

CLOUDLINK SET-UP GUIDE



Thank you for purchasing your Hubble Cloudlink device!

This Quick Setup Guide will help you get your system connected to the cloud server, so that you can access and remotely monitor the most accurate data coming directly from your power system

Please visit <https://www.hubblelithium.com/cloudlink>
for the latest version of this guide

It is important that you read this manual before attempting the installation of your device. Depending on your setup, certain steps will be needed to ensure compatibility.



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WHAT IS IN THE BOX?

CLOUDLINK:

1 x Cloudlink Device with unique serial identifier

SERIAL:

1 x RJ12 (6 pin) to RJ12 (6 pin) cable used to connect the CloudLink "S" port to the Serial RS232 (master) port of the battery.

1 x RJ12 (6 pin) to RJ45 (8 pin) (black cable with red boot) used to connect CloudLink "S" port to the Serial/RS232 port of the inverter. See compatibility chart for list of compatible inverters.

PLEASE NOTE:

The use of the RJ12 (6 pin) to RJ45 (8 pin) cable does not require external power with expert inverters.

POWER:

1 x black and red power cable for providing power to the device.

As your setup will be different, please refer to the compatibility chart on page 4 for more information on which cables are best suited for your setup.

CAN BUS:

Blue Cable for generic inverter CAN communications.

Red Cable for Deye/Sunsynk type inverter CAN communications.

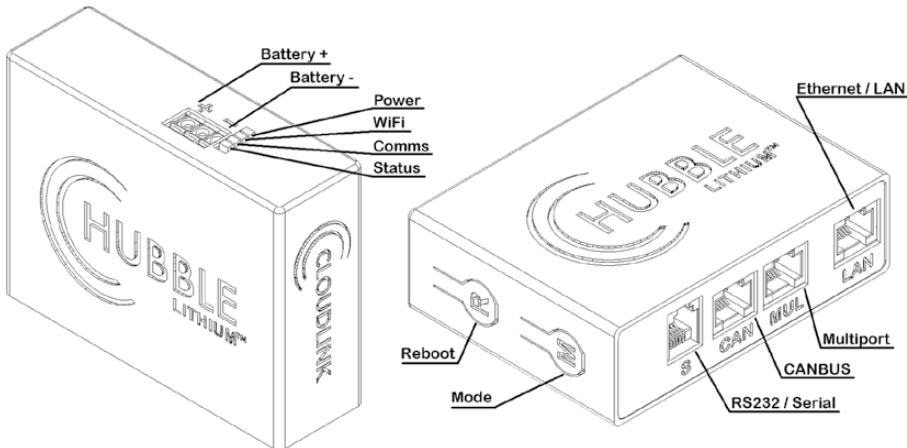


TECHNICAL

SPECIFICATIONS

INPUT			
VOLTAGE		20V to 75V DC	
POWER		<2W	
COMPATIBILITY			
RS232	INVERTER		BATTERY
	Voltronic, Mecer, Axpert, Phocos, Kodak.. etc		Hubble
RS485/MOD	ENERGY METER		
	Eastron-Modbus: SDM120, SDM220, SDM630, Hubble 1 Phase Smart Meter, Hubble 3 Phase Smart Meter		
CAN	TO-INVERTER		FROM-BATTERY
	Victron, Sunsyst, Deye, Goodwe, Schneider, Growatt, Solis...etc		Hubble Lithium
INCLUDED CABLES			
RS323	RJ12 to RJ12	For RS232 compatible battery	
	RJ12 to RJ45	For RS232 compatible inverter	
RS485/MOD	CAT5e Type B	Inverter with compatible pinouts	
CAN	CAT5e Type B	Inverter with compatible pinouts *Victron has custom pinouts - see the Victron Setup Guide on our website	
COMMUNICATIONS			
PROTOCOL	STANDARD	PHYSICAL	BUILT-IN TERMINATION
SERIAL	RS232	RJ11/12	N/A
CAN Bus	CAN J1939 & NMEA2000	2 X RJ45	Yes
MOD Bus	RS485	RJ45-MUL Port	Yes
WIFI			
WIFI MODE		Station/SoftAP/SoftAP+Station/P2P	
STANDARDS		FCC/CE/IC/TELEC/KCC/SRCC/NCC	
PROTOCOL		802.11 b/g/n/e/i (802.11n up to 150 Mbps)	
SECURITY		WPA/WPA2/WPA2-Enterprise/WPS	
BLUETOOTH			
PROTOCOLS		Bluetooth v4.2 BR/EDR and BLE Specification	
RADIO		NZIF receiver with -98dBm sensitivity	
		Class-1, Class-2 and Class-3 transmitter	
FULL PIN LAYOUTS			
PIN	S-PORT/ RJ12	CAN-PORT/ RJ45	MUL-PORT/ RJ45
1	12V		
2		GND	GND
3	CLODLINK RX		
4	CLODLINK TX	CAN-H	CAN-H
5	GND	CAN-L	CAN-L
6	5V	GND	GND
7	-	RS485 A	RS485 A
8	-	RS485 B	RS485 B

DEVICE OVERVIEW



INDICATORS	OFF	ON	FLASH	PULSE
LED-1 PWR	No Power	Power Go	N/A	N/A
LED-2: WiFi	Boot	Internet Active	Wifi Connected	-
LED-3 Com	No Coms	CAN Connected	Battery Connected	-
LED-4 Status	-	-	Boot	Will pulse after 15 seconds
BUZZER	-	Button Pressed	Config Mode (X-n)	-
SPECIAL MODES		LEDs: "WIFI", "COM", "STATUS"		
Downloading Firmware		Flash in alternating sequence		
Device in Config Mode		Flash together; all on and off at the same time		
MODE	PRESS & HOLD BUTTON "M"	UNTIL THE BEEP(S) SOUNDS		
Enter Menu Mode	Hold for 1 second	1		
Toggle Config. Mode*	Hold for 5 seconds	2		
Check for new Firmware	Hold for 10 seconds	3		
Factory default settings	Hold for 30 seconds	4		
Erase WiFi passwords	Hold for 40 seconds	5		
Exit & Reboot	Hold for 50 seconds	On continuously		

To enter or exit Config. Mode press and hold Button "M" until you hear 2 beeps.

PIN LAYOUTS

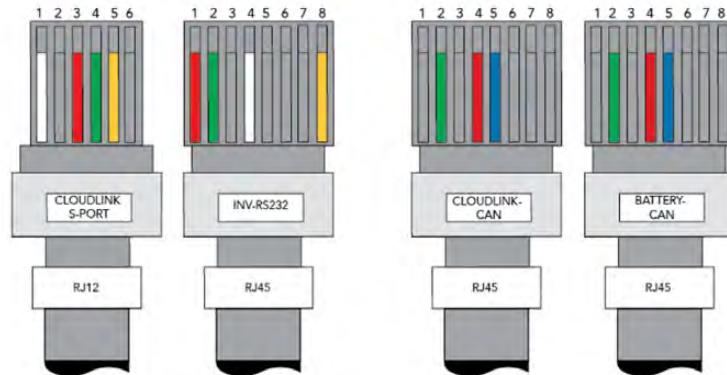
FOR INVERTERS

Below are the recommended pin layouts for the Cloudlink to inverter cable connections:

*Ensure that the clip is pointed away from you when connecting the pins.

AXPERT/VOLTRONIC CABLES:

Refer to cables provided on page 3.

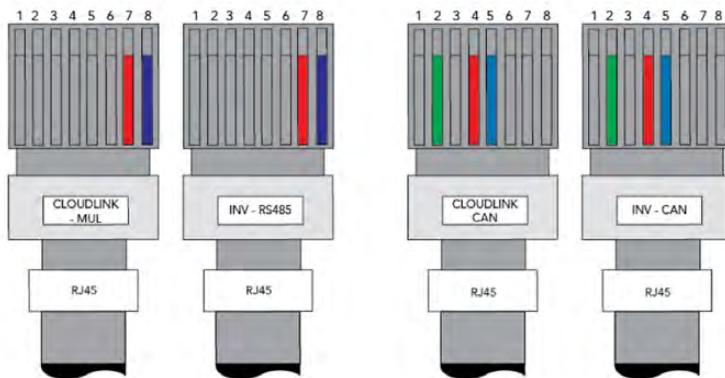


PIN	CLOUDLINK S-PORT (RJ12)	INV-RS232 (RJ45)	CLOUDLINK - CAN (RJ45)	BATTERY-CAN (RJ45)
1	12V	N/A	N/A	N/A
2	N/A	GND	GND	GND
3	CLOUDLINK RX	N/A	N/A	N/A
4	CLOUDLINK TX	CAN-H	CAN-H	CAN-H
5	GND	CAN-L	CAN-L	CAN-L
6	N/A	N/A	N/A	N/A
7	—	N/A	N/A	N/A
8	—	Gnd	N/A	N/A

SUNSYNK / DEVICE CABLES:

Refer to cables provided on page 3.

*Ensure that the clip is pointed away from you when connecting the pins.



Pin	CLOUDLINK-MUL	INV - RS485	CLOUDLINK CAN	INV - CAN
1	N/A	N/A	N/A	N/A
2	N/A	N/A	GND	GND
3	N/A	N/A	N/A	N/A
4	N/A	N/A	CAN-H	CAN-H
5	N/A	N/A	CAN-L	CAN-L
6	N/A	N/A	N/A	N/A
7	RS485 A	RS485 A	N/A	N/A
8	RS485 B	RS485 B	N/A	N/A

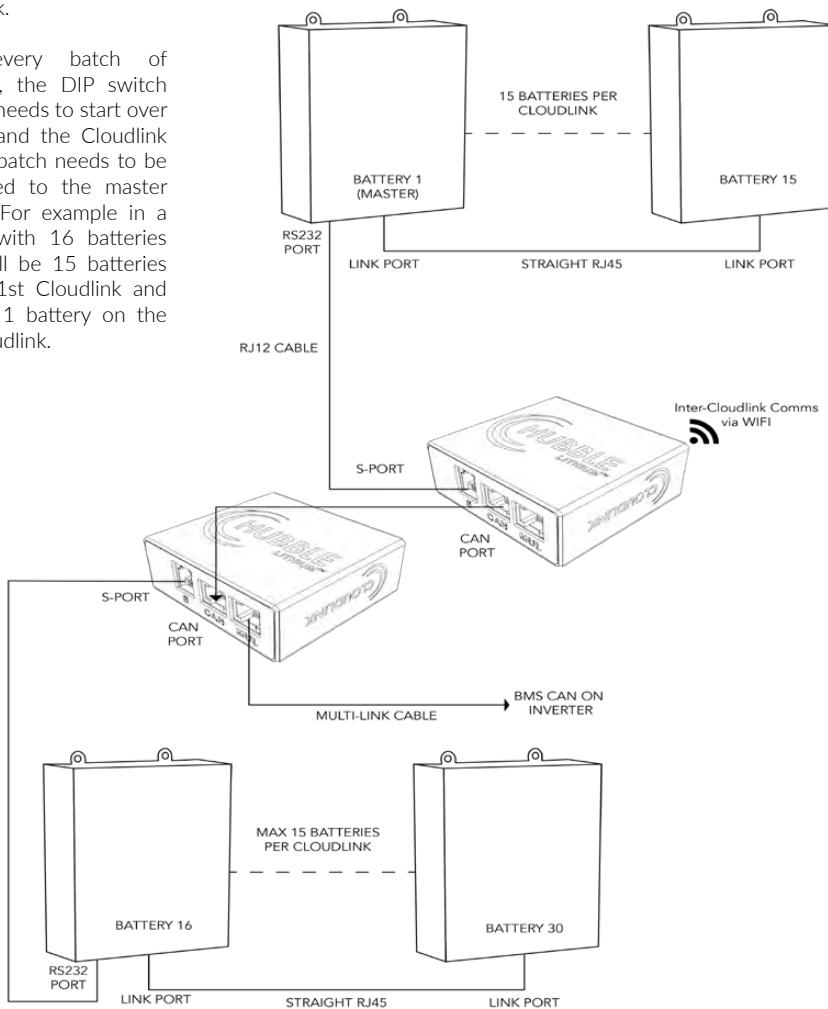


MULTIPLE CLOUDLINKS

Each Cloudlink has the capacity to monitor 15 batteries. It is best practice to add the first 15 batteries to the master Cloudlink, then the rest to the second Cloudlink.

With every batch of batteries, the DIP switch address needs to start over from 1 and the Cloudlink of each batch needs to be connected to the master battery. For example in a system with 16 batteries there will be 15 batteries on the 1st Cloudlink and only be 1 battery on the 2nd Cloudlink.

Example of Setup Conditions			
Batch	1-15	16-30	31-45
Number of Cloudlinks	1	2	3
Dip Address	1-15	1-15	1-15



DEVICE SETUP

GUIDE



CONNECTING THE CLOUDLINK

Your Cloudlink device can accept a nominal input voltage from 24V to 48V DC. The following steps are based on a 48V inverter installation, however your inverter setup may vary. If you are not a qualified electrician and are unsure about your system, please contact one for assistance. Refer to Specifications on page 4, to view inverter compatibility. (Note: When setting up the Cloudlink unit, do so in an area sheltered from direct sunlight & high temperature.)

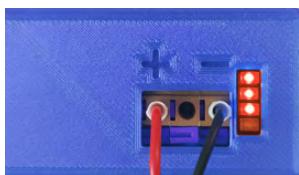
STEP 1: POWER CABLE

If the supplied power leads are not adequate for your setup, you may assemble 2 lengths of cable in red and black. The one side should be fitted with 8mm ring lugs to suit your inverter or battery and the other end should be fitted with a 0.5mm² bootlace ferrule.

STEP 2: INSTALLING POWER

⚠️ WARNING

Follow the below steps in order as stated. Failure to do so can cause damage to the device and render it inoperable. Your device colour may differ slightly from the image below. Consult your inverter and/or battery manual for connection of your battery to the inverter or contact a qualified electrician for assistance.



2.1. Isolate power by turning off the inverter and lithium battery.

2.2. Wait 5 minutes for the residual power in the inverter to drain before disconnecting the battery from the inverter.

2.3.1 Push back on orange springloaded button and fully insert the black power cable into the negative (-) terminal of the device. Note: This is the terminal closest to the LED bar as shown. Lightly pull back on the cable and make sure that it has been securely fitted.

2.3.2. Push back on orange springloaded button and fully insert the red cable into the positive (+) terminal of the Cloudlink. This is the terminal furthest away from the LED bar as shown. Lightly pull back on the cable and make sure that it has been securely fitted.

2.4. Install the black wire on top of the negative battery terminal and affix the nut to the terminal. Tighten to the recommended torque in the manual for your inverter.

2.5. Install the red wire on top of the positive battery terminal and affix the nut to the terminal. Tighten to the recommended torque in the manual for your inverter.

2.6. Power up your inverter and battery. You will see the PWR LED on the CloudLink turn on.

CONFIGURATION

SETUP



After powering up the Cloudlink for the first time, you will need to configure the WiFi credentials. This will enable the Cloudlink's access to the cloud server for monitoring as well as allowing the device to automatically download and install the latest firmware version for the Cloudlink.

In order to configure the Cloudlink you will be connecting your phone to the Cloudlink network.

STEP 1: CONNECTING USING YOUR MOBILE DEVICE

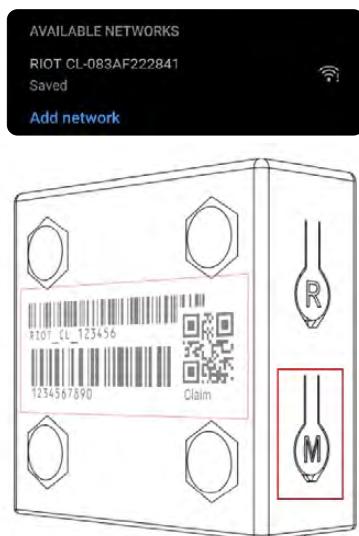
Ensure that your mobile data is disabled. This will prevent your mobile device from disconnecting from the Cloudlink during the configuration procedure.

STEP 2: CONFIGURATION MODE

Place the Cloudlink into configuration mode by holding down the Mode button marked "M" on the side of your device. You will hear one beep. Thereafter, release the Mode button after the 2 consecutive beeps. The Cloudlink is now in Configuration Mode. This can be observed by viewing the flashing LED bar. (Note: Pressing the mode button until the buzzer beeps twice will toggle Config. Mode, i.e., pressing the mode button until the buzzer beeps twice can be used both to enter and to exit Config. Mode.)

STEP 3: CONNECTING TO "RIOT CL-#"

Open the WiFi menu on your mobile device (also possible on a desktop), scan for any available WiFi networks in your area. You may have to scroll down to locate the Cloudlink WiFi access point (**RIOT CL-xxxx** *see example below). If you do not see the RIOT/Cloudlink WiFi connection, refresh your WiFi list. If after ten seconds you do not see the RIOT/Cloudlink WiFi connection, please confirm that the 3 LED's are still flashing in sequence as described in the previous step. If they are no longer flashing then return to the beginning of Step 2, and repeat the process. Take note below.



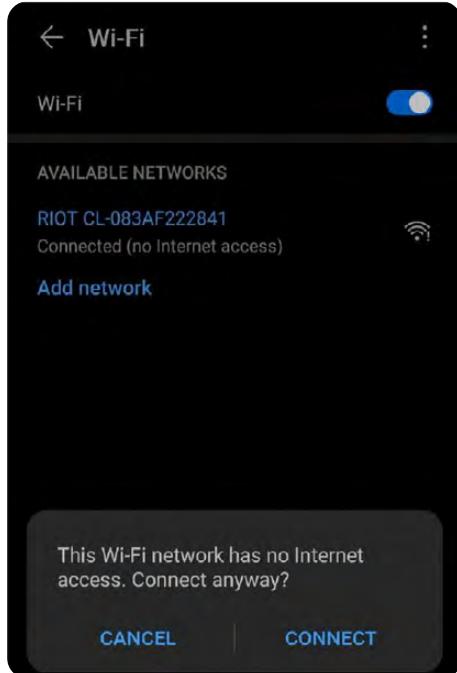
PLEASE NOTE:

CLOUDLINK SECURITY

The Cloudlink will automatically exit configuration mode after 2 minutes of inactivity and or after a maximum of 5 minutes. If you do not complete the configuration process during this allocated time you will need to restart the configuration procedure. This is a built-in security mechanism.

The "Status" LED will blink rapidly for two seconds then begin to blink slowly. After a few seconds the "Status", "Comms" and "WiFi" LEDs will toggle on and off, together, repeatedly and in a synchronized manner. This indicates that the device is now in config mode and that you can proceed to the next step.

The RIOT/CloudLink WiFi AP "RIOT CL-#" is only available and or accessible while the device is in configuration mode. This is a built-in security mechanism.



Tap on the "RIOT CL#" Wi-Fi connection and connect to the Cloudlink device. The AP has part of the unique serial number for your device. Use this number to identify the device if you have multiple devices.

No password is required to connect as the "RIOT_CL#" is an open network.

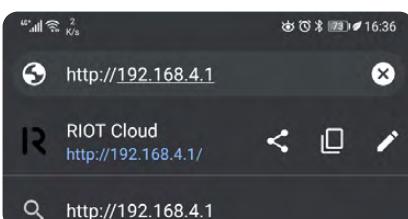
If your mobile device prompts you to disconnect from the "RIOT CL#" network please select "connect anyway" or "keep connection" to proceed.

STEP 4: NAVIGATING THE URL

Open your browser on your mobile device or computer, we recommend using Google Chrome, and enter the following below address in the URL box at the very top of the page:

<http://192.168.4.1>

Samsung users can click on the "gear cog" to the right of the network name and click "manage router" to take you straight to the configuration page.



PLEASE NOTE:

It is especially important for iOS devices that you type in the full URL into the search bar - including the "http://"

If your mobile device shows that it cannot locate the web page, please ensure that:

- The device is still in configuration mode indicated by the LED sequence.
- Your mobile device is still connected to the "RIOT_Cloud" WiFi AP.

If not then return to the beginning of Step 2.

CLOUDLINK SECURITY

The RIOT CloudLink will automatically exit configuration mode after 5 minutes of inactivity and or after a maximum of 10 minutes. If you do not complete the configuration process during this allocated time you will need to restart the configuration procedure. This is a built in security mechanism.



CONFIGURATION PAGE QR CODE

Alternatively you can also navigate to the configuration page by scanning the QR code to the right, which will automatically open the link for you.



STEP 5: OWNER INFORMATION

Once the page has loaded, the opening display will show owner information and device information on your Cloudlink.

Fill in your name, surname and email address in the space provided. Enter your phone number with international code (e.g. +27 83 555 5555). This information is stored on the device and will be used to secure your device to your Cloudlink Portal account.



REMINDER:

Your Cloudlink device will only remain in Configuration Mode for a maximum of 10 minutes. If for any reason the setup process is interrupted, you will have to return to the start of Step 2.



STEP 6: SELECTING WIFI SETTINGS

From this page, tap the hamburger-menu button (≡) and select the WiFi settings from the drop-down menu.

Alternatively, you can swipe left on the main page to go through the different menus, then select WiFi Settings.

FIRMWARE UPDATE VS CONFIGURATION MODE

If needed, the device will download and install new firmware automatically. This will be indicated by the "Status", "Comm" and "WiFi" LEDs flashing one at a time in sequence. This must not be confused with the signaling of "Configuration mode" where the 3 LEDs are flashing on and off at the same time.



STEP 7: WIFI CONFIGURATION

On the WiFi configuration page, tap the refresh button to have the Cloudlink scan for the available WiFi connections in your area.

Select the WiFi connection (not the RIOT CL-#) that you wish the Cloudlink device to connect to.

Type in your WiFi password into the password box.



IMPORTANT:

It is especially important that you choose the WiFi connection with the strongest signal. The stronger the signal, the higher up in the list the AP will be. So ideally select the first AP in the list.

The AP that your device connects to should ideally have a RSSI between 0 and -60 dBm. If not, then the Cloudlink device may have trouble with day-to-day operations.

If you are experiencing signal issues, speak to Hubble about the external antenna option or install a WiFi booster closer to the Cloudlink.

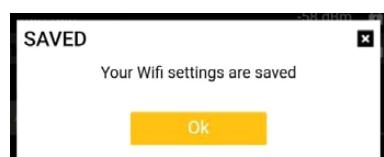
Tap save at the bottom of the page to complete the process.

Tap the hamburger-menu button (≡) and then tap the Exit button. This will save the settings and reboot the Cloudlink device, after which it will return to its normal operating state. See device overview to identify LED light mode indications. After a few seconds the Status LED will turn off, signalling that it has left config mode.

If the WiFi LED remains off for 2-5 minutes after this process then it means that the device is unable to connect to the network and you may have typed the incorrect password for the selected AP. You will then have to restart the configuration.

If the WiFi LED stays flashing it is signaling that it was able to connect to the local AP (so the password is correct), but that it is unable to make a connection to the Internet. This may be due to a firewall blocking Internet access or that the network may have reached its data cap. This may be the case when the device is installed at the guest-house, office building or similar environment. Please consult with the business IT department to allow internet traffic to and from the Cloudlink device.

If the LED light is on but not flashing you are connected and ready to go! Will beep once to confirm connection.



INSTALLER APP

SETUP

Can be downloaded from the playstore, search for “Hubble Installer App”

STEP 1: PUT CLOUDLINK IN PROVISIONING MODE

To put your Cloudlink into provisioning mode, hold down the mode button. You will hear one beep, then five seconds later you will hear two consecutive beeps, finally after five more seconds you should hear three consecutive beeps. After the third beep, release the mode button. Now the Cloudlink will enter provisioning mode. When your Cloudlink is in provisioning mode, the power LED will be solid and the three other LEDs will flash on and off together.

In provisioning mode, the Cloudlink will make its own Wifi Access Point/Hotspot. The Wifi name will be similar to “Cloudlink-XXXXXXX”.

STEP 2: CONNECT YOUR PHONE TO THE CLOUDLINK HOTSPOT

At the bottom of the home page, click the “Open Wifi Settings” button and your phone will automatically open up its Wifi settings menu.

Now select the Cloudlink-XXXXXXX network.

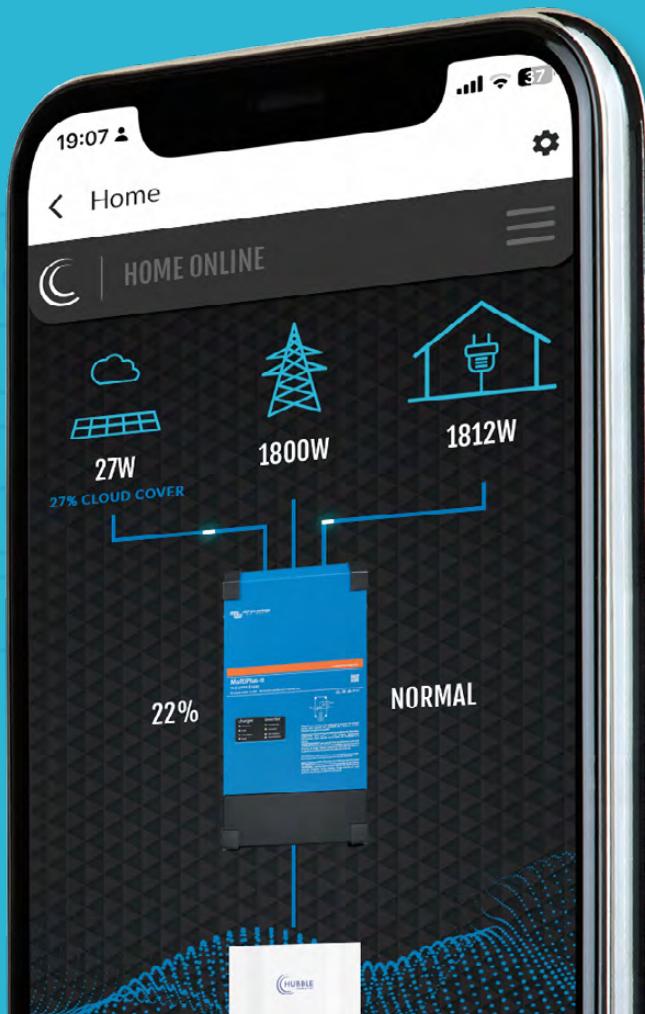
Wait for a few seconds after the connection has been established. If a notification pops up stating that internet may not be available, click “Connect only this time” or “Keep connection”.

STEP 3: RETURN TO THE HUBLE INSTALLER APP

To return to this App from the Wifi Settings Menu, use your phone’s back button or your phone’s “Recent app tray” button and select the Hubble Installer App.

PORTAL SETUP

GUIDE



CLOUDLINK

PORTAL SETUP

To access your Cloudlink device on the cloud, you first need to create a RIOT/Cloudlink Portal Profile.

STEP 1:

Open Google Chrome browser on your mobile or desktop device and navigate to:

<https://portal.riotsystems.cloud/signup>

or scan the QR code, which will navigate you directly to the sign-up page.

* If you have an existing Cloudlink Portal account then login with your existing username and password, and skip to the next page.

STEP 2: SELF-REGISTRATION

Complete the self-registration form by filling in your first name, last name, email address (which will be your username), and password.

It is highly recommended that you use a strong password, containing at least 8 characters of capital letters, lower case, numbers, and symbols in combination.

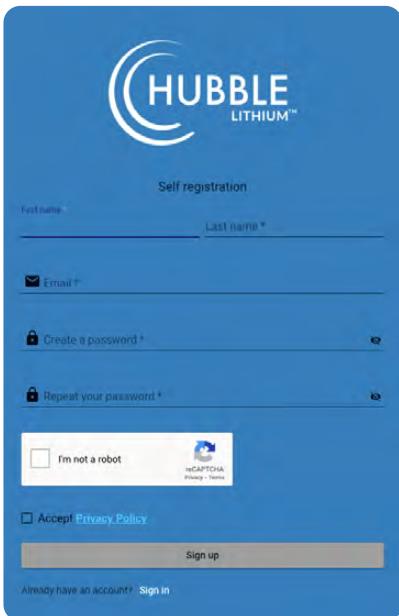
Tick the reCAPTCHA box and read the privacy policy. If you accept the privacy policy, tick the check box, and click "sign up".

STEP 3: ACTIVATION LINK

You will be emailed an activation link to the email address that you have provided. Click the "Activate your account link" in the email to complete your registration. If the activation link email does not appear in your inbox after 10 minutes, please check the email address provided or check your spam folder.

STEP 4: LOG IN

Once your account has been successfully activated, navigate to the login page from the login link or by navigating to <https://portal.riotsystems.cloud/login> and login using the username and password used during the registration process.



CLAIMING YOUR DEVICE

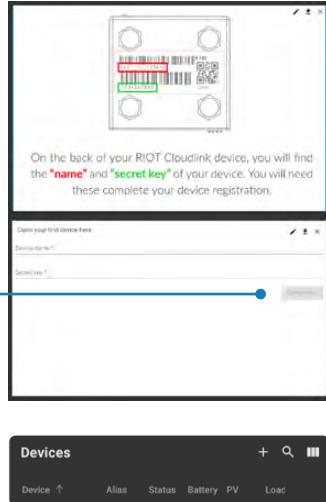
Once you have created your Cloudlink Portal Account after logging in you will need to first claim your device to access the cloudlink remote monitoring features.

To claim your device input the “**Device Name**” and “**Secret Key**” in the appropriate fields and click “**Claim Device**”

TO ADD MORE DEVICES

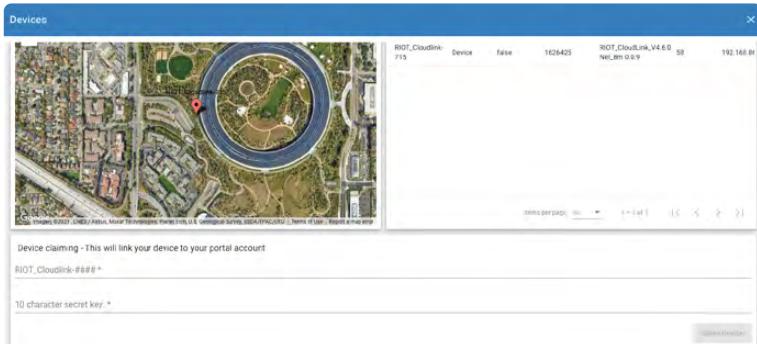
MOBILE

1. Navigate to the menu (≡)
2. Select “**ALL DEVICES**” and click on the “**+**” in the top right corner
3. Follow the instructions on the page to find your “**Cloudlink’s name**” and “**Secret Key**”
4. Enter such in the appropriate fields and click “**Claim Device**”



DESKTOP

1. Click on the devices icon on your dashboard (see image to the right)
2. Scroll down to see “Device claiming” on the pop up window.
3. Find your “**Cloudlink’s name**” and “**Secret Key**” as instructed above.
4. Enter such in the appropriate fields and click “**Claim Device**”



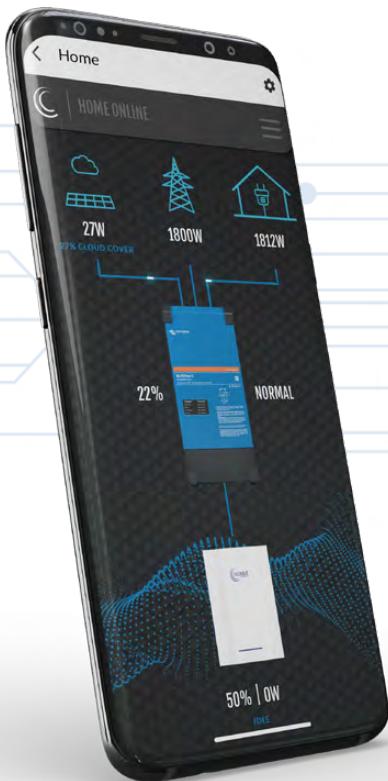
PORTAL APP

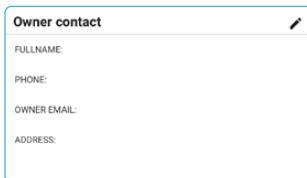
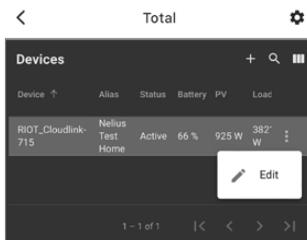
NAVIGATION AND SETTINGS

GENERAL

On the Mobile Dashboard, you can view your data either by pressing on the icons or you can access these by going to the menu and clicking the relevant buttons:

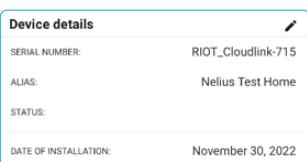
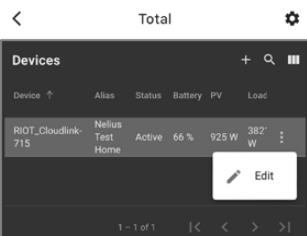
1. Click the **solar panel icon** for your **Energy Savings**.
2. Click the **grid or house icon** for your Usage and Generation Graphs.
3. Click the **inverter image** to see all your **inverters connected in parallel** and your **PV production source**.
4. Click the **battery image** for your **battery connected in parallel**.
5. The information about your system can be found under the system information button in the menu.





CHANGING YOUR DETAILS

1. Go to **Menu (≡)**
2. Select **“All Devices”**
3. Click the edit icon to the right of the device name
4. This will open another page containing all device information.
5. Scroll down until you see **“Owner Contact”**
6. Click on the edit icon in the right hand corner.
7. Once you have changed your details click **“save”** and your details will be updated.



CHANGING YOUR DEVICE DETAILS

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CHANGING YOUR DEFAULT DASHBOARDS

1. Go to **Menu (≡)**
2. Select **“Preferences”**
3. From here you can change your default device (*this is the device that will automatically load*) and default dashboard for mobile and desktop. (*here you will specify which dashboard will be loaded for mobile and for desktop*)

CHANGING CLOUDLINK CONFIGURATIONS

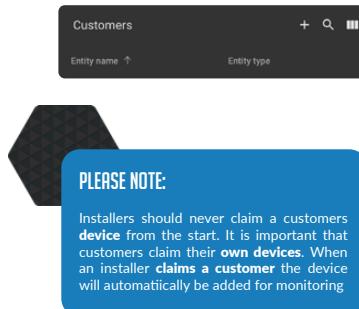
1. Go to **Menu (≡)**
2. Select "**Remote Console**". Here you can change the Cloudlink Configurations
3. Click on the menu in the right hand corner and select "**Device Settings**"
4. Once you have finished changing your Cloudlink settings, click the "**save**" button and wait for it to successfully send the settings to your Cloudlink Device.

CHANGING INVERTER SETTINGS

1. Go to **Menu (≡)**
2. Select "**Inverter Settings**". Here you can change the settings for your inverter
3. Once you have finished click the "**save**" button and wait for it to successfully send the settings to your inverter

SHARE YOUR SITE WITH AN INSTALLER

1. Go to **Menu (≡)**
2. Select "**Preferences**".
3. Select the "**Copy Secret Key**" button.
4. Paste it in a message/email etc. to your installer.



ADD A CUSTOMER (FOR INSTALLERS)

1. Go to **Menu (≡)**
2. Select "**All Devices**".
3. Select the "**+**" button in the top right corner of the "Customers" block
4. Follow the instructions on the page to find your customer's **secret key** and then enter it, along with their email, in the customer claiming box.

SETUP COMPLETE

CONGRATULATIONS!

You can now monitor your lithium batteries from anywhere in the world!

If you have any difficulties with setting up your system or queries regarding the portal you can contact our Technical Support Department via support@hubblelithium.co.za. Please include the following information in your initial email so that we can provide you with timely assistance:

1. Inverter make & model
2. Model & number of connected batteries
3. Are your batteries in Series or Parallel?
4. A brief description of your system and any issues you may be having
5. If possible; images of your power system

