

Lightware Lab summary of Poly Studio USB validation



TABLE OF CONTENTS

1. INTRODUCTION	3
1.1. TEST CASES	3
1.2. TEST ENVIRONMENT	4
1.3. TESTED CABLES	4
2. SCENARIO 1 – ONE UCX.....	5
2.1. OVERVIEW	5
2.2. WIRING	5
2.3. CABLE NUMBERING	6
2.4. RESULTS.....	7
3. SCENARIO 2 – ONE UCX WITH ACTIVE EXTENSION CABLES	8
3.1. OVERVIEW	8
3.2. WIRING	8
3.3. CABLE NUMBERING	9
3.4. RESULTS.....	10
4. SCENARIO 3 – ONE UCX WITH EXTENDER.....	11
4.1. OVERVIEW	11
4.2. WIRING	11
4.3. CABLE NUMBERING	12
4.4. RESULTS.....	13
5. SCENARIO 4 – TWO UCX UNITS (TABLE-DISPLAY) WITH EXTENDERS	14
5.1. OVERVIEW	14
5.2. WIRING	14
5.3. CABLE NUMBERING	15
5.4. RESULTS.....	16
6. SCENARIO 5 – CONTENT SHARING.....	17
6.1. OVERVIEW	17
6.2. WIRING	17
6.3. CABLE NUMBERING	18
6.4. RESULTS.....	19
7. CONCLUSION.....	20

Version	Comment	Date
1.0	Initial version	May 22, 2023

1. Introduction

The Poly Studio USB is an all-on-one video bar with a 4K camera. The Lightware Taurus UCX extends the functionality of the Poly Studio USB, enabling BYOD mode for up to multiple clients, while also providing charging and networking for them.

Our customers need confirmation that the UCX interoperability with Poly Studio USB has been tested, validated, and recommended by Lightware.

1.1. Test cases

For testing, a videocall was initiated by Zoom and MS Teams software clients running on own laptops described below. We also investigated content sharing through Taurus UCX in an MTRoW (Lenovo RoomPC, Poly GC8 touch and Poly Studio USB) setup.

During calls, we tested the quality and reliability of the audio/video and shared content that was being sent to the far end, and we tested the video and audio received from the far end. In addition to the above, the laptops were dis- and reconnected ten times to check the video/USB auto switching feature of Taurus UCX.

Taurus UCX was set to the default settings, auto-select on the input ports, using last-detect, and we used manual input selection, when it was needed.

We distinguish the following test results:

- **Passed** – Both peripheral (camera, speaker and microphone) and display (DP Alt mode) signals are reliable, and redirection of the peripheral signal works by the video/USB auto switching
- **Failed** – Either peripheral or the display signal is unstable or not presented at all.
- **Not tested** - The test case cannot be interpreted in the given configuration, e.g. due to lack of HDMI port.

1.2. Test environment

Unit	Type	FW/OS version
Peripheral	Poly Studio USB	v2.1.1
HDMI/USB matrix switcher	Lightware UCX-4x2-HC30	v2.10b2
HDMI extender (if applicable)	Lightware HDMI-TPX-TX107 / RX107	
USB extender (if applicable)	Icron 2304GE-LAN	
Display	Samsung QB50B	1090.2
RoomPC	NUC11TNK	Win10 Pro 22H2
MTRoW PC	Lenovo 10T1	Win10 IoT Ent 21H2
Touch	Poly GC8	
Laptop 1	Lenovo Yoga7	Win10 Pro, Build:19045.2546
Laptop 2	Lenovo T14	Win10 Pro, Build:19045.2546
Laptop 3	Dell Latitude 5520	Win10 Pro, Build:19044.1620
Laptop 4	Asus VivoBook	Win10 Pro, Build: 19044.2364
Laptop 5	MacBook 2020 M1	MacOs Monterey, 12.6

1.3. Tested cables

Unit	Type
Lightware CAB-USBC-T100A	1m Type C – Type C
Lightware CAB-USBC-T200A	2m Type C – Type C
Lightware CAB-USBC-T300A	3m Type C – Type C
Lightware CAB-USBC-T400B	4m Type C – Type C
Lightware CAB-USBC-T500B	5m Type C – Type C
Lightware CAB-USBC-AOC800K	8m Type C – Type C
Lightware CAB-USBC-AOC1000K	10m Type C – Type C
Unitek AWM2725 3m	3m Type A – Type B
Unitek AWM2725 5m	5m Type A – Type B

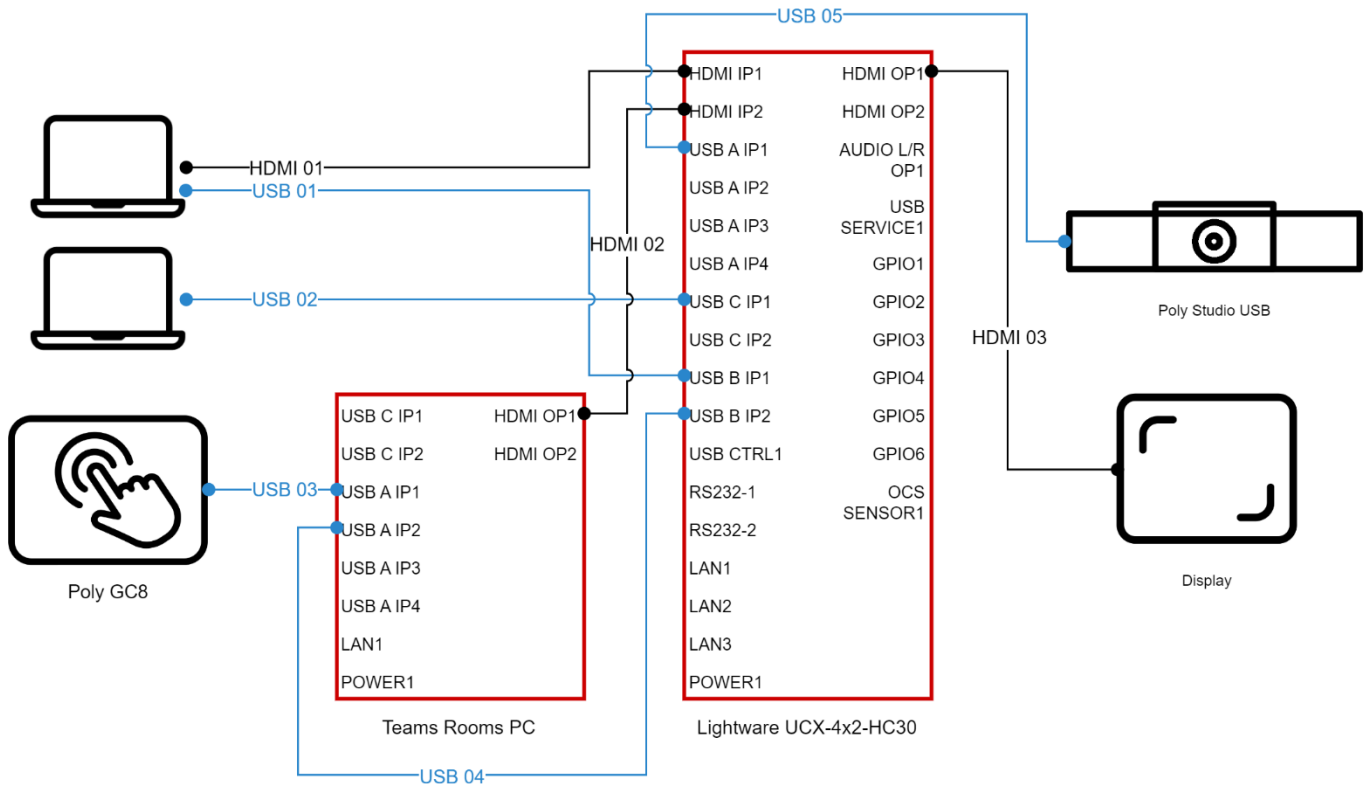
2. Scenario 1 – One UCX

2.1. Overview

The first test scenario contains one Taurus UCX and Poly Studio USB in a Poly MTRoW setup.

2.2. Wiring

For clarity, only USB/HDMI connections are shown.



2.3. Cable numbering

Nr	Type
USB 01	<i>See tested cable list – USB Type C-C</i>
USB 02	<i>See tested cable list – USB Type A-B</i>
USB 03	Poly 10m USB3.1 Type A-C
USB 04	<i>See tested cable list – USB Type A-B</i>
USB 05	Poly 2m USB2.1 Type A-C
HDMI 01	Lightware CAB-HDMI20-PHS200F
HDMI 02	Lightware CAB-HDMI20-PHS200F
HDMI 03	Lightware CAB-HDMI20-PHS500P

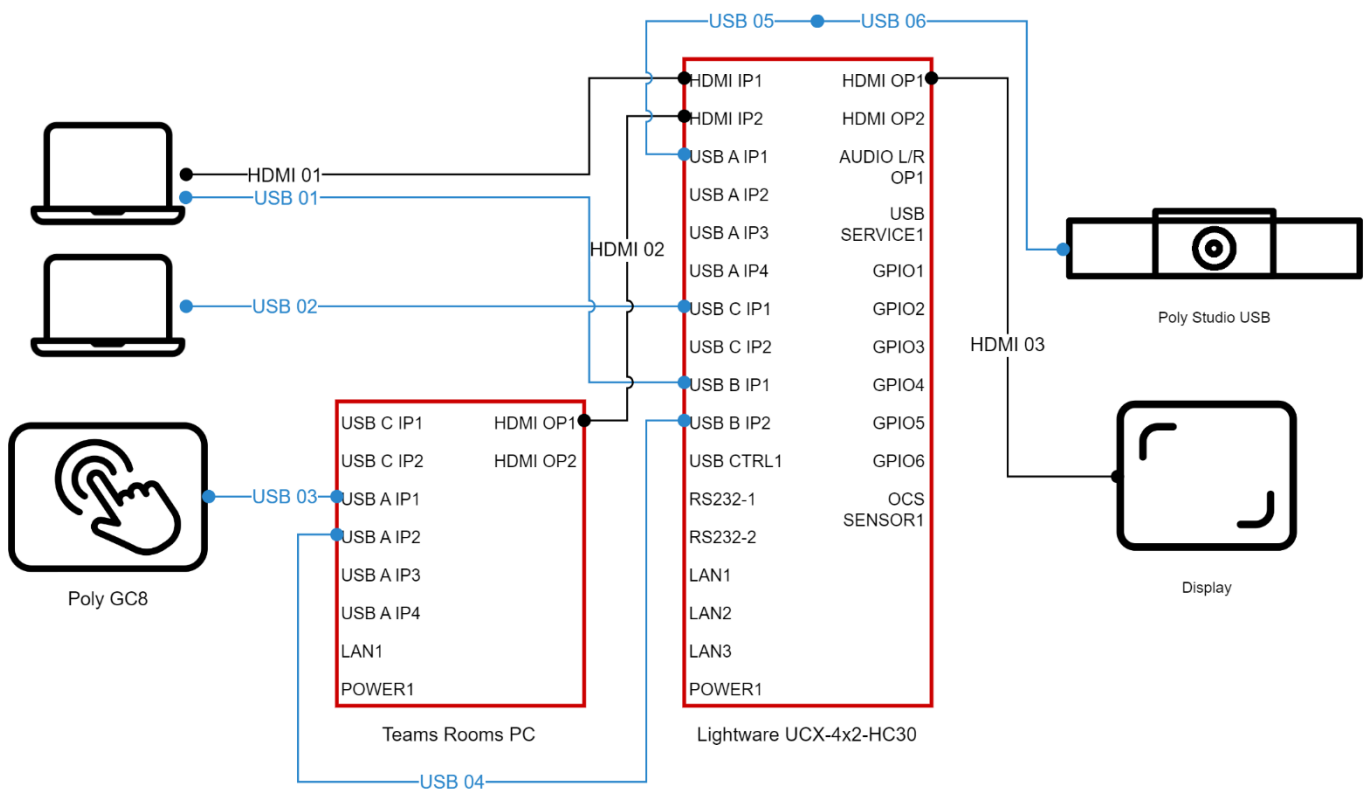
3. Scenario 2 – One UCX with active extension cables

3.1. Overview

This test scenario contains one Taurus UCX and Poly Studio USB, which is connected by using **10m or 16m long USB 3.1 Gen1 SuperSpeed Active Extension Cable** produced by Lightware. This setup is usually preferred for smaller and medium rooms, where (because of the conduit layout) the peripheral needs a longer wire than the USB cable supports. In this setup the UCX (and optionally the RoomPC) is placed under the table.

3.2. Wiring

For clarity, only USB/HDMI connections are shown.



3.3. Cable numbering

Nr	Type
USB 01	<i>See tested cable list – USB Type C-C</i>
USB 02	<i>See tested cable list – USB Type A-B</i>
USB 03	Poly 10m USB3.1 Type A-C
USB 04	<i>See tested cable list – USB Type A-B</i>
USB 05	Lightware CAB-USB-AMAF-T1000A / T1600A
USB 05	Poly 2m USB2.1 Type A-C
HDMI 01	Lightware CAB-HDMI20-PHS200F
HDMI 02	Lightware CAB-HDMI20-PHS200F
HDMI 03	Lightware CAB-HDMI20-PHS500P

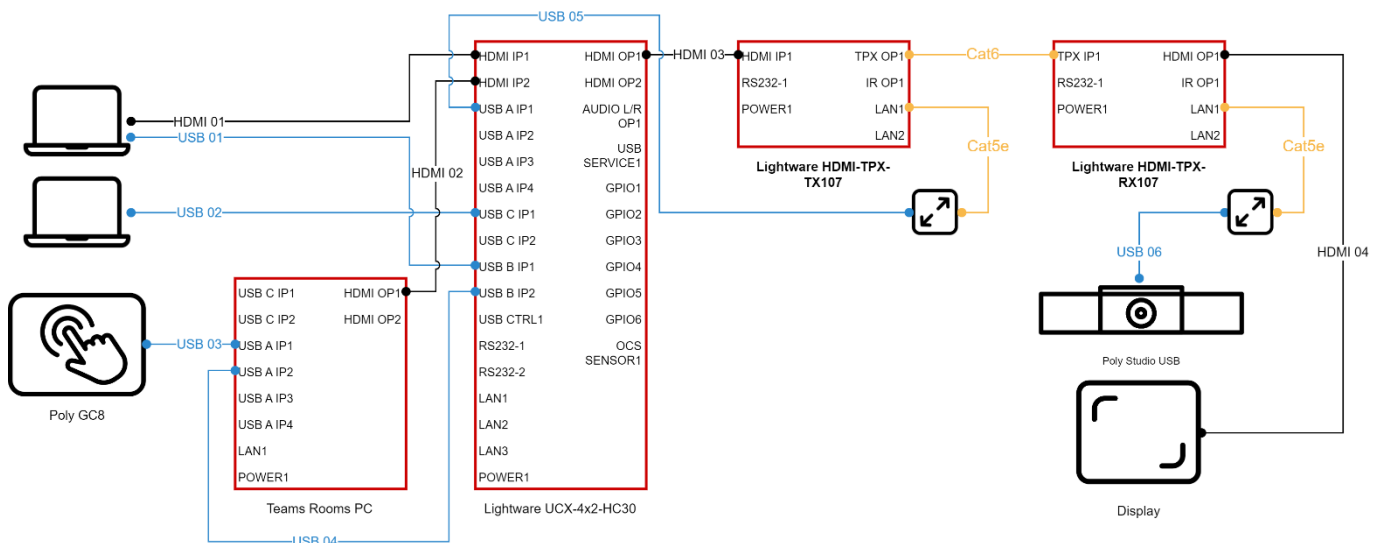
4. Scenario 3 – One UCX with extender

4.1. Overview

This test scenario contains one Taurus UCX and Poly Studio USB, which is connected by using **Lightware TPX (HDMI) and Icron 2304GE-LAN (USB)** extenders. This setup is preferred for medium and large rooms, where (because of the conduit layout) the peripheral needs a longer wire than the USB cable supports. In this setup the UCX (and optionally the RoomPC) is placed under the table. We chose this TPX based solution, because in this case only one UTP cable is needed between the desk and the display. This configuration can also be implemented with other extenders (e.g. Lightware TPS series and Icron 2311), after thorough testing, please contact us for more information.

4.2. Wiring

For clarity, only USB, HDMI and extension Cat6 connections are shown.



4.3. Cable numbering

Nr	Type
USB 01	<i>See tested cable list – USB Type C-C</i>
USB 02	<i>See tested cable list – USB Type A-B</i>
USB 03	Poly 10m USB3.1 Type A-C
USB 04	<i>See tested cable list – USB Type A-B</i>
USB 05	Unitek AWM2725 3m USB2.0 Type A-B
USB 06	Poly 2m USB2.1 Type A-C
Extender CAT6	50m Siemon Category 6A F/UTP 4-Pair Cable
HDMI 01	Lightware CAB-HDMI20-PHS200F
HDMI 02	Lightware CAB-HDMI20-PHS200F
HDMI 03	Lightware CAB-HDMI20-PHS200F
HDMI 04	Lightware CAB-HDMI20-PHS200F

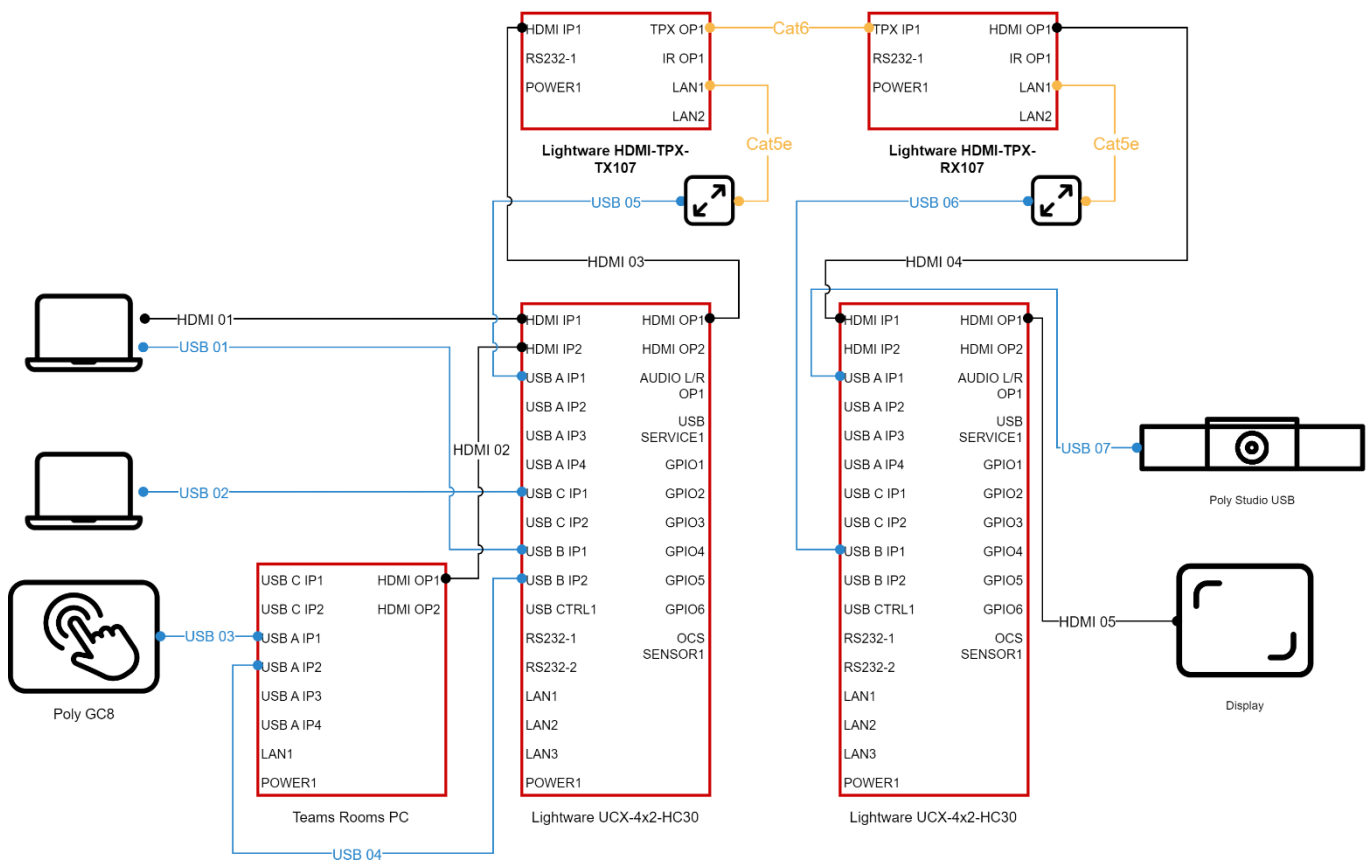
5. Scenario 4 – Two UCX units (table-display) with extenders

5.1. Overview

This configuration contains two Taurus UCX units and a Poly Studio USB soundbar. This setup is usually preferred for medium or large meeting rooms, where the primary UCX is placed at the table (for BYOD) and the second one is behind the screen. The Room PC could be connected to both UCX units, up to customer needs. The UCX units are connected by using **Lightware TPX (HDMI) and Icron 2304GE-LAN (USB)** extenders in between, which allows tens of metres distance (we tested with 50m long Cat6). This configuration can also be implemented with other extenders (e.g. Lightware TPS series and Icron 2311), after thorough testing, please contact us for more information.

5.2. Wiring

For clarity, only USB, HDMI and extension Cat6 connections are shown.



5.3. Cable numbering

Nr	Type
USB 01	<i>See tested cable list – USB Type C-C</i>
USB 02	<i>See tested cable list – USB Type A-B</i>
USB 03	Poly 10m USB3.1 Type A-C
USB 04	<i>See tested cable list – USB Type A-B</i>
USB 05	Unitek AWM2725 3m USB2.0 Type A-B
USB 06	Icron 2m USB2.0 TypeA-B
USB 07	Poly 2m USB2.1 Type A-C
Extender CAT6	50m Siemon Category 6A F/UTP 4-Pair Cable
HDMI 01	Lightware CAB-HDMI20-PHS200F
HDMI 02	Lightware CAB-HDMI20-PHS200F
HDMI 03	Lightware CAB-HDMI20-PHS200F
HDMI 04	Lightware CAB-HDMI20-PHS200F

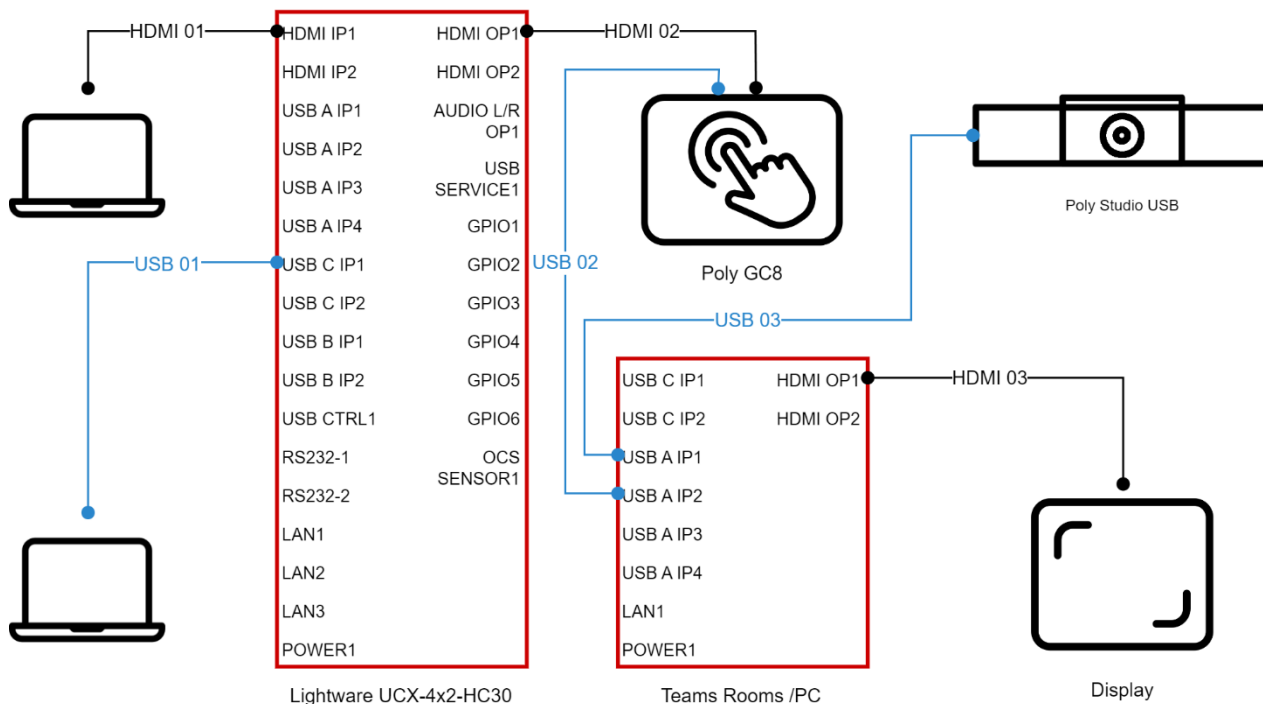
6. Scenario 5 – Content sharing

6.1. Overview

We also investigated content sharing through Taurus UCX in an MTRoW setup. This configuration contains a Taurus UCX, a Lenovo RoomPC, a Poly GC8 touch and a Poly Studio USB. The Taurus UCX HDMI output is routed to the HDMI input of Poly GC8. By this way we shared content into the MS Teams videoconference.

6.2. Wiring

For clarity, only USB/HDMI connections are shown.



6.3. Cable numbering

Nr	Type
USB 01	<i>See tested cable list – USB Type C-C</i>
USB 02	Poly 10m USB3.1 Type A-C
USB 03	Poly 2m USB2.1 Type A-C
HDMI 01	Lightware CAB-HDMI20-PHS200F
HDMI 02	Lightware CAB-HDMI20-PHS200F
HDMI 03	Lightware CAB-HDMI20-PHS200F

7. Conclusion

During our tests, we recognized, that the length of the used Lightware CAB-xxx cables itself does not affect the signal and connection quality as we expected. Either USB and Video signals were present, or they were not present at all. We did not find any states between.

However, in a system design the USB standard's specifications, and USB tree structure should be considered. The maximum layer count, or levels of the tree must not exceed 7. (Layer of the USB tree is also called tier.) Some peripherals, has built-in USB hub, which adds to the tier count. This is also true for the extenders, that have multiple peripheral USB ports. In this regard, we need to mention MacBook computers, because they also have an additional layer in the USB structure, leading to quick consumption of the available USB tiers. Since the 8m, and 10m long USB-C cables are using active optical technology, it also adds to the tiers.

We highly recommend to design the AV system taking into account the above considerations, and choose the peripherals, and extenders wisely. Counting the USB tiers, and designing the system consciously reduces the risk of an unstable system.

Our tests show that by using UCX, the functionality of the Poly Studio USB can be expanded in a stable way to multiple clients, either in BYOD or MTRoW environments.