Multilink®
Simply More...

Smart Tracker Remote Power Manager

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INSTALLATION

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Section 1: Critical Safety Issues

Safety Admonishments:

Three different levels of safety admonishments are used within this instruction manual; specifically **DANGER, WARNING,** and **CAUTION.**

Trois niveaux différents d'avertissements de sécurité sont utilisés dans ce mode d'emploi; spécifiquement DANGER, AVERTISSEMENT et ATTENTION.

 **DANGER**

The statement following the **DANGER** heading alerts the equipment user of a potentially life or health-threatening situation unless precautions are taken against it. Admonishments of this nature usually entail the hazards of electrical shock or those encountered that may result in physical injury.

*La déclaration sous la rubrique **DANGER** avertit l'utilisateur de l'équipement d'une situation potentiellement mortelle ou mortelle, sauf si des précautions sont prises contre lui. Les admonistances de cette nature entraînent habituellement les dangers d'un choc électrique ou ceux rencontrés qui peuvent entraîner des blessures physiques.*

 **WARNING** / ***AVERTISSEMENT***

The statement following the **WARNING** heading alerts the equipment user of a condition or procedure that could result in interruption of service to the users or subscribers of the service receiving power from this product.

*La déclaration sous le chapitre **AVERTISSEMENT** avertit l'utilisateur de l'équipement d'une condition ou d'une procédure qui pourrait entraîner une interruption de service pour les utilisateurs ou les abonnés du service qui reçoit l'alimentation de ce produit.*

 **CAUTION** / ***ATTENTION***

The statement following the **CAUTION** heading alerts the equipment user of a condition that could result in damage to the subject equipment or ancillary equipment if care is not exercised during certain maintenance or operating procedures.

*La déclaration suivant la rubrique **ATTENTION** avertit l'utilisateur de l'équipement d'une condition qui pourrait endommager l'équipement concerné ou l'équipement auxiliaire si les soins ne sont pas exercés pendant certaines procédures de maintenance ou d'exploitation.*

SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during installation and operation of the Smart Tracker.

Emergency Shutdown Procedure:

DANGER

Exercise extreme caution when performing the following procedure. Carry out the steps precisely in the order given to avoid the possibility of personal injury or equipment damage.

Perform the following procedure if the Smart Tracker must be shut down and disconnected on an emergency basis:

1. Open the upstream Input AC circuit breaker.
2. Open the Smart Tracker AC circuit breaker.
3. Disconnect all attached harnesses attached at the front of the Smart Tracker.

General Safety Issues:

The Smart Tracker documented in these instructions has been designed, tested, and produced to ensure safe, trouble-free operation. Personnel using or installing this device should completely read and fully understand the following safety instructions. They are provided here as informational guidelines for the continued safety in usage of the product.

Safety Issues of Regarding Installation and Use:

The Smart Tracker has been designed and built to power equipment of matching rated voltage. It is not intended for any other usage and provides output voltages suitable only for its intended application.

DANGER

This Smart Tracker operates from an AC source ranging from 85 to 154 volts. DO NOT open any covers or panels or attempt to perform any service to the Smart Tracker without first removing and disconnecting AC power. Only trained, qualified personnel should attempt service and repair work on the Smart Tracker.

Ground Fault Protection:

The Smart Tracker does not contain integral ground fault protection. Where such protection is required, the power harness should be connected to a ground fault interrupter (GFI) outlet or to a branch circuit protected by a GFI circuit breaker of proper ratings.

Enclosure Safety Issues:

The enclosure and the Smart Tracker must be installed by qualified technicians or installers only, using appropriate mounting hardware in accordance with local codes and construction practices. The device must be installed within a grounded metal enclosure suitable for accommodating DOT/ITS rack mount equipment.

The outer enclosure housing the Smart Tracker must be of adequate strength to support the device. Additionally, the enclosure must afford adequate ventilation for the device such that a minimum free air space of 1 RU (1.75 inches) remains around all sides and the top of the device.

Temperature of the air flowing around the Smart Tracker may be rated up to 74° C (165° F). Air intake and exhaust openings within the enclosure must not be less than what is required to maintain this temperature requirement. If these temperature limits are routinely exceeded or ventilation requirements cannot be attained, a suitable forced-air cooling system may be required within the enclosure.

Section 2: Introduction

Overall Operation:

The Smart Tracker Remote Power Manager is an IP ready, GPS enabled device that provides remote control over each independent outlet, relay, or input contact. Each of the eight outlets may be remotely commanded on or off to cycle power to network devices, CCTV cameras, heater mats, or any device that may be attached to the Smart Tracker. Eight relays are also independently controlled to provide alarm notification to traffic controllers or power activation to auxiliary devices. The eight input contacts may be used to indicate that an external event has occurred, such as tampering with the enclosure, or that a standby generator is currently running. All outlets, relays, and input contacts are fully customizable, providing accurate labeling and descriptions for their use. When any of the outlets or relays changes state, the Smart Tracker stores the current state each outlet and relay in the event that unit must be shutdown. Upon power up, the unit will automatically restore each outlet and relay to its previously stored state of operation.

Embedded in each Smart Tracker is a webpage used to provide the user control of the device. This webpage also includes real-time AC input voltage, total AC current readings, internal and external temperature and humidity conditions, the ability to monitor two external DC voltage sources, and state of operation for outlets, relays, and input contacts. Thresholds for various operating parameters are configurable through the embedded webpage, allowing for email notifications and SNMP trap information to be sent to any number of recipients with information regarding the event. GPS location with mapping provides the exact location of each Smart Tracker that is deployed in the field. All events that occur are kept in an event log that can be viewed through any web browser. A built-in Scheduler and Action Task creator provides outlet and relay automation. Each unit has the ability to reset one or more outlets if network connectivity is lost when utilizing the integrated Ping feature. Management of firmware and upload of configuration files allows each Smart Tracker to be upgraded and maintained remotely. The Smart Tracker also includes a two-line LCD and LEDs to provide local access to parameters and status of currently active outlets, relays, and input contacts.

Primary Voltage:

The Smart Tracker has been designed for operation from standard AC utility lines with an overall voltage range of 85 to 154 volts for 60Hz models. A 15Amp circuit breaker provides power to the device as well as protection from over current conditions. The output voltage of each outlet follows the primary input voltage.

Hot-Start:

In the event that none of the outlets are activated automatically, the Hot-Start feature provides a way to active all outlets from the front panel using the Enter Button. This is a useful feature to allow a user the ability to power multiple devices immediately.

Smart Tracker Features:

- Wide input voltage operating range
- High efficiency for economical line operation
- IP Ready with TCP/IP, HTTP, SMTP, SNTP, and SNMP
- 8 independent 5-15R outlets
- 8 independent output relays
- 8 independent input contacts
- Liquid Crystal Display (LCD) for local parameter information
- Push button for Hot-Start and default network settings.
- Firmware update and unit configuration upload
- Adjustable rack mount brackets

Unpacking and Inspection:

Before installing this equipment, inspect the Smart Tracker for shipping damage or missing components. If the Smart Tracker or other items were damaged in shipment, file a damage claim with the shipping company and contact a Multilink representative immediately. Be sure to retain the original shipping carton and all packing material for the Smart Tracker until it is certain that a warranty return will not be required.

All Smart Trackers include:

1 Smart Tracker, with adjustable rack mount brackets
1 AC power cord
4, 8 position terminal blocks
2, 4 position terminal blocks
1, 6 position terminal block
1 GPS antenna
1 user manual

Missing or Damaged Items:

If items are found to be damaged or missing, contact the shipping company and a Multilink representative immediately. All damage claims must be filed with the shipping company conveying the equipment. A Multilink representative will be able to assist with immediate equipment needs if necessary.

Original Shipping Container:

When returning a Smart Tracker for service, use its original shipping container and all original packing materials. Items damaged as a result of improper packaging will not be covered under provisions of warranty service.

Other Items:

If other items, such as the external temperature and humidity sensor, have been ordered, ensure that those items did not sustain shipping damage. As with the Smart Tracker itself, all damage claims must be filed with the shipping company and a Multilink representative should be contacted immediately.

Section 3: Front Panel Controls, Connections, and Indicators

The front panel of each Smart Tracker contains various connections and indicators. These items are described as follows. See figures 3-1 for connector locations. Further details regarding use of controls and indicators may be found in the **Startup and Operation** section of this manual.

Controls:

AC Circuit Breaker: 15Amp circuit breaker protects input and outputs. This circuit breaker is also used as an AC switch to apply and remove input power to the Smart Tracker. LED illuminates when power is active.

Enter Button: Push button to provide Hot-start and IP reset capabilities. Refer to **Section 5** for user functions.

Connections:

AC Input Plug: C13/C14 plug and receptacle. Rated at 15Amps.

5-15R Outlet Receptacles: 8, 3 wire outlets used to power devices.

Output Relay Contacts: Phoenix Contact terminal plug. 8 positions per plug. 2 contacts per relay. 12-30 AWG. Tighten to 5.0 lb-in. Rated for 10A, 250VAC/125VDC.

Input Contacts: Phoenix Contact terminal plug. Optically isolated inputs. 8 positions per plug. 2 contacts per input. 12-30 AWG. Tighten to 5.0 lb-in. **Note**: Do not exceed 5VDC on input.

Analog DC Input Contacts: Phoenix Contact terminal plug. 4 positions per plug. 12-30 AWG. Rated 0-60VDC. Tighten to 5.0 lb-in.

Temp/Humidity Inputs: Phoenix Contact terminal plug. 4 or 6 positions per plug. 12-30 AWG. Tighten to 5.0 lb-in. **Note**: The external temperature and humidity sensor is an extra cost item.

GPS Antenna Connector: Mini RF, threaded connector for an external antenna.

Ethernet LAN Port: RJ-45 connector: provides connection to network interface.

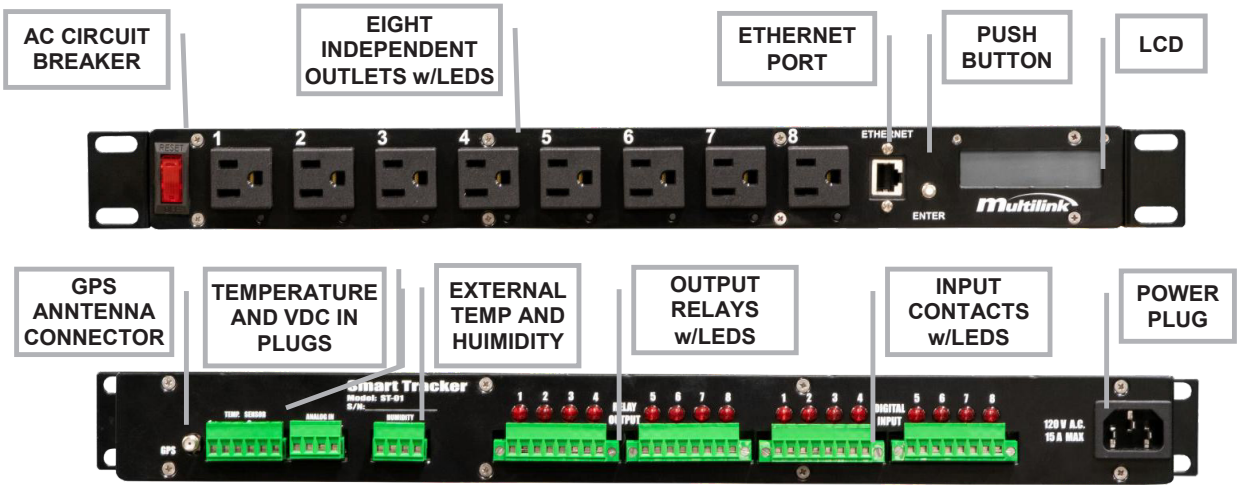


Fig. 3-1 Smart Tracker Front and Rear Detail

Indicators:

Liquid Crystal Display (LCD): The two-line LCD on the front panel of the Smart Tracker serves as the main visual communications device and enables the user to view a number of operational parameters of the Smart Tracker at any given time. Parameters automatically scroll over the LCD. A description of the menu tree may be found in the **Startup and Operation** section of this manual.

LEDs: At the lower right hand corner of each outlet is a red LED that is used to indicate active power to that respective outlet. Each relay and input contact on the back of the Smart Tracker also contains a red LED to indicate active relays or input contacts. These LEDs are placed between the two contacts of each relay or input contact.

Section 4: Installation and Setup

Installation of the Smart Tracker into a rack system or enclosure may be accomplished by attaching the unit to the standard 19-inch rack and connecting the wiring to the appropriate connectors of the Smart Tracker. All power connections on the front of the Smart Tracker can be made using 5-15R mating equipment. On the rear panel of the Smart Tracker, each of the terminal plugs uses bare copper wiring. Moreover, connections used in this Smart Tracker mate with accessory harnesses and assemblies designed and manufactured by Multilink Inc. Refer to the **OPTIONS** section of these instructions for further information.

In all installations, the following conditions apply and must be observed:

- A service disconnect switch containing over-current protection devices such as circuit breakers or fuses with appropriate AIC (amperes – interrupting capacity) rating should be placed between the AC utility source and the service entrance device for the Smart Tracker. Where used, the disconnect switch must be installed in compliance with all national, state, and local codes as required.

- For outdoor installations, the AC utility conductors connected to the Smart Tracker service entrance device shall be physically protected through an appropriate restraining device and conduit, consistent with local codes and practices.

- Permission to mount the Smart Tracker enclosure at any site shall be made in accordance with all legal requirements and local practices of the area.

This Smart Tracker is designed for use in a variety of rack systems and enclosures. Observe the following procedures during installation of any Smart Tracker.

Preparation:

The Smart Tracker has been factory assembled, tested, and prepared as a complete product ready for installation within a rack system or enclosure. The installer must verify that the correct type of AC power receptacle is installed in the enclosure for the input service and Smart Tracker selected for use at any given site.

Grounding:

Safety ground and earth ground connections must be in place for the Smart Tracker and enclosure for both personal safety and operational considerations. During Smart Tracker and/or enclosure installation, the following grounding connections must be provided or verified.

CAUTION

Failure to provide and connect adequate safety and earth grounds at each installation site may result in improper Smart Tracker operation or permanent damage to the Smart Tracker itself. Grounding facilities and connections must conform to appropriate national codes and/or local practices.

1. The AC utility conductors installed in the service entrance box must contain a safety ground conductor. The Smart Tracker installer should verify that this grounding conductor is in place, having been installed along with the AC utility input.

2. A separate enclosure ground wire must be connected between the enclosure ground lug and an earth ground connection provided by a ground rod installed at the Smart Tracker site. In most cases, one copper or copper-clad steel ground rod of 2.5 meter (8 feet) length driven into the earth will be sufficient to provide the ground connection required. In some instances, a more elaborate grounding method (such as a ring ground) may be required; however, this may be dictated by state or local codes and depends on conductivity of the soil within the installation area.

3. The dead metal of the service entrance box must be bonded to the metal enclosure that houses the Smart Tracker. Additionally, the ground bar within the service entrance box should be bonded to the metal enclosures; however, this requirement may be subject to local codes and practices.

4. The grounding wire connected between the Smart Tracker enclosure and the earth ground rod should be no smaller in area than 13 mm² (6 AWG) copper. Both ends of the ground wire should be sealed with an appropriate anti-oxidation compound.

5. An optional ground bonding wire of the same size as specified in Step 4 above may be connected between the optional ground lug at the left side of the Smart Tracker chassis and earth ground where such connection enters the external system enclosure. Refer to the **OPTIONS** sections for more information

Placement in the Enclosure:

This Smart Tracker has been designed primarily for use within a cabinet or enclosure offering protection from outdoor weather, entry of excessive dust, dirt or moisture, and from unauthorized contact by untrained personnel. If used in a controlled environment, the Smart Tracker may be located within an indoor equipment cabinet or may be mounted to a rack or placed on a shelf. If necessary, adjust the rack mount brackets on each side of the unit to recess outlets further into the rack to avoid obstruction with enclosure doors.

Clearance of at least 1RU or 1.75 inches must be maintained around all surfaces of this Smart Tracker for unobstructed airflow. Temperature of the air entering the Smart Tracker should not exceed 74°C (165° F). System de-rating will occur at 55°C. See Specifications.

Surge Protection:

Use of an external surge protection device is encouraged. The Smart Tracker does not provide surge protection to any of the eight outlets available on the front panel in the event of AC utility input voltage spikes.

Wiring:

Install the Smart Tracker according to the following procedure. Refer to Fig. 3-1 for control and connector positions.

1. Operate the AC circuit breaker in the service entrance box to the OFF (O) position. Ensure that the branch circuit breaker chosen to protect the AC receptacle for the Smart Tracker is operated to the OFF position, if necessary.

2. Operate the Input circuit breaker on the front panel of the Smart Tracker to the OFF (O) position.

3. Attach the AC power cord to the receptacle on the rear of the Smart Tracker.

4. Attach the GPS Antenna to the connector on the rear of the unit.

5. If using the output relays, input contacts, or DC voltage inputs, wire them accordingly.

6. Connect an Ethernet cable to the Ethernet receptacle on the front panel of the Smart Tracker.

7. Wiring of the Smart Tracker is now complete.

Section 5: Startup and Operation

The Smart Tracker is ready to be placed into operation after it has been installed in its rack or enclosure and all input and output connections have been made. Ensure that AC input power is available to the Smart Tracker receptacle then perform the following steps in sequence. When started, the Smart Tracker will go through a 45 second initialization period to restore previously stored states of outlets or relays.

CAUTION

The following steps in the startup procedure MUST be performed exactly as presented; otherwise, permanent damage to the Smart Tracker may result. Observe the LED indicators and the LCD as a guide when performing the startup procedure.

1. Verify that all connections and initial wiring is complete, as previously outlined and described.
2. Operate the utility AC circuit breaker serving the Smart Tracker to the ON position.
3. Operate the Input circuit breaker to the RESET or (|) position on the Smart Tracker and the Smart Tracker will begin its initial start up procedure.
4. The LCD backlight will illuminate and display operating parameters after a 45 second initialization period.
5. If outlet states have been previously stored, the respective outlets will automatically turn on as indicated by their respective LED.
6. If no outlets are active, press and hold the Enter Button for 5 seconds and release to activate the Hot-Start feature, which will turn on all 8 outlets.
7. Verify that equipment that is attached to the Smart Tracker is now powered.

Front Panel LCD Menus:

Operating parameters of the Smart Tracker are indicated in the various menus available on the Liquid Crystal Display (LCD) located on the front panel of the Smart Tracker. All menus automatically scroll to show pertinent information.

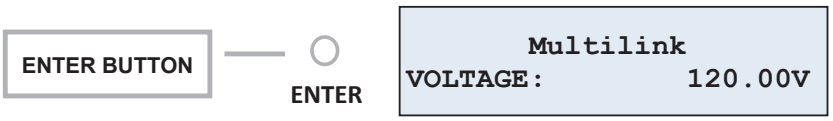


Fig. 5-1 LCD and Enter Button

LCD Screen:

The LCD assembly chosen for the Smart Tracker has been designed for use in a wide temperature range. As such, the characters displayed on the screen should be visible under nearly all temperature conditions. The user may note that under hotter than normal conditions, the characters may fade and become less distinct as compared to those viewed at lower temperatures. The faded characters are temporary. Some values may take up to two minutes to properly display upon startup.

Menu Options and Descriptions:

```
     MULTILINK
VOLTAGE:      120.50V
```

AC Input Voltage: This is the voltage available to the outlets for their individual use.

```
     MULTILINK
CURRENT:        5.5A
```

Total AC Current: Total current draw of all outlets currently active.

```
     MULTILINK
TEMPERATURE:   75.00F
```

Internal Temperature: This is the internal temperature of the unit. Values may display in either Fahrenheit or Celsius, configurable through the webpage.

```
     MULTILINK
HUMIDITY:     35.00%
```

Humidity: Displays the internal ambient humidity of the unit.

```
 DATE:  19-01-29
 TIME:  12:30:00
```

Date and Time: The date and time are set using time zone setting and SNTP. Time is shown using 24 hour time format.

```
     MULTILINK
IP:  192.168.100.1
```

IP Address: The currently assigned IP address of the unit. This address may also be reset using the Enter button when held for 10 seconds and released.

```
     MULTILINK
 60:BC:34:83:11:FB
```

MAC Address: Displays the unique MAC address of each Smart Tracker.

```
     MULTILINK
      V 1.1.0
```

Firmware Version: This displays the current firmware build number.

Enter Button Functionality:

The Enter button provides the user with two options for local control of the Smart Tracker. When the Enter button is pressed, held for a particular length of time, and then released, the Smart Tracker will react appropriately to the user input as described below.

Hot-Start Outlets: This feature can be activated by pressing and holding the Enter button for 5 seconds and then releasing. All outlets will turn off and turn back on to provide AC power to each outlet.

IP Reset: In the event the IP address must be reset or a static IP address assigned, press and hold the Enter button for 10 seconds and then release. This will cause the Smart Tracker to momentarily restart and begin to re-initialization. The previous state of operation will be reloaded and the factory IP address will then be displayed.

Section 6: Webpage Interface

Embedded in each Smart Tracker is a webpage that is used to view and configure all outlets, relays, input contacts, and other necessary system and network parameters. The webpage provides a summary of all parameters and operating states of each outlet, relay, and input contact, all on one intuitive webpage. Additional pages for unit configuration and management are also available. Each feature of the embedded webpage will be described in this section.

Configuration:

Each Smart Tracker is factory configured for a static IP address to allow for local configuration and control of the device. The user should attach an Ethernet cable from a computer prior to powering the device to allow the Smart Tracker to recognize the local area network and establish connection as described below.

Local Ethernet Connection:

The following instructions shall be used to locally connect to the Smart Tracker. These instructions assume that the proper operating conditions exist to allow the Smart Tracker to operate. Additionally, these instructions assume use of Windows 7/10 based machines. Please follow the instructions below to locally connect to the Smart Tracker. Refer to the **Troubleshooting** section for network communication and connection problems.

1. With an Ethernet cable connected to the Ethernet port on the Smart Tracker, ensure the Smart Tracker is turned on. If the unit is not operating, refer to **Section 5** for "Startup and Operations".

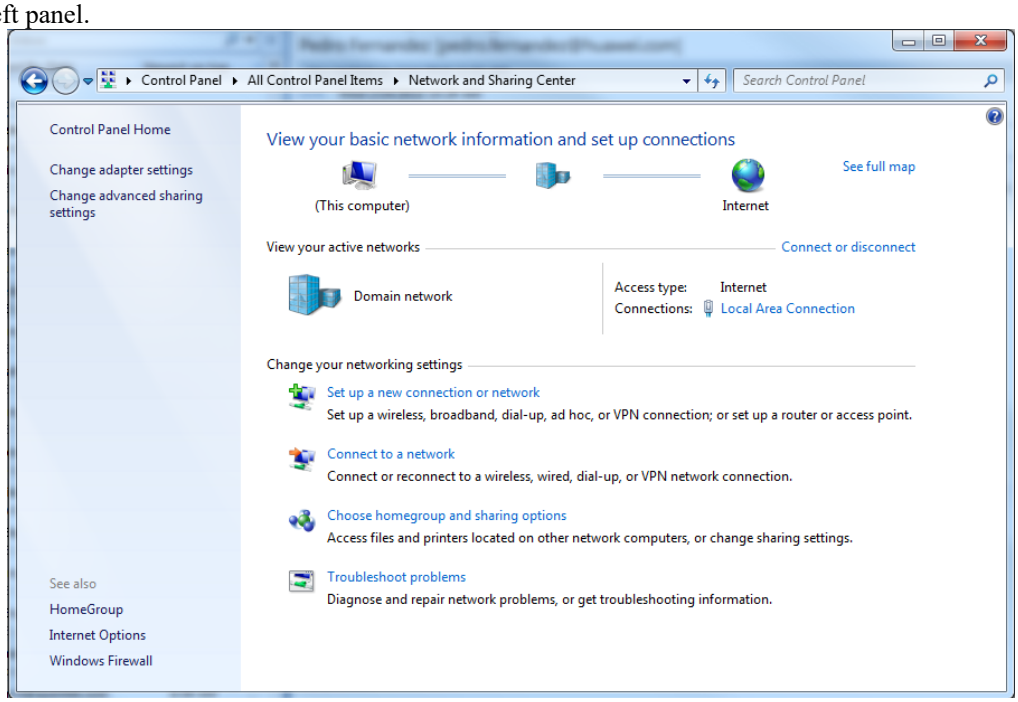
2. Ensure the opposing end of the Ethernet cable to from the Smart Tracker is attached to a desktop or laptop computer. The Smart Tracker will display 0.0.0.0 until a local area network is discovered.

3. A factory static IP address is assigned to each Smart Tracker. If necessary, the user may press, hold for 10 seconds, and release the Enter button to assign a static IP address for local use.

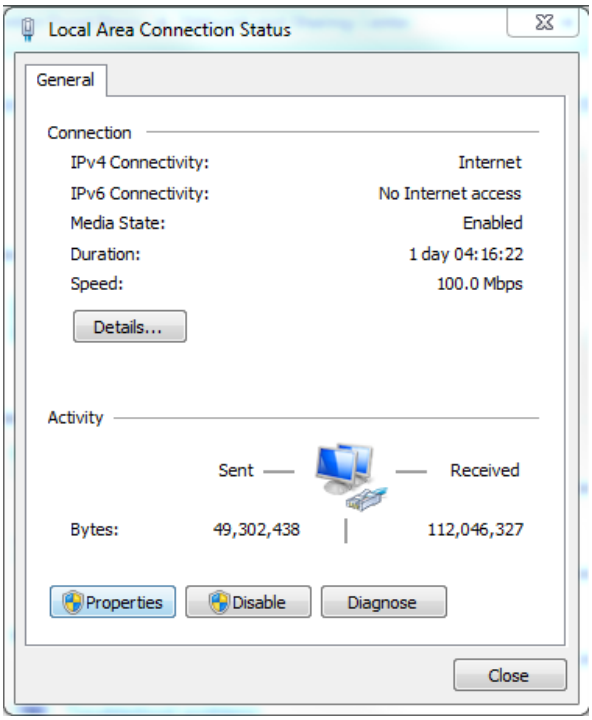
   The **default IP address** of the Smart Tracker is **192.168.100.1**.

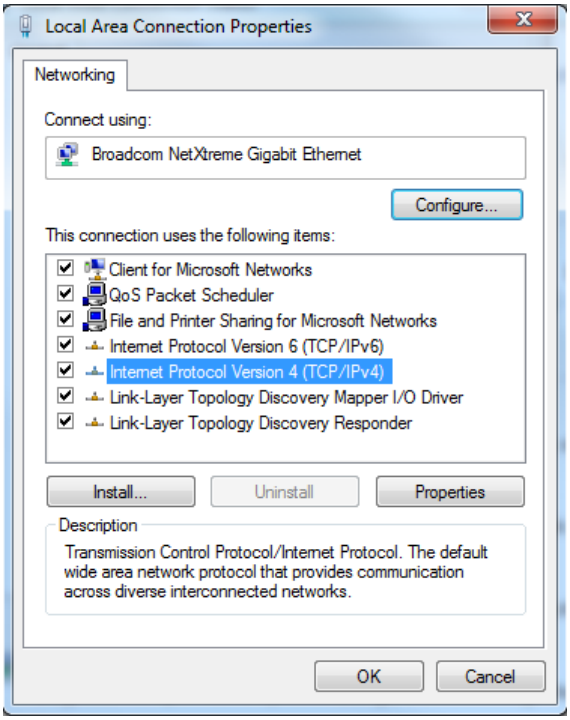
4. The desktop or laptop's network interface card must be configured to the same IP range as the Smart Tracker in order to access the embedded webpage. See the following steps for local network card reconfiguration.

5. Navigate to the Control Panel, “Network and Sharing Center”, and select “Change adapter settings” from the left panel.



6. Left click on the “Local Area Connection” and select “Properties”. Click to highlight “Internet Protocol Version 4 (TCP/IP)” and click the “Properties” button below.

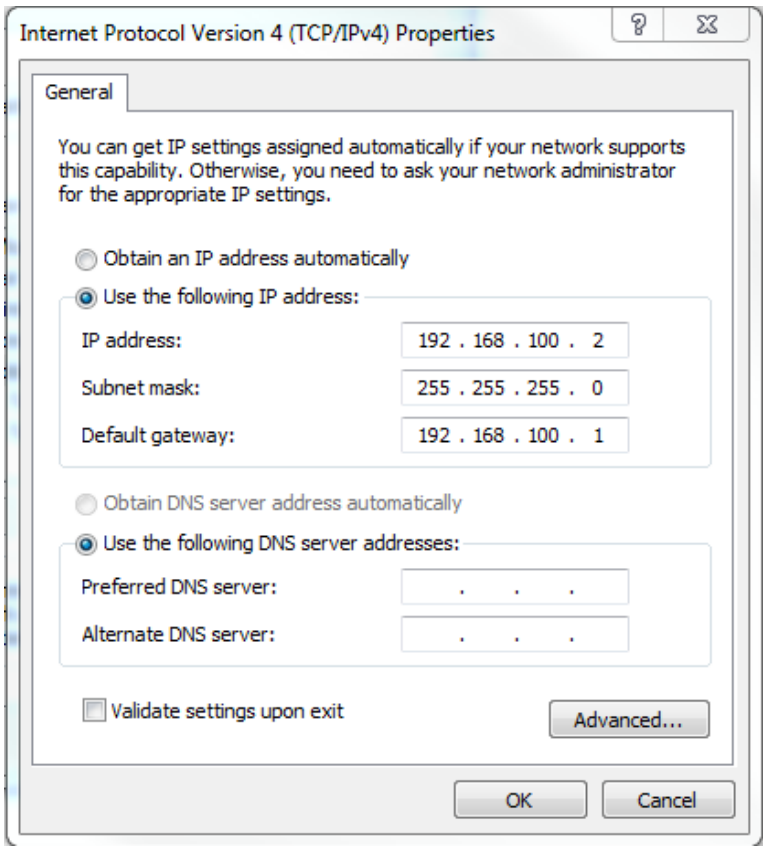




7. Highlight the “Use the following IP Address” radio button and enter an IP Address in the range of the currently assigned IP address of the Smart Tracker. Be sure not to enter an identical IP address in this textbox. For example; if the Smart Tracker is assigned 192.168.100.1, the user may enter 192.168.100.2 in the textbox.

8. Enter the appropriate subnet mask and gateway if it has not already been auto-filled. For example; if 192.168.100.2 is the IP Address, the Subnet mask would be 255.255.255.0.

9. Assign the default gateway to 192.168.100.1.



10. Select the “OK” button and then select “Close” on the previous window. The computer’s network interface card may now begin communication with the Smart Tracker.

11. Open a preferred web browser and enter the default IP address of the Smart Tracker in the address box. If the user has assigned a different IP address, enter this IP address instead. The Summary Page should now be displayed.

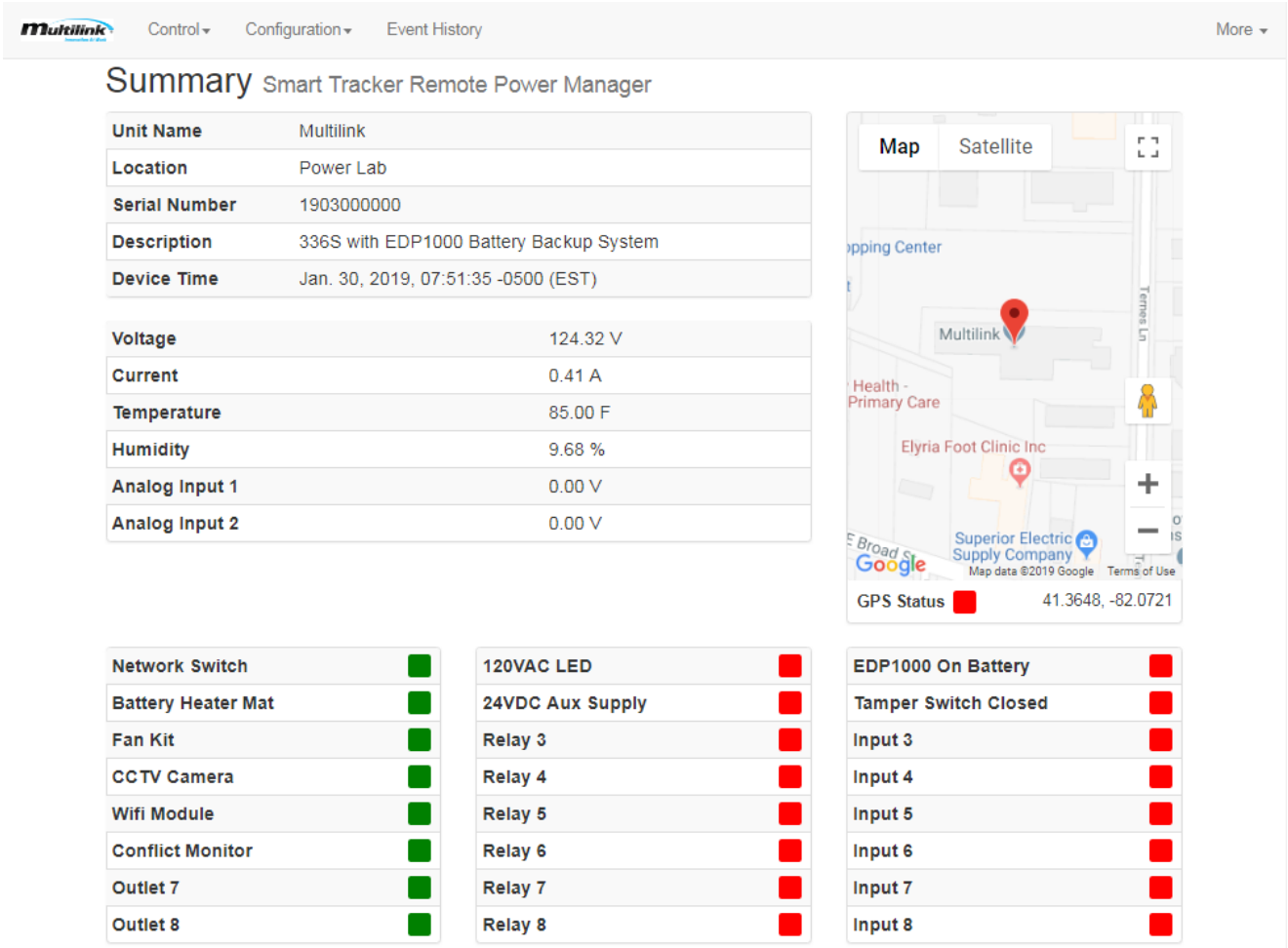
Webpage Overview:

Upon establishing connection to the embedded webpage of the Smart Tracker, the user is presented the Summary Page. This page provides all operating parameters currently enabled for use and the state of each outlet, relay, and input contact. Unit specific GPS coordinates are also included on this page. Coordinates display beneath the Google map, when applicable. Additional configuration pages reside along the top of the webpage. These pages require user authentication to access the Control, Configuration, and Event History pages for each Smart Tracker. In the following sub-sections, each page and feature of the Smart Tracker will be shown and described.

Summary Page:

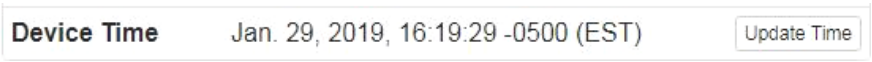
The Summary Page provides status-at-a-glance for all outlets, relays, input contacts, operating parameters, and pertinent information regarding the specific unit being addressed. An interactive map showing the GPS location of the unit is also displayed, with coordinates displayed below the map. A Green or Red box next to the outlet, relay, and input contact label names indicates the current state of the respective outlet, relay, or input contact. Green indicates active or On, Red indicates inactive or Off. Operating parameters will automatically refresh every 5 seconds.

Beneath the URL address box resides a row of tabs for pages that may be viewed in order to control the outlets and relays, configure the unit, change network settings, or to remotely update firmware of each unit. At any time, the user may return to the Summary Page by clicking the "Multilink" logo in the upper left corner.



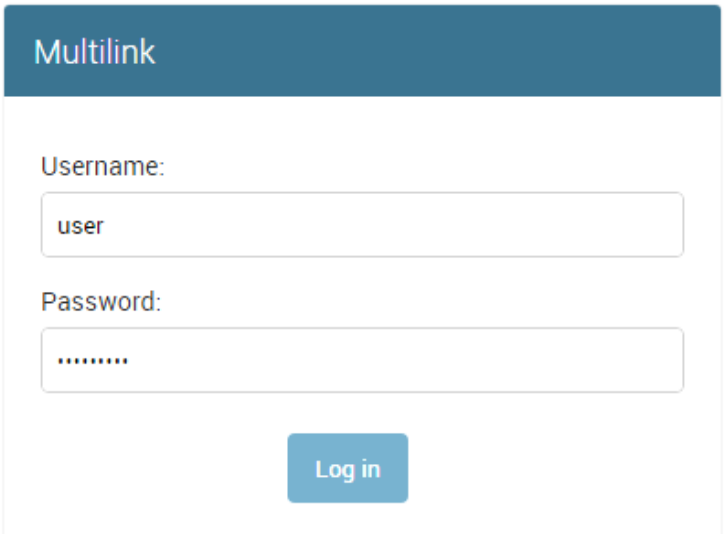
Device Time:

The Device Time that is shown on the Summary page reflects the date and time of the unit. Accuracy for the date and time are necessary for scheduled events to take place. It is greatly encouraged that users configure an NTP Server address under Unit Configuration for each Smart Tracker to automatically update its date and time periodically and whenever the Smart Tracker is restarted. If this is not done, the date and time of the unit will reflect the firmware build date of the Smart Tracker, which will be incorrect and may affect scheduled events. If no NTP server is accessible, an "Update Time" button will automatically appear next to Device Time. This will require the user to manually update the date and time for each unit using this feature. This feature asks the user's device for the local date and time. The units will then briefly restart and begin to reflect and maintain the current local date and time. This feature assumes the user's device is set to reflect the correct date and time.



User Log-in and Authentication:

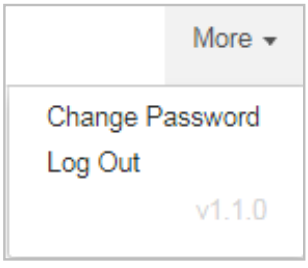
When navigating away from the Summary page, the user will be required to enter authorization credentials in order to control or configure any of the features of the Smart Tracker. When clicking any of the pages, the user will be prompted to log in. The default **username** for the Smart Tracker is "**user**". The default password is "**multilink**".



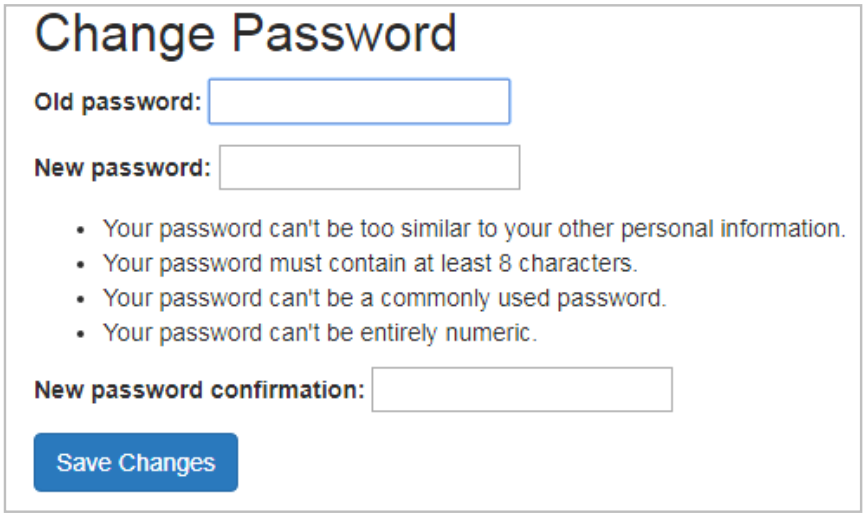
Once this information has been entered, click the "Log in" button and the user may navigate to any page with full access to control and configure the Smart Tracker. The user may log out at any time by clicking on the "More" tab in the upper right corner and selecting "Log Out".

Changing "user" password:

The user may also change the password for the default user account by clicking on the "More" tab in the upper right corner of the webpage and selecting "Change Password". It is encouraged that the user changes the password for the device to increase security.

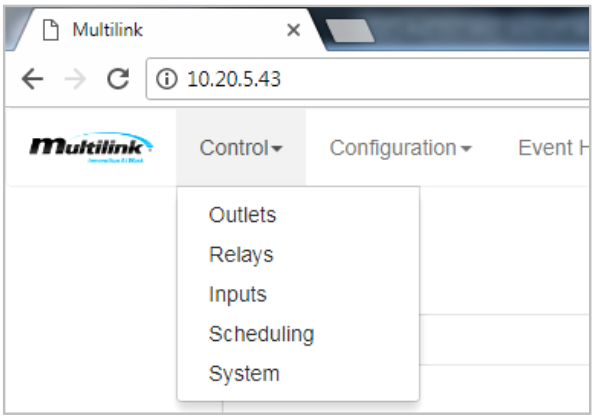


When clicking “Change Password” from the More tab, the user is prompted with the following. Enter the old password and then enter a new password, followed by the new password again to confirm the change. Be sure to click “Save Changes” to save the new password. A prompt will appear at the top of the page to confirm or deny the new password.



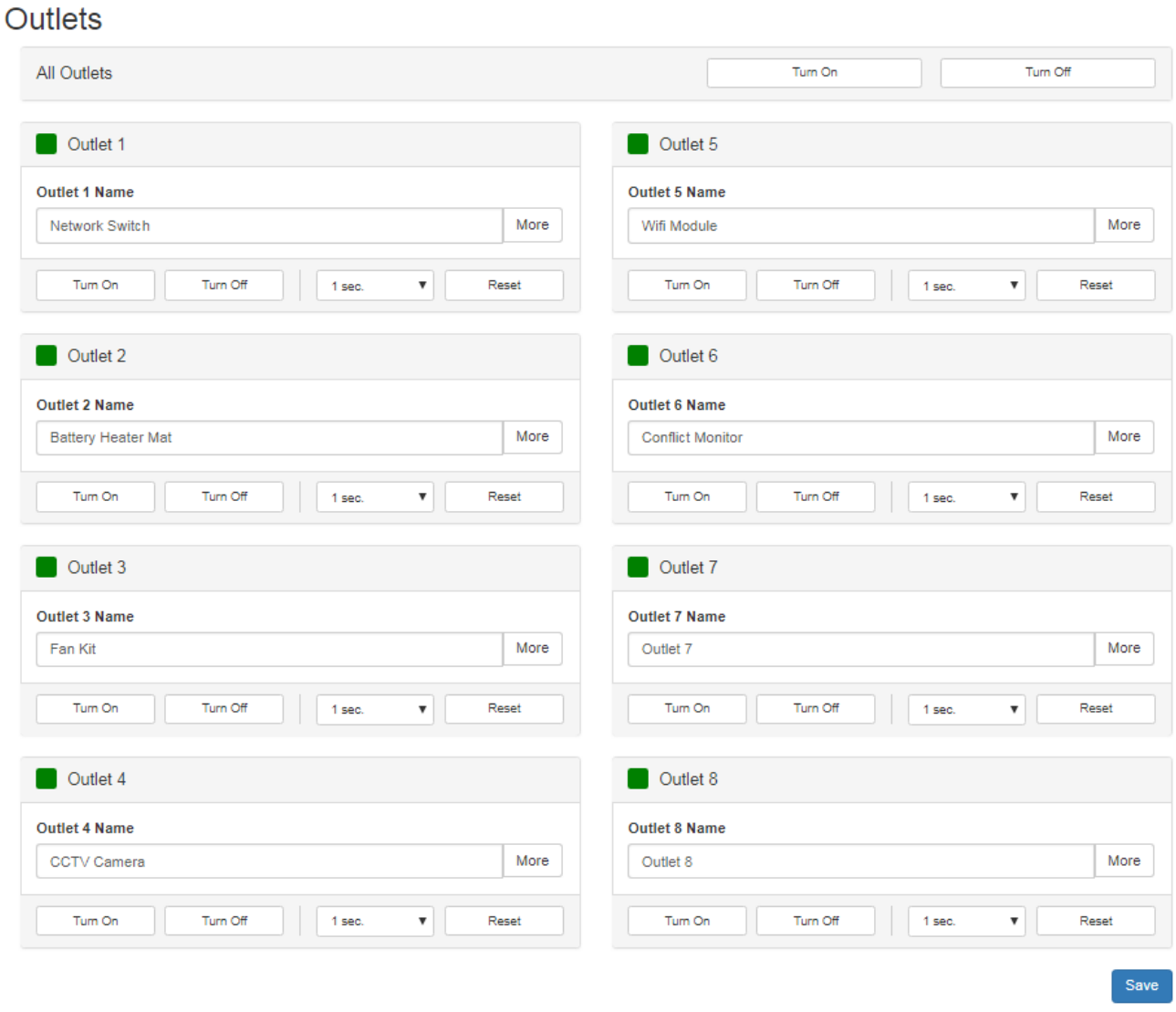
Control Tab:

When clicking the Control tab, a drop down list appears with five options: Outlets, Relays, Inputs, Scheduling, and System. Each of these pages provides a means of controlling and configuring respective options, with the System page providing shutdown and reboot functions. These pages require user authentication for access.



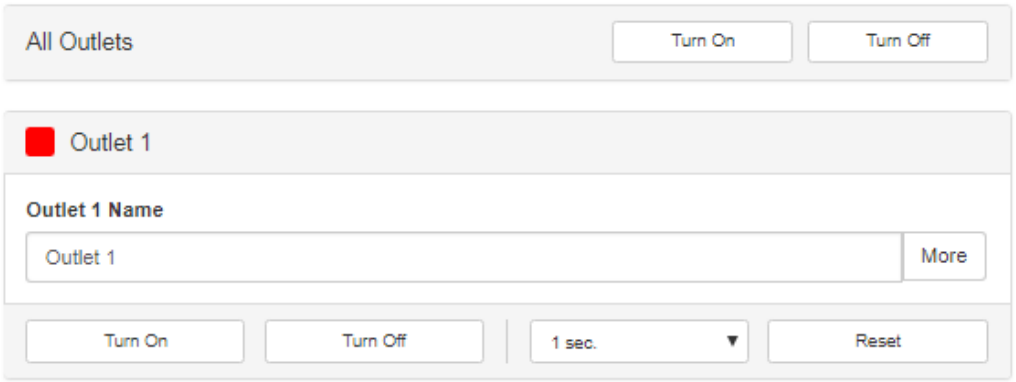
Outlets Page:

The Outlets page allows the user to independently control each of the eight outlets. The user may select to turn on or off any or all of the outlets. Textboxes are included to allow the user to rename each outlet to reflect the piece of equipment that may be attached to that respective outlet. Outlet information and action textboxes are also included to provide more description and secondary tasks for each outlet, if necessary.



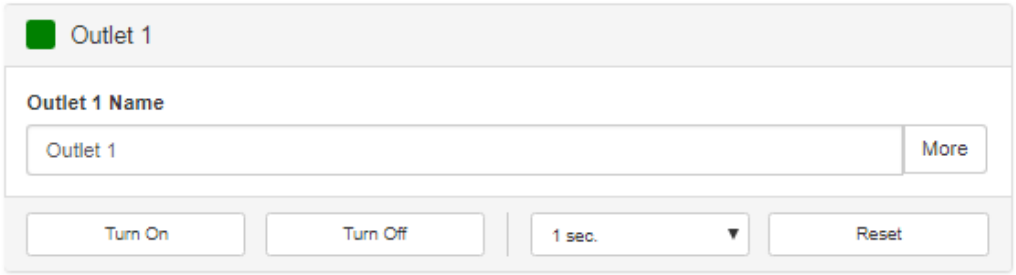
Controlling Outlets:

To change the state of an outlet or all outlets at once, select an outlet and click its respective "Turn On" or "Turn Off" button. The user may also select the option reset the respective outlet by selecting a reset time and clicking the "Reset" button.



In the following screen shots, Outlet 1 is used as an example. All subsequent outlets will act in the same manner, respectively. When turning on Outlet 1, the user is prompted with a message asking if they want to perform the action.

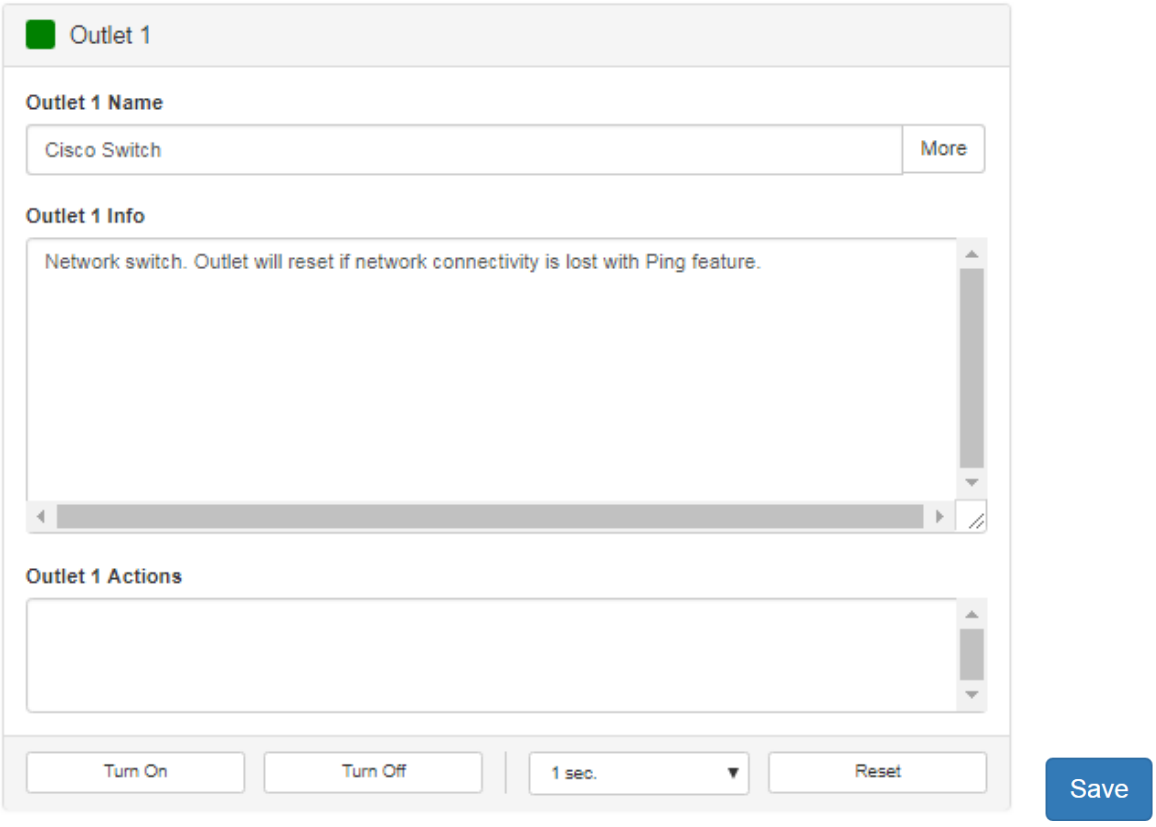
Click "Turn On" and the outlet will turn on. If Outlet 1 was previously on, it will remain on. After clicking "Turn On", the indicator next to Outlet 1 will display in Green. The Summary page will also display a Green indicator. Additionally, the LED for Outlet 1 will also illuminate on the front panel of the unit.



The user will also be prompted when turning off Outlet 1. Click "Turn Off" and the outlet will turn off. If Outlet 1 was previously off, it will remain off. After clicking "Turn Off", the indicator next to Outlet 1 will display in Red. The Summary page will also display a Red indicator. Additionally, the LED for Outlet 1 will turn off on the front of the unit.

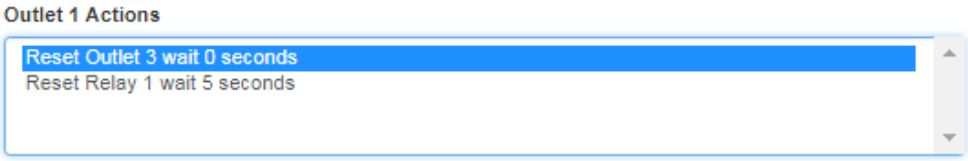
Renaming Outlets:

To rename any of the outlets and provide additional information, the user may type a new name into the text box for the respective outlet. Additional information may be included to describe the piece of equipment attached to Outlet 1, such as the model and serial number or action of the attached network switch, by clicking the "More" button. Be sure to save the changes before leaving this page. Changes are not automatically saved.



Assigning Outlet Actions:

The Outlet Actions box may include tasks that the user has created that are to be performed when the Outlet is energized. Each action may be selected by using the mouse to click on and highlight the action that is to occur. An action may be deselected by holding the Ctrl key (Command key for Mac) and clicking on the highlighted action. Additional actions may be selected by holding the Ctrl key (Command key for Mac) and clicking additional actions.

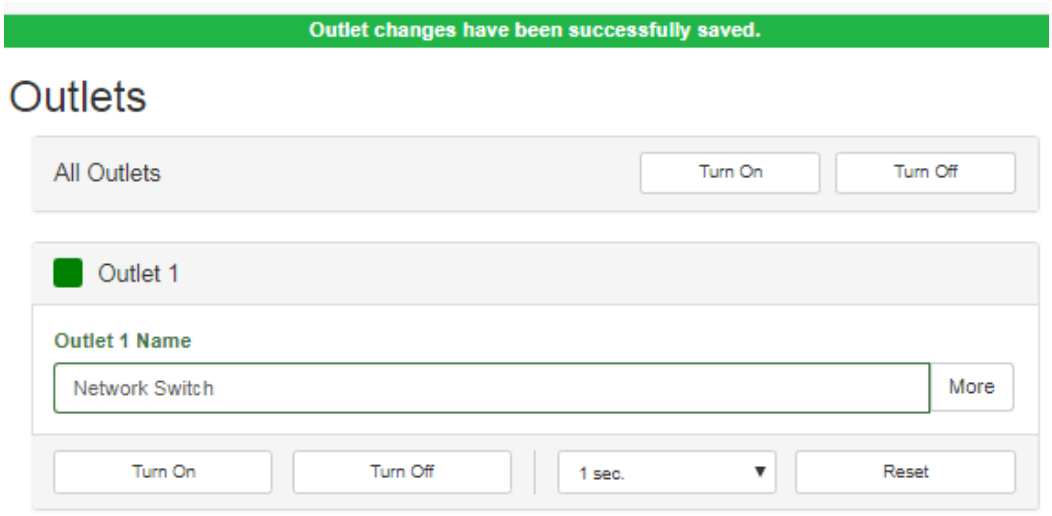


Be sure to click the "Save" button to save the action(s) that each outlet will perform. Once saved, the selected action(s) will appear in grey under each respective outlet.

Refer to the **Scheduling** section of this user manual for step-by-step instructions to create, edit, and remove actions.

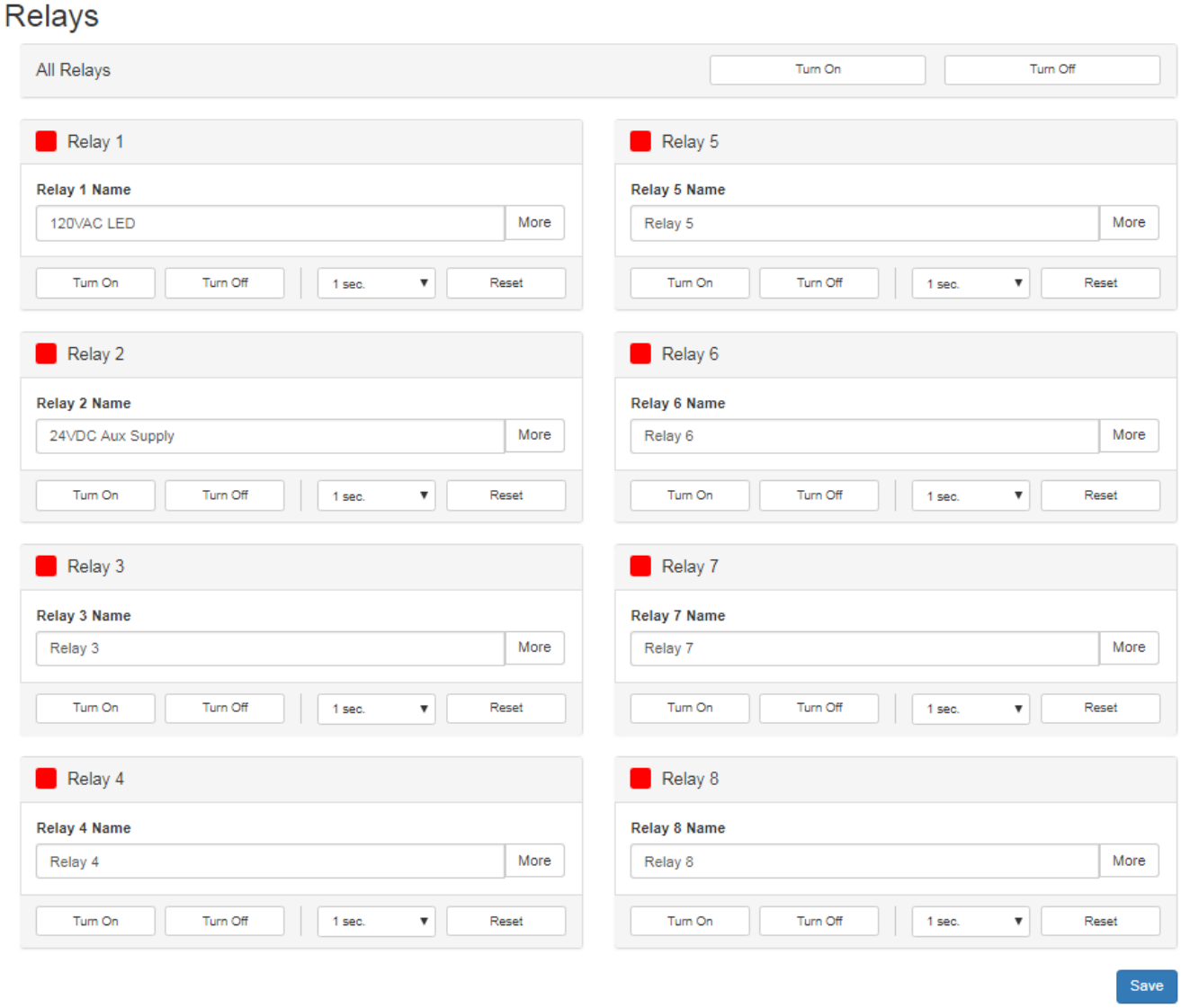
Saving Outlets Changes:

Click the "Save" button to save any changes. When the "Save" button is clicked, all text boxes will illuminate Green to indicate the changes have been saved and a prompt at the top of the page will indicate the changes have been successfully saved. Once saved, the new name for Outlet 1 will be displayed on the Outlets and Summary pages. Additionally, changes to any of the names will be reflected in the Event History page for clarity.



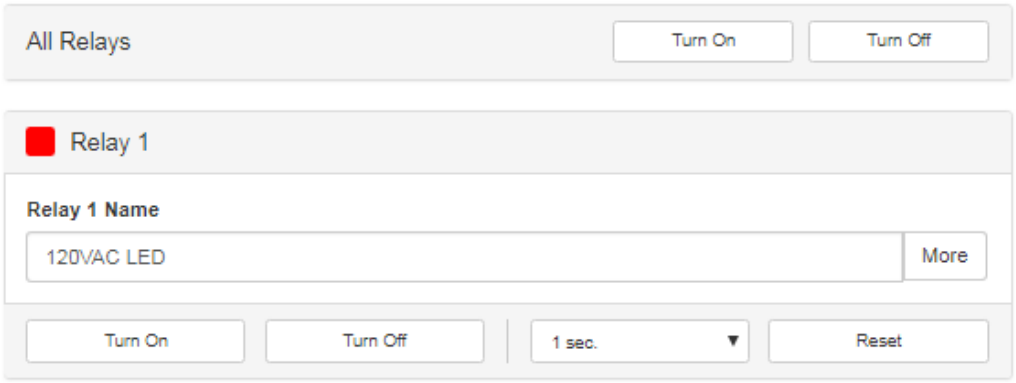
Relays Page:

The Relays page provides control and configuration of each of the eight relays. The relays are used to provide a low or high impedance signal that may be used by a traffic controller or device as indication that a specific event or action has taken place. They may also be used to switch on or off power to a device. Each relay has two mating contacts for which to attach wiring and LED indicators to show when power to a relay is active.

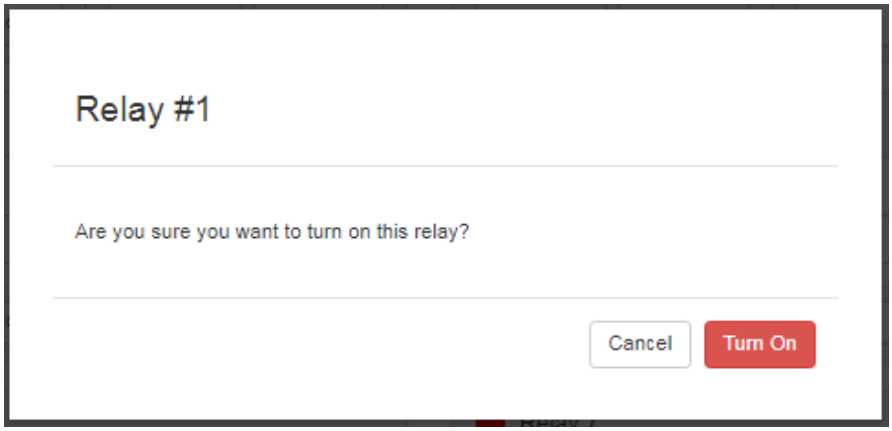


Controlling Relays:

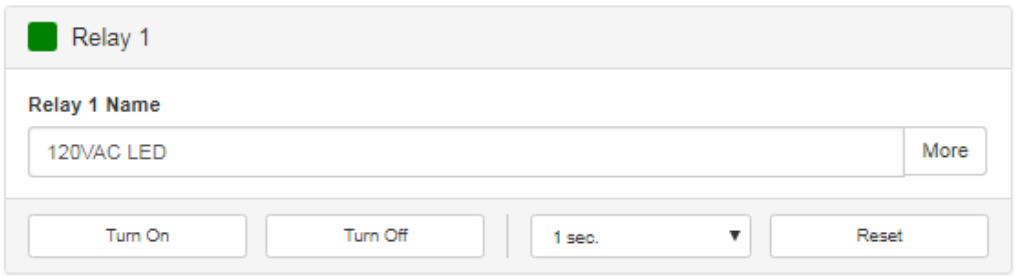
To change the state of a relay or all relays at once, select a relay and click its respective "Turn On" or "Turn Off" button. The user may also select the option to reset the respective relay by selecting a reset time and clicking the "Reset" button.



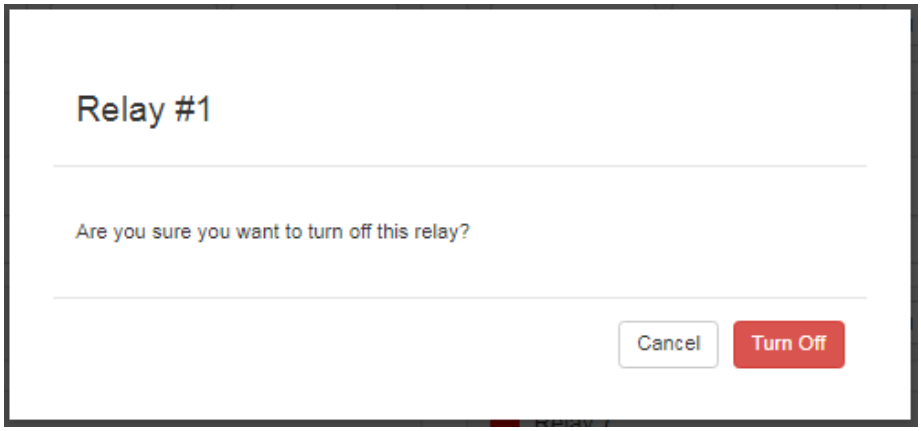
In the following screen shots, Relay 1 is used as an example. All subsequent relays will act in the same manner. When turning On Relay 1, the user is prompted with a message asking if they want to perform the action.



Click "Turn On" and the relay will turn on. If Relay1 was previously on, it will remain on. After clicking "Turn On", the indicator next to Relay 1 will display in Green. The Summary page will also display a Green indicator. Additionally, the LED for Relay 1 will also illuminate on the back panel of the unit.

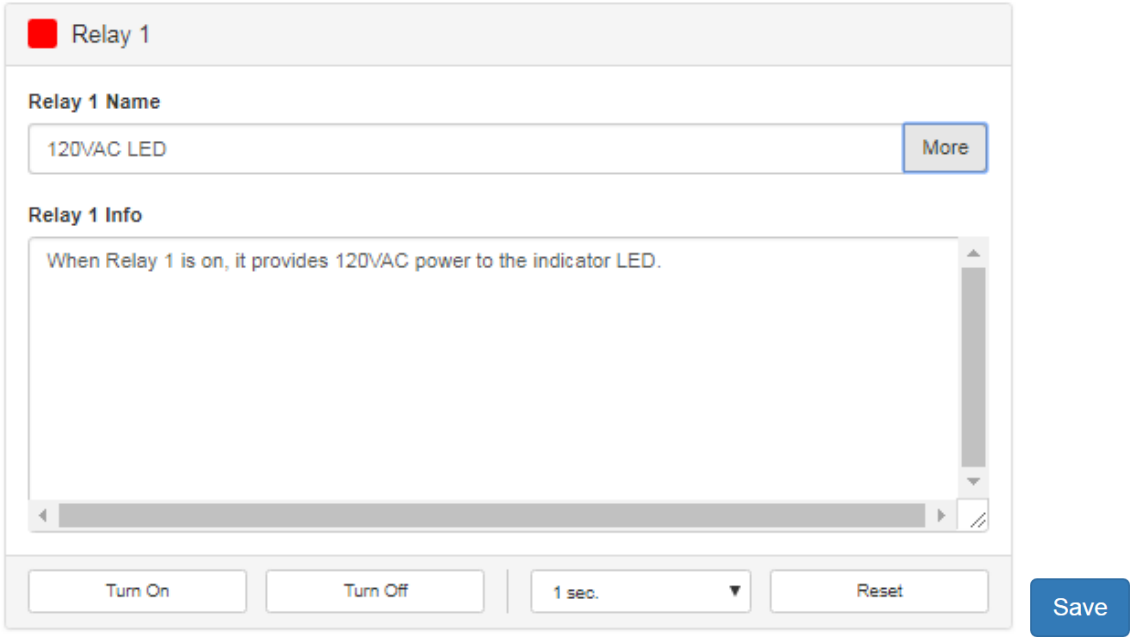


The user will also be prompted when turning off Relay 1. Click "Turn Off" and the relay will turn off. If Relay 1 was previously off, it will remain off. After clicking "Turn Off", the indicator next to Relay 1 will display in Red. The Summary page will also display a Red indicator. Additionally, the LED for Relay 1 will turn off on the back of the unit.



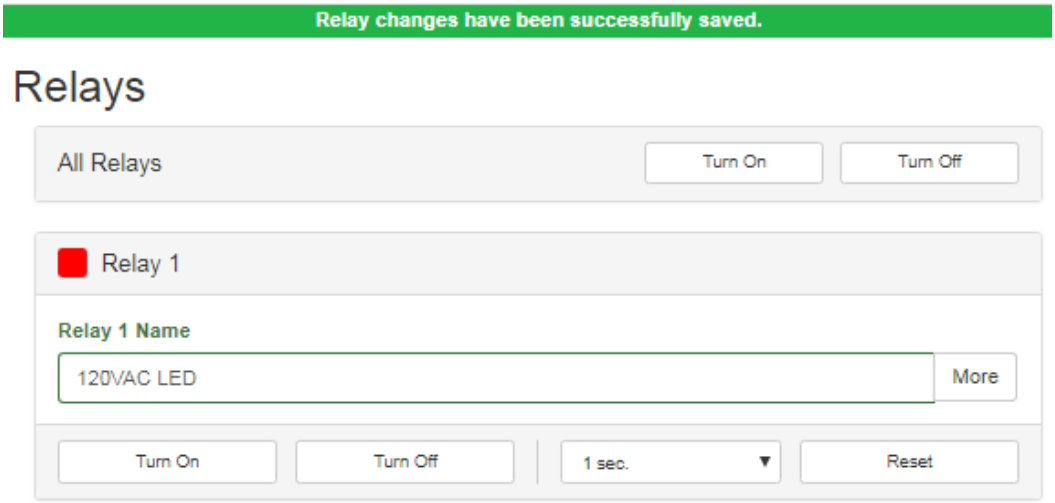
Renaming Relays:

To rename any of the relays and provide additional information, the user may type a new name into the text box for the respective relay. Additional information may be included to describe the piece of equipment attached to Relay 1, such as applying power to an indicator, by clicking the "More" button. Be sure to save the changes before leaving this page. Changes are not automatically saved.



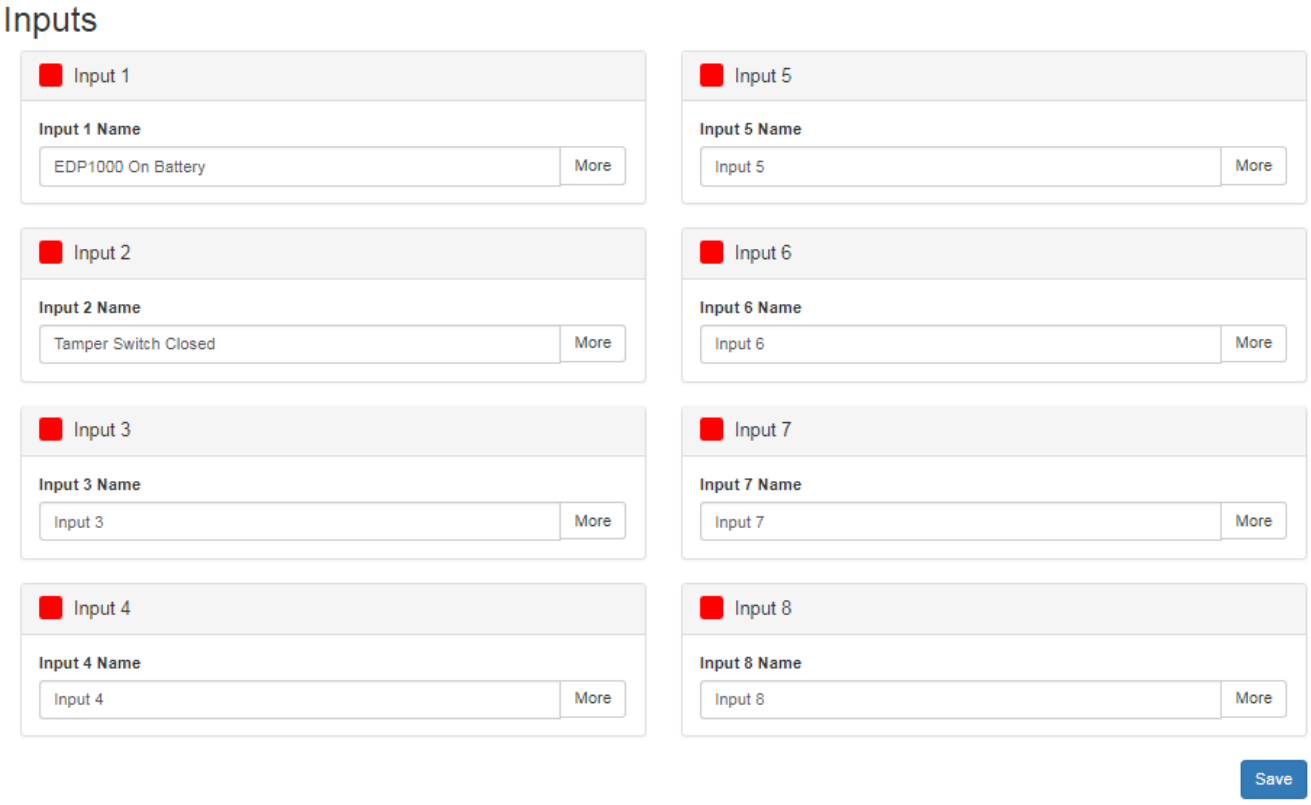
Saving Relay Changes:

Click the "Save" button to save any changes. When the "Save" button is clicked, all text boxes will illuminate Green to indicate the changes have been saved and a prompt at the top of the page will indicate the changes have been successfully saved. Once saved, the new name for Relay 1 will be displayed on the Relays and Summary pages. Additionally, changes to any of the names will be reflected in the Event History page for clarity.



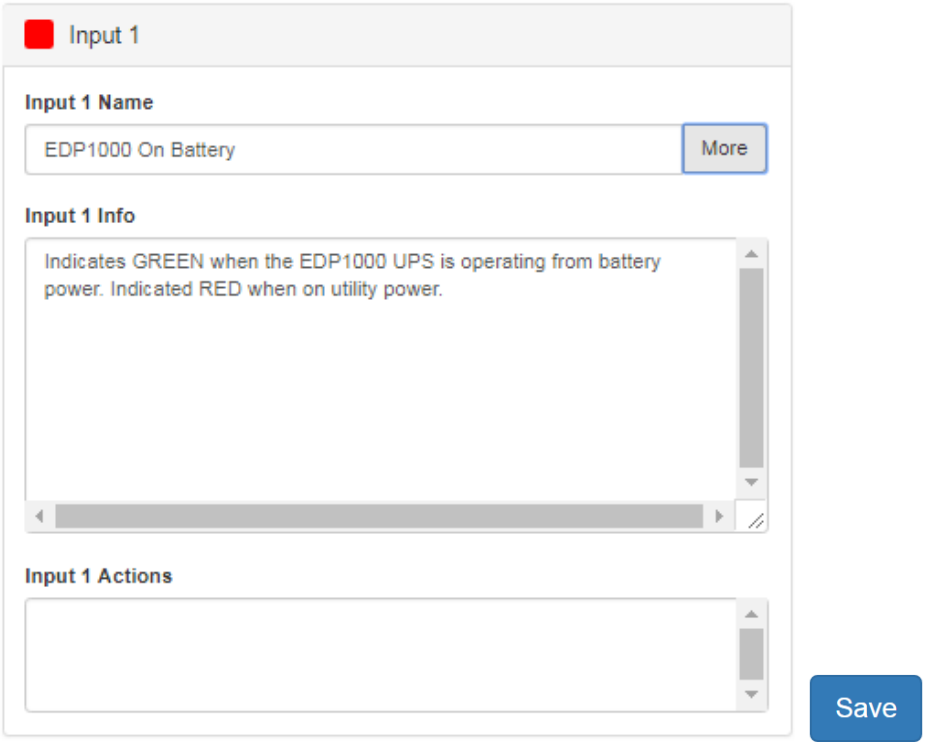
Inputs Page:

The input contacts are used to indicate the state of an event or action that is external to the Smart Tracker, such as a UPS system being activated. Each input has two mating contacts for which to attach wiring. When continuity is present between the two contacts, the input will indicate Green on the Inputs and Summary pages. If no continuity is present, the input will indicate Red. Inputs may also be used to trigger actions for outlets and relays.



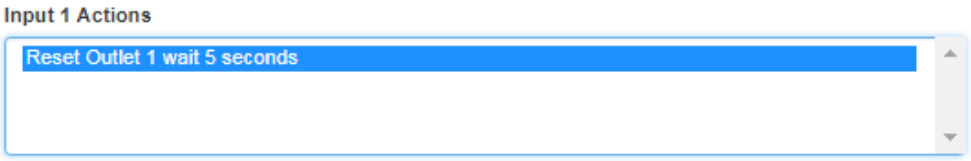
Renaming Inputs:

To rename any one of the inputs and provide additional information, the user may type a new name into the text box for the respective input. Click the "More" button to expand an additional textbox that may be filled with information that describes the use for the input. For example, Input 1 may be used to indicate the presence of UPS power. Click "Save" to save changes. In the following screen shots, Input 1 is used as an example. All subsequent inputs will act in the same manner.



Input Contact Actions:

The Input 1 Actions box may include tasks that the user has created that are to be performed when the input is active, or has continuity present between both wires of the respective contacts. Each action may be selected by using the mouse to click on and highlight the action that is to occur. An action may be deselected by holding the Ctrl key (Command key for Mac) and clicking on the highlighted action. Additional actions may be selected by holding the Ctrl key (Command key for Mac) and clicking additional actions.

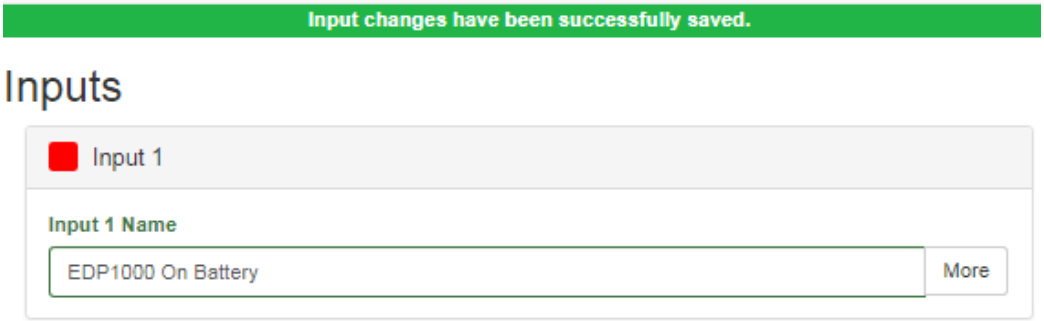


Be sure to click the "Save" button to save the action(s) that each input contact will perform. Once saved, the selected action(s) will appear in grey under each respective input contact.

Refer to the **Scheduling** section of this user manual for step-by-step instructions to create, edit, and remove actions.

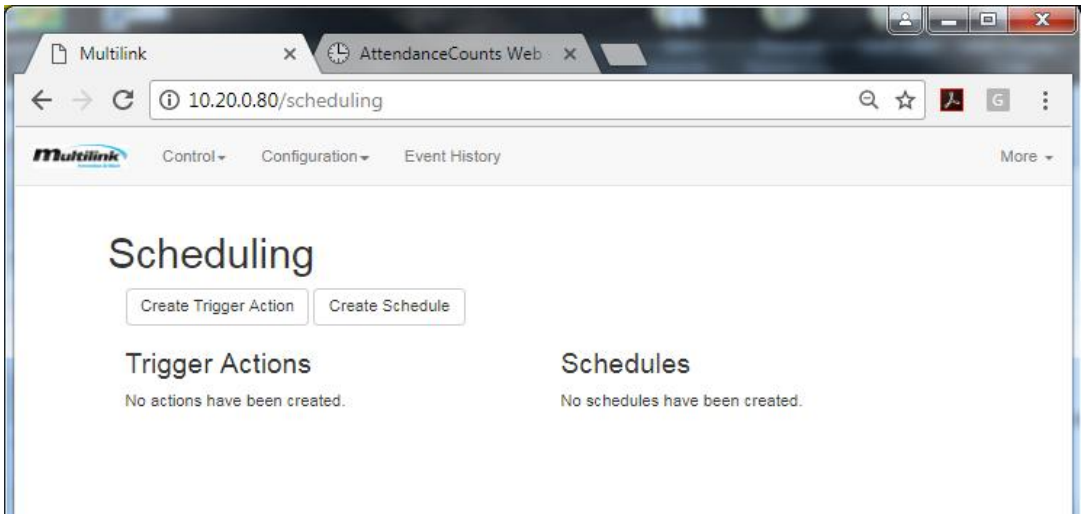
Saving Input Changes:

Click the "Save" button to save any changes. When the "Save" button is clicked, all text boxes will illuminate Green to indicate the changes have been saved and a prompt at the top of the page will indicate the changes have been successfully saved. Once saved, the new name for Input 1 will be displayed on the Inputs and Summary pages. Additionally, changes to any of the names will be reflected in the Event History page for clarity.



Scheduling Page:

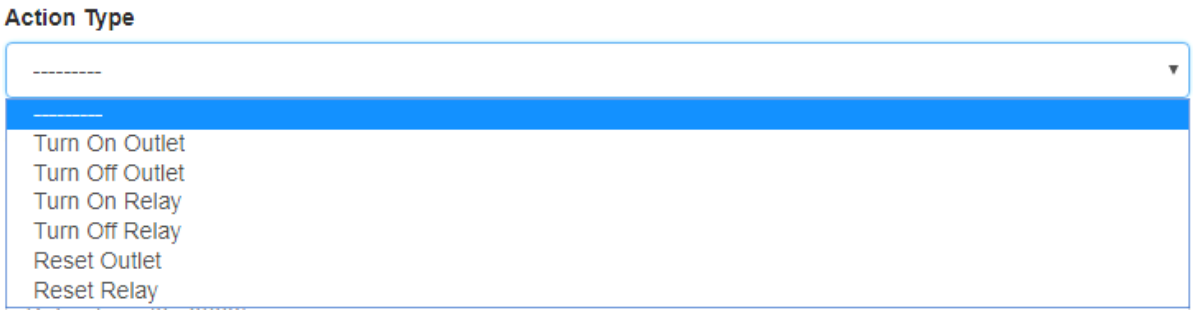
The Scheduling page allows the user to setup automated tasks at specific times and/or dates. Some useful examples of this feature would be to turn on an outlet that is powering CCTV cameras during rush hour to monitor traffic, or to periodically reset an outlet that is used to power a network switch to maintain connectivity. On this page, the user is provided with the option to create a trigger action and to create a scheduled periodic event. The user will also use this page to edit and remove the trigger actions and scheduled periodic tasks.



Creating a Trigger Action:

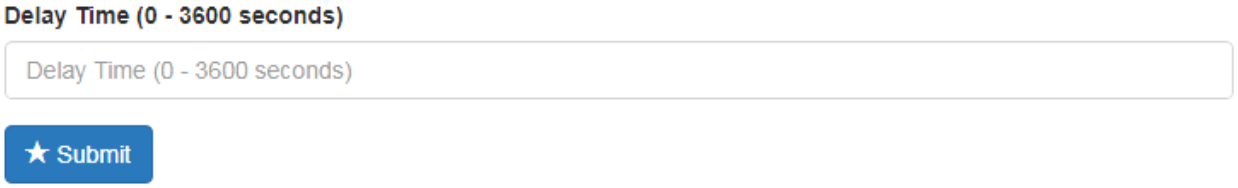
A trigger action is created by the user and may be used by the outlets and input contacts to allow for secondary actions to occur when an outlet or input becomes **Active**. These actions have been shown in both the Outlets and Inputs pages under the "More" button for each respective outlet and input. Click on the "Create Trigger Action" button to create an action. See the following for descriptions and an example of how to create a trigger action. Refer to the Outlets or Inputs pages for selecting an action.

The user can select from any of the six **Action Types** in the dropdown list. Each action is described by its name, and when selected, will turn on, turn off, or reset an outlet or relay. When selecting an action, note that the action selected will either apply to an outlet or to a relay, not to both. When choosing to reset an outlet or relay, the user will be prompted to select the reset time.



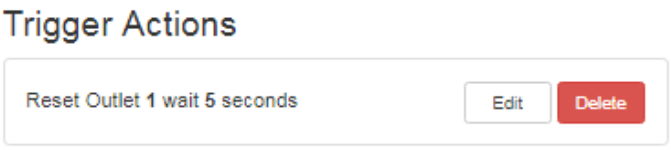
The user will then select the **Output Number** for the outlet or the relay for which the action will take place. The user may select a single outlet or relay or may select "All", which will affect all outlets or all relays. When "All" is selected, the action will display as "0" in the Outlet Actions or Input Actions fields to indicate all outlets or relays have been selected.

After selecting the output number, the user can define a delay for the action to take place. The delay is entered in seconds from 0 to 3600, allowing for a delay of up to 1 hour before the action takes place. An entry of "0" would indicate an immediate action, where "5" would indicate a 5 second delay.



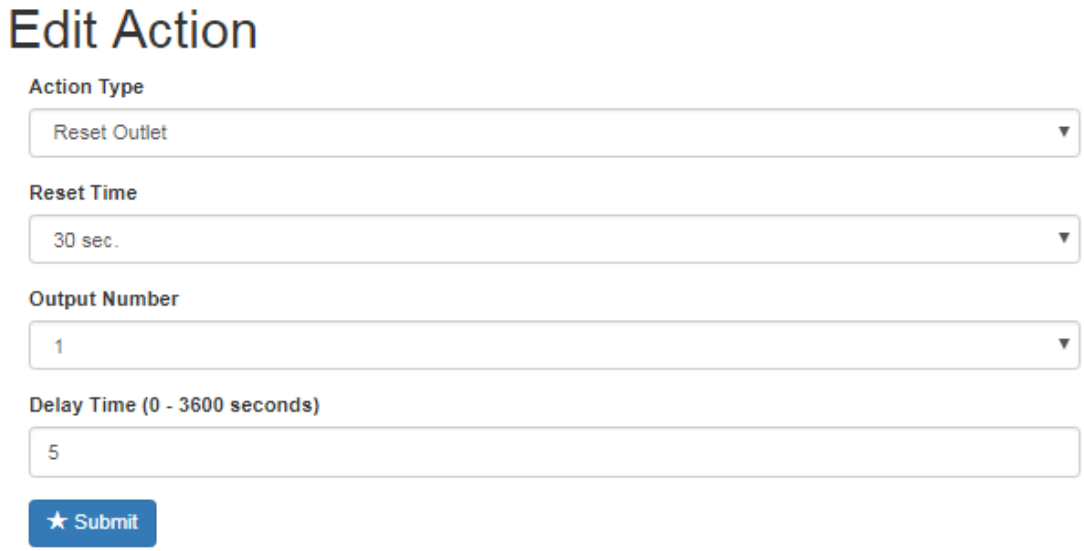
The following screen shot shows how the user can create an action that will reset Outlet 1 for 30 seconds. This action will be triggered after a 5 second delay time has elapsed. Be sure to click "Submit" to add this example action or any created action to the list of created actions that will display on the Scheduling page.

The new action will be listed on the Scheduling page. The action will list its action, outlet or relay number, as well as if a wait period applies to the action.



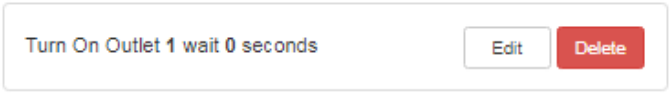
Editing Trigger Actions:

Each of the created trigger actions listed on the Scheduling page can be modify using the "Edit" button for each respective trigger action. After clicking this button, the user will return to an "Edit Action" screen, where the specific action criteria may be modified. Be sure to click "Submit" to save the changes made.



Deleting Trigger Actions:

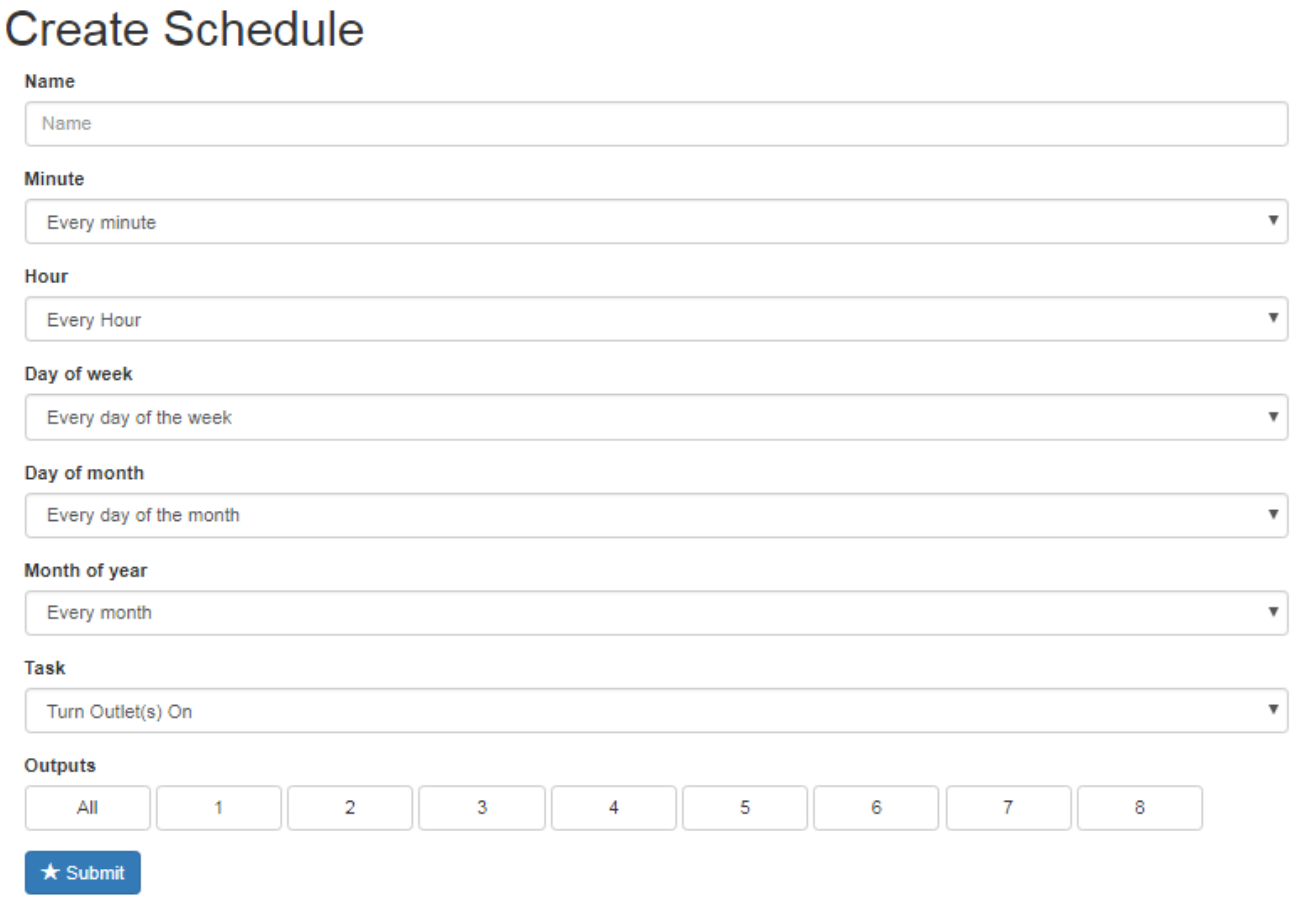
Trigger actions can be also be deleted on the Scheduling page. The user may remove any of the trigger actions by clicking the "Delete" button next to the trigger action. Doing so will remove the trigger action from the list as well as from the Outlets and Inputs pages.



Creating Schedule:

Creating a schedule of events allows the user to automate a task, such as resetting an outlet to restart a network switch or turning off an outlet to shutdown equipment to reduce power consumption. The user can create up to 1,000 scheduled events for each Smart Tracker unit and can edit or delete each scheduled event. Click "Create Schedule" on the Scheduling page to begin a new scheduled event. See the following for descriptions and an example of how to create a scheduled event.

Note: Scheduling relies on accurate Device Time as well as NTP and time zone specifications. Its encouraged that the user establish a reliable NTP server address in the Unit page and select or verify their time zone in the Unit page before creating any scheduled events.



Name: In the "Name" textbox, the user will input the name of the event that will take place, such as "Reset Outlet 1". As a tip, if any of the names of the outlets or relays were changed, use those names in place of "Outlet 1".

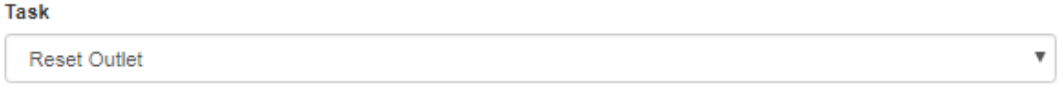
Minute: In the Minute dropdown list, the user can specify the minute portion of the time of the event. Selectable from 0-59, the user can set a particular minute the event will occur. If the user would like an event to occur the "top of the hour", or every new hour, select 0. For an event to occur at the "half hour", select "30".

Hour: The defining hour is based on a 24-hour clock scheme. This is selectable from 0-23, with 0 representing a new day or "Midnight", 12 representing "Noon", and 23 representing "11 PM". Events are based on the hour specified and require the appropriate time zone to be selected in order for the event to occur at the correct local time. Refer to the Configuration page to select or verify the time zone of the unit.

Day of Week: Day of the week can be used to select a single day Monday-Sunday, weekdays Monday-Friday, weekends Saturday-Sunday, or everyday of the week.

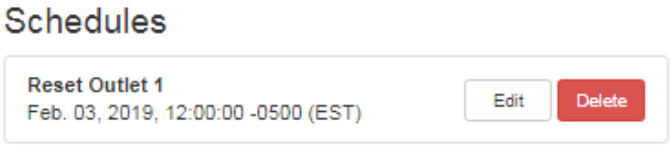
Day of Month: Day of month is required to specify events to take place during a specific month January-December or for every month. Most events will fall under the "Every month" selection if reoccurring events are required year round.

Task: Task is used to define the action that will take place at the scheduled time. Similar to selecting an action type, Task has six options that will affect outlets or relays. Take care when selecting the appropriate task when applying the event to an outlet or to a relay.



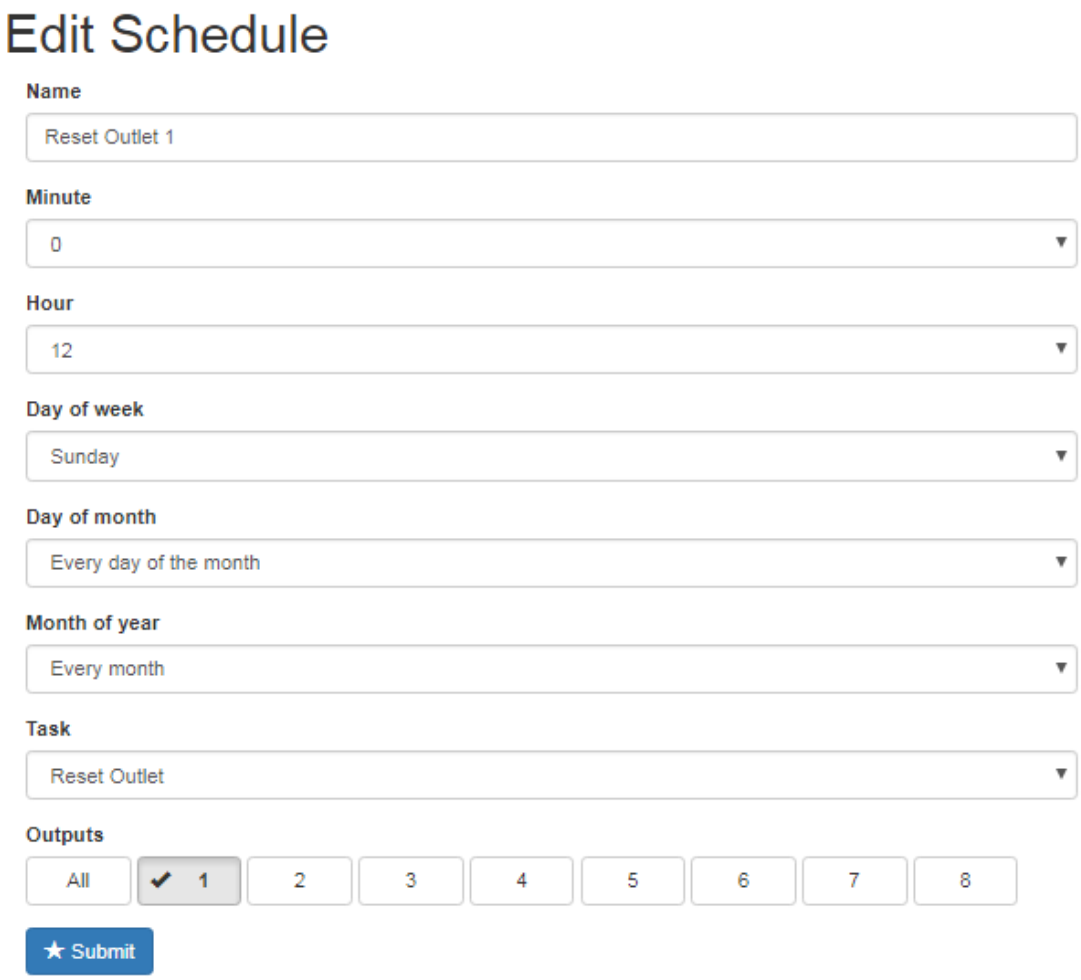
Outputs: Outputs provide a list of checkboxes that are used to represent the number of the outlet or relay that will be affected by the task. Select the appropriate checkbox for the outlet(s) or relay(s), as multiple outlets or relays may also be selected. In this example, Outlet 1 is selected.

After selecting the criteria for the scheduled event, click the "Submit" button to create the scheduled event. The Scheduled event will appear under "Schedules" on the Scheduling page. The name of the event will be listed, as well as when the event will occur. In this example, Outlet 1 will be reset at 12:00PM (EST) on Feb 3rd. This example selected "Every Sunday" for when to occur and this event will automatically update the date shown for the next reoccurring event.



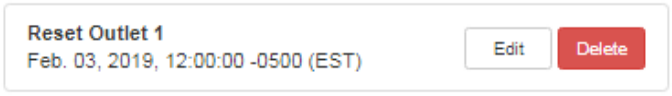
Editing Schedules:

Each of the created scheduled events listed on the Scheduling page can be modify using the "Edit" button for each respective schedule. After clicking this button, the user will return to an "Edit Schedule" screen, where the schedule criteria may be modified. Be sure to click "Submit" to save the changes made.



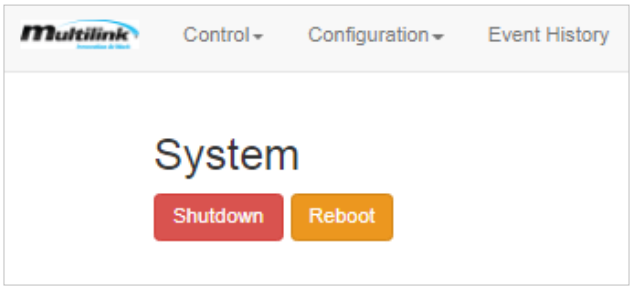
Deleting Schedules:

Schedules can be also be deleted on the Scheduling page. The user may remove any of the schedules by clicking the "Delete" button next to the schedules. Doing so will remove the schedule from the list as well as from future use.



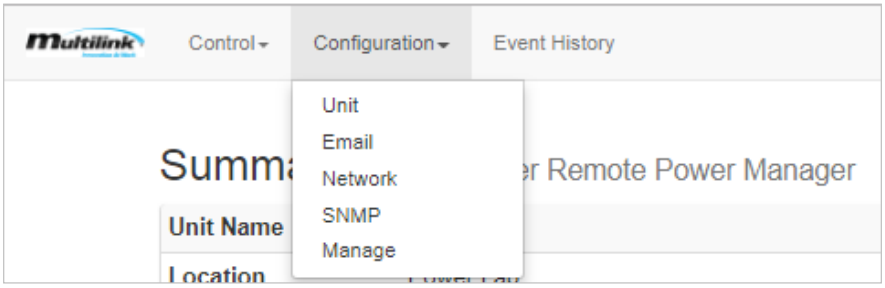
System Page:

In the System page, the user can remotely shutdown or reboot the operating system of the Smart Tracker. The Shutdown feature allows for authorized remote shutdown prior to disconnecting the Smart Tracker from AC power. This feature should **only** be used when a technician is present to physically remove power from a Smart Tracker, due to the AC circuit breaker. All outlets, relays, and network connectivity will become inactive. The Reboot option can be used to remotely restart the Smart Tracker, if necessary.



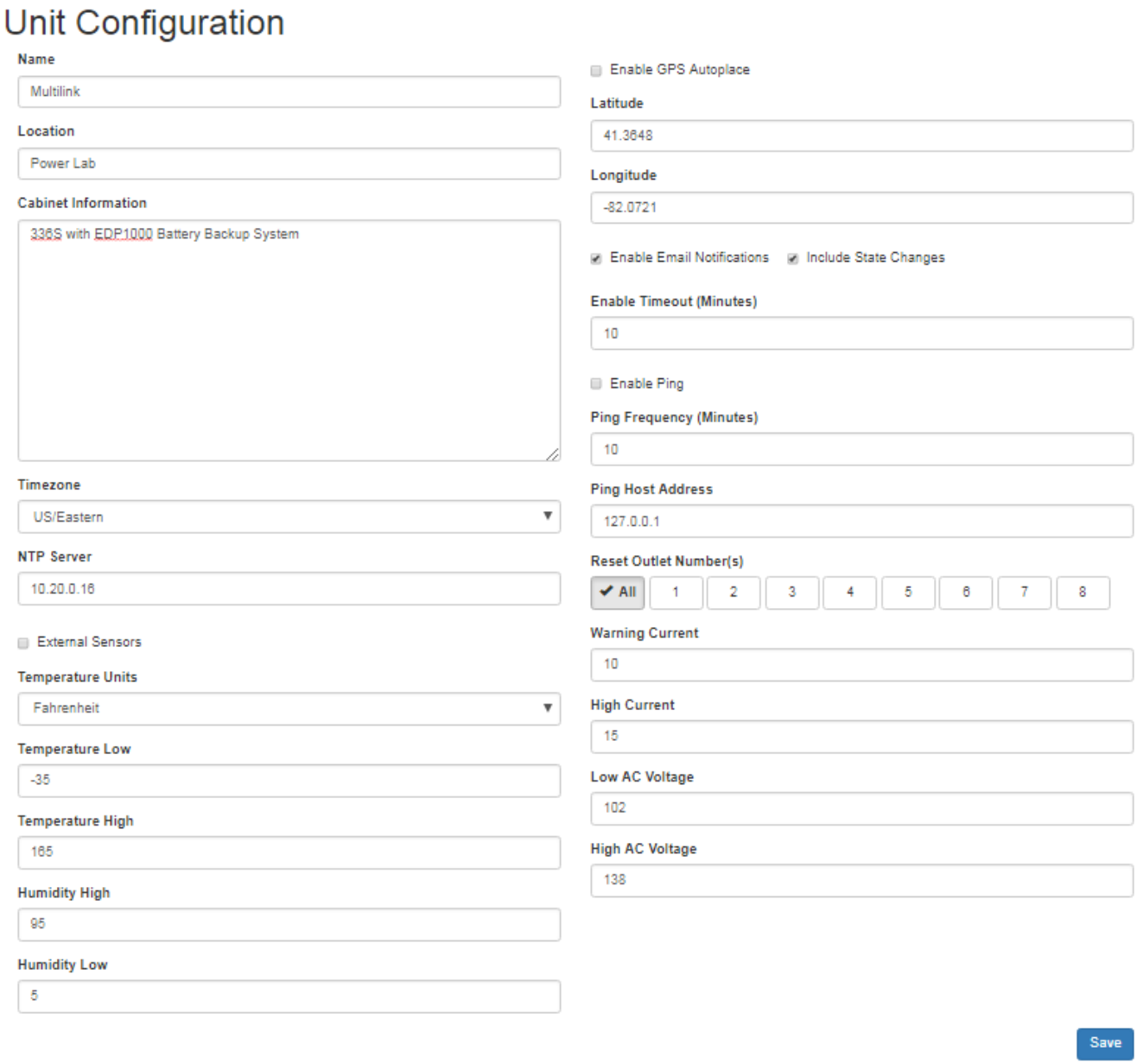
Configuration Tab:

The Configuration tab includes five pages for Unit, Email, Network, and SNMP configurations, as well as a page to manage each Smart Tracker. Each of these pages provides the user with configurable parameters in order to setup or enhance the operation of each unit. The Manage page is used to update the unit's firmware and also provides the ability to download a preexisting configuration file from a Smart Tracker that may be uploaded to multiple units, saving time during setup. Each of the pages is shown and described below.



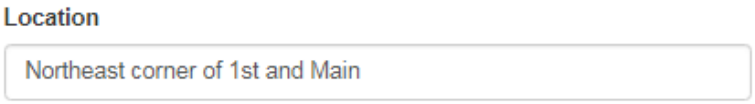
Unit Configuration Page:

The Unit configuration page allows the user to modify the Smart Tracker's device information, operating attributes, select the time zone, set an NTP server address for time and date synchronization, and provide GPS location information. It allows the user to edit the high and low threshold points for voltage, current, temperature, and humidity. If an external temperature and humidity sensor has been purchased, the option to enable this feature is also found on this page. Additional features such as email timeout and Ping are also available, limiting excess emails and providing an automatic tool to reset one, some, or all, outlets that may be powering network equipment. Changes can be saved to any item by clicking the "Save" button. Each of these items, their respective default values, and its use are described below.

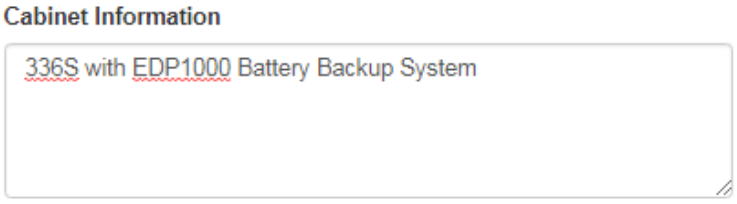


Name: This text field may be used to rename each unit or to reflect the organization who owns the unit.

Location: Used to describe the location of the device. For example: Northeast corner of 1st and Main.



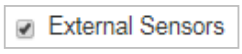
Cabinet Information: Used to describe the enclosure and/or the equipment that may reside inside the enclosure.



Timezone: This configuration item is used to set the time offset from UTC time. It is also used to set the time offset in the event that the Smart Tracker is not able to connect with a NTP server to automatically update the date and time. Select the timezone that most accurately depicts the location of the unit.

NTP Server: Each Smart Tracker must be able to automatically update its Device Time using an available NTP server. Enter the IP address of an accessible NTP server in this text box. Each unit will use this address upon restart and periodically to maintain accurate device time.

External Sensors: When enabled, the Summary page will display two additional parameters, the external temperature and humidity. This is an optional feature and will not display the external values unless the feature is enabled and an external temperature and humidity sensor is in use.



Temperature	94.42 F
Humidity	14.76 %
External Temperature	77.32 F
External Humidity	25.02 %

Temperature Units: Allows user to change the unit of measure for the temperature. Values for the temperatures on the Summary page, Unit configuration page, and LCD will change when the unit of measure is changed.

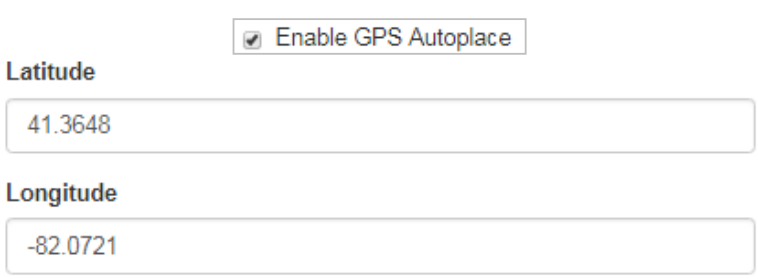
Temperature Low: This threshold can be adjusted to indicate when the internal temperature of the Smart Tracker has exceeded its low threshold value. When this occurs, the Smart Tracker will send an email notification to the list of recipients concerning the alarm. This feature is auto-correcting.

Temperature High: This threshold can be adjusted to indicate when the internal temperature of the Smart Tracker has exceeded its high threshold value. When this occurs, the Smart Tracker will send an email notification to the list of recipients concerning the alarm. This feature is auto-correcting.

Humidity High: This threshold can be adjusted to indicate when the internal humidity of the Smart Tracker has exceeded its high threshold value. When this occurs, the Smart Tracker will send an email notification to the list of recipients concerning the alarm. This feature is auto-correcting.

Humidity Low: This threshold can be adjusted to indicate when the internal humidity of the Smart Tracker has exceeded its low threshold value. When this occurs, the Smart Tracker will send an email notification to the list of recipients concerning the alarm. This feature is auto-correcting.

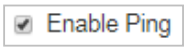
Enable GPS Autoplace: This feature allows the GPS to receive a signal provided by the external antenna and places the Smart Tracker at its location on the Summary page map. When GPS is not capable of "auto-placing" itself due to lack of reception, the user may disable this feature and manually input latitude and longitude coordinates.



Email Notifications: When enabled, each Smart Tracker will send an email when one or more thresholds are exceeded. There is also the option of including state changes in emails whenever an outlet, relay, or input has changed state.

Enable Timeout (Minutes): Allows the user to delay the frequency of emails, as the potential for several emails may exist at any one time. The default is ten minutes.

Ping: Ping is used to test the network connectivity of the Smart Tracker when network equipment is being powered by the Smart Tracker. When enabled, the unit will attempt to contact another device on the network. If the unit does not receive a response from the Ping Host, the user may select one, some, or all outlets to perform a 30 second reset to reboot the network equipment and regain connectivity.



Ping Frequency (Minutes): When Ping is enabled; the unit will attempt to contact another device on the network. The frequency of Ping may be adjusted as necessary. The default is ten minutes.

Ping Host Address: This is the address Ping uses to verify network connectivity. The user may enter the IP address of the network DNS server, email server, or any network device attached to the same network. The default Ping Host address of 127.0.0.1 is a loopback address for the Smart Tracker to communicate with itself and should be changed to prevent misleading network connectivity.

Reset Outlet Number(s): When Ping does not receive a response, the user may select one, some, or all outlets to perform a 30 second reset to reboot the network equipment attached to the Smart Tracker.

Warning Current: This threshold can be adjusted to indicate that the total current draw has exceeded its warning value. When this occurs, the Smart Tracker will send an email notification to the list of recipients concerning the alarm. This feature is auto-correcting.

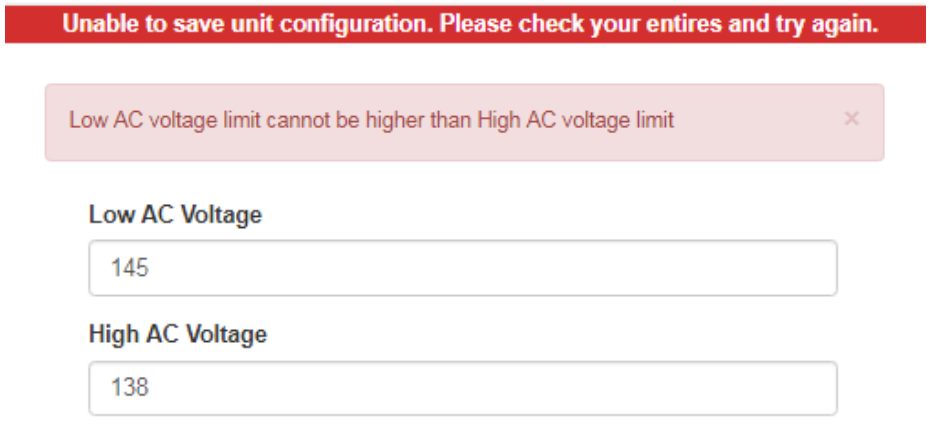
High Current: This threshold can be adjusted to indicate the total current draw has exceeded its High value. When this occurs, the Smart Tracker will send an email notification to the list of recipients concerning the alarm. This feature is auto-correcting but the AC circuit breaker may trip on the unit, requiring a manual restart.

Low AC Voltage: This threshold can be adjusted to indicate when in AC input voltage has exceeded its low threshold value. When this occurs, the Smart Tracker will send an email notification to the list of recipients concerning the alarm. This feature is auto-correcting.

High AC Voltage: This threshold can be adjusted to indicate when the AC input voltage has exceeded its high threshold value. When this occurs, the Smart Tracker will send an email notification to the list of recipients concerning the alarm. This feature is auto-correcting.

Error Messages:

In the event that certain criteria are not met when the user changes the threshold values for current, voltage, temperature, and humidity, the user will be prompted with an error message upon saving changes. This message reports the reasons why the last change or changes were not saved. Values that violate these criteria will revert to the previously saved value when the unit configuration page is reloaded. For example, the Low AC voltage limit should not exceed the High AC voltage limit.

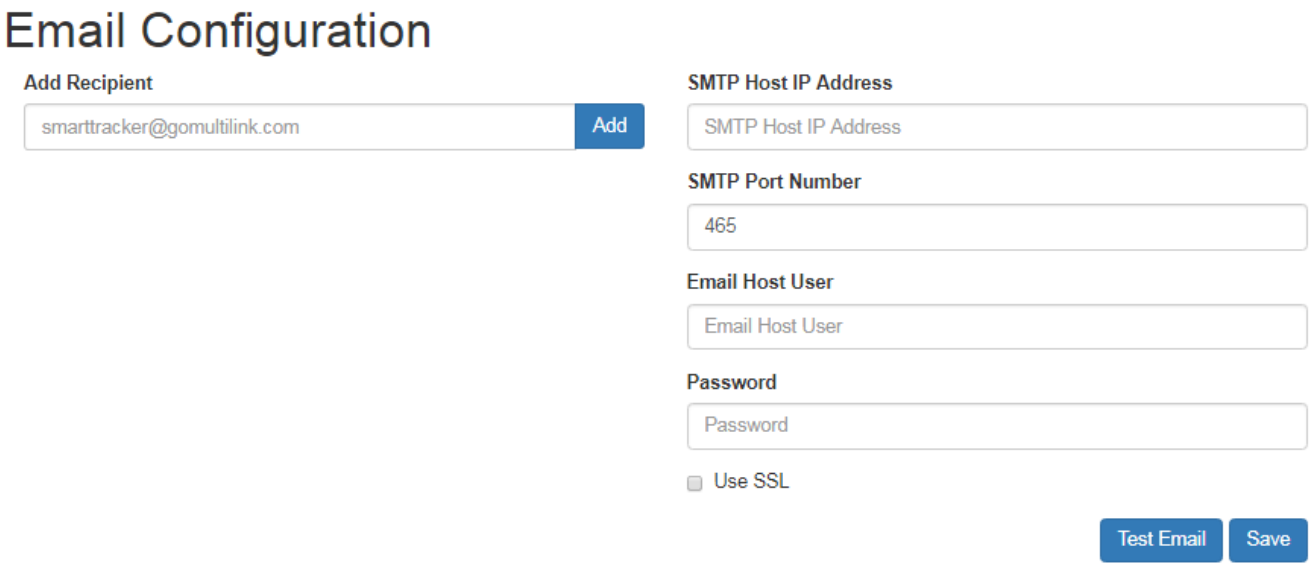


Saving Unit Configuration Changes:

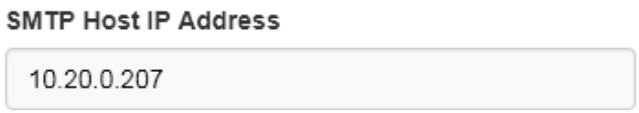
Be sure to click the "Save" button at the bottom of the page to save all changes. As with the Outlets, Relays, and Inputs pages, all textboxes and fields will illuminate Green to signify the changes have been saved.

Email Configuration Page:

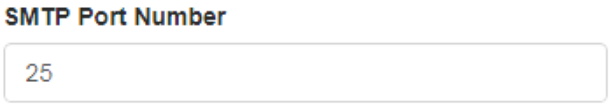
On this page, the user can configure and test the email notification feature. Email notifications require SMTP server information to be entered in order for the Smart Tracker to send emails to the list of recipients. This information can be requested from the network administrator. The user can test the connection to verify the connection has been established using the Test Email button. Each text field is described below with an example for setting up email notification and recipients.



SMTP Host IP Address: This item is the SMTP host server for which emails will be relayed to the recipients. This may be an IP address or a domain name. In this example, an IP address for the host's email server is used.

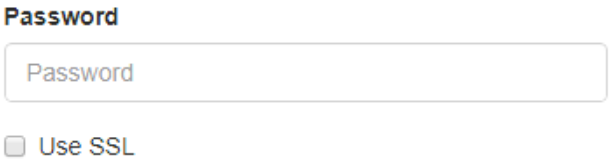


SMTP Port Number: This text field is the SMTP port for which emails will be relayed. In this example, Port 25 is the authorized port that is used for email. Consult with the network administrator to determine the correct port number to use.



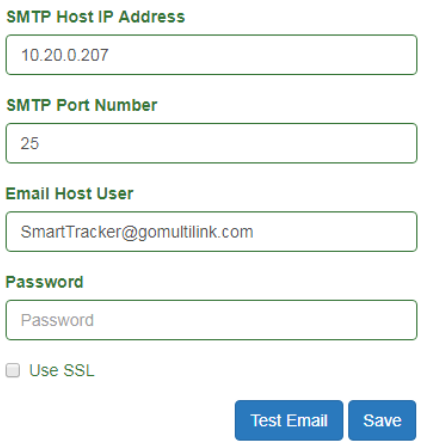
Email Host User: This is the Smart Tracker's email address. The user may change the Smart Tracker email address to better represent the device. In this example, the username of the email address is "SmartTracker" and the domain portion is @gomultilink.com.

Password: Used for user authentication, if required, by the SMTP email host. The "Use SSL" and a valid email address and password must be established by the network administrator for this field to be used.



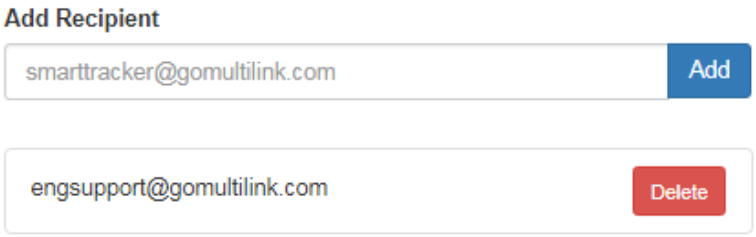
Saving Email Configuration Settings:

When all information is input, click the "Save" button to save all changes. As with previous pages, all textboxes and options will illuminate Green to indicate the changes have be saved.



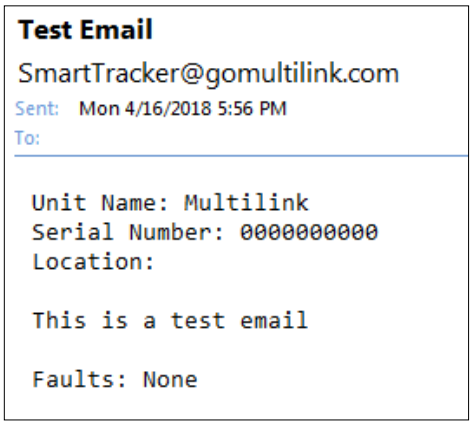
Adding Email Notification Recipients:

The user is required to add at least one recipient in order to test and receive email notifications. There is no limit on the number of email recipients. Enter a valid email address into the "Add Recipient" textbox and click the "Add" button to add the email address to the list. The list will display below the textbox. To remove any one of the recipients from the list, click the "Delete" button and the email address will be removed.



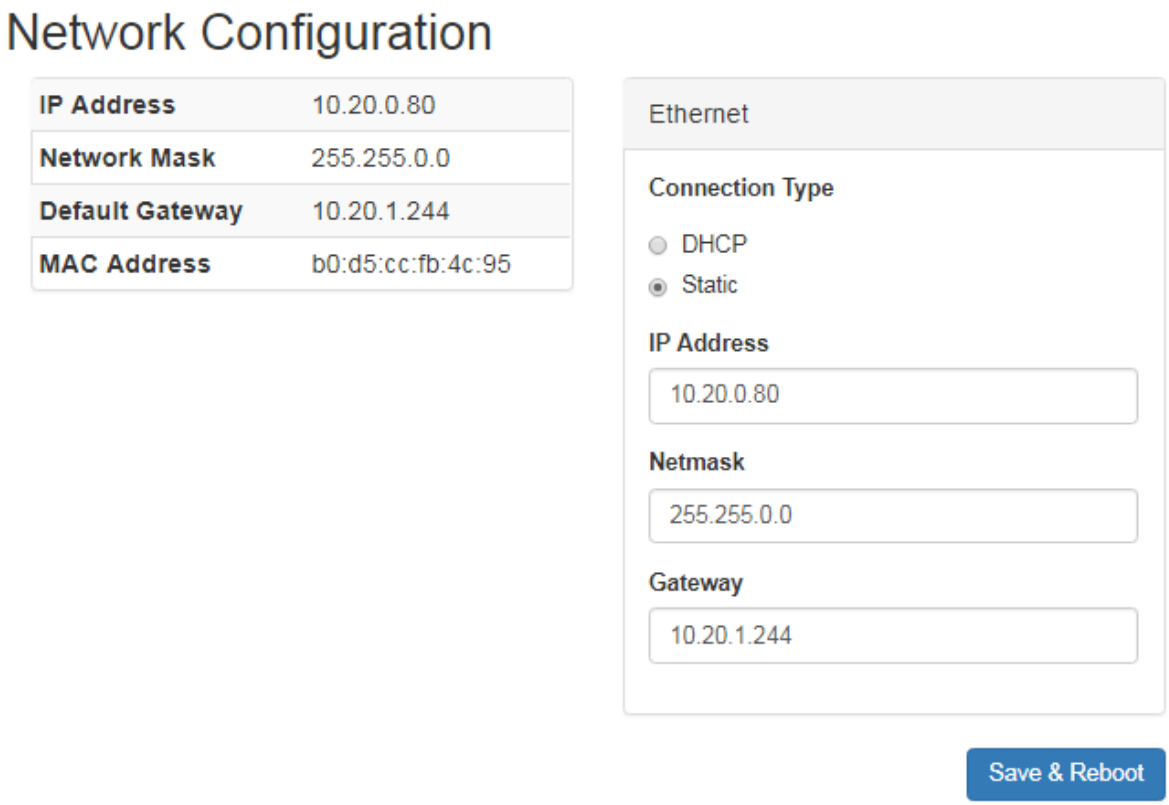
Testing Email Notification Settings:

With a valid email recipient added, the user may test the connection to the SMTP host by clicking the "Test Email" button on the page. If the information provided is correct, the recipient will receive a email from, in this example, SmartTracker@GoMultilink.com. Be sure to enter the required SMTP information and click "Save" prior to clicking the "Test Email" button.



Network Configuration Page:

The Smart Tracker is factory configured with a default IP address for local configuration and control. When selected, it may also utilize DHCP to automatically acquire its network configuration from the network's DHCP server. Once a connection is established, the IP, subnet mask, and default gateway addresses are stored for display and use. The device MAC address is also displayed. Each item is described below.



Current Network Configuration:

After the network connection has been established, the current network configuration and MAC address are displayed.

IP Address	10.20.0.80
Network Mask	255.255.0.0
Default Gateway	10.20.1.244
MAC Address	b0:d5:cc:fb:4c:95

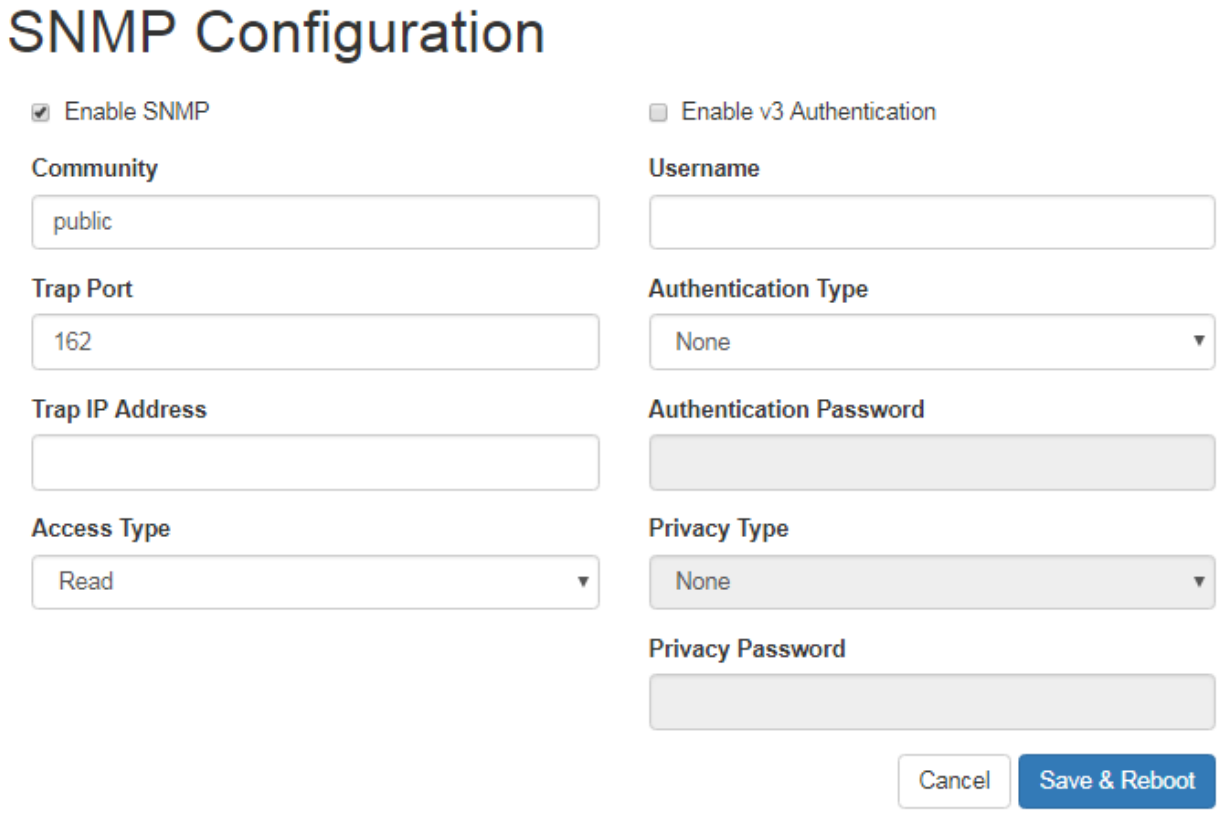
Configure Static and DHCP IP Addressing:

The user may change the network configuration to a static IP address by selecting the "Static" radio button and filling in the three textboxes. The gray addresses in the textboxes are used to show valid formats for each textbox. The user may also press and hold the "Enter" button from the front panel for 10 seconds to set the factory default IP address. **Note**: Take care to verify that the static IP address chosen is not currently in use and the appropriate subnet mask and gateway are configured for the IP address selected. The example below shows the factory default IP address, subnet mask, and gateway for the Smart Tracker.

Click the "Save and Reboot" button to store the changes and allow the Smart Tracker to reboot. Once the unit restarts, the user may address the unit through the new static IP address. The user may also change the Static IP address to DHCP by selecting the DHCP radio button and clicking "Save and Reboot". The network configuration will be automatically assigned to the Smart Tracker.

SNMP Configuration Page:

The Simple Network Management Protocol (SNMP) is used to provide operating parameters, device information, and state of each outlet, relay, and input over a network connection. Users may interface with the SNMP agent of each Smart Tracker using a variety of software packages, from simple MIB browsers to advanced network management software suites. This feature is enabled by default using SNMPv2c, but may be disabled by the user. SNMPv3 is also included for added network security and may be enabled, if required. Each textbox and dropdown list will be described below. A Management Information Base (MIB) is required when using SNMP to communicate with the Smart Tracker. It is available by contacting Multilink and may be downloaded from Multilink's website. If necessary, please consult with the network administrator to properly configure SNMP.



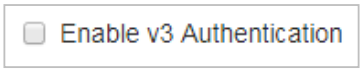
Community: The Community string is used by SNMP v1 and v2c variations of the protocol. Its use is similar to a password and has a default of "public". This may be changed by the user to provide some minor security. When changing this parameter, the community string for both the Smart Tracker and the SNMP manager's software package must match in order to receive a reply from the Smart Tracker.

Trap Port: The Trap Port is the port where asynchronous traps from the Smart Tracker will be received. The SNMP manager will receive traps from the Smart Tracker at this port when they occur. Traps are listed in the MIB file, which will be discussed later in this user manual. The default is Port 162.

Trap IP Address: Trap IP Address is the SNMP server's IP address; where the Smart Tracker's SNMP Traps will be sent and received. Network operators typically designate one server as the SNMP manager to receive all Traps from networked devices. This is blank by default and must be filled out in order for SNMP trap messages to be received.

Access Type: Access Type allows the user to select either "Read" or "Read/Write" capabilities over SNMP. These correspond to GET and SET commands received by the Smart Tracker from the user's network management software or MIB browser. "Read" is selected by default.

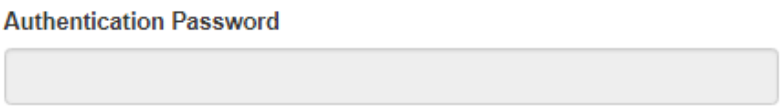
Enable v3: The following textboxes and dropdown lists are used for SNMPv3 authentication and security. This version can provide encrypted messages and two-level password protection to enhance the security of each Smart Tracker. V3 is not enabled by default and must be enabled by the user. For more information regarding v3, refer to RFC3414 from the IETF.



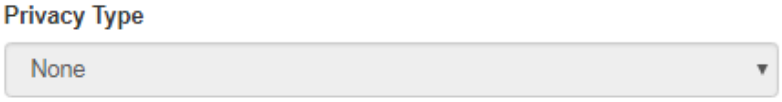
Username: The Username field is used to enter a new user name. This field is used by both the Smart Tracker and the SNMP manager and must match in both to allow encryption/decryption of messages.

Auth Type: The user can select from two Authentication protocol types, MD5 and SHA. Both types are used to encrypt messages between the Smart Tracker and the SNMP manager. Either may be selected. Contact your network administrator for information regarding which type may be required.

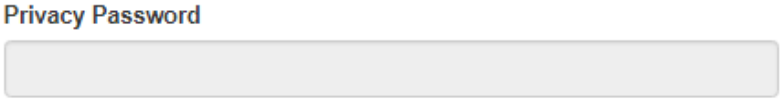
Auth. Password: When selecting an authentication type, an authentication password must be provided. This password must be known by both the Smart Tracker and the SNMP manager's software package or MIB browser.



Privacy Type: Privacy type provides another layer of security between the Smart Tracker and the SNMP manager. Select from DES or AES. Contact your network administrator for information regarding which type is required.



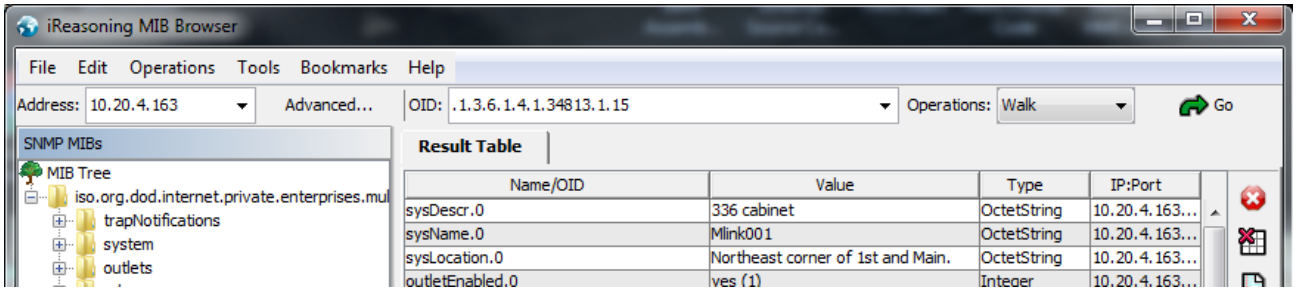
Privacy Password: Privacy password is similar to the authentication password, where the Smart Tracker and the SNMP manager's network management software or MIB browser must have knowledge of this password to complete encryption.



Be sure to save all entered and selected information. The Smart Tracker will automatically restart upon clicking the "Save & Reboot" button.

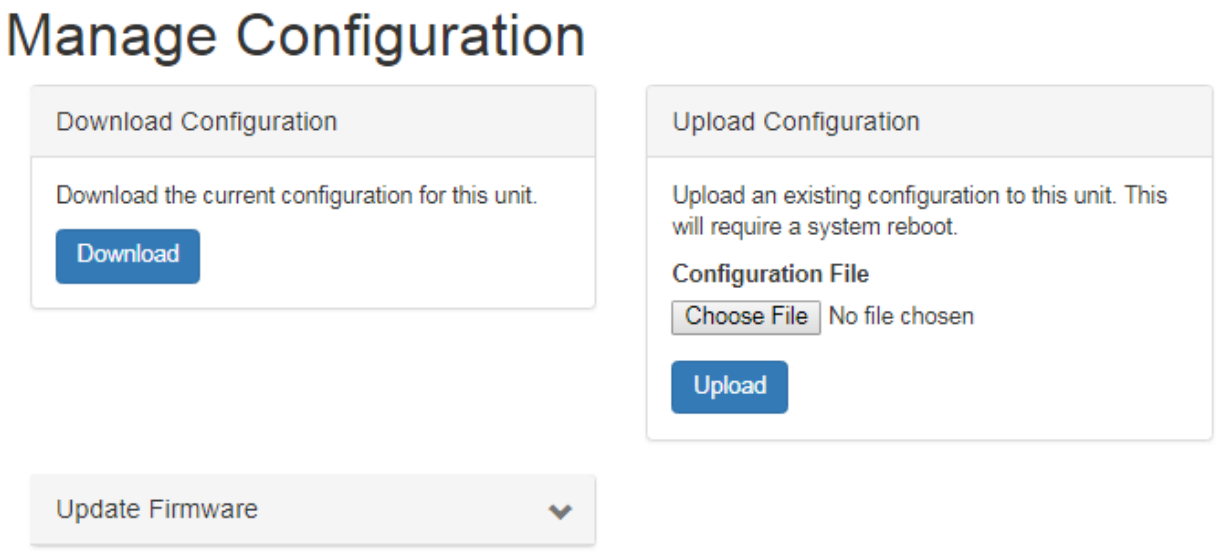
SNMP Management Information Base (MIB):

The Smart Tracker requires that a MIB file be loaded into the user's MIB browser or network management software suite in order for SNMP operating parameters and traps to be passed over a network connection. This is a proprietary document and may be found on Multilink's website or by contacting Engsupport@gomultilink.com. All objects and traps that may be passed over a network connection are described in this document. OID information is provided and can be visualized using a MIB browser or network management software suite. Refer to the help sections of the user's MIB browser or network management software suite to learn how to upload the MIB and begin SNMP communication with the Smart Tracker. A simple MIB browser for testing SNMP functionality of the Smart Tracker is the iReasoning MIB Browser. A screen shot of the WALK command showing SNMP functionality is shown below.



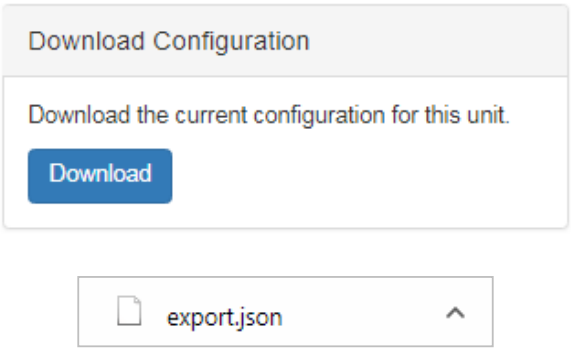
Manage Page:

The Manage page allows the user to remotely download a unit's configuration file, upload an existing configuration file, and update the firmware of each Smart Tracker when a new release is available. These features and their requirements are described below. **Note**: This feature is only available in Smart Trackers with v1.1.0 or later firmware.



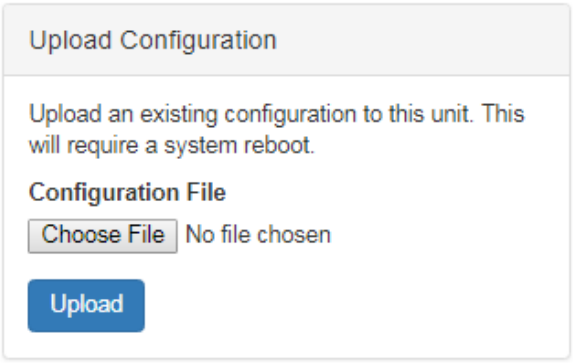
Download Configuration:

This section of the Manage page allows the user to download the respective Smart Tracker's configuration file for use in other Smart Trackers. This feature is designed to speed up the configuration of several units, as opposed to manually configuring each unit. When clicking the "Download" button, a file will begin to download named "**export.json**". This JSON file must be saved to the user's computer before use. The file may be renamed before use or immediately used to upload into other Smart Trackers. **Note**: This file does not copy existing network parameters as this would result in network conflicts with IP address resolution and potential to lose remote communication with the unit.

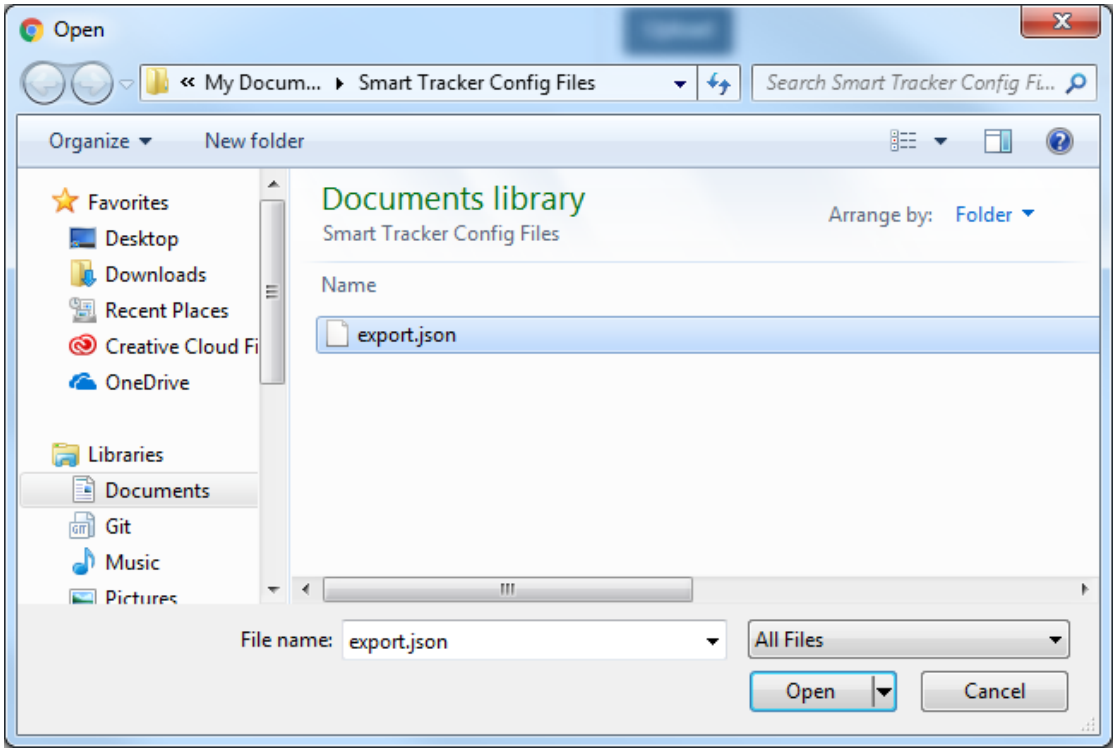


Upload Configuration:

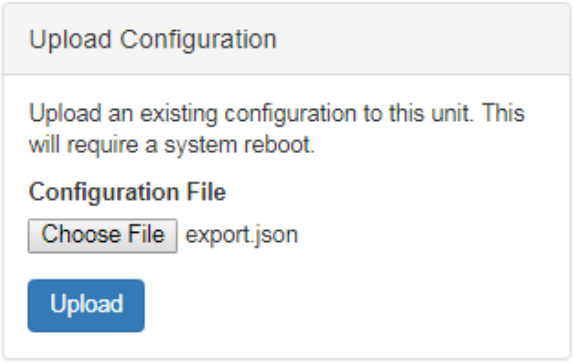
After a configuration file has been downloaded, it may then be uploaded to another Smart Tracker for use. This file will copy the existing configuration of the previous device into the new Smart Tracker. This feature requires the Smart Tracker to reboot after uploading. Once rebooted, both Smart Trackers will operate under the same configuration settings, including any name changes, triggers actions, and schedules. Follow the instructions below to upload a configuration file.



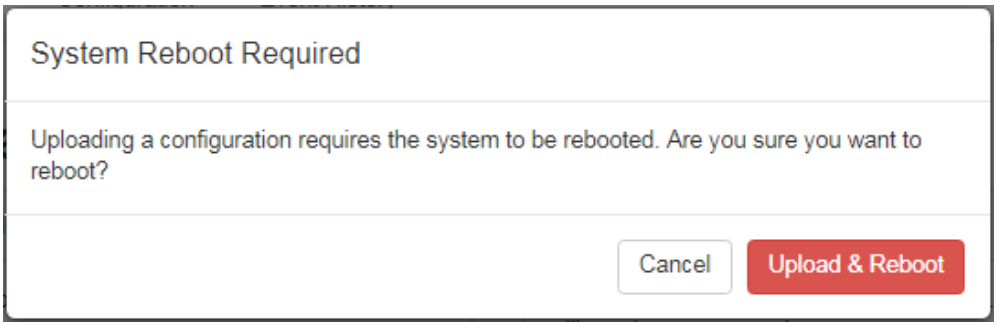
1. To upload a configuration file, click “Choose File”. A prompt will open asking to select the “export.json” file. Select the file and click “Open”. The name of the file will be listed after selecting the file. Only files with a “.json” file extension will be allowed to be uploaded. An error prompt will display if an incorrect file type is attempted to be uploaded.



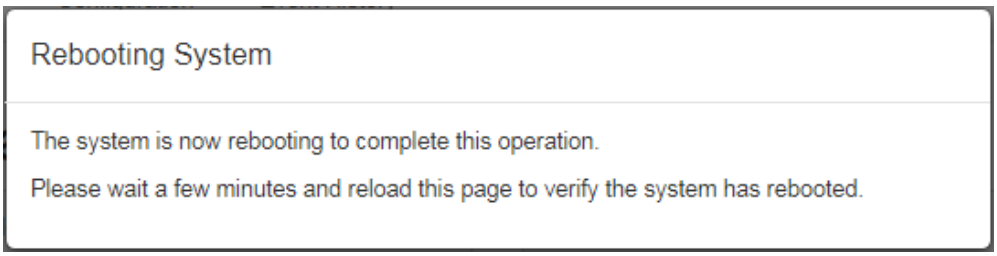
2. Click the “Upload” button.



3. A prompt will appear notifying that the upload will require a system reboot is required. Click “Upload & Reboot” to begin the upload.



4. The upload will commence and then inform the user that the system is rebooting.

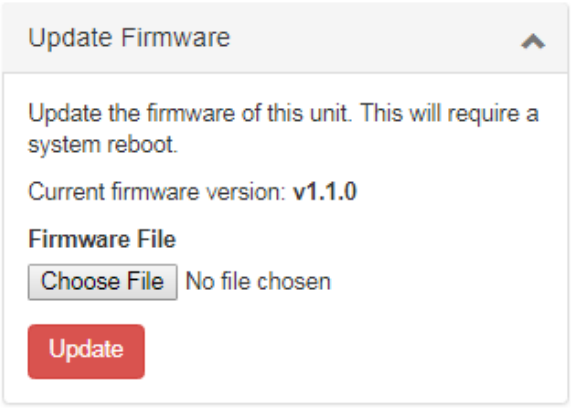


5. After a few minutes, refresh the webpage to confirm the upload has completed and the system has rebooted. This may be repeated for each Smart Tracker unit deployed in the field.

Update Firmware:

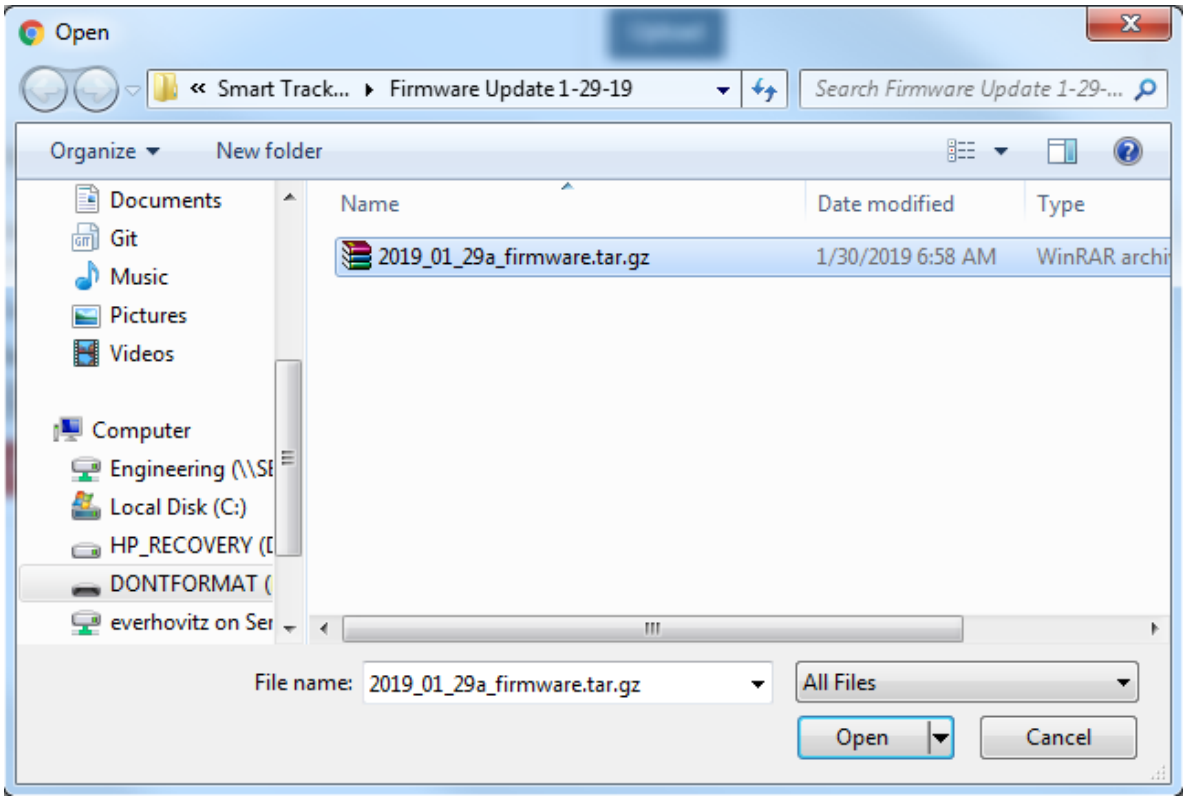
When new versions of firmware become available, the user may download the new firmware .zip file and remotely upload it to each Smart Tracker. Each unit will need to have its firmware updated separately after which, the unit will perform a reboot. Periodically, Multilink will inform users that a firmware update is available to those using "v.1.1.0" or later firmware.

Follow the instructions below to perform a firmware update.

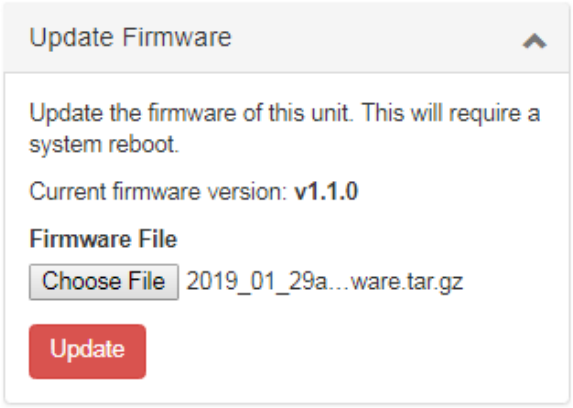


1. Click the drop down arrow to expand the Update Firmware menu. The current firmware version will be listed.

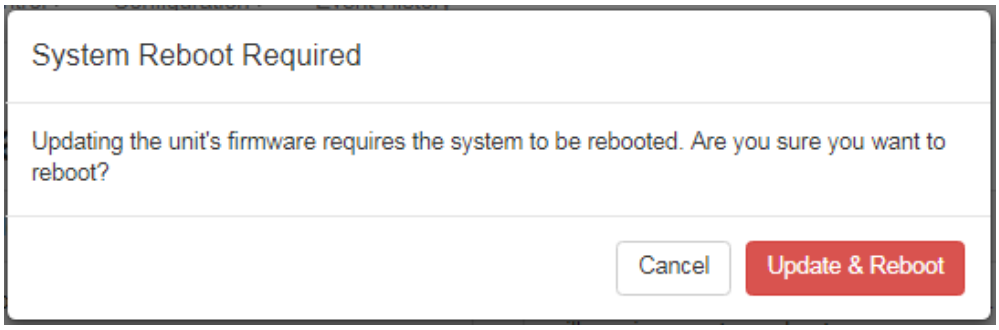
2. Click "Choose File" and select the .zip file provided by Multilink. Click "Open" and the name of the file will be listed. Only .zip files may be uploaded.



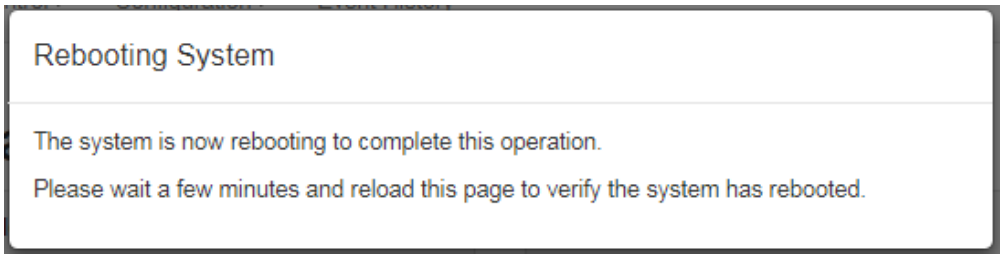
3. Click the Update button.



4. A prompt will display notifying the user that a reboot is required. Click "Update & Reboot" to begin the firmware update process.



5. After the firmware update process has completed, the user will be prompted that the Smart Tracker is rebooting. After a few minutes, refresh the webpage, click the drop down arrow next to Update Firmware, and verify the current firmware version has changed.



Event History Page:

All events that occur in each Smart Tracker are recorded and listed in the Event Log. When the state of an outlet, relay, or input changes, the date and time of that event are recorded. This will also occur for operating parameter threshold alarms that are currently exceeded, as well as for Ping events, Enter button actions, and scheduled events. If the name of an outlet, relay, or input has been changed, this name will display in the log for clarity. Thousands of events may be listed, with the latest event occurring at the top of the log. The user may adjust the number of entries shown, select different pages of events to view, and clear the event log by clicking "Clear Log" and confirming the action.

Event Log

Clear Log

Show 50 entries

Timestamp	Event
Wed Jan. 30, 2019, 17:28:14 +0000 (UTC)	Turn On Network Switch
Wed Jan. 30, 2019, 17:27:44 +0000 (UTC)	Turn Off Network Switch
Wed Jan. 30, 2019, 17:27:44 +0000 (UTC)	Ping Timed Out. Resetting Selected Outlets.
Wed Jan. 30, 2019, 17:25:00 +0000 (UTC)	Turn On Network Switch
Wed Jan. 30, 2019, 17:25:00 +0000 (UTC)	Scheduled Event: Turn ON Outlet 1
Wed Jan. 30, 2019, 17:24:11 +0000 (UTC)	Low AC Voltage
Wed Jan. 30, 2019, 17:23:50 +0000 (UTC)	Turn Off All Relays
Wed Jan. 30, 2019, 17:23:45 +0000 (UTC)	Turn On All Relays
Wed Jan. 30, 2019, 17:20:31 +0000 (UTC)	Turn On CCTV Camera
Wed Jan. 30, 2019, 17:20:00 +0000 (UTC)	Turn Off CCTV Camera
Wed Jan. 30, 2019, 17:20:00 +0000 (UTC)	Scheduled Event: Reset Outlet 4

Showing 1 to 11 of 11 entries

Previous 1 Next

Section 7: Smart Tracker Shutdown

The Smart Tracker can be shutdown at anytime. During shutdown, the user will observe that the LCD is active. The Smart Tracker contains a circuit that allows the unit to save the operating state and then safely shutdown the operating system.

Observe the following procedure:

1. Operate the Input breaker to the OFF (O) position or operate the circuit breaker serving AC utility power to the supply to the OFF position.

2. All outlets, relays, indicators, and the backlight will turn off. The microprocessor may remain powered for up to 20 seconds to allow the Smart Tracker to safety shutdown.

Section 8: Options

The Smart Tracker supports the use of an external temperature and humidity sensor that may be purchased as extra cost times. Below is a list of additional options that are available to the Smart Tracker to expand its functionality:

172-004-20 - Smart Tracker external temperature and humidity sensor.

035-006-11 - Ground lug kit.

Section 9: Troubleshooting

This troubleshooting guide has been designed to help quickly locate and resolve common problems. The table assumes normal operation and configuration of the Smart Tracker at any given time. If the problem cannot be resolved, replace the Smart Tracker with a known good unit or call Multilink Inc. for support.

Operating Conditions	UPS LED/LCD Status	Corrective Action
Smart Tracker did not start as expected	- LCD backlight OFF - No outlets powered	• Verify AC power cord is plugged into the receptacle of the unit. • Verify upstream AC circuit breaker is closed and AC power is available. • Verify AC circuit breaker on Smart Tracker is turned on and the switch is illuminated. • Shutdown the unit for 60 seconds.
No power to outlets	- All outlet LEDs OFF	• Outlets may be turned on remotely or by using the Hot Start feature. • If no outlets can be forced on, remove Smart Tracker and replace with a known good unit.
No Ethernet connectivity	- IP address reads 0.0.0.0 or 169.254.x.x - Cannot connect to Smart Trackers embedded webpage	• Verify that the Ethernet cable is properly attached. • Verify that the network configuration settings are correct. • Verify desktop or laptop's network adapter settings are correct and within the same IP range as the unit. • Reset to factory IP using Enter button
Date and Time are not accurate	- Date and time incorrect	• Verify NTP Server setting in Unit configuration. • Use the "Update Time" button if displayed on the webpage.
Configuration and firmware files not uploading as expected	- Error message regarding file	• Select either .json for configuration uploads or .zip for firmware uploads • Log out and then log back in to verify access to these features.
LCD screen inoperable	- Backlight may be on but no text or incorrect text is visible	• Verify temperature of the unit. High temps will cause character fading. • Shutdown the unit for 60 seconds. • Verify if unit responses to Hot-Start. If not, remove unit and replace with a known good unit.
SNMP not working properly	- No response or timed out	• Verify SNMP is enabled • Check SNMP Configuration settings
Email Notifications not sending	- No email notifications received	• Verify Email Notification or outlet state change is enabled • Check Email Configuration • Verify recipient email address • Check Spam folder
Limited access to outlets do to large transformer style power plugs	- Outlets physically blocked by transformer power plug or come in contact with the enclosure's door	• Use a short, 5-15R to 5-15P extension cord to provide power to transformer style power plugs. • Adjust rack mount brackets

Section 10: Smart Tracker Specifications

The operating specifications of the Smart Tracker are listed below.

General Specifications	
No. Outlets:	8 Individually Controlled Outlets
Outlet Type:	NEMA 5-15R, 15A/125 VAC, 60Hz
User Input:	Pushbutton for Specific Actions
LEDs:	Indicators for Active Outlets, Relays, and Digital Inputs
LCD:	Dual Line 2x20 Backlit
Embedded Webpage:	Password Protected User Interface
Event Log:	Stores Thousands of Events
Automation:	Scheduled Events and Actions
Remote Updates:	Firmware and Unit Configuration
System Clock:	NTP/RTC/Manual Update
Mechanical Specifications	
Dimensions:	1.7"H x 7.0"D x 19"W (43mm x 482mm x 178mm)
Weight:	5 Lbs.(2.26 Kg)
Color:	Blue or Black
Mounting:	1RU Rack Mounting w/ Adjustable Rack Mount Brackets or Shelf Mount
Relay and Input Connections:	Screw Terminal Plugs for 12-22AWG Wire
Digital Input Specifications	
No. Digital Inputs:	8 Individual Inputs (2 Contacts per Input)
Digital Input Voltage:	5VDC, 10mA Max., Opto-isolated Inputs
Analog Voltage (DC) Input:	2 Independent DC Measurement Inputs
Analog Input Voltage (DC):	0-60VDC
Temperature Sensor:	Embedded
Humidity Sensor:	Embedded
Output Relay Specifications	
No. Output Relays:	8 Individual Output Relays
Relay Switching Voltage:	250VAC, 125VDC MAX
Relay Current Capacity:	10 Amps, Each
AC Input Specifications	
Voltage Range:	85-154VAC; 120VAC Nominal
Frequency:	60Hz ±3Hz
Circuit Breaker Rating:	15A
Current Capacity:	15A
Power Cord:	Pluggable 5-15P, C13 15A/125VAC
Environmental Specifications	
Operating Temperature:	-37°C to +74°C (-34°F to 165°F)
Operating Humidity:	5-95% Non-condensing
Storage Temperature:	-45°C to 85°C (-49°F to 185°F)
Communication Specifications	
Network Interface:	10/100/1000 BASE-T Ethernet Port, RJ45 Connection, Auto MDI-x
Network Protocols:	NTCIP/TCP/IP/HTTP/SNMP/SNTP/UDP
IP Addressing:	DCHP and Static IP Addressing
Notification Type:	SNMP Traps/Email Notification
Safety Standard Specifications	
Standards:	NEMA TS2-2016 v03.07

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