OEM-U8S

User Manual

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2. Introduction

The PowerPad15Shas been designed primarily for desktop use, being highly compact and quiet. It provides 10W of charging power to each of its 15 Type-A ports, allowing mobile devices to be charged quickly, safely and reliably. All ports can be controlled using Cambrionix software to enable charging and data transfer while monitoring important port and device information.

The PowerPad15S can charge attached USB devices without using a local computer, and our intelligent charging algorithm allows almost any device to be charged at its optimum rate (up to 2.1A). The firmware can be updated to enable new charging profiles, ensuring the PowerPad15S can charge the latest devices. It is ready to charge out-of-the-box and sync devices when attached to a host computer.

When a local (host) computer is connected, the host can control the operation of the ports using available software. Device charging and synchronisation can be monitored through

Cambrionix's Connect App, the Application Programming Interface (API) or Command Line Interface (CLI). Cambrionix's free monitoring and control software can be downloaded from https://www.cambrionix.com/software

You can download the latest version of this manual and all product user manuals from our website at the following link. www.cambrionix.com/product-user-manuals

2.1. Key Features

Up To
- Gbps

Transfer Data Seamlessly

Each high-speed port can transfer data up to - Gbps

Up To
2.1A

Power

Each port can charge devices up to 2.1 A at 12 (W)

3. Safety

This user manual is for informational purposes only, it contains information for the start-up and operation of this product. Note: the contents and the product described are subject to change without notice. To avoid injuries and damage, observe the safety instructions in the user manual.

This manual has been arranged to follow the IEC/ICEE 82079-1 standard. This is to facilitate the easier understanding and location of information relating to the OEM-U8S. Any errors or omissions can be reported using our support ticket system (see Help and Support). This way, any issues that are discovered can be acted on quickly and we can update the documentation to reflect this.

Understanding and observing the instructions in this user manual are prerequisites for hazard-free use and safety during operation. This user manual cannot cover all possible applications. If you would like additional information or if problems arise that are not sufficiently addressed in this manual, please ask your distributor or contact us directly using the means preferred, which are located on the back cover of this manual.

⚠CAUTION
Personal Injury and Damage to the product
Always observe the safety instructions in this user manual

3.1. Signal word panel

Depending on the probability of serious consequences, potential dangers are identified with a signal word, the corresponding safety colour, and if appropriate, the safety alert symbol.

⚠CAUTION
Indicates a potentially hazardous situation that, if not avoided, may result in moderate or minor (reversible) injury.

CAUTION
Indicates a potentially hazardous situation which, if not avoided, may result in damage to the product and its functions, or to property in its proximity.

3.2. Safety alert symbol

⚠️	Use of the safety alert symbol indicates a risk of injury.
	Observe all measures that are marked with the safety alert symbol in order to avoid injury

3.3. Pictograms

These symbols will be used throughout this documentation to alert to any potential dangers or any actions that must be taken.

Warning Signs	
Electrical hazard	Fire Hazard

Mandatory action signs	
Read operating instructions	Mandatory regulation

3.4. Product modification

Cambrionix products are designed and manufactured to meet the requirements of UK and international safety regulations. Modifications to the product could affect safety and render the product non-compliant with relevant safety standards, resulting in injury or damage to the product.

	⚠ CAUTION
⚡	**An electric shock or personal injury may occur** Do not modify the product in any way. Do not dismantle the product. Do not open the product

	⚠ CAUTION
🔥	**Fire, or personal injury may occur** Do not obstruct air vents on the product. Do not cover the product in or place near combustible material.

	CAUTION
❗	**Damage to your product may occur** Do not bend or compress any part of the product.

3.5. Power supply

This section describes the safety precautions you must follow when using the external power supply.

	⚠CAUTION
⚡	**An electric shock or personal injury may occur** Do not use a damaged power cord or plug, or a loose power socket. Do not touch the power plug with wet hands. Do not allow liquids to come into contact with the unit or power supply.

	CAUTION
❗	**Damage to your product may occur** Do not short circuit the Power Supply Unit (PSU) supplied with your product. Do not disconnect the power cord while the product is being used. Do not bend or pull the power cord with excessive force. Do not use a power supply that exceeds the power supply specifications within this manual

3.6. Storage and Installation

This section describes safety precautions you must follow when installing and storing your OEM-U8S.

	⚠CAUTION
⚡	**An electric shock or personal injury may occur** Do not place the power cord near heat sources. Connect the plug only to an earthed socket.

	CAUTION
⊖	**Damage to your Cambrionix product may occur** Operate the product only in an environment where the ambient temperature is inside the operating temperature range. Operate the product only in an environment where the relative humidity is inside the operating range. Be careful not to leave the power cord underneath a heavy object.

	⚠**CAUTION**
⚠🔥	**Overheated power sockets may cause a fire** Do not overload the power socket that your hub is connected to. Insert the power plug all the way into the socket so that it is not loose.

	CAUTION
⊖	**Overloading the brackets may cause failure** The rack brackets for all our products are not designed to be used in a mobile application, bracket failure could occur if the units are not supported fully e.g Shock during road transport.

3.7. OEM

	⚠**CAUTION**
⊖	**Personal injury may occur** Cambrionix OEM modules have sharp edges, corners and suitable protective equipment must be worn whilst handling. components.

	CAUTION
⊖	**Damage to your Cambrionix OEM module may occur** When mounting a Cambrionix OEM module, all mounting holes should be used with appropriate spacers, screws and a torque level of 1.1Nm. Cambrionix OEM modules are susceptible to Electrostatic Discharge (ESD). OEM modules should be handled in an ESD safe area. This product is not reverse-polarity protected. The power connections MUST be connected correctly. If in doubt, please contact Cambrionix. Drawing more than the maximum current can damage the PCB

4. Getting Started

This manual provides a reference for end-users installing for the first time and using their hub afterwards. As well as a guide for product safety-related information.

The OEM-U8S is intended to be used in an indoor static environment in which the environment falls within the tested specifications to provide charge, sync and management functionality. Please see the Product Specifications section of this manual for information on the environment specifications.

4.1. Unpacking your product

When you have received your product, please check the packing slip inside the box to ensure all contents and quantities are correct before opening. This is to avoid retesting and repackaging any items that are not required.

When opening the packaging, use a suitable method to open the box i.e, do not use a knife. This is to ensure the product is not damaged.

	⚠CAUTION
(!)	**Personal Injury and Damage to the product** There will be a label on the hub advising you to read the User manual before use. This will need to be removed before use as it may be covering host ports, vents etc.

4.2. What's Included

- OEM-U8S Hub

4.3. Consumables and Placing Orders

If you require any spare parts, such as cables, these can be ordered by quoting the product part number listed in the Product Specifications.

These can be ordered from the reseller or solution partner you purchased your OEM-U8S from, or from Cambrionix directly.

To find one of our partners local to you please visit www.cambrionix.com/about-cambrionix/partners-distributors where you can learn about the local vendors and distributors that can assist you and find their contact information.

4.4. Connecting to a Host

Throughout this manual we will refer to a "host system" this is the system you will be using to connect and control your devices and hubs. This could be any host system such as a Windows PC, macOS system or Linux PC.

Once the power is connected, connect the OEM-U8S to your host system using a Type-B cable, one of these is supplied with your hub and we recommend using this cable to connect with. If your host system does not have a matching port to the cable supplied still use the cable, but also use an adaptor cable to finish the connection at your host. Using an incorrect host cable may result in the hub and all subsequent ports not being recognised by your host.

Please note that USB specifications require a minimum 100 mA charge current to be available during data transfer. As indicated in above, if the attached device has a BC1.2 compliant CDP port, the device can draw up to 2.1A whilst transferring data.

4.5. Connecting devices to your OEM-U8S

Throughout this manual we will refer to "devices" this relates to the device you are connecting to the OEM-U8S this could be any USB device such as a phone, tablet, USB drive or any other USB connected device.

Once you have your hub setup the next thing is to connect your devices to start using the OEM-U8S. We would always recommend using the OEM cable supplied by the manufacturer of the device, so whatever cable is provided with the device use that cable to connect to the hub.

If your device has a USB plug (male connector) on it already then you can connect the device directly into the hub.

If the cable (or plug fitted to device) is not the same USB type as the socket (female connectors) on the OEM-U8S then you will require an adaptor or a different cable.

Cables

Some USB cables are data transfer only, and some are power delivery only. There are also options that can handle both tasks. Be sure to verify a cable's abilities before purchasing it and select a cable which can handle the speeds and power transfer that you require.

4.6. Charging

Your OEM-U8S will allow your device to charge at the maximum rate possible up to 2.1A. The way that charging takes place is the OEM-U8S will provide the device with a capability to charge and the devices USB charging controller will determine the maximum amount of charge it wants to draw down.

Although a maximum charge rate of 2.1A is possible, the device itself determines the exact rate and as such you may not see the maximum amount of charging on every device type that is connected.

4.7. Connecting the OEM-U8S to the Power Supply Unit using Spade Connectors

Having ensured the output voltage of the DC power supply is 5V, and certainly does not exceed 5.6 Vdc, connect the PSU to the OEM-U8S using insulated copper cables of no less than six mm2 cross-section and no longer than 150 mm. Longer cables or smaller cross-sections are likely to cause a voltage drop across the cable and improper board operation.

With the mains power supply disconnected, the PSU should be connected to the input spade terminals on the OEM-U8S using the cable (described above) terminated (at the OEM-U8S end) with crimp connectors. The positive voltage spade terminal is closest to the OEM-U8S board edge, and Ground (GND) is marked on the OEM-U8S board close to the innermost spade terminal.

Taking appropriate safety precautions, turn the mains supply on. Periodic inspection should be made to power supply cables and any USB cables for any signs of damage. If any damage is found then replace damaged cord before further use.

4.8. Registration

You may register your product at www.cambrionix.com/product-registration

4.9. Help and Support

FAQs and help can be found on the Help page here

- https://www.cambrionix.com/help_pages/help.

You can raise a support ticket for more in depth support here

- https://support.cambrionix.com

You can also download any of our manuals and keep up to date at the link here

- www.cambrionix.com/product-user-manuals

When contacting support, please supply the product information for the hub in question. This can be found on the Device Information Plate which is either on the underside or back of the unit.

Providing serial and Purchase order numbers, can help identify your specific product and speed up the process.

EN

5. Using your Cambrionix Hub

This section provides guidance on using your hub effectively, either in charge-only or sync-and-charge applications. You will also find detailed information on managing your hub, adjusting port modes, connecting multiple hubs to a single host, and utilising Cambrionix Software for enhanced functionality.

5.1. Using without connecting to a host

When the hub is powered on and not connected to a local host computer, it automatically switches to charging mode using its intelligent charging algorithm. Simply connect your devices to any available port (excluding the Host Port) using USB-compliant cables to begin charging.

Once the devices are connected, the algorithm will detect the highest charge rate allowable for each attached device. Charging at the optimum rate (up to 2.1A) specified by the manufacturer will commence once profiling is complete. Depending on the state of charge of the device attached, this may take tens of seconds.

5.2. Using When Connected to a Host

5.2.1 Connecting the Hub to a host computer

Connect the OEM-U8S to your host system using a Type-B cable. Using an incorrect host cable may result in the hub and all subsequent ports not being recognised by your host. You can use an optical cable to connect to your host as the OEM-U8S is self powered.

The OEM-U8S must be connected physically to a host in order to communicate with the hub and devices. If you wish to connect to a hub remotely (not on the physical host it is connected to) it will still need to be connected to a host and have access to the Cambrionix Hub API which can then be connected to if the relevant steps have been taken, more information on remote access can be seen in the Cambrionix Hub API user manual, which can be viewed from the website. https://www.cambrionix.com/cambrionix-api

5.2.2 Charging

When the Host Port is connected to a local computer, the hub defaults to Sync mode and charge currents are determined according to USB Implementers Forum (USBIF) Super-Speed USB3 specifications. If the attached device complies with USB-IF Battery Charging specification BC1.2 and supports Charging Downstream Port (CDP), the hub can provide high-speed charging at 1.5A. If the connected device does not comply with BC1.2, the charge current will be limited to Standard Downstream Port (SDP) which is 0.5A in compliance with USB specifications. Information on the different charging levels can be found in the Port Specifications section.

The OEM-U8S also has an 'ALT Sync Charge' mode which is on by default, having this option selected will allow the OEM-U8S to charge devices up to 2.1A whilst syncing data.

If you wish to limit the charging to your devices whilst connected to your host system then you can disable CDP. You can disable CDP through Internal hub settings either by going through the advanced settings and turning "Sync charge" off or through the API and disabling it via code. For example, the instructions would be below using the command line.

The CLI commands for turning off the sync charge options, with a 1 or 0 per port.

```
settings_unlock
settings_reset
settings_set sync_chrg 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
settings_set alt_sync_chrg 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
reboot
```

This can also be done via the API if this is easier. Just supply that string (joined with \n) like:

```
cbrxapi.cbrx_connection_set(handle, "Settings", "settings_unlock\nsettings_
reset\nsettings_set sync_chrg 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0\nsettings_set
alt_sync_chrg 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0\nreboot")
```

Note that settings_reset clears any previous settings, so if you need to retain something else, it would be better to issue settings_display first, which gives you the entire settings which you can then modify and re-issue in entirety.

For more information on this please see the internal hub settings section of CLI manual, which can be viewed from the following link. www.cambrionix.com/cambrionix-cli

5.2.3 Data Transfer

If you wish to transfer data, change applications, restore or update your mobile device, a data connection to a local host computer is required. The Cambrionix Hub API and software is compatible with macOS®, Windows™ and Linux® operating systems and can transfer data between these operating systems and many mobile operating systems such as iOS™ and Android™.

In order to transfer data, connect the host port to your local (host) computer using a Type-B compliant cable. Any devices connected to the hub will now appear as if they were connected to the host computer's USB port.

5.2.4 Communication Interface and Protocol

The OEM-U8S appears as a virtual COM port (VCP). On Microsoft Windows™, the system will appear as a COM port, the COM port number can be found in device manager. On macOS®, a device file is created in the / directory. S is an alpha-numeric serial string unique to each device

```
/dev/tty.usbserial S
```

Devices incorporate a USB to UART converter IC from FTDI International. On Windows 7 or later, a driver may automatically be installed (if Windows is configured to download drivers from the internet automatically). If this is not the case, or if a Mac® or Linux® platform is used, the driver may be downloaded from www.ftdichip.com. The VCP drivers are required. For Linux® or Mac computers, the default OS drivers should be used.

The default communications settings are as below, ANSI terminal emulation should be selected.

Communication setting	Value
Number of bits per second (baud)	115200
Number of data bits	8
Parity	None
Number of stop bits	1
Flow control	None

Table 5-1

5.2.5 Connecting U8S for API

In order for the U8S to work correctly with the API there must be a USB Type-A to Mini-B cable that connects the control or update port to an expansion port on the same product. This is in addition to the USB cable that connects the host port to the machine running the API.

EN
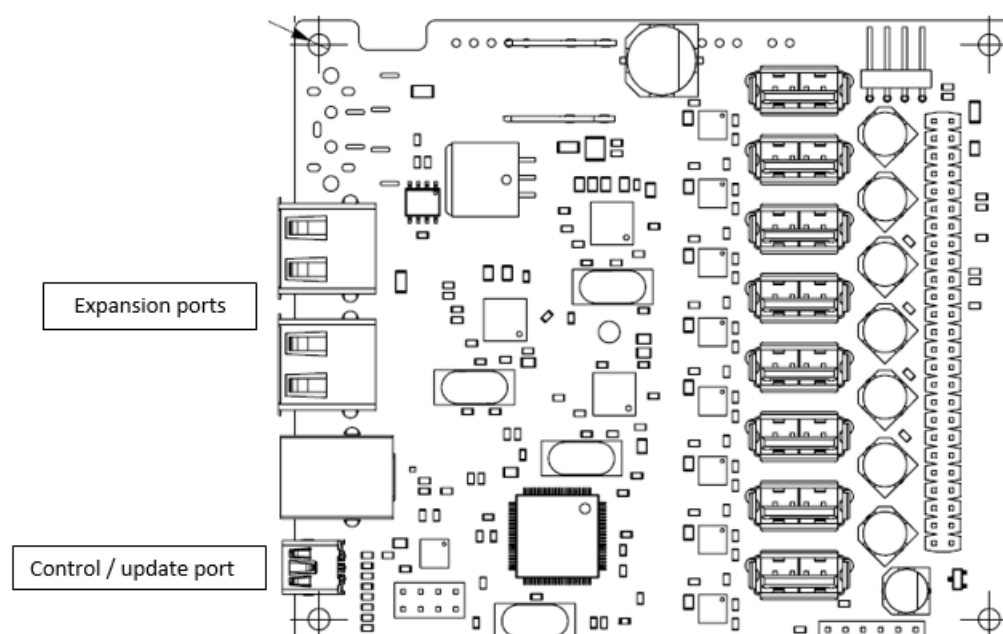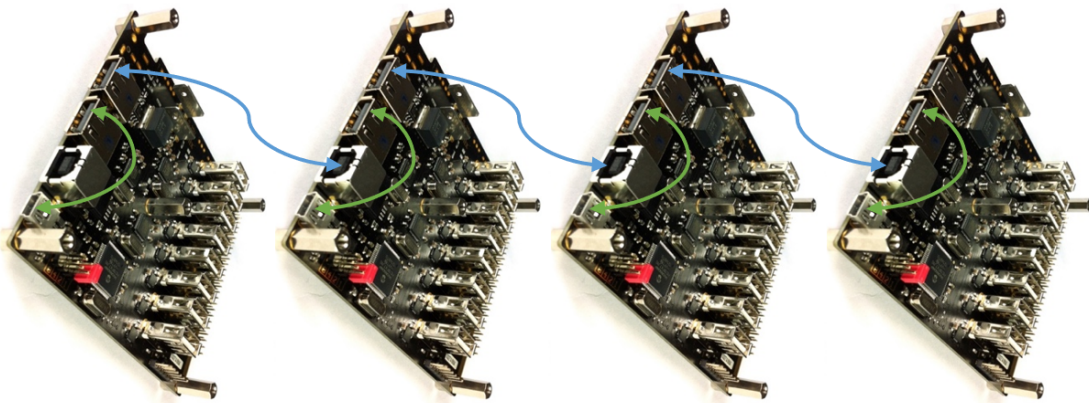
Figure 5.1

The green connections above are optional under normal circumstances when performing peer control, monitoring and data transfer (syncing) and are only required if you wish to up-date the firmware on all boards simultaneously.

5.3. Managing Ports & Your OEM-U8S

Each port on your OEM-U8S can be managed either individually, or all together. You can turn the ports off and on, change the port mode, or change various other settings applicable to the OEM-U8S more information can be found in the Cambrionix Connect section under Internal hub settings. This can be done through Cambrionix Connect, the CLI or by connecting to the hub via the API.

5.3.1 Port Modes

Charge	Turn specific ports or the whole hub to charge only mode (no data connection, hub emulates an OEM charger)
Sync	Turn specific ports or the whole hub to sync mode
Biased	Detect the presence of a device but it will not sync or charge it
Off	Turn specific ports on or off or switch the whole hub on or off (no power and no data channels open, mimics unplugging the device)

Table 5-2

5.3.2 Switching port modes

You can switch between port modes by using Cambrionix Connect, the CLI or by connecting to the hub via the API. If you switch a port off then this will stop any connection taking place to

the USB device and would mimic unplugging the USB device completely from the host system.

If you are in Sync mode and then switch to Charge mode the USB device will disconnect briefly whilst the profiling process takes place, during the profiling process the connection will disconnect and reconnect whilst the device settles on the optimum profile. Once the profiling has taken place, and a charging profile is selected, the device will then draw a charge rate, which will be defined by the charging controller within the USB device. The charging profile will limit the maximum amount that the device is able to draw.

If you are in Off or Charge mode and switch to Sync mode the USB device will disconnect briefly whilst a data connection is opened, the USB device will then become available to the host as if the USB device is connected directly to the host, and will be able to sync data. The OEM-U8S will also charge the device whilst connected. It is impossible to have a data connection to a USB device without any power negotiating, you can reduce the charging rates available by disabling CDP (Charging downstream port).

5.3.3 Charging Profiles

To ensure attached devices charge at their optimum rate, our smart USB hubs come with the below intelligent charging profiles built in:

0	Intelligent charging algorithm which will select a profile 1-6
1	2.1A (Apple)
2	BC1.2 Standard (this covers the majority of Android™ phones and other devices)
3	Samsung
4	2.1A (Profile 1 but with a longer timeout)
5	1.0A (Typically used by Apple)
6	2.4A (Typically used by Apple)

Table 5-3

5.3.4 Firmware

The firmware can be kept up to date using our Cambrionix Connect software. As part of delivering an easy user experience, our Cambrionix Connect application is now a set-and-forget solution. The Cambrionix Connect application will discover your USB hub's firmware and present an update for you.

To update the firmware, first, go to the firmware section of Cambrionix Connect. Here you can see the available Firmware versions to install to the hub.

The current firmware version on the hub is displayed in the firmware section alongside the hub's name. This will appear red if a newer version is available or green if it is the most up to date.
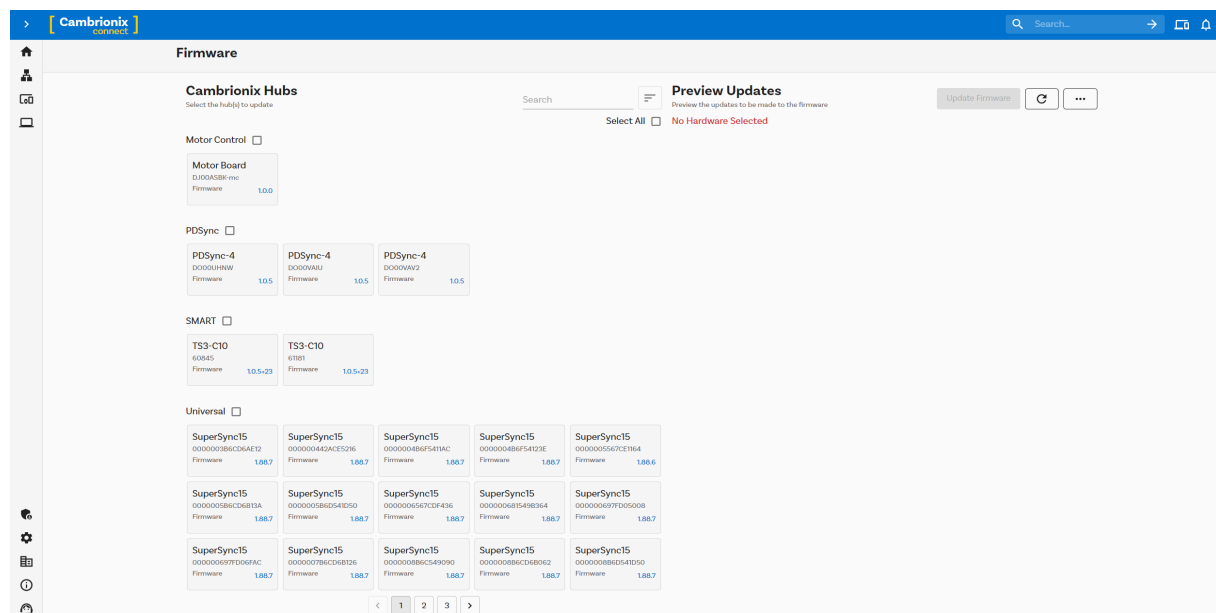
Figure 5.2

To install the firmware onto the hub click the hub(s) connected that you want to update, the latest firmware will be automatically selected, if you wish to change the firmware version you are updating to then this can also be done. Once selected press the update button at the top and the update will commence.

If you are running in an offline environment then there are other ways to update the firmware on your hub. One way would be to use the Command Line Updater, this can be downloaded from our website along the with user manual from the following link cambrionix.com/cambrionix-clu.

An alternative would be to download the firmware file and manually add this to the Hub API there is more information in the Cambrionix Hub API user manual which can be downloaded from the following link cambrionix.com/cambrionix-api.

	CAUTION
!	**Your Hub may not function correctly** Do not downgrade firmware onto a new product

	CAUTION
!	**Your Cambrionix Firmware may get corrupted** Do not interrupt the Firmware update process. Do not disconnect the power during the update process.

	CAUTION
!	**Your Cambrionix Hub may not be visible or become unre-sponsive** If you have older hardware with Firmware version number lower than 1.83 then the hub may not be compatible with the Cambrionix Hub API and will need to be updated to the latest version of Firmware using the Command Line Updater which can be downloaded and installed from the following link. https://www.cambrionix.com/cambrionix-clu

CAUTION
A new version may be available Ensure you have the latest version of Firmware installed on your hub. These updates will often contain new features, fixes for bugs and performance improvements

5.4. Scalability

If you wish to maximise the amount of devices you can connect through one USB port on your host system it is possible to connect multiple hubs together.

To daisy-chain multiple hubs, each hub needs to be connected to mains power individually, then the first (parent) hub in the chain should be connected using the host port and then connecting directly to a USB port on the host system. The subsequent hubs can then be connected using the host port on the second (child) hub and any of the downstream ports from the parent hub.

If you connect too many devices to most computers' USB ports, you may hit what is known as the endpoint limit.

If you experience the endpoint limit, you are likely to see an error indicating you have "run out of USB resources" on your host computer, you may not see any error message at all, and (any of) your USB devices may randomly fail to operate correctly or become intermittent.

For more information on endpoints, connecting multiple devices and calculating how many devices you can connect to your host system please see our technical note on endpoints.

https://downloads.cambrionix.com/documentation/en/Technical-note-endpoint.pdf

Each USB device will use a different amount of endpoints and therefore a different amount of endpoint memory. This will need to be looked at on a case by case basis, you can find information on different products and how to calculate from our technical note linked above. Also another thing to consider when connecting devices is how you are connecting them, for example using a USB2 cable with a USB3 capable device will only connect the device with USB2.

You will also need to consider hub depth when chaining multiple hubs, more information can be found in the technical note.

Examples

Using the OEM-U8S you will be able to connect the following amount of devices, through a standard USB host controller. It is possible to connect more devices and hubs but as a baseline this amount of devices should always be possible to connect at one time.

Device	Maximum numbers of devices connected via USB 2	Hubs required
Google Pixel 6	54	7
iPhone 15	19	3
Samsung S20	19	3
Oppo X2 Lite	54	7
Xiaomi Redmi 9AT	54	7

5.5. Cooling the OEM-U8S

The safety features of the product include an over-temperature feature that causes the board to temporarily shut down when the board temperature exceeds 65°C board temperature can be measured using a temperature sensor placed at the location shown in the diagram below. Temperature can also be monitored via our API, Cambrionix connect App and the command line interface. When measuring temperature to determine if forced cooling is required, the temperature should be measured whilst the OEM-U8S is under full load and at the highest ambient operating temperature.

Forced cooling may be required if the board is operated inside an enclosure and/or at high ambient temperatures. We recommend using a fan monitoring fan flow-rate and position to ensure the unit remains below 60°C.

The fan connections are made using 2/3 pins of the 4-pin connections. Two types of connection are possible:

a) Constant speed – Connect the fan using two wires to +5Vdc and GND

b) Variable speed – connect the fan using +5Vdc, GND and PWM

6. Software

Cambrionix provides interfaces by which the Hub can be monitored and managed:

- Cambrionix Connect

- Cambrionix Hub API

- Command Line Instructions

Cambrionix connect will use the Cambrionix Hub API to interact with the hub through a user-friendly application. The API can be used to provide other protocols that send translated string commands. The Hub uses string commands to communicate with the host system. These can be sent via the virtual serial port directly. If another piece of software is accessing the virtual serial port that the hubs is connected through the API will not be able to communicate with the hub.

There are different channels for both our Cambrionix Connect application and the API. The channels are Beta and Release. We would recommend using the release version of both the API and Cambrionix Connect.

We will push bug fixes and updates through Beta before it is merged into the Release version. If you have found a bug that we have a fix for, the Beta releases may already have addressed these and implemented fixes.

6.0.1 Installing Software

Cambrionix has software that can be used to manage the devices and your hub using different host systems. This section has instructions and information on using our software on three of the most popular host systems.

Our software is available to download from https://www.cambrionix.com/software, you will find software available for Windows™, Mac® and Linux® Systems.

Linux® OS systems tested with our software are Ubuntu 20.04 LTS or Debian 9; some other OS versions based on the two mentioned will work. Some different Linux® OS versions may work, but we dont test against other distributions.

To install on Mac® and Windows™ systems, download the install files from the above link, once downloaded run the install process and dialogue boxes will help you through installation and initial set-up.

For Linux® systems, download the AppImage file from the website at the above link. Once downloaded, you will need to make the file executable. This can be done by selecting the AppImage file, go to Properties > Permissions, and check the option to allow it to be executed as a program, or by making it executable via terminal sudo chmod +x Connect(version-number).AppImageonce the file is executable run the AppImage by double-clicking it in your file manager or executing it from the terminal

6.0.2 Cambrionix Connect

Cambrionix Connect is an application that can be run from a browser by visiting https://connect.cambrionix.com or it can be downloaded from https://www.cambrionix.com/connect. Cambrionix Connect allows you to switch the ports on and off and set the port mode. Cambrionix Connect's home page shows the hubs available, by selecting a hub you can obtain the following information about all the ports:

• Status (Attached/disconnected)

• Mode (Charge/Sync/Off)

• Profile (Charging profile)

• Duration (How long the device has been attached)

• End time (Time the battery reaches a threshold (full) level)

• Current (Quick charge current in mA)

• Energy (Present energy rate)

Tick boxes adjacent to each port symbol allow that port mode to be changed when the "enable port controls" is selected. Cambrionix Connect shows the hub rail voltages, time since switched on, total current and power, and temperature. Further details on Cambrionix Connect are available on our website. https://www.cambrionix.com/connect

!	**CAUTION**
	A new version may be available
	Ensure you have the latest version of Cambrionix Connect installed on your host system. These updates will often contain new features, fixes for bugs and performance improvements

6.0.3 Internal Hub Settings

Within your hub, there are some specific controllable settings called 'internal hub settings'. These are a variety of different settings for your OEM-U8S.

You can navigate to the Internal hub settings by opening Cambrionix Connect and selecting the hub you want to connect to. Once you have chosen the connected hub, navigate to the below icon on the top right of the screen from Cambrionix Connect

Figure 6.1

Once you have pressed this you will be taken to the Internal hub settings section where you can view and change the Internal hub settings, including reverting back to default factory settings.

Setting name	Description	Default value
Local Name	Optional, "Local Name", set by the user. Limit of 31 characters. This name will appear in the device's system information if set.	Empty
Attach Threshold (mA)	The attach threshold is the device current (mA) level at which the hub can determine that a device (iPhone etc.) has been attached to a port. The attach threshold may need to be increased if the device (iPhone etc.) is connected to a Cambrionix port with a cable which includes an LED or other electronics. It may also need to be increased if you are using a device (iPhone etc.) with a 3rd party sled/holder/case (such as a barcode scanner or battery pack) which contains electronics or charging pass-through	10
Charged Threshold (mA)	The charged threshold is used to determine if the device is probably charged. If the drawn power drops below this mark for 2 minutes, then we set a charged flag	100
Maximum Internal Hub Temperature (°C)	Sets Maximum temperature before the shut-down of ports	70
Port Mapping	Change the ordering of the ports from the default	Sequential order
Default Profiles	Change the default profile for specific ports. Use 0 for default operation	0
Ports AlwaysOn	Configure which ports to be always powered regardless of attach status. This must only be used in conjunction with a default profile	Off
Sync Charge	Enable CDP* on a per port basis	On

Table 6-1

Setting name	Description	Default value
Alternative Charge Mode	Enable alternative method CDP* to support some hardware, and increase the device charging. This has no effect if Sync Charge for that port is disabled.	On
Display Mode	Change display mode for hubs that have extended LEDs	Current (mA)
Flags	Change various flags	None selected
Stagger Delay (ms)	Introduce a delay between ports turning on when either host is detected or mode is switched to Sync. 0-9999ms	3000
Stagger Offset (ms)	An additional delay to add before starting the staggered process. 0-9999ms	0

Table 6-1

*Charging Downstream Port (CDP) Being enabled means that a port is capable of transferring data and charging the device at the same time with a higher current than just data syncing alone. With CDP enabled the hub can supply up to 1.5 A

If you disable CDP you will receive the notification "This Hub has the Charge Downstream Port UCS mode disabled. This could limit the maximum current seen on some ports." This notification is there to ensure you haven't turned this off by accident and can still have the highest charge available.

There is more information on the Internal hub settings and how to manage them in our CLI manual. which can be found at the link here.

6.0.4 Cambrionix Hub API

The Cambrionix Hub API allows you to monitor and control each port in detail and to integrate these functions into your own workflow processes. The API comprises a daemon (which is a program running in the background) that can be downloaded from https://www.cambrionix.com/cambrionix-api and installed on the host machine. Port information and control can be provided through the API. Calls are sent as a request to the API to "Get" port, device or Hub information, or "Set" port functions. A library of sample code is downloaded along with the API from the following link https://www.cambrionix.com/cambrionix-api and can be found within the program files under 'examples'. These can help you integrate many of these functions into your process work-flow alongside the complete user manual.

CAUTION
A new version may be available Ensure you have the latest version of API installed on your host system. These updates will often contain new features, fixes for bugs and performance improvements

6.0.5 Updating Software

By using Cambrionix Connect you will be able to automatically download and install the most up to date software (Cambrionix Connect and the Cambrionix Hub API)

By going into the settings section on the left-hand side of Cambrionix Connect, you can navigate to the general tab, and under this can see the options for keeping both Cambrionix Connect and the API up to date.
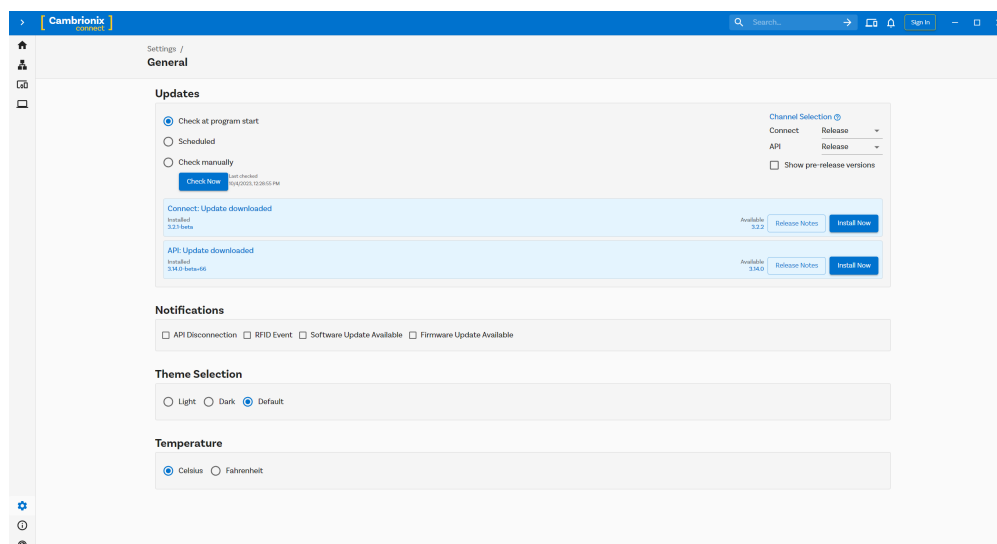

Figure 6.2

By default Cambrionix Connect will check for updates regularly or, if you prefer, you can change to a manual update selection. You can also select which version of the software you would like to use between the Beta or Release options. You can also select historic versions of the API and Cambrionix Connect to install.

When you have some software updates available, you can select install now to begin the installation process; a progress bar will appear to show the installation status. From this bar, you can also view the release notes for the version of the software you are looking at.

6.0.6 Removing Software

If you wish to uninstall the software (Cambrionix Connect, Cambrionix Hub API and the Cambrionix Recorder Service) from your host system, the following steps can do this.

Windows™

To remove the software from a Windows™ system, you can do so by going into "Add or remove programs" finding the software you wish to remove, selecting it and pressing "uninstall"

macOS®

To remove the software from a macOS® system, locate the application in the Finder, drag the application to the Trash, or select the application and choose File > Move to Trash. You may be asked to enter the name and password of an administrator account on your Mac®. Then to completely delete the application, choose Finder > Empty Trash.

Alternatively, use the below instructions.

```
sudo /Library/Cambrionix/ApiService/bin/CambrionixApiService --remove
sudo /Library/Cambrionix/ApiService/bin/CambrionixRecorderService --remove
```

Linux®

To remove software on Linux® there are two options.

The first is to use the Software centre, then either the list of installed applications or the search bar to find the software you wish to remove. Once you have selected the application, click on the remove button and you will be prompted for a password, enter the password and the software will be removed.

The second way you can remove software is by using the command line. All you need to do is to use the command in the following fashion:

```
sudo apt remove program_name
```

Table 6-2

Variable	Description
program_name	The file name of the program including any version numbers

You'll be asked to enter your account password. When you enter it, nothing is visible on the screen. You will need to confirm removal, it will ask for your confirmation, press the enter key or Y key: Keep in mind that you'll have to use the exact package name in the apt remove command otherwise, it will show 'unable to locate package error'. You can type the first few letters of the program you want to uninstall, and then hit the tab key. It will show all the installed packages that match those letters at the beginning of their names.

6.0.7 Command Line Instructions (CLI)

Command Line Instructions can be used to control and monitor the functions of the hub and attached devices. To use the command-line interface a serial terminal emulator must be installed on the host computer. Examples include PuTTy, Serial, ZTerm, and Minicom. If you would like more information, please look at our more in-depth information here:
www.cambrionix.com/cambrionix-cli

Two example commands can be seen below, you can use these commands to check hub information and health.

Command	Action
system	Show hardware and firmware information
health	Show voltages, temperatures, errors and boot flag

Table 6-3

7. Product Specifications

7.1. Features

OEM-U8S Features	
19-inch Rack Mountable	no
Dedicated control port	yes
Fan Assisted Cooling	no
Selective upstream port	no
Internal Temperature Monitoring	yes
Indicator LED	yes
User Replaceable Fuse	no
Internal Battery	no

Table 7-1

USB Downstream Port Features	
Configurable enumeration delay	yes
USB BC 1.2 Support	yes
USB Type-C Rev 1.3 Support	no
USB Power Delivery 2.0 Support	no
USB Power Delivery 3.0 Support	no
Independent Hi-Speed Enable and Disable	no
Independent SuperSpeed Enable and Disable	no
Individual Enable and Disable	yes
Individual port voltage measurement, Vbus	no
Individual port current measurement, Vbus	yes
Individual CC voltage measurement, Vconn	no
Individual CC current measurement, Vconn	no
Link speed detection	no
Programmable port current limits	no
RGB Indicator LEDs	no
Individual Colour Indicator LEDs	no

Table 7-2

7.2. OEM-U8SSpecifications

OEM-U8SProperties					
Colour	Nom	-	Number of USB Upstream Ports	Nom	1
Control Port Connector Type	Nom	-	Number of USB Upstream Ports	Nom	1
Dimensions Depth (mm)	Nom	90	Number of USB2 Type-A Downstream Ports	Nom	8
Dimensions Height (mm)	Nom	20	Number of USB2 Type-A Expansion Ports	Nom	1
Dimensions Width (mm)	Nom	104	Number of USB2 Type-A Upstream Ports	Nom	-
Downstream Connector Type	Nom	Type-A	Number of USB2 Type-B Upstream Ports	Nom	1
Electrostatic Discharge, air (kV)	Max	-	Number of USB2 Type-C Downstream Ports	Nom	-
Electrostatic Discharge, Vesd (kV)	Max	-	Number of USB2 Type-C Expansion Ports	Nom	-
Enclosure Material	Nom	-	Number of USB2 Type-C Upstream Ports	Nom	-
Expansion Connector Type	Nom	Type-A	Number of USB3 Type-A Downstream Ports	Nom	-
Form Factor	Nom	OEM	Number of USB3 Type-A Expansion Ports	Nom	-
Fuse Type	Nom	-	Number of USB3 Type-A Upstream Ports	Nom	-
Host Connector Type	Nom	Type-B	Number of USB3 Type-C Upstream Ports	Nom	-

OEM-U8S Properties

Manufacturing Origin	Nom	UK	Output Power, Max (W)	Max		87.4
Mass (kg)	Nom	Mass (kg)	Part Number	Nom		150036
Model Number	Nom	OEM-U8S		Min		-
Number of Thunderbolt 3 Expansion Ports	Nom	-	Power Efficiency at maximum load (%)	Nom		-
Number of Thunderbolt 3 Upstream Ports	Nom	-		Max		-
Number of USB Control Ports	Nom	-	Power Type	Nom		DC
Number of USB Downstream Ports	Nom	8	Product Name	Nom		OEM-U8S
Number of USB Expansion Ports	Nom	1	Vbus Source Power (W)	Max		87.4

Table 7-3

OEM-U8S Environmental Properties

Ambient Operating Temperature (°C)	Min	0
	Max	35
Relative Humidity Range (%)	Min	20
	Max	80
Storage Relative Humidity Range (%)	Min	5
	Max	95
Storage Temperature (°C)	Min	-20
	Max	60
Operating Altitude Max (m)	Max	2000

Table 7-4

Power LED Properties

Colour	Nom	Red
Diameter (mm)	Nom	-
LED Wavelength, Red (nm)	Min	-
	Nom	650
	Max	-
Luminous Intensity (mcd)	Nom	-

Table 7-5

Hub Endpoint Information

USB Hub Depth*	Max	3
Memory Used (Kb)	Max	32
Total Endpoints Used	Max	8

Table 7-6

* Hub depth may differ for expansion ports, please see the internal architecture for more information

7.3. Power Specifications

Hub DC Power Input Properties		
Under Voltage (V)	Min	-
	Nom	-
	Max	-
Current, Isupply (A)	Min	-
	Max	3.5
Over Voltage (V)	Min	-
	Nom	-
	Max	-
Voltage Measurement Resolution, Vsupply (mV)	Nom	-

Table 7-7

Hub Power Input Properties		
Connector Type	Nom	Spade Connectors
Voltage, Vsupply (V)	Min	-
	Nom	5
	Max	-
Voltage Measurement Rate (Hz)	Nom	-
Voltage Measurement Accuracy, Vsupply (%FSR)	Nom	-
Power, Psupply (W)	Min	-
	Max	-
Power, no devices attached (W)	Min	-
	Nom	-
	Max	-

Table 7-8

7.4. Port Specifications

USB Downstream Port Properties					
Short Circuit Detection Time (ms)	Max	-	Vbus Output Current, ALT CDP Mode (A)	Max	2.1
Short Circuit Response Time (ųs)	Max	-	Vbus Output Current, CDP Mode (A)	Max	1.5
USB D Logic Low Voltage (V)	Min	0	Vbus Output Current, DCP Mode (A)	Max	2.1
	Max	0.3	Vbus Output Current, SDP Mode (A)	Max	0.5
USB D Logic High Voltage (V)	Min	2.8	Vbus Output Power (W)	Max	10
	Max	3.6	Vbus Output Voltage (V)	Min	4.8
USB Hi-Speed Data Rate (Mbps)	Nom	480		Nom	5
USB SuperSpeed Data Rate (Gbps)	Nom	-		Max	5.2
Vbus Current Measurement Accuracy (%FSR)	Min	-	Vbus Source Power (W)	Max	-
	Max	-	Vbus Voltage Measurement Accuracy (%FSR)	Min	-
Vbus Current Measurement Range (A)	Min	-		Max	-
	Max	-	Vbus Voltage Measurement Range (V)	Min	-
Vbus Current Measurement Rate (Hz)	Nom	-		Max	-
Vbus Current Measurement Resolution (mA)	Nom	-	Vbus Voltage Measurement Rate (Hz)	Nom	-
Vbus Current Setpoint Resolution (mA)	Nom	-	Vbus Voltage Measurement Resolution (mV)	Nom	-
Vbus Output Current (A)	No	2.1	Vbus Voltage Ripple (mV)	Max	-
			Vbus Voltage Setpoint Resolution (mV)	Nom	-

Table 7-9   Table 7-10

Upstream Port Properties		
Vbus Input Current (mA)	Min	-
	Nom	-Vbus Input Current (uA)
	Max	-
Vbus Input Power (W)	Min	-
	Nom	-
	Max	-
Vbus Input Voltage (V)	Min	-
	Nom	-
	Max	-
Connection speed (Mbps)	Nom	480

Table 7-11

Ports Lifetime

Standard USB connections have a minimum rated lifetime of 1,500 cycles of insertion and removal. USB-C receptacles have a minimum rated lifetime of 10,000 cycles of insertion and removal. This is an industry-standard.

One thing you can do to prolong the lifetime of the ports on your OEM-U8S is to use "sacrificial cables" in between the hub and your charging cables so when you repeatedly connect/disconnect you are only going to wear the cables rather than the hub.

7.5. Drawings
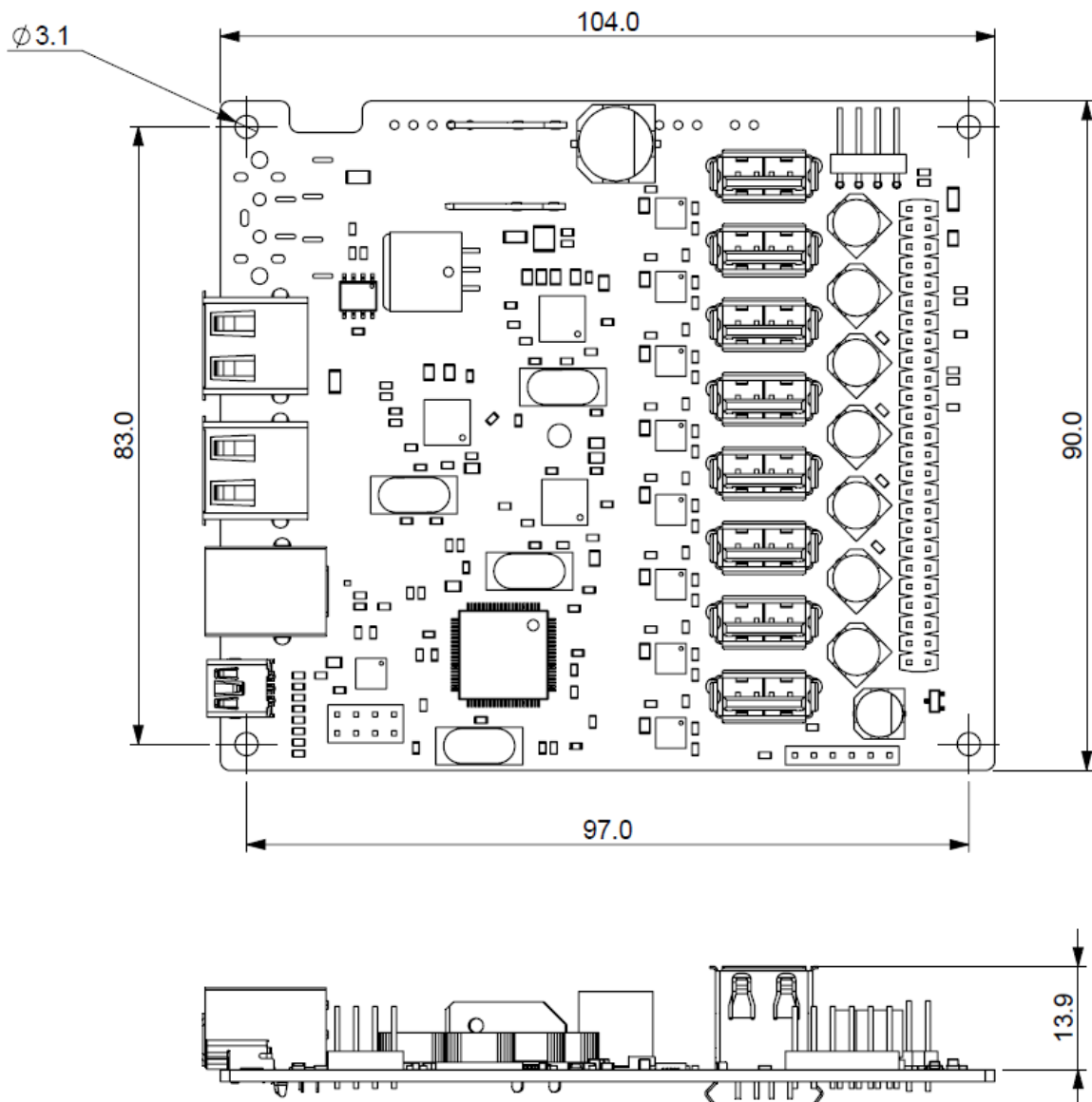
Figure 7.1

7.6. Hub Architecture

Below is a diagram of the internal architecture for the OEM-U8S.
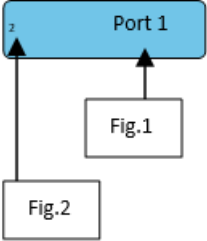
	Fig	Description
	1	This is the external physical port number
	2	This is present if this component is connected to an internal hub, if it is present the number represents the port number on the internal hub

Table 7-12

Background colour	Description
	An External physical port you can connect a USB device to
	The Host port that you will connect the host computer to
	An Internal hub which can then connect to external ports or other internal components
	Any other components which includes expansion ports and internal chips

Table 7-13
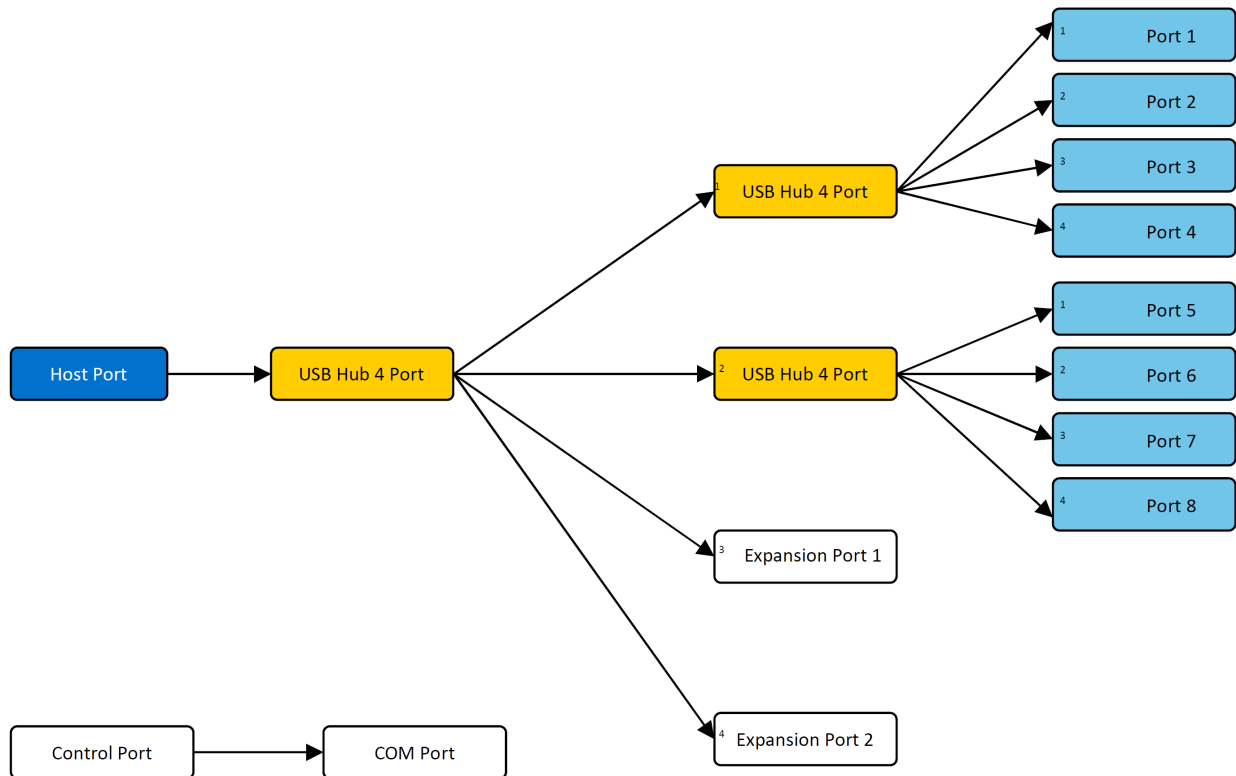
Figure 7.2

7.7. 50 pin connector

The PCB has a 50 pin connector which can be used to drive accessories and connect further components to the base PCB that is supplied.

Information can be found on the pin layout and descriptions of each pin below.

Pin	Signal	Notes
1	5V Output	5V Output from U16S Spade (limited to 2Amp across all 5V pins)
2	5V Output	5V Output from U16S Spade (limited to 2Amp across all 5V pins)
3	3V3 Output 3V3	Output from U16S Spade (limited to 500mA max)
4	GND	Ground/chassis connection

Table 7-14

Pin	Signal	Notes
5	GND	Ground/chassis connection
6	SEC_ARMED_LED	LED output to indicate that the 'security mode' has been enabled.
7	5V Output	5V Output from U16S Spade (limited to 2Amp across all 5V pins)
8	PANEL_ID	Indicates (via a resistor to GND) to the U16S Spade what type of front panel is connected - LCD or LED.
9	GND	Ground/chassis connection
10	KEY_A	Key input. Active high, 3V3. 12k Pull-down on U16S Spade.
11	KEY_B	Key input. Active high, 3V3. 12k Pull-down on U16S Spade.
12	KEY_C	Key input. Active high, 3V3. 12k Pull-down on U16S Spade.
13	GND	Ground/chassis connection
14	LED_BANK_SEL	The port LEDs are split into 2 banks Ports 1 - 8 and Ports 9 - 16.
15	GND	Ground/chassis connection
16	LCD_E	LCD E
17	GND	Ground/chassis connection
18	LCD_RS	LCD RS
19	GND	Ground/chassis connection
20	LCD_RW	LCD RW
21	LCD_D4	LCD DATA[4]
22	LCD_D5	LCD DATA[5]
23	LCD_D6	LCD DATA[6]
24	LCD_D7	LCD DATA[7]
25	PIEZO	PWM output which can drive a FET/transistor to drive a piezo speaker

Table 7-14

Pin	Signal	Notes
26	PORT1_LED_1	These can all be individually addressed via the API. Use the BANK_SEL pin to switch between either the upper or lower 8 ports.
27	PORT1_LED_2	"
28	PORT2_LED_1	"
29	PORT2_LED_2	"
30	PORT3_LED_1	"
31	PORT3_LED_2	"
32	PORT4_LED_1	"
33	PORT4_LED_2	"
34	PORT5_LED_1	"
35	PORT5_LED_2	"
36	PORT6_LED_1	"
37	PORT1_LED_3	"
38	PORT2_LED_3	"
39	PORT3_LED_3	"
40	PORT4_LED_3	"
41	PORT5_LED_3	"
42	PORT6_LED_2	"
43	PORT7_LED_1	"
44	PORT7_LED_2	"
45	PORT8_LED_1	"
46	PORT8_LED_2	"
47	PORT6_LED_3	"

Table 7-14

Pin	Signal	Notes
48	PORT7_LED_3	"
49	PORT8_LED_3	"
50	GND	Ground/chassis connection

Table 7-14

1	5V		5V	2
3	3V3		GND	4
5	GND		SEC_ARMED_LED	6
7	5V		PANEL_ID	8
9	GND		SWITCH_1	10
11	SWITCH_2		SWITCH_3	12
13	GND		LED_BANK_SEL	14
15	GND		LCD_E	16
17	GND		LCD_RS	18
19	GND		LCD_RW	20
21	LCD_D4		LCD_D5	22
23	LCD_D6		LCD_D7	24
25	PIEZO		PORT1_LED1	26
27	PORT1_LED2		PORT1_LED3	28
29	PORT2_LED1		PORT2_LED2	30
31	PORT2_LED3		PORT3_LED1	32
33	PORT3_LED2		PORT3_LED3	34
35	PORT4_LED1		PORT4_LED2	36
37	PORT4_LED3		PORT5_LED1	38
39	PORT5_LED2		PORT5_LED3	40
41	PORT6_LED1		PORT6_LED2	42
43	PORT6_LED3		PORT7_LED1	44
45	PORT7_LED2		PORT7_LED3	46
47	PORT8_LED1		PORT8_LED2	48
49	PORT8_LED3		GND	50

8. Troubleshooting

If you experience any issues with your OEM-U8S ; please try the following troubleshooting steps, if the issue is not addressed in this section, please get in touch with your local vendor or Cambrionix. To contact Cambrionix Support please see Help and Support.

8.1. Common troubleshooting tips

Some tips and information to check first.

- If you directly connect the same device to the port the hub is in, does it appear to the OS.

- If you plug a device (phone, USB stick) into the hub, does it appear to the OS (device manager/ system info etc.).

- Try switching the cables with ones that are working/ use cable from a hub that is working.

8.2. Logging through Cambrionix Connect

If you are experiencing a bug or an issue, we may ask you to obtain some logs of the behaviour, to see in more detail what is happening. To get logs of the behaviour use the following steps to get a zip file of the logs.

1. Open Cambrionix Connect (if this is not already downloaded, then go onto our website and download both the API and Cambrionix Connect)
   https://www.cambrionix.com/software

2. Once inside, select the Computers tab.

3. Select localhost or the name of the local computer you are obtaining logs from

4. Then, click on the "Hub API"

5. From here, you should see a section titled 'API Logging Sections'. Expand the 'Advanced logging settings' downwards.

6. Click the "select all" tick box and then the save button.

7. After this is enabled, use the hub in a way that causes the issue you are seeing.

8. Wait for the issue to occur

9. Note the time and date that the issue occurs. Then, go back to the API page in Cambrionix Connect and press the zip logs.

10. Once you have the logs un-tick the "select all" box and save your settings.

11. Send the logs to us for us to take a look at

The API keeps a maximum of 20 logs at 256 Mb each, so the latest one is usually smaller. If a crash occurs, you would see a smaller log file and the next instance of API shuffles the existing ones

Default locations

Log messages generated by the CambrionixApiService go to syslog.

Using Windows the logs will default to the below location

```
C:\ProgramData\Cambrionix
```

Using macOS the logs will default to the below location

```
Library>Logs>Cambrionix
```

Using Linux the logs will default to the below location

```
/var/log/cambrionix
```

8.3. Hardware Failure

If the Hardware fails, the LEDs can flash in a pattern to determine the type of failure. If no LEDs are on the downstream ports, this will be the red power LED flashing in a pattern.

The unit will blink(B) four times, followed by eight long(L) or short(S) flashes, which then repeat. The flashes are a number in binary which match a number in our error code list.

i.e if the LED flashes the following - BBBB SLSSSLSS, the binary number is 01000100.

8.4. Device connection

If you are seeing any device connection issues please read through the following trouble shooting steps to see if this resolves the observed behaviour.

Device Detection

Lightning cables have the capacity to draw a small amount of current, even when no device is connected to them. This behaviour can cause a USB hub to interpret the cable as a device with

a low power draw, resulting in the hub's LEDs turning on. Additionally, in the case of a Cambrionix Connect system, this may lead to the appearance of an "unknown device" in the interface.

This current draw is a characteristic of lightning cables, as they negotiate power automatically upon connection, regardless of whether a device is attached or not. Consequently, the hub may mistakenly identify the cable itself as an active device, despite the absence of any connected peripherals.

Device issues when updating

We have found that during updates on some devices the connection can be dropped or lost on the device, this is due to devices going in and out of the bootloader and requiring different power levels. In most instances disabling CDP has resolved this issue for our customers.

You can disable CDP through Internal hub settings either by going through the advanced settings and turning "Sync charge" off or through the API and disabling it via code. For example, the instructions would be below using the command line.

```
settings_unlock
settings_set sync_chrg 0000000000000000
```

Unstable device connection

Some devices can have unstable connections with your host system through USB hubs. We have only observed this behaviour in a very few amount of devices, disabling CDP and setting the ports to always be on has resolved all issues and the connections are stable.

You can disable CDP through Internal hub settings either by going through the advanced settings and turning "Sync charge" off or through the API and disabling it via code. For example, using the command line, the instructions would be as below.

```
settings_unlock
settings_set sync_chrg 0000000000000000
```

You can set the ports to always be on through Internal hub settings through the advanced settings and turning "Ports On" settings to always on for each port. When you set the port to always be on you will need to set a default profile on each port for when the port(s). There is a description for each profile within Cambrionix connect.

Battery information for Android

If you are observing an issue displaying battery information on Android devices ensure firstly you have ADB tool installed and open then try these things in order.

1. Check that developer options are enabled on the android device, and then that USB debugging is also enabled.

2. If you have done this step and it still does not work, go to Developer Options and click 'Revoke USB debugging authorisations'. Unplug the cable and reconnect.

3. If this still doesn't work, turn off the developer options at the top, re-enable it, and re-enable 'USB Debugging'.

4. You can get detailed info directly from ADB at each step to diagnose things:

```
adb.exe shell dumpsys battery # Use -s SERIAL_NUMBER as first options
if you have more than 1 Android attached
```

Unknown devices

Sometimes, within Cambrionix Connect and device manager, the connected device may show up as an unknown device.

This can be due to the host system needing to be trusted on the device. This can be done on the device itself on the initial connection.

This could also be due to an insufficient number of endpoints available on the USB controller in the host system. This limitation within the USB controller can only be resolved if you connect fewer USB devices to the controller in question.

For Apple devices there is a setting called "USB accessories" which can be activated, Once activated it will reduce the amount of times a device will need to be unlocked/ trusted. More information can be found at the link https://support.apple.com/en-gb/HT208857.

Cannot connect any more devices

Sometimes, you may reach the endpoint limit of your USB controller and this may stop you from being able to attach any more devices to your host system.

You can create more space is to change connections from USB3 to USB2. You can change the connection by disabling USB3 in the BIOS on startup.

A much simpler way is to use USB2 cables instead of USB3 cables, limiting the connection to USB2.

Port overcurrent behaviour

When a port encounters an overcurrent event, the port is shut down and an error flag (e) is applied to the port, the port stays disabled until the device is removed or the port state is reset (turned to off mode then back to charge) if the short isn't removed the port will shut down again

The error flag for the port can be seen in the state command see the example below where port 4 had overcurrent applied.

```
>>state
1, 0000, D I, 0, 0, x, 0.00
2, 0000, D I, 0, 0, x, 0.00
3, 0000, D I, 0, 0, x, 0.00
4, 0000, e D I, 0, 0, x, 0.00
5, 0927, A C, 1, 15, x, 0.00
6, 0000, D I, 0, 0, x, 0.00
7, 0000, D I, 0, 0, x, 0.00
8, 0048, A P, 2, 2, x, 0.01
```

8.5. Hub connection issues

If you there are issues with the hub and connecting to your host system, please see below troubleshooting solutions.

Hub not connecting to host

If you see that the OEM-U8S is not connecting to the host system, one of the issues may be caused by the USB drivers on your host system not being up to date. It is good practice to ensure you have the latest drivers and updates installed on your host system, which is usually handled by the OS, but sometimes may require an update directly from the USB host controllers manufacturer, which will be found on their website.

USB drivers required are FTDI drivers, which can be found on the site https://ftdichip.com/drivers/.

Cannot access the COM port

You may get an error message stating "COM (and then a number) could not be opened (Access is denied)".

This is because an application has control over the COM port that the hub is connected to, and no subsequent application can access the hub. To resolve this, you will need to close any other applications that are using the COM port before trying to use the COM port.

8.6. Using with a headless system

If you are using a headless system with no GUI, then and you require to enable logging for support issues, you can use the following command to create the logging cfg file manually:

```
echo*=DEBUG>/etc/opt/cambrionix/cambrionix.log.cfg
```

Then after re-producing the problem, you can zip the logs from the folder

```
/var/log/cambrionix
```

You may delete the file below when you are finished with it.

```
/etc/opt/cambrionix/cambrionix.log.cfg
```

8.7. Software troubleshooting

Some users have noted that the API can cause a high level of CPU usage. This can sometimes be linked to the API recorder service. If you are finding this and you are not using it then we would recommend to uninstall it from your system entirely. Information on how to uninstall programs can be found in the Removing Software section.

Firmware Update

If you have older hardware with Firmware version number lower than 1.83 then the hub may not be compatible with the Cambrionix Hub API and will need to be updated to the latest version of Firmware using the Command Line Updater which can be downloaded and installed from the following link.

https://www.cambrionix.com/cambrionix-clu

9. Returns and Damaged Products

If you wish to return or fix a damaged product first look at the terms on our website

www.cambrionix.com/terms-conditions

Before a product is returned please contact support using the methods detailed in the Help and Support section.

9.1. What if my order arrives with an issue?

- If you have received your order in a damaged box and/or the product has physical damage please contact Cambrionix Customer Support or your distribution partner. Please provide photos of the damaged box and/or product when contacting Customer support.

- If an item in your order does not have physical damage but is not functioning properly or will not power on, please contact Customer Support or your distribution partner and provide as much information as possible and including any steps followed to troubleshoot internally.

- Please include photos of the damaged box and product when contacting Customer Support.

Note: If you have received your order in a damaged box and the damage was indicated to the courier, please provide us with a copy of the delivery note detailing this.

9.2. What happens after I have requested a Return?

- If you have not purchased the Product(s) direct from Cambrionix please contact the vendor the item was originally purchased from for their returns process.

- Once you have notified Cambrionix of your return, Cambrionix will arrange for the collection of the product(s), or provide instructions and details for you to return the product direct.

- When returning your product(s), please only send back the items that were advised through the support process.

- Return your product(s) in the original packaging where you can. Where original packaging is not available, use suitable packing methods, which will ensure that the product cannot be subject to impact damage. i.e. double-walled cardboard box with 50mm of soft material.

- Product(s) not returned in their original condition may result in additional costs, please refer to the warranty and terms section on our website.

- Where Cambrionix arranges collection, return shipping will be free, unless Cambrionix notified you otherwise.

- When contacting us about returning a product please provide the following information.

   - Collection Address

   - Weights and Dimensions WxDxH (m) of shipment

   - Preferred collection date and time.

   - Product serial number(s) (this can be found on a label on the rear or underside of the unit)

   - Purchase order number(s)

9.3. Cleaning your OEM-U8S

Cleaning the product is generally not required, although in some instances it may be necessary if excess dirt/ dust/ hair has accumulated, or if minor liquid spillages have occurred on the module during operation or storage.

	⚠️CAUTION
⚡	**Electric shock or personal injury may occur** If there is a dirt/ spillage over a ventilation slot, external data/ power connector or product aperture, please remove power from the unit without touching the liquid and seek advise before reapplying power

- Ensure that the product is switched off and the power cord is removed from the product. Hold the power cable by the plug and do not touch either the plug or the power cord with wet or damp hands as an electrical shock may result

- Wipe the product with a clean, dry and soft cloth. Do not use detergents which contain alcohol, solvent or surface-active agents. Do not spray water or detergent directly onto the product

- Mildly dampen a soft and dry cloth in water and wring thoroughly to clean the product as required

- Dry the product thoroughly once the cleaning has finished

- Reconnect the power cord and use your product as advised once cleaning is complete

Antimicrobial additive

Our integrated antimicrobial technology within ModIT (made by Clariant) works to continuously minimise the presence of microbes (bacteria, algae and fungi) throughout the entire life-cycle of the product. This works by having a surface where microbes cannot grow which in turn reduces the spread of the microbes, this will help minimise contact points and reduce the risk of passing on infections/ diseases throughout your work environment.

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- Source Code: The source code of our software is proprietary and cannot be provided.

- Proprietary Methods: Detailed descriptions and implementations of our proprietary methods are also protected.

As such, requests for access to the source code or other protected information will be respectfully declined. We appreciate your understanding and cooperation.

EN

Cambrionix Patents

Title	Link	Application Number	Grant Number
Syncing and Charging Port	GB2489429	1105081.2	2489429
CAMBRIONIX	UK00002646615	2646615	00002646615
CAMBRIONIX VERY INTELLIGENT...	UK00002646617	2646617	00002646617

Terms and Conditions

The use of Cambrionix hubs is subject to the Cambrionix Terms and Conditions, the document can be downloaded and viewed using the following link.

https://downloads.cambrionix.com/documentation/en/Cambrionix-Terms-and-Conditions.pdf

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