



Universal Supervisor Charger User Manual

Diagnostic Battery Charger

Models:

USC-1/25

USC-1/50

USC-2/25

USC-2/50

USC-6/25

USC-6/50

Manufacturer:

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Warranty and Service

Cadex Electronics Inc. warrants the Universal Supervisor Charger (USC) against defective materials and workmanship for two years (24 month) from the original purchase date. Cables, DC Input Clamp Cable and Accessories are warranted against defective materials and workmanship for one year (12 month) from the original delivery date.

The warranty does not cover:

- Damage caused by abuse, negligence, accident, or improper installation.

- Damage caused by improper use of USC and its accessories.
- Damage caused by an attempted repair not authorized by Cadex Electronics Inc.
- Changes or modifications to the Product and/or its accessories, including battery adapters.
- Normal wear and tear.
- Damage from external causes such as leakage spills, power fluctuations or failure.
- Product received without the appropriate model number, serial number, or safety markings.
- Damage caused in transit due to improper packaging.
- Product used for rental purposes

Before sending a unit for service, contact Cadex Technical Support at:

service@cadex.com (Canada) 1-604-231-7777 (USA Toll Free) 800-565-5228
(Europe) +49 (0) 911 240 332-0

Warranty Service

- If the Product qualifies for warranty service, a Cadex representative will provide a Return Materials Authorization form (RMA) or number and the location of the nearest service center.
- Ship the Product to the service center with freight, insurance, customs and duties prepaid. The RMA form must be included to obtain warranty service.
- Ensure that the Product is properly packaged before shipping, preferably in the original Product packaging.
- Product returned from warranty service will be shipped with freight prepaid by Cadex.

Non-Warranty Service

If the Product is not covered by warranty, a Cadex representative will provide the contact information for the nearest service center. Contact the service center directly to arrange to send the product in for service. An RMA form or number will be provided only if the product is returning to the Cadex Head Office.

- Ship the Product to the service center with freight, insurance, customs and duties prepaid.
- Ensure that the Product is properly packaged before shipping.

Note: Cadex and Cadex authorized service centers require a Purchase Order or written authorization to precede with Non-warranty service repairs.

Disposal

Dispose of the device according to local jurisdiction requirements. For assistance in determining proper disposal practices, contact representatives at Cadex Electronics Inc.

For any returning item to Cadex Electronics Inc., contact representative to arrange for a Return Material Authorization before shipping

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1 Safety Information

Use of Product

Universal Supervisor Charger (USC) product family are designed with adequate safeguards to protect user from shock and other hazards when used as specified within this manual. However, if the product is used in a manner not specified in this manual, the protection provided may be impaired. Please read this manual and product labeling before use.

Modification of Product and its Accessories

CE, UKCA, ETL, FCC and other approvals apply to the Universal Supervisor Charger (USC) and its accessories in its factory- authorized configuration. Changes or modification to the product not expressly approved by Cadex will void regulatory safety approvals and void user's authority to operate the product.

Disposal of Waste WEEE



This symbol on the product and package indicates that this product must not be disposed of with unsorted municipal waste. Instead, it is the owner's responsibility to dispose of WEEE by handing it over to a designated collection point for the disposal. The separate collection and recycling of waste equipment will help conserve natural resources and ensure that it is disposed of in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for disposal, please contact your local municipal office, waste disposal service or wherever you purchased the product.

RoHS and REACH Compliance

The Universal Supervisor Charger (USC) complies with the European Union's Directive 2002/95/EC, Restrictions of Hazardous Substances (RoHS) and Regulation (EC) No 1907/2006 , Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

Explosion Hazard



Batteries can burst if treated improperly. Follow these precautions at all times.

- Do not exceed the battery manufacturer's recommended charge current and voltage limits for batteries
- Do not use unauthorized battery types

Warning & Caution Labels



Warning and caution indications in this User Manual are marked with the symbol at the left.

- Warnings indicate required actions to prevent serious injury to a user
- Cautions indicate required actions to prevent serious damage to the equipment

Electrical Safety



Warnings:

- The safety, reliability, and performance of the product can be assured only if the electrical installation of the facility where it is configured meets the appropriate regulatory requirements.
- To avoid the risk of electric shock, product must only be connected with the provided power supply.

Electromagnetic Safety



Cautions:

- Universal Supervisor Charger (USC) complies with EN 61000-3-2 and EN 61000-3-3 for EMC when properly configured with supplied components, including dedicated power supply. Failure to use the supplied components may lead to increased electromagnetic emissions or decreased electromagnetic immunity.
- Portable radio frequency (RF) communications equipment can cause Universal Supervisor Charger (USC) performance degradation and, as such, should be used with other system at an appropriate distance.



Warnings:

Note: This product has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This product generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this product does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the product and receiver.
- Connect the product into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Product Safety



Warnings:

- Read all instructions in this manual before using product.
- Gases produced by a battery are explosive. Charge batteries in a well ventilated area and use extreme caution when working with batteries.
- Do not operate the product if its component or packaging is damaged when received.



Cautions:

- Always inspect a battery for physical damage before inserting.
- Always inspect the device for physical damage before using.
- Always inspect the DC Clamp Cable for observable damage prior to use.

Operational Safety



Warnings:

- Do not attempt to service and/or modify any parts of the product.



Cautions:

- Do not operate the product if any of the parts are damaged or worn.
- Only use the power supply and accessories provided by Cadex Electronics Inc.
- Use appropriate tool when replacing the battery adapter followed by the instructions below.
- Cadex recommend not to leave the product unattended when program is running
- Operate the product using certified batteries only.
- Remove power from the unit by disconnecting the plug before switching from AC to DC power source (Vice-versa) [USC-6 only]

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About USC

The Universal Supervisor Charger (USC) product family provides charging capabilities with added diagnostics in an operator friendly package which can be used stand-alone, connected to a local device for dynamic real time data viewing and cloud connected for processing fleet level data analytics.

Supervisor Chargers support smart batteries and exchange data with the onboard Battery Management System when available. There are 7 models available with different power levels and accessory options. All models support batteries of varying chemistries including Li-Ion, NiCd, and NiMH.

The USC is available in standard configuration of 1Bay, 2Bay and 6Bay.

User Responsibility

The Universal Supervisor Charger (USC) is designed with adequate safeguards to protect the user from shock and other hazards when used as specified within this manual. Please read this document and the equipment labeling before use.

The user is responsible for operating the The Universal Supervisor Charger (USC in accordance with the instructions in this user manual.

System Requirements

CadexLink supported devices:

Android & Microsoft Windows based computers, tablets and phones.
BLE 4.2 or greater (USC-6 models only)
USB-C cable

CadexLink supported web browsers:





Google Chrome revision 91, Microsoft Edge revision 92
Typical resolutions for Cadex Link: 1080x2340, 1400x3200, 1920x1200, 2560x1600

Glossary of Terms and Symbols

Terminology, abbreviations and symbols are listed in the following tables. These may appear in:

- User Manual/Instructions for Use
- Quick Reference Guide
- Labels and associated documentation
- Software User Interfaces
- Other accessory components

USC	Universal Supervisor C
Ah (Ampere hour)	European units for reserve capacity
AWG	American Wire Gauge (a U.S. wire size standard)
Battery Type	The structure for the battery (e.g. AGM, FLD, Li-Ion)
Diagnostic Charger	Charger with basic add-on features to assess battery health
DIN	German Standard (Deutsches Institut für Normung)
EN	European Norm standard
FCC	Full Charge Capacity – present charge capacity of a battery
EMC	Electromagnetic Compatibility
IEC	International Electrical Commission
OCV	Open Circuit Voltage
RC	Reserve Capacity
Relative SoC	The state of charge with respect to the battery's current FCC
Absolute SoC	The state of charge with respect to the battery's designed capacity
SoC	State of Charge
SoH	State of Health
UI	User Interface
USB	Universal Serial Bus

Symbol	Title	Description
	Unique equipment data matrix	A form of serialization used for regulatory, supply chain traceability and anti-counterfeiting.
	Date of Manufacture	Indicates the date when the equipment was manufactured.
	Manufacturer	Indicates the equipment manufacturer.
	Refer to Manual	Indicates to read the instructions in the user manual before operating the equipment.



Caution!

Indicates that caution is necessary when operating the equipment or control near where the symbol is placed, or that the current situation needs operator awareness or operator action in order to avoid undesirable consequences.



Waste Electrical
and Electronic
Equipment

Waste Electrical and Electronic Equipment (WEEE) Directive: Do not dispose with household garbage. Dispose of all components according to local jurisdiction.

3 Introduction

Overview

Intended Use

The Universal Supervisor Charger (USC) designed as depot charger intended for in-door use.

Intended User

The Universal Supervisor Charger (USC) is intended for untrained operators and on periodic maintenance sessions by trained and knowledgeable technicians. The USC shall be available in one, two and six bays. Replaceable battery adapters enable field upgrade when batteries change.

Features

The USC family includes key features such as:

1. Reads Smart batteries with SMBus or DQ communication protocols
2. One button press access to 4 important battery programs:
 - a. Charge
 - b. Calibrate – cycles the battery to cause the onboard fuel gauge to recalibrate
 - c. AirShip – sets the battery’s SoC to 30% or lower to comply with shipping regulations
 - d. Storage – sets the battery’s SoC to 50% for ideal storage conditions
3. Universal adapters ensure that the base unit will never be obsolete even when new battery models arrive
The adapters contain coded parameters to ensure the correct charging algorithms are used with each different battery model.
4. Operator friendly easy-to-read indicators show when it is time to replace the battery
5. Plug-and-go automatic program start
6. Automatic “Boost Wake-up” routine to bring over-discharged batteries back to life when needed.

USC Diagnostic Charger



USC-1/XX



USC-2/XX









USC-6/XX

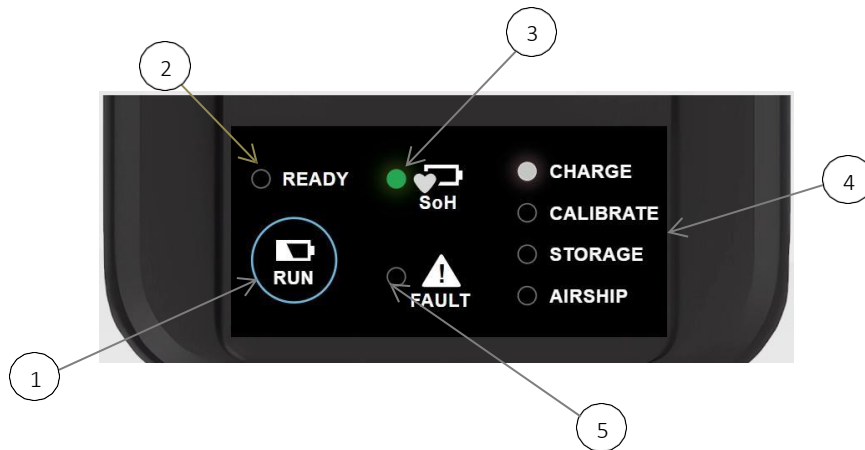
A USC-1, USC-2 or USC-6 package includes the following items:

ID#	Components	Quantity
1	USC Diagnostic Charger	1
2	Power Adapter (Power cord only for USC-6)	1
3	Quick Reference Guide	1
4	DC Clamp Cable (depends on configuration)	1
5	Unit Box	1
6	Batter Adapter (each bay)	1

Power Supply

<p style="text-align: center;">AC-DC Power Adapter</p> <p style="text-align: center;">USC-1/25</p>  <p style="text-align: center;">USC-2/50</p> 	<p style="text-align: center;">DC-DC Clamp Cable</p> <p style="text-align: center;">USC-1/25, USC-1/50, USC-2/25, USC-2/50</p>  <p style="text-align: center;">AC Power Cord NA</p> 
<p style="text-align: center;">AC-DC Power Supply</p> <p style="text-align: center;">USC-6/25</p>  <p style="text-align: center;">USC-6/50</p> 	<p style="text-align: center;">DC-DC Clamp Cable</p> <p style="text-align: center;">USC-6/25</p> <p style="text-align: center;">USC-6/50</p>

Front Label & LEDs



#	Icon	Color Indicator	Description
1		Push-button	Press to cycle through and select program to run
2		No light Solid Green Pulsate Green	Not finished current program Current program completed Idle, no battery inserted
3		No light Solid Green Solid Amber	No battery found, or normal battery (non-smart) State of Health capacity is enough Battery's fuel gauge needs calibration, or SoH is low
4		No light Blinking White Solid And White	Program not selected Program is executing Program is completed
5		No light Solid Red	No battery, or no fault found Fault found in battery during test

4

Setup & Operation

The USC can be operated as a standalone unit which does any of the four programs and gives diagnostic information when batteries need attention. It can also be connected to a host device like a tablet, phone or PC and additional features become available and can be configured to connect to the cloud for data storage and analytics.

Stand-Alone Setup

The USC will normally come with the ordered adapters installed in each bay. When necessary, follow steps below to remove and put a different adapter in any bay.

Remove adapter

- Ensure the power supply is removed from the USC
- Using a Philips screwdriver, undo the two screws fastening the adapter to the base unit.
- Carefully lift the adapter taking care not to damage the thermistor wire if one is included.
- Disconnect the 8-pin connector from the base unit's floating socket

Insert adapter

- Place the empty battery adapter near the bay and plug the 8-pin connector into the base unit's floating socket.
- Place the adapter into the bay and line up the screw holes on the front and back.
- Tighten the screws
- Apply power to the unit.

Note: The adapter may be sensitive to Electrostatic Discharge. Use ESD procedures when installing or uninstalling.

Wall-Mount

- Wall mount kit is not included.
- Use an appropriate VESA mount, flat display mounting interface, to attach USC.
- Place the USC onto the flat display mounting interface. Use four M3x0.5mm screws to secure from the bottom of USC.
- Ensure that the weight of the battery does not exceed 1kg for each bay while the USC is wall-mounted.
- Ensure that the height of the wall/ceiling or other structure mount does not exceed 2.0m from the ground level. Otherwise, additional safeguard is required.
- Consult with the manufacturer when the weight of battery and the battery adapter exceed 1 kg in total. Any battery and battery adapter that exceed 1 kg in total shall not be used on wall mount.
- Consult with the manufacturer to find out whether the adapter is applicable for wall-mount.
- Ensure that the battery does not slide out from the adapter when wall mounted.

Power on and off

- To power the USC, plug the provided power supply into the power connector on the back of the base unit. Removing the plug is the method to shut power off for the unit.

Stand Alone Operation

Run Program

- To execute one of the programs, press the Run button until the LED beside the desired program is lit. Insert a battery into the adapter.

Within 20 seconds, the Ready LED will go off, and the Program LED will flash indicating that the program is executing. The SoH LED will indicate if the battery health is OK or needs attention.

Note: Once a program has started executing, the Run button will no longer allow changing the program.

When a program is finished, depending on the results of the session one of the following conditions will show:

Ready LED	SoH LED	Fault LED	Program LED	Meaning
Solid Green	Solid Green	Off	Solid White	Battery is ready to use
Solid Green	Solid Amber	Off	Solid White	Battery is ready to use, but may require a calibration cycle, or may need to be repurposed.
Off	Any	Solid Red	Any	Battery has failed. Retire.

Abort Program

- To stop an executing program, remove the battery from the adapter.

Program Descriptions

Each of the four programs includes special behaviors that depend on the type of battery adapter installed, and the battery inserted.

- Charge Program

A suitable set of steps are applied to charge the battery up to its full potential. This program operates on Smart and Normal batteries.

- Calibrate Program

Calibrate puts a smart battery through the necessary steps to trigger the onboard fuel gauge to recalibrate. Including necessary rest periods, discharge periods and charge periods, the entire process can take more than 12 hours and depends on the battery capacity.

The Calibrate program is intended only for Smart batteries. When executed on batteries without an onboard fuel gauge, it may improve performance especially for Nickel chemistry batteries.

- Storage Program

Charging or discharging is applied to the battery until it reaches the configured Relative SoC (default= 50%).

This program is intended for Lithium chemistry batteries with onboard fuel gauges. If a Lithium battery does not have a fuel gauge, an approximate SoC of 50% will be targeted based on an equivalent voltage. If a Nickel

chemistry battery is inserted, this program will be skipped when pressing the Run button.

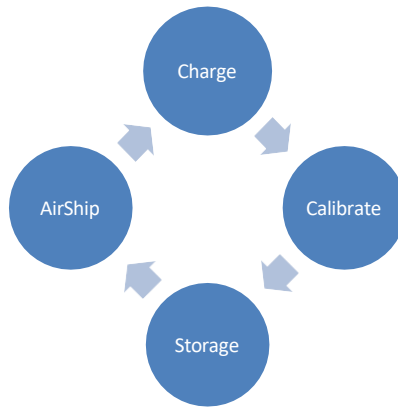
- AirShip Program

Charging or discharging is applied to the battery until it reaches the configured Relative SoC (default=30%) or lower to comply with shipping regulations for Lithium Ion batteries.

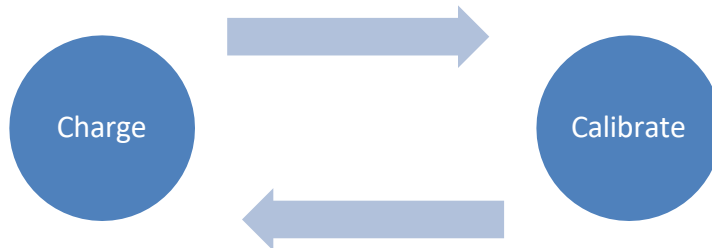
This program is intended for Lithium chemistry batteries with onboard fuel gauges. If a Lithium battery does not have a fuel gauge, an approximate SoC of 30% will be targeted based on an equivalent voltage. If a Nickel chemistry battery is inserted, this program will be skipped when pressing the Run button.

Select Program cycles

With any smart battery the sequence below will occur as the Run button is pressed:



When a Nickel chemistry battery is inserted, only two of the 4 programs will be available. The sequence will be as below:



Once a program is selected for any bay, the USC will remember that program. Operators simply put a battery in the unit, and within seconds the program will begin without any further interaction required. Remove a previous battery and insert another one and it will start the program.

Software & Host

In addition to the stand alone functionality offered in the USC product line, connecting Cadex software to the equipment adds important features. Two components of the software system include CadexLink and CadexCloud. CadexLink is the direct link to the USC device and provides access to configuration settings and additional detail about the battery, the program progress and the results when finished. CadexCloud provides a fleet-wide view into battery service/program records in a Cloud-based database.

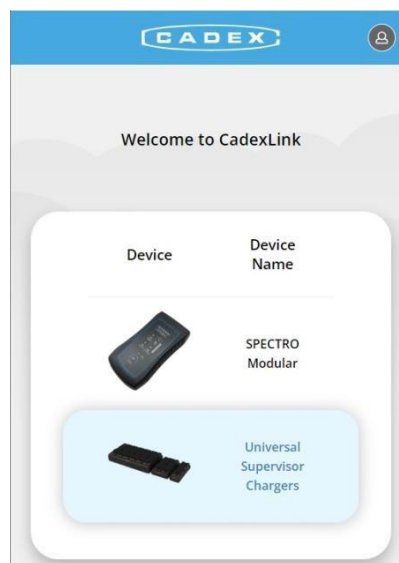
Direct Connection to USC

CadexLink is a Web App which can be run in a PC with USB connectivity directly to a USC, or on a mobile device such as a tablet or phone. With a tablet or phone, connectivity is only possible on a USC 6 bay model and uses Bluetooth for communication.

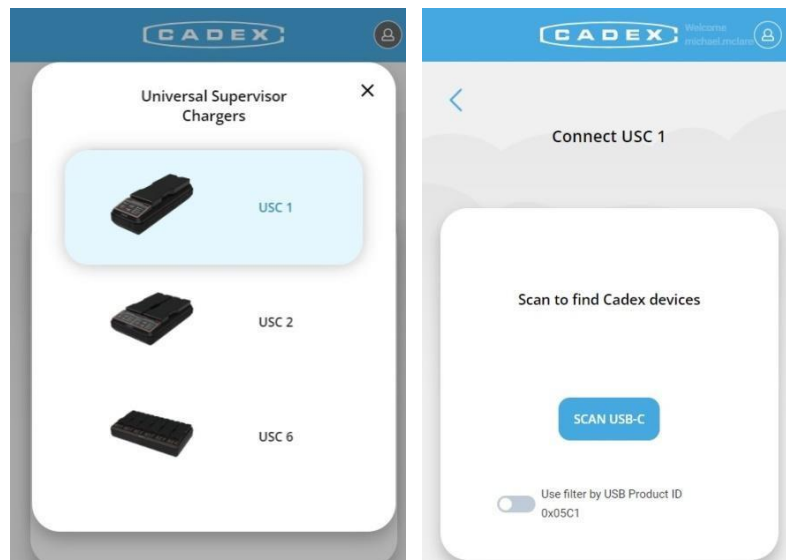
Set up CadexLink

Choose a device to use with the USC unit and prepare it by running the CadexLink web App.

- Ensure the host device has access to the internet
- Open a supported browser in the host (See System Requirements)
- Enter the Cadex Link URL: www.cadexlink.com
- Note the Welcome page appears.

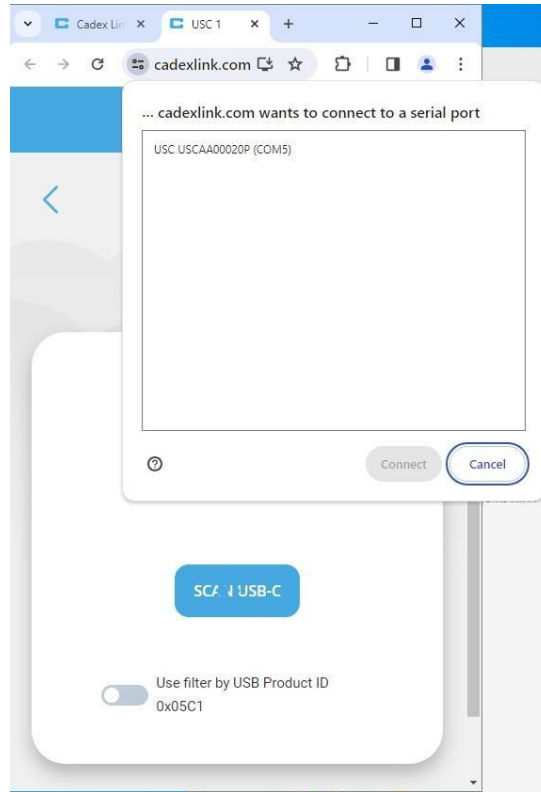


Select Universal Supervisor Chargers and see the page that appears:



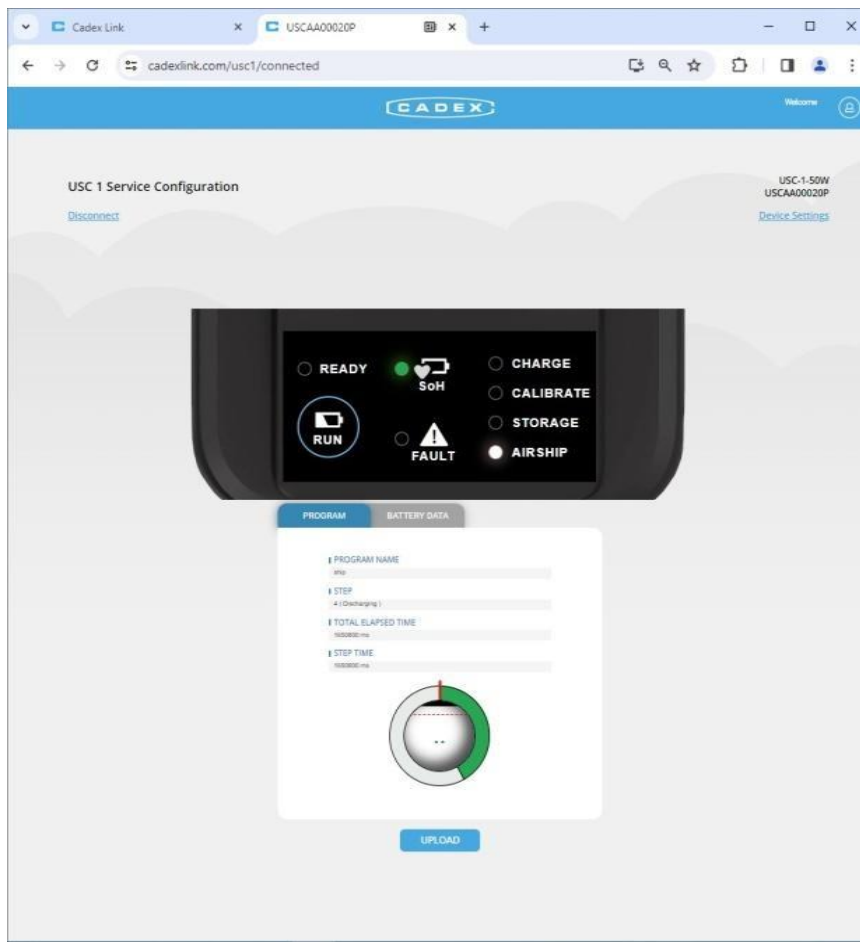
Click on the model being connected and look for the USB port scan window to appear. Click on Scan USB-C and see

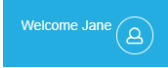
the devices of that model connected to the host device.




Select the desired USC unit and click on Connect. The serial number can be found on the bottom face of the USC.

A page similar to the one below will appear with current status information for the connected USC and inserted batteries.



Note: The user icon on the top right side of the screen  indicates user's sign in status.

A grey background on the user icon () indicates that user has not signed on to CadexCloud and data cannot be uploaded to the cloud.

A blue background indicates user has signed in to CadexCloud and data will be loaded to the cloud as battery programs progress.

Features

Connecting one or more USC units to a host running CadexLink enables:

- Viewing detailed live data for the charging sessions in progress including the fishbowl indicator
- Display of detailed battery data for smart batteries
- Host-based control of programs in each bay
- The ability to set values for the unit overall such as:
 - Target Selector threshold. This is the SoH value below which the SoH LED will light in Amber indicating that the battery should be repurposed or retired
 - Temperature units to display
 - Target threshold for MaxError value to trigger for SoH LED

- The ability to set values for each bay as follows:
 - AirShip Target SoC
 - Storage Target SoC
- A communication conduit to upload data to CadexCloud for USB only models.
- CadexCloud account login

Operation CadexLink

Adjust unit settings

- From the Service Page, click on Device Settings hyperlink
- Make any of the settings described in the following sections
- When finished each setting, click on the Save button
- Return to the service page

Adjust AirShip State of Charge target

- Enter a value between 0 and 30% in the Airship SoC target field

Adjust Storage State of Charge target

- Enter a value between 0 and 50% in the Storage SoC target field

Adjust Target Selector threshold

- Click to dropdown the selections and select the Target Selector value desired.

Adjust data update rate

- Enter a value for the number of seconds between live-updates

From the Service Page the following are available:

Select program

- When no battery is inserted, or when the Ready Light on the unit is lit, click on the Run light icon to cycle through the programs available. See the Stand-Alone chapter for the sequences.
- If a battery is inserted ensure that you click in sequence quickly to get to the desired program before the unit starts a program and locks out program change.

Disconnect from USC

- At any time, click on the Disconnect hyperlink in the top left of the CadexLink page to close the link with the USC.
- The USC will continue to run the program even when disconnected, however, data updates will not be visible on the host.

Upload

- Click on the Upload button to send a service record to CadexCloud at any time.
- This host device must be logged in to the CadexCloud account.

View data

When viewing CadexLink Service Page, the front panel display shows the LEDs as they appear on the unit. The Program LEDs, the SoH LED, the Ready LED, the Fault LED and the Run button all have similar appearance and function to the stand-alone unit.

In addition, it is possible to click directly on a program name to select a program when using CadexLink.

The Fishbowl diagram

The Fishbowl diagram shows details about the current state of the battery that has been inserted.

Elements of the Fishbowl diagram are:

- Charge Ring which indicates the Relative SoC of the battery starting from the 12:00 position and rotating clockwise when charge is increasing.
- The usable capacity is indicated by the dome area in the center.
- The unusable capacity is indicated by the black ceiling hanging down from the top.
- The Target Selector threshold is indicated by the dotted red line. When the battery's FCC has reduced to where the black ceiling is below the dotted red line, it is time to retire the battery from this purpose.
- A text indication shown over the central dome indicates the results of the session.
 - Pass – program was successful
 - Calib – need to calibrate the battery
 - Fail – battery has a fault
- Leftover charge when the battery is inserted is recorded and shown as a red line located appropriately around the charge ring.

Clicking on the central dome will bring up the detailed data for the battery.

The Program tab indicates what program is executing, which step of that program is currently in progress and the elapsed time since the start of the session and the start of this step.

Multiple USC's handling

When using multiple USC's connected to the same computer on different USB ports, open a different tab and run CadexLink for each unit.

Advanced setup including CadexCloud data posting

If a CadexCloud account and subscription have been purchased, uploading data to the cloud on a regular basis will be available from CadexLink. Two additional settings are available on the Device Settings page.

Cloud Push Type and Interval

Select the method to push records to the cloud.

- The only option available today is periodic push.
- Enter the push interval in seconds in the field "Cloud push interval"

Remote Connection to USC

CadexCloud is a Web App which can be run in a PC, or on a mobile device such as a tablet or phone. This app displays historic data from the CadexCloud database and allows supervisors, fleet managers, or fleet maintenance staff to view aggregate data and long-term historic data for devices and batteries.

Set up CadexCloud

To use CadexCloud for recording full historic data and to view aggregate data, it is necessary to pay for a subscription. Follow the steps in the section on CadexCloud Subscription. Once a subscription is registered, follow the steps below.

Choose a device to install the CadexCloud app on.

- Ensure the device has access to the internet
- Open a supported browser in the host (See System Requirements)
- Enter the CadexCloud URL: www.cadexcloud.com

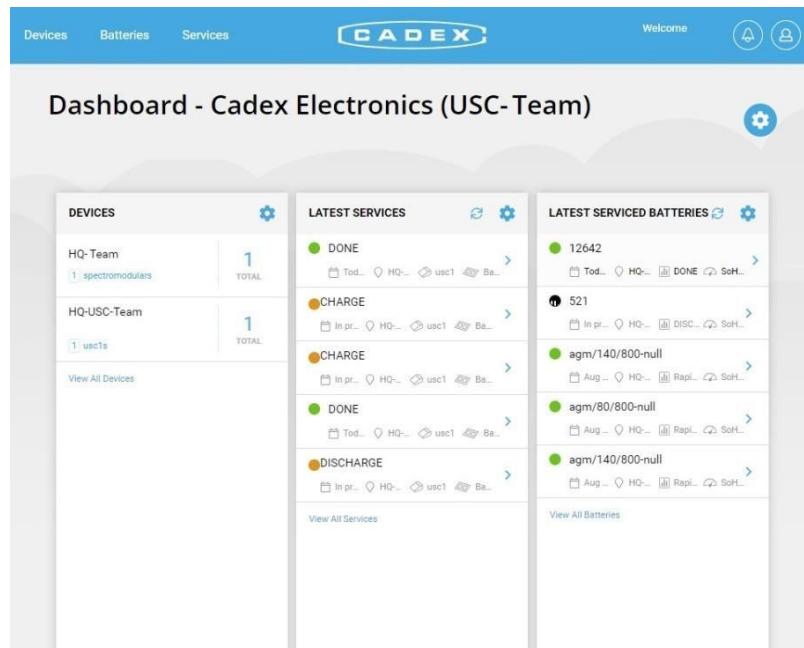
- Note the Welcome page appears.



Click the Login button in the upper right area of this page. The login dialog will appear:

The image shows a screenshot of the Cadex Cloud login dialog. At the top is the CADEX logo. The title of the dialog is 'Cadex Cloud login'. Below the title, it says 'Please login to your account below.' There are two input fields: 'EMAIL *' with the placeholder text 'Your email' and 'PASSWORD *' with the placeholder text 'Password'. Below these fields is a blue 'LOGIN' button. At the bottom of the dialog, there are three links: 'Forgot password?', 'No account? Create an account.', and 'Learn more about Cadex Cloud'.

Once successfully logged in, the landing page will include any recent information on Cadex Devices, Batteries, and Service Records.



See the CadexCloud user manual for details on use of CadexCloud.

Notes:

- If you do not have a CadexCloud account, read the section: “Create a CadexCloud Account” for steps to create one.

CadexCloud Features

- Aggregate data
- Historic data
- Detailed service records
- MORE (Minimum Operational Reserve Energy)
- RUL indicator
- Analytics

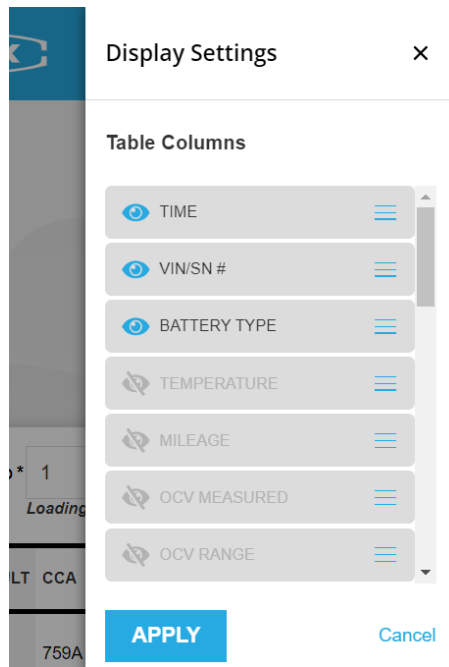
CadexLink for USC Advanced Set up

Display Settings

On the Battery Data page in the Service page, the Settings icon allows an administrator or operator to control the display of smart battery fields. Table entries properties can be adjusted.

Select the Settings icon  found on the top right-hand side of the smart battery data table.

Select to show or hide fields that require entry, and whether they will appear in the results report. Press, hold and drag to rearrange the order of the fields in the results report.



Once adjustments are made, select APPLY to save the settings. Every time this host opens CadexLink connecting to a USC it will remember these settings.

Connect USC-6 to Wi-Fi (TBD)

▼To connect to CadexCloud via Wi-Fi:

1. Navigate to CadexLink *Service Configuration* page and select **Device settings**.

This displays the *Device Settings* page.

2. Tap on SET WIFI and enter the Wi-Fi credentials for the network the USC-6 is to join.
3. Select **Save**.

Note: The Wi-Fi LED on the USC unit will indicate upon successful Wi-Fi connection.

Provided a CadexCloud account is created, the Wi-Fi connection will allow uploading of battery service results so that USC saved results can be reviewed as part of your organization's data analytics and Fleet Management activities.

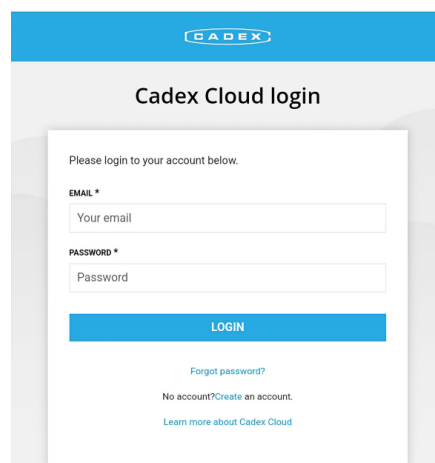
Create a CadexCloud Account

CadexCloud offers additional features for USC including:

- Ability to upload data to store reliably in the Cloud
- Ability to see aggregate data for multiple USC units, and multiple battery test sessions

▼To create an account:

1. Launch CadexLink on your host.
2. Select the user icon in the upper right side of the screen.
3. The CadexCloud login screen will appear
4. Select **Create** an account.



CADEX

Cadex Cloud login

Please login to your account below.

EMAIL *

PASSWORD *

LOGIN

[Forgot password?](#)

[No account? Create an account.](#)

[Learn more about Cadex Cloud](#)

5. Enter desired credentials.

CADEX

Create An Account


Please enter your details below.

FIRST NAME *
Your first name

LAST NAME *
Your last name

COMPANY NAME
Your company name

EMAIL *
Your email

PASSWORD * 
Password

- × Min 12 characters
- × At least 1 uppercase character
- × At least 1 lowercase character
- × At least 1 number
- × At least 1 symbol

REGISTER

All Fields marked with an asterisk must be filled in. The email and password will be used to login in the future.

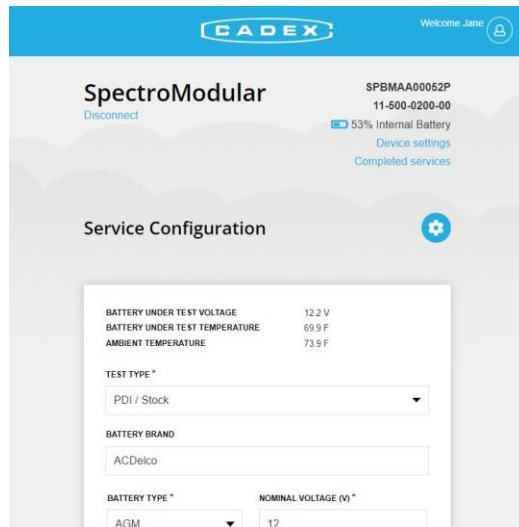
6. Select **Register**.

Once your organization administrator approves your request, a verification email will be sent to the email address provided.

7. In your email account, open the verification email, and select to verify your “CadexCloud” account registration request.
8. Enter your credentials.
9. Select **Login**.

Note: The CadexLink application now has full functionality

When signed in to CadexCloud, your name is displayed beside the user icon.



Maintenance

Equipment Maintenance & Cleaning

▼To clean the Universal Supervisor Charger:

1. Prior to cleaning, disconnect power from the unit.
2. Wipe the unit with a clean cloth.

Equipment Storage

For storage longer than 3 months, or for transporting, prepare the unit as follows:

▼To store the Universal Supervisor Charger:



1. Disconnect power from the unit.
2. Clean the parts.
3. Place the unit, and power supply into the unit case.

Replacement

The USC does not have any field replaceable parts. If the unit or any accessories are considered non-functional or operate abnormally, contact Cadex support by email: service@cadex.com.

Firmware Update

▼To update firmware on Universal Supervisor Charger:

1. Select the Login icon  found on the top right-hand side of the main page.
2. Login to your account.
3. Click Device Settings found on the top right-hand side of the Configuration page.
4. Select Firmware Update icon  found on the top right-hand side of the Device Settings page.
5. Click the box of Firmware Package that you want to update and click Select box.
6. Click the box of application(s) to update Firmware and click Upload box.

Note: Product cannot be reverted to earlier firmware versions once an upgrade has been done.

Troubleshooting

▼To reset USC: If the USC stops operating or does not respond to any input during a firmware upgrade, reset it

1. Remove the power plug from the unit
2. Wait 5 seconds
3. Plug the power in once again.

▼To reset Bluetooth connection: On USC-6 models, to reset the Bluetooth connection, disconnect from the host side and attempt to reconnect

1. Use a thin tool to press the Bluetooth reset button for # seconds.
2. Remove the power plug from the unit
3. Wait 5 seconds
4. Plug the power in once again.

Charger Error Codes Summary

Error Code (smallest error code)	Title
-32768 to -32000	RESERVED Don't add or remove anything in that range
-17999 to -17000	JSON-RPC Error
-16999 to -15000	Charger Error
14999 to -13000	Battery Processing Error
-12999 to -12500	C-Code Error Codes
-12499 to -12000	Adapter Error
-11999 to -11500	Datalogging Error
-11499 to -11000	Battery Under Test (BUT) Error
-10999 to -10500	BLOB Error
-10499 to -10100	Miscellaneous Error
-10999 to -10000	Spectro-B Legacy Error
-7999 to -7000	Bootloader Error
-6499 to -6000	CLI Error
-5999 to -5000	MQTT Error
-4999 to -4000	Web Error
-3999 to -3800	Display Error
-2699 to -2500	EEPROM Memory Error
-2499 to -2300	Flash Memory Error

-2299 to -2100	One-wire Error
-2099 to -1900	SPI Error
-1899 to -1700	HDQ Error
-1699 to -1500	DQ Error Codes
-1499 to -1300	SMBus Error
-1299 to -1100	PMBus Error
-1099 to -1000	Key-Value Error
-999 to -900	BSON Parser Error
-899 to -800	JSON Parser

Note: please contact Cadex's Service and Support team for further assistance if the charger displays an error.

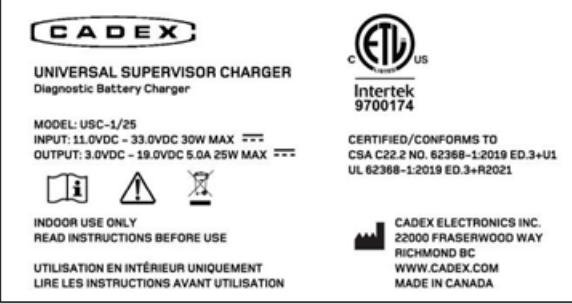





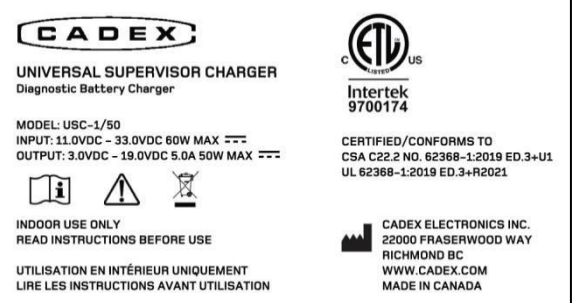





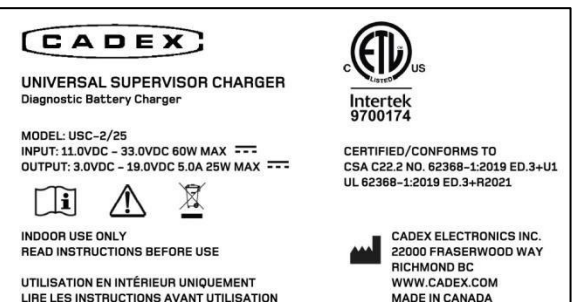





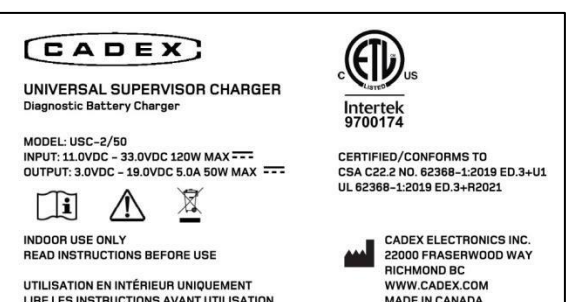





5

Regulatory Information & references

Technical Specifications

Type	Specifications		
Equipment Name	USC 1-bay	USC 2-bay	USC 6-bay
Model	USC-1/25, USC-1/50	USC-2/25, USC-2/50	USC-6/25, USC-6/50
Input Voltage	100-240VAC 50/60Hz 11.0-33.0VDC	100-240VAC 50/60Hz 11.0-33.0VDC	100-240VAC 50/60Hz 11.0-33.0VDC
External Power Supply	Power Supply AC Adapter Input: 100-240VAC, 50-60 Hz Q-NA, Q-EU	Power Supply AC Adapter Input: 100-240VAC, 50-60 Hz Q-NA, Q-EU	N/A
Reverse Polarity Protection on DC input	YES	YES	N/A
Discharge Power per bay	8Watts		
Charging Power per bay	25watts for USC-x/25, 50watts for USC-x/50		
Battery Test Voltage Range	3.6 to 14.4VDC		
Records Storage	TBD 4 – 12 /bay quoted so far		
Operating Environment (recommended)	Temperature: 0°C to +45°C (32°F to 113°F)		
Storage Environment	Temperature: -40°C to +70°C (-40°F to 158°F)		
Net Weight excluding adapters	360 g (0.79 lbs)	700 g (1.54 lbs)	3500 g (7.72 lbs)
Size	Base unit: 60mm x 110mm x 250 mm (2.36" x 4.33" x 9.84")	Base unit: 60mm x 180mm x 250mm (2.36" x 7.09" x 9.84")	Base unit: 90mm x 460mm x 250mm (3.54" x 18.11" x 9.84")
Supported Battery types	Li-ion, Li-poly, LiFePo NiCd, NiMh		
Ingress Protection	IPX0		
Grounding	F1 Class II / Double Insulated		
General Safety Standards	Compliance IEC 62368		
Mechanical Energy Source Class	MS1	MS1	MS2
Pollution Degree	II		
Enclosure Flame Class Rating	UL94 V-0		

Regulatory Labels

Model Name	Label
USC-1/25W	 <p>CADEX UNIVERSAL SUPERVISOR CHARGER Diagnostic Battery Charger</p> <p>MODEL: USC-1/25 INPUT: 11.0VDC - 33.0VDC 30W MAX --- OUTPUT: 3.0VDC - 19.0VDC 5.0A 25W MAX ---</p> <p>  </p> <p>INDOOR USE ONLY READ INSTRUCTIONS BEFORE USE</p> <p>UTILISATION EN INTÉRIEUR UNIQUEMENT LIRE LES INSTRUCTIONS AVANT UTILISATION</p> <p> Intertek 9700174</p> <p>CERTIFIED/CONFORMS TO CSA C22.2 NO. 62368-1:2019 ED.3+U1 UL 62368-1:2019 ED.3+R2021</p> <p> CADEX ELECTRONICS INC. 22000 FRASERWOOD WAY RICHMOND BC WWW.CADEX.COM MADE IN CANADA</p>
USC-1/50W	 <p>CADEX UNIVERSAL SUPERVISOR CHARGER Diagnostic Battery Charger</p> <p>MODEL: USC-1/50 INPUT: 11.0VDC - 33.0VDC 60W MAX --- OUTPUT: 3.0VDC - 19.0VDC 5.0A 50W MAX ---</p> <p>  </p> <p>INDOOR USE ONLY READ INSTRUCTIONS BEFORE USE</p> <p>UTILISATION EN INTÉRIEUR UNIQUEMENT LIRE LES INSTRUCTIONS AVANT UTILISATION</p> <p> Intertek 9700174</p> <p>CERTIFIED/CONFORMS TO CSA C22.2 NO. 62368-1:2019 ED.3+U1 UL 62368-1:2019 ED.3+R2021</p> <p> CADEX ELECTRONICS INC. 22000 FRASERWOOD WAY RICHMOND BC WWW.CADEX.COM MADE IN CANADA</p>
USC-2/25W	 <p>CADEX UNIVERSAL SUPERVISOR CHARGER Diagnostic Battery Charger</p> <p>MODEL: USC-2/25 INPUT: 11.0VDC - 33.0VDC 60W MAX --- OUTPUT: 3.0VDC - 19.0VDC 5.0A 25W MAX ---</p> <p>  </p> <p>INDOOR USE ONLY READ INSTRUCTIONS BEFORE USE</p> <p>UTILISATION EN INTÉRIEUR UNIQUEMENT LIRE LES INSTRUCTIONS AVANT UTILISATION</p> <p> Intertek 9700174</p> <p>CERTIFIED/CONFORMS TO CSA C22.2 NO. 62368-1:2019 ED.3+U1 UL 62368-1:2019 ED.3+R2021</p> <p> CADEX ELECTRONICS INC. 22000 FRASERWOOD WAY RICHMOND BC WWW.CADEX.COM MADE IN CANADA</p>
USC-2/50W	 <p>CADEX UNIVERSAL SUPERVISOR CHARGER Diagnostic Battery Charger</p> <p>MODEL: USC-2/50 INPUT: 11.0VDC - 33.0VDC 120W MAX --- OUTPUT: 3.0VDC - 19.0VDC 5.0A 50W MAX ---</p> <p>  </p> <p>INDOOR USE ONLY READ INSTRUCTIONS BEFORE USE</p> <p>UTILISATION EN INTÉRIEUR UNIQUEMENT LIRE LES INSTRUCTIONS AVANT UTILISATION</p> <p> Intertek 9700174</p> <p>CERTIFIED/CONFORMS TO CSA C22.2 NO. 62368-1:2019 ED.3+U1 UL 62368-1:2019 ED.3+R2021</p> <p> CADEX ELECTRONICS INC. 22000 FRASERWOOD WAY RICHMOND BC WWW.CADEX.COM MADE IN CANADA</p>

USC-6/25W



UNIVERSAL SUPERVISOR CHARGER
Diagnostic Battery Charger

MODEL: USC-6/25
INPUT: 11.0VDC - 33.0VDC 180W MAX ---
100-240VAC 50/60Hz 2.3A
FUSE: T2.5A 250VAC
OUTPUT: 3.0VDC - 19.0VDC 5.0A 25W MAX ---



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USC-6/50W




UNIVERSAL SUPERVISOR CHARGER
Diagnostic Battery Charger

MODEL: USC-6/50
INPUT: 11.0VDC - 33.0VDC 350W MAX ---
100-240VAC 50/60Hz 5.0A
FUSE: T6.3A 250VAC
OUTPUT: 3.0VDC - 19.0VDC 5.0A 50W MAX ---



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Regulatory Declaration

USC complies with the essential requirements of the following applicable European Directives:

1. Electromagnetic Compatibility (EMC) Directive 2014/30/EU
2. Low-Voltage (Safety) Directive 2014/35/EU
3. RoHS Directive 2011/65/EU, and its amendments
4. REACH – Regulation (EC) No 1907/2006
5. Radio Equipment Directive 2014/53/EU (*only for USC-6*)

Note: Please contact Cadex Electronics Inc. for more details on the compliance standards or to request a copy of declaration of conformity.