

EAGLE-200™

Intelligent Control Gateway



User Manual

Version 1.00
Oct 2017

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EAGLE-200™ – Intelligent Control Gateway

RFA-Z114-Z2
Version 1.00

User Manual

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Regulatory information

FCC Notices

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

FCC/IC RF Exposure Statement

This equipment complies with FCC and Industry Canada radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this equipment must be installed to provide a separation distance of at least 8 inches (20cm) from all persons.

ICES-003 Compliance

This Class B digital apparatus complies with Canadian ICES-003.

Note: This equipment 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 equipment 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 equipment 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 equipment and receiver.
- Connect the equipment 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.

Introduction to your EAGLE-200

Congratulations on getting an EAGLE-200, the most versatile link to your smart meter energy information. This device is a compact gateway that connects directly to the smart meter using Zigbee wireless. It reads the meter in real time, and streams the data to your home network and our Rainforest Cloud.

Your EAGLE-200 will help you track the energy consumption of your home – whether you are home or not. This will help you take control of your usage, and allow you to save energy and lower your utility bills.

It's easy to get started: just plug in your EAGLE-200 and log into rainforestcloud.com with your web browser. The Rainforest Cloud provides you with a simple graph that shows you your smart meter data in real time. It can be viewed on your computer, tablet, or smart phone anywhere that you have internet access.

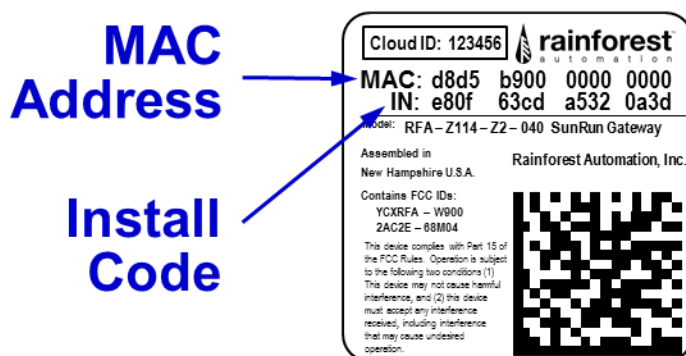
Quick Setup

Step 1: Prerequisite software and hardware

- 1) A free Ethernet port, or WiFi access, on a router directly connected to the internet.
- 2) A PC or other device with a web browser.
- 3) A utility meter with a certified Zigbee radio less than 100 feet from the EAGLE-200.

Step 2: Register your EAGLE-200

Your EAGLE-200 device must be registered with your utility to connect to the smart meter. You will need to contact your utility with two numbers (MAC Address and Install Code) that can be found on the Information Label on the underside of your EAGLE-200:



Note that it may take some time for your utility to enable the smart meter to connect with your device. You must wait until this process is complete before proceeding; your EAGLE-200 will not function correctly until the smart meter is enabled.

Step 3: Power up your EAGLE-200

- a) Plug the Ethernet cable into a port on your router, and the other end into the Ethernet port on your EAGLE-200. It is also possible to connect wirelessly using WiFi. If you wish to use WiFi, skip to the *WiFi Setup* section of this manual.

- b) Plug the AC adapter into a nearby wall outlet, and plug the other end into the power socket on the EAGLE-200. *It is important that only the included 5v adapter is used to power your EAGLE-200. If another adapter is used, it may cause permanent damage to the unit.*
- c) Allow three minutes for the device to boot up. You should see that 4 of the 5 status LED lights at the front of the EAGLE-200 are on continuously.

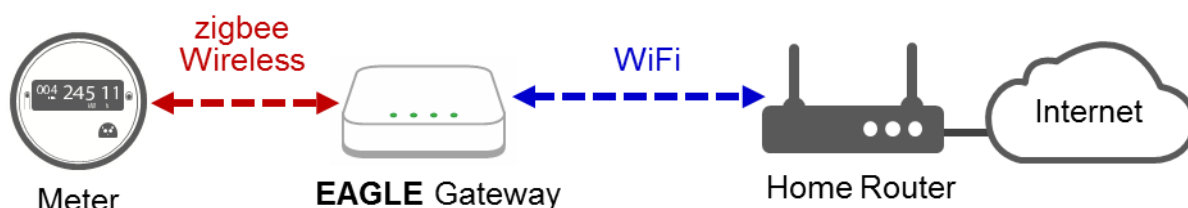


This indicates that the unit is functioning normally.

Now you need to skip ahead to the *Connect to the Cloud* section of this manual.

WiFi Setup

Sometimes it is not possible to use the Ethernet cable to connect the EAGLE-200 to your router. For instance, if the router is too far away from your utility meter, it may be beyond the range of the meter's Zigbee radio. Or, there may not be an available port on your router. In these cases, you may choose to use the internal WiFi radio in the EAGLE-200 to connect to your router.



After your EAGLE-200 has been registered with your utility and your meter has been enabled to communicate, follow these steps to connect your EAGLE-200 to your home WiFi network.

Step 1: Power up your EAGLE-200

- a) Plug the AC adapter into a nearby wall outlet, and plug the other end into the power socket on the EAGLE-200. *It is important that only the included 5v adapter is used to power your EAGLE-200. If another adapter is used, it may cause permanent damage to the unit.*

Do not plug in the Ethernet cable.

- a) Allow three minutes for the device to boot up. You should see that 2 of the 5 status LED lights at the front of the EAGLE-200 are on continuously.



Step 2: Enable the WiFi radio

- a) Your EAGLE-200 is shipped from the factory with the WiFi radio disabled. To enable the WiFi radio, insert a pen or paperclip wire into the small hole labeled “1” on the far left of the back of the EAGLE-200 and press and hold the internal switch for 5 seconds.

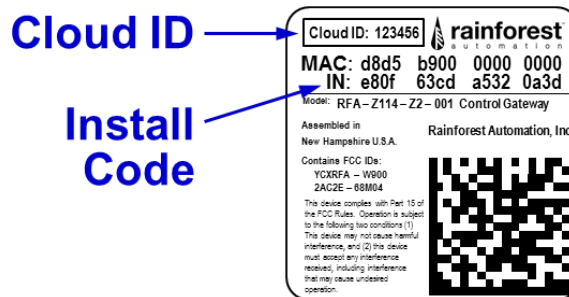


- b) It will take a minute for the WiFi radio to start up. Then you will see the center status LED light at the front of the EAGLE-200 start flashing. This indicates that the WiFi radio is active.

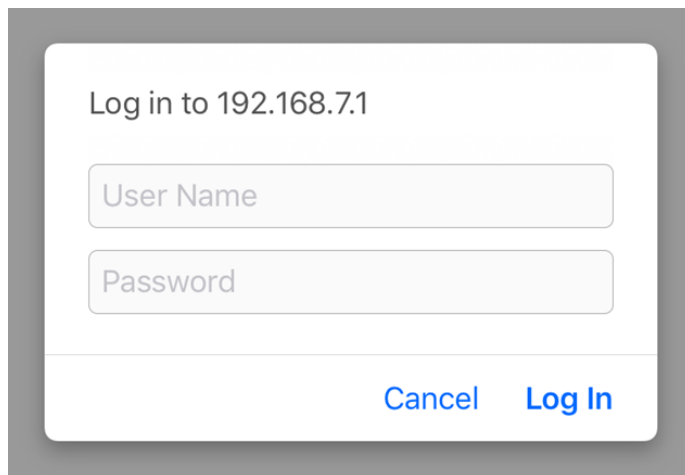


Step 3: Connect to WiFi

- a) Now use your computer or phone equipped with WiFi to scan for WiFi access points. In the list will be an entry for “eagle-xxxxxx (router)”, where xxxxxx is the 6-digit Cloud ID for your EAGLE-200 (the Cloud ID can be found in the top left corner of the device label). Click on this network to connect to it. When prompted for the password, use the Install Code of the EAGLE-200 (Install Code is a 16-digit hexadecimal number shown as “IN:” on the EAGLE-200 label).



- b) After you are connected to the EAGLE-200 WiFi, enter the address 192.168.7.1 into your web browser. This will bring up the “Login” page.



Log in to 192.168.7.1

User Name

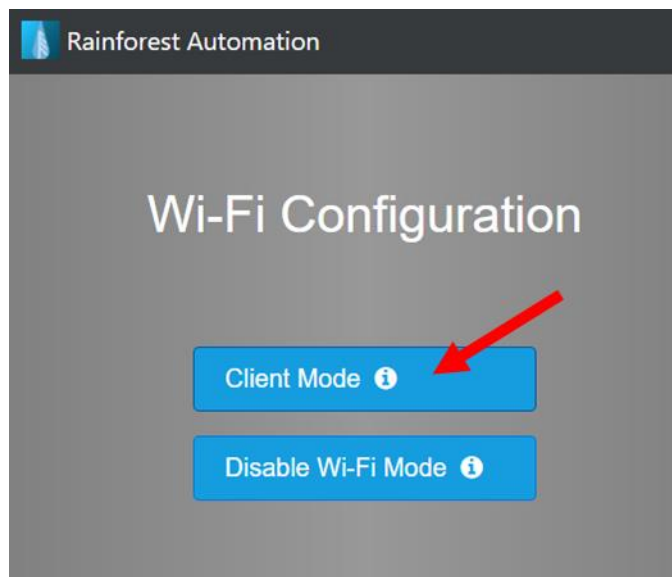
Password

Cancel Log In

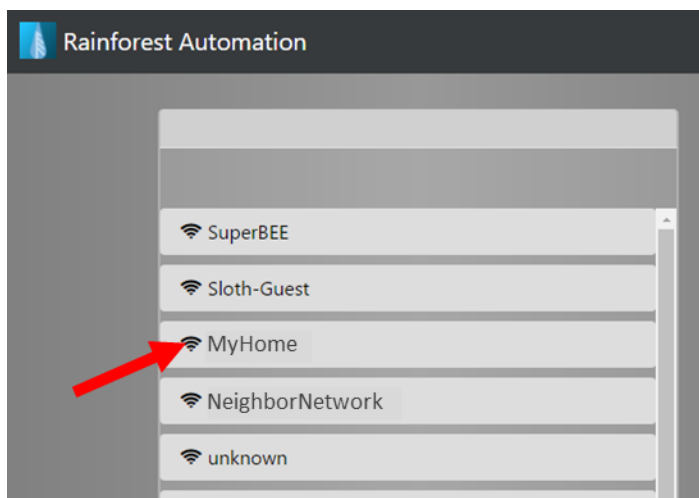
- c) To login, enter username = the Cloud ID and password = Install Code (both can be found on the EAGLE-200 label).

Step 4: Configure WiFi

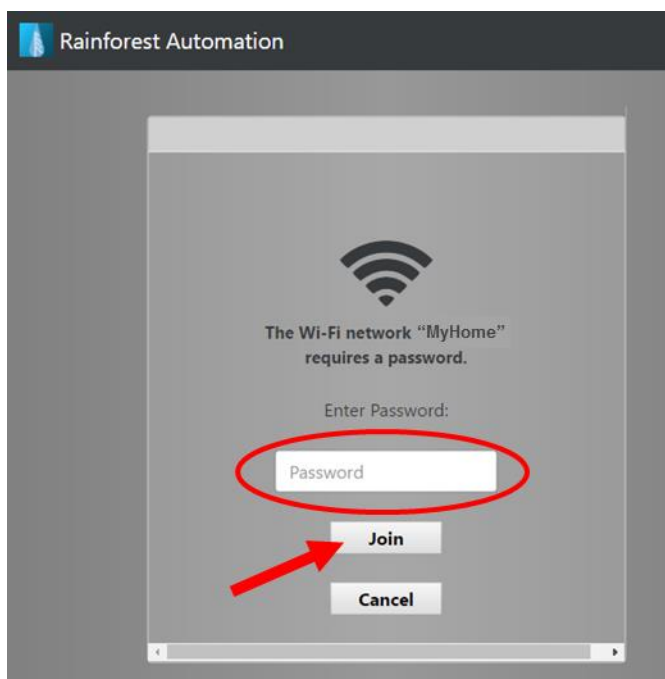
- a) After logging in, you will see the “Wi-Fi Configuration” page.



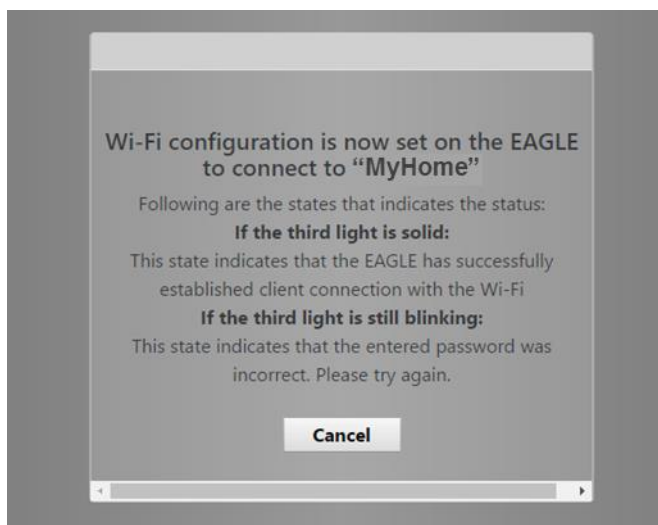
- b) Click on the blue “Client mode” bar at the top of the list, and a list of networks to join appears.



- c) Select your home WiFi network from the list, and you will see a prompt for your WiFi password.



- d) Enter the password for your home WiFi network, and click the "Join" button.



- e) Wait for the EAGLE-200 WiFi LED light (📶) to go from blinking to constantly on.

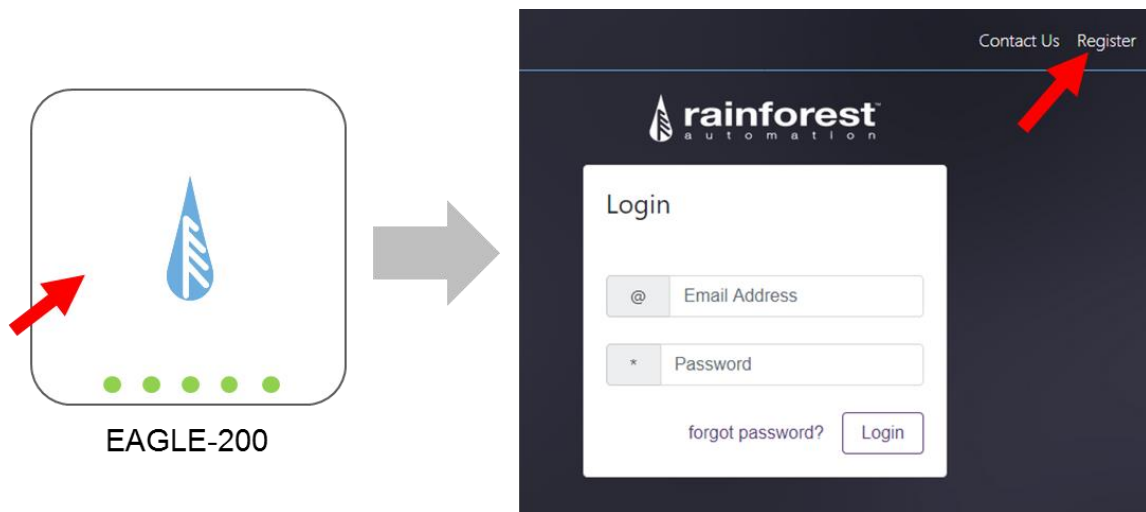
At this point, your EAGLE-200 is connected to your home router via WiFi.

Now go to the *Connect to the Cloud* section of this manual.

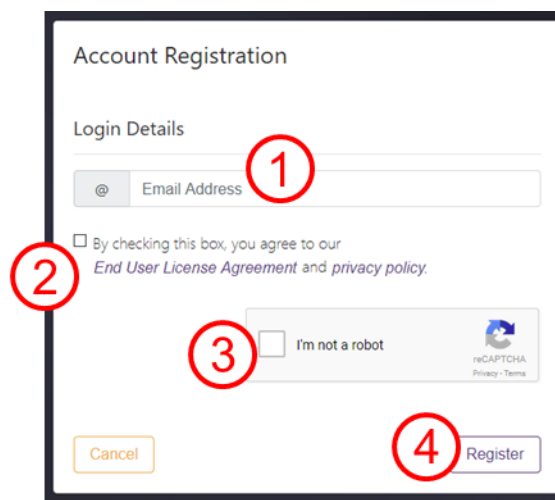
Connect to the Cloud

Step 1: Create your Cloud Account

- a) Using your web browser, go to rainforestcloud.com. You will be asked to select the version of the EAGLE you are using. Select the EAGLE-200 (with five lights).



- b) This will bring up the Rainforest Login page. Click on the word “Register” in the top right of the screen.



The screenshot shows the 'Account Registration' form. It includes a 'Login Details' section with an 'Email Address' field (callout 1). Below this is a checkbox for agreeing to the 'End User License Agreement and privacy policy' (callout 2). There is also a reCAPTCHA 'I'm not a robot' box (callout 3). At the bottom, there are 'Cancel' and 'Register' buttons (callout 4).

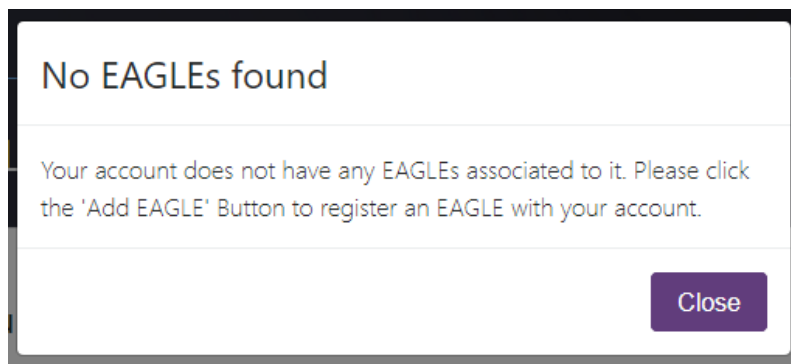
- c) You will see the “Account Registration” form. (1) Fill in your email address, (2) check the box to agree to our EULA, (3) click the “I’m not a robot” CAPTCHA box, and (4) click “Register”.



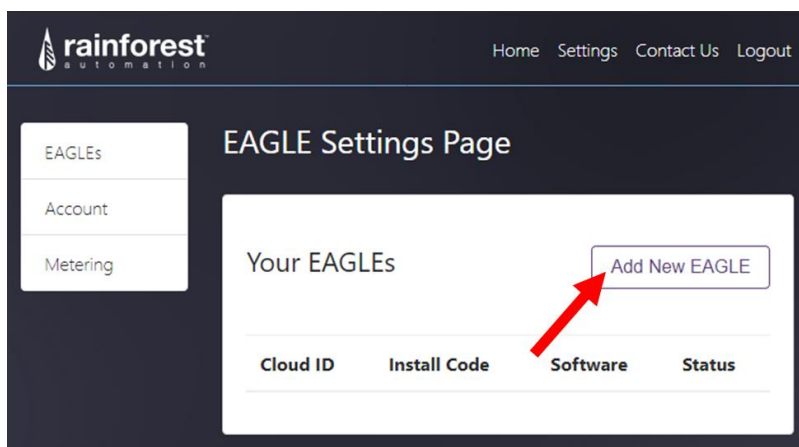
- d) Check your email to find the message from Rainforest Automation with the subject line “EAGLE Cloud Account activation”. Click the red box in the email with the “SETUP PASSWORD FOR MY ACCOUNT” link.
- e) This link will take you to the first “Account Registration” page. Set up your password and click “Next”. Fill in your information on the following page and click “Next”. The following page asks you to indicate information about your home energy loads. When you are done, click “Activate Account”, and you will be back at the Login page.

Step 2: Connect to your EAGLE-200

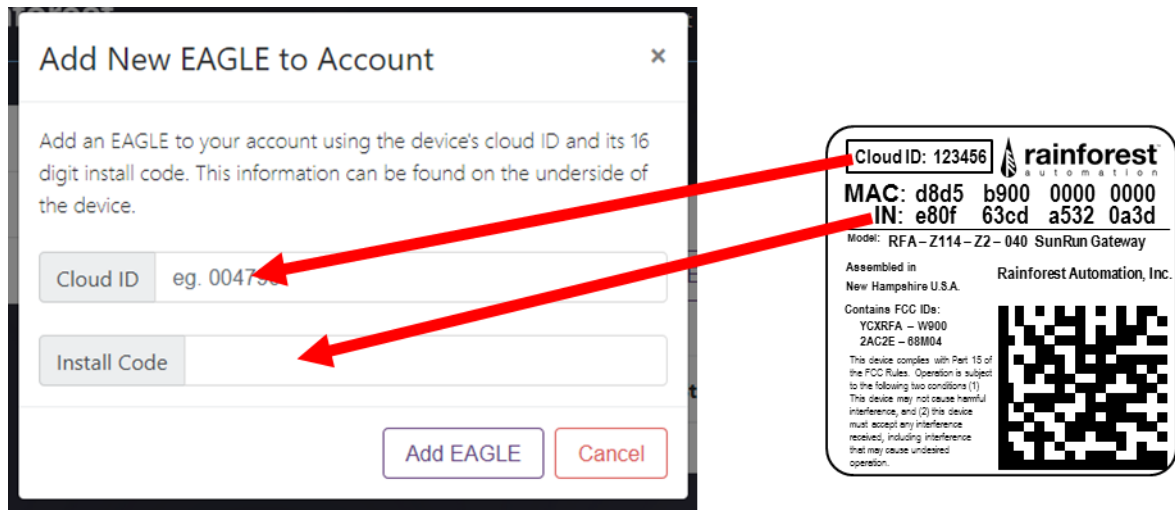
- a) Log into your Cloud Account.



- b) You will see a “No EAGLEs found” message. Click “Close” to clear the message.



- c) Click “Add New EAGLE”.




Add New EAGLE to Account [X]

Add an EAGLE to your account using the device's cloud ID and its 16 digit install code. This information can be found on the underside of the device.

Cloud ID

Install Code

CloudID: 123456 rainforest automation
MAC: d8d5 b900 0000 0000
IN: e80f 63cd a532 0a3d
Model: RFA-Z114-Z2-040 SunRun Gateway
Assembled in New Hampshire U.S.A. Rainforest Automation, Inc.
Contains FCC IDs:
YCXRF A - W000
2AC2E - 68M04
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.




- d) Enter the 6-digit Cloud ID and 16-digit Install Code (with no spaces) from the label of your EAGLE-200, and click “Add EAGLE”. You should see the EAGLE-200 appear on the “Your EAGLES” list.
- e) Click “Home” at the top of the page to see your real-time data form your EAGLE-200.

EAGLE-200 Status LED Lights

The EAGLE-200 has five LED lights at the front of the top of the device. These lights are a quick way to check the status of the device.



 **Power LED** – shows that the device is powered on. The light should always be on when the unit is plugged in.

 **Ethernet LED** – shows status of the connection to the local Ethernet network.


Off	No Ethernet connection. May not be plugged in. This light will be off when WiFi is being used.
Blinking	Ethernet link is active, but waiting for an IP address from the router.
On	EAGLE-200 is connected to your network.

 **WiFi LED** – shows status of the WiFi radio.

Off	WiFi radio is off.
Slow Blink	WiFi radio is in AP/Router Mode.
Fast Blink	WiFi radio is joining to your network.
5 Blinks, Pause	There is a WiFi error.
On	WiFi radio is connected to your router in Client Mode.

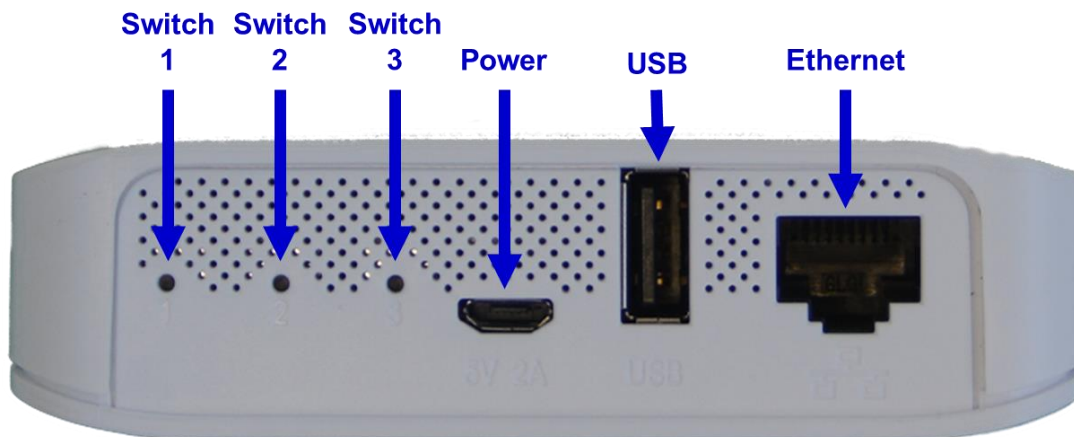
 **Cloud LED** – shows status of connections to the cloud

Blinking	Problem detected with the cloud connection.
On	No cloud problems detected.

 **Zigbee LED** – shows that the Zigbee radio is active. It should come on shortly after the EAGLE-200 boots up.

EAGLE-200 Hardware Ports

On the back of the EAGLE-200 there are three interface ports and three switches.



From right to left, these are:

- Ethernet – The included Ethernet cable plugs into this socket. The other end of the cable plugs into the local network router. This should be plugged in first before plugging the power in.
- USB – This socket can be used to expand the functions of the EAGLE-200. Nothing should be plugged into this socket.
- Power – The included AC power adapter connects to this standard micro-USB socket. The other end of the adapter plugs into a nearby power outlet. *It is important that only the included 5v adapter is used to power the EAGLE-200. If another adapter is used, it may cause permanent damage to the unit.*
- Switch 3 – This switch should not be used.
- Switch 2 – this small hole provides access to a reset switch for the Zigbee Endpoint radio. *This switch should only be used under the direction of a Rainforest support engineer, as it will cause the Zigbee radio to break its connection to the meter, and will require re-provisioning by the utility.*
- Switch 1 – this small hole provides access to a reset switch for the WiFi radio. If you insert a pen or paperclip wire to press and hold the internal switch for 5 seconds, it will reset the WiFi radio, and put it in AP/Router Mode. If the switch is briefly pressed and not held, it will toggle the WiFi radio On/Off.

Using your Cloud Account

Your Cloud Account on rainforestcloud.com makes it easy for you to connect to your EAGLE-200 from anywhere. When you first log in, you are in the Home screen, which shows a graph of your last 5 minutes of electrical usage.

At the top of the Home screen is a menu bar with a number of options on the right:

- **Home** – click to return to the Home screen.
- **Settings** – click to go to the Settings screen, which has a stack of menu options on the left:
 - EAGLEs
 - Shows Your EAGLEs list
 - You can add additional EAGLEs by clicking “Add New EAGLE”
 - You can check whether you have the latest software on your EAGLE by clicking the button in the “Software” column for that EAGLE in the list.
 - Account
 - Set your local Time Zone if it is not provided by the meter.
 - Metering
 - See details of the Zigbee wireless network of your EAGLE
 - See messages that may have been sent to your EAGLE from the utility
 - See the price of electricity read by your EAGLE from the meter. You can manually enter a price if it is not supplied by the meter, or is incorrect.
 - For commercial meters, you can program the multiplier and divisor for the data.
- **Contact Us** – click to go to the product support page on the Rainforest website.
- **Logout** – click to log out of your Cloud Account and display the Login screen.

Troubleshooting Guide

If you do not see your real-time meter data while you are logged in to your Cloud Account, there are three likely causes:

1. The EAGLE-200 is not connected to the internet.

Check the LED lights:

- If you are using the Ethernet cable to connect to your router, then the Ethernet light (second from the left) should be on and not blinking.

If the light is not on, check that the Ethernet cable is plugged in solidly to both the router and the gateway. You can also try another port on the router.

If the light is flashing, check to make sure that the gateway is connected to a router, and not just a switch.

- If you are using WiFi to connect to your router, then the WiFi (center) light should be on and not blinking.

If the light is not on or is flashing, you will have to reset the WiFi radio. Follow the procedure in the “WiFi Setup” section of this manual.

- The Cloud light (second from the right) light should be on and not blinking.

If the light is flashing, you will need to reboot the EAGLE-200, as described in item #3 below. If the Cloud light continues to flash after the reboot, contact Rainforest Technical Support.

If the EAGLE-200 was previously connected and then subsequently stopped communicating, then it is likely an intermittent internet outage. This may require resetting your internet modem, or merely waiting. If this problem persists, then you may need to reboot the EAGLE-200, as described in item #3 below.

2. The EAGLE-200 is not connected to the meter.

If the Zigbee radio connection to the meter is not active, then the EAGLE-200 will not be receiving data to send up to the cloud. The wireless connection can be intermittent if the EAGLE-200 is at the limit of the meter’s Zigbee radio range. This range can be as much as 75 feet, but is diminished by walls and other obstructions to the radio signal. It is best to position the gateway as close to the meter as practical. This may involve using a longer Ethernet cable, or switching to a WiFi connection to allow better placement of the gateway.

If the gateway is located close to the meter, and it still does not connect to the meter, then gateway should be rebooted (see item #3 below). If this does not work, then a request will have to be sent to the utility to re-provision the meter. The procedure for

this will depend upon the utility, but in most cases the request will have to come from the utility account holder. Prior to the re-provision request, the Zigbee radio should be factory reset. Please contact Rainforest Technical Support for assistance with this.

3. The EAGLE-200 needs to be rebooted.

To reboot the EAGLE-200 gateway, unplug the power cord, wait 10 seconds, and plug it back in again. Allow three minutes for the gateway to boot up.

Technical Support

Contact us at: <http://support.rainforestautomation.com>