MANUAL

RAC

1 Table of contents

2 General

The RACis the next gen RF Collison avoidance system. Designed specifically for overhead cranes it has reflector less technology. Then paired with 2 120/240VAC relays, 10ft prewired pigtail it is and easy installation. With Wi-Fi built in the setting of set points is now done over Wi-Fi to get the technicians off the crane when setting the distances and making fine adjustments.

3 Overview

The RAC is a collision avoidance product using 6-9ghz band RF to produce RF TOF calculation to calculate distance.
Basic:

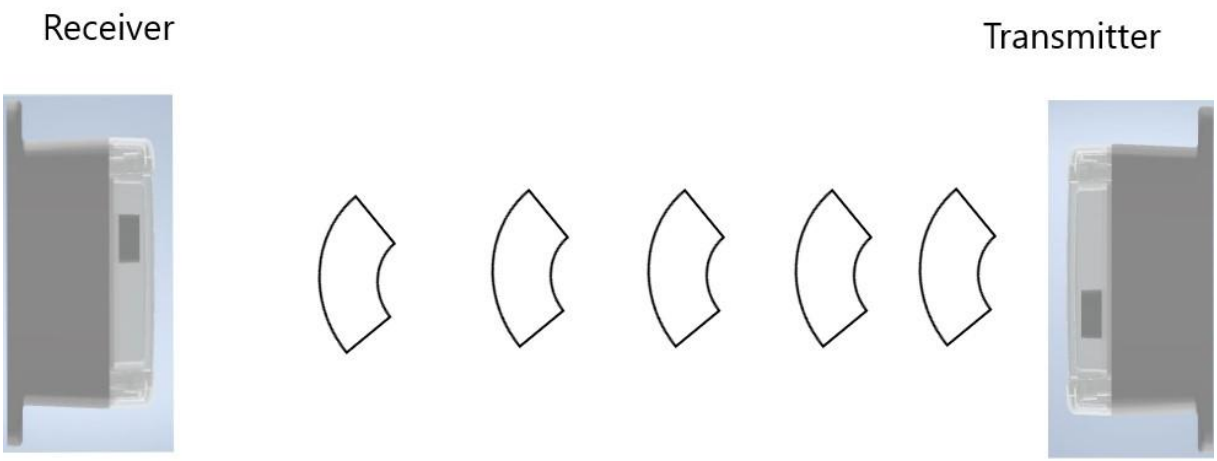
The RAC has a range that varies due to installation / antenna alignment.
From 50M-70M in standard setups with 3 relays for slow1,slow,stop
With 1 error relay for RF loss of signal
The relay setpoints are adjustable via the RAC Webapp and real time distance is available in the webapp as well as the relay status of each relay.
For maximum safety wire the RF loss of signal in series with the motion relays.
If you don't want to stop the cranes during a RF signal loss then you can wire the Error relay to a Light to indicate the Collison avoidance system is offline.

1 Unit gets mounted on 1 crane and the 2nd unit gets mounted on the 2nd crane you are trying to avoid.

In Crane to wall applications 1 unit gets mounted on the Crane and the other gets mounted on the wall.

4 Description

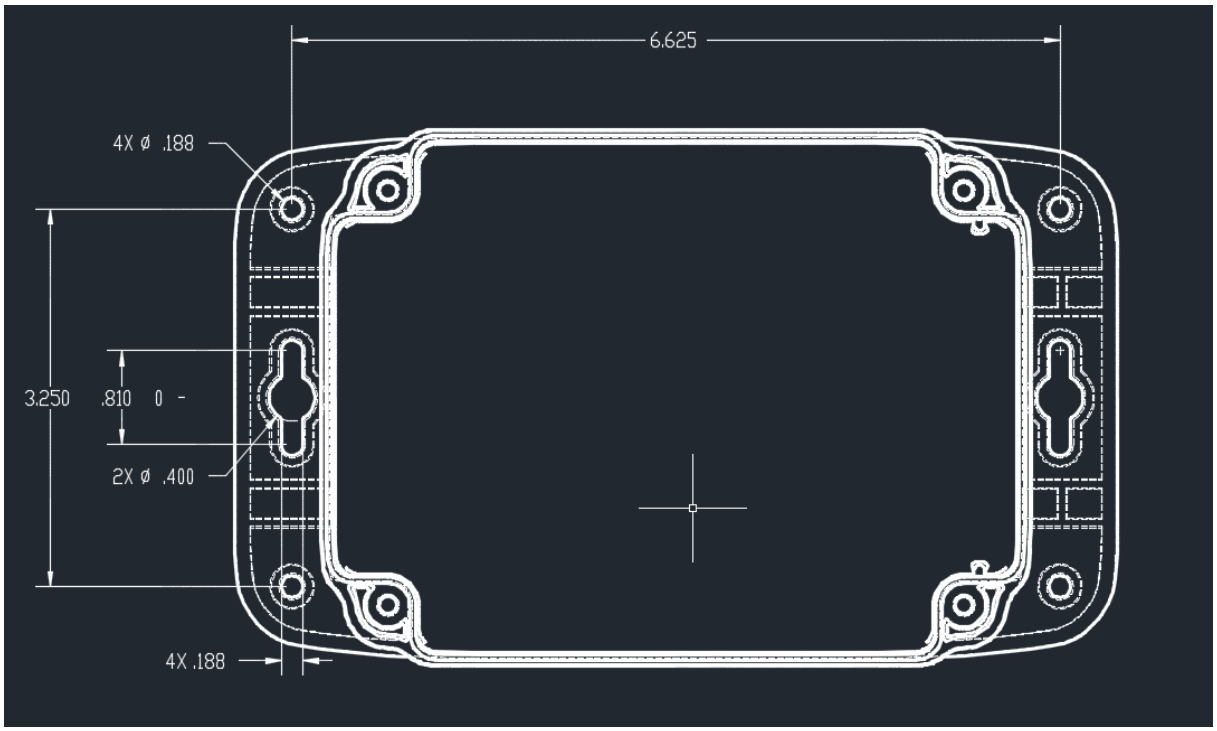
Using an RF time of flight calculation to get distance. The Transmitter will be installed on the 2nd crane or wall and the Receiver will be mounted on the crane you want to control . No alignment needed as you can mount each in the best location.
Then use the Web app to set you real distances accordingly. Both sides calculate the distance so you get controls on both cranes with 1 set.

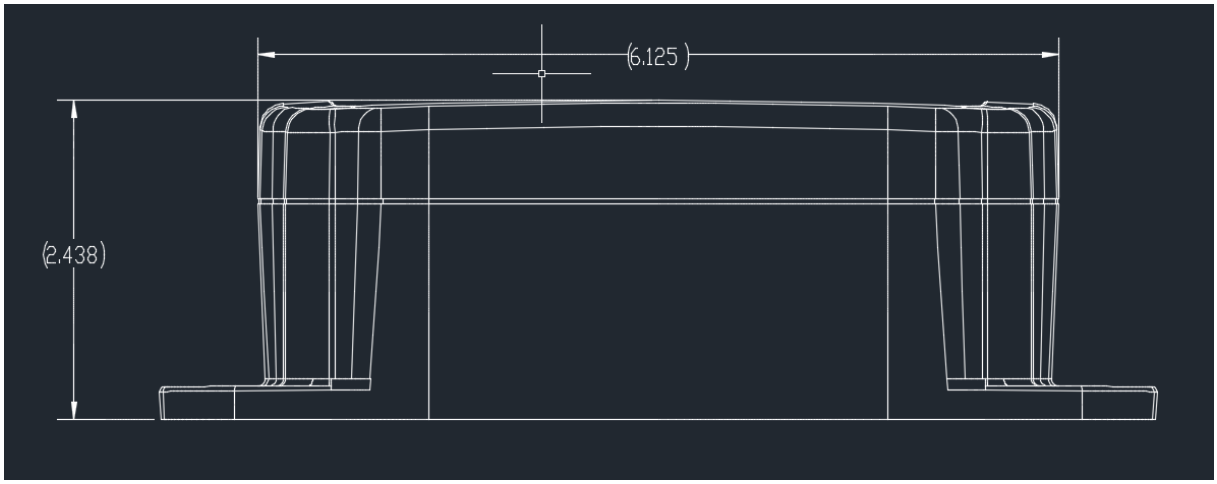


5 Installation

Follow the instructions as described in this manual for the installation of this product.
IF this is being installed outdoors the Connector must be facing towards the ground.
To stop runoff rain water to enter thru any areas of the connector/antenna.

The following diagram shows the mounting dimensions for the **RAC**





- Turn off the power supply.

- Locate a suitable place to install the **RAC**,with clear line of site to the opposite crane you are trying to stop the collision. Align the RAC Facing the same direction as the object you want to avoid. It is best to have the orientation of both units the same so the internal antennas are on the same plane

- Connect the input power wires RAC pigtail**.**

- **Wire 1 L**

- **Wire 2 N**

- Connect the relay output cables to the corresponding connections on crane function you want to slow and stop.

- Wire 3 Motion input (stop) Relay k1

- Wire 4 Motion output (stop) Relay k1

- Wire 5 Motion input (slow) Relay k2

- Wire 6 Motion output (slow) Relay k2

- Wire 7 slow 1 input Relay k3

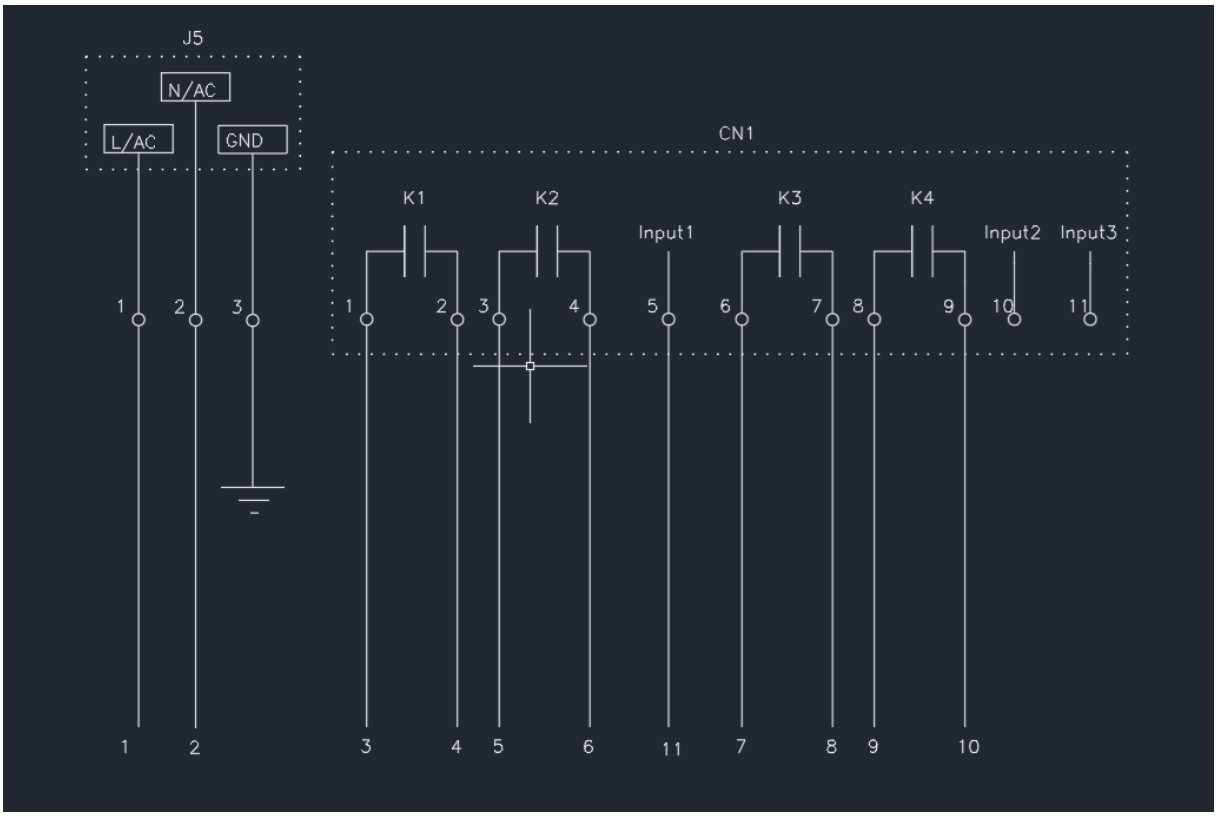
- Wire 8 slow 1 output Relay k3

- Wire 9 RF loss input Relay k4

- Wire 10 RF loss output Relay k4

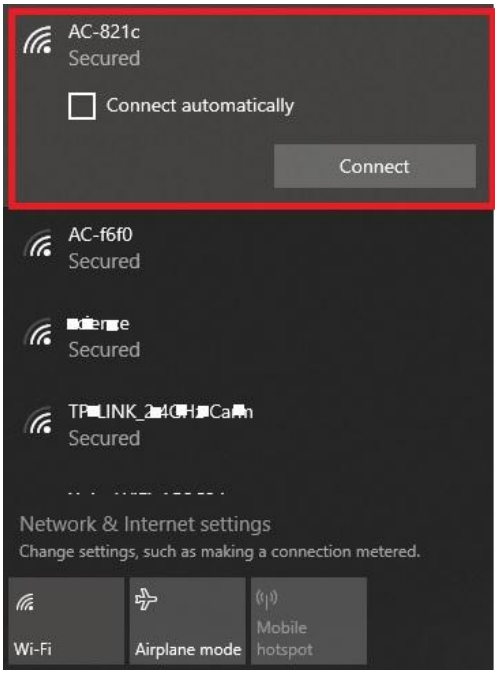
- Wire 11 120VAC input for bypass

Schematic


J5
N/AC
L/AC
GND
1
2
3
CN1
K1
K2
K3
K4
Input1
Input2
Input3
1
2
3
4
5
6
7
8
9
10
11
1
2
3
4
5
6
11
7
8
9
10

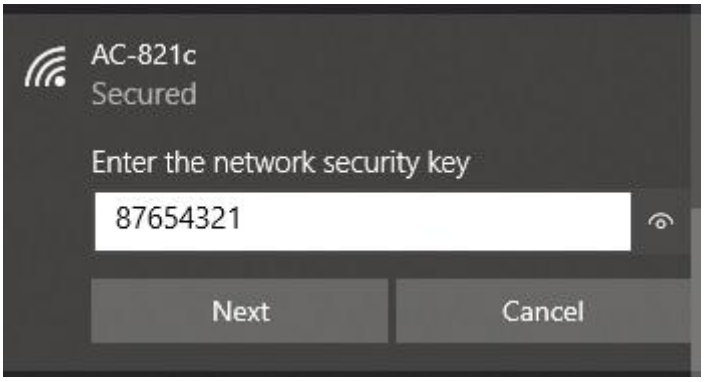
Wifi Login

Open your phone/tablet/PC and look for accessible wifi hotspots



Select AC - **** where the **** is the last 4 digits of the units mac address.

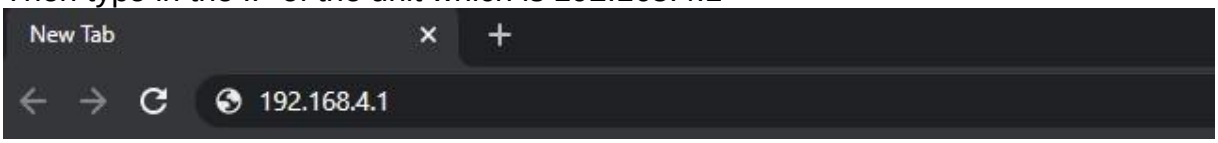
the Password is 87654321



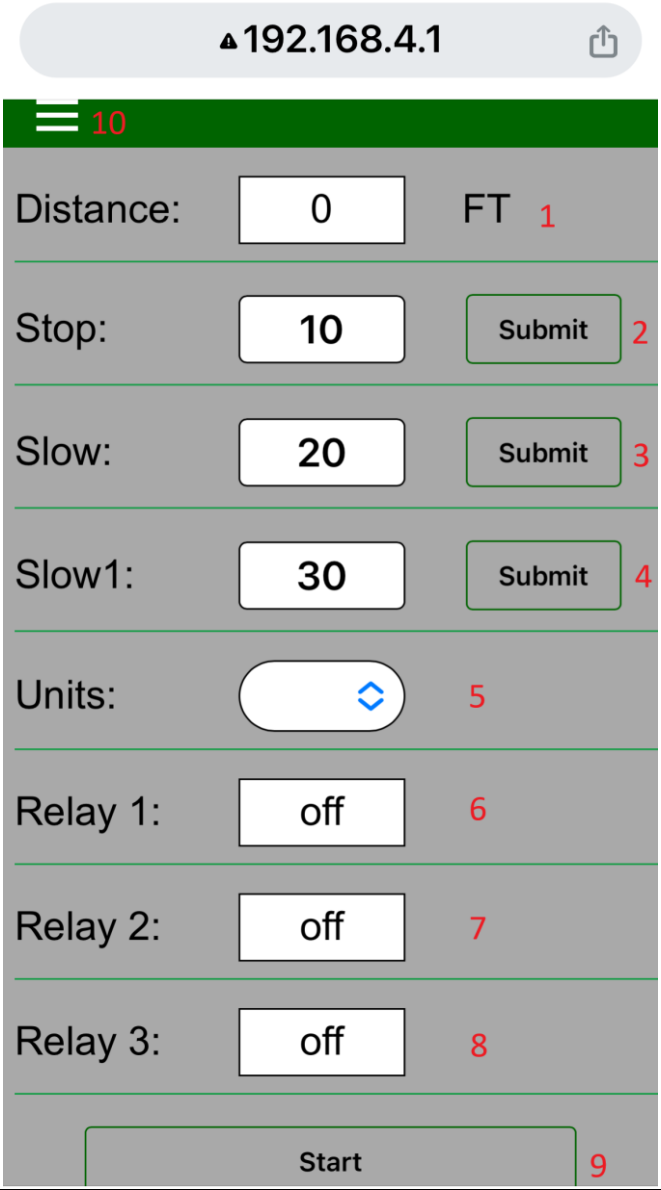
6 Webapp

Once you are connected to the LAC-12 hotspot you can then proceed to open your browser on your device. Chrome, Opera, Firefox …..

Then type in the IP of the unit which is 192.168.4.1

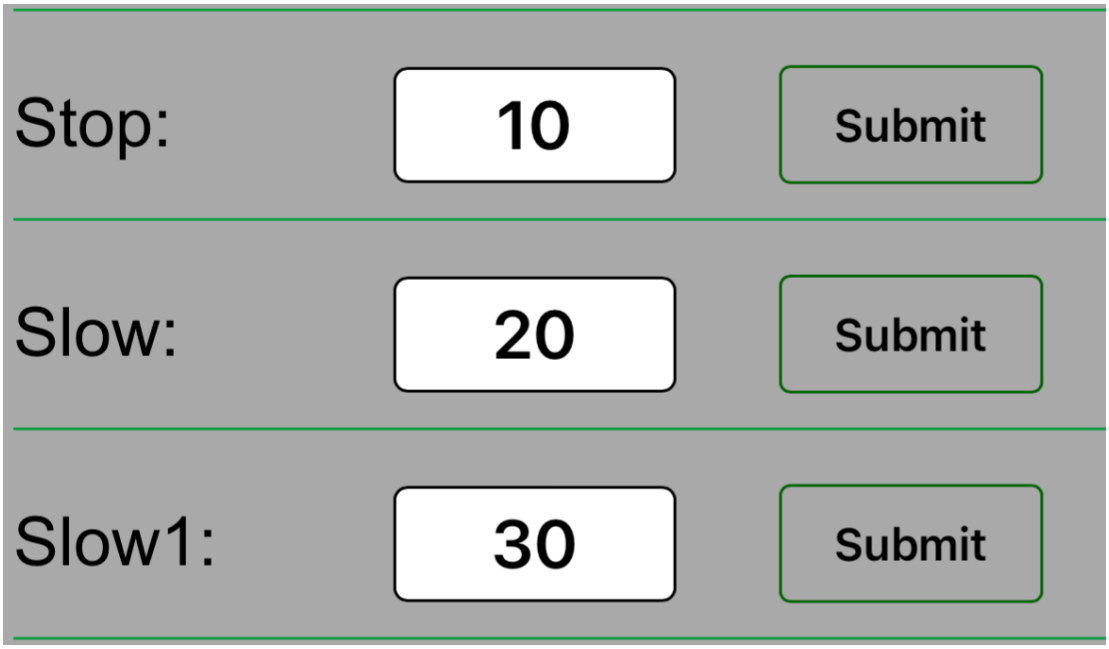


If you are connected properly the webapp should like and you should see the following.

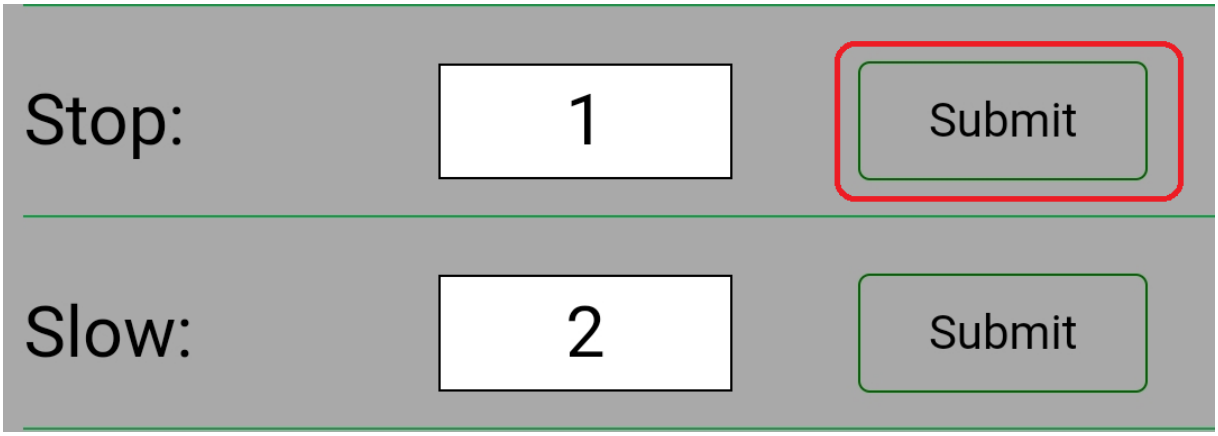


1. Distance reading once you press start
2. Stop setting , changeable
3. Slow setting, changeable
4. Slow1 setting, changeable
5. Units selection, mm or FT
6. Relay 1 status ON or OFF
7. Relay 2 status ON or OFF
8. Relay 2 status On or OFF
9. Start button to get the reading
10. Navigation menu to go to other pages

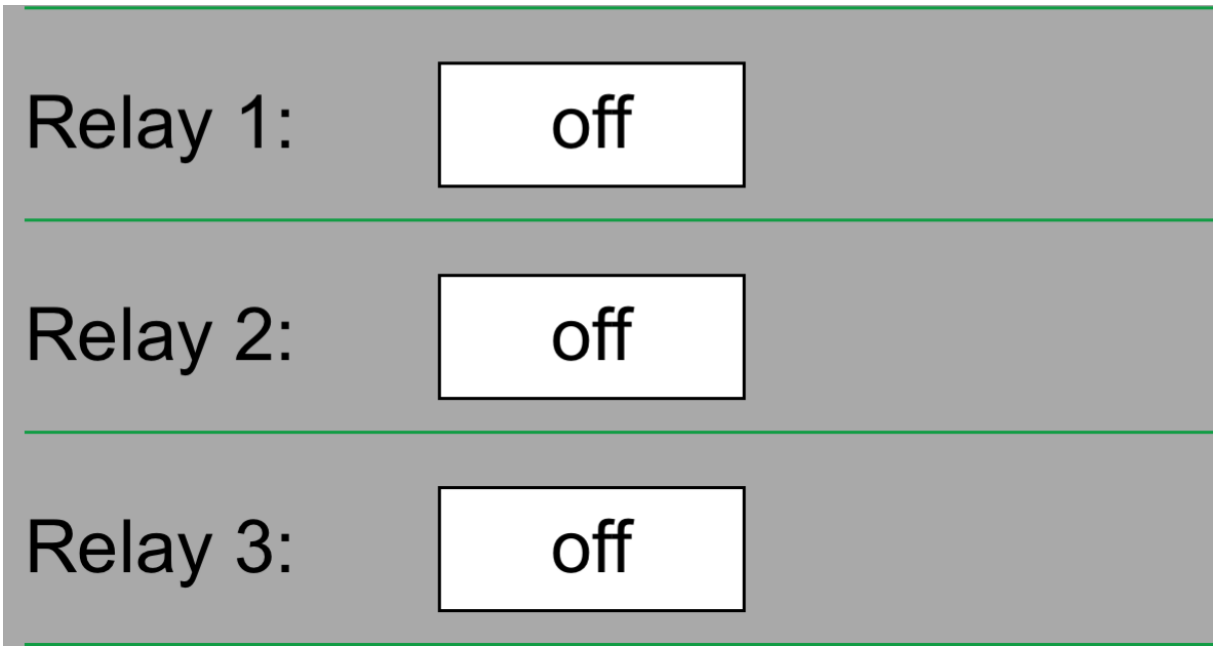
Row 2 , 3& 4 are the slow1 slow and stop setpoints. They will populate on the page load of the current settings.



To change the setting put your cursor in the box you want to change and delete the old settings. Then put in your new setting and press the submit button beside the slow / stop that you are changing.



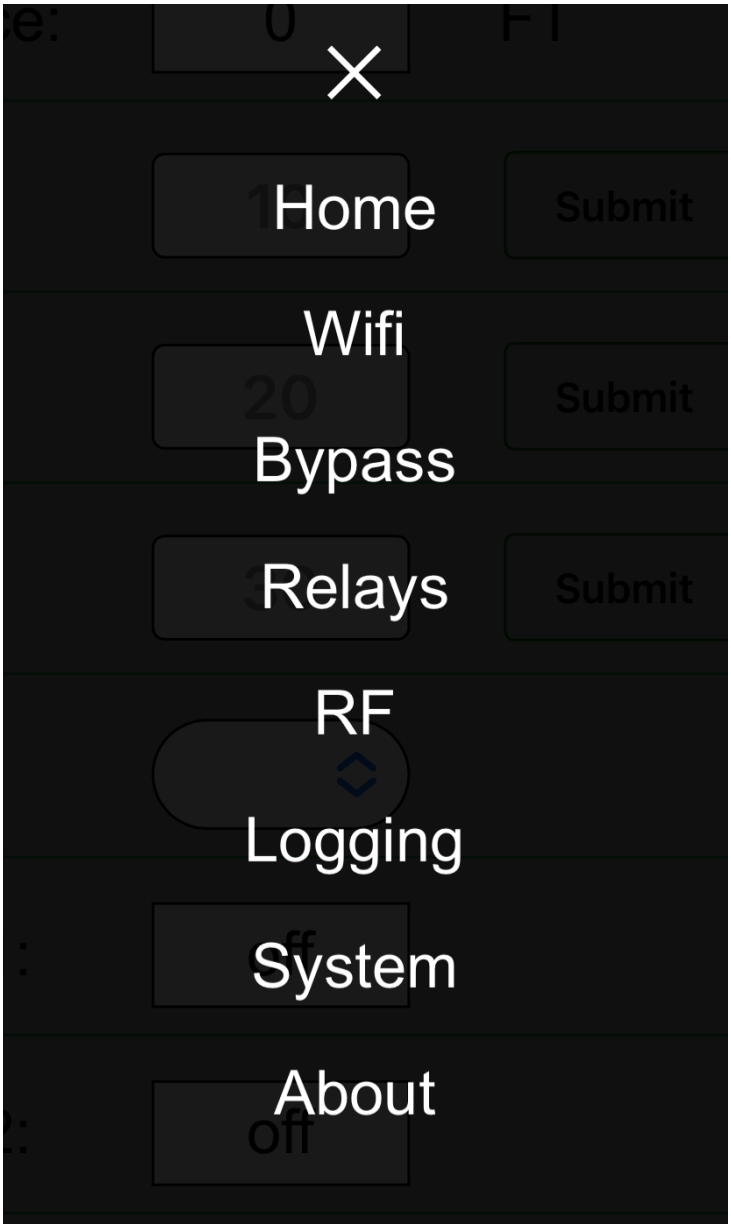
The relay status will also show if the relays are on or off. Items 6,7 & 8



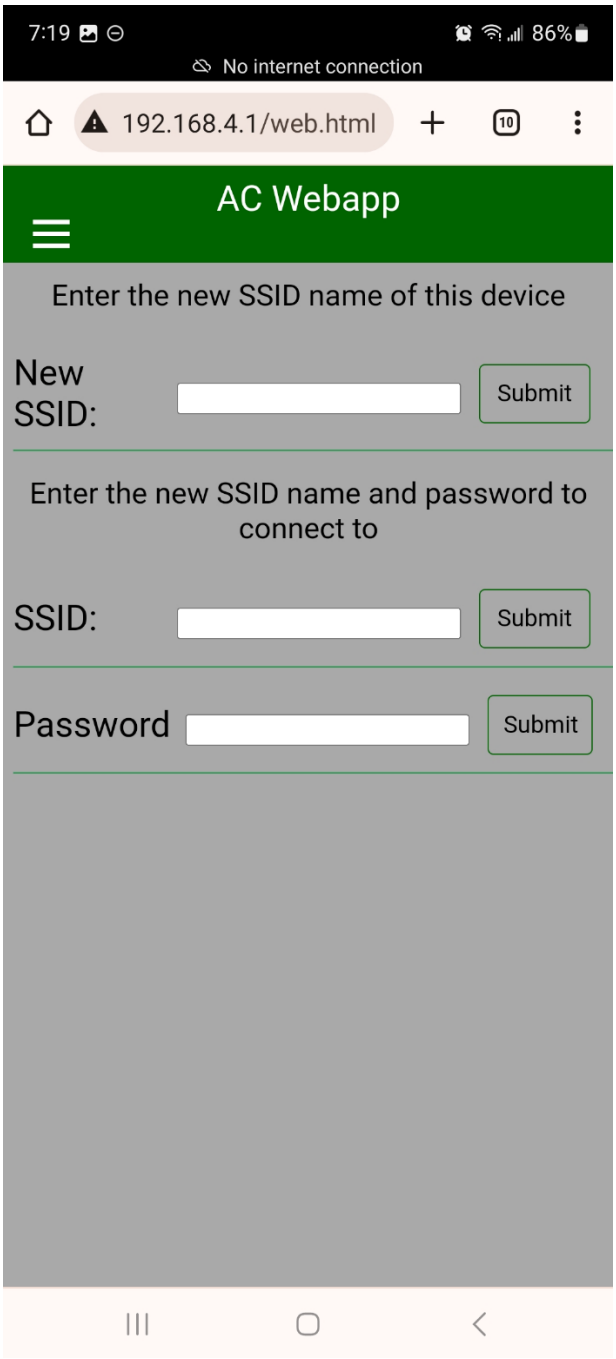
To go to start the readings of the distance sensor press start.

To move to other page settings click the navagation menu 10.

Once you press the navigation menu it will open like this.

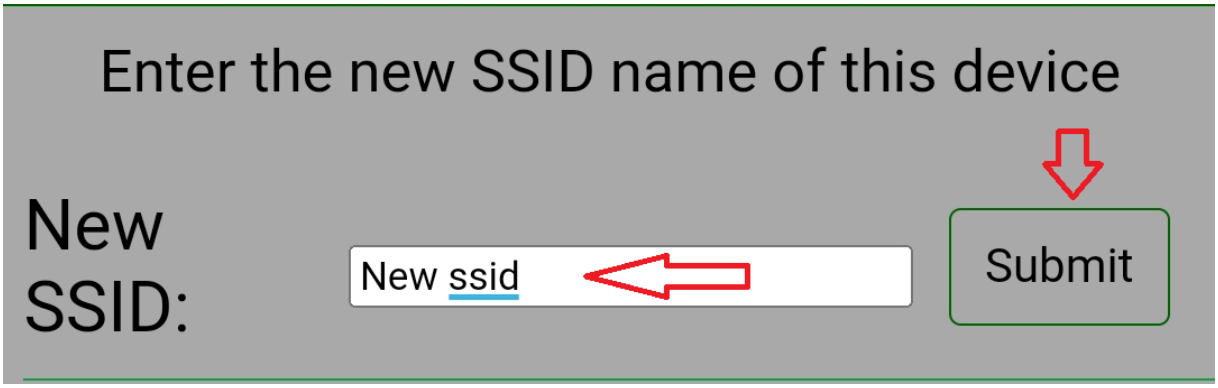


If you click the Wifi tab it will bring you to the wifi settings page.

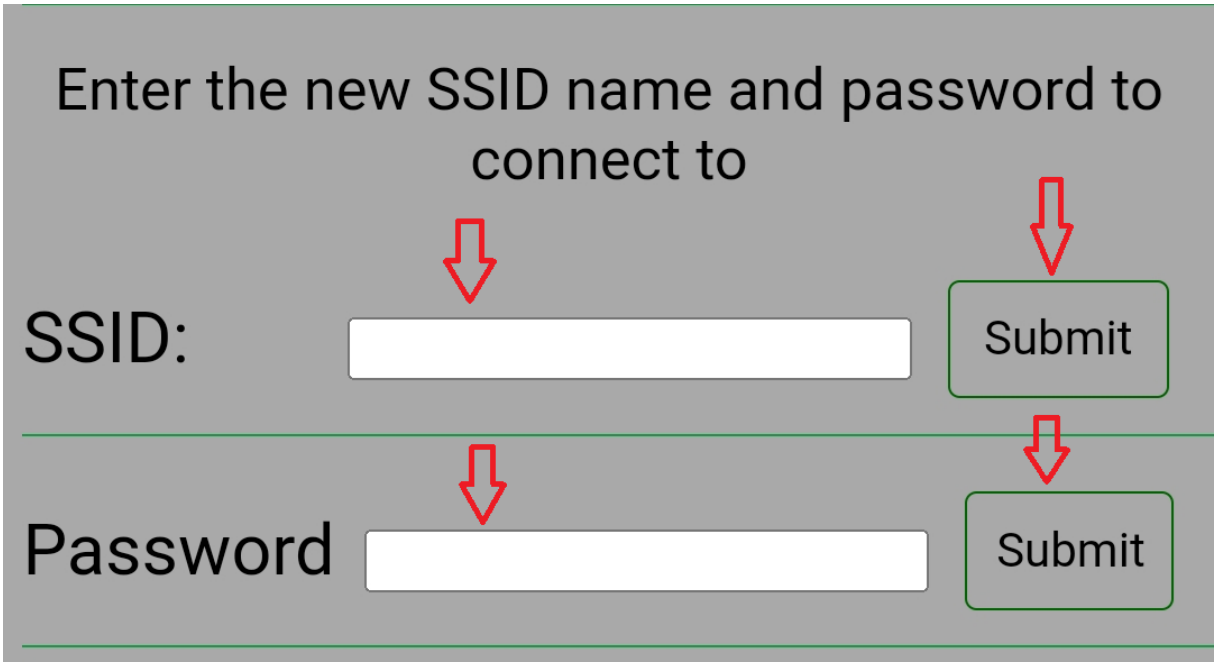


The Default SSID of the unit is AC-**** where the 4 * are the last 4 digits of the mac address. If you have multiple units in the same facility it can be hard to keep track of the SSID you are logging into.

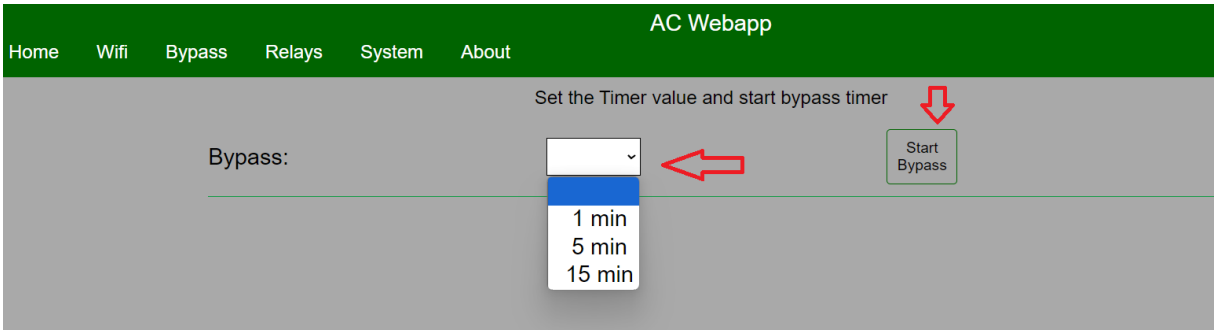
Here you can change the name of this LAC wifi access point. To Something more recongizable onsite Like the Crane number. To do this click in the new name area change to the new name you want and press submit.



The LAC and can also connect to a wifi network. To do so enter the SSID and PASSWORD of the network you want to join.



You can choose to bypass the system by clicking the bypass button



The Bypass button is not permeant due to safety reasons. You can choose 4 settings for bypass to help move the crane if it is stuck or if you haven't finished installing the system yet and need to move the crane.

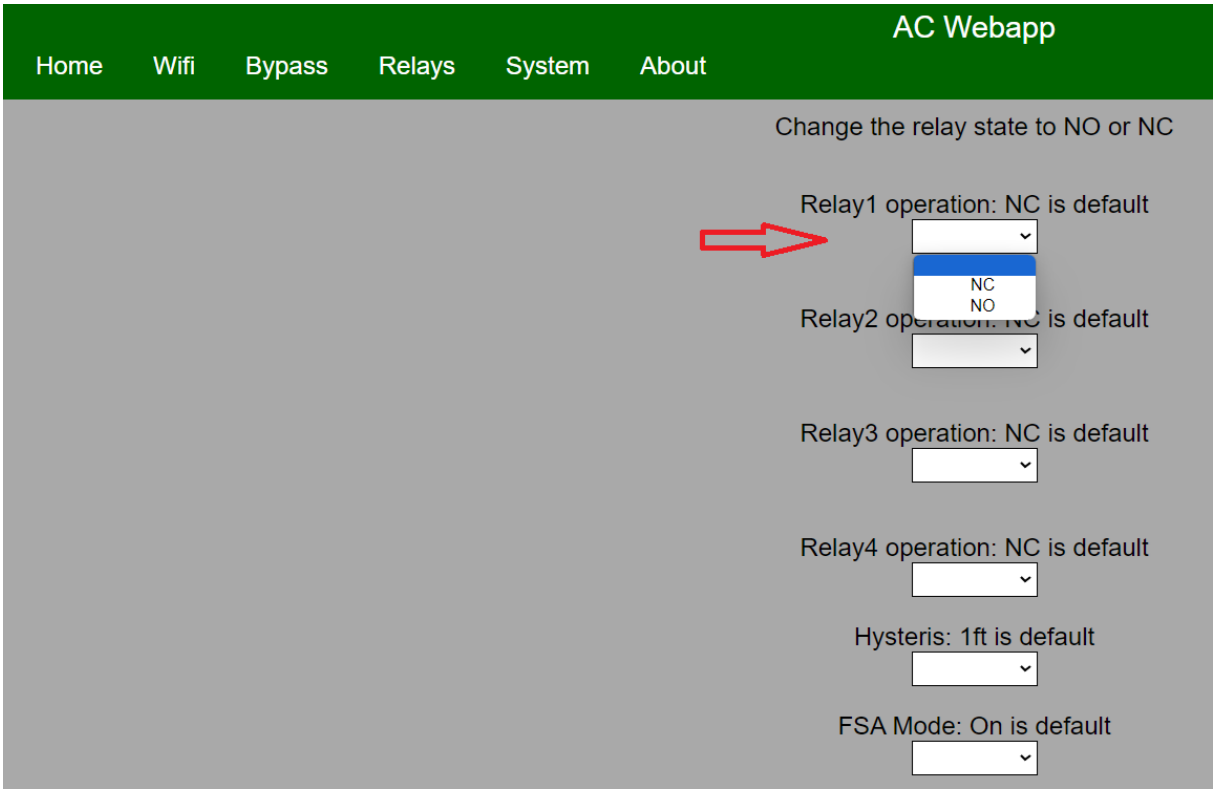
Pressing Start Byass without choosing a time will default to 30 sec
Other options are
1 min
5 min
15 min.
4 hours
8 hours

Once you press start bypass the relays will stay closed until the timer is up.
The LED on the unit should be White while its in bypass mode.

Relays Page

The System is setup with the relays turning on using normally open contacts.
So these contacts will close during normal operation.

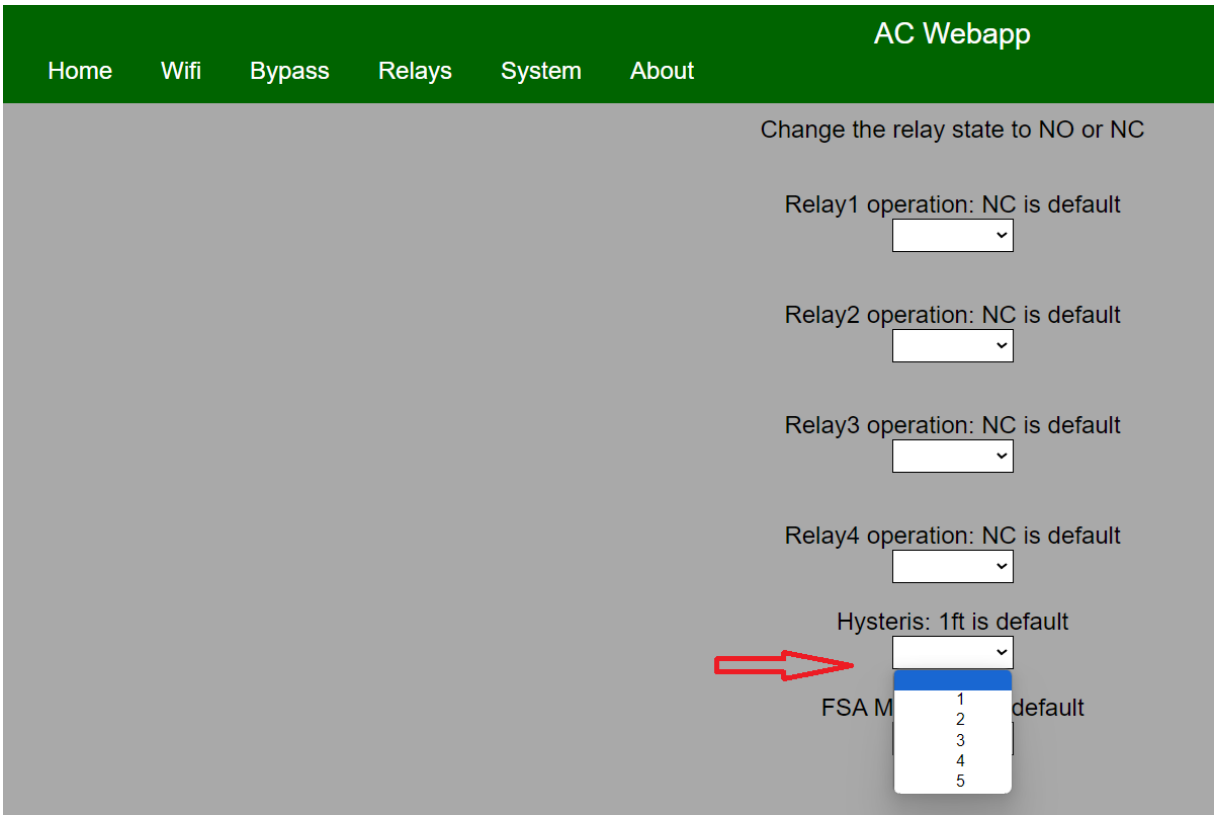
Sometimes the crane cant except this wiring and it either needs to be rewired to the NC contacts or we have a way to switch the relay operation in the software without rewiring the outputs.



To Change the operation of the relay Pick the relay you want to swap the contact via the drop down menu and change it from NC to NO

Now the relay will not close on startup and will turn on when the setpoint has been reached.

Hysteris: when the setpoint has been reached we add a hysteris so the relay will not continuously turn on / off when it is right at the edge of the setpoint. So for the relay to change state you need to be back the other way by default 1ft. if for some reason the reflection of is not stable and you have the signal bouncing more you can change this up to 5ft.

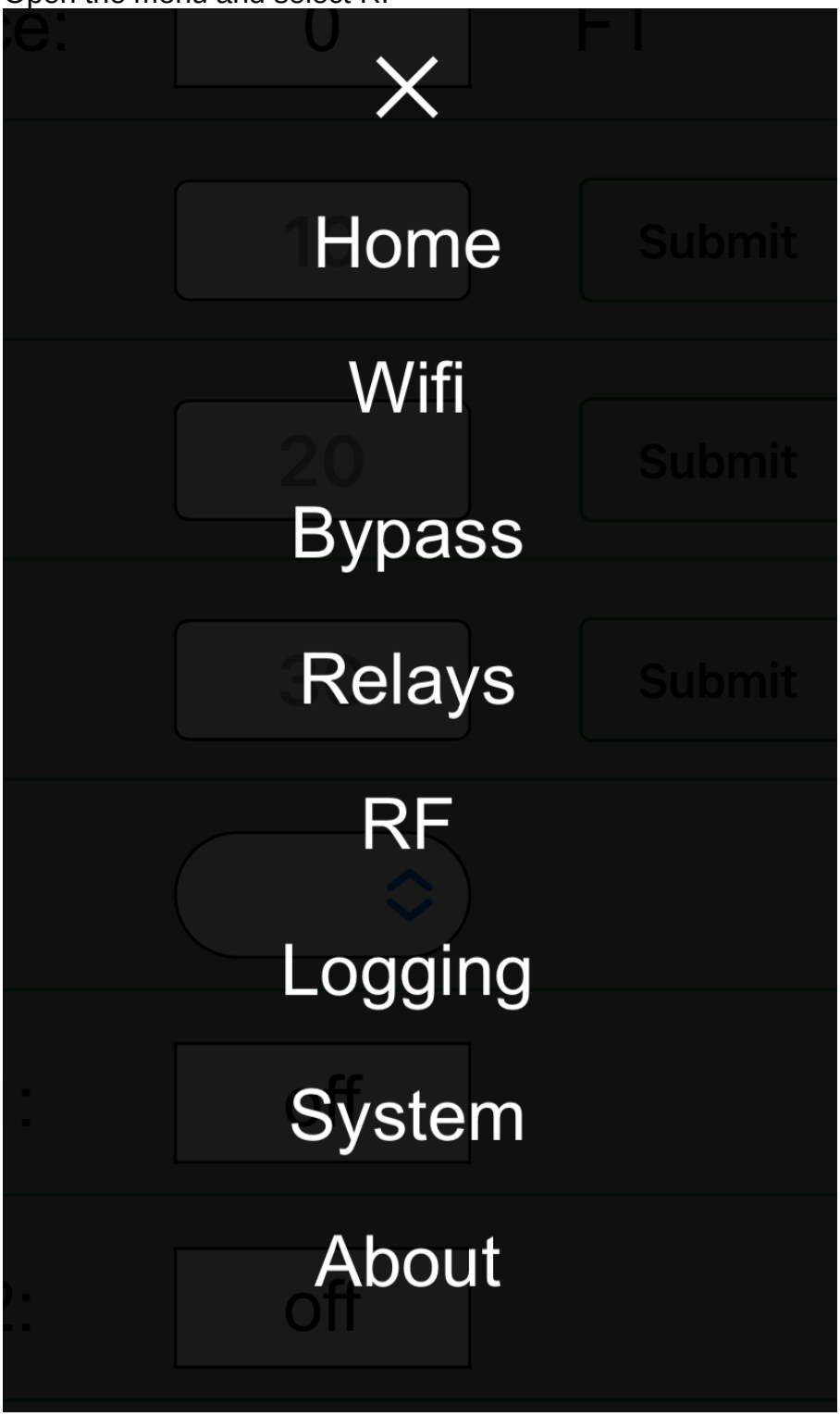


you change this setting until you find where the relay unwantedly is turning on / off to save the contacts of the RAC and the contactors / controls on the crane.

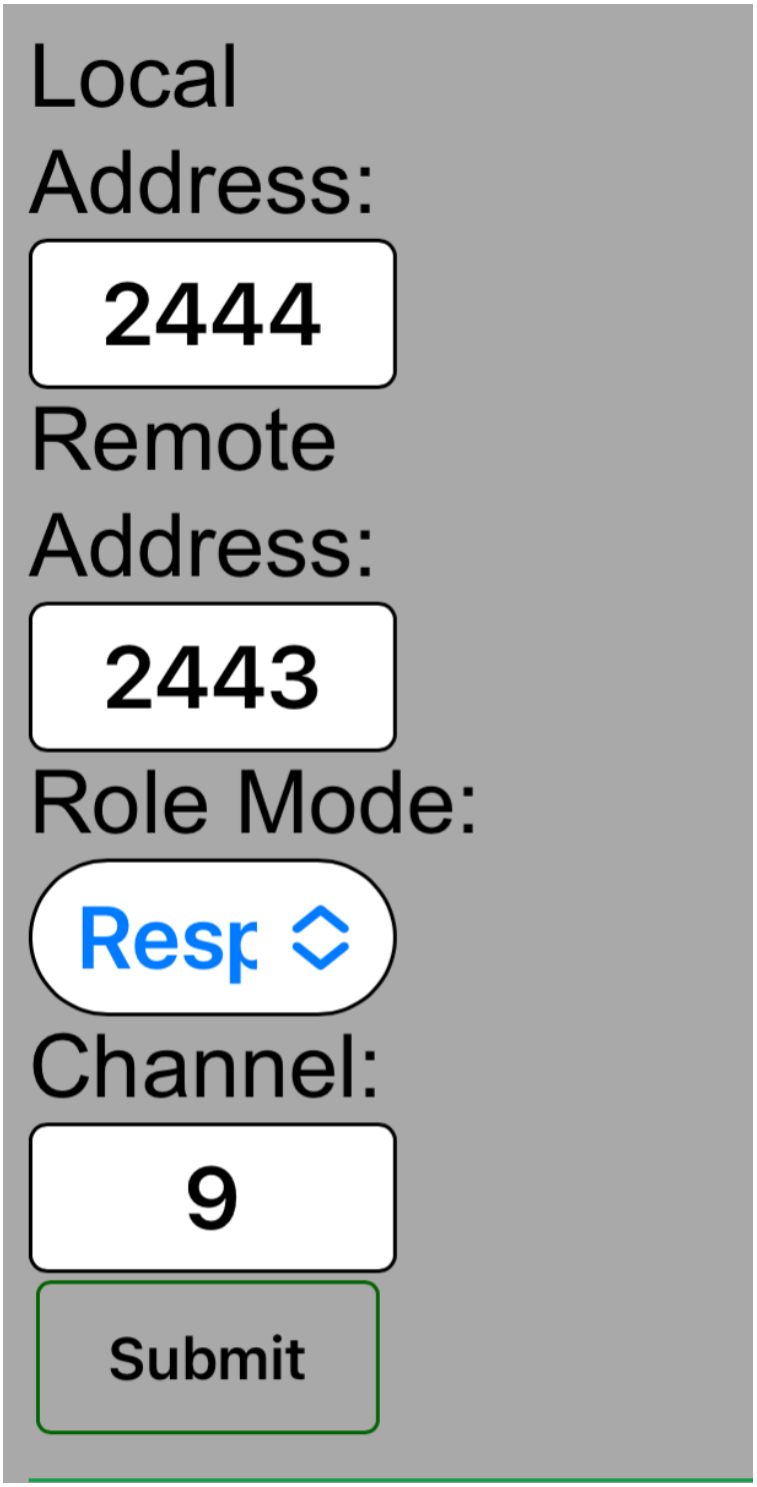
RF Page.

The RF page is to setup the RF COMS. This is done at the Factory.
If this needs to be done please consult the factory for the correct settings.

Open the menu and select RF



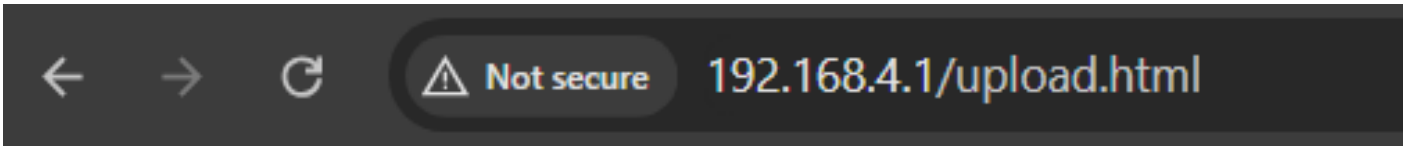
When the page is open you will get this.



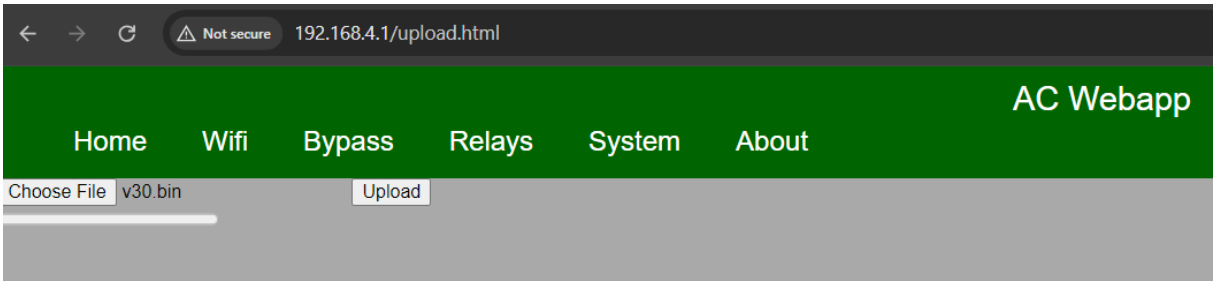
FIRMWARE UPDATE over wifi

You can upload a new firmware over the wifi. This web address will have to be manually typed in on your browser.

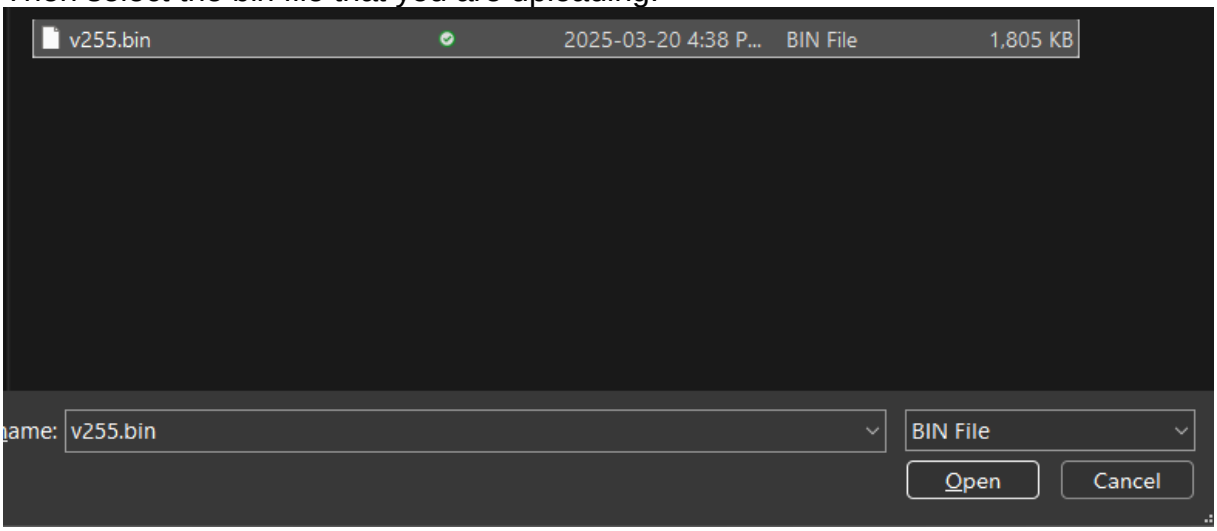
Please open the browser and type this address.



Then this web page will open

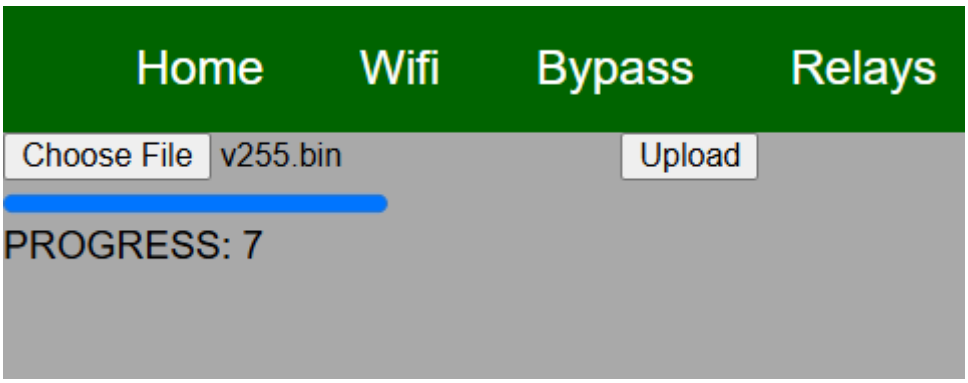


Click Choose file.
Then select the bin file that you are uploading.

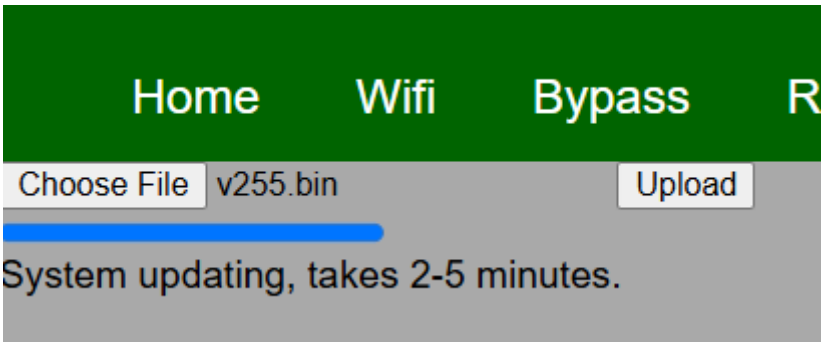


Then Click upload

Then you will see the blue line fill in and the progress will start going up.
DO NOT TURN OFF POWER



Once it is done the system will start to update itself. This could take 2-5 min.



Once the update is done the Yellow LED on the unit will turn on.
This means its writing the new config files and then the yellow light will go out.
Then the system will boot up into the new program.

DANGER

ELECTRIC SHOCK

- Be sure to remove ALL power from ALL devices before connecting or disconnecting inputs or outputs to any terminal or installing or removing any hardware.
- Be sure to connect the grounding wire to a proper ground.

Failure to follow this instruction will result in death, serious injury, or equipment damage.

WARNING

FAILURE OF OUTPUTS

- If outputs should fail, outputs may remain on or off. Where personnel and or equipment hazards exist, use appropriate safety interlocks.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

7 Technical Specifications

7.1 General Data

Frequency 6240.0 MHZ to 8000.0MHz power 1.0 mW

UWB Device

FCC/IC listed

7.2 Electrics/electronics

Function	Description
Digital inputs	• 3 optical isolated inputs • 120VAC input
Relay outputs	• 4 change-over relays • galvanic insulated • max 250Vac - 3A
Supply	• 90-230Vac ± 10% • optional 100-240Vac
Power consumption	• max 6W

7.3 Mechanical data

Function	Description
Dimensions	• 6.13 x 4.63 x 2.44 in / 155.70 x 117.60 x 61.98 mm
Mounting	• Thur hole
Weight	• 0.6 lbs
Housing	• PC/ABS

7.4 Ambient data

Function	Description
Temperature range	• operational : -15°C to +60°C • storage : -40°C to +85°C
Relative Humidity	• 10 to 95% (without condensation)
protection	• Nema 4X IP68

8

WIRING

Wire number	Function
1	120V L
2	120V N
3	Relay 1 Common
4	Relay 1 output
5	Relay 2 Common
6	Relay 2 output
7	Relay 3 Common
8	Relay 3 output
9	Relay 4 Common
10	Relay 4 output
11	120VAC input
Green/yellow	Earth Ground