

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.co.za/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.

**WARNING:**

Working with high voltage systems is dangerous. Do not attempt to modify your inverter and battery setup unless you are certain you understand the risk. Speak to a qualified electrician if you are unsure.

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Watch the Cloudlink Setup Tutorial on Youtube: <https://www.youtube.com/watch?v=JayXKT4IdSA&t=18s>

CONTENT

1 x Cloudlink device with unique serial identifier

SERIAL

1 x RJ12 (6 pin) to RJ2 (6 pin) cable used to connect the RIOT CloudLink "S" port to the Serial/Terminal of the battery. See compatibility chart for list of compatible batteries on Page 2

1 x RJ12 (6 pin) to RJ45 (8 pin) Red cable used to connect RIOT CloudLink "S" port to the Serial/RS232 port of the inverter. See compatibility chart for list of compatible inverters on Page 2

POWER

1 x Power cable pair for providing power to the device if not using the RJ12 (6 pin) to RJ45 (8 pin) Red cable.

As your setup will be different, please refer to the compatibility chart on Page 2 for more information on which cables are best suited for your setup.

CANBUS

2x grey RJ45 (8pin) to RJ45 (8pin) cable used to connect RIOT CloudLink "CAN" port to the CAN port of your battery or Inverter. See compatibility chart for list of compatible inverters on the Cloudlink page on our website.

PLEASE NOTE:

The use of the RJ12 (6 pin) to RJ45 (8 pin) Red cable does not require external power with expert inverters. Please follow directly to configuration setup of the manual.



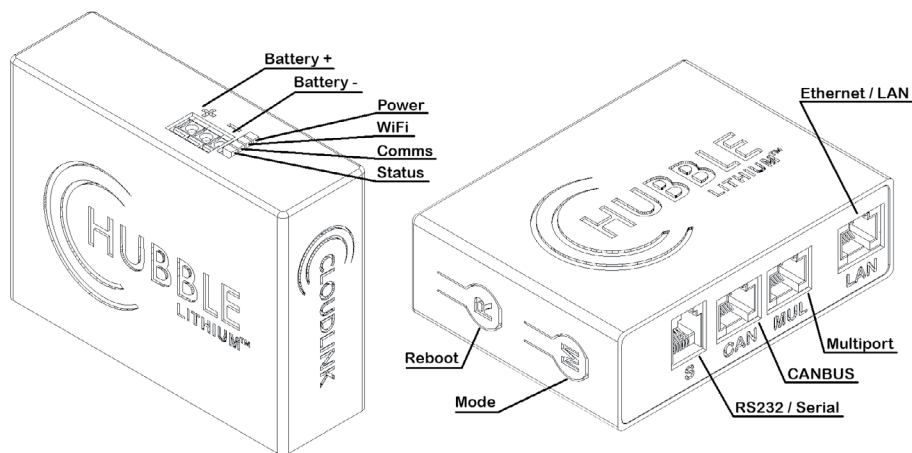
TECHNICAL

SPECIFICATIONS

INPUT			
VOLTAGE		20V to 75V DC	
POWER		<2W	
COMPATIBILITY			
RS232	INVERTER		BATTERY
	Voltronic, Mecer, Axpert, Phocos		Hubble
RS485/MOD	ENERGY METER		
	Eastron-Modbus: SDM120, SDM220, SDM630		
CAN	TO-INVERTER		FROM-BATTERY
	Victron, Sunsynk, Deye, Goodwe, Schneider, Growatt		Hubble Lithium
INCLUDED CABLES			
RS232	RJ12 to RJ12	For RS232 compatible battery	
	RJ12 to RJ45	For RS232 compatible inverter	
RS485/MOD	-	-	
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/SRRC/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 reciever 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
4	CLOUDLINK RX		
4	CLOUDLINK 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	FLASH/PULSE	ON
LED-1 PWR	No Power	N/A	Power Good
LED-2: WiFi	Boot	WiFi Connected	Internet Active
LED-3 Com	No Coms	Battery Connected	CAN Connected
LED-4 Status	CPU fault	Boot	Config Mode
BUZZER	-	Config Mode (X-n)	Button Pressed
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	
-	Hold for 1 second	1	
Toggle Config. Mode	Hold for 5 seconds	2	
Check for new Frimware	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	

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 3, to view inverter compatibility.

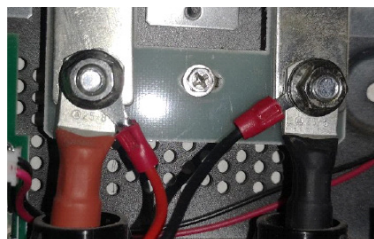
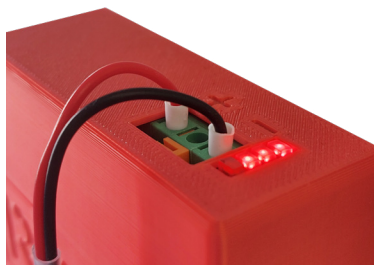
STEP 1: POWER CABLE

If the supplied power leads are not adequate for your setup, you may assemble 2 lengths of cable in red and black. The onse 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 may differ from illustration. 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 to the inverter
- 2.2. Turn off the inverter and lithium battery.
- 2.3. Wait 5 minutes for the residual power in the inverter to drain before disconnecting the battery from the inverter.
- 2.4. Fully insert the black 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.
- 2.5. 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.
- 2.6. 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.
- 2.7. 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.
- 2.8. Reconnect the battery and 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.

STEP 1: CONNECTING USING YOUR MOBILE DEVICE

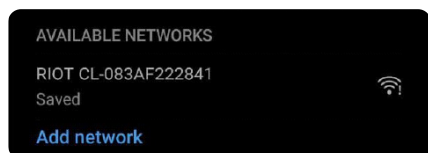
Ensure that your mobile data is disabled. This will prevent your mobile device from disconnecting from the Cloudlink during the configuration procedure.

STEP 2: CONFIGURATION MODE

Place the Cloudlink into configuration mode by holding down the Mode button marked "M" on the side of your device. A short beep will be heard followed by a 5 second pause then two short consecutive beeps. Release the Mode button after the 2 consecutive beeps. The Cloudlink is now in Configuration Mode. This can be observed by viewing the LED bar.

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. 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 Section 2, and repeat the process.



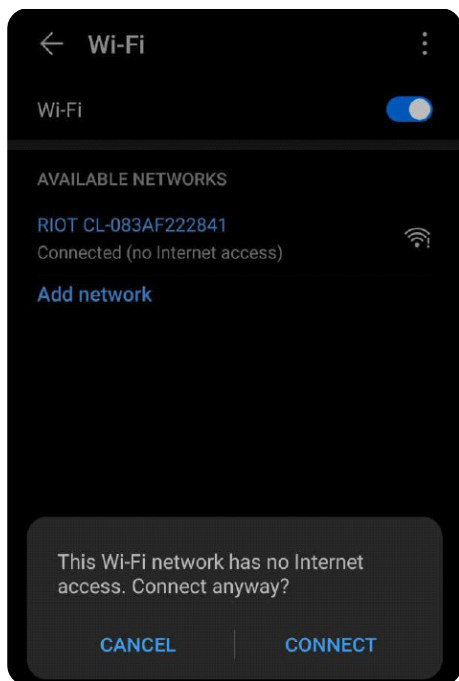
PLEASE NOTE:

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.



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_CloudL" WiFi AP.

If not then return to the beginning of Section 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.

You may have to scroll down to locate the Cloudlink WiFi access point. 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 Section 2, and repeat the process.

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.

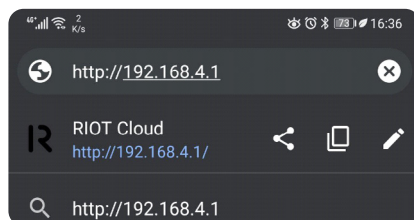
No password is required to connect as the "RIOT_CL#" is an open network.

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

<http://192.168.4.1>



CONFIGURATION PAGE QR CODE

If you are having difficulty navigating to the configuration page, you can alternatively scan the QR code, pictured right, which will automatically navigate you there.



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 3.



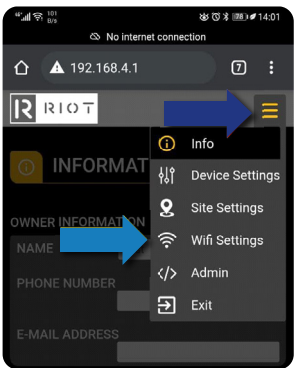
STEP 6: SELECTING WIFI SETTINGS

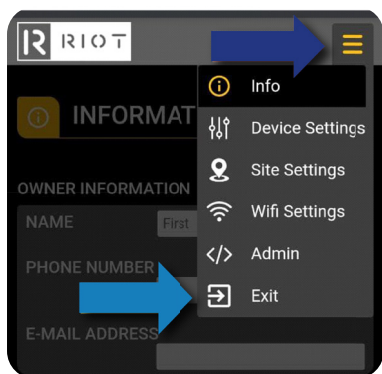
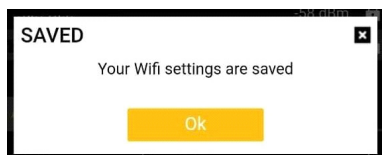
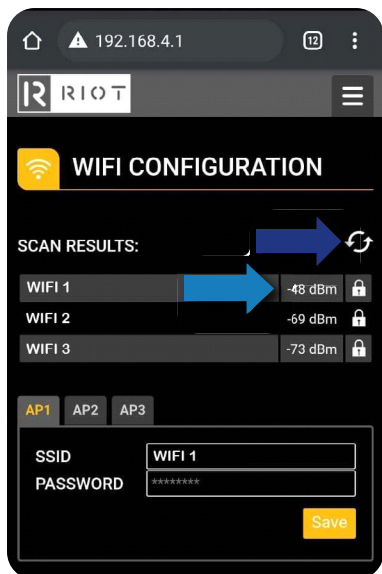
From this page, tap the hamburger-menu button (☰) and select the WiFi settings from the drop-down menu.

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.

After a few seconds the Status LED will turn off, signalling that it has left config mode.

If the WiFi LED remains off 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.

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.

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 then please 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.



[RIOTsystems.cloud/signup](https://portal.riotsystems.cloud/signup)

The image shows a mobile app interface for Hubble RIOT. At the top, the Hubble RIOT logo is displayed. Below it, the text "Self registration" is centered. The form contains several input fields: "First name *", "Last name *", "Email *", "Create a password *", and "Repeat your password *". Each field has a small icon to its left (person, envelope, and padlocks respectively) and a clear button to its right. Below the password fields is a reCAPTCHA box with the text "I'm not a robot" and a small robot icon. Below the reCAPTCHA box is a checkbox labeled "Accept Privacy Policy". At the bottom of the form is a green "Sign up" button. Below the form is a blue box with the text "Account successfully activated!" and "Congratulations! Your account has been activated." At the bottom of this box is a green "Login" button.

CLAIMING

YOUR DEVICE

Your Cloudlink device is now connected to the cloud service and your Cloudlink Portal account has been created, but in order to access the data from your device, your CloudLink device needs to be paired with your Cloudlink Portal Account. The following steps will instruct you on how to achieve this.



RIOTsystems.cloud/signup

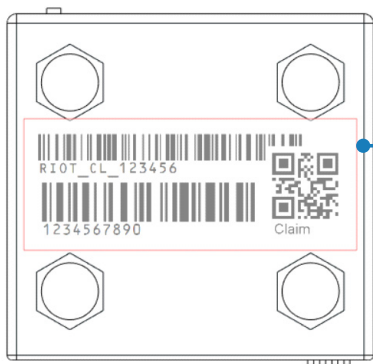
STEP 1: LOG IN

Navigate to your portal using the link: <https://portal.riotsystems.cloud/login>

or scan the QR code - pictured left.

STEP 2: DEVICE CLAIMING

At the home screen, navigate to the portal dashboard dropdown box, pictured below, and select the "Device_Claiming" option.



On the back of your RIOT CloudLink device, you will find the "name" and serial number of your device. You will need these codes to complete your device registration.

Device_Claiming

New Device claiming widget

Device name *

Serial number *

Claim device

STEP 3: CLAIM FORM

On the device claiming form, fill in your Cloudlink device name and serial number - exactly as they appear on the barcodes.

For Example:

Device name: RIOT_Cloudlink_1_000123

Serial number = 12345679

If everything is correct, press "claim device" to successfully complete configurations.

PIN LAYOUTS

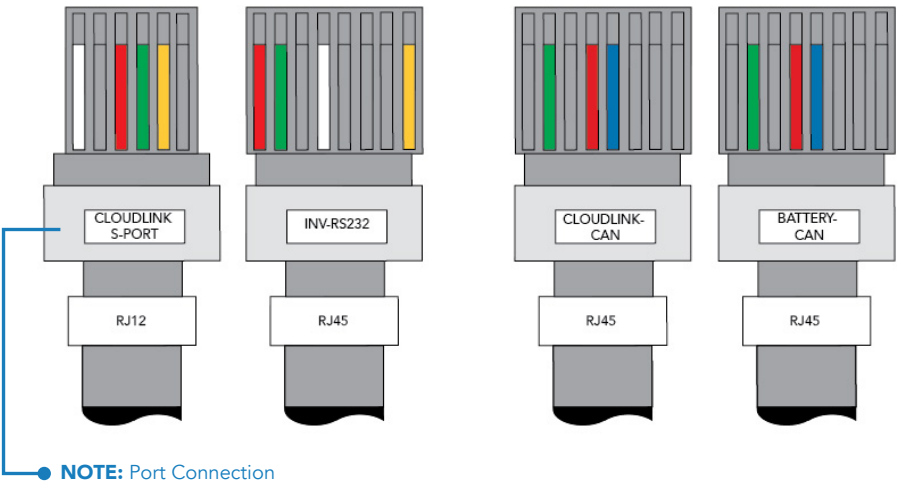
FOR INVERTERS

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

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

AXPERT/VOLTRONIC CABLES:

Custom RJ12 to RJ45 wire only - 450mm length.



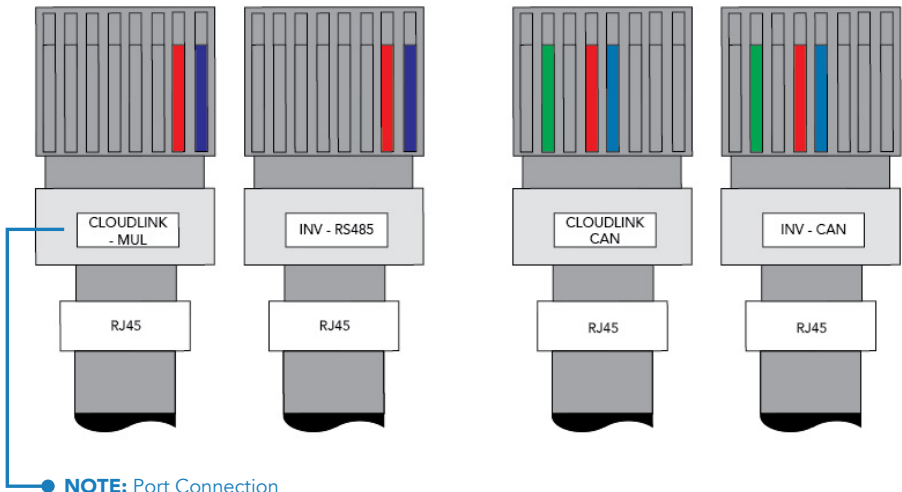
PIN	RJ12	RJ45
1	12 V	CLOUDLINK RX
2	N/A	CLOUDLINK TX
3	CLOUDLINK RX	N/A
4	CLOUDLINK TX	12 V
5	GND	N/A
6	N/A	N/A
7	-	N/A
8	-	GND

PIN	RJ45	RJ45
1	N/A	N/A
2	GND	GND
3	N/A	N/A
4	CAN-H	CAN-H
5	CAN-L	CAN-L
6	N/A	N/A
7	N/A	N/A
8	N/A	N/A

SUNSYNK / DEVICE CABLES:

Please note: straight RJ45 to RJ45 with only two wires - 1500mm

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



PIN	RJ45	RJ45
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A
4	N/A	N/A
5	N/A	N/A
6	N/A	N/A
7	RS485 A	RS485 A
8	RS485 B	RS485 B

PIN	RJ45	RJ45
1	N/A	N/A
2	GND	GND
3	N/A	N/A
4	CAN-H	CAN-H
5	CAN-L	CAN-L
6	N/A	N/A
7	N/A	N/A
8	N/A	N/A

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 battery. In a system with 16 batteries there will only be 1 battery on the second Cloudlink.



SETUP

COMPLETE

CONGRATULATIONS!

Your Cloudlink device will now give you access to your renewable lithium batteries from anywhere in the world!

If you have any difficulties with setting up your system 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

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watch?v=JayXKT4ldSA&t=18s](https://www.youtube.com/watch?v=JayXKT4ldSA&t=18s)

