RAVEN

Hublet Installation Manual

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1. Introduction

This document provides instructions for hardware installation, network connection, and device resets for the Raven Hublet. In addition, it also includes detailed information on sensor wiring.

Sensor connections to the Hublet will allow the Raven system to determine the uptime of your machine and track part output. There are four possible input signals that can be tracked.

The input signals fed to the device must be 24V digital inputs. These can either be a continuous signal to indicate "machine is running" or pulsed signals to represent a completed part/cycle or rejects.

Rejects can be on any of the unused channels but should be a 24V pulsed signal. If rejects can't be counted directly then they can be calculated by comparing the difference in counts at two different points on the line.

Note:
Pulse width should be 50ms or greater.

For high-speed processes (>1 unit/min) only the pulsed signal for part counts is needed. It should be connected to **Port 1: Channel 1** and the Raven system will determine machine uptime from the pulses.

For low-speed processes (<1 unit/min), a second signal should be added to give a continuous high signal while the process is active. The machine active signal should be connected to **Port 1: Channel 1** and the pulsed part count should be connected to **Port 1: Channel 2**.

Configuration 1 – Uptime

Port 1
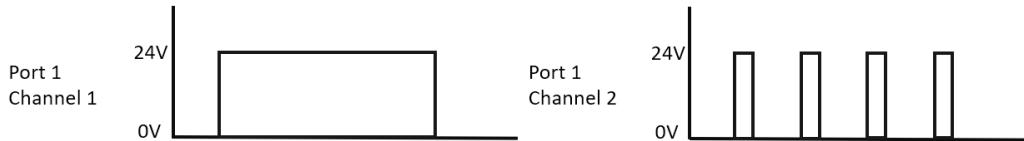Channel 1

24V

0V
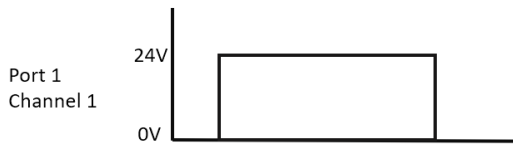
Configuration 2 – Pulsed Part Count (software determines machine uptime from the pulses)

Port 1
Channel 1

24V

0V
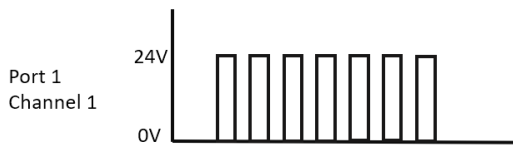
Configuration 3 – Uptime and Pulsed Part Count

Port 1
Channel 1

24V

0V

Port 1
Channel 2

24V

0V

2. Hardware Installation

2.1 Connecting the Power

The power connection to the Hublet can be via the included 120V plug-in power supply or a 24V supply point from the machine being monitored. The cable shown below can be used to provide the 24V power to the Hublet from the machinery being monitored if you choose that option. Power must be continuously supplied to the Hublet to ensure continuity of data collection.

Cable for providing 24V power to Raven Hublet 2.0 from a point on customer machine.

**Use the appropriate connector at this end**
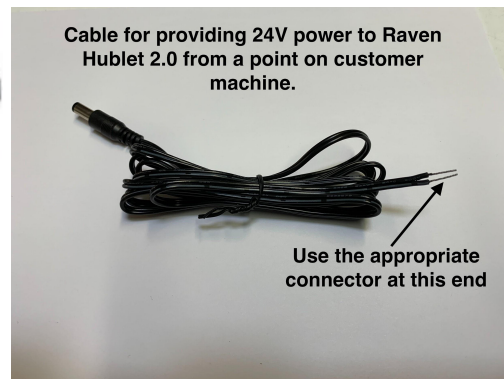
Note:
New devices will power up immediately as soon as power is connected. Reused devices that have had their batteries drained will require 10-15 minutes to charge before they boot up.

2.2 Connecting the Sensors

The signals from the machine to Hublet are delivered through RJ45 connections. These are the typical ethernet type connections for CAT5/6 data connection ports.

There are two ports on the Hublet, each port can receive 2 digital signals. Port 1 has the connections for Channels 1 and 2 and port 2 has the connections for Channels 3 and 4.
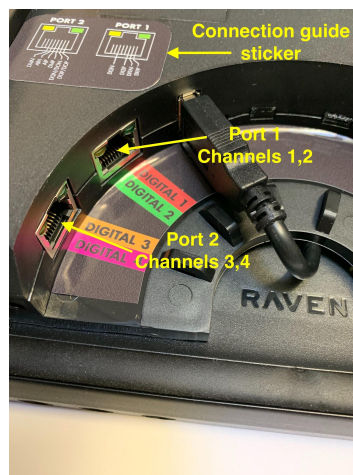
It is recommended using a minimum 24 AWG twisted pair ethernet CAT5/6 wire type cable.

These CAT5/6 cables with RJ45 connectors already installed and tested can be purchased at any length.

These cables can then be cut off to provide the connection points to the Hublet through the RJ45 connector end and the connection points on the machine by stripping the proper wire pairs and attaching to the signal point (Any type of compatible connector can be used at the machine connection point).

2.2.1 Input Port Connections

RJ45 Pinout
T-568B
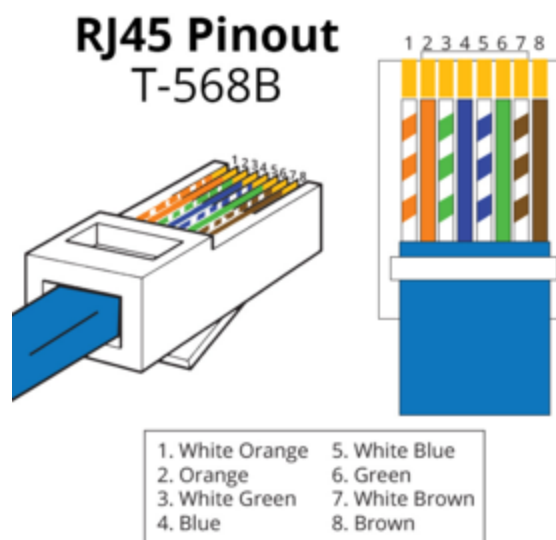
1. White Orange
2. Orange
3. White Green
4. Blue
5. White Blue
6. Green
7. White Brown
8. Brown

PORT 1: Channel 1

The connection points for *Port 1 Channel 1* are wires attached to digital IN positive *pin #1* and digital IN negative *pin #2* on the RJ45. In a typical CAT5/6 ethernet cable these are *+ve white with orange stripe* and *-ve solid orange*.

24V on *pin #1* and ground on *pin #2*.

PORT 1: Channel 2

The connection points for *Port 1 Channel 2* are wires attached to digital IN positive *pin #3* and digital IN negative *pin #6* on the RJ45. In a typical CAT5/6 ethernet cable these are *+ve white with green stripe* and *-ve solid green*.

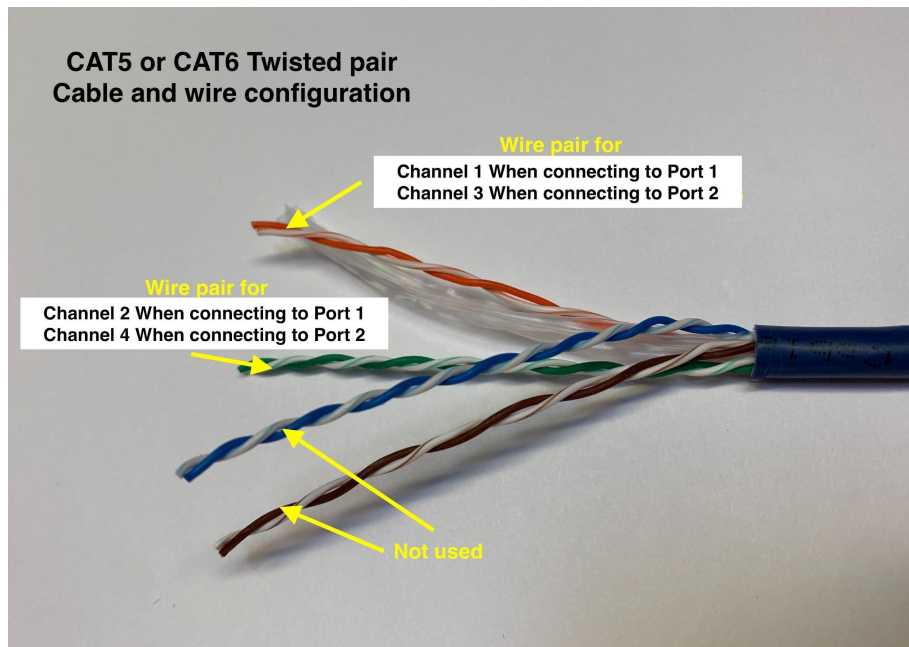24V on *pin #3* and ground on *pin #6*.

PORT 2: Channel 3

The connection points for *Port 2 Channel 3* are wires attached to digital IN positive *pin #1* and digital IN negative *pin #2* on the RJ45. In a typical CAT5/6 ethernet cable these are *+ve white with orange stripe* and *-ve solid orange*.

24V on *pin #1* and ground on *pin #2*.

PORT 2: Channel 4

The connection points for *Port 2 Channel 4* are wires attached to digital IN positive *pin #3* and digital IN negative *pin #6* on the RJ45. In a typical CAT5/6 ethernet cable these are *+ve white with green stripe* and *-ve solid green*.

24V on *pin #3* and ground on *pin #6*.

CAT5 or CAT6 Twisted pair Cable and wire configuration

Wire pair for
Channel 1 When connecting to Port 1
Channel 3 When connecting to Port 2

Wire pair for
Channel 2 When connecting to Port 1
Channel 4 When connecting to Port 2

Not used

If you are not using a CAT5/6 data cable, you must assemble the wires into an RJ45 connector for signals according to the connections described above.

*Port 1 Channel 1* and *Port 2 Channel 3* are connected to **pin 1 (+ve)** and **pin 2 (-ve).**

Port 1 Channel 2 and *Port 2 Channel 4* are connected to **pin 3 (+ve)** and **pin 6 (-ve).**

2.2.2 Field Wiring

There are numerous options for field wiring, so the best solution will depend on the specifics of the installation. Key points are whether the input signals are coming from a PLC or directly from a sensor and whether the signals are hardwired or galvanically isolated with a control relay/solid state relay.

24V sensor power cannot be supplied directly from the Hublet, so for sensors directly connected to the Hublet or signals coming through a relay, an external power supply must be provided or the Hublet power supply must be spliced. The picture below shows an example of wiring from PLC outputs through relays with an external power supply.
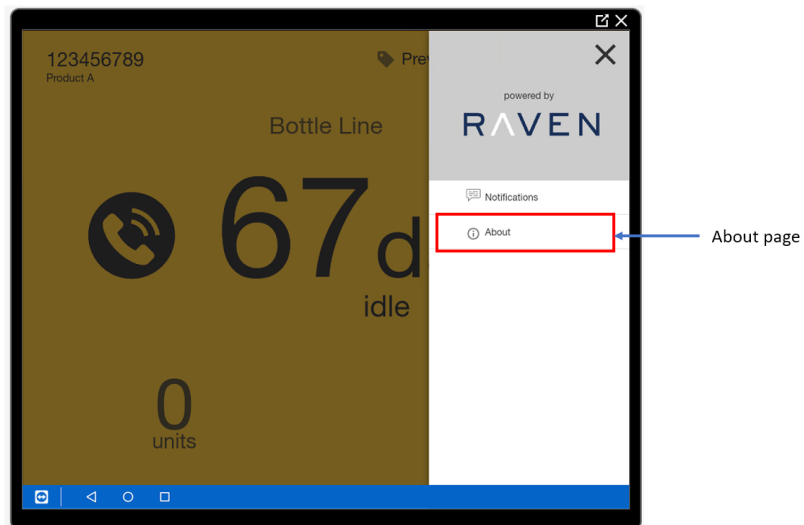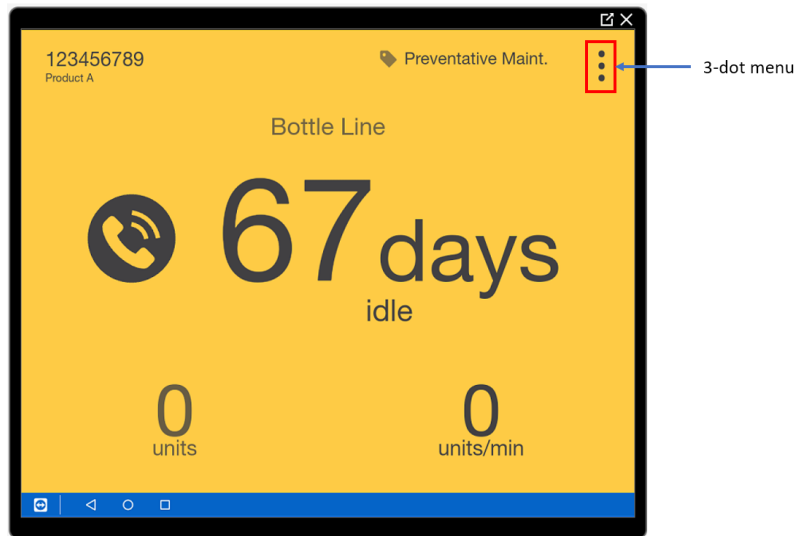
Two Inputs - Uptime and Counts
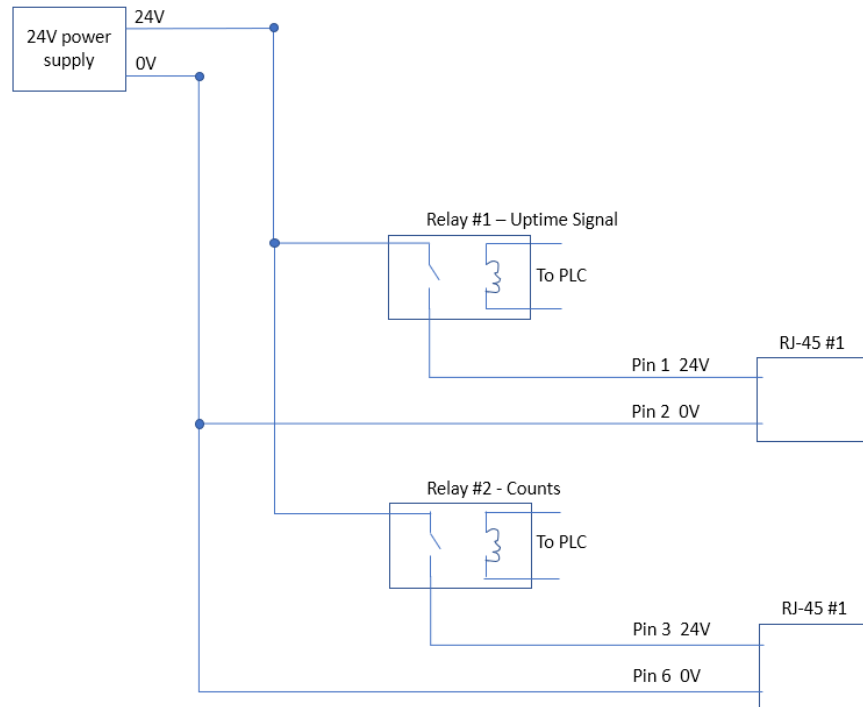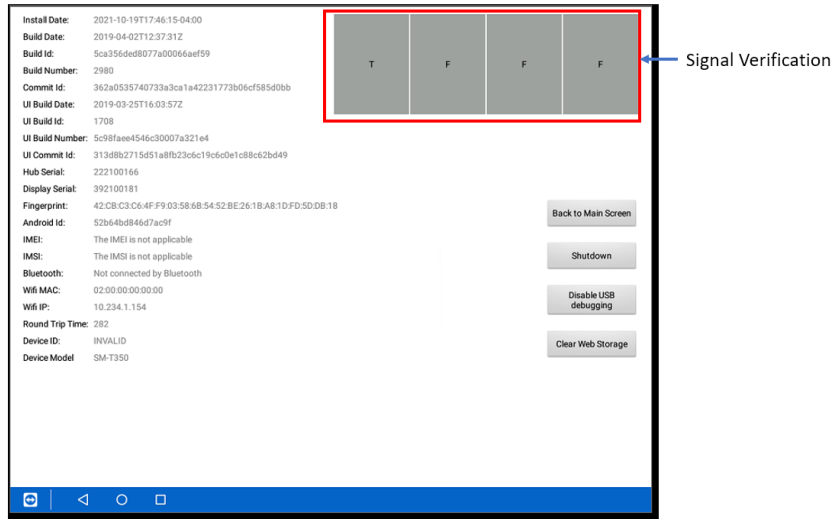

2.2.3 Signal Verification
Input signals can be verified from the Hublet by following these steps:

1. Click the **3-dot** menu in the top right corner of the device.
2. Click **"About"**.
3. Verify signal connection using the **4 grey squares** in the top right corner.
   ○ Each square represents an input channel.
   ○ **"T"** means the channel sees 24V.
   ○ **"F"** means the channel sees 0V.
   ○ Start production and ensure the grey box transitions between **"F"** and **"T"** as expected for signal pulses.

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123456789
Product A

Preventative Maint.

3-dot menu

Bottle Line

67 days

idle

0 units

0 units/min

123456789
Product A

Pre...

Bottle Line

67 d

idle

0 units

powered by

RAVEN

Notifications

About

About page

Signal Verification

2.3 Mounting

The device has been designed to be mounted onto a Rocketfish mount, on the wall or side of equipment, or to a VESA mount device (the device complies with VESA standards for mounting).

2.3.1 To Mount to a Rocketfish

Prepare the back cover by mounting the rocket fish on the back cover with 2 6-32 screws and washers (supplied) as shown below.

Back Cover
Mounting Holes

Rocket fish mount

6-32 Washers

6-32 Screws

Rocket fish mounted to
Back Cover with 2 x
6-32 screws and washers

## 2.3.2 For Mounting on Wall, on Side of Equipment or VESA Mount Device
Prepare the back cover as below by drilling out the 4 holes marked as raised circles from the inside surface of the Back Cover as shown below.
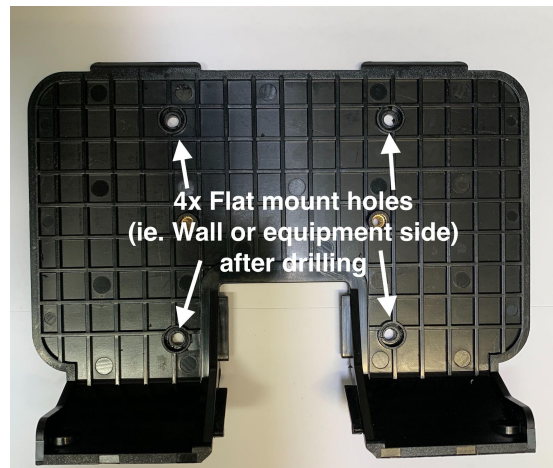
2.3.3 Cable Guard Installation

After the connections to the device through the cable guard are completed as shown below.

Wires connected and through the Cable guard
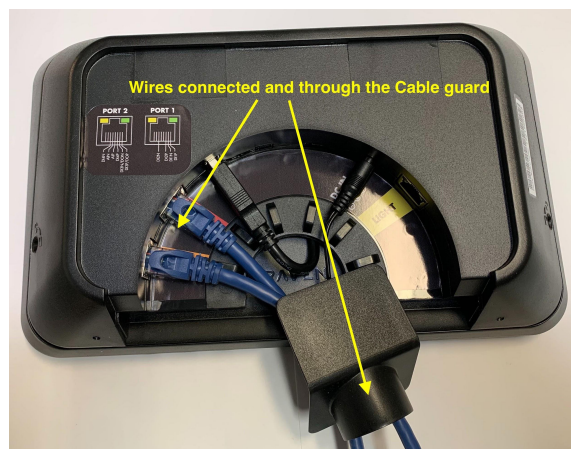
2.3.4 Cable Pipe Installation

Note: The following steps can be done at this point or after the device is mounted in the final position and after the back cover has been mounted.

Obtain the cable pipe supplied with the device at the bottom of the box.

Cable pipe (Supplied)

Open it up from one end.

OPened up at the end

Still open

Place all wires inside the pipe and close it all the way along

Closed

Continue to open along the entire length in the same manner and place all wires inside the opened pipe and re-close the pipe with wires inside. Once the pipe is closed with the wires inside, insert the pipe into the cable guard.


LIGHT

Slide this assembly down a bit to give you room to install onto the back cover>

Once the pipe is completely closedPut pipe all the way into the Cable Guard

2.3.5 Mounting the Back Cover onto the Device

To mount the back cover onto the device or the device onto the back cover in the case where the back cover is on the wall, side of equipment or on a VESA mount, line up the two tabs on the back cover with the receptacles on the back of the device and put the two parts together. The back cover will fit in the back cavity of the device.

Tighten the two socket screws using an Allen key drive (size 7/64" or TORX T-15).
Do not overtighten. Tighten until the screw has seated and then 1/4 of a turn more (Approximately 4-6 lb-in of torque).
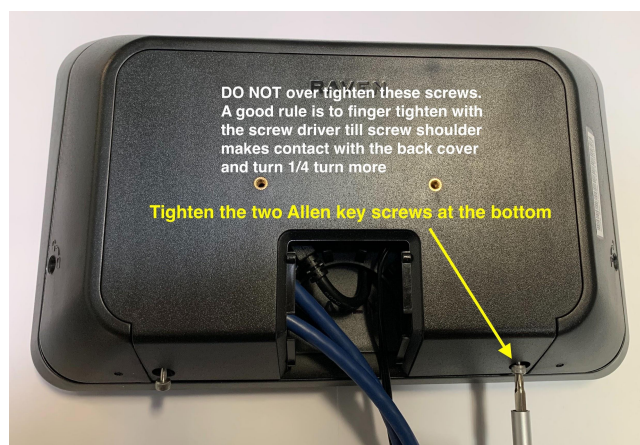
Once the back cover is screwed onto the device in all configurations, you can push the cable guard and pipe assembly up the wires and onto the back cover.

The device and back cover can be assembled using the same procedure no matter which configuration is used for mounting.

2.3.6 Cable Guard Removal

To remove the Cable Guard for any reason, pull the pipe out and slide it down the cables, place your finger inside the Cable Guard opening, push up and pull outward at the same time, see below.

To remove put your finger or a screw driver in the end and push up from inside in the white circle area as shown and pull the guard off. This action disengages the lock.

Cable guard being pulled off after pressing up from inside and pulling outward.
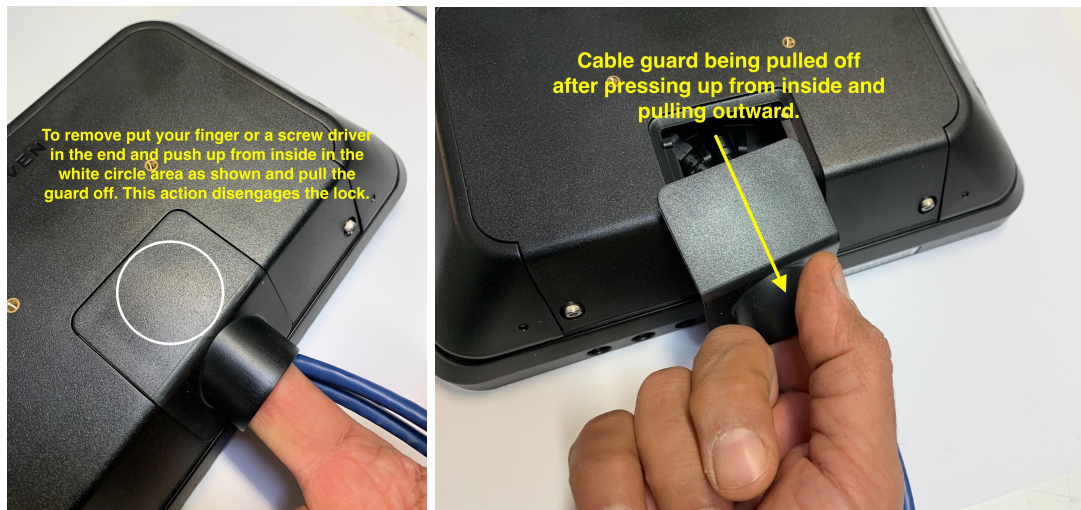
3. Network Connection

The Hublet can only be connected to a network via WiFi. You can use this procedure to connect the Hublet to the network.

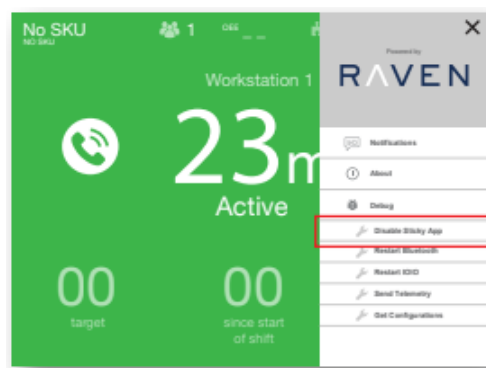**Step 1** - Tap the **three dots** on the top right corner to bring up the side menu.
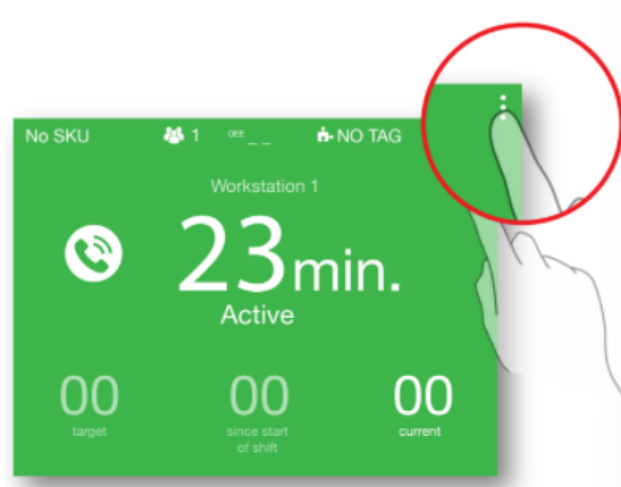
Step 2 - Tap the **Raven logo** quickly and repeatedly until you see additional options.
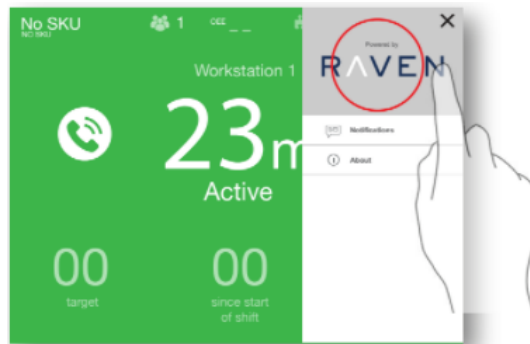
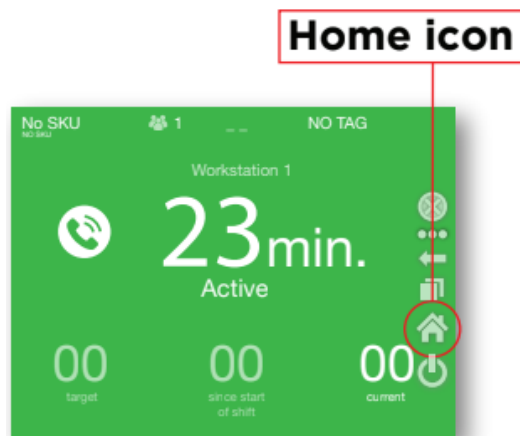**Step 3** - Tap on **Disable Sticky App.**

Step 4 - Exit the menu by tapping the **"X"** in the top right-hand corner. Swipe inward from the rightmost edge of the screen to access the Android toolbar.

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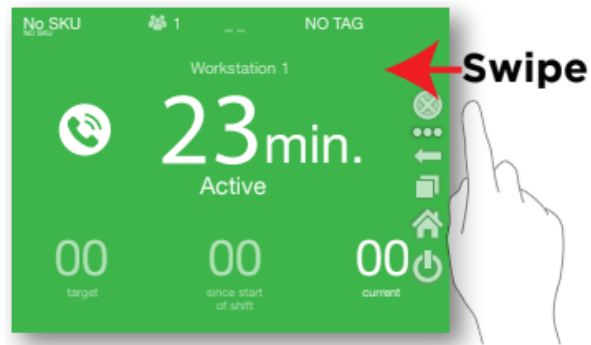
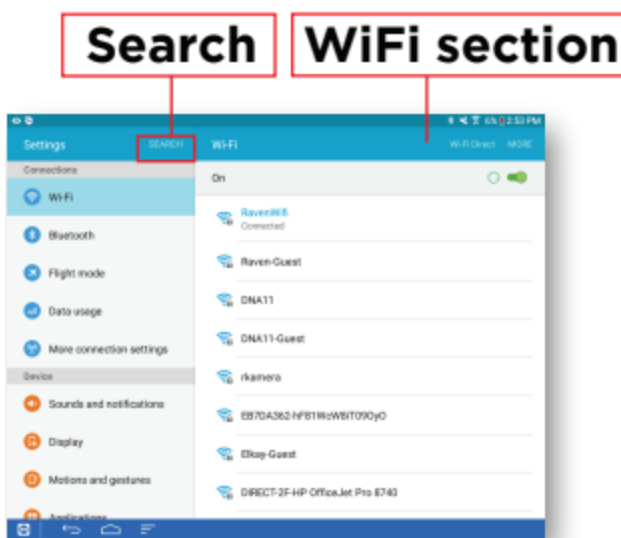**Step 5** - Tap the **Home** icon to minimize the Raven application.

**Step 6** - Open the **Settings** application (indicated by a gear symbol).

Step 7 - Select within the **WiFi section** and connect to your WiFi SSID. If the WiFi toggles off and on too quickly to input the password, tap the **Search** button and input the password into the text box. Select the text with a long-press of the field, then paste it into the password field in the WiFi section.
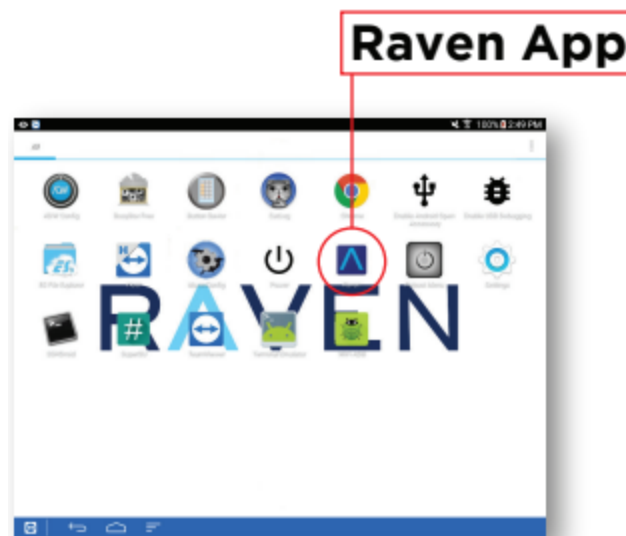
RAVEN

Step 8 - **Swipe from the side** to bring up the Android toolbar. Tap the **Home** icon to minimize Settings.
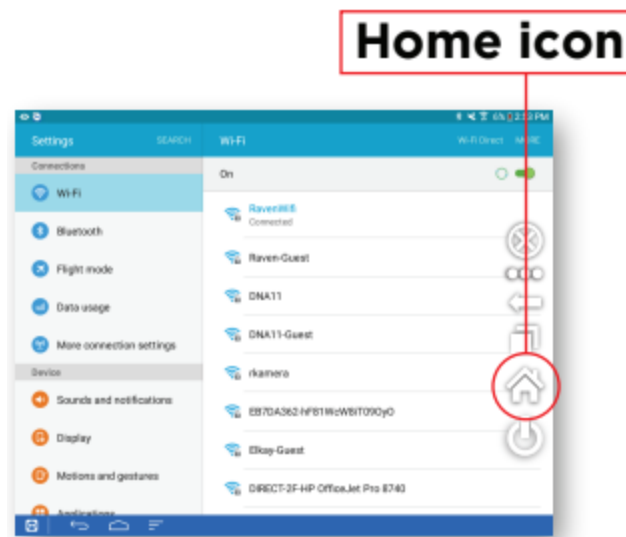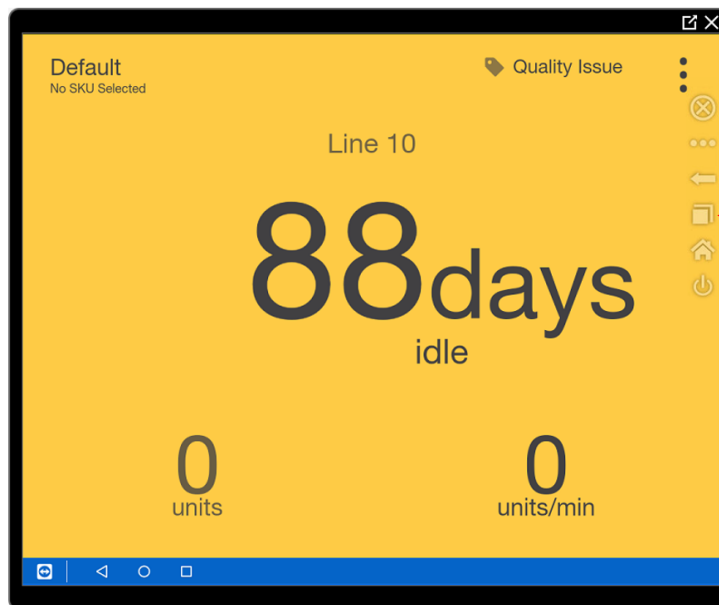

Step 9 - Open the **Raven** application. Your device should now be connected to the WiFi network.
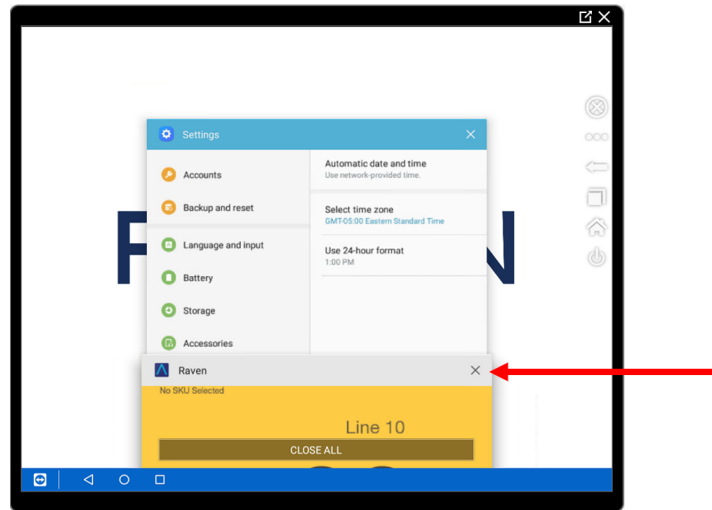
4. Resetting the Device

4.1 Software Reset
1. Swipe inwards from the right side of the screen towards the center of the display. This will cause the **Android app control bar** to appear.

2. Click the **square app switcher** icon. This will display the applications running.

3. Tapping the **"X"** or swiping the Raven app should close it. The app should automatically restart.
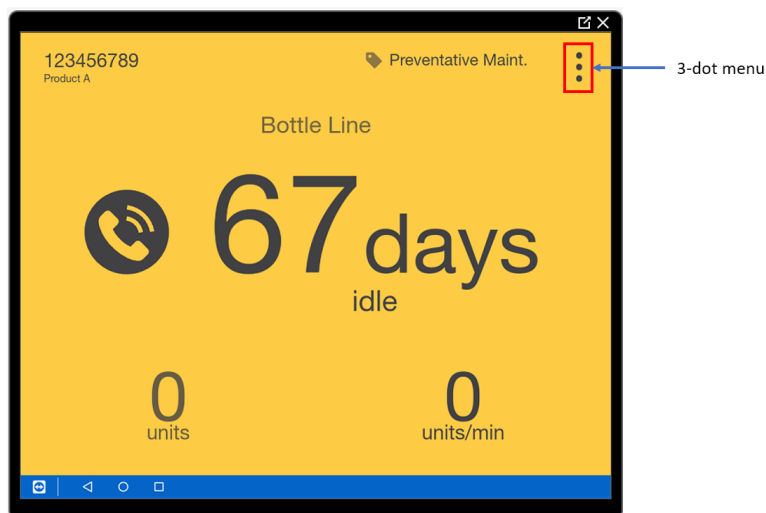
4.2 Hardware Reset

Follow the below steps to restart the device. This will power it off completely. The device should automatically reboot if it is connected to power.

1. Click the **3-dot** menu.

3-dot menu

2. Click **"About"**.

About page

3. Click **"Shutdown"**.

Shutdown/Restart