

User Manual

PDS-C4



1. Table of Contents

1. Table of Contents	1
2. Your PDS-C4 at a glance	3
2.1. Key Features	3
3. Safety	4
3.1. Signal word panel	4
3.2. Safety alert symbol	5
3.3. Pictograms	5
3.4. Product modification	5
3.5. Power supply	6
3.6. Storage and Installation	7
4. Getting Started	8
4.1. Opening your product	8
4.2. What's Included	8
4.3. Connecting to the mains	9
4.4. Connecting to Host	9
4.5. Charging	9
4.6. Cables	9
4.7. Registration	10
4.8. Help and Support	10
5. Using your PDS-C4	11
5.0.1 LED Configuration	11
5.1. Using without connecting to host	11
5.2. Using when connected to host	12
5.2.1 Connecting the Hub to a host computer	12
5.2.2 Charging	12
5.2.3 Data Transfer	12
5.2.4 Communication Interface and Protocol	13
5.3. Scalability	14
5.4. Manage Ports & Your PDS-C4	15
5.4.1 Port Modes	15
5.4.2 Charging Profiles	15
5.4.3 Firmware	15
5.5. Software	17
5.5.1 Installing Software	17
5.5.2 LiveViewer	18

5.5.3 Cambrionix API	19
5.5.4 Updating Software	19
5.5.5 Removing Software	20
5.5.6 Command Line Instructions (CLI)	21
5.6. Cleaning your PDS-C4	23
6. Product Specifications	24
6.1. Input Power Requirements	24
6.2. Output Power	24
6.3. Error flag rail values	24
6.4. Physical specifications	24
6.5. Consumables and Placing Orders	25
6.6. Power Supply	26
7. Troubleshooting	27
7.1. Initial troubleshooting tips	27
7.2. Logging through LiveViewer	27
7.3. Hardware Failure	28
7.4. Device connection.	28
7.5. Hub connection issues	29
7.6. No GUI	30
7.7. Software troubleshooting	31
8. Disposal	32
9. Returns and Damaged Products	33
9.1. What do I do if my order arrives and something the product is faulty or is physically damaged?	33
9.2. What happens after I have requested a Return?	33
10. Compliance and Standards	35

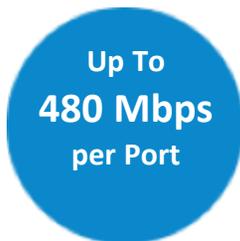
2. Your PDS-C4 at a glance

The PDS-C4 has been designed primarily for desktop use, being highly compact and quiet. It provides 60W of charging power to each of its 4 x USB 2.0 Type-C 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 PDS-C4 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 3A). The firmware can be updated to enable new charging profiles, ensuring the PDS-C4 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 freely available software. Device charging and synchronisation can be monitored through Cambrionix’s LiveViewer App, the Application Programming Interface (API) or Command Line Interface (CLI). Cambrionix’s free monitoring and control software can be downloaded from www.cambrionix.com/software

2.1. Key Features



Transfer Data Seamlessly

Each high-speed port can transfer data up to 480 Mbps



Power

Each port can charge devices up to 3A (60W)



Scalability

Up to 16 devices can be connected at once using multiple hubs

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 IEC/ICEE 82079-1 standard. This is to facilitate the easier understanding and location of information relating to the PDS-C4. Any errors or omissions can be reported using our support ticket system (seeHelp and Support). This way, any issues can be collected and fixed.

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
	<p>Personal Injury and Damage to the product</p> <ul style="list-style-type: none"> • 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
<p>Indicates a potentially hazardous situation that, if not avoided, may result in moderate or minor (reversible) injury.</p>

CAUTION
<p>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.</p>

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

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

	⚠ CAUTION
	<ul style="list-style-type: none"> • Do not modify the product in any way. • Do not dismantle the product.

	⚠ CAUTION
	<p style="text-align: center;">Fire, or personal injury may occur</p> <ul style="list-style-type: none"> • Do not obstruct air vents on the product. • Do not cover the product in combustible material.

	CAUTION
	<p style="text-align: center;">Damage to your product may occur</p> <ul style="list-style-type: none"> • 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 power supply.

	⚠ CAUTION
	<p style="text-align: center;">An electric shock or personal injury may occur</p> <ul style="list-style-type: none"> • 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
	<p style="text-align: center;">Damage to your product may occur</p> <ul style="list-style-type: none"> • Do not short circuit the Power Supply Unit (PSU) supplied with your product.

	CAUTION
	<ul style="list-style-type: none"> • Do not disconnect the power cord while the product is being used. • Do not bend or pull the power cord with excessive force.

3.6. Storage and Installation

This section describes safety precautions you must follow when installing and storing your PDS-C4.

	 CAUTION
	<p style="text-align: center;">An electric shock or personal injury may occur</p> <ul style="list-style-type: none"> • Do not place the power cord near heat sources. • Connect the plug to an earthed socket.

	CAUTION
	<p style="text-align: center;">Damage to your Cambrionix product may occur</p> <ul style="list-style-type: none"> • 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
	<p style="text-align: center;">Overheated power sockets may cause a fire</p> <ul style="list-style-type: none"> • 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.

4. Getting Started

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

The PDS-C4 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 physical specifications section of this manual for information on the environment specifications.

4.1. Opening your product

When you have received your product, please check the packing slip 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
<ul style="list-style-type: none"> • There will be a sticker 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

- PDS-C4 Hub
- 2m Mains power cable (Country specified on order including fuse for the UK plugs)
- Power Supply Unit

Part description	Part number
Power Supply Unit	200402

UK Power cable	200144
US Power cable	200327
EU Power cable	200329
AUS Power cable	200337

IND Power cable	200341
-----------------	--------

4.3. Connecting to the mains

Connect the Power Supply Unit (PSU) to the hub using the 4-pin DIN plug. Connect the power cable to the PSU. Making sure you adhere to local safety regulations, connect the power cable to the 100 – 250 VAC mains power outlet and switch the hub on using the small power switch located adjacent to the power input connector on the hub. When the device is switched on, a red LED next to the power input will be illuminated. The hub is now ready to charge attached devices.

Periodic inspections should be made to power supply cables and any USB cables for any signs of damage. If any damage is found, replace the damaged cord before further use.

4.4. Connecting to Host

Once the power is connected, connect the PDS-C4 to your host system using a USB 2.0 Type-C cable. 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 delivered during data transfer. As indicated in above, if the attached device has a BC1.2 compliant CDP port, the device can draw up to 3A while transferring data.

4.5. Charging

Your PDS-C4 will allow your device to charge at the maximum rate possible up to 3A. The way that charging takes place is the PDS-C4 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.

4.6. 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. We would advice using the cable that was provided with the device to connect to our hubs.

4.7. Registration

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

4.8. Help and Support

FAQs and help can be found on the Help page here

- www.cambrionix.com/help_pages/help.

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

- <https://cambrionix.atlassian.net/servicedesk/customer/portals>

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 the product in question faster, and speed up the process.

5. Using your PDS-C4

In this section, you can find information using your hub in charge or sync application. You can also find information on managing your hub, changing port modes, connecting multiple hubs to one host and using Cambrionix Software.

5.0.1 LED Configuration

Your PDS-C4 has inbuilt LEDs used to show the state of the ports or devices. These LEDs can be configured to support your use case; this can be controlled either by using the API to send commands directly or through separate software.

The default LED behaviour of the hub is below.

Colour	Behaviour
Flashing Red	Port is in charge mode and is profiling the device
Red	Port is in charge mode and is charging
Yellow	Port is in sync mode and has a host connection
Green	Port is in charge mode and the device has reached the charged threshold

5.1. Using without connecting to host

When the Hub is switched on and is not connected to a local host computer it is automatically configured to charge devices using its intelligent charging algorithm. Connect the devices to be charged to any of the available ports (not the Host Port) using USB - compliant cables.

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 3A) 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 host

5.2.1 Connecting the Hub to a host computer

Connect the PDS-C4 to your host system using a USB 2.0 Type-C cable. Using an incorrect host cable may result in the hub and all subsequent ports not being recognised by your host.

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 3A. If the connected device does not comply with BC1.2, the charge current will be limited to 500 mA in compliance with USB specifications.

If you wish to limit the charging to your devices whilst connected to your host system then you can disable CDP on all ports by inputting the following commands.

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.

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 hub 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 USB 2.0 Type-C 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 PDS-C4 appears as a virtual serial port (also called a UART or 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
```

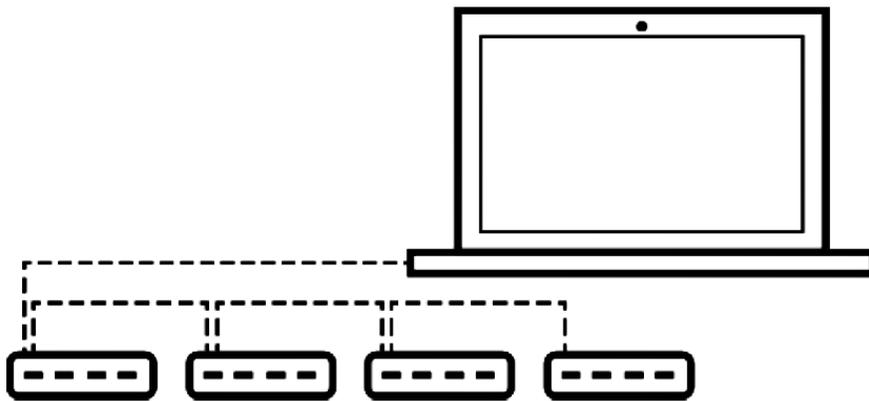
Devices incorporate a FT230X USB to UART converter IC from FTDI International. On Windows 7 or later, a driver may automatically be installed (if Windows is configured to download drivers from the internet automatically). If this is not the case, or if a Mac® or Linux® platform is used, the driver may 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 should be set to 115200 baud, 8 data bits, no parity, and one stop bit. This is sometimes referred to as "115200,8,N,1". No flow control is used. ANSI terminal emulation should be selected

5.3. Scalability

If you wish to synchronise more devices, multiple hubs can be connected to allow more devices to be managed from a single host computer simultaneously.

To daisy-chain multiple hubs, each hub needs to be connected to mains power individually, and the first hub in the chain should be connected to the local computer through the hub's "host port". The host port of the next hub in the daisy-chain is then connected to any of the first hub's downstream USB ports. More hubs are added in the same way.



5.4. Manage Ports & Your PDS-C4

Each port on your PDS-C4 can be managed either individually, or all together. You can turn the ports off and on, change the port mode, or change the charging profiles. This can be done either through LiveViewer, or by connecting to the hub via the API.

5.4.1 Port Modes

Sync	Turn specific ports or the whole hub to sync mode
Off	Turn specific ports on or off or switch the whole hub on or off (no power and no data channels open)

5.4.2 Charging Profiles

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

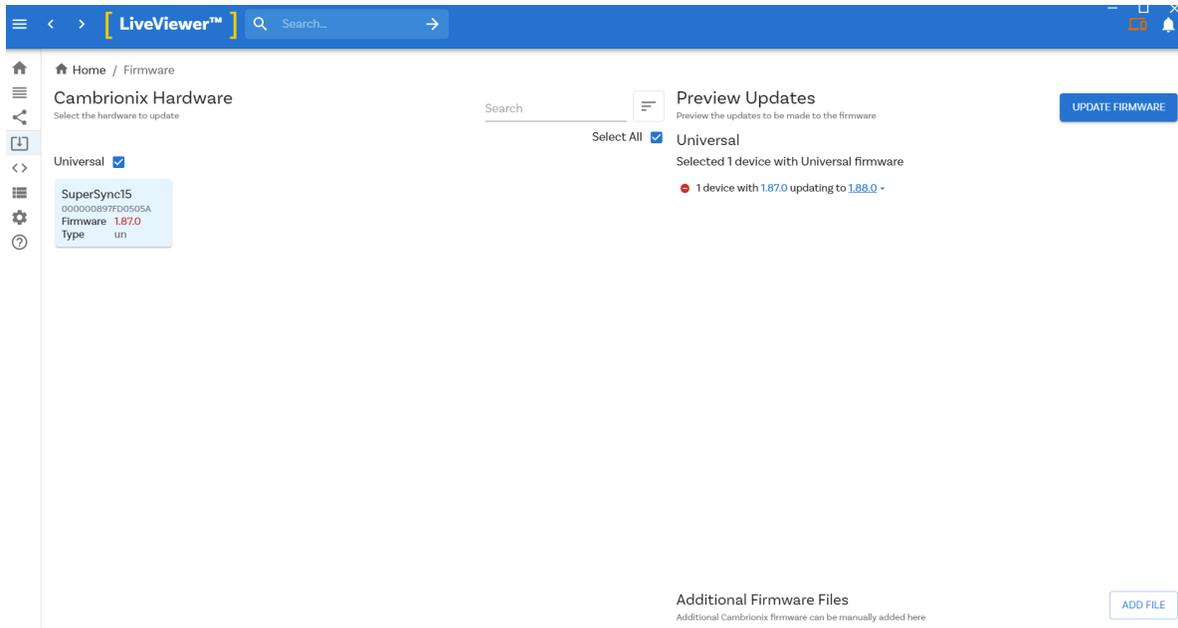
1	15W
2	27W
3	45W
4	60W

5.4.3 Firmware

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

To update the firmware, first, go to the firmware updater section of LiveViewer. Here you can see the available Firmware versions to download and install to the hub.

The current firmware version on the hub is displayed in the firmware updater 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.



To install the firmware onto the hub click the hub/ hubs connected that you want to update, then select the firmware version you want to upgrade to. Once selected press the update button at the top and the update will commence.

Firmware versions and hardware

We advise not to change the firmware version on any new products you receive as this may cause compatibility issues and stop your PDS-C4 from functioning.

	CAUTION
	<p>Your PDS-C4 may not function correctly</p> <ul style="list-style-type: none"> • Do not install old firmware onto a new product

	CAUTION
	<p>Your Cambrionix Firmware may get corrupted</p> <ul style="list-style-type: none"> • Do not interrupt the Firmware update process. • Do not disconnect the power during the update process.

5.5. Software

More productivity, saving you time. Cambrionix provides three interfaces by which the Hub can be monitored and managed:

- LiveViewer
- Cambrionix API
- Command Line Instructions

The PDS-C4 uses string commands to communicate with the host system. These can be sent via the virtual serial port of the PDS-C4 directly, or the API can be used to provide other protocols that send translated string commands. LiveViewer can use the API to interact with the devices through a user-friendly application.

There are three different channels for both our LiveViewer application and the API. The three channels are Alpha/ Beta and Release. We would recommend using the release version of both the API and LiveViewer.

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

5.5.1 Installing Software

Cambrionix has two pieces of 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 www.cambrionix.com/software, you will find software available for Windows™, Mac® and Linux® Systems.

Linux® OS systems tested with our software are Ubuntu 18.04 LTS or Debian 9; some other OS versions based on the two mentioned will work. Some different Linux® OS versions may work, but we have not tested with them.

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 install files from the website at the above link. Once downloaded, you can either install it from the desktop GUI or the command line via:

```
sudo apt install ./
```

after this command you will need to enter the file name that has just been downloaded from our website.

5.5.2 LiveViewer

LiveViewer is an application downloaded from www.cambrionix.com/products/liveviewer. Once downloaded and installed on the host computer, LiveViewer allows you to switch the ports on and off and set the port mode. LiveViewer's home page shows 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. When the port is in Sync mode, only instantaneous current can be monitored through LiveViewer. When the port is in Charge mode, the charge profile, current, energy rate, charge duration and end time are displayed. In addition to individual port information and control, LiveViewer shows the hub rail voltages, time since switched on, total current and power, and temperature. Further details on LiveViewer are available on our website.

NVRAM settings

Within your hub, there are some specific controllable settings called "non-volatile RAM settings", which are referred to as NVRAM settings. These control a variety of different settings on your PDS-C4.

You can navigate to the NVRAM settings by opening LiveViewer 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 LiveViewer and then clicking advanced on the bottom of the page



Once you have pressed advanced this will take you to the advanced settings page where you can view and change the NVRAM settings, including reverting back to default factory settings.

There is more information on the NVRAM settings and how to manage them in our CLI manual. which can be found at the link [here](#).

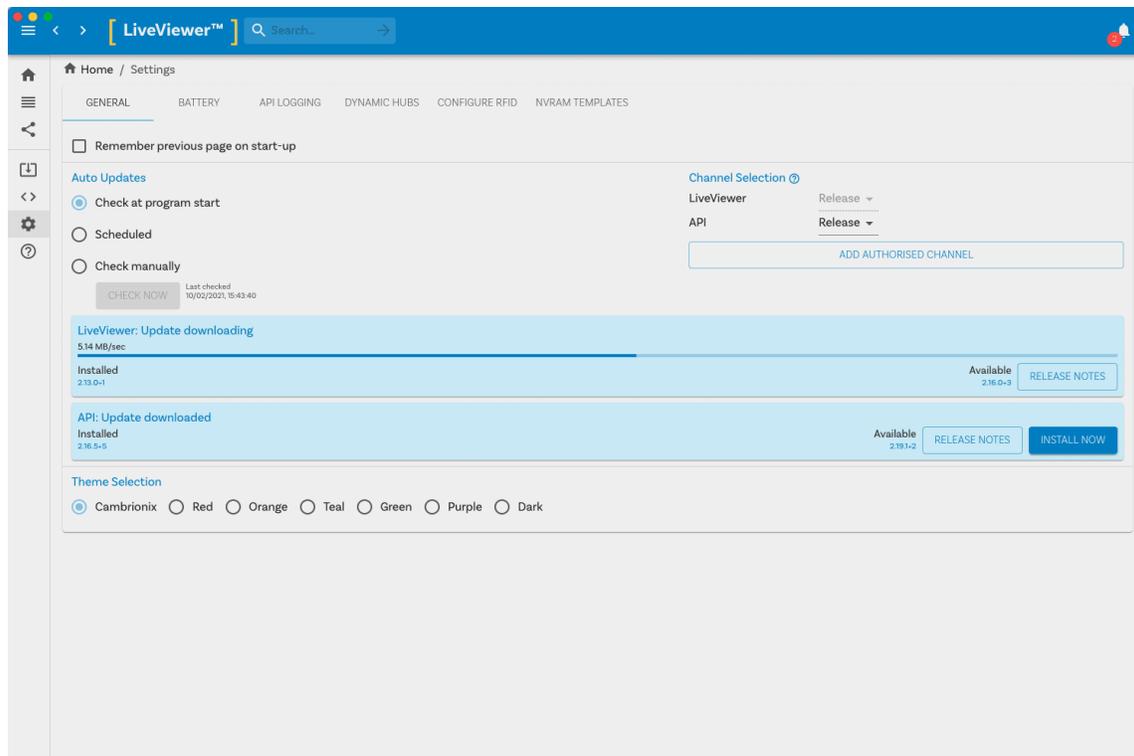
5.5.3 Cambrionix API

Cambrionix API allows you to monitor and control each port in more 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 www.cambrionix.com/products/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 (such as mode). A library of sample code can be obtained from www.cambrionix.com/products/api to help you integrate many of these functions into your process workflow alongside the complete user manual.

5.5.4 Updating Software

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

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



You can select when you would like the automatic software checks to take place 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 Alpha, Beta or Release options.

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.

5.5.5 Removing Software

If you wish to uninstall the software (Cambrionix LiveViewer and Cambrionix API) from your host system, the following steps can do this. One thing to note when removing the API is to check you have also removed the recorder service which will install alongside it.

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
```

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.

5.5.6 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 Serial, ZTerm, PuTTY, and Minicom. If you would like more information, please look at our more in-depth information here:

www.cambrionix.com/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

5.6. Cleaning your PDS-C4

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
	<p>Electric shock or personal injury may occur</p> <ul style="list-style-type: none"> • 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 contact Cambrionix immediately

- 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
- Wet 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 and drying is complete

6. Product Specifications

The PDS-C4 is manufactured in the UK

6.1. Input Power Requirements

Input Voltage	24Vdc
Input Current	15A
Input Connection	4-pin DIN

6.2. Output Power

Output Voltage	21V Maximum
Output Current (Max per Port)	3A
Output Power (Max per Port)	60W
Output Power (Total)	200W

6.3. Error flag rail values

Input rail Max	27V
Input rail Min	9.59V

6.4. Physical specifications

Input Connectors	1 x USB 2.0 Type-C
Expansion Port	1 x USB 2.0 Type-C
Output Connectors	4 x USB 2.0 Type-C
Maximum Downstream Data Speed per Port	480 Mbps
Ambient Operating Temperature range	0-35 °C
Relative humidity	5% to 95% non-condensing
Dimensions	106 x 126 x 36mm
Weight	1.6kg

With the PDSync-C4, the casing is build to certain tolerances and the base plate may be slightly loose. This is purely cosmetic and will not affect the product.

6.5. Consumables and Placing Orders

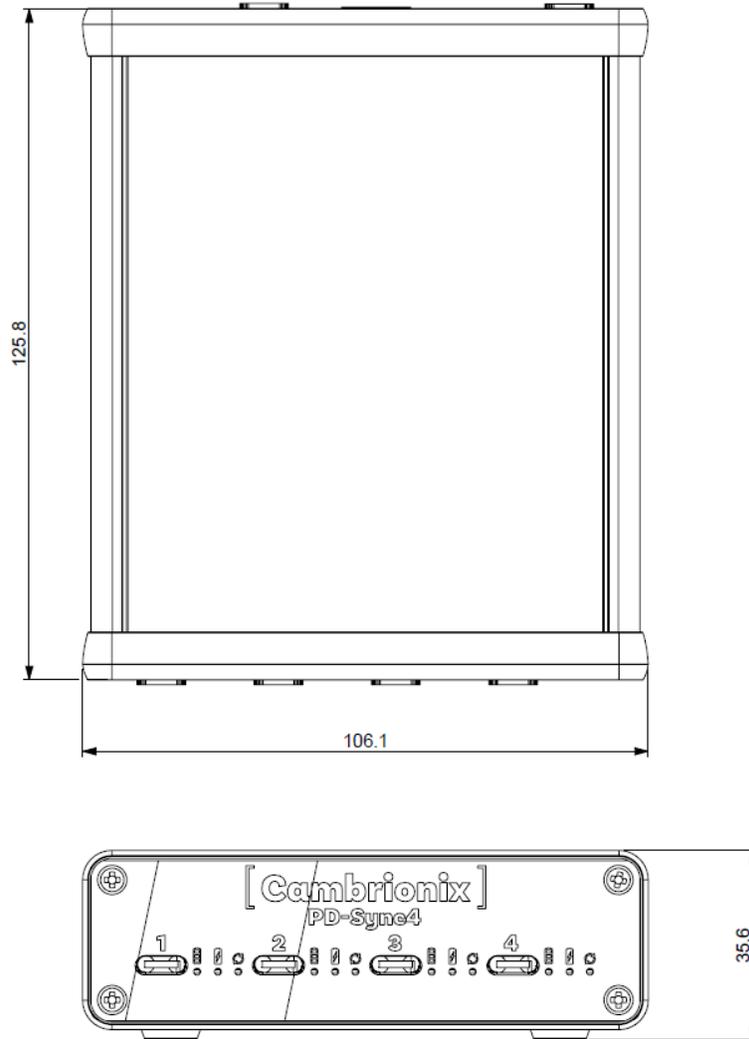
Below is a list of any Consumable products you may require for your PDS-C4 including the cables you will require to connect devices to the hub.

Cables	4 x USB 2.0 Type-C
--------	--------------------

If you require any spare parts, such as the power cables or USB 2.0 Type-C cable, these can be ordered by quoting the product part number and the spare part number (available from what's included section)

These can be ordered from the reseller or solution partner you purchased your PDS-C4 from, or from Cambrionix directly.

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



6.6. Power Supply

Input Voltage	100-250Vdc
Input Current	4A @ 115VAC
	2A @ 230VAC
Input Frequency	50-60Hz
Input Connector	C14
Output Voltage	24V
Output Current	0 - 9.2A
Output Power	221W
Output Connector	4-pin DIN
Dimensions	210 x 85 x 46mm

7. Troubleshooting

If you experience any issues with your PDS-C4; please try the following solutions, if your issue is not addressed in this section, please get in touch with your local vendor or Cambrionix.

7.1. Initial troubleshooting tips

Some tips and information to check first.

- If you plug a device (phone, USB stick) into the hub, does it appear to the OS.
- If you directly connect the same device to the port the hub is in, does it appear to the OS.
- Try switching updater cables with one which is working/ use cable in a hub that is working.

7.2. Logging through LiveViewer

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 LiveViewer (if this is not already downloaded, then go onto our website and download both the API and LiveViewer) www.cambrionix.com/software
2. Once in LiveViewer, on the left-hand side of the screen, select the settings section.
3. Once in the settings section, select the API tab.
4. In the API section click the "cog" on the right hand side of the local API
5. Click the "select all" tick box and then the save button.
6. After this is enabled, use the hub in a way that causes the issue you are seeing.
7. Wait for the issue to occur, i.e. when updating an iPad the device disconnects.
8. Make a note of the time that the issue occurs then go back to the API page in LiveViewer, and press the zip logs.
9. Once you have the logs un-tick the "select all" box and save your settings.
10. Send the logs to us for us to take a look at.

The API keeps a maximum of 20 logs at 256Mb 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

7.3. Hardware Failure

If the Hardware fails the LEDs can flash in a pattern to determine the type of failure. The power LED will flash the pattern if no LEDs are present on the downstream ports.

The unit will blink four times, followed by eight long or short 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.

7.4. Device connection.

If you are having device connection issues please read through the following common solutions to see if this resolves your observed behaviour.

Unstable device connection

Some devices can have unstable connections with your host system through the PDS-C4. We have only observed this behaviour in a very few amount of devices, by disabling CDP this has resolved all issues and the connections are stable.

You can disable CDP through NVRAM settings either by going through the advanced settings and turning "Alt 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
```

Battery information for Android

If you are having 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 Liveviewer 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 [here](#).

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.

7.5. Hub connection issues

If you have 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 PDS-C4 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/>.

Daisy chaining multiple PDSync-C4 using expansion port

USB C cables can have variations in speed, power, and protocol capabilities. Some “active” or E-mark type-C cables may not work on the daisy chain when connecting the expansion port to another PDysnc-4. We recommend to use “passive” type-C cables and not to use cables fitted with e-markers, see your cable supplier to see if e-markers are fitted.

Cannot access 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 applications that control the COM port before opening another.

7.6. No GUI

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
```

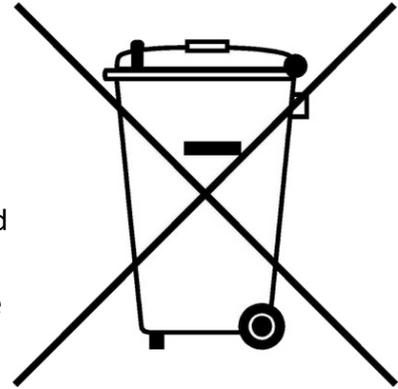
7.7. Software troubleshooting

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.

8. Disposal

Disposal of Old Electrical & Electrical Equipment (Applicable in the European Union and other European countries with separate collection systems)

This product is subject to Directive 2012/19/EU of the European Parliament and the Council of the European Union on the waste electrical and electronic equipment (WEEE), and in jurisdictions adopting that Directive, is marked as being put on the market after August 12, 2005, and should not be disposed of as unsorted municipal waste. Please utilize your local WEEE collection facilities in the disposition of this product and otherwise observe all applicable requirements.



Cambrionix PRN (Producer Registration Number) For the UK is "WEE/BH191TT".

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 do I do if my order arrives and something the product is faulty or is physically damaged?

- If you have received your order in a damaged box and/or the product has physical damage please contact Cambrionix Customer Support. 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 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 of shipment
 - Preferred collection date and time.
 - Product serial number
 - Purchase order number

10. Compliance and Standards

- CB Certificate
- CE Tested and marked
- FCC Part 15 Tested and marked
- Housed within a UL94-VO specification fire enclosure
- RoHS Compliant
- Independently safety tested by the Underwriters Laboratory (UL) under file #E346549

Use of Trademarks, Registered Trademarks, and other Protected Names and Symbols

This manual may make reference to trademarks, registered trademarks, and other protected names and /or symbols of third-party companies not related in any way to Cambrionix. Where they occur these references are for illustrative purposes only and do not represent an endorsement of a product or service by Cambrionix, or an endorsement of the product(s) to which this manual applies by the third-party company in question.

Cambrionix hereby acknowledges that all trademarks, registered trademarks, service marks, and other protected names and /or symbols contained in this manual and related documents are the property of their respective holders

"Mac® and macOS® are trademarks of Apple Inc., registered in the U.S. and other countries and regions."

"Intel® and the Intel logo are trademarks of Intel Corporation or its subsidiaries."

"Android™ is a trademark of Google LLC"

"Chromebook™ is a trademark of Google LLC."

"iOS™ is a trademark or registered trademark of Apple Inc, in the US and other countries and is used under license."

"Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries"

"Microsoft™ and Microsoft Windows™ are trademarks of the Microsoft group of companies."

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

Cambrionix Ltd
The Maurice Wilkes Building
Cowley Road
Cambridge CB4 0DS
United Kingdom

+44 (0) 1223 755 520
enquiries@cambrionix.com
www.cambrionix.com

Cambrionix Ltd is a company registered in England and Wales
with the company number 06210854