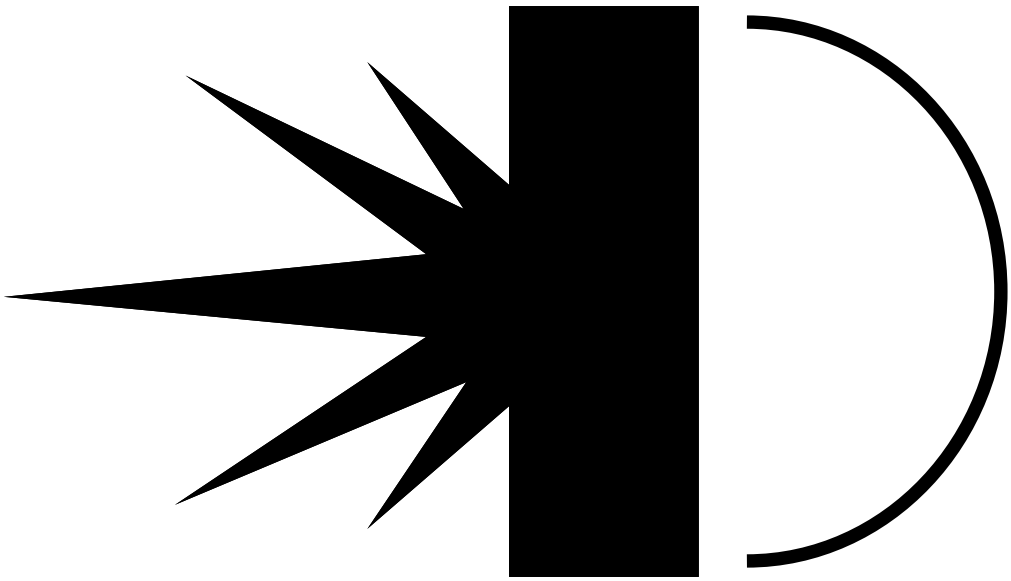
Contents

DYNASEN, Inc.



SENS-ALERT PORTABLE REMOTE SENSING AND ALERTING SYSTEM

USER MANUAL

[250-0001-00 REV010 SENS-ALERT USER MANUAL]

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PLEASE READ CAREFULLY.

CAUTIONS: IRIDIUM EDGE TRANSCEIVER- RADIO FREQUENCY DEVICE WARNINGS

Regulatory Standards and Compliance for The Iridium Edge Transceiver Unit.

Explosive Atmosphere / Blasting areas

WARNING Power down or turn off the Iridium Edge when in a "blasting area" or in areas posted "Turn off two-way radio." Obey all signs and instructions. Failure to do so could result in serious injury or death.

WARNING Turn your device OFF in any area with a potentially explosive atmosphere. Obey all signs and instructions. Sparks from your device in such areas could cause an explosion or fire resulting in serious injury or death.

Pacemakers

WARNING Persons with Pacemakers:

- Should ALWAYS keep Iridium Edge more than eight inches from their pacemaker when it is turned ON.
- Should turn Iridium Edge OFF immediately if there is any reason to suspect that interference is taking place.
- Failure to heed this warning could result in serious injury or death.

Iridium Edge is certified as Model #9680. It is designed to comply with the standards for the United States, Canada, European Union, and Australia/New Zealand as per the table below.

Regulatory Approvals	Test Specification	
	EMC Tests	ETSI EN 301 489-20 V1.2.1 (2002-11) ETSI EN 301 489-1 V2.1.1 (2017-02)
		EN 550022 :2010/AC :2011 EN61000-4-2 : 2009 (Electrostatic Discharge) EN61000-4-3 : 2010 (Radiated RF Immunity) EN61000-4-4 : 2012 (Electrical Fast Transient) EN61000-4-6 : 2014 (Conducted RF Immunity) EN61000-4-8 : 2010 (Magnetic Immunity) EN55022:2010/AC :2011
	Safety	EN60950-1:2006/A2:2013 EN623311:2008
	RoHS	RoHS 2:2011/65/EU
FCC	FCC 47 CFR Part 25 (Contains a modular approved device: FCC ID Q639603N) FCC 47 CFR Part 15, Subpart B	
Industry Canada (ISED Canada)	ISED RSS 170. (Contains Modular approved device: IC 4629A-09603N) ICES-003, Issue 5 : 2012	
Australia/NZ	AS/NZS CISPR 22 (2009) + A1:2010 ACMA HES Standard (2014)	

Any unauthorized modifications or attachments could damage the Iridium Edge and may violate FCC regulations and void your authority to operate the device.
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.

Use Aboard an Aircraft**.**
The Iridium Edge has not been qualified or tested for operation in aircraft. In the United States, use of the device is subject to regulation including 47 C.F.R. 25.285(a), governing use of the device only by the pilot or with pilot consent. Learn about all of the rules, regulations and laws governing your use of the device before attempting to use on an aircraft.

⚠ WARNING

WARNING Power down or turn off the Iridium Edge when in a "blasting area" or in areas posted "Turn off two-way radio." Obey all signs and instructions. Failure to do so could result in serious injury or death.

The Iridium Edge is not approved for operation in hazardous locations with potentially explosive atmospheres.

⚠ WARNING

WARNING Turn your device OFF in any area with a potentially explosive atmosphere. Obey all signs and instructions. Sparks from your device in such areas could cause an explosion or fire resulting in serious injury or death.

The Iridium Edge is designed to and certified for operation such that it is normally more than 20cm (8 inches) from humans.

⚠ WARNING

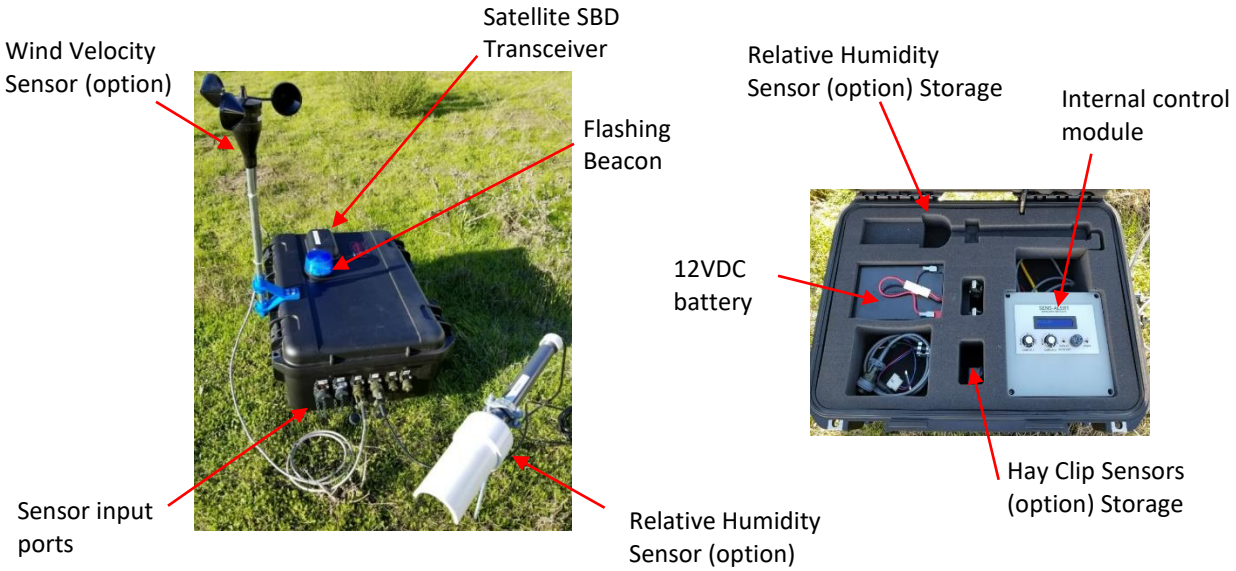
People with pacemakers:

- Should ALWAYS keep Iridium Edge more than eight inches from their pacemaker when the device is turned ON.
- Should turn Iridium Edge OFF immediately if there is any reason to suspect that interference is taking place.
- Failure to heed this warning could result in serious injury

GENERAL DESCRIPTION

The Sens-Alert unit is a portable, multi-sensor, selectable trip point alarm system. The typical build contains a Satellite Short Burst Data transceiver (or "SBD" transceiver for short) and the central control module circuitry. To this base system can be added sensors and switches for a multitude of capabilities. The system is currently configured to operate on the Iridium Satellite Network. SBD service is provided by Wireless Innovation, Ltd. Dynasen builds and initially activates the device for the customer and links it to the customers SBD plan/account with Wireless Innovation. The customer must interact with Wireless Innovation for service billing and transceiver re-activation or dormancy requests. (These transceivers can be put in a "dormant mode", keeping them registered on the Iridium Network for a nominal monthly fee. Then when the system is needed, it can be awoken without paying the larger "Reactivation Fee" that is required if the module is "turned" off each season.) Of course, the module can simply be left active on the network as well, allowing one to use it for any number of monitoring or alerting situations.

The system's general operation includes the deployment of the system to a remote location where monitoring is required for conditions such as Relative humidity, Hay toughness, general switch closures or openings etc. Prior to remote placement the user configures "Trip" points or sensor threshold values at which the user wishes to be notified. Once the device reaches any of these trip points the user is notified with a voice phone call (to numbers the user has previously programmed into the system). At any point in time the user can check the current status of sensors by viewing the web portal where the status of sensors is being reported. Alternatively, the user(s) can call the device for a real-time update of current status of active sensors or switches. Additional capabilities (available options) can include the ability to activate a switch at the device (optional installation required at factory), or turn on a flashing beacon at the unit making it easier to locate in dark locations. There are many sensor and control options for these systems, contact Dynasen for more details. The first step after obtaining a device is to go to the Sens-Alert Portal to set up device information and trip points.

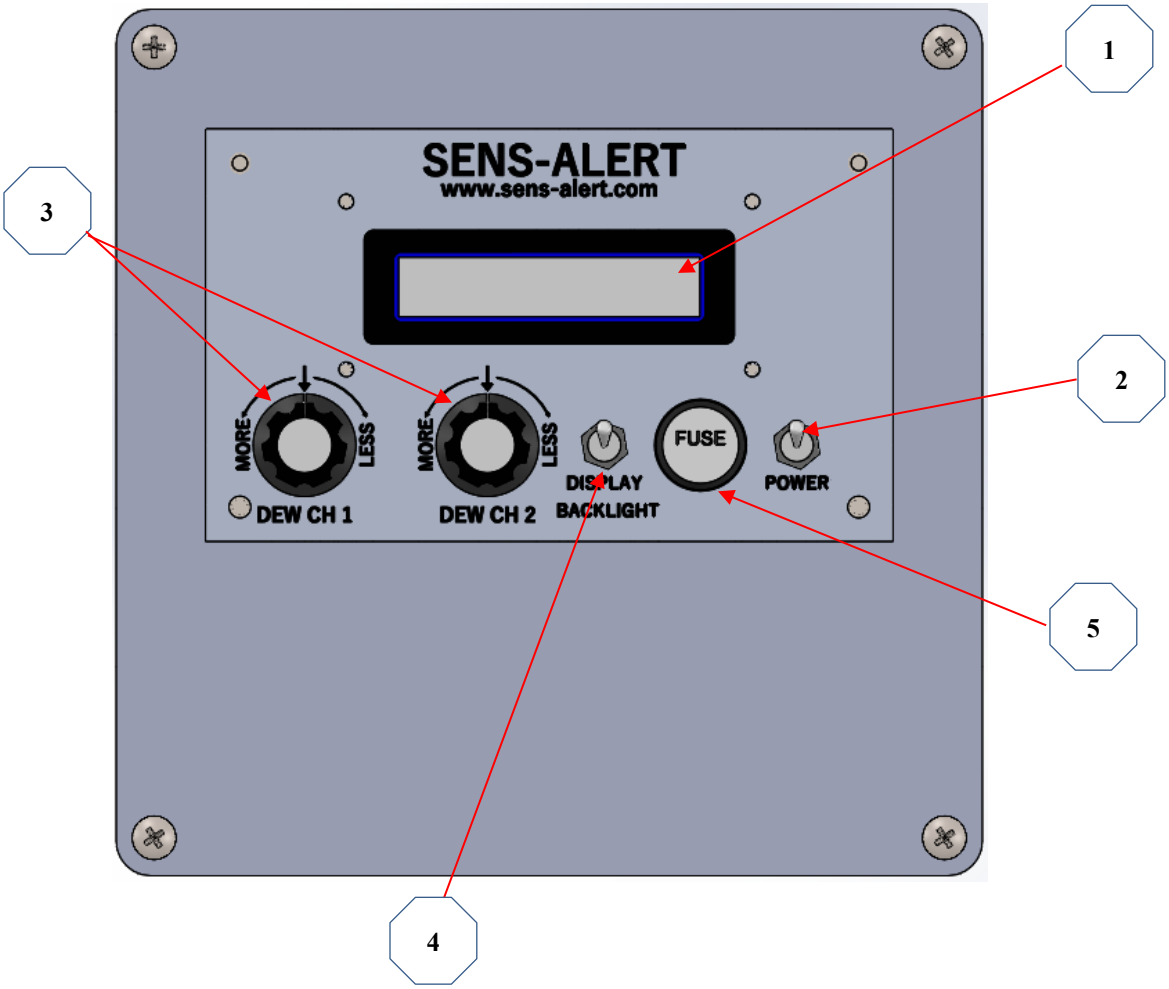


System Enclosure (shown with Optional Wind Velocity and Relative Humidity Sensor Support)

SENS-ALERT INTERNAL CONTROL PANEL DESCRIPTION

The following identifies the control features on the Sens-Alert system. Refer to figure below.
The front panel can give the user visual feedback when at the device (otherwise during normal remote operation, the feedback is provided via the Sens-Alert portal. The user does set the "offset" for the two Hay Clip sensors options available with the unit. If you do not have the Hay Clip options, you can simply ignore these two adjustments. The display will indicate to a person located by the device the current active sensor values. (note, these may be different that the values indicated at the web portal depending on when the portal received its last update from the device (its last "Heart Beat" transmission). Control panel items are listed here.

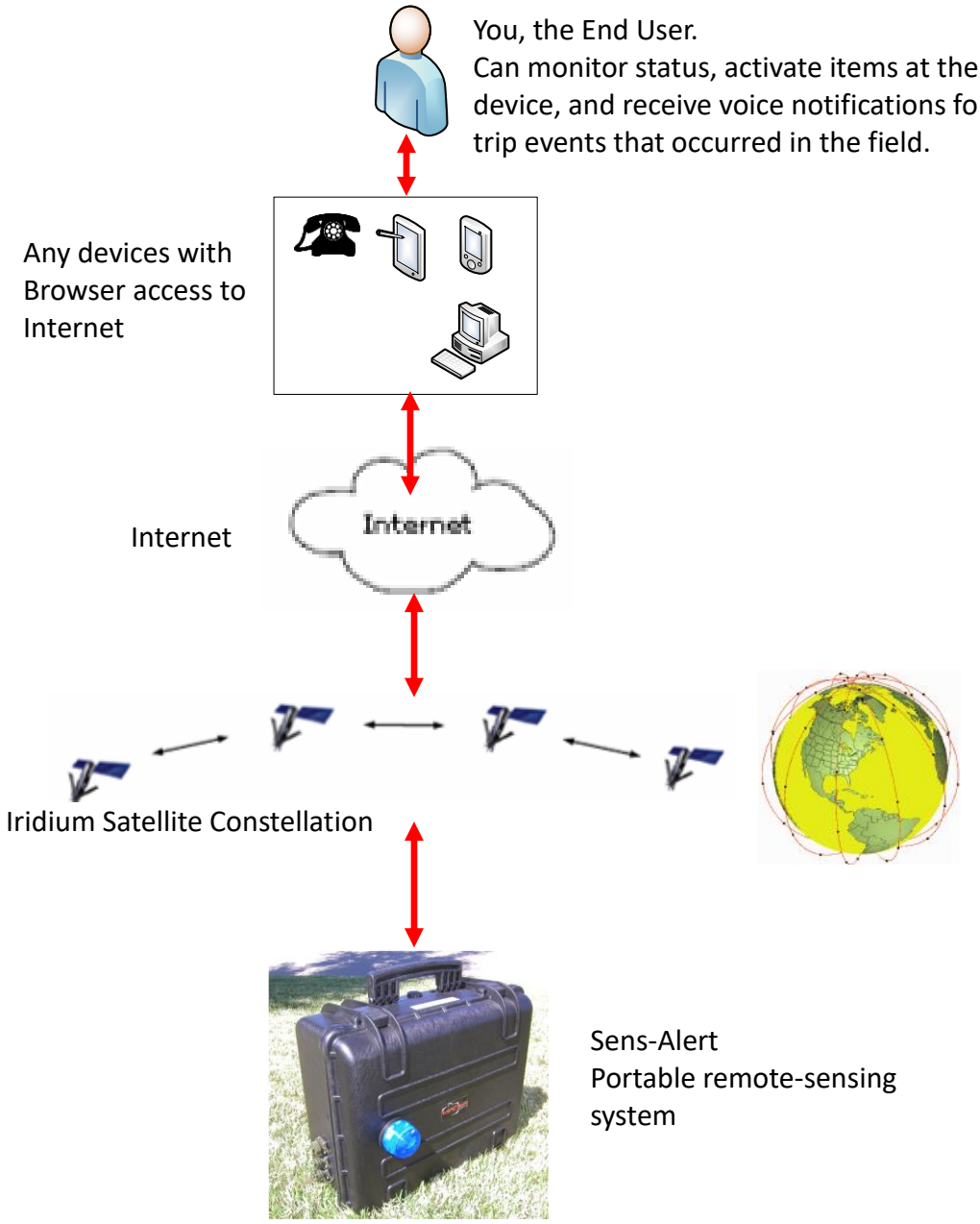
1 - Sensor Display - indicates output of sensor(s).
2 - POWER SWITCH - supplies 12V to the system (battery must be connected first).
3 - HAY CLIP OPTION SENSITIVITY ADJUSTMENT - adjusts the output of the individual Dew sensors (digital panel meter will reflect this adjustment). Clockwise rotation yields less sensitivity to dew formation and counter-clockwise results in the system being more sensitive to dew formation.
4 - DISPLAY BACKLIGHT. This switch awakens the display backlight so that you can read the display in low light situations.
5 – FUSE – standard 1 ¼ Inch glass fuse 4-6 amp.



System Control Module Details.

SENS-ALERT COMMUNICATION FROM FIELD TO YOU.

The Sens-Alert communicates with you (and you with it) via the internet as well as with voice alert notifications. Any device that has browser access and authorization, can access the unit in the field. Your Smart phone or computer accesses the Sens-alert system via a browser through the Sens-Alert portal on the web. This portal communicates through the Iridium Terrestrial network to the Satellites orbiting above the earth to the remote transceiver in the Sens-Alert field unit. The starting point for interfacing with the system is the Sens-Alert Web portal at: http://app.sens-alert.com . Below is a graphical representation of the overall system. In general, the user can utilize any web-enabled device to communicate with or monitor the status of the remote system. When a "trip" condition is reached, the unit will place voice calls to users you specify.



SENS-ALERT DATA USAGE

Sens-Alert system is intended to be a stand-alone web-based system utilizing an internal 12V DC supply, and a Short Burst Data (SBD) Satellite transceiver and controller module all housed in a single enclosure. Many variations of this design, have been constructed some of which include fixed station configurations. The SBD system is used to communicate information to and from the field.
The system is designed under normal use, to utilize a minimum amount of data to communicate with the user via the internet. To keep operational cost low we minimize the amount of data used per transmission. The data plan provided by Wireless Innovation Ltd., is a 30kb/month plan. The average transmission for monitoring is around 22bytes (0.022kbytes), so theoretically you could send data over 1000 times and still be under your data limit for the month. Note, that the data packet size to both program sensor trip conditions and set the system parameters in the Sens-Alert remote device can consume up to 100bytes each time the unit is powered-up or when new parameters or trip points are set.

So, until you become more familiar with your monthly data consumption rates (which, will be different for every customer and application), it would be advised to regularly visit your Wireless Innovation web portal ("WILPort") at https://portal.wilport.net and keep an eye on data usage. As with any data plan, users will pay a premium for data "overages" over the 30kbyte per month! See the terms of your agreement for details. A sample of the data plan from Wireless Innovation is provided below. -subject to change-. Visit Wireless Innovation, Ltd. For the most recent plan structure!

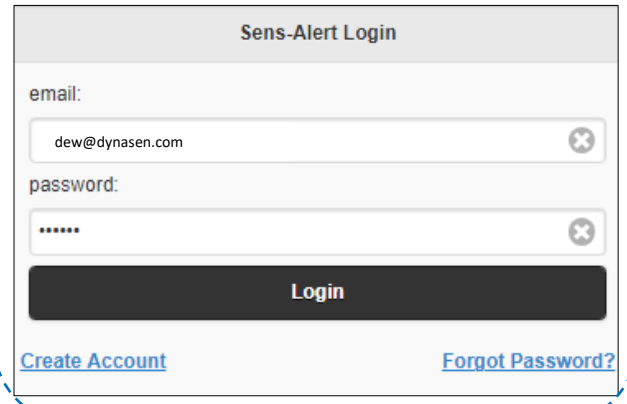
PART NUMBER Fee Type & Description	DYN-IRSG-30-1	Comments
Short Burst Data Re-Activation Fee	$99.00	Single Charge
Monthly Fee per IMEI	$39.95	Per month
KBytes Included in monthly fee	30	Per month, no carry over of unused bytes.
Usage Rating in excess of Included Bytes User Payload Data Price **Per 1000 bytes**	$1.10	For both Mobile Originated and Mobile Terminated Messages (All usage is inclusive of system overhead)
Usage Rating: Minimum billable message size in bytes	10	For both Mobile Originated and Mobile Terminated Messages, regardless whether Included or Excess bytes
Mailbox Check *[A Mobile Originated Message, with Zero user bytes of data]*	$0.02	Per mailbox check if a Mobile Terminated message is not queued at the Gateway.
Mailbox Check *[A Mobile Originated Message, with Zero user bytes of data]*	$0.00	Per mailbox check if a Mobile Terminated message is queued at the Gateway.
Mobile Terminated Ring Alert [When used with a compatible IDM]	$0.00	Ring Alerts are automatically triggered when a suitably provisioned IMEI is sent a Mobile Terminated Message.
SBD Registration	$0.02	Each SBD is allowed one free registration event per month, included in the monthly fee. Extra event will incur a per event charge.
Monthly IMEI Fee while Suspended	$9.00	Per Month

OVERVIEW OF THE THREE ESSENTIAL COMPONENTS OF THE SYSTEM

The Sens-Alert system overview is described graphically below. It is comprised of 3 major items; 1. The Sens-Alert hardware which includes the Satellite SBD Transceiver and sensors, 2. The Sens-Alert Website browser portal (http://app.sens-alert.com) for monitoring and controlling your remote system, and 3. The "WILPort" portal from Wireless Innovation, the provider of the SBD service plan for the Satellite modem. As a user, you will spend almost all of your time using the Sens-Alert Portal (http://app.sens-alert.com) communicating with your system(s). Activation and service subscription arrangements with Wireless Innovation for the Satellite Transceiver is described in separate documents. Contact Dynasen for more details.

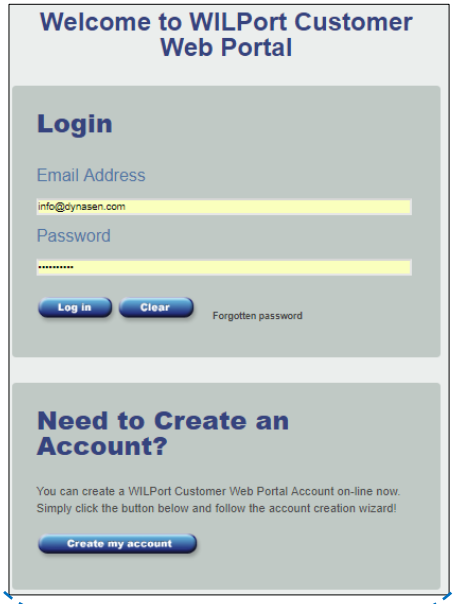
Sens-Alert Portable Remote Sensing System

http://app.sens-alert.com



Sens-Alert Unit Interface Portal provide User access to remote device

https://portal.wilport.net



Wireless Innovation Provides SBD Service Plan

USING THIS DOCUMENT

This document can be used as a guide to take you through the steps for using your Sens-Alert system. This Manual assumes that you have completed the procedure to establish your Account as well as registered for the Satellite SBD service activation with Wireless Innovation. These steps can be completed at the portal called, "WILPort" at Wireless Innovation. Please go to https://portal.wilport.net and sign-up.

This Manual is comprised of various "screen Shots" of the Sens-Alert Web portal where the user(s) access the devices. The Sens-Alert web portal is quite straight forward to use but, if needed this manual can provide additional guidance for the web site.
Below is a list identifying icons used to guide you through aspects of the web site account set-up procedures outlined for you in the following pages.

←These symbols indicate something that you can select.

←This symbol indicates a field that needs your input.

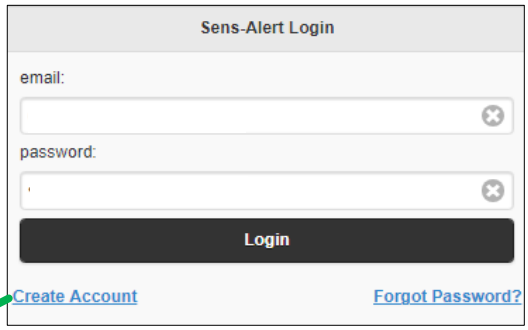
←This symbol indicates information that explains something important or informative about the location or input field.

←This symbol indicates that there may be an option to have a field or group of fields automatically filled based on items you have already input previously.

CREATING YOUR SENS-ALERT ACCOUNT

Access to the remote Sens-Alert field unit(s) is provided through the http://app.sens-alert.com/ portal. In order to have access to a unit a user needs to register so that the system can link you to any of your devices. There is no charge for this. This step is outlined here. Go to: http://app.sens-alert.com/ and select "Create Account".

Be sure your browser allows pop-up's (turn off your pop-up blocker) until you complete this procedure.



1. Enter you First and Last name
2. Enter your phone number, exactly 10 digits i.e., 8041231357
3. Enter your email address
4. Enter a unique password, a minimum of 6 characters..
5. Renter the unique password to confirm the password.

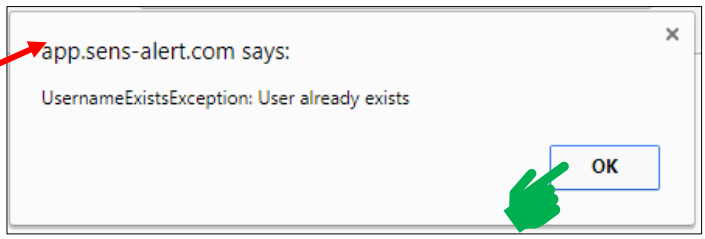
(Click to create your account)

(cont. next page)

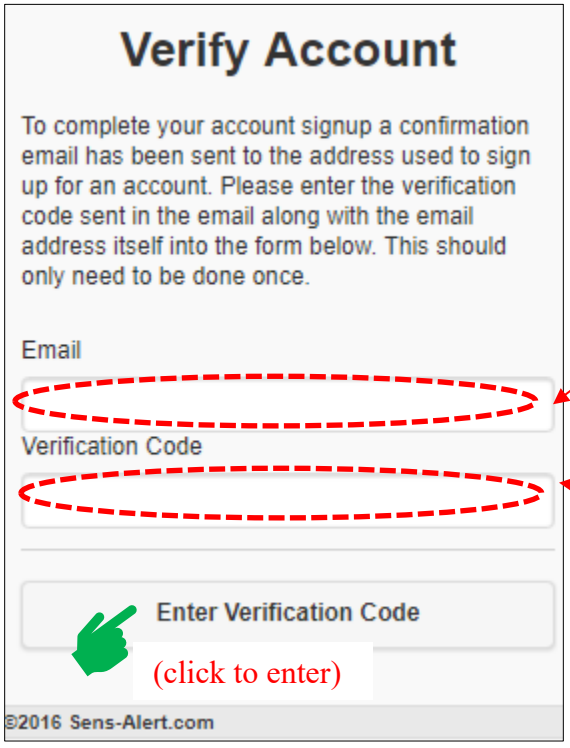
CREATING YOUR SENS-ALERT ACCESS ACCOUNT (cont.)

If an account already has the email address or name information that you just entered, you will receive a "Username Exists Exception" error message. Select OK, and return to the form to edit it with new information.

(If you already have an account under this name or email, you will see the following message, select OK and re-enter new information)



If you have successfully entered your account information, you will receive an email notification (delivered to the email you entered). In this email will be a unique "Verification Code", enter this number and your email address, then select "Enter Verification Code". You are finished! Now you will be able to access any Sens-Alert device you are authorized for. Authorization for access to any devices is controlled by the owner of the devices.



1 Enter your email (the one associated with the account you just registered).

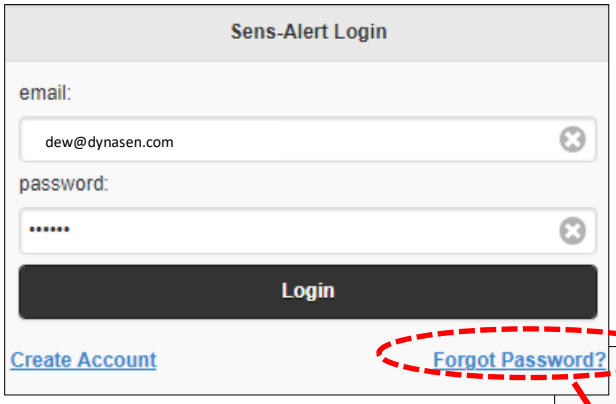
2 Enter the verification code from the email you just received.

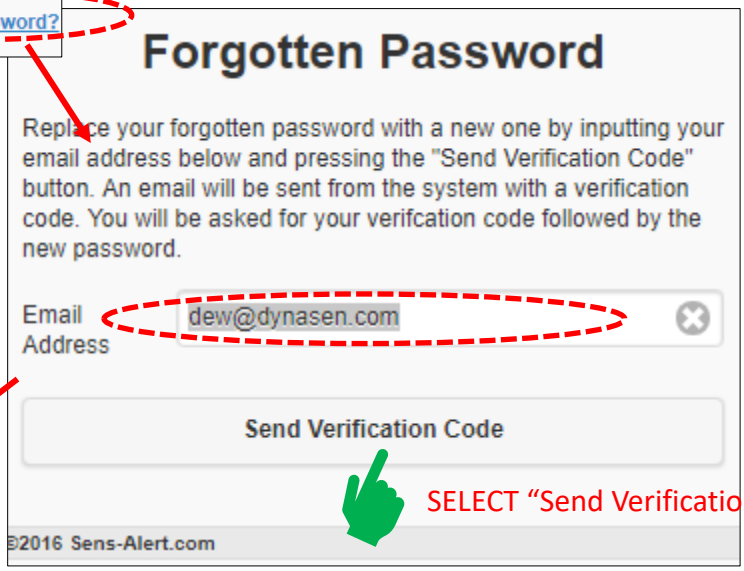
USING THE SENS-ALERT WEB PORTAL TO RESET PASSWORD.

The following assumes that you have already signed up for your Sens-Alert portal account at, http://app.sens-alert.com .
After establishing your account and your Owner/Administrator has assigned you access to their Sens-Alert devices, you simply log in using your email and password. If you forget your password, you can select the "Forgot Password". Once you do this, you will enter your email address, and select "Send Verification Code". You will receive an email with a numerical "Verification Code. Input this when requested and continue on to change the password (see below). Once your password issues are resolved you can log on normally.

http://app.sens-alert.com

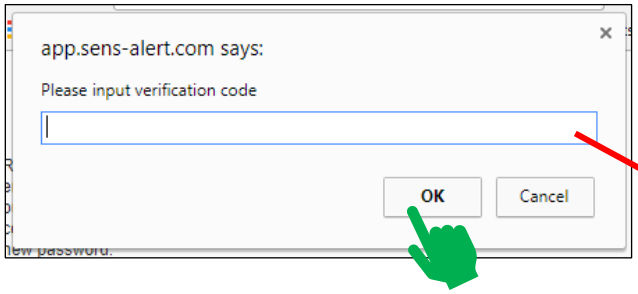
Be sure your browser allows pop-up's (turn off your pop-up blocker) until you complete this procedure.



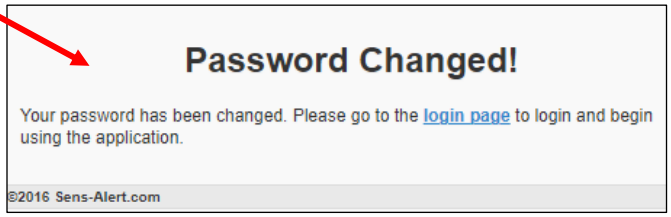


SELECT "Send Verification Code"

You will receive an email with a "verification Code". Copy this code and enter it here. Next a screen will show up asking for a new password, type in a new one and select OK.



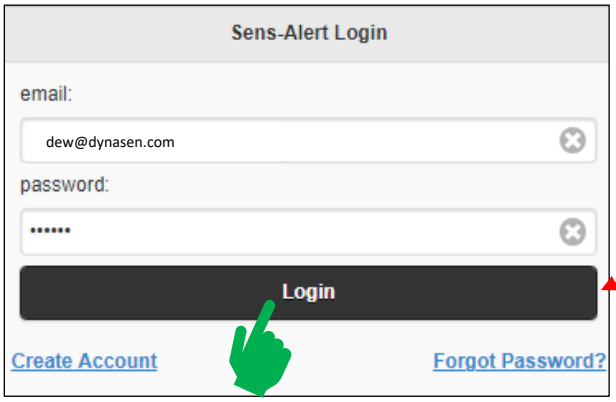
Once the correct code is entered, you will see the following screen indicating the password has been changed! And you can proceed to login with the new password!



RESETTING SENS-ALERT PASSWORD

WEB PORTAL ACCESS TO YOUR SENS-ALERT UNIT

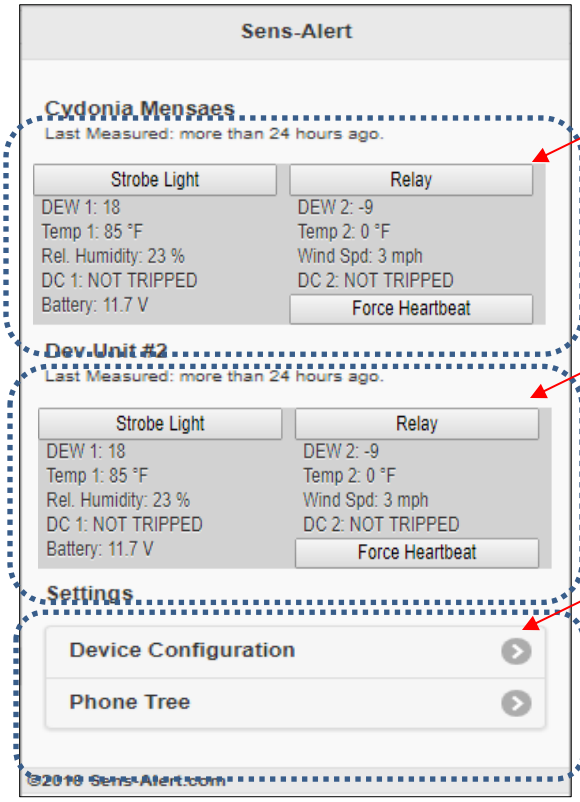
The following assumes that you have already signed up for your Sens-Alert portal access at, http://app.sens-alert.com . To login and access your system(s), navigate to the login page and select "LOGIN". ***Note, you may have to always select "LOGIN" twice, this is a characteristic of the system login routine, this is normal.* ** If you have forgotten your password go to the section on "Resetting Your Password". If you do not have an account, see the section on "Creating Your Sens-Alert Account".



You may have to select "LOGIN" 2X's to get in, this is normal for this web site.

Device Monitoring.

Once you have completed the necessary account set-up procedures and have been given access to a device (or devices), The next step is to login and view your device(s) using your email and password. The top-level home screen is presented below. This particular example below indicates that the user has access to two units. One named "Cydonia Mensaes", and one named "Dev Unit #2". These names have been entered by the operator so as to uniquely identify the devices. These names can be changed by the user if needed by selecting the "Device Configuration" tab in "Settings" at the bottom of the screen.
In the screen image below, you can see all the active sensors and their last reported condition or value. Sensors that are active are indicated, any sensors that have been turned OFF (or not purchased) will not be shown.



First Device. Shows the last reported Sensor Status

Second Device. Shows the last reported Sensor Status

Selections you can make to adjust settings for any of the devices. Device Configuration allows you to set the Trip points and sensor related details. The Phone Tree allows you to set up phone numbers to be called on an alert event.

USING THE SENS-ALERT WEB PORTAL TO CONFIGURE THE SYSTEM.

General Device Configuration.

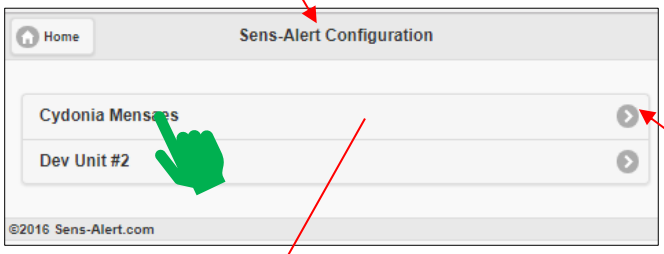
When configuring the Sens-Alert device there are two top level selections to choose from; “Device Configuration” and “Phone Tree” (these two selections are at the bottom of the “monitoring window shown in the previous page).

The “Device Configuration” tab is where the user will go to turn ON or OFF the different sensors as well as input all the trip values for each active sensor. High level control and Callout parameters are set in this tab as well for a particular device.

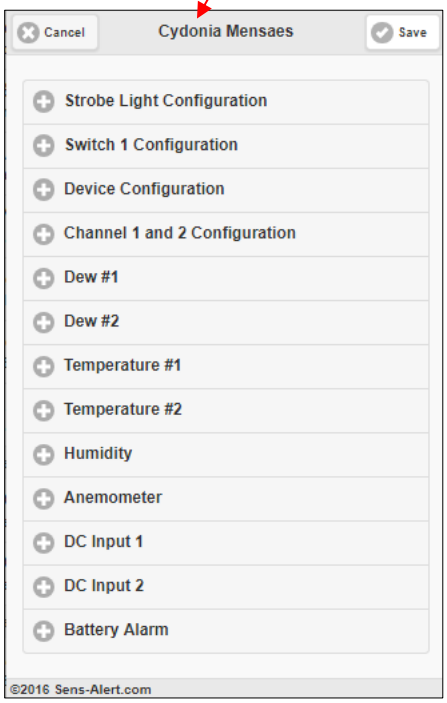
The “Phone Tree” is where the user goes to input information for who is to be called, at what phone number to be called at, and all call related settings for when a trip condition occurs.

Settings inside these tabs are stored in memory until the user logs in and makes changes. If your settings for call out phone numbers and trip points remain the same you may not go into this area very often…

1 Select Device Configuration



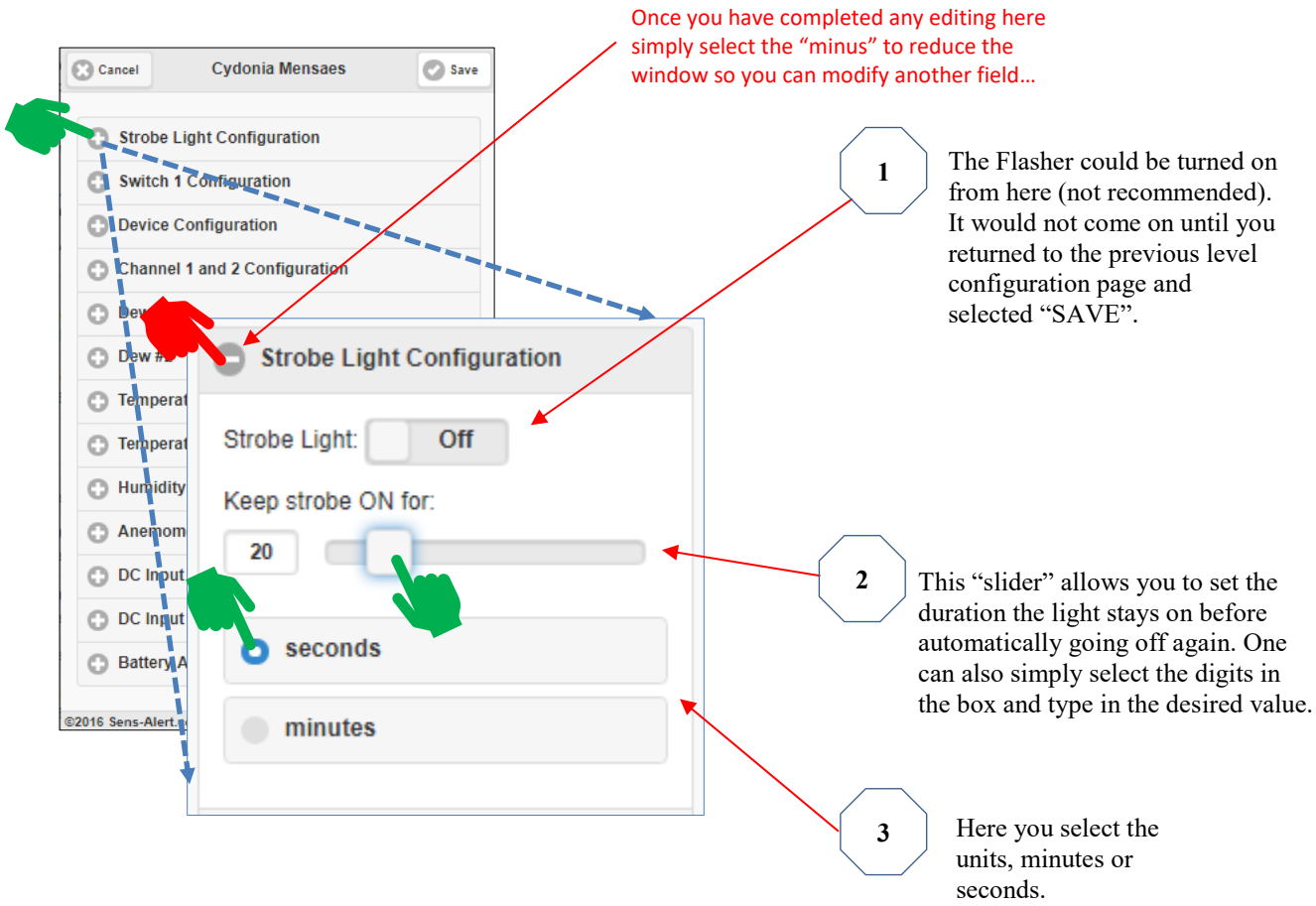
2 Select a device. For this example, we select the first unit “Cydonia Mensaes”.



3 This screen shows the available adjustments that can be made to this particular device (“Cydonia Mensaes”). To adjust any parameter simply select the “+” symbol next to the parameter and a new window will appear where you make changes. The following pages outline each possible selection.

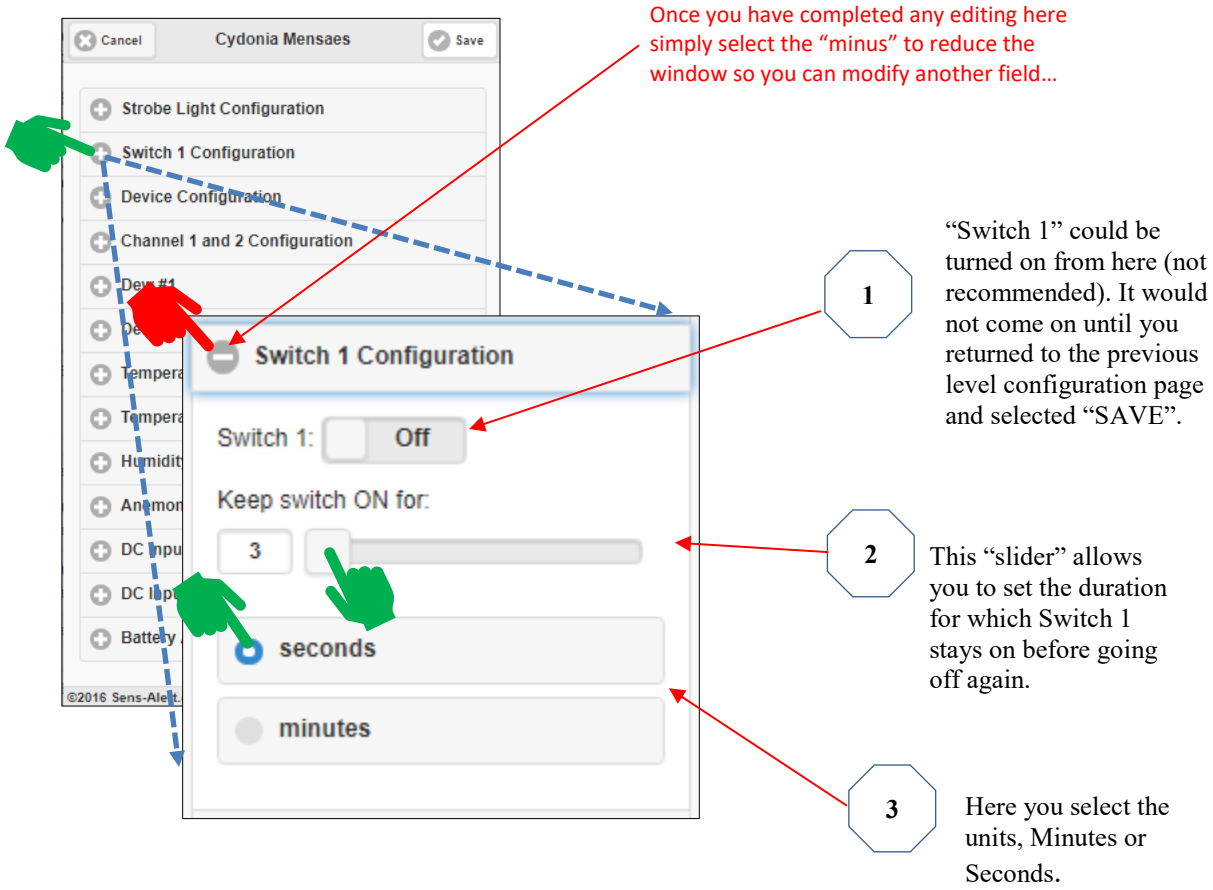
Strobe Light Configuration.

The "Strobe Light" tab allows one to configure the details associated with the Strobe light option on the unit. The strobe light is a simple flashing light option that can be activated by selecting the "Light On" button at the device monitoring page. Once activated it will stay on for the duration specified in these settings. This option allows a user to locate the system in the dark of night. You can set the duration the light will stay on once activated as well as select the units for the duration (seconds or minutes). When you are finished inputting values here, simply select the (-) next to Device Configuration to reduce the window back to the previous screen. This flasher also provides visual feedback when the unit has received new setting from the web portal the influence the operation of the remote field unit (settings like changing a sensor or a sensors trip point threshold).



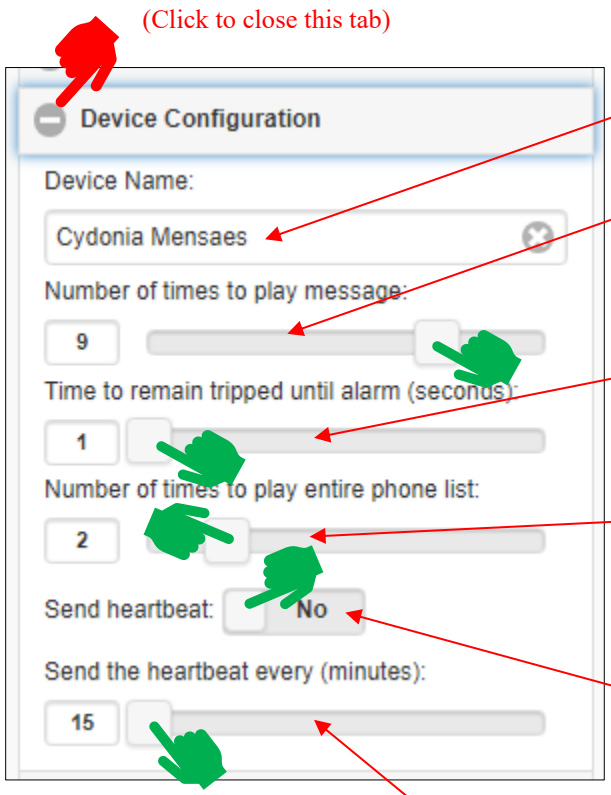
Switch 1 Configuration Option.

The "Switch 1 Configuration" tab allows one to configure the details associated with an optional external switching capability that can be built into the system. This could be used to switch something on which is located adjacent to the unit in the field. Switch 1 is a simple control feature option that can be activated by selecting the "Switch 1" button at the device monitoring page. Once activated it will stay on for the duration specified in these settings. You can set the duration the switch will stay activated as well as select the units for the duration (seconds or minutes). When you are finished inputting values here simply select the (-) next to Device Configuration to reduce the window back to the previous screen.



Device Configuration settings

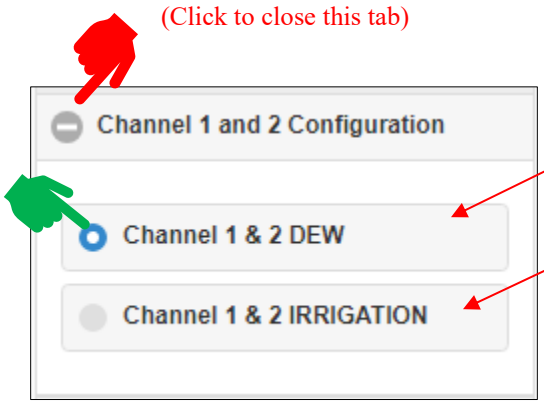
Device Configuration setting fields are described below. These are important parameters that allow one to identify each unit when viewing the sensor values in the monitoring window. These parameters also influence the "Heart Beat" settings (automatic sensor status updating frequency) and factors applied to parameters when calling the alert phone numbers during a trip event. When you are finished inputting values here, simply select the (-) next to Device Configuration to reduce the window back to the previous screen.



1. Input a "Name" for the device (i.e., "Field #21 or "Back 40"..etc./.).
2. How many times do you want the Sens-Alert voice message to be repeated during a call to report a trip condition?
3. How long would you like sensors to remain past a trip threshold before you are notified?
4. How many times do you want the system to go through the phone list (list of phone numbers to be called on a trip condition- see Phone List tab back on the monitoring page)?
5. A "Heart Beat" is not required. One can simply wait for the unit to call on a trip condition, and/or call to request a status update by using the "LIVE UPDATE" button on the monitoring home page. Select NO, if you do not want the automatic "Heart Beat".
6. How often do you want the unit to report from the field to update the sensor values (this is called a "Heart Beat")? **Higher Heart Beat frequencies can lead to Data Overage Charges**). Every 15 minutes is the fastest heart beat available.

Channel 1 and 2 Configuration General settings (set to Dew or Irrigation Options)

Channel 1 and 2 Configuration setting fields are described below. These simply set the two analog channels (located at the control module and adjusted manually using the two knobs there) to either Hay Clip monitoring if monitoring Hay toughness, or Irrigation Channels if monitoring water position in operations like flood irrigation or water intrusion. (User needs to have purchased these probes as an option.) When you are done making your selections here, select the (-) next to Device Configuration to reduce the window back to the previous screen.

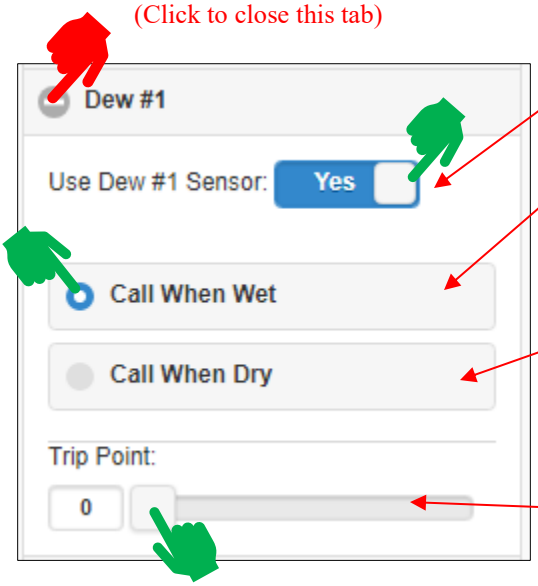


1 — Select this button if you are using Channel 1 and Channel 2 for Hay Clip sensors ("Dew Sensors")

2 — Select this button if you are using Channel 1 and Channel 2 for Flood Irrigation or water detection.

Channel 1 (or Channel 2) Configuration settings

Channel 1 Configuration setting fields are described below [*Note: The settings for the second Channel (Dew or Irrigation Channel 2) are the same*]. In this window, you choose if you want to use or monitor Channel #1 (which is either Dew or Irrigation depending on the mode it is set to in the "Channel 1 and 2 Configuration" settings). You can instruct it to alert you upon a transition from a "dry" hay to "wet" (i.e., typical baling start condition) or from a "wet" condition to a "dry" state (i.e., rained on hay that is drying out). When you are done making your selections here, select the (-) next to Device Configuration to reduce the window back to the previous screen.



1 — Select this button to "Yes" if you want to use or would like to monitor Channel 1 Hay Clip sensor ("Dew Sensors"). Otherwise, choose "No"

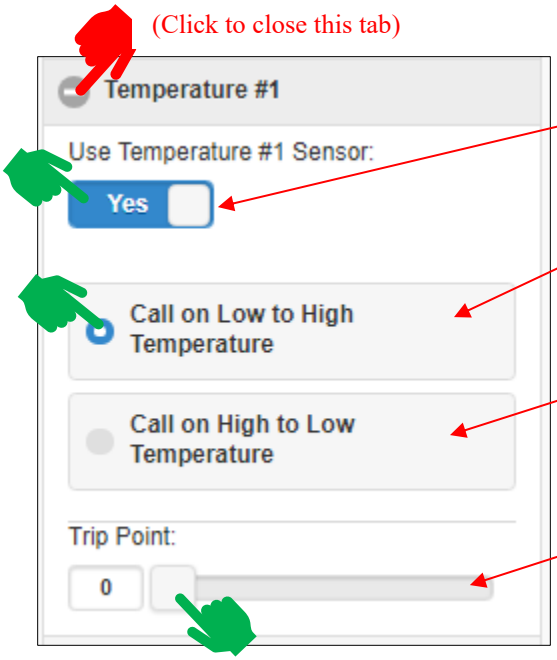
2 — Select this button if you are using Channel 1 to monitor "dry" or fully cured hay with a Hay Clip and are waiting for hay to toughen up from moisture.

3 — Select this button if you are using Channel 1 to monitor "rained on" hay with a Hay Clip.

3 — This "slider" allows you to set the "Trip Point" threshold (the level at which you want to be called). Set to "0" for Dry-to-Wet Transition. Set to a negative value like "68" for Wet-to-Dry (rained-on hay that is drying out). Value is assumed negative when in the Wet-to-Dry mode.

Temperature 1 Option Configuration

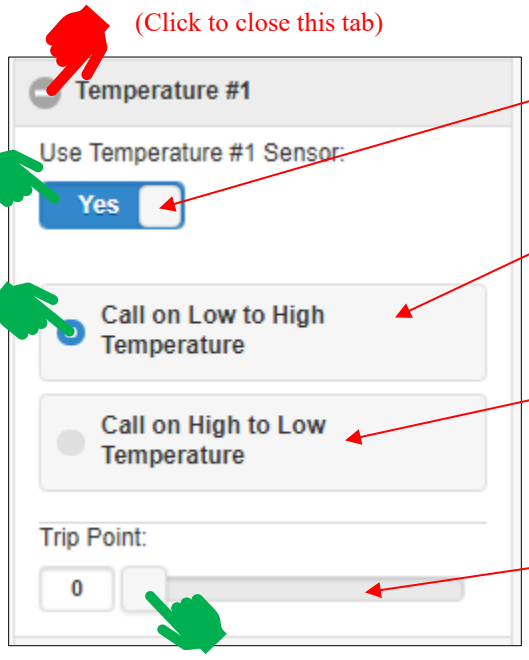
Temperature 1 is the "primary" temperature monitoring device (user needs to have purchased the "Humidity/Temperature1" probe as an option). This Temperature 1, is incorporated into the relative humidity probe optional sensor which allows for monitoring relative humidity and/or temperature with the same probe. When you are done making your selections here, select the (-) next to Device Configuration to reduce the window back to the previous screen.



1. Select "Yes" if you want to monitor and be alerted on a temperature trip point event. Otherwise select "No".
2. Select this button if you want to be alerted to a temperature transition from a "high" temperature to a "low" temperature.
3. Select this button if you want to be alerted to a temperature transition from a "low" temperature to a "high" temperature.
4. This "slider" allows you to set the "Trip Point" threshold (the level at which you want to be called). Select the desired trip point temperature (Degrees F).

Temperature 2 Option Configuration

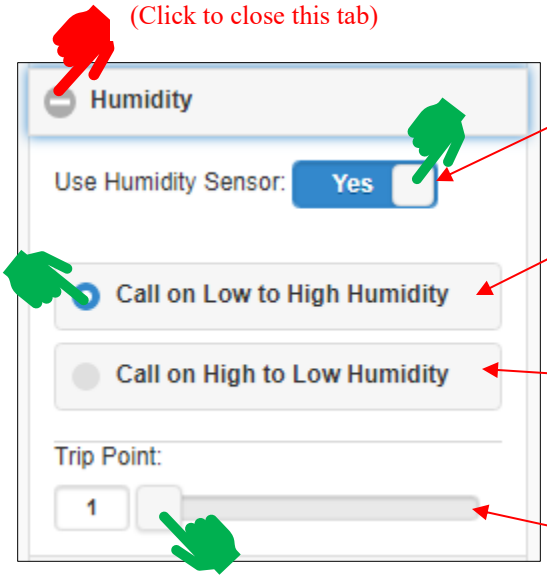
Temperature 2 is an optional "secondary" temperature monitoring device (user needs to have purchased this probe as an option). It provides an option to monitor a second environmental temperature or monitor a temperature without purchasing the RH+Temp probe option. When you are done making your selections here, select the (-) next to Device Configuration to reduce the window back to the previous screen.



1. Select "Yes" if you want to monitor and be alerted on a temperature trip point event. Otherwise select "No".
2. Select this button if you want to be alerted to a temperature transition from a "high" temperature to a "low" temperature.
3. Select this button if you want to be alerted to a temperature transition from a "low" temperature to a "high" temperature.
4. This "slider" allows you to set the "Trip Point" threshold (the level at which you want to be called). Select the desired trip point temperature (Degrees F).

Humidity Option Configuration

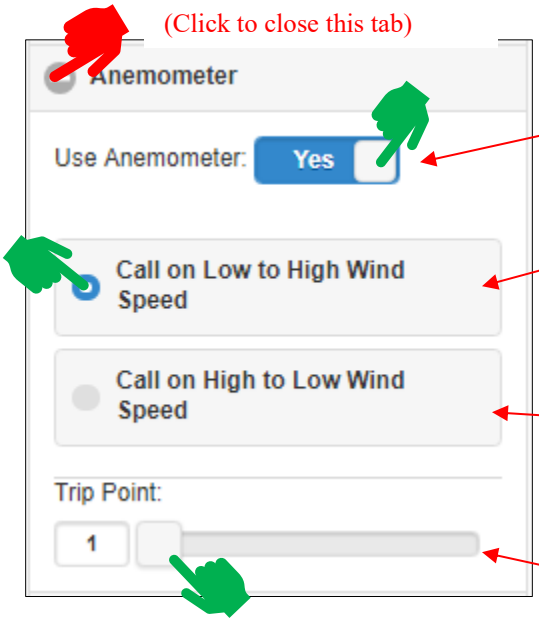
Humidity is an optional monitoring device (user needs to have purchased this probe as an option). It provides an option to monitor relative humidity and is purchased in a single transducer package along with a temperature probe (Temperature 1). When you are done making your selections here, select the (-) next to Device Configuration to reduce the window back to the previous screen.



1. Select "Yes" if you want to monitor and be alerted on a temperature trip point event. Otherwise select "No".
2. Select this button if you want to be alerted to a relative humidity (RH) transition from a "low" RH to a "high" RH.
3. Select this button if you want to be alerted to a relative humidity (RH) transition from a "high" RH to a "low" RH.
4. This "slider" allows you to set the "Trip Point" threshold (the level at which you want to be called). Select the desired trip point humidity (%RH [+/-2%]).

Anemometer Option Configuration

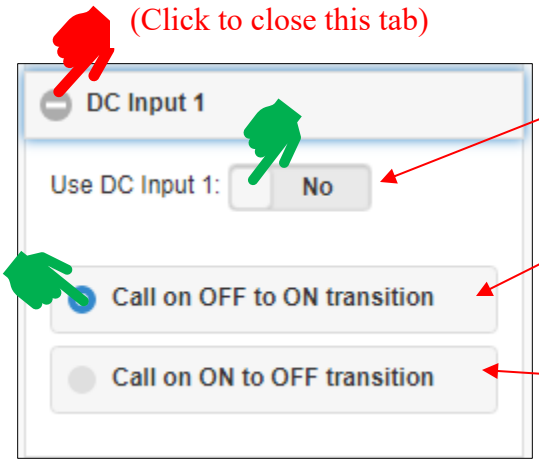
Anemometer or wind velocity is an optional monitoring device (user needs to have purchased this probe as an option). It provides an option to monitor wind speed and is purchased in a single transducer package. When you are done making your selections here, select the (-) next to Device Configuration to reduce the window back to the previous screen.



1. Select "Yes" if you want to monitor and be alerted on a wind velocity trip point event. Otherwise select "No".
2. Select this button if you want to be alerted to a wind speed transition from a "low" to a "high" velocity.
3. Select this button if you want to be alerted to a wind speed transition from a "high" to a "low" velocity.
4. This "slider" allows you to set the "Trip Point" threshold (the level at which you want to be called). Select the desired trip point wind speed (mph [+/- 1mph]).

DC Input 1 (or 2) Option Configuration

DC Input 1 (or DC Input 2) is an optional switch closure or opening monitoring device (user needs to have purchased this probe as an option). It provides an option to monitor a switch closure or a switch opening at the remote device. This can be used for monitoring unauthorized access to an area or building, or it can alert you to a relay closure from something like a motion detection system. There are many ways these inputs can be utilized. When you are done making your selections here, select the (-) next to Device Configuration to reduce the window back to the previous screen.



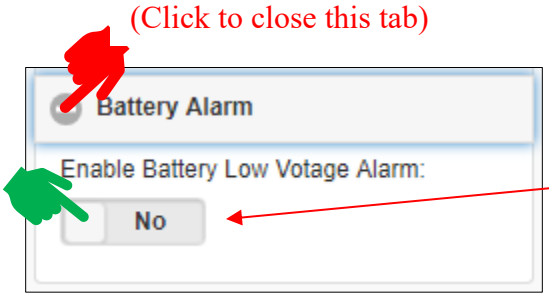
1 — Select "Yes" if you want to monitor and be alerted on switch transition event at the unit. Otherwise select "No".

2 — Select this button if you want to be alerted to a transition from "OFF" to "ON".

3 — Select this button if you want to be alerted to a transition from "ON" to "OFF".

Battery Alarm Configuration

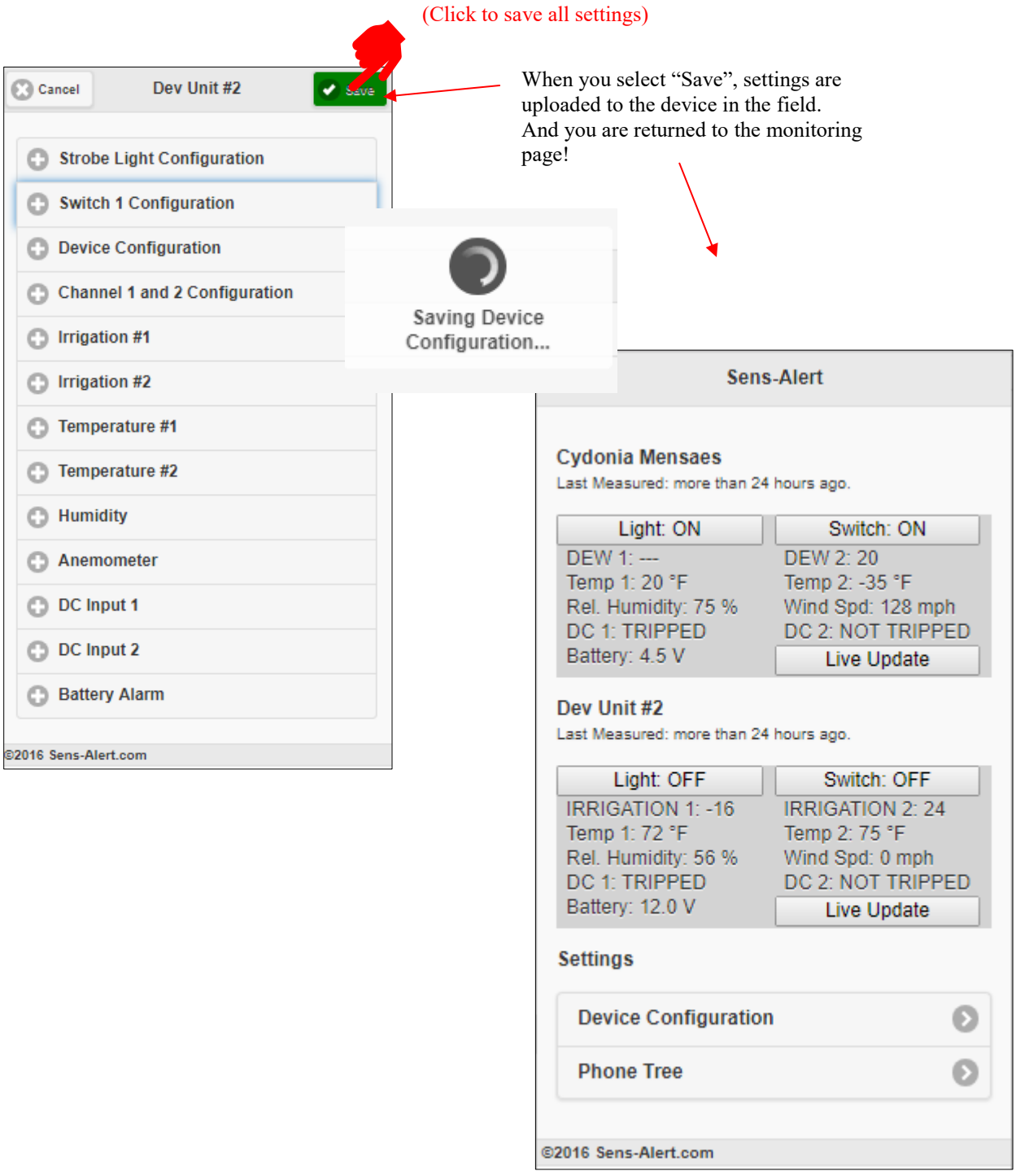
The Sens-alert system can monitor its own battery voltage level. If you enable this option, when the system reaches a preset level of 11.7VDC, the unit will alert the user to this condition. Note this is a back-up monitoring of the battery voltage. Good practice is to ALWAYS evaluate your battery voltage prior to deploying the unit to the field! This option is built into each unit. When you are done making your selections here, select the (-) next to Device Configuration to reduce the window back to the previous screen.



1 — Select "Yes" if you want to be alerted on a "Low Battery" situation. Otherwise select "No".

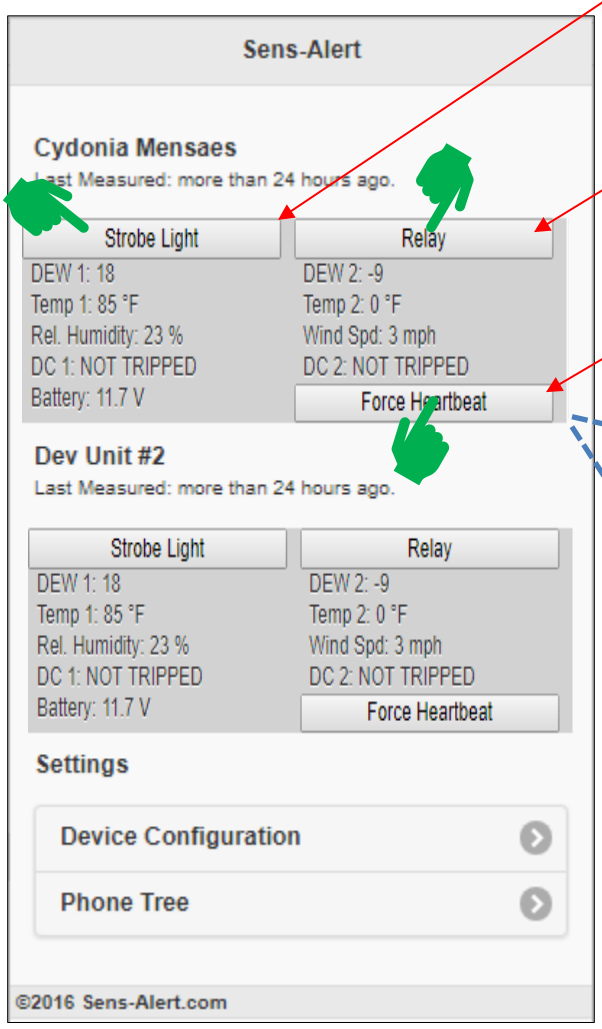
Saving the Device Configuration Settings

After you have completed all the appropriate settings for your device, you simply select “Save”. The screen will then indicate the updated values are being sent! This transmission uses more data than a typical “Heart Beat” transmission.
After you have saved the settings, you will be returned to the monitoring page for your device(s).



Real-Time Switching, "Force Heartbeat" Request and Real-Time Switch Control

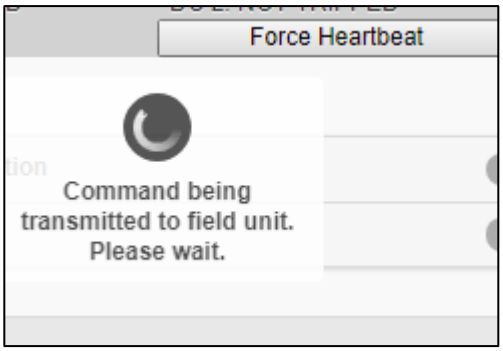
The system can be configured with optional switching capabilities. If you have these options, you can make the selection from your monitoring location (the "home Page" for your account shown below). If you activate one of these switches or request a "Live update" of the remote sensor values, you will see a message pop-up from the system alerting you that it is making a SBD transmission to the unit in the field to update the status of your selection (i.e., Switch on the "Light" (flashing beacon), or turn on the "Switch" to control something at the unit, or request a more recent set of field data "Force Heartbeat"). Note, that the Flashing beacon will illuminate on the device as the result of a "Forced Heartbeat", or the change of a trip point or sensor selection. Note that there is a system latency (or delay) for the unit to respond to these commands. This is normal and is due to the networks involved and the fact that all these transmissions go "to space and back"! Early indications are that this latency can be anywhere from 30 seconds to 4 minutes…Placement in a location where the transceiver has a clear view of the sky will minimize this latency.



1 Turns on the flashing beacon on the top of the device. Useful for night time location of the unit(s).

2 Activates the optional local Switch control at the location of the unit(s).

3 Requests current values from the remote field unit, This is a "Heart Beat" request. After a couple of minutes **you will need to "Refresh" you screen in your browser to see the recent values reported.**



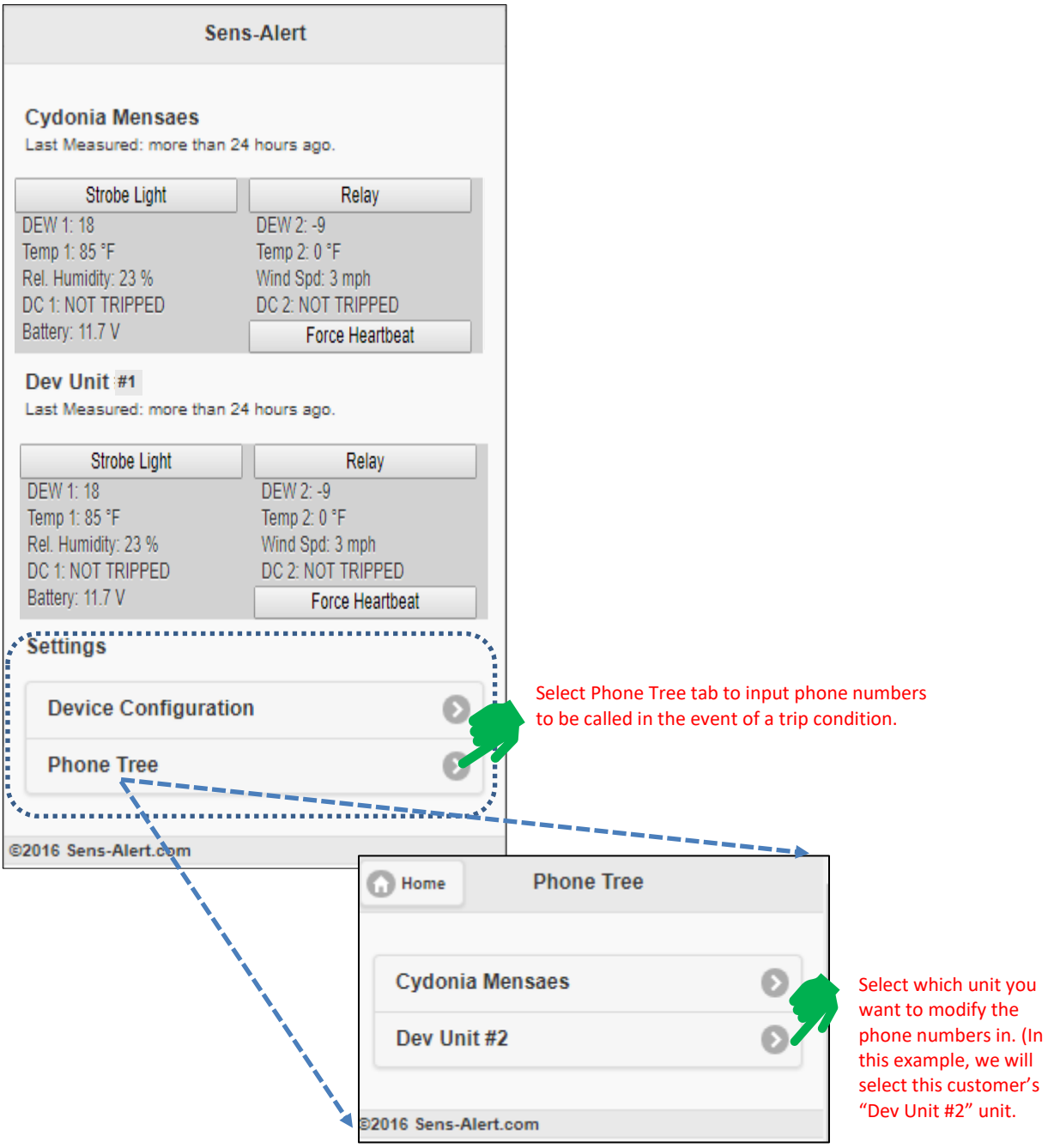
When you select "Force Heartbeat" you will see the "spinning" symbol show up. After a minute or so the values in the screen of the portal will be updated.

Note,
This spinning symbol will also be displayed upon the selection of "Strobe Light" or "Relay".

OPTOINAL REMOTE SWITCHING AND HEART BEAT REQUESTS FROM PORTAL

Setting up the Phone Tree for alert callout notification.

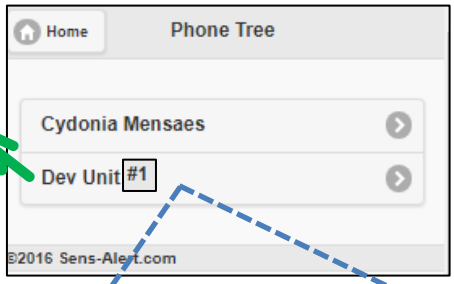
The system needs to be configured so that you and/or others are notified of a trip condition at the unit. This setup is performed in the "Phone Tree" tab and is described next. Starting at the Home page (monitoring page), http://app.sens-alert.com/ . select the "Phone Tree" tab.

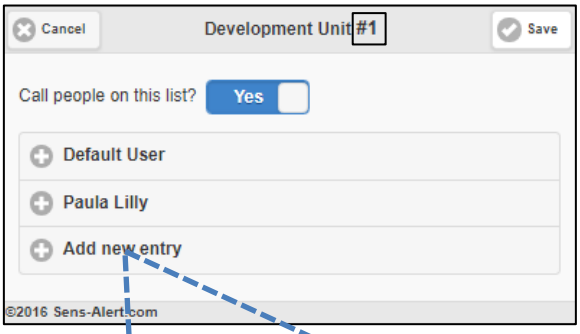


(cont.)

Adding a New Person to be Notified to the Phone list

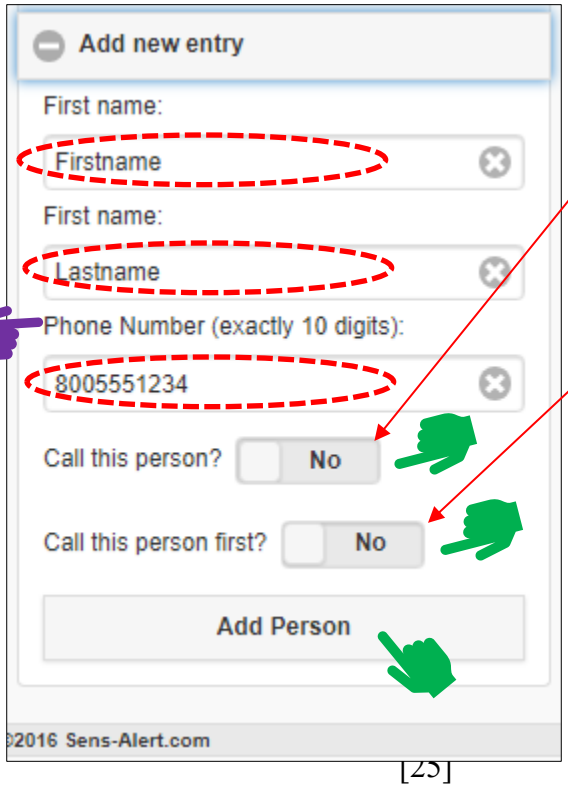
Continuing to the next level in the Phone Tree settings…





This is a list of people currently selected to be potential call recipients in the event of a trip condition for the "Cydonia Mensases" unit.

Select "Add New Entry" and input the requested details.



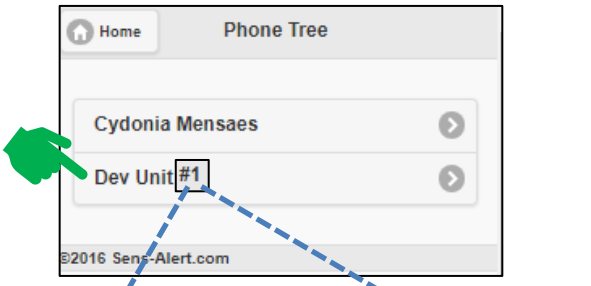
1 People can be on the list but not called. Perhaps they are on vacation and you want to disable calls to them. Select "NO" to NOT call this person.

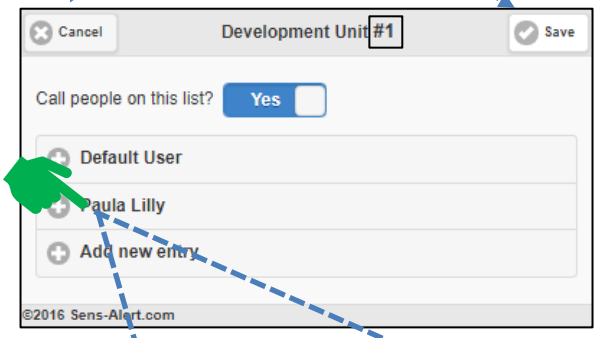
1 Select "Yes" if you want this person to be called first Otherwise select "No".

You must Select "Add Person" and the information will be stored.
Then you MUST select "SAVE".

Deleting a Person to be Notified from the Phone list

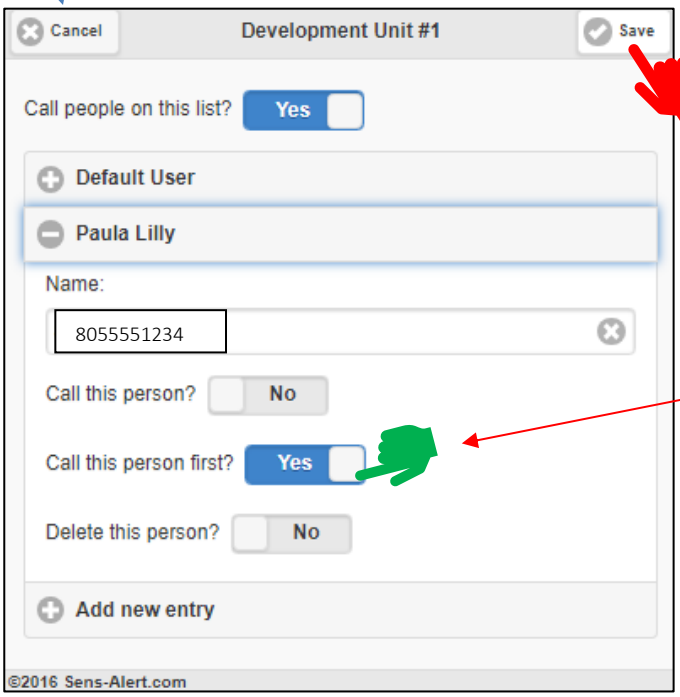
Continuing to the next level in the Phone Tree settings…





This is a list of people currently selected to be potential call recipients in the event of a trip condition for the "Cydonia Mensases" unit.

Select "Person" to be deleted (in this example the name is "Firstname Lastname").



When changes have been made, select "Save".

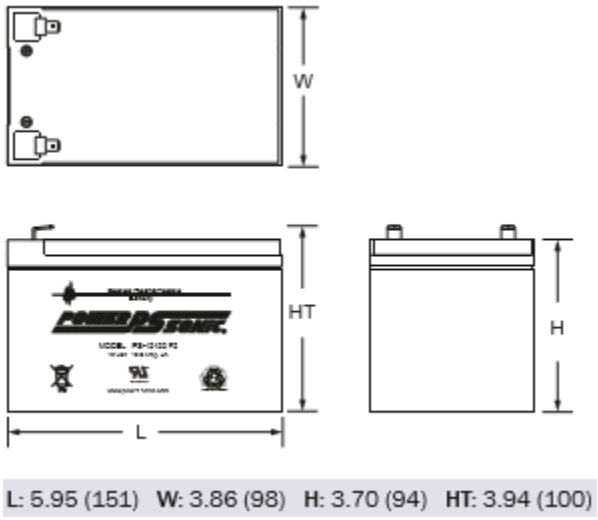
1

Select "Yes" if you want this person to be removed from your call-out list.

Select "YES" and the person will be deleted.

INSTALLING THE BATTERY and BATTERY INFORMATION

Each Sens-Alert remote sensing unit has a small compartment inside the external enclosure that will support a 12Volt, 12 Amp hour Sealed Gel-Cell battery of the size 5.95" Long x 3.86" wide x 3.94" tall. The battery should be installed so that the terminals are easily accessed from the top of the box.
Be careful not to short the terminals when installing the unit and ALWAYS DISCONNECT THE BATTERY FROM THE 110VAC CHARGING UNIT, AND MAKE SURE ALL SWITCHES ARE IN THE OFF POSITION!
Do not remove the spade terminals on the battery to charge it. If for some reason you have removed the battery terminal connections be very careful to reconnect them in the following manner. Plug the battery into the battery cable connector using the spade terminals connecting the RED to the POSITIVE terminal and the BLACK wire to the NEGATIVE terminal of the battery. Once this cable has been installed on the battery and you have verified that the positive and negative have been connected correctly, connect the battery and cable assembly to the Sens-Alert system using the polarized mating plug system Your Sens-Alert system is now ready to use.
IMPORTANT: When charging your battery, use the charger supplied with the unit. Standard automotive batteries can damage the Gel Cell type of battery. Larger chargers can be purchased to expedite the charging of these batteries, but they must be capable of float charging and be certified for Gel Cell technology batteries!



(12Volt, 12 Amp hour Sealed Gel-Cell battery of the size 5.95" Long x 3.86" wide x 3.94" tall)

General Battery Dimensions Details for a Battery that will fit into the enclosure cavity.

Physical Set-up of The Sens-Alert Unit in The Field.

The System is ready to use when you receive it. The only connections that need to be made are the battery, and any sensors you want to use. When the unit is making or receiving a call stay at least 3 feet from the antenna.

Powering up the unit.

• Rotate the SENSITIVITY knobs fully counter-clockwise. Turn on the power to the unit by switching on the "System Power" switch. The display should light up and you will see the greeting "SENS-ALERT SYSTEM".
• Program the appropriate call out phone numbers and calling sequences and sensor trip points online at the http://app.sens-alert.com/ web portal.
• Set sensors to the desired setting (initial value recommended by Sens-Alert, or a value determined appropriate for your application).
• Position the device in the windrow area (or appropriate location for the type of monitoring you are interested in) that best represents the type of response to dew onset that is desirable for baling or raking. In general sensor is placed face up on the side of the windrow, trial and error as well as your own experience will help you to determine the best location. Or if using another sensor system place it in the appropriate location specified for the device. Programming of the device is performed online.

The following Table 1 gives a reference of the system parameter details for the online programming options.

Sens-Alert Descriptions of System Parameters. TABLE 1

To Set:	Key Sequence:	Value ranges	Description
GENERAL SET-UP COMMANDS AND SETTINGS			
Call-out Phone Number(s)	Home page, Settings> Phone Tree>	10 digits required	Call-out phone numbers are access via the Phone Tree tab at the bottom of the monitoring page. In this tab, one can edit existing user numbers and information as well as toggle on or off who is to be called on a trip condition. Phone numbers entered in this area must include area code, a 10-digit number is required for each entry. There is no limit to the number of people on the phone tree list. The people you want to call on the list can be temporarily disabled or terminated from the list. More than one person can be selected to be called "first", but at least one should be selected to be the "first" called during a trip event. If multiple persons are to be "called first" the systems will go through the list in a random order.
Device Configuration…	Home page, Settings> (*select a named unit*)>Device Configuration> Device Configuration		These system settings are found at the home monitoring page at the bottom under Device Configuration>"Device Configuration" tab. These settings control the name of the unit, the number of times an alert message is played during a call (select 1 to 12 times), how long the Sens-Alert needs to remain in the "Tripped state" before it calls out (select from 1-99 seconds), how many times it needs to cycle through the phone list (people to be called) before stopping (select from 1 to 6 times), if you want to have the unit send or not send regular status messages ("Heart Beat"), and what the frequency of this "Heart Beat" is if you are using it (select from 15 to 60 minutes). Note. Heart Beat setting frequency will affect your data usage. The more frequently you request a "Heart Beat", the more data you will consume on your monthly plan. The maximum Heart Beat rate setting is 15 (for a report every 15 minutes), the Minimum rate is for the unit to report every hour (60 min). If the Heartbeat is turned OFF, you will need to manually request updates by selecting the "FORCE HEARTBEAT" button at the Sens-Alert portal for the device.
Strobe Light Configuration	Home page> Device Configuration (*select a named unit*)> Strobe Light Configuration		The "Strobe Light" is a flashing light is built into the remote Sens-Alert unit. This can make locating the device in the middle of a dark field much easier. It is also a good feedback device for visually verifying changes that are made to the device in the field (i.e., sensor trip point changes, sensor activation or deactivation) This location is where you set how long the strobe light stays on when you call into the device to activate it. Select from 1 to 99 seconds, or minutes.
Switch 1 Option Configuration	Home page> Device Configuration (*select a named unit*)> Switch 1 Configuration		The "Switch 1" option is a local relay switching control option that can be built into the remote Sens-Alert unit. This option could provide users the ability to switch something on or off adjacent to the unit.. Here you set how long the switch would stay activated when you call into the device to activate it. Select from 1 to 99 seconds, or minutes.
Channel 1 & 2 Configuration	Home page> Device Configuration (*select a named unit*)> Channel 1 and 2 Configuration		Channels 1 and 2 are the only two sensor options that have adjustments that are located at the remote unit. The sensor offsets can be adjusted at the unit by using the two knobs on the front of the control panel. These two channels can be set to be "Dew" monitoring channels for "hay toughness" or they can both be "irrigation" monitoring channels for detecting water arrival at the sensors. Selection is made at the web portal to identify these channels as "Dew" or "Irrigation" monitoring inputs.

The following Table 2 gives some of the sensor option parameter details for the online programming options.

Sens-Alert Descriptions of Sensor Option Parameters. TABLE 2

SENSOR RELATED SET-UP COMMANDS AND SETTINGS			
To Set:	Key Sequence:	Value ranges	Description
Dew 1 (or Irrigation 1)	Home page> Device Configuration (*select a named unit*)> Dew#1		Select "Yes" to use this channel for Dew (or irrigation), otherwise select "No". IF "yes" choose "Call when Wet" to monitor when the hay has toughened up enough to start baling. In this mode Choose a trip point of "0". Set the knobs on the control panel to a value of approx. "4" to "5" as read in the display on the unit. As moisture comes in the unit will go from this 4 or 5 value and drift down to "0" at which point It will trip and call out. IF you choose "Call when Dry" to monitor when the hay has dried off enough (after something like a rain event), choose a trip point of something like "95" (this value is assumed negative). In this type of scenario, rained on hay or wet hay will push the device full scale negative in the display. As the hay dries off, the value will gradually creep up towards zero. You would want to be notified before it gets to "0", this is why you select something like "95" so that you are notified before it is completely dry (should read "0" if completely dry). If Channel is set to monitor "IRRIGATION" the trip point should be set to "0". In this situation, you can simply rotate the knobs on the controller to a +25 value in the display (or simply turn full counter-clockwise). As water arrives at the irrigation sensor probe end the value will immediately switch to a full scale negative value (tripping as it passes through "0").
Dew 2 (or Irrigation 2)	Home page> Device Configuration (*select a named unit*)> Dew#2		Select "Yes" to use this channel for Dew (or irrigation), otherwise select "No". IF "yes" choose "Call when Wet" to monitor when the hay has toughened up enough to start baling. In this mode Choose a trip point of "0". Set the knobs on the control panel to a value of approx. "4" to "5" as read in the display on the unit. As moisture comes in the unit will go from this 4 or 5 value and drift down to "0" at which point It will trip and call out. IF you choose "Call when Dry" to monitor when the hay has dried off enough (after something like a rain event), choose a trip point of something like "95" (this value is assumed negative). In this type of scenario, rained on hay or wet hay will push the device full scale negative in the display. As the hay dries off, the value will gradually creep up towards zero. You would want to be notified before it gets to "0", this is why you select something like "95" so that you are notified before it is completely dry (should read "0" if completely dry). If Channel is set to monitor "IRRIGATION" the trip point should be set to "0". In this situation, you can simply rotate the knobs on the controller to a +25 value in the display (or simply turn full counter-clockwise). As water arrives at the irrigation sensor probe end the value will immediately switch to a full scale negative value (tripping as it passes through "0").
Temperature #1	Home page> Device Configuration (*select a named unit*)> Temperature #1		This is the Primary temperature monitoring device option (is included with the Relative Humidity probe option as a single unit). Select "Yes" to use the primary temperature unit, otherwise select "No". Select whether you want the unit to trip as the temperature decreases or increases to the set temperature value. Select the temperature trip point setting at which you want the unit to call-out (0 to 99F).

To Set:	Key Sequence:	Value ranges	Description
Temperature #2	Home page> Device Configuration (*select a named unit*)> Temperature #2		This is a secondary temperature monitoring device option (is for someone who did not purchase the Relative Humidity and temperature probe option). Select "Yes" to use temperature #2 unit, otherwise select "No". Select whether you want the unit to trip as the temperature decreases or increases to the set temperature value. Select the temperature trip point setting at which you want the unit to call-out (0 to 99F).
Humidity	Home page> Device Configuration (*select a named unit*)> Humidity		This is the Humidity monitoring device option (is included with the Temperature#1 probe option as a single unit). Select "Yes" to use the Humidity unit, otherwise select "No". Select whether you want the unit to trip as the Relative Humidity decreases or increases to the set humidity value. Select the Humidity trip point setting at which you want the unit to call-out (0 to 99%).
Anemometer	Home page> Device Configuration (*select a named unit*)> Anemometer		This is the Wind Anemometer monitoring device option. Select "Yes" to use the Humidity unit, otherwise select "No". Select whether you want the unit to trip as the wind speed value decreases or increases to the set wind speed value. Select the wind speed trip point setting at which you want the unit to call-out (0 to 98mph).
DC Input 1	Home page> Device Configuration (*select a named unit*)> DC Input 1		This is the DC Input 1 monitoring device option. Select "Yes" to use the DC Input 1 unit, otherwise select "No". Select whether you want the unit to trip as the DC Input 1 transitions from ON to OFF, or from OFF to ON. Select the Switch transition direction "ON to OFF" or "OFF to ON".
DC Input 2	Home page> Device Configuration (*select a named unit*)> DC Input 2		This is the DC Input 2 monitoring device option. Select "Yes" to use the DC Input 2 unit, otherwise select "No". Select whether you want the unit to trip as the DC Input 2 transitions from ON to OFF, or from OFF to ON. Select the Switch transition direction "ON to OFF" or "OFF to ON".
Battery Alarm	Home page> Device Configuration (*select a named unit*)> Battery Alarm		This is the Battery monitoring selection. You can select if you want the unit to call you if the system reaches this low level. Select "Yes" to use the Battery Alarm and the unit will call you when the remote system's battery voltage drops to 11.7 volts. Otherwise, select "No".

Using The Sens-Alert Hay Clip or Dew Inputs

In general, there are two modes in which the Dew channels can be utilized. The most common application is the Dry-to Wet mode (see the programming example). A new mode that is still evolving, is the Wet-to-Dry mode. These are explained next.

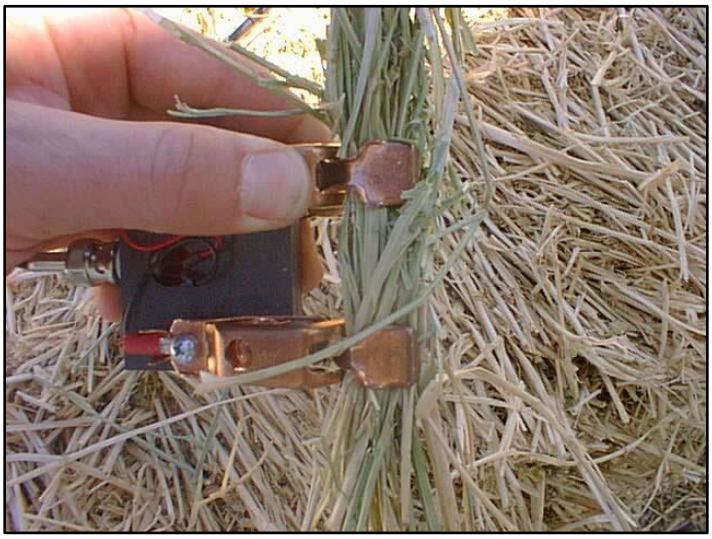
"DRY-to-WET" Mode.
This is the most common way to use this system. The dew sensors connected to the unit allow the device to respond or call-out as the hay "toughens -up" or dew comes in. The appropriate "trip" value is selected for Channel one and Channel two respectively. Then the operator adjusts each channels' sensitivity adjustment (black knobs on the front panel) until an appropriate value is shown on the display. This offset value is recommended when you purchase the sensor. Let's assume that a value of 5 is recommended. So, the user sets the sensitivity adjustment knob to 5 (read on the display). As dew begins to form, the sensor will cause the display to change, causing the value to decrease from 5 to 4…. 3…2..…1…and finally 0. As the unit goes through zero, it instructs the call-out sequence to begin and the unit makes a call, dialing the two preprogrammed numbers. Ideally this indicates the appropriate baling start conditions.

" WET-to-DRY " Mode.
This is another way to use this system. In this mode the dew sensors connected to the unit allow the device to respond or call-out as the hay "dry's-out". This functionality was designed into these units for monitoring hay that had been rained on as well as an attempt to monitor hay-curing conditions. It was set up so that the user could clip on to hay in the windrow while it was wet (or green), then as it dried (or cured) to a predetermined value. The device would sense this, and call the operator notifying him. Values for this setting really are a function of the individual's requirements and may require a certain amount of trial and error. Sens-Alert.com can assist you in determining values for this method.
Let's assume that a value of -80 is recommended as an appropriate trip point for "WET to DRY" testing. Typically in this mode, the operator wants to start baling with hay that is not completely dry for best baling quality. "wet" or "green" hay typically will cause the unit to indicate a very large negative value in the display. The operator wants the unit to call him when the hay has just the right moisture to bale with. For discussion purposes, let's say that the recommended value for this "wet to Dry" mode is -80.
So with the unit powered-up, access the unit at the web portal and sets the trip points -80 (the negative sign is implied in this mode and all you enter is 80 for each channel).
As the hay begins to dry out (or cure), the sensor will cause the display to change, causing the value to decrease from a large negative value (basically "off scale" in the negative direction). The value in the display would change from this "off scale" negative value and progress, say, through a value of -250 to -150 …-100…-90…-85 and finally -80. As the unit goes through -80, it instructs the call-out sequence to begin and the unit makes a call, dialing the two preprogrammed numbers. Ideally this indicates the appropriate baling start conditions.

When you have determined which arrangement you are going to use and the unit has been properly programmed, you are ready to apply the unit to actual field testing.

General Field testing.

•(This assumes the trip points have already been programmed into the web portal. Position the system at the appropriate location in the field and plug the dew sensor or Hay Clip into the bulkhead port on the side of the Sens-Alert unit external enclosure, labeled DEW1 or DEW2. When using the "Hay Clip", select a small "fist-full" of hay about a 3/4" diameter. Place this hay in the jaw of the clips and place on the top of the windrow. If using two sensors a second location might be inside the windrow close to the ground. It has been observed that the effects of ground moisture can toughen the hay to baling conditions even prior to dew formation on the top of the windrow. Experimentation is the best way to determine the best placement and setting for your application. The figure below shows an example of a Hay Clip assembly with a test sample already installed.



Hay Clip Option

• Turn on the power to the Sens-Alert unit.

• (For Dry to wet mode operation) Adjust the sensor sensitivity knob until you view the recommended reading for the unit in the display. This should yield a good starting point to the determination of dew onset (or hay toughness). Rotation of the SENSITIVITY dial counter-clockwise yields “less sensitivity“ to dew formation (takes more dew to trigger the system, or the hay will be tougher when the unit triggers. Rotation clockwise, yields greater sensitivity to dew formation (takes less dew to trigger the unit and the hay should be relatively dryer). NOTE that the display values for this sensor can “bounce” around a little (+/- a point or two). Simply use a visual average to set this value. The circuitry is quite sensitive for this sensor! An initial setting of 5 to 7 in the display is a good start point.

When the Sens-Alert unit is triggered by one of the inputs for the amount of time set in the web portal, the system will call the required phone numbers and play a voice message to alert users of the condition.

During this trip condition, the Sens-Alert unit will instruct the transmitter to call out. It will call the listed phone numbers the number of times recorded in the configurations setup. At any time during this call-out sequence any person being called can “Acknowledge the alert by pressing “1” then “#” button on their phone as instructed by the voice message. At that point, the callout routine is stopped. After someone acknowledges the alarm, you return to the unit and terminate the power on the Sens-Alert unit and remove it from the field.

Other custom configurations can be considered. Call for more information. The current options available for this unit are discussed next.

OPTIONAL CONFIGURATIONS

(contact Sens-Alert.com for more information regarding these options)

Alarm Calling as a Result of a DC Input Option

The Sens-Alert will alert you when one of the DC alarm inputs has been tripped. The DC inputs are simply two inputs that can be used to detect switch closures. If the unit is configured to include these two inputs they will be available to the user via a connector plug wired from the side of the outer enclosure. There will be a +12 VDC pin and a ground pin that can be connected to a general switch for the monitoring of the switches closure or opening, i.e. door opening, closing, float switches etc.

Setting the unit to trigger on a High to Low transition will make the unit call out when the input has transitioned from ON to OFF (HI to LO or closed to open…).

Setting the unit to trigger on a Low to High transition will make the unit call out when the input has transitioned from OFF to ON (LO to HI or open to closed).

Strobe / Flasher

The Sens-Alert is configured to include a Flashing Beacon. This provides the operator with the ability to switch ON a flashing beacon mounted on the top of the enclosure. This is useful in finding the unit in the dark of night! Control is performed through the web portal with the selection of the "LIGHT ON or OFF" button at the monitoring page. This flasher is a valuable feedback device when initially programming the system from the we portal. Upon the reception of new "Trip Points", the flasher will flash for the prescribed period of time in the "Device Configuration….Strobe Light Configuration "Keep Strobe ON" setting.

Relay control Option

The Sens-Alert can be configured to include a relay control option. This option provides the operator with the ability to control a system at any location adjacent to the device. Control is performed through the web portal with the selection of the "SWITCH ON or OFF" button at the monitoring page.

Relative Humidity + Temperature Sensor Option

The Sens-Alert can be configured to include a relative humidity probe that also has a temperature sensor built-in. (The unit is designed to be used in the night time but if the sensor is shielded from solar effects it could be utilized during the day.) The device is placed down at the level of the wind row in any location and the operator selects the appropriate level of RH desired, as the unit senses this threshold level of RH, the device performs the call-out routine. You do not have to use the temperature sensor to trigger from, but is available. Settings for this device are performed at the web portal.
Placement of the sensor option will have to be determined with experimentation. It is suggested that the probe be placed over and just above the wind row (for Hay applications). Placement of about 12" off the ground next to the windrow might be another good location. Keep the movable shield orientated so as to protect the silver R.H. sensor housing from rain and sunshine. If rain is immanent, remove the system from the field. If the device is to be utilized in regular rainy applications, contact Sens-Alert.com for the purchase of a rain type enclosure more suitable for that type of all-weather – daytime application. This particular probe was designed to monitor more closely conditions in and around windrows during night time, leaving the sensor slightly more exposed than you might see in a common R.H. probe design, where it might have protection from all kinds of extreme weather environments. The unit is designed to be easy to transport to any remote position. The standard enclosures that the Sens-Alert are constructed with include a compartment for the storage of the RH/T probe.

Temperature Sensor Option (Temperature #2).

The Sens-Alert can be configured to include a Temperature probe that can provide an independent temperature measurement and alert you to a trip point condition programmed by you. The device is placed down at the level of the wind row in any location and the operator selects the appropriate level of temperature desired, as the unit senses this threshold level of temperature (°F), the device performs the call-out routine. After setting the general command settings at eh web portal for the callout phone numbers, sensor options etc.

Placement of the sensor option will have to be determined with experimentation. It is suggested that the probe be placed out in the field as close to the point of interest as possible.

Wind Anemometer Option

The Sens-Alert can also be configured to include the option to monitor wind speed.

Anemometer Option

A sensor and cable is connected to a designated bulkhead on the enclosure. The anemometer probe is mounted in the support stake (or some other user specified support). The unit will call out after the value has migrated through the “trip Point” specified.

Flood Irrigation Option

The Sens-Alert can be configured to include Irrigation sensors that monitor the position of Flood irrigation waters in fields or pastures. A sensor and cable is run out into the field and when the flood water arrives at the sensor located in a certain point in the field the unit calls two numbers to alert the operator. This device is simple to use and is a "go, no-go" type of determination. That is, it only calls the operator if water has reached the probe. It uses the same physical connector inputs as the two Dew Channels. During this application the sensitivity knob for each dew channel is rotated to its least sensitive position (full counter-clockwise). You can interrogate the unit via the web portal for Irrigation values, but these individual readings will not have much meaning until the water gets to the probe, at that point the value will go completely off scale in the negative direction. The unit will call out after the value has migrated through the "trip Point" specified for the particular channel.

A **B** **C**

Irrigation Probe option.

The images above shows the Irrigation Probe. Fig A, shows the probe and its connection to the external enclosure. Once connected to the enclosure, stretch the cable out to the point in the field where you want to detect water. Push the two stabilizing "screws" into the soil or hook them under the plants (fig. B and C). These allow the unit to remain flat during the monitoring process. Sometimes the transition between night and day time temperatures can cause the sensor cable to rotate, these stabilizing pins help to prevent this from happening. (a rock or clump of soil might work just as well). Be sure not to let the sensing pins (located just inside the two stabilizing screws) contact plant stems, as they will trip the device due to their high conductivity. It may be advantageous to create a depression using the heel of you shoe to rest the sensor in, clearing any conductive debris away from the front of the sensor.
After the sensor trips, return to the unit and terminate the power. Then simply pull the sensor from the field and move to your next location. It is OK to touch the end of the sensor. Be sure to wipe it off after using it so that the sensor surface is ready to go the next time.

ADDITIONAL COMMENTS

ALWAYS DISCONNECT ANY 110VAC POWER (AND THE BATTERY) FROM THE UNIT WHEN SERVICING THE UNIT.

Battery: The 12V DC battery used with this system should be the Sealed Gel Cell battery type should be handled as per manufacturer specifications.

System Fuses: There is a single fuse in this device. It is located on the face of the control panel labeled FUSE. These fuses should only be changed by a qualified technician.

SBD (Satellite) Module Specifications

- IRIDIUM Certified Device
- FCC 47 CFR Part 25 (Contains a modular approved device: FCC ID Q639603N)
  FCC 47 CFR Part 15, Subpart B
- Operating Temperature Range, -40ºC to + 85ºC
- Storage Temperature Range, -40ºC to + 85ºC
- Frequency Range: 1616 MHz to 1626.5 MHz
- Duplexing Method:TDD (Time Domain Duplex)
- Polarization:RHCP
- Multiplexing Method:TDMA/FDMA
- Average Power during Transmit Slot (maximum):1.6 W

Typical Examples of monitoring power consumption:
Power Up: 150mA
Standby (monitoring) with Display backlight “ON”: 60mA
Standby (monitoring) with Display backlight “OFF”: 40mA
Standby (monitoring), Strobe Light ON, 300mA

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