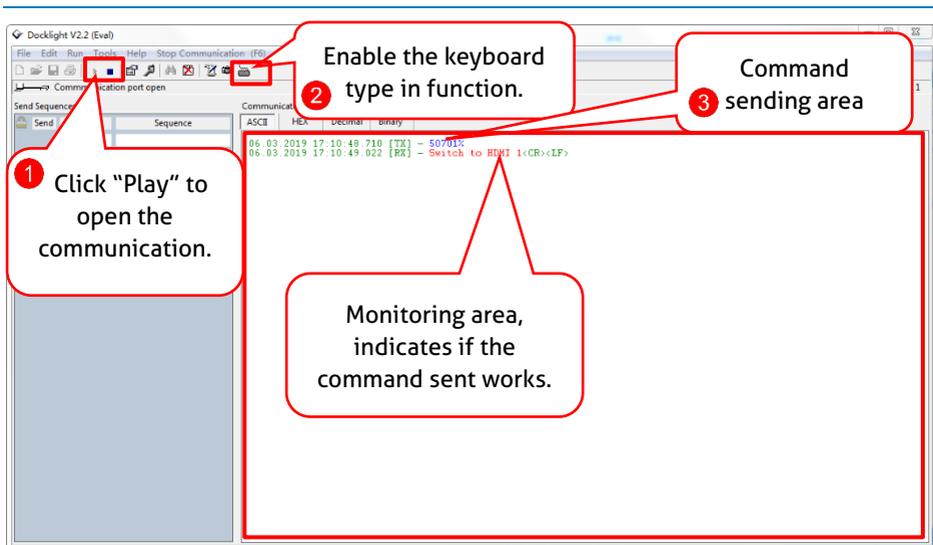
All other settings can be left at default for most applications, but refer to device RS232 settings to be sure.



In order to be able to send commands, open communication with the device by clicking on "Play". **(1)**

Then the keyboard function must be activated, so that commands can be written in the "communication window". **(2)**

Finally enter the command, then confirmed by pressing "Enter" to send. Any response from the connected device will appear in red. **(3)**



## 7.2 RS232 Command

**Communication protocol:** RS232 Communication Protocol

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

*Note:*

- *Commands are not case sensitive;*
- *Commands are not space sensitive;*
- *Commands end with ".";*
- *When the command is wrong, the feedback is "Invalid Command!".*

STA.	<i>Feedback Example:</i>
Status query	PT-E-U321-H 2x1 USB3 Cat Extender Switch(Host-Side) FW Version: 1.0.0b Power On! Front Panel Locked! Local RS232 Baudrate Is 9600! Auto Switch Off! Host 2 Input!
RST.	<i>Feedback Example:</i>
Restore Factory	Factory Default!
Baudrate[XXX].	<i>Feedback Example:</i>
Set control baud rate. [XXX] Support 2400, 4800, 9600, 19200, 38400, 57600, 115200.	Baudrate9600. Set Local RS232 Baudrate To 9600!
LOCK.	<i>Feedback Example:</i>
Turn on front panel lock	Front Panel Locked!
UNLOCK.	<i>Feedback Example:</i>
Turn off front panel lock	Front Panel UnLock!
AUTO_ON.	<i>Feedback Example:</i>
Auto-switch mode on	Auto Switch On!
AUTO_OFF.	<i>Feedback Example:</i>

Manual-switch mode on	Auto Switch Off!
<b>HOST[x].</b>	<i>Feedback Example:</i>
Host selection. x = 1(HOST 1 selected) x = 2(HOST 2 selected)	HOST1. Set Host 1 Input!

## 8. After-Sales Service

If there are some problems when running the product, please check and deal with the problems by referring to this user manual. Any transport costs are borne by the users during the warranty period.

**1) Product Limited Warranty:** This product will be free from defects in materials and workmanship for **three years** (The purchase invoice shall prevail).

Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service.

**2) What the warranty does not cover (servicing available for a fee):**

- Warranty expiration.
- Factory applied serial number has been altered or removed from the product.
- Damage, deterioration or malfunction caused by:
  - Normal wear and tear.
  - Use of supplies or parts not meeting our specifications.
  - No certificate or invoice as the proof of warranty.
  - The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
  - Damage caused by force majeure.
  - Servicing not authorized by distributor.
  - Any other causes which does not relate to a product defect.
- Delivery, installation or labor charges for installation or setup of the product.

**3) Technical Support:** For any questions or problems, contact your distributor or reseller and tell them the respective product name and version, the detailed failure situation as well as the formation of the cases.

## Asking for Assistance

**Technical Support:**

Phone: +49 5971 800299 - 0

Fax: +49 5971 800299 – 99

**Technical Support Hours:**

8:30 AM to 5:00 PM Monday thru Thursday

8:30 AM to 4:00 PM Friday

**Write to:**

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