



AgSense® Mobile Application

User Guide for Version 1.0



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Overview

Introduction

This guide is designed to help users manage their AgSense hardware by taking a detailed look into the AgSense mobile application. Below you will find a description of available features, information about navigating the app, and walkthroughs complete with screenshots. This version of the user guide was compiled for version 1.0 of the app.

What's new in this version?

AgSense mobile version 1.0 contains all the great features of the WagNet Mobile application in a newly designed user interface. Some of the other exciting improvements include the following:

- A centralized control panel for monitoring and controlling AgSense devices
- A queueing system for sending customized groups of commands
- A redesigned interface for managing speed, endgun, and aux tables
- An intelligent flow that allows users to see the most important data from their devices at a moments notice

Compatibility and requirements

The AgSense app is available for both the iOS and Android platforms. Both versions of the app are similar in appearance and function. Because of this most of the screenshots found in this guide will show the app on the iOS platform. If a significant variation exists between the two platforms a separate screenshot will be included to indicate the difference.

iOS Platform

This application is compatible with all iOS devices running iOS 8 or iOS 9. A device's software version can be determined in the Settings app (General > About > Version). Compatible devices include the following:

- iPhone 4s, 5, 5c, 5s, 6, 6 Plus, 6s, 6s Plus
- iPod Touch 5th Generation, 6th Generation
- iPad 2, 3, 4, Air, Air 2, Pro, Mini, Mini 2, Mini 3, Mini 4

Overview

Android Platform

This application is compatible with all Android devices running Android 2.3.3 Gingerbread or later. For best performance Android 5.0 Lollipop is recommended. An Android's software version can be determined in the device settings (similar to: Settings > About Device > Android Version).

AgSense Account and Hardware Requirements

An AgSense account (username and password) is required in order to login with user credentials. A demo account is provided for temporary access for users without an AgSense account.

Monitoring and controlling remote devices with AgSense mobile requires the installation of compatible hardware. Here is a complete list of compatible remote devices:

- AgSense CommanderVP™
- AgSense Field Commander®
- AgSense Precision Link for T-L Irrigation Co.®
- AgSense Crop Link®
- AgSense Aqua Trac Lite and Aqua Trac Pro
- Valley® TrackerSP®

Get Started

Log in

The login screen is presented when the application is first launched. To access a user account, begin by entering the account's username and password into the textfields indicated below. Next touch the button labeled "Login" to log in. Switching the "Remember Me" toggle to the ON position before touching the "Login" button will cause the app to automatically sign in next time the login screen is visited. The button labeled "Demo" provides access to the AgSense demo account and is intended for temporary use for users without an AgSense account.



Get Started

AgSense mobile navigation tabs

Before diving into all of the great features of AgSense mobile it is helpful to understand the basics of navigating the app. At almost any point in the app the user can find a bar containing commonly accessed tabs. This bar appears at the bottom of the screen if using an iOS device. On an Android device this bar will appear near the top. Each of the tabs listed below can be accessed with a single touch.

List Tab

The list tab displays all of the user's units together in one complete list. Each row in the list represents a different device. To access all of the data and controls for a particular device simply select the device in the list.

Device Tab

The device tab displays all of the data and controls for a specific device. This is the centralized location for monitoring device data, sending commands, managing tables, and editing configuration parameters.

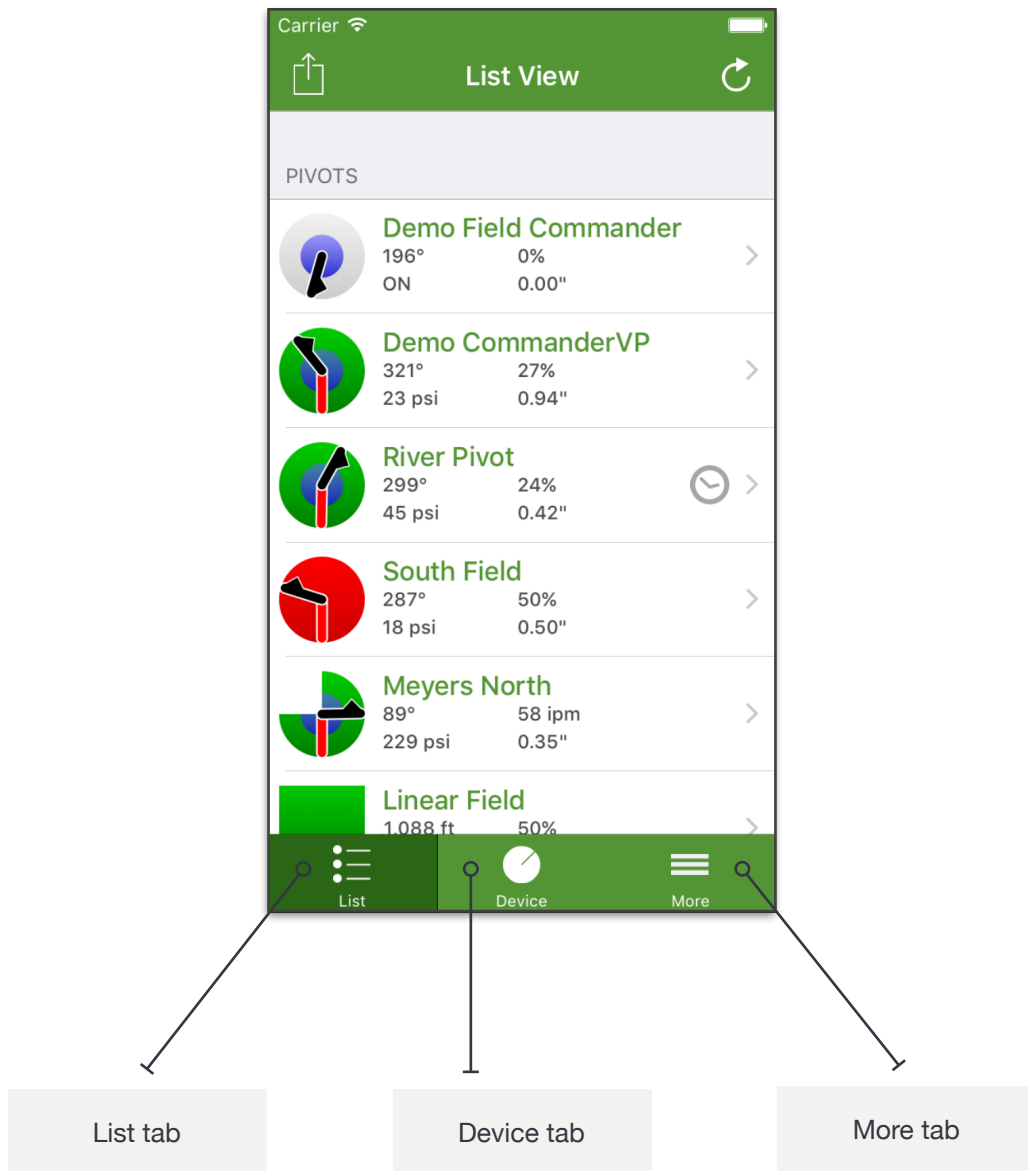
More Tab

The more tab contains a log out button. Check back here in the future for additional useful features.

Get Started

Navigate AgSense mobile on iOS

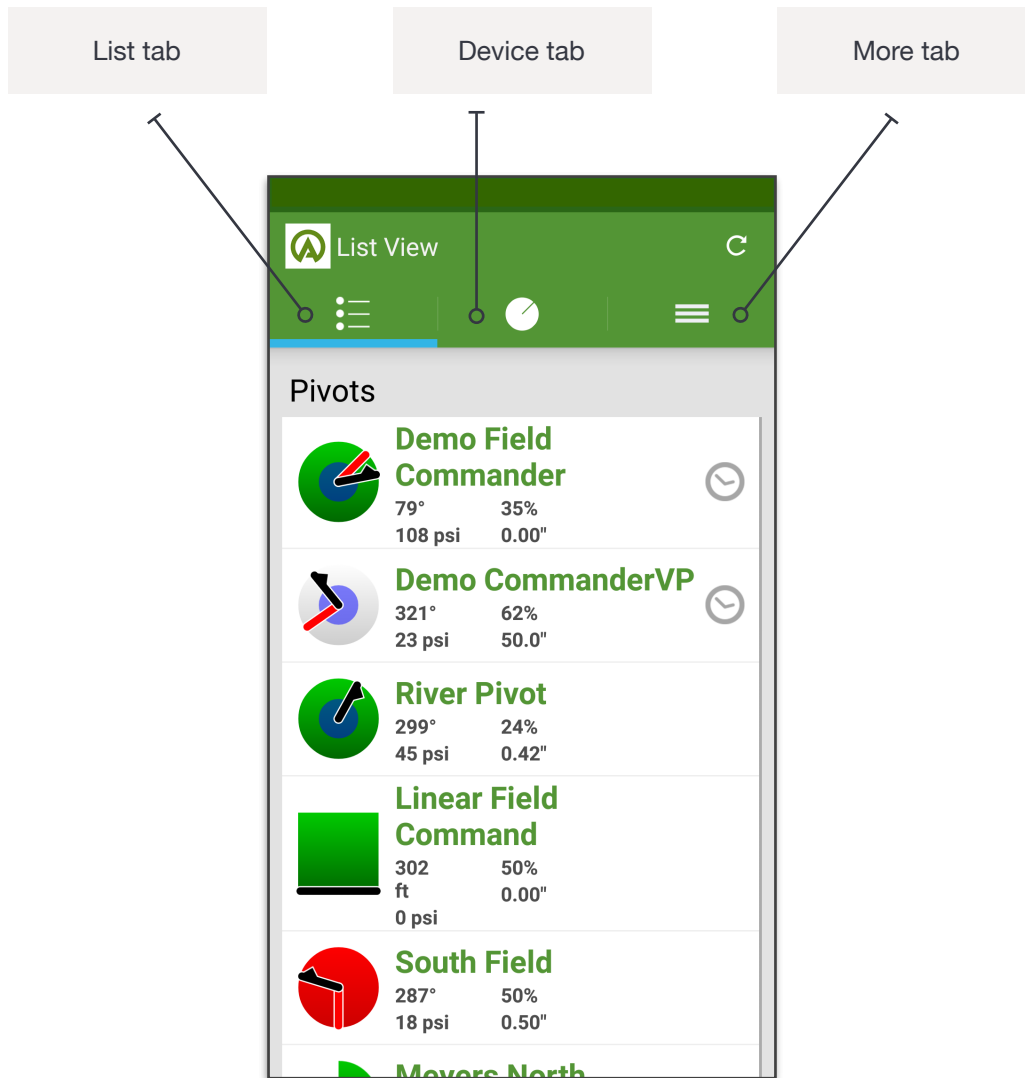
On an iOS device the quick access tabs can be found at the bottom of the screen. Consult the screenshot below for more details.



Get Started

Navigate AgSense mobile on Android

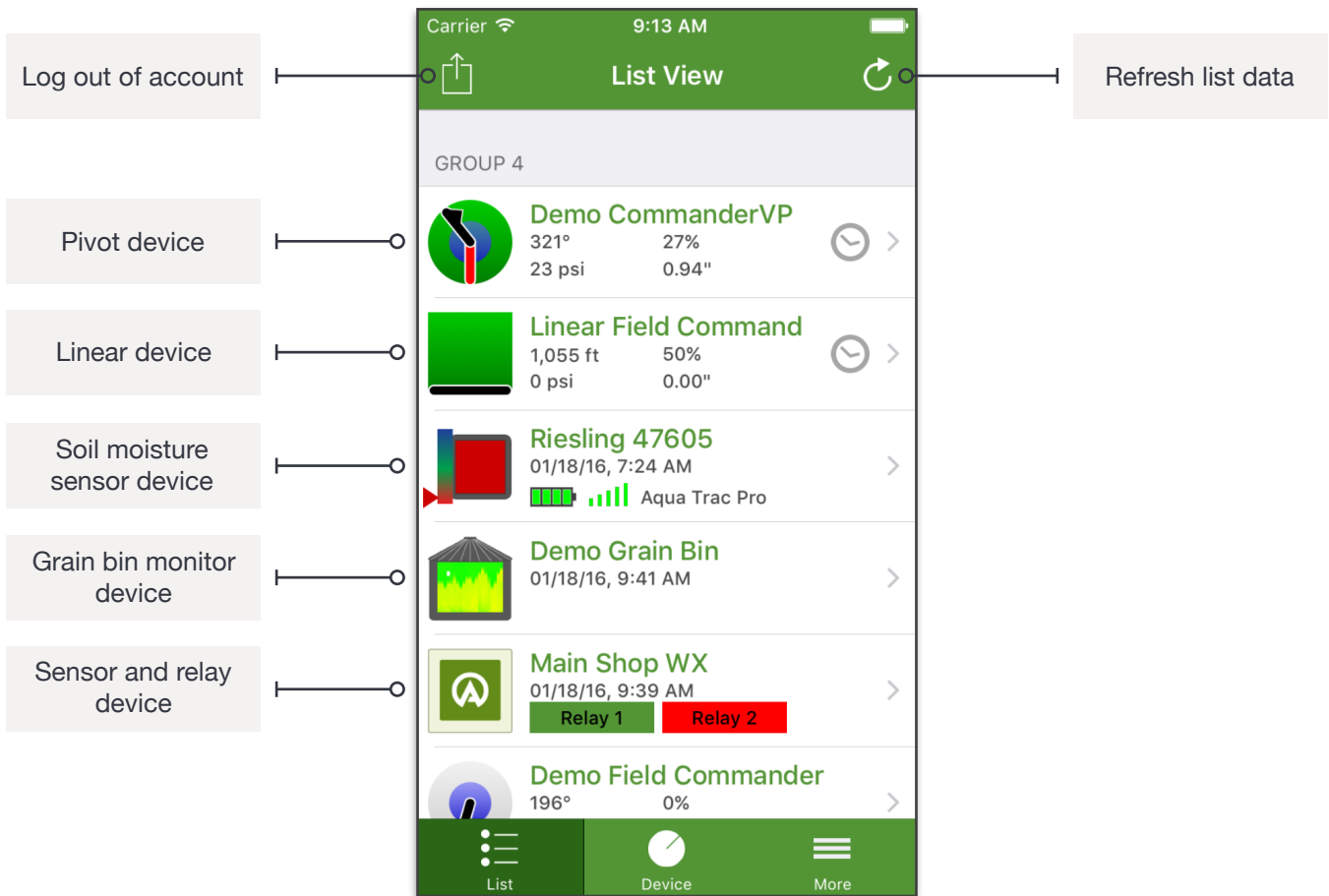
The quick access tabs are located near the top of the screen on an Android device. The screenshot below shows an example of these tabs.



View All Devices

List view

The list view provides AgSense users with a bird's eye view of their entire assortment of AgSense-enabled devices. Each device is displayed in its own row along with its most important data. Devices are ordered and separated into their configured groups. To modify the order and grouping in which devices are listed log onto the WagNet web control panel (www.wagnet.net).



View All Devices

List view device types

There are several categories of AgSense devices—each with their own unique representation in the list view. This ensures that at any given moment the most important data can be viewed at a glance.

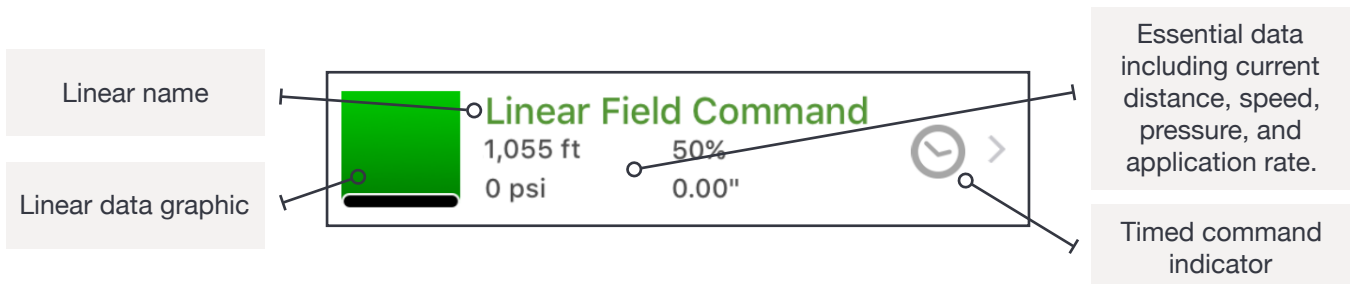
Pivot device

All pivot type devices will display their configured name next to a pivot graphic representing the device's current state. Below the pivot's name is a list of its most important data. If the device has a timed command scheduled to occur at some point in the future it will be indicated by an icon on the right.



Linear device

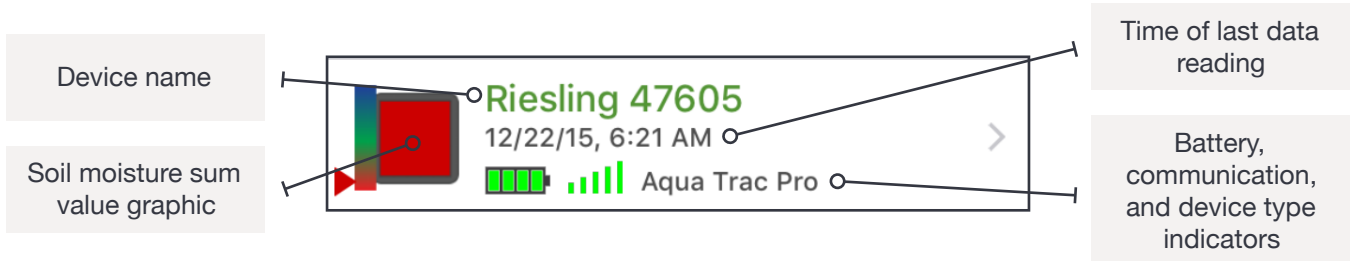
On the list view linear devices appear similar to pivot devices in that they display the name, data graphic, essential data, and timed command indicator. Differences include the rectangle shaped data graphic and the listed data displaying distance instead of current angle.



View All Devices

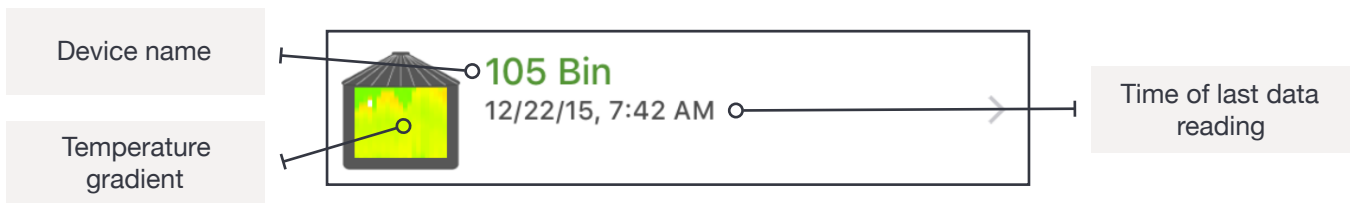
Soil moisture sensor device

Devices configured with soil moisture sensors are displayed in a cell containing the device name, a sum value graphic, the time of the latest data reading, battery and communication indicators, and the device type label.



Grain bin monitor device

Devices configured to monitor grain bin temperature display the device name, a gradient of the bin's temperature at the time of the last data reading, as well as the data reading time stamp.



Sensor and relay device

Devices configured with weather sensors or another type of sensor not listed above are displayed with their name and the date of their latest data reading. The state of any configured relays is displayed as well.



Understand Device View

Device view tabs

The device view serves as the central location for all data and controls related to a particular device. Each unit on a user's account is given a device view unique to its type, configuration, and current state. Below is a list of all of the possible tabs that can be found on the device view. These tabs can each be accessed near the top of the screen.

Main Panel Tab

This tab contains all of the most important data and controls for operating a pivot or linear device. The device's data graphic is shown here along with a map of its current location. Data including power state, direction, angle, distance, pressure, and speed is displayed as well. The main panel also gives users an interface for sending common commands like stop and start. This screen also houses other applicable components for controlling direction, pump state, speed, and end guns.

Data Graph Tab

The graph tab is the best place to access a device's historical data. Here various pieces of device and sensor data are displayed together on a graph. The variable time frequencies and selectable data cells allow users to see only the data applicable to their operation.

Device Info Tab

Here the user can find a summary of other device information including a list of active and recent commands, cycle data, and device stats.

Device Configuration Panel

This panel contains a list of options for setting up and modifying the way a device functions. Tasks such as naming a device, setting graphical limits, and configuring sensors can be completed here.

Soil Moisture Data Tab

Devices with soil moisture sensors can access a summary of their sensor data in this tab.

Navigate Device View

Grain Bin Data Tab

Devices that monitor grain bin temperature can see their current temperature data here. Grain bin data can be organized by sensor or displayed as a gradient.

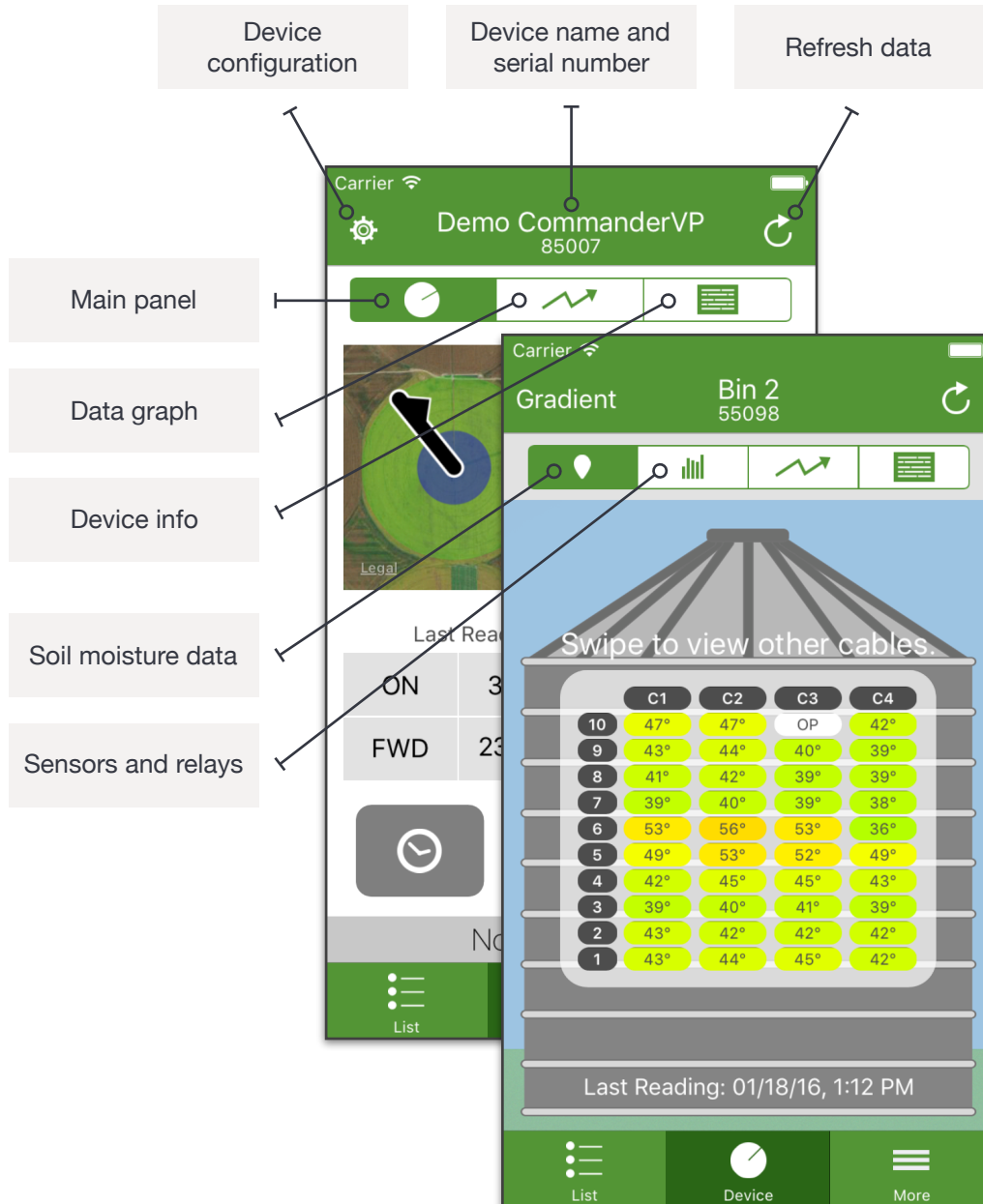
Sensors and Relays Tab

This tab contains a list of all sensors and relays configured on a Crop Link or Aqua Trac device. This is useful for gathering information about configured soil moisture sensors, rain buckets, flow meters, pressure transducers, and others sensors.

Understand Device View

Device view on iOS

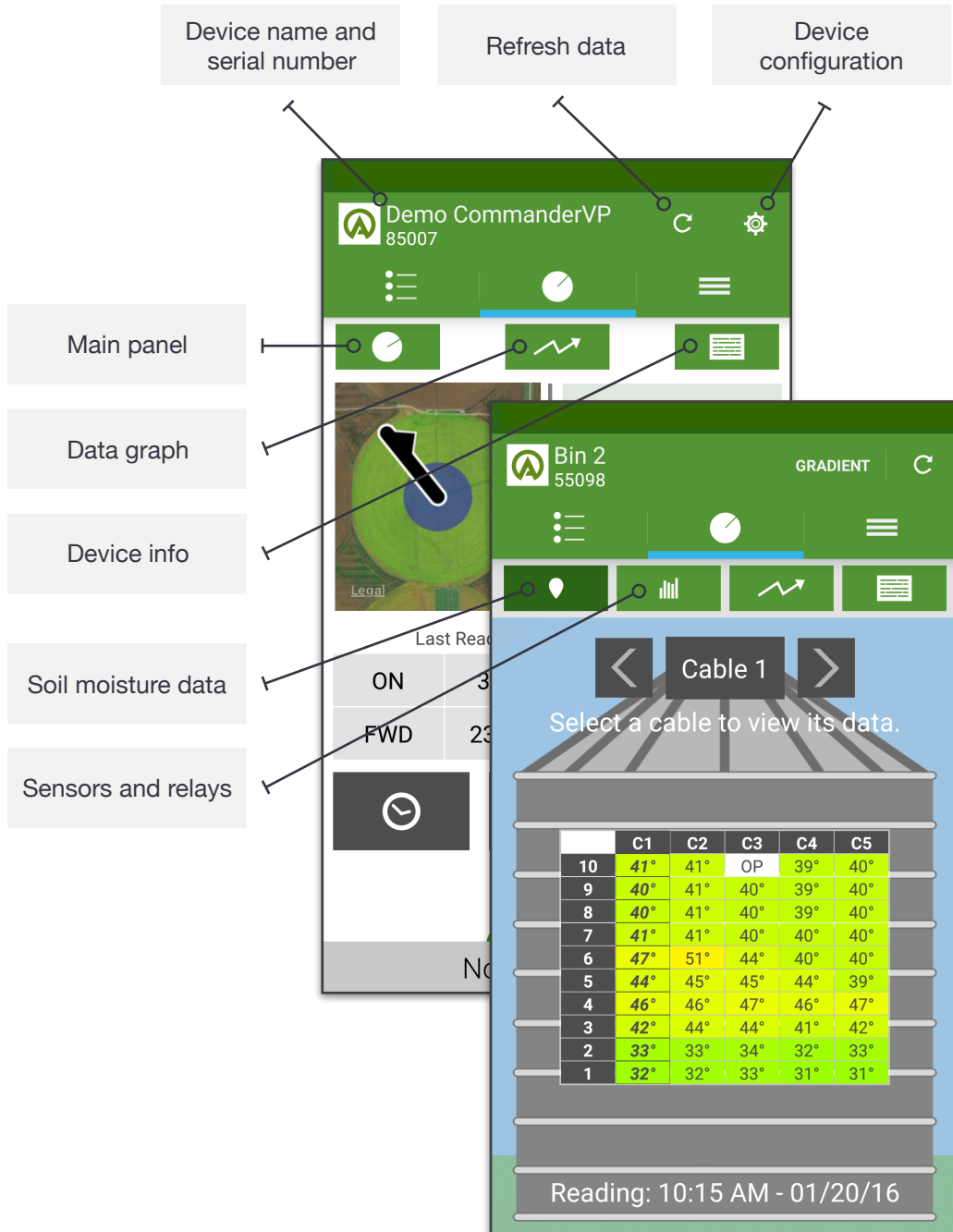
Each of the tabs listed above can be found near the top of the screen. Below is an example of the device view as seen on an iOS device.



Understand Device View

Device view on Android

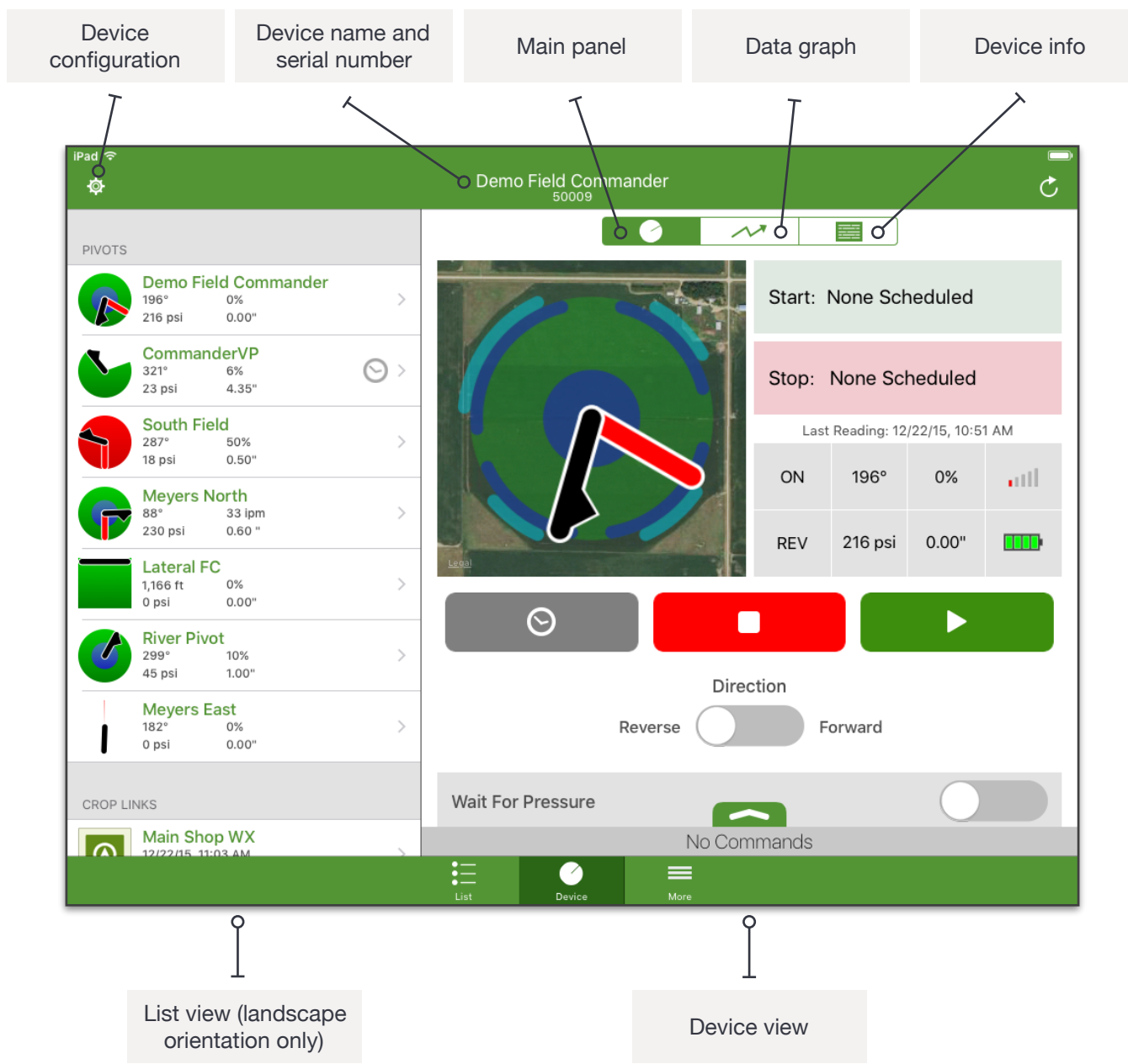
Here is a screenshot of the device view shown on an Android device.



Understand Device View

Device view on a tablet

The AgSense mobile application for tablet-style devices appears very similar to the application ran on phone-style devices. One exception is that tablets with large screens will be able to view both the list view and the device view on a single screen in landscape orientation. The screenshot below shows the device view on a tablet in landscape.



Monitor Pivot and Linear Devices

Data graphic

Upon reaching the device view users will notice the data graphic near the top left of their screen. This graphic gives users an at a glance take on their device's current state and shows its location on a map. Below is a list of all the data contained within this graphic.

Angle, Distance, and Direction

A device's current position is indicated by the black line seen on the data graphic. The arrow seen at the end of the position line represents the current direction of motion.

Forward direction



Reverse direction



Power State

The power state of a device is represented by the background color of the data graphic. Here are the four possible power states a device can maintain:

- ON — device is powered and in motion
- IDLE — device is powered but not in motion
- OFF — device is not powered
- COMM — device has not communicated for an extended period of time

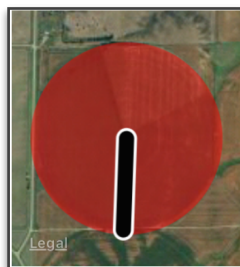
ON



IDLE



OFF



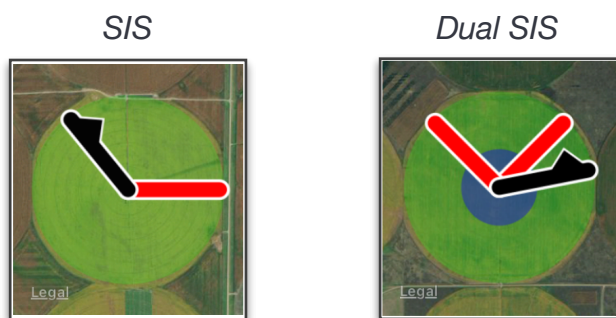
COMM



Monitor Pivot and Linear Devices

SIS

Stop in slot angles are indicated on the pivot or linear graphic with a red line. See the “Control Pivot and Linear Devices” section for more information on SIS and dual SIS options.



Pressure and End Guns

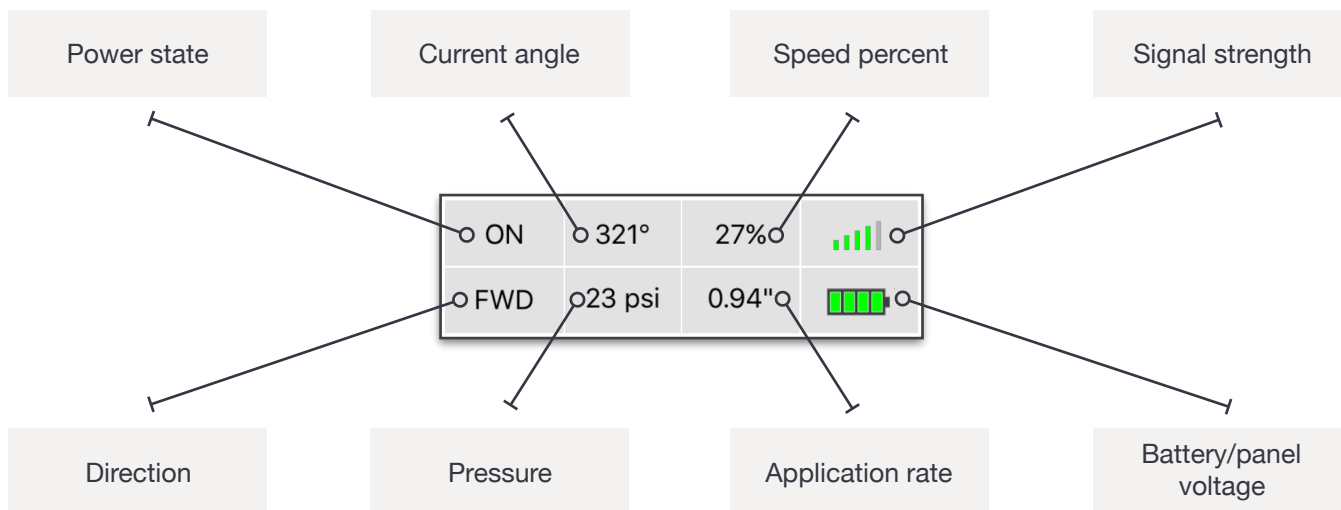
Compatible devices indicate pressure with a blue circle at the graphic’s center. A pressure sensor must be installed and configured to receive this data. Similarly, the angles at which a device’s end gun will become operational are indicated with a blue outline.



Monitor Pivot and Linear Devices

Essential data panel

This box summarizes the most frequently referenced data about a pivot or linear. Depending on a device's configuration and type its data panel may vary slightly from the screenshot below.



Analog and digital sensors

There are many types of analog and digital sensors that can be connected to AgSense pivot and linear devices. The data from these sensors is displayed near the bottom of the device view. Below are some examples of how sensor data is displayed.

Pressure sensor

Analog 1
Pressure: 35.0 psi

Thermistor

Analog 1
Temperature: 88.0°F

Flow meter

Digital 2
Flow Rate: 89.0 gal/min

Rain bucket or ET gage

Digital 1

12hr	24hr	Year
0.52 inches	1.25 inches	8.22 inches

Control Pivot and Linear Devices

Common commands

The next section found on the device view contains various options for sending commands and updating operational states. Note that the user may need to scroll up or down on their screen to locate each of the components in this section and that not all devices are compatible with all of the various commands.

Stop and Start Commands

The stop and start buttons can be used to queue a stop or a start command. Note that in order to successfully send a stop command the current device must be both powered on and running. In order to send a start command the device must be powered on and in an IDLE state.

Stop command



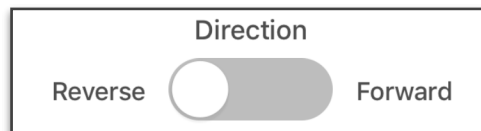
Start command



Direction Control

The direction toggle allows the user to control the device's direction of motion. Touching this toggle will queue a change direction command.

Direction control



Wait For Pressure Control

Switching the wait for pressure toggle to the ON position will command the current device to pressure up before being set in motion. Note that access to this control requires both the ability to monitor pressure and that the "Water required for speed" option is selected in the device configuration.

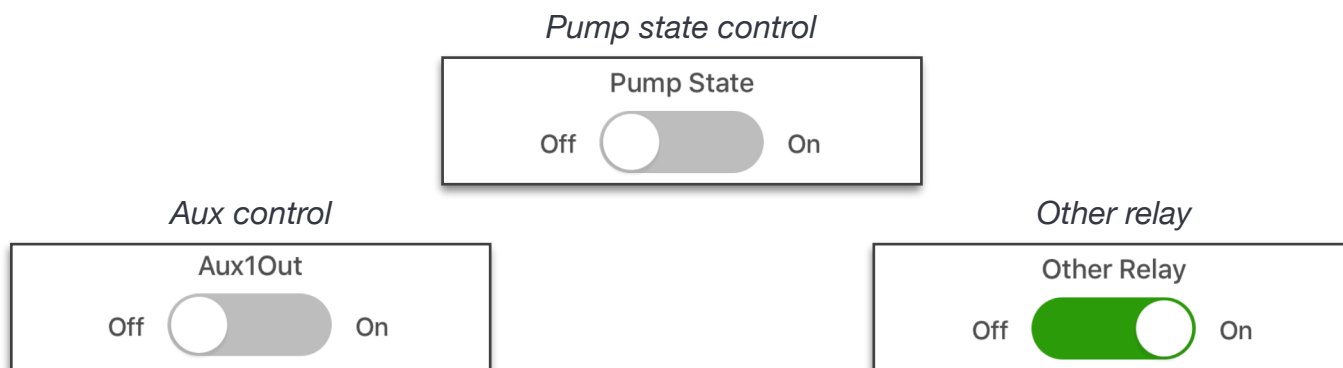
Wait for pressure control



Control Pivot and Linear Devices

Pump, Aux, and Relay State Controls

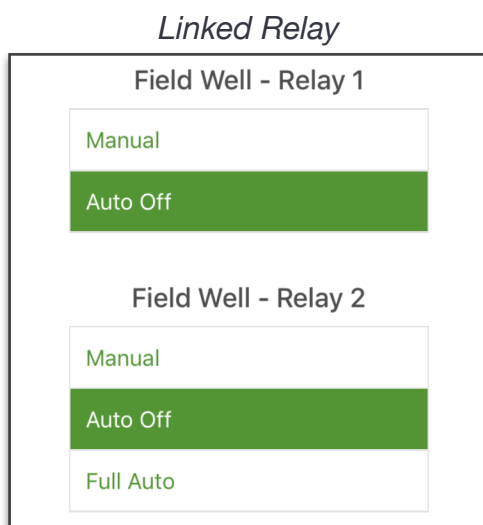
Many AgSense devices offer configurable hardware relays that can be used to control pumps and other auxiliary devices. All of the controllable relays for the selected device will be listed together below the other commands.



Crop Link Relay State Controls

The AgSense Crop Link can be paired with certain pivot and linear control devices. This makes it seamless to control pumps and other auxiliaries remotely. Each linked relay can be configured to behave differently:

- **Manual** — relay must be turned ON and OFF manually
- **Auto Off** — relay must be turned ON manually but will automatically turn OFF when the pivot or linear device stops
- **Full Auto** — relay will automatically turn ON and OFF as the pivot or linear device starts and stops



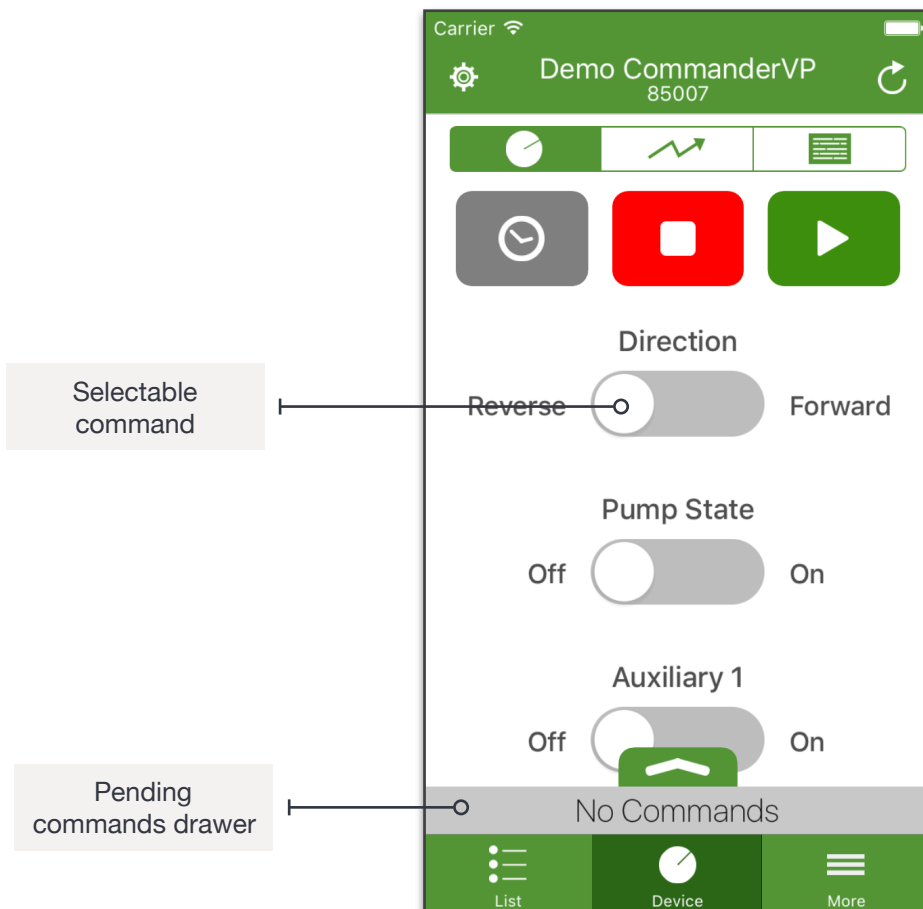
Control Pivot and Linear Devices

Send commands

The AgSense mobile app provides a redesigned interface for sending commands to pivot and linear devices. Users are able to send any grouping of commands in three steps. These steps are described in detail below.

Step 1: Select Desired Commands

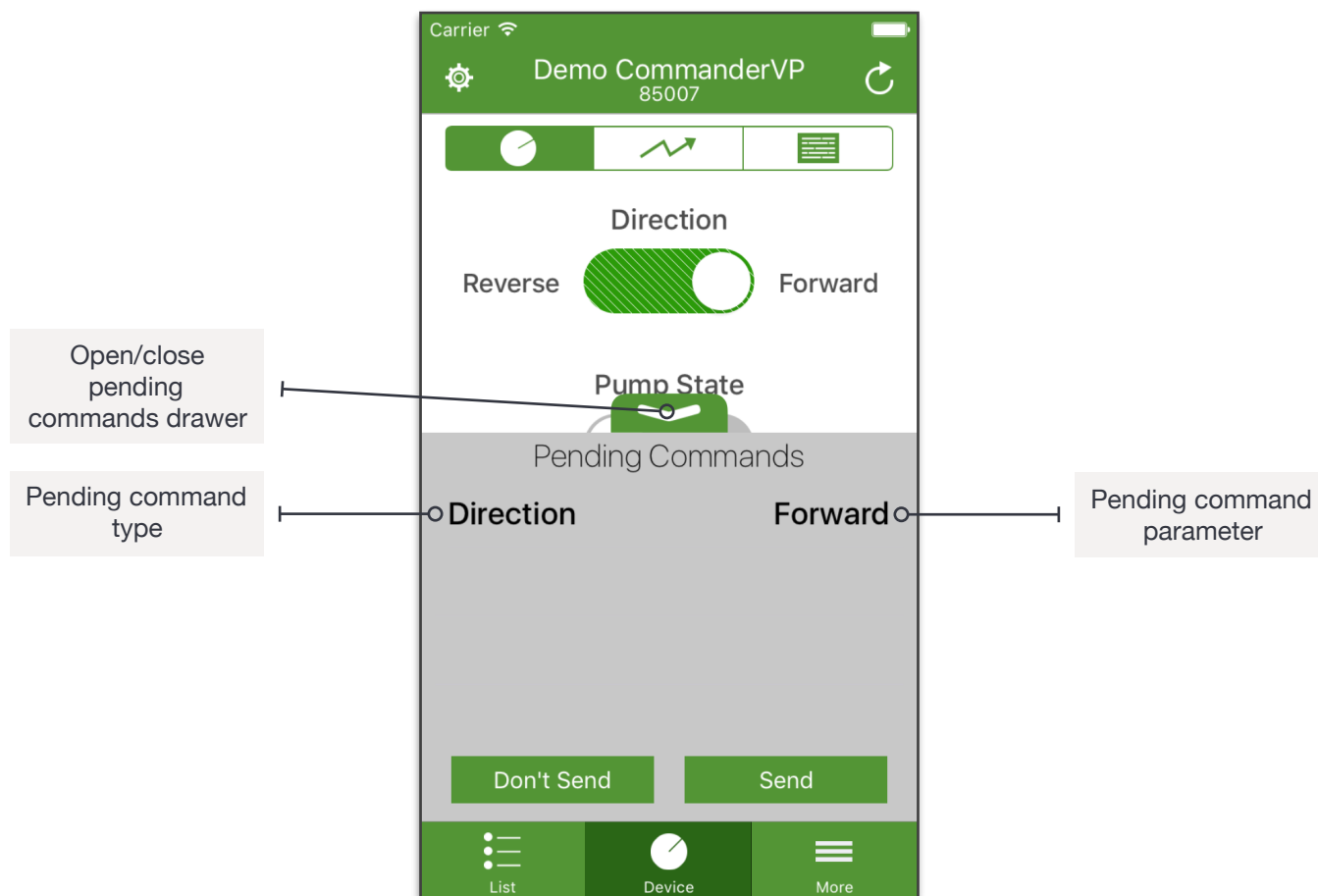
First, locate the pending commands drawer at the bottom of the screen. Note that the label specifies that “No Commands” have yet been queued. Select a command by touching the appropriate button or toggle. When a command has been selected its appearance is altered to display a “hashed” background. This signifies that a command has been queued. Note that selecting a command also causes the label on the pending commands drawer to change to “Pending Commands”. Continue selecting commands until the desired grouping has been achieved. There is no limit to the number of commands that can be grouped together.



Control Pivot and Linear Devices

Step 2: Review Pending Commands

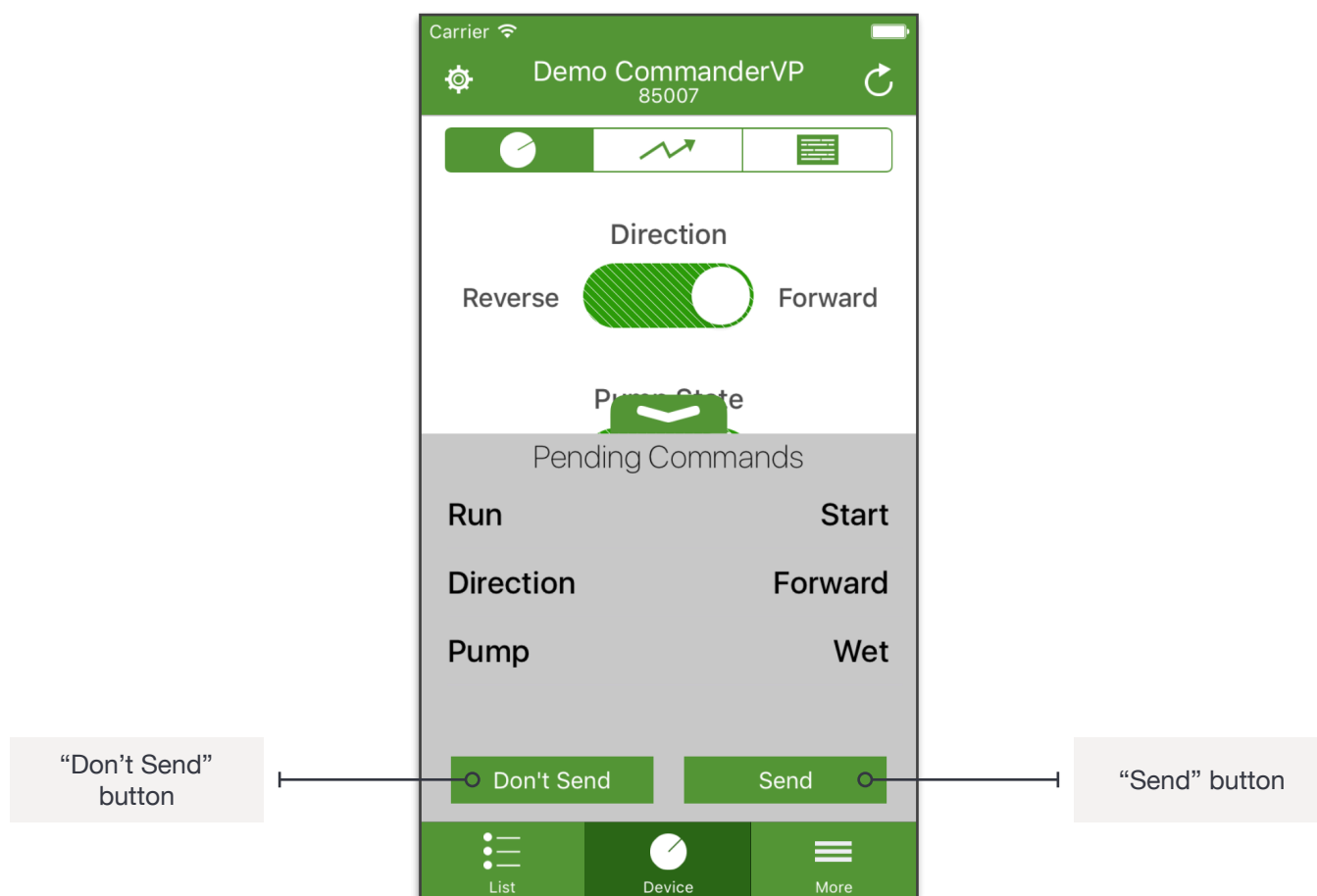
Next, open the pending commands drawer to reveal a list of the commands that have been selected so far. Each queued command lists a command type and parameter. In the example below the user has queued a command of type “Direction” with the parameter of “Forward”. At this point the user may choose to modify the list of pending commands by closing the drawer and queueing additional commands. Previously selected commands may be deselected by touching the desired component a second time. The user in the example below could remove the queued direction command by touching the direction toggle again.



Control Pivot and Linear Devices

Step 3: Execute Commands

After opening the pending commands drawer and ensuring that all desired commands have queued, the user may select the “Send” button to send the commands to the device. Touching the “Don’t Send” button will clear all pending commands from the list without executing them. After pressing the “Send” button the label on the pending commands drawer will give a brief status update to notify the user that the commands have been sent successfully or that the commands could not be sent.



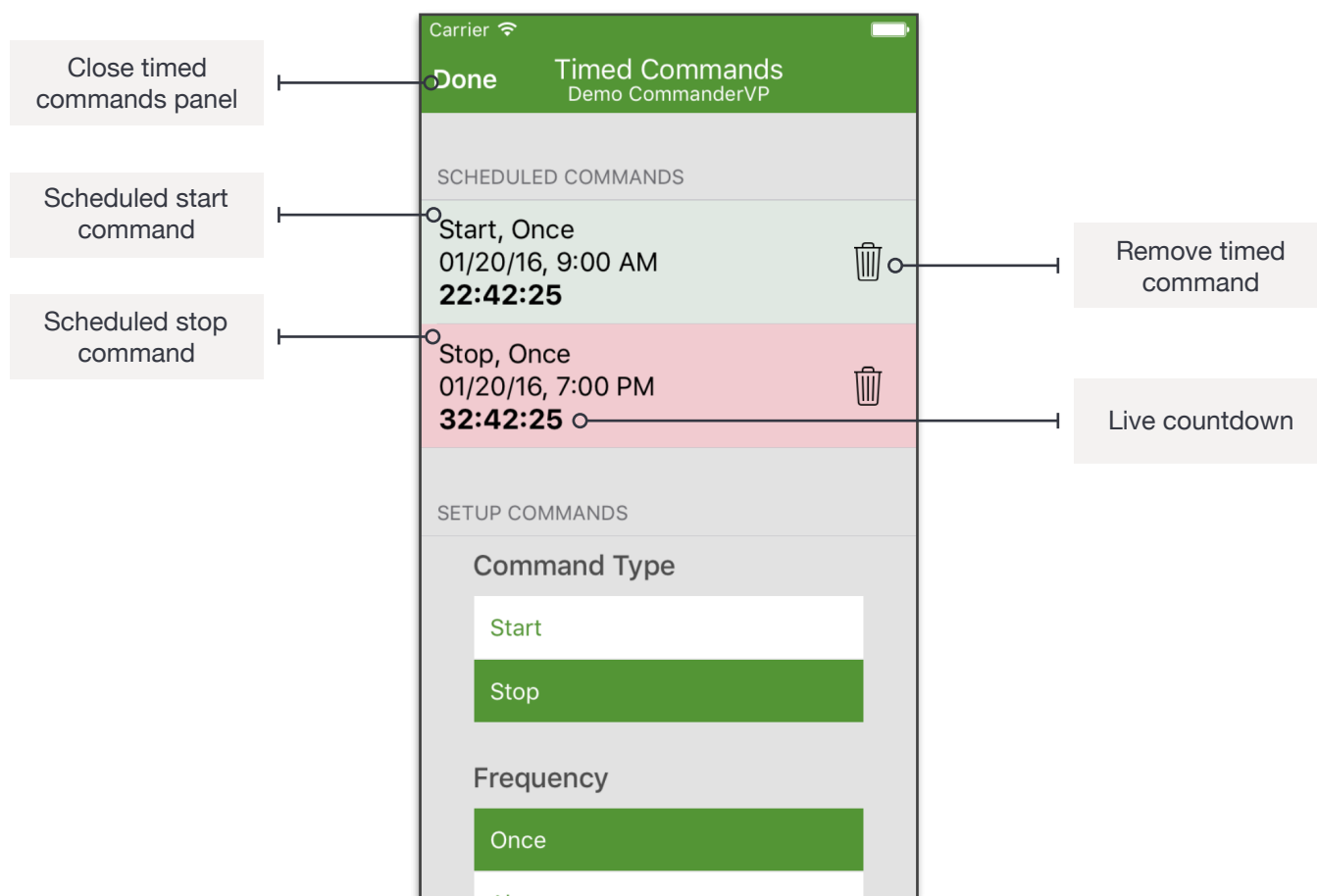
Control Pivot and Linear Devices

Timed commands

Timed commands are a great tool to use for scheduling a start or stop command at a future date and time. To access the timed commands control panel touch the grey timed commands button to the left of the stop command button.

View Currently Scheduled Commands

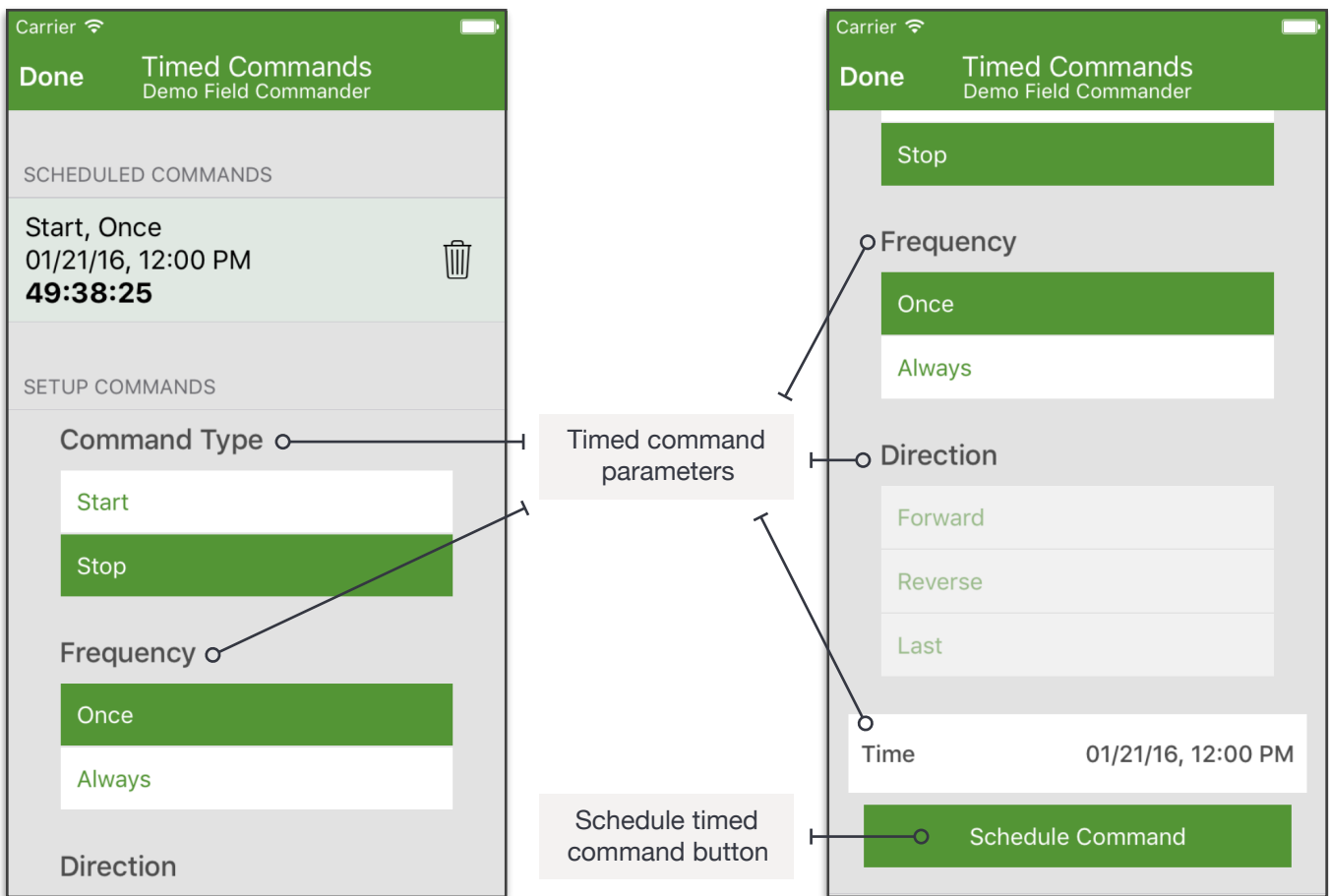
After entering the timed commands control panel the user will see all currently scheduled timed start and timed stop commands listed near the top of the screen. The parameters for each scheduled command are listed along with the chosen date and time. A live countdown is also displayed for each command to signify the exact time the command will be executed.



Control Pivot and Linear Devices

Scheduling A Timed Command

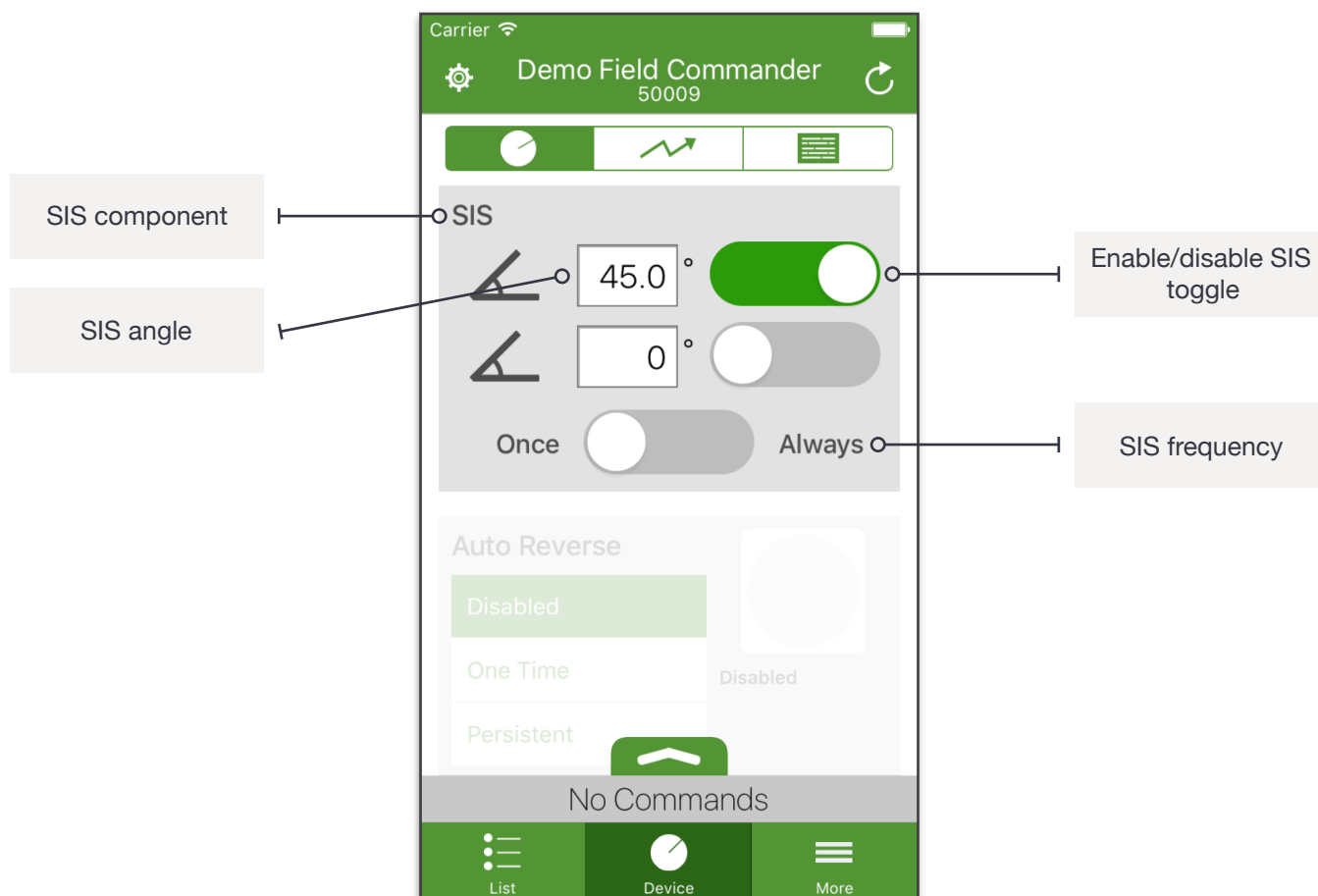
To schedule a new timed command begin by selecting a command type—start or stop. If the command being schedule should be executed one time select “Once” in the frequency selector. If the command should be executed daily at a set time select “Always”. Continue entering the remaining parameters until the desired command has been configured properly. Finally, touch the “Schedule Command” button to send the command to the device. The newly scheduled command will appear in the “Scheduled Commands” list after the next data refresh.



Control Pivot and Linear Devices

SIS

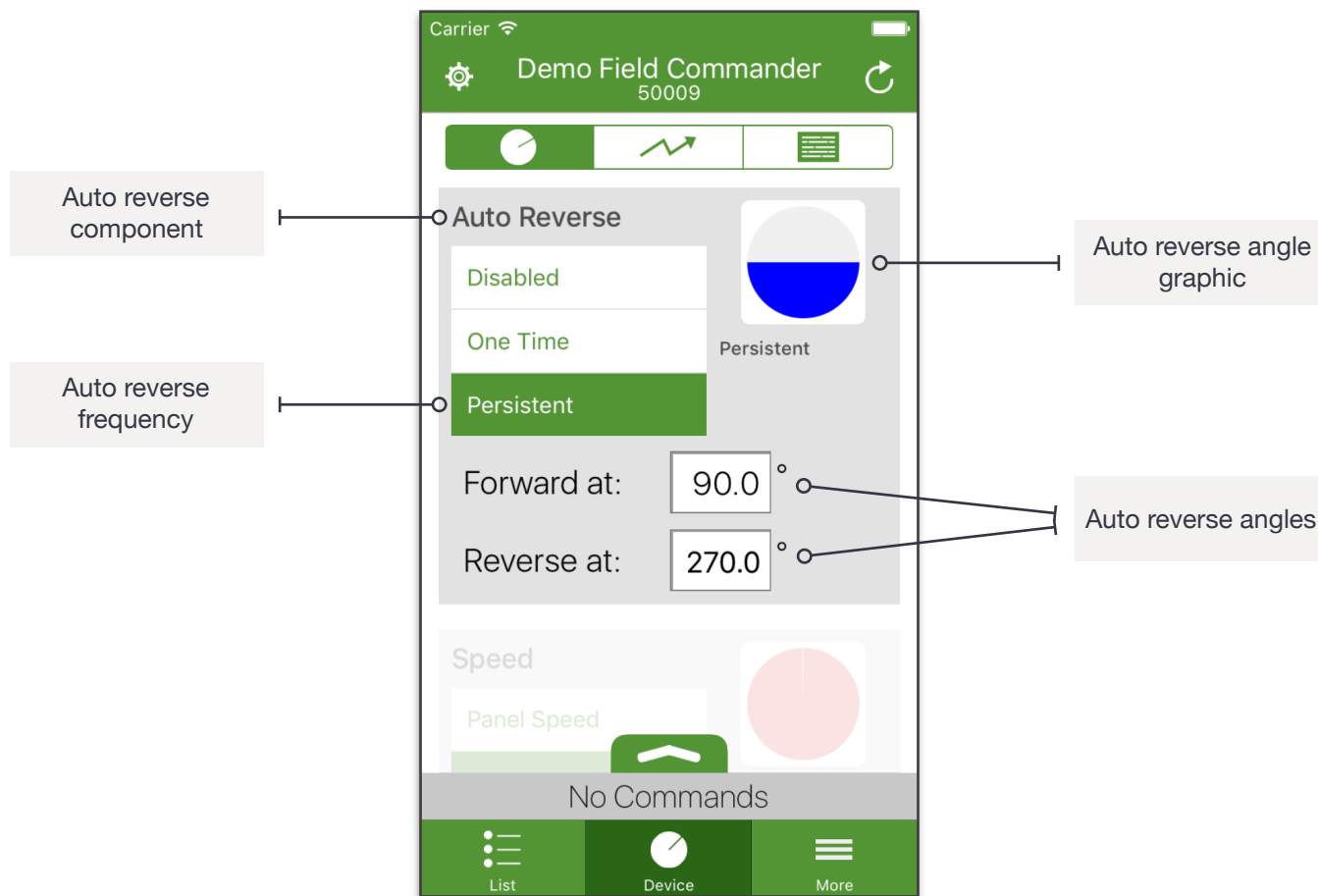
The Stop In Slot feature allows a user to specify an angle at which the current pivot or lateral should come to a stop. In order to configure an SIS the user must enter the desired angle into the text box and ensure the SIS toggle is resting in the ON position. Setting the frequency to “Once” allows the configured SIS to stop the pivot or lateral a single time. After this the SIS would be cleared from the device. Setting the frequency to “Always” allows the SIS to remain effective until it is manually disabled. Some devices allow users to specify two separate SIS angles. In these cases the SIS angles may be set and enabled/disabled independently. After specifying all of the desired parameters the SIS command will be ready to be sent from the pending commands drawer.



Control Pivot and Linear Devices

Auto reverse

The auto reverse feature allows the user to specify two angles at which the current pivot should change its direction. To configure an auto reverse the user must first select the frequency. A “One Time” command will only cause the pivot to change direction one time at each of the angles. A “Persistent” frequency will cause the auto reverse angles to remain active until they are manually disabled. Next the user must configure the two angles at which the auto reverse is to be executed. For example, in order to cause a device to walk the south side of a field the user must enter “90” in the “Forward at” textfield and “270” in the “Reverse at” textfield. To reduce confusion, a graphical representation of the entered angles is displayed in blue on the right. After entering the appropriate frequency and angles the auto reverse command will be queued in the pending commands drawer.



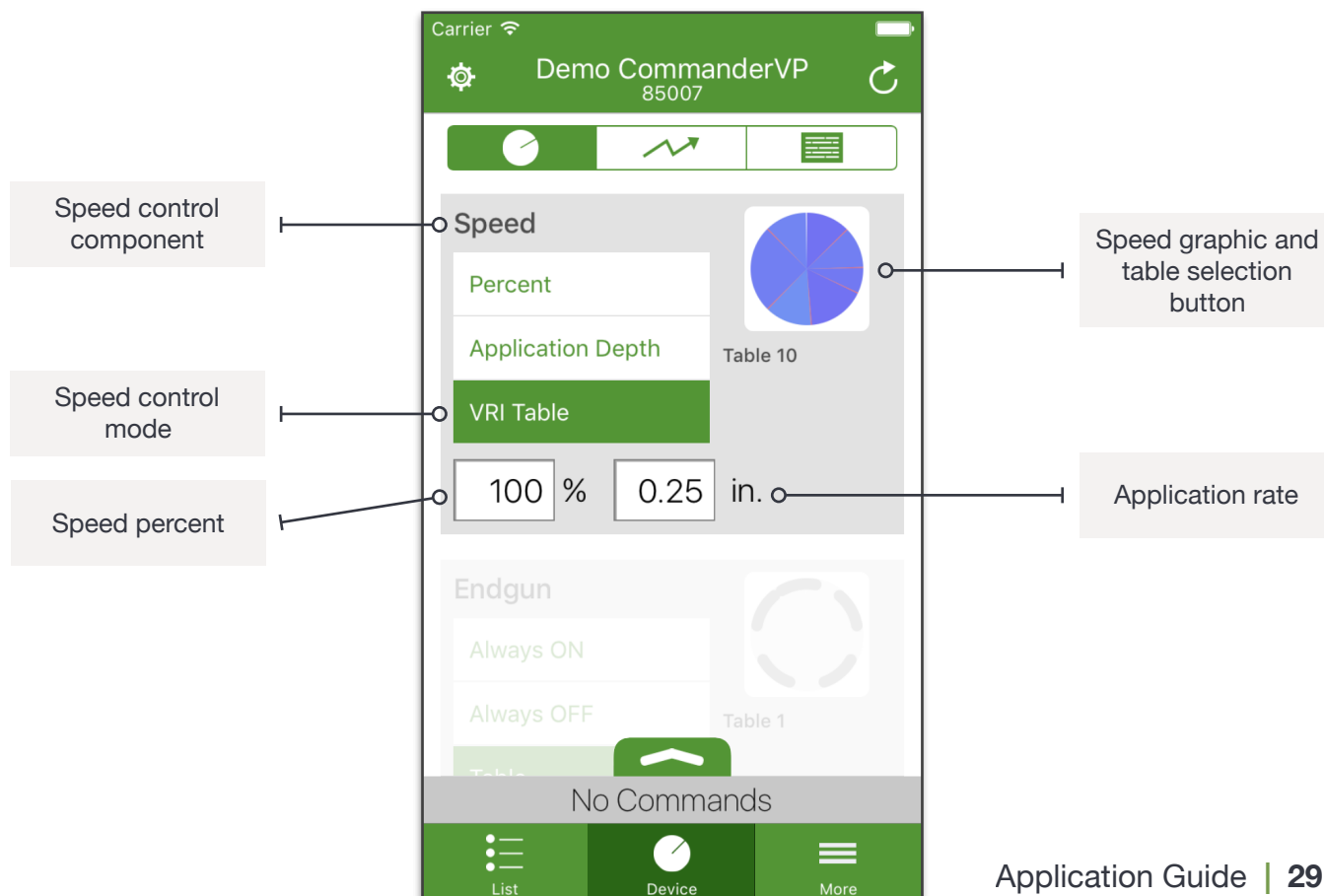
Control Pivot and Linear Devices

Speed control

AgSense offers several options for controlling the speed of pivots and linears. When configuring speed control, one or more of the following modes may be available depending on the device's type:

- Panel Speed — disable remote speed control
- Flat Rate — set a persistent speed percent or application rate
- VRI Table — enable variable rate irrigation based off data in a speed table
- Percent — set a persistent speed percent
- Application Depth/Rate — set a persistent application depth/rate

Choose the desired speed control mode by selecting it in the list. If the control mode requires a specific speed percent or application rate the user must enter these parameters in the appropriate textfields. If “VRI Table” mode is selected the user will need to ensure the desired table is currently displayed in the speed graphic. At this point the speed control command will be ready to send from the pending commands drawer. To learn more about selecting and editing VRI tables see the section titled “Speed VRI, Endgun, and Aux Tables”.



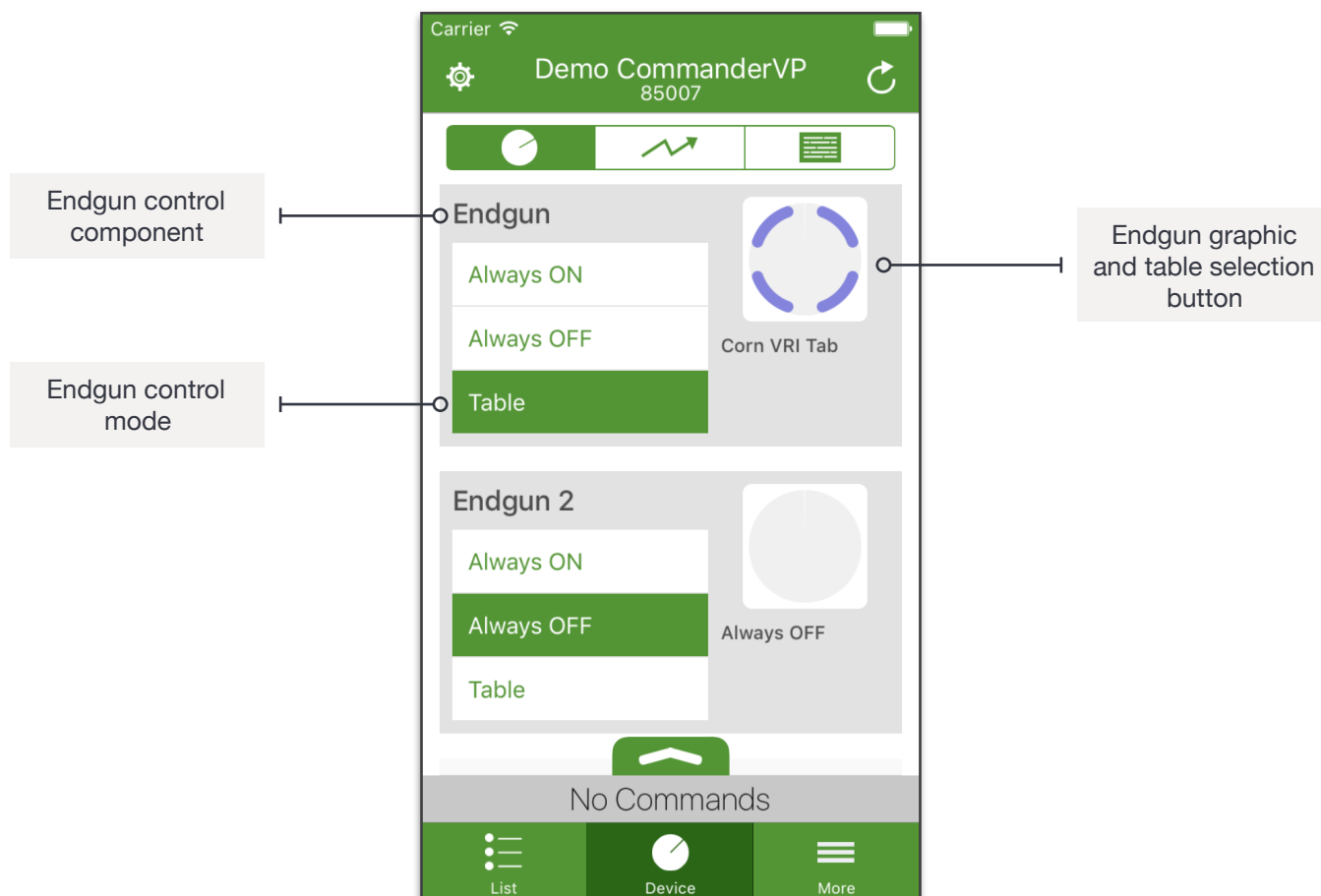
Control Pivot and Linear Devices

Endgun control

Compatible devices have the option to control one or more endguns. To control a device's endgun first select the desired control mode. Here is a list of the different control modes.

- **Always ON** — activate the endgun until manually disabled
- **Always OFF** — deactivate the endgun until manually enabled
- **Table** — enable the endgun to be activated and deactivated at various angles based off data in an endgun table

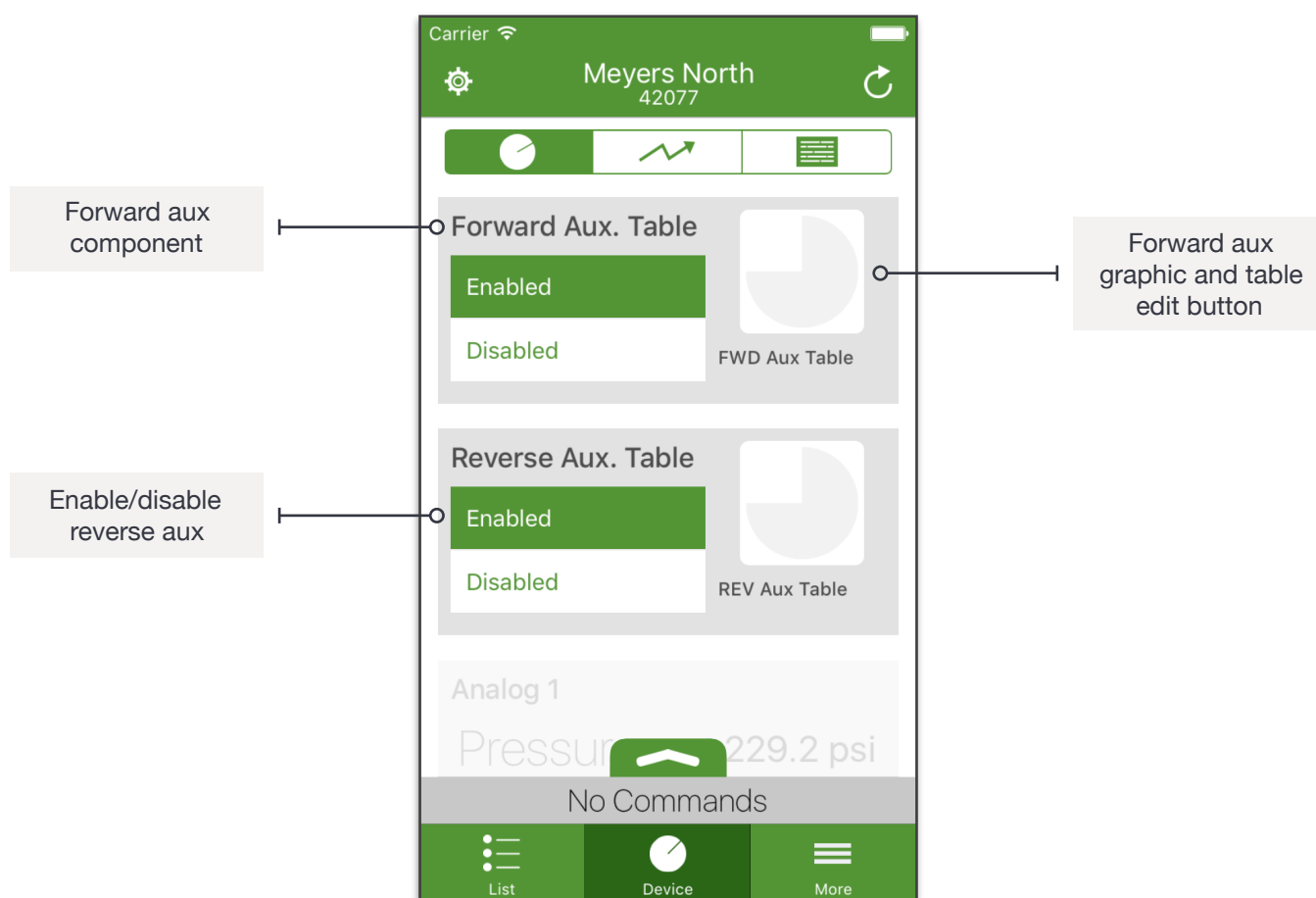
The endgun graphic gives a representation of the selected endgun mode or table. To learn more about selecting and editing endgun tables see the section titled "Speed VRI, Endgun, and Aux Tables".



Control Pivot and Linear Devices

Forward and reverse aux tables

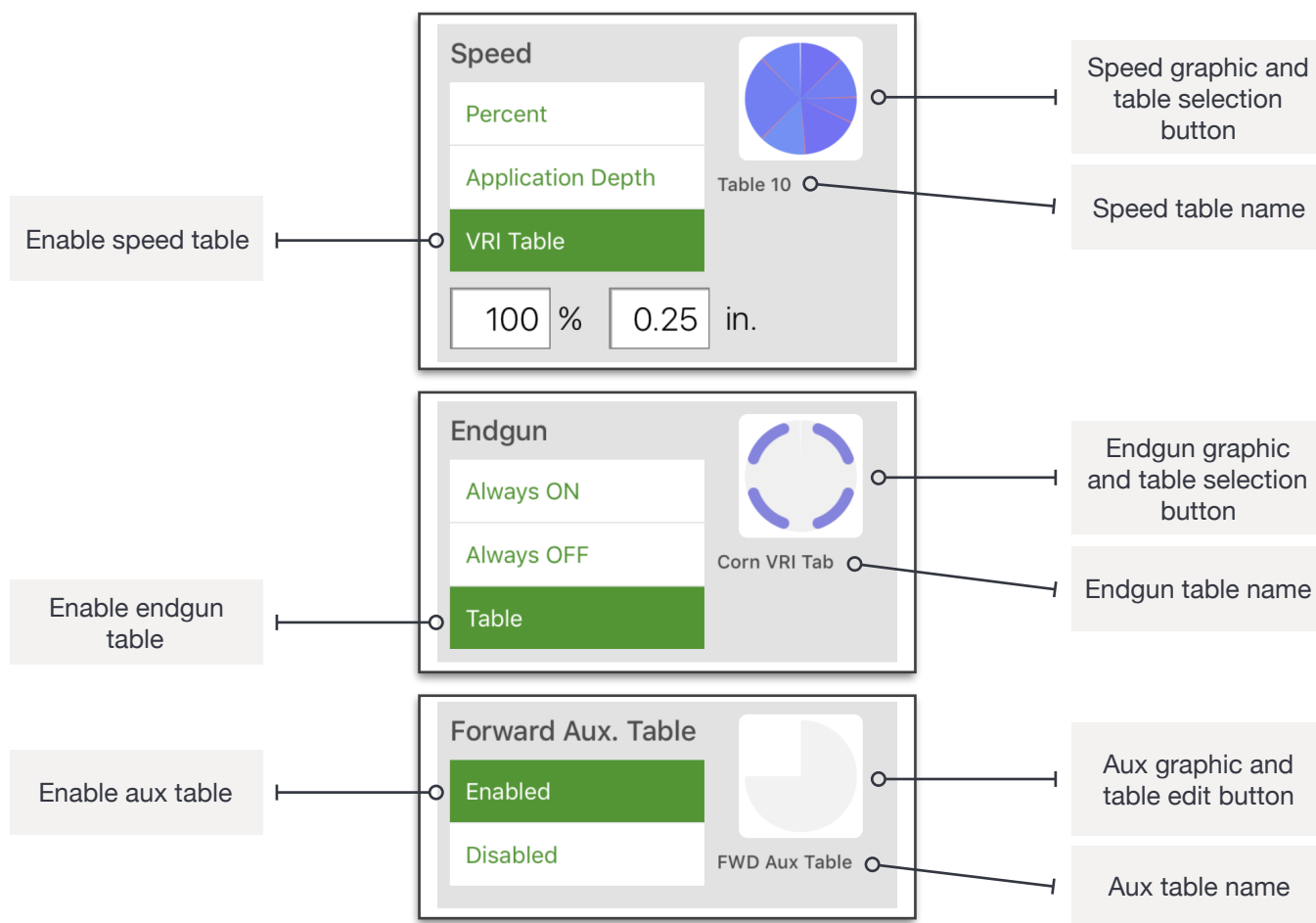
AgSense Precision Link devices can be configured to control both a forward and reverse aux table. These tables allow the device to adjust its application rate at various angles based on the data in a table. To modify the state of an aux table select “Enabled” or “Disabled” in the mode selector. Note that the aux graphic will give a representation of the currently selected aux mode and table. To learn more about editing aux tables see the section titled “Speed VRI, Endgun, and Aux Tables”.



Speed VRI, Endgun, and Aux Tables

Enable table control

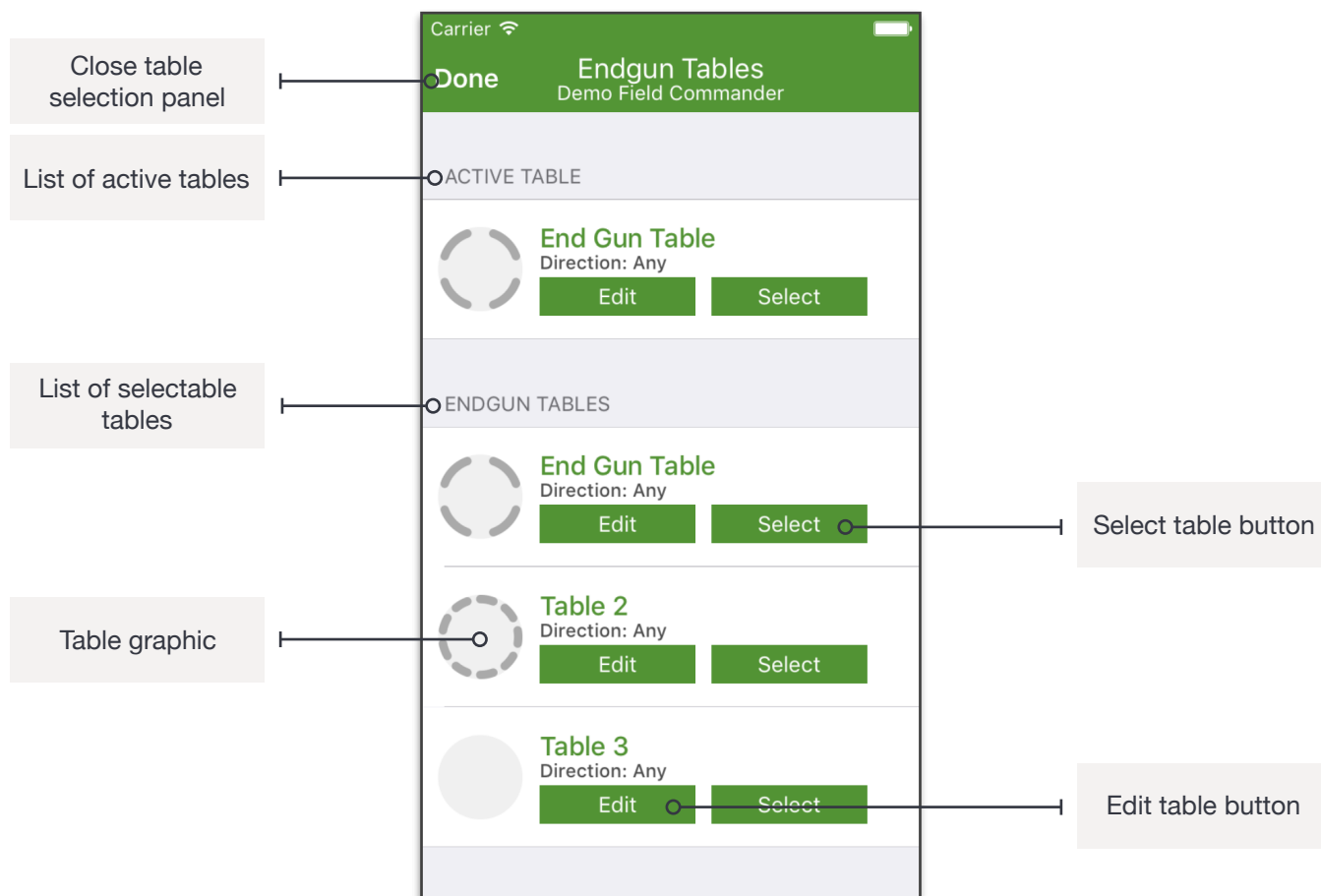
Compatible devices can control speed percent, application rate, endgun state, and aux application rate by use of various data tables. To use a table first enable table control in the speed, endgun, or aux component by selecting the appropriate mode (shown below on the left). At this point if the desired table is represented in the graphic the command is ready to be sent from the pending command drawer. To select a different table touch the table graphic (shown below on the right). If controlling speed or an endgun this will open the table selection panel. If controlling an aux table the user will be presented with the table editor.



Speed VRI, Endgun, and Aux Tables

Table selection

Upon entering the table selection panel the user will be presented with two main sections. The top section lists any tables that are currently active on the device. The bottom section lists any tables that are available to be selected and activated. Each AgSense device maintains its own unique list of tables. To make a table active first select it by touching the “Select” button. Next, close the table selection panel by touching the “Done” button at the top of the screen. Note that a table does not become active until it has been sent from the pending commands drawer. To edit the data in a table touch the “Edit” button. This will open the table editor.



Speed VRI, Endgun, and Aux Tables

Table editing

To begin editing a table locate the list of parameters on the right side of the pivot or linear graphic and touch a box to modify its value. Parameters include the table name, direction, and base rate. Note that not all parameters are available for every type of table. Next, touch a row in the table data to modify its values. Notice that the graphic on the top-left updates to give a representation of the table data each time a row is modified. After all of the desired data has been entered press the “Save” button to submit all changes that have been made.

The screenshot shows the 'Table Editor' interface for 'Demo Field Commander'. It features a top navigation bar with 'Cancel' and 'Save' buttons. Below the bar is a pie chart labeled 'Table data graphic' and a table of parameters. The table has columns for 'Begin', 'End', 'Speed', and 'Rate', with 10 rows of data. Callouts point to the 'Cancel' button (labeled 'Close table editor'), the 'Save' button (labeled 'Save table data'), the 'Corn Table' text (labeled 'Table name button'), the 'Any' text (labeled 'Table direction button'), the direction icon (labeled 'Increment table speed percent'), and the table rows (labeled 'Table data').

	Begin	End	Speed	Rate
1	0.0°	10.0°	25.0%	0.15"
2	10.0°	20.0°	30.0%	0.13"
3	20.0°	30.0°	35.0%	0.11"
4	30.0°	40.0°	40.0%	0.10"
5	40.0°	120.0°	30.0%	0.13"
6	120.0°	315.0°	80.0%	0.05"
7	0.0°	0.0°	0.0%	0.00"
8	0.0°	0.0°	0.0%	0.00"
9	0.0°	0.0°	0.0%	0.00"
10	0.0°	0.0°	0.0%	0.00"

Other Device View Tabs

Data graph tab

While in device view the user may select the graph tab to see a graph of all of the current device's data. The bottom portion of the screen contains a list of selectable data types. Each of these data types may be selected and deselected until only the desired data is displayed on the graph. The selections available for a device depend on its type and configured sensors. In the example below the user has chosen to graph all of the data from their pressure, leaf wetness, and temperature sensors within the past month. There are three available date ranges by which data can be graphed—day, week, month. The user may select one of these ranges by touching a frequency on the date range controls denoted below.

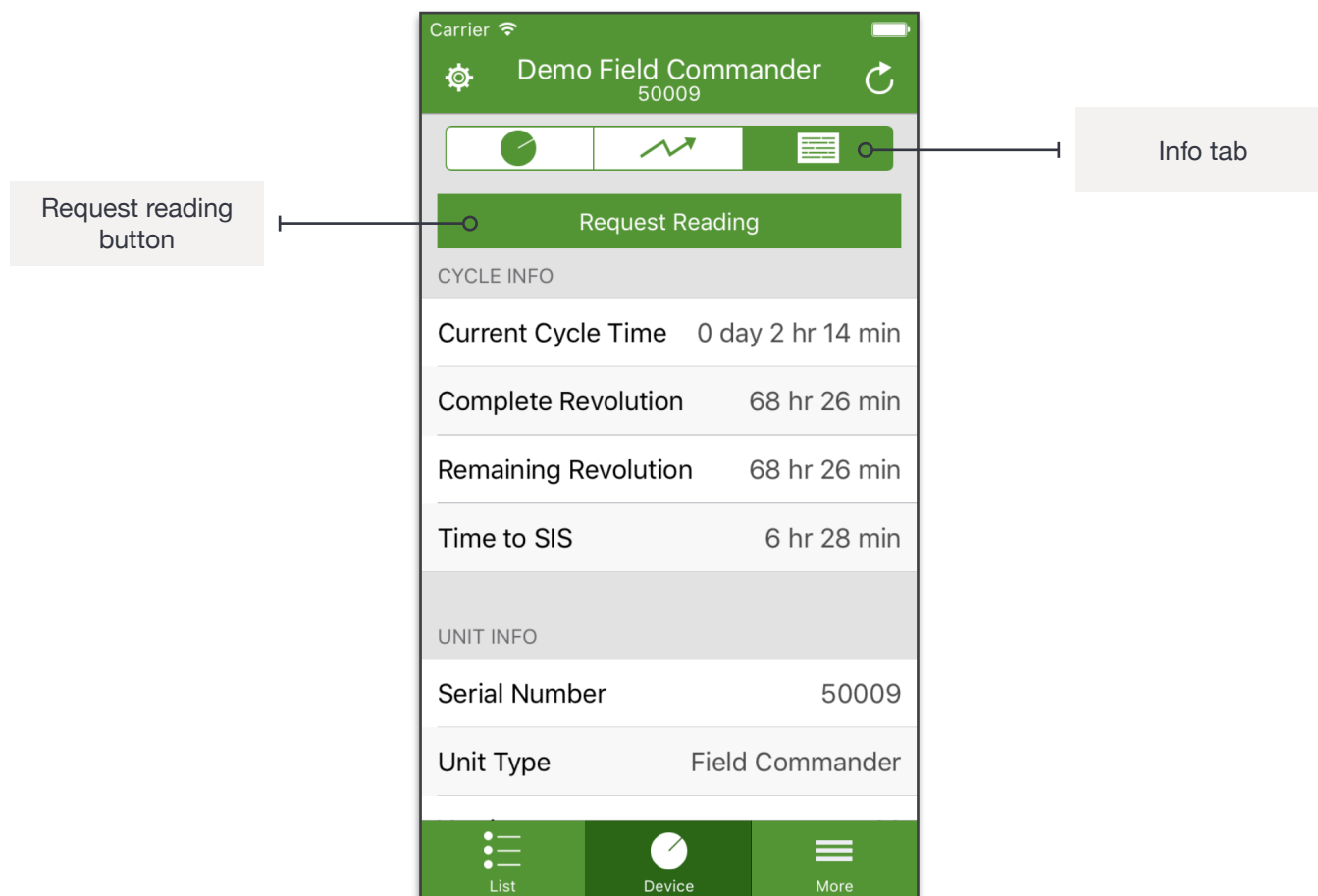


Other Device View Tabs

Device info tab

While in device view the user may select the info tab to view additional information about the current device. To manually request a data reading from the current device touch the “Request Reading” button. There are several other sections of data available on compatible devices:

- **Active Commands** — displays a list of commands that are currently active on the device
- **Recent Commands** — displays a list of the most recent commands sent to the device
- **Cycle Info** — displays cycle data including the length of the current cycle, the device’s complete revolution, and the device’s remaining revolution
- **Unit Info** — displays a list of basic device information including the serial number, firmware version, and modem signal strength

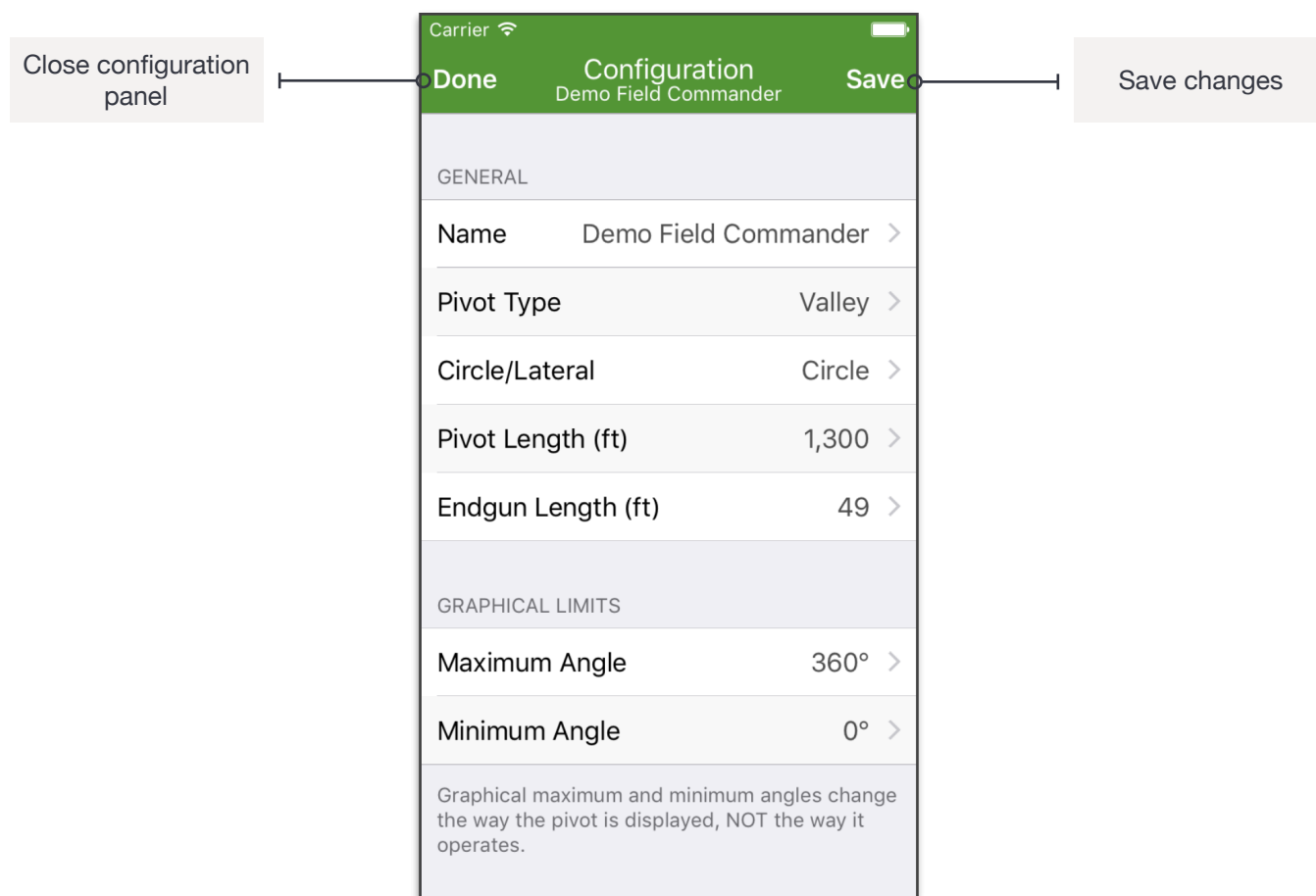


Other Device View Tabs

Device configuration panel

To open this panel touch the gear-like icon near the top of the device view. This panel contains all of the configurable parameters for a device. Options include the device name, graphical min/max, full run time, connected sensors, and GPS coordinates. After modifying a value the user must touch the “Save” button to submit the changes. Finally, the user must touch the “Done” button to return to the device view.

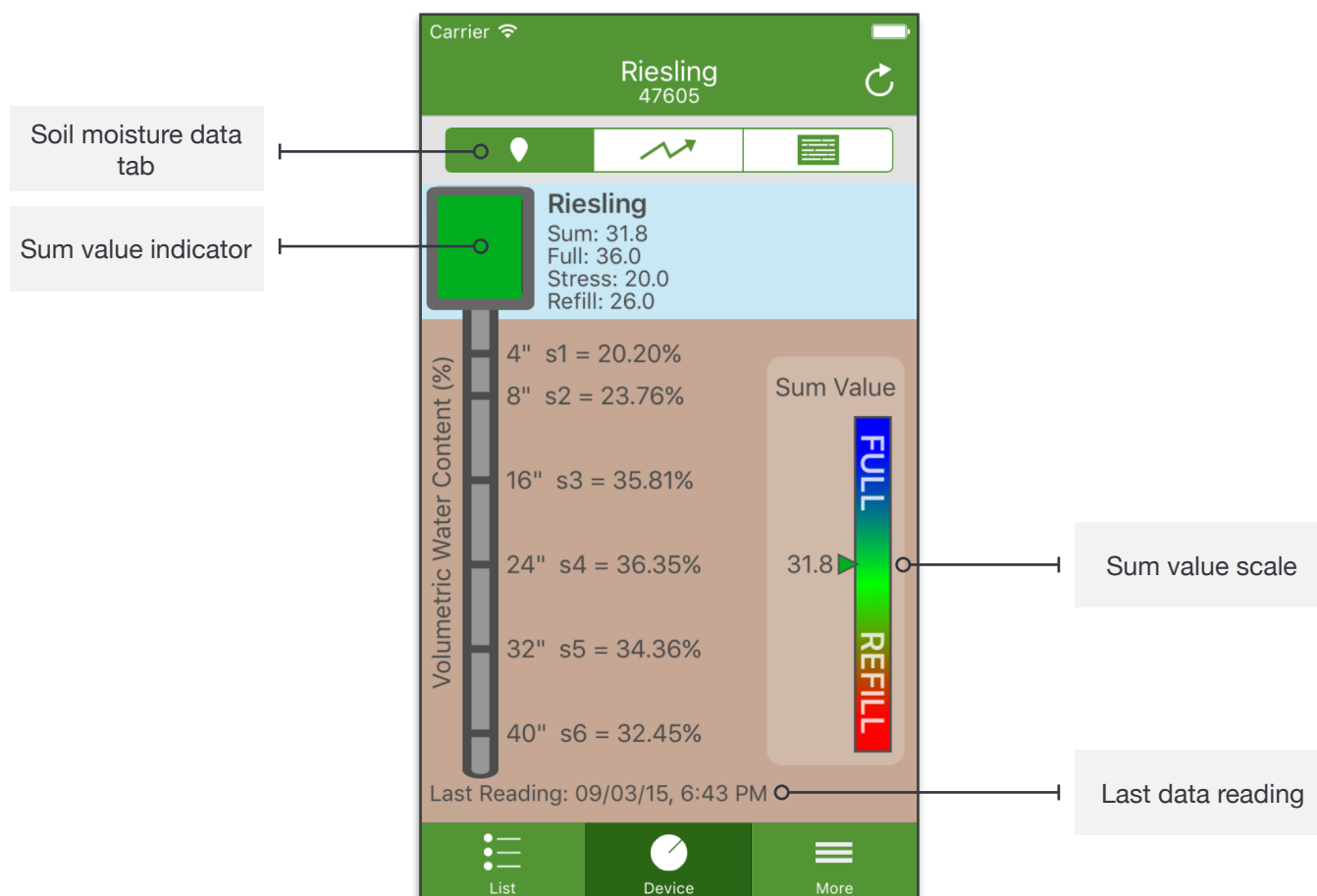
WARNING: Modifying any of the values in the device configuration panel will change the way a device functions.



Other Device View Tabs

Soil moisture data tab

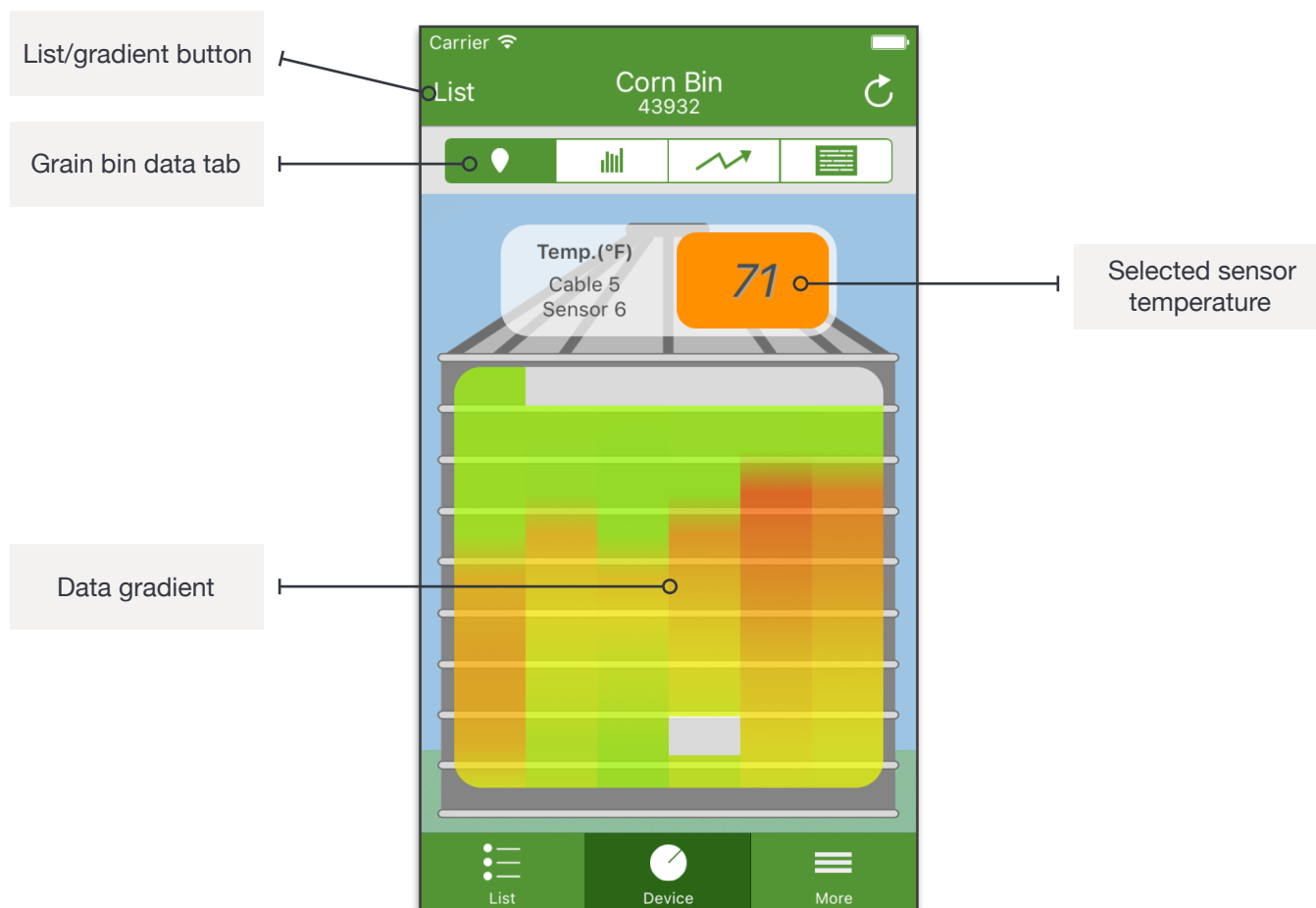
The soil moisture data tab is available for Aqua Trac devices with compatible soil moisture sensors installed. The color displayed in the sum value indicator represents the current moisture level of the soil. A more detailed scale can be seen on the right side of the screen. A blue color signifies a “full” value while red indicates “refill”. A green color represents a moisture level somewhere in between full and refill. Other information found on this tab includes the configured sum, full, stress, and refill values as well as individual sensor depths and readings.



Other Device View Tabs

Grain bin data tab

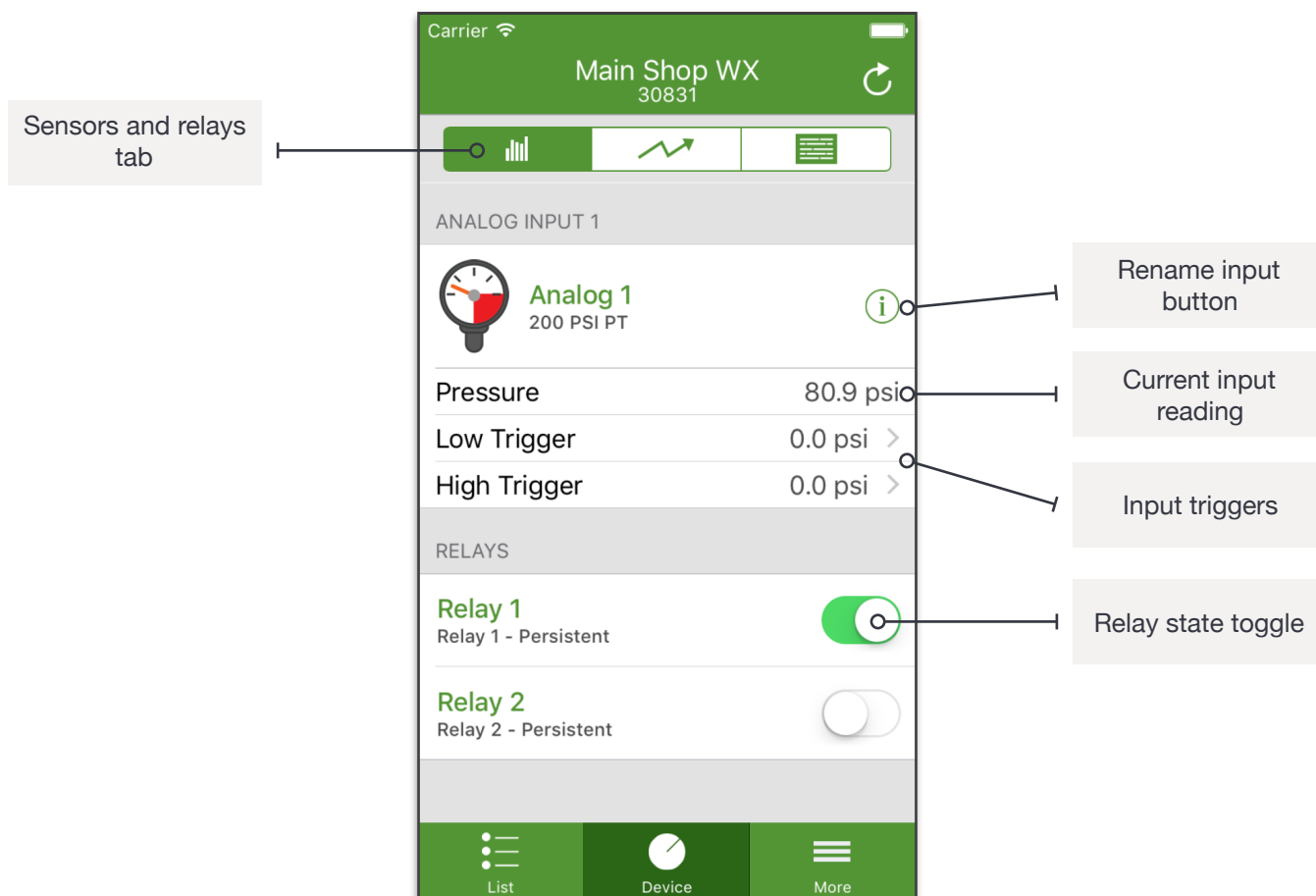
Crop Link devices with the ability to monitor grain bin temperature will be able to access the grain bin data tab. Here users can see the temperature readings for a single grain bin. Pressing the “List/gradient” button will affect the way data is displayed. In the list mode users will see the data for each individual sensor. If the gradient is displayed users will see a summary of the temperature values by color. A green color indicates a low temperature while a red color indicates the high value. Touching anywhere on the gradient will display the data for the individual sensor found at that location.



Other Device View Tabs

Sensors and relays tab

This tab becomes available for Crop Link and Aqua Trac devices with a configured sensor or relay. Each sensor is listed along with its most important information including its input number, name, type, latest data value, and trigger values (if applicable). Each relay is listed along with its name and state toggle. Touching this toggle will command the relay to turn ON or OFF.



Support and Feedback

Contact information

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