

**SWITCHPAK™**

**BAS** *MS/TP Enabled*

**OPERATION AND MAINTENANCE**



An  Acuity Brands Company

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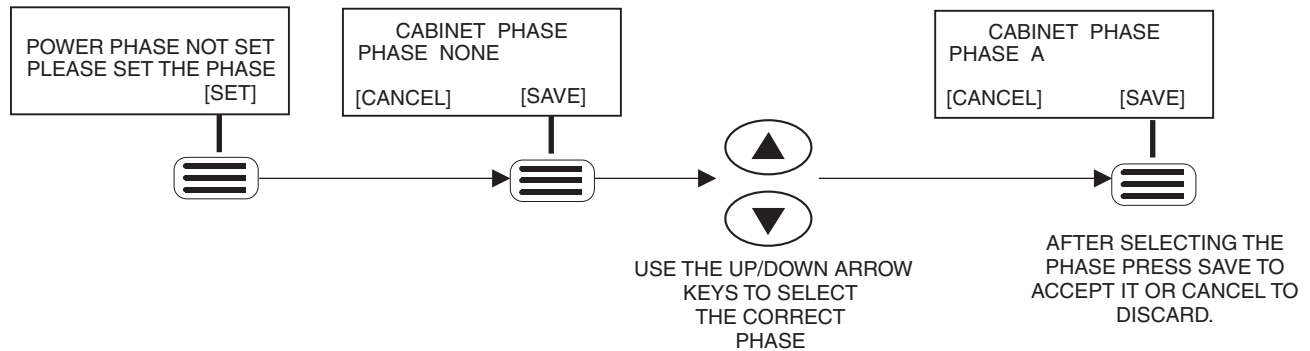
**Powering Up For The First Time**

When the SwitchPak is initially powered up, you will be prompted to set the PHASE of the circuit feeding the power supply.

**The correct phase MUST be set!**

If you do not select the correct input phase your product warranty may be void if you experience micro-welding of the relays. Setting the input phase correctly switches the relays only at zero cross, significantly reducing the possibility of micro welding. The initial warning prompt and alert beep experienced at start up WILL NOT end until you select and save the POWER PHASE.

Follow the steps shown in the flow diagram below to set the power supply phase.



**Setting MSTP Communication Parameters**

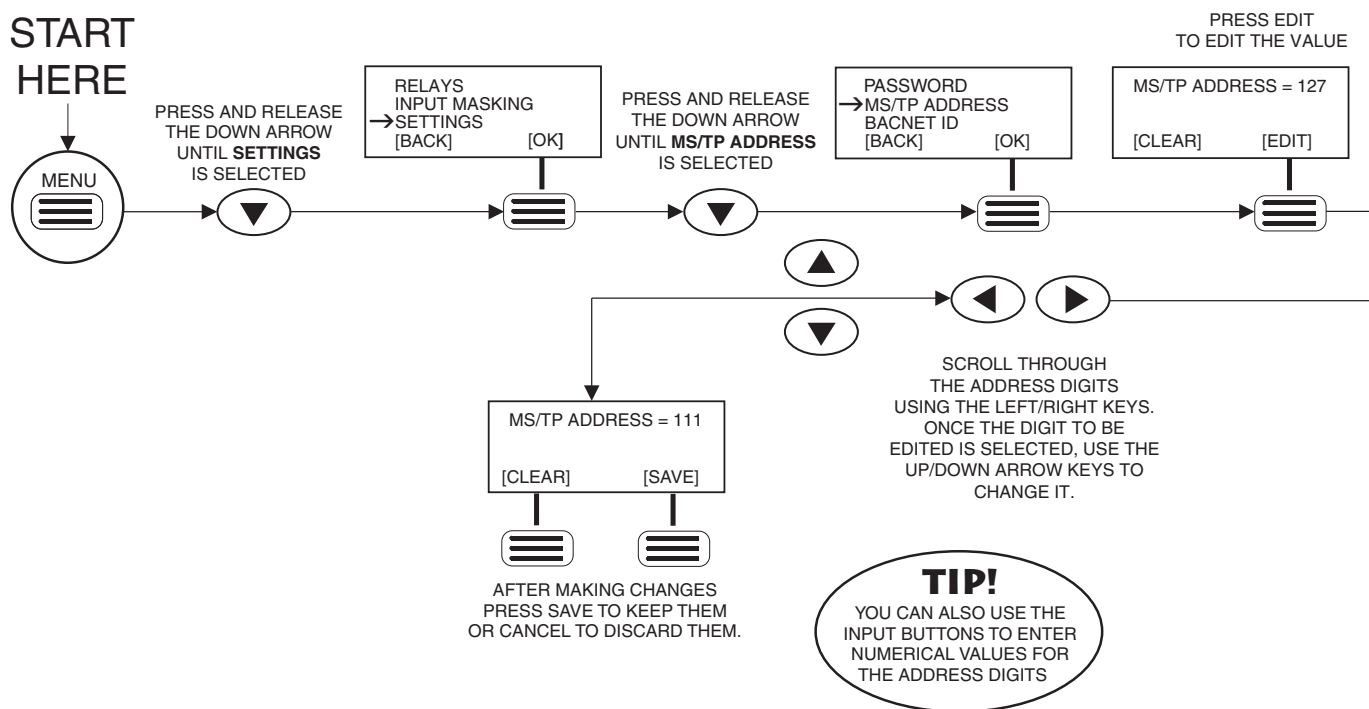
The default MSTP communication settings are:

- MSTP address 127
- BACnet ID 4194302
- MSTP BAUD rate 9600

You must verify these settings will work with your network. If not, follow the next three sections to change them.

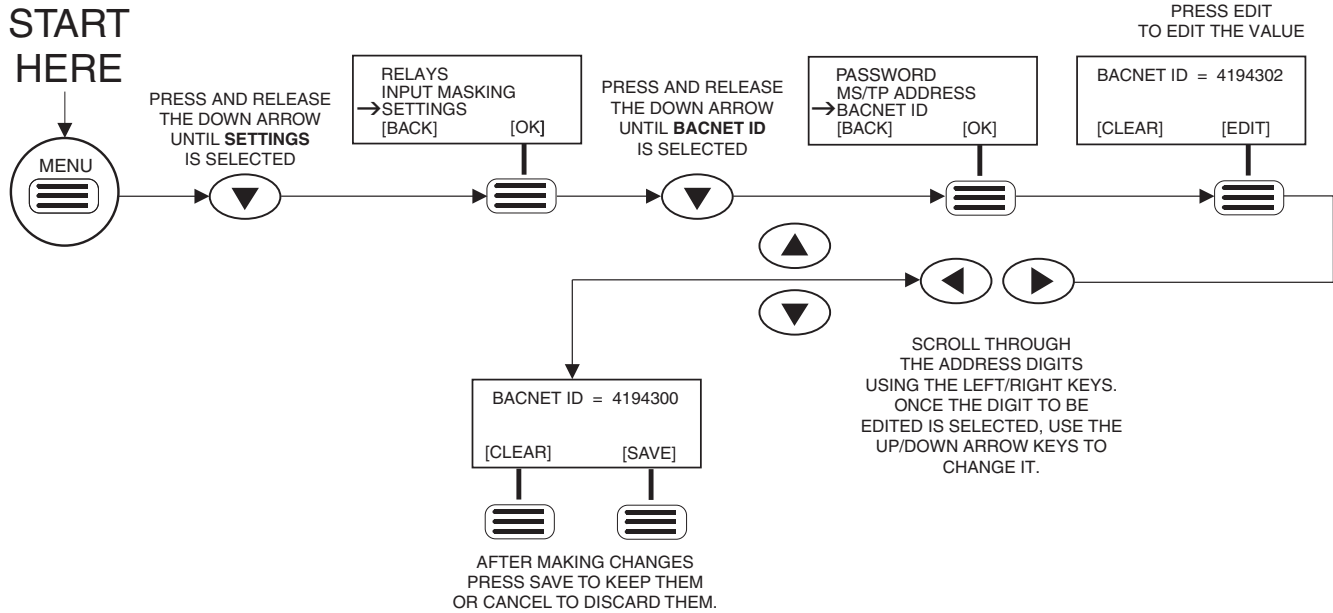
**Changing the MSTP Address**

The default MSTP address for the SPAK BAS is 127. The flow diagram below shows the programming steps to change it.



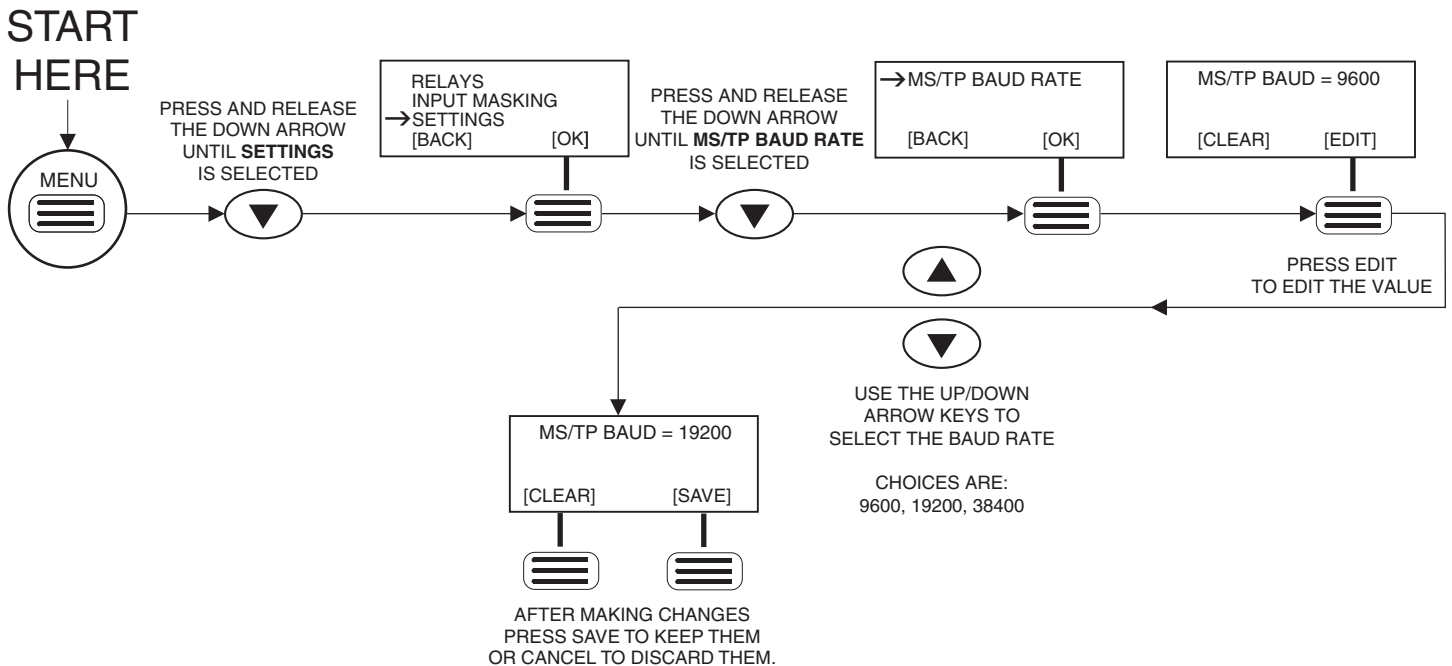
**Changing the BACNET ID**

The default BACnet ID for the SPAK BAS is 4194302. The flow diagram below shows the programming steps to change it.



**Changing the MSTP BAUD rate**

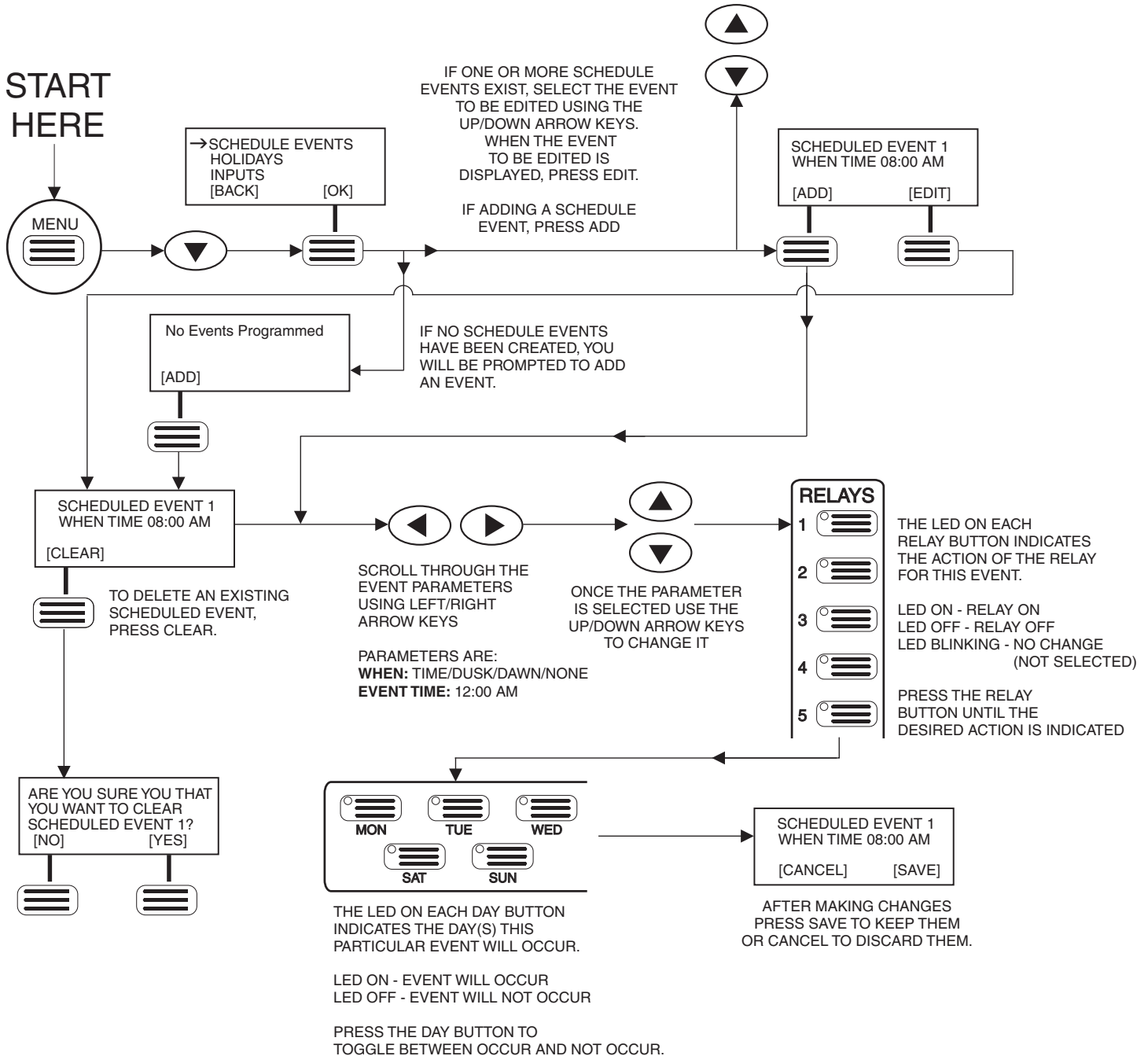
The default MSTP BAUD rate for the SPAK BAS is 9600. The flow diagram below shows the programming steps to change it.



**How Do I Program a Time Schedule Event to Control a Circuit?**

SwitchPak uses schedule events to control one or more circuits (RELAYS). For each scheduled event, RELAYS can be selected to switch ON, OFF, or NO CHANGE, (not selected for event) eliminating the need to have both ON and OFF events at the same scheduled time. Each schedule event can be assigned to any combination of days.

The flow diagram below shows the programming steps to edit a SCHEDULED EVENT.



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## Time Schedule Event Parameters

### WHEN: (EVENT PARAMETERS)

**TIME** – The time the event will occur. The time is displayed as HH:MM with an AM/PM indicator.

Note: The system time must be correct for scheduled events to operate correctly. The system time setting is edited under SETTINGS, TIME/DATE. See the 'HOW DO I SET THE SYSTEM TIME AND DATE' section for more details.

**DUSK** – The event occurs at dusk based on the internal astronomic time-clock function. A positive or negative offset up to 999 minutes can be set for a DUSK event. A positive offset will set the event to occur the specified number of minutes after DUSK. A negative offset will set the event to occur the specified number of minutes before DUSK. Note: The system location must be correct for the DUSK/DAWN event to operate correctly. The system location setting is edited under SETTINGS, LOCATION. See the 'HOW DO I SET THE SYSTEM LOCATION' section for more details.

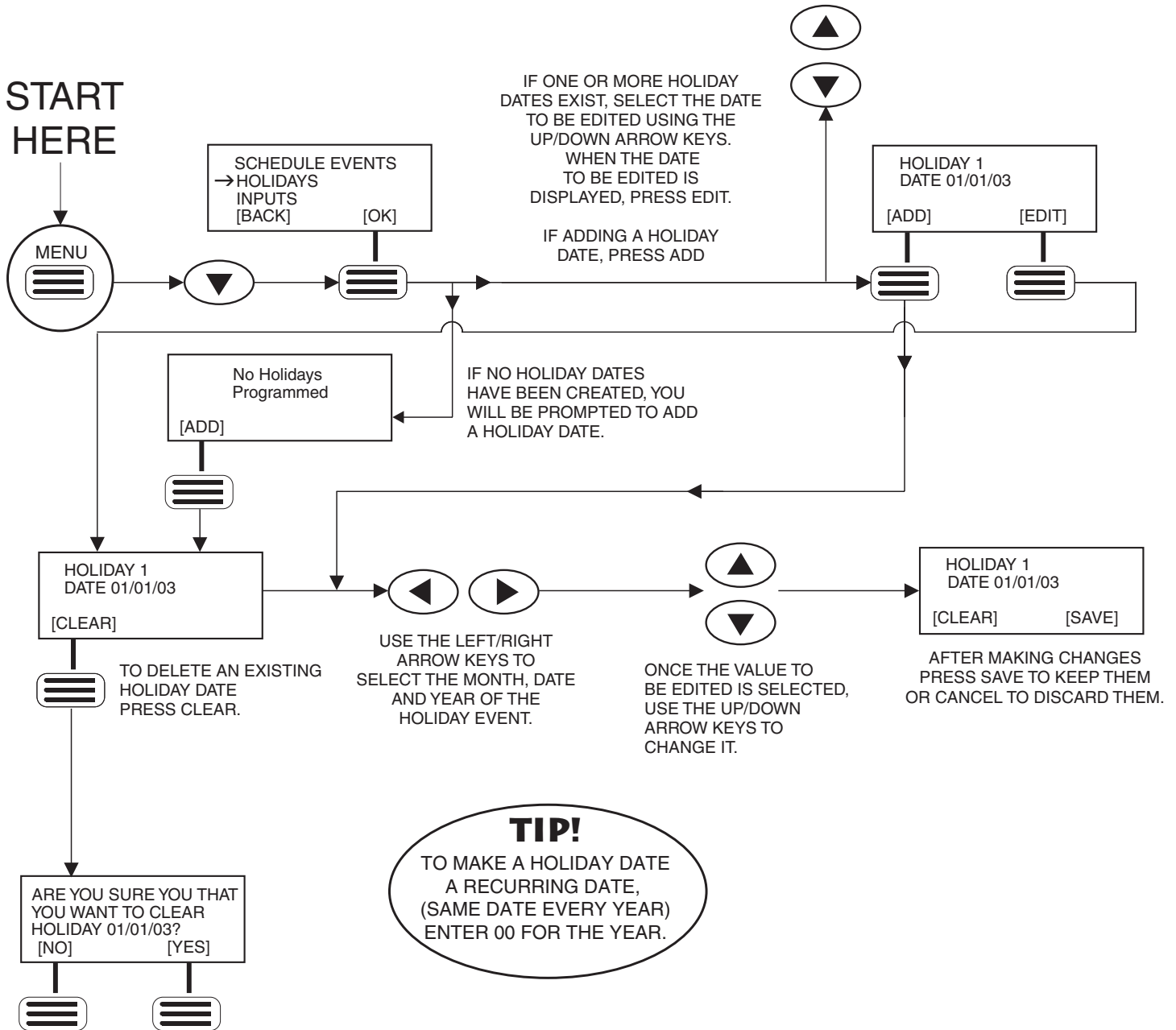
**DAWN** – The event occurs at dawn based on the internal astronomic time-clock function. A positive or negative offset up to 999 minutes can be set for a DAWN event. A positive offset will set the event to occur the specified number of minutes after DAWN. A negative offset will set the event to occur the specified number of minutes before DAWN. Note: The system location must be correct for the DUSK/DAWN event to operate correctly. The system location setting is edited under SETTINGS, LOCATION. See the 'HOW DO I SET THE SYSTEM LOCATION' section for more details.

**NONE** – The event can be permanently REMOVED by setting the TIME field to NONE.

**How Do I Enter Holiday Dates to be Used With Time Schedule Events?**

SwitchPak contains 32 holiday (calendar) dates for special occasions. Events occurring on holiday dates override any standard schedule events. Holiday dates are entered using the MM/DD/YY format. Once the holiday date(s) are programmed, use the HOLIDAYS button to assign programmed events to the holiday date. See 'HOW DO I PROGRAM A SCHEDULED EVENT TO CONTROL A CIRCUIT' for more event programming information.

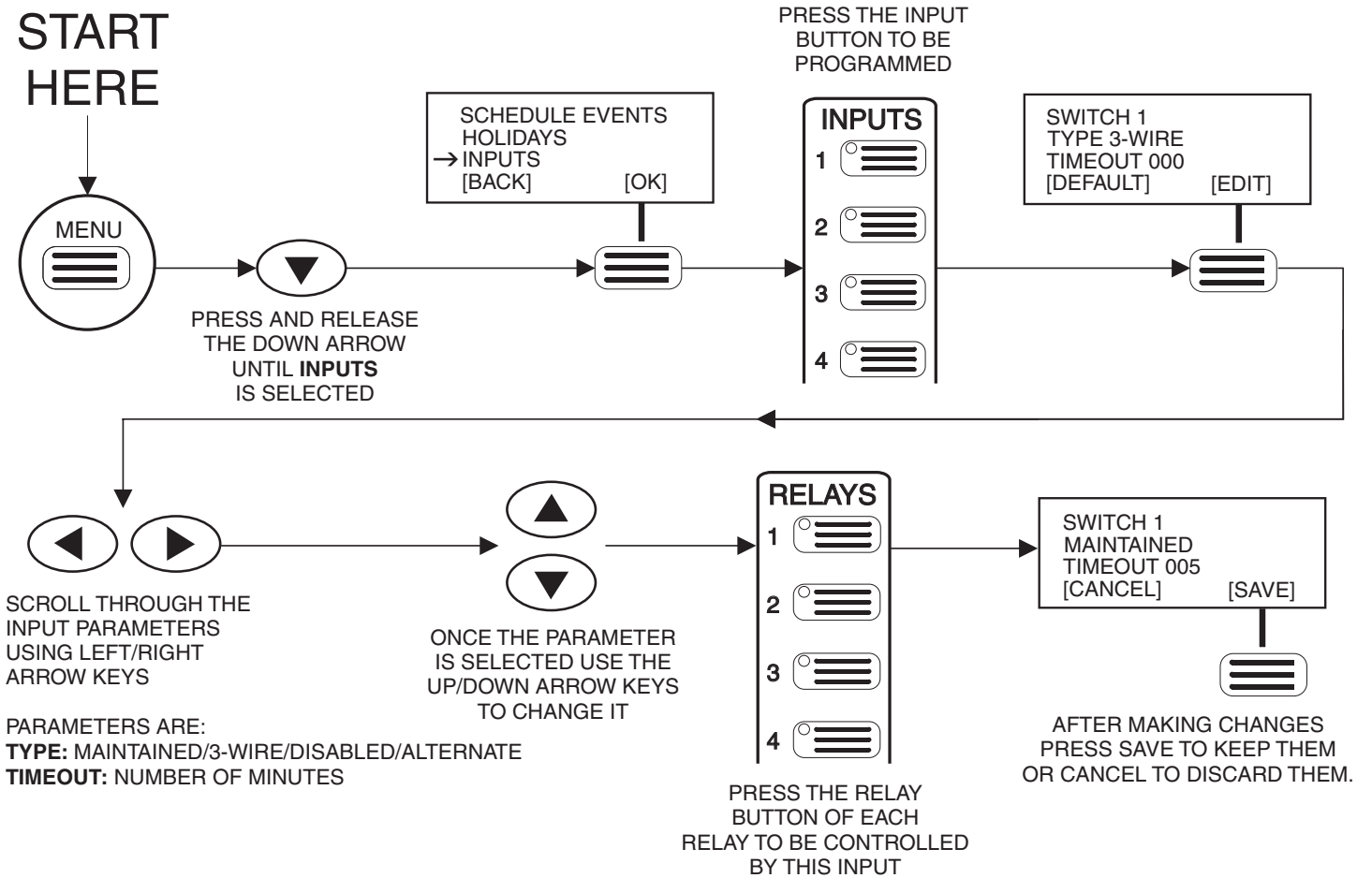
The flow diagram below shows the programming steps to create/edit HOLIDAY DATES.



**How Do I Assign A Switch To Control A Circuit?**

SwitchPak can assign a switch (INPUT) to control one or multiple circuits (RELAYS.) This eliminates the need to rewire switches and loads if your control scheme changes. Switchpak contains eight inputs for switches, sensors or other dry contact closure devices.

The flow diagram below shows the programming steps to configure an input.



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## Switch Input Parameters

### TYPES:

**MAINTAINED (2-wire SPST)** – Terminated between ON and COM. Typically a standard wallswitch that is used in residential applications. A maintained switch can also be terminated between OFF and COM to provide an inverted output.

**ALTERNATE (2-wire momentary SPST)** – Terminated between ON and COM. Press once to turn ON. Press again to turn OFF. Example Cat # - LVRS 1G 8BT

**3-WIRE MOMENTARY (SPDT)** – Terminated between ON, OFF and COM. Typically has an ON and OFF button. Press the ON button to turn the relay(s) on and the OFF button to turn the relay(s) off. Example Catalog # - LVMS IV.

**DISABLED** – The INPUT is not used. Any switches, photocells, or sensors wired to this input will not function.

### Interfacing to other building systems

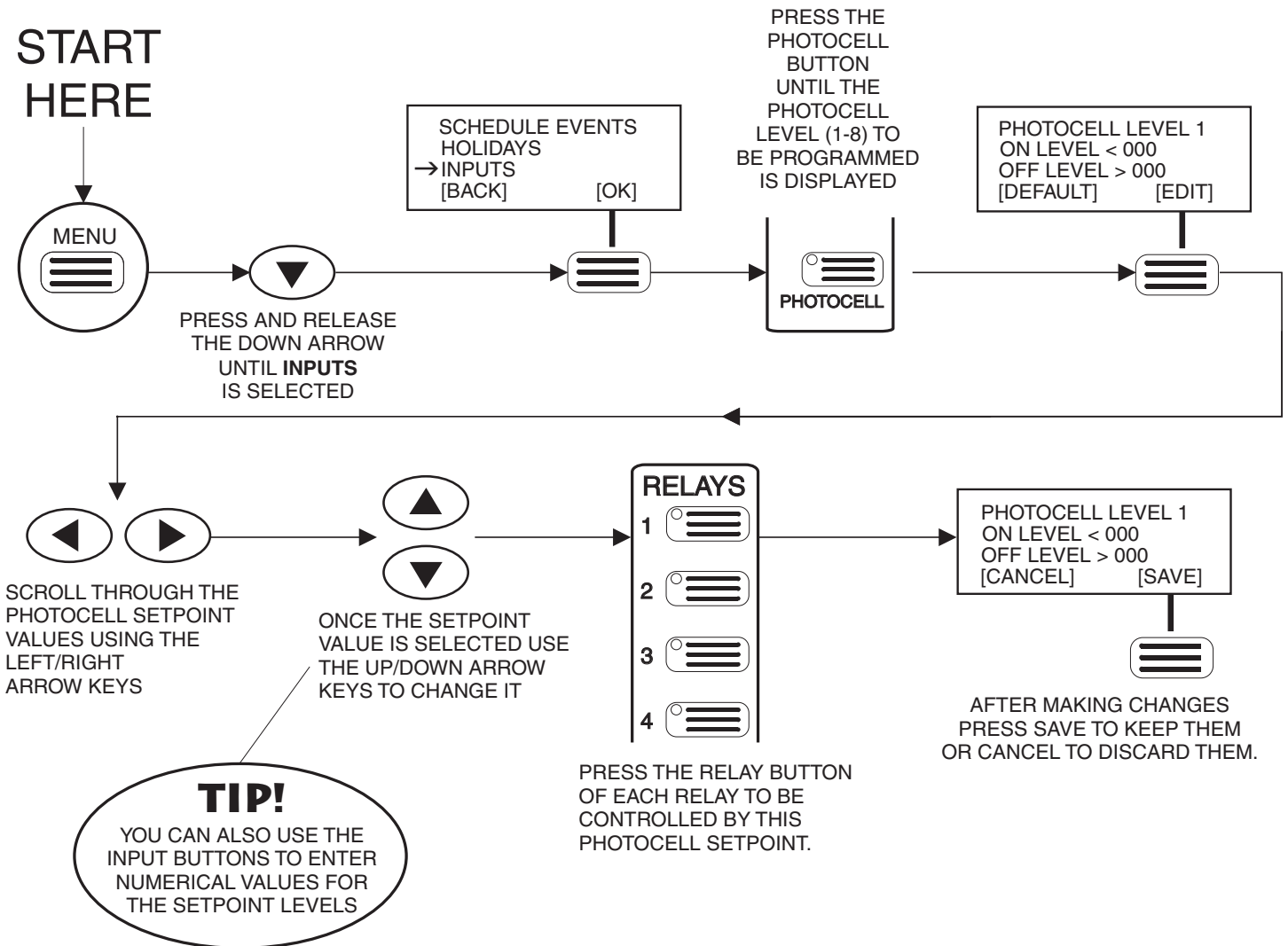
Others systems such as fire alarm, HVAC and energy management are often required to control a building's lighting. These systems interface to SwitchPak using dry-contact closures via Class 2, low-voltage conductors. Typically these inputs are connected in the "Maintained" INPUT scenario shown above and programmed like any other switch input.

**TIMEOUT** - A timer can be associated with an INPUT that will turn the lights OFF after a specified time. Some states or local codes require an override switch to keep the lights on for only 2 or 4 hours. Enter the time in minutes the switch should keep the lights ON.

**How Do I Assign an Analog Photocell To Control A Circuit?**

SwitchPak has one analog photocell input and can assign it to control one or multiple circuits (RELAYS.) SwitchPak can assign up to 8 different levels (set points) of photocell control, each set point being based on the amount of light the photocell is seeing. The analog photocell must be terminated on the ANALOG PHOTOCELL input (AGND, INPUT, +20V.)

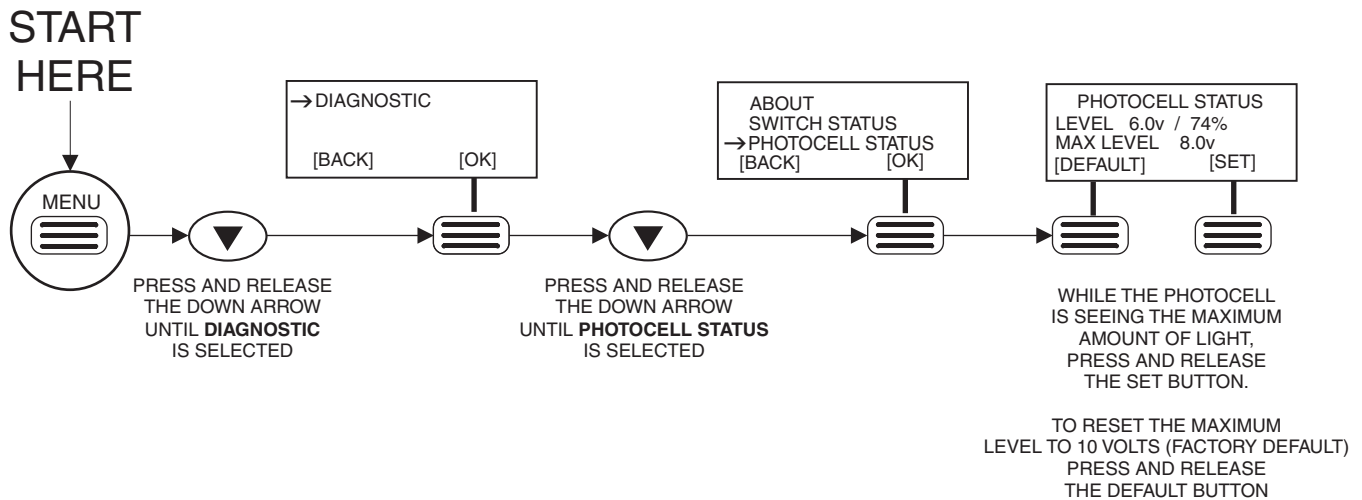
The flow diagram below shows the programming steps to program the analog photocell input.





**How Do I Calibrate the Photocell?**

SwitchPak's analog photocell input is designed to work with a 0 - 10 volt photocell. Whenever the photocell sees the maximum footcandle amount it's rated for, it's output should be at 10 Volts. If the photocell is installed in a location where it does not receive enough light to cause it's output to operate in the entire 0 - 10 volt (0 - 100%) range, any photocell input programming based on a full range will not function correctly. To correct this situation, the photocell input can be calibrated to achieve the full 0 - 100% range at footcandle levels less than the photocell maximum. To calibrate the photocell, choose a sunny day and time when the photocell is seeing the maximum amount of light possible. Then follow the steps below:

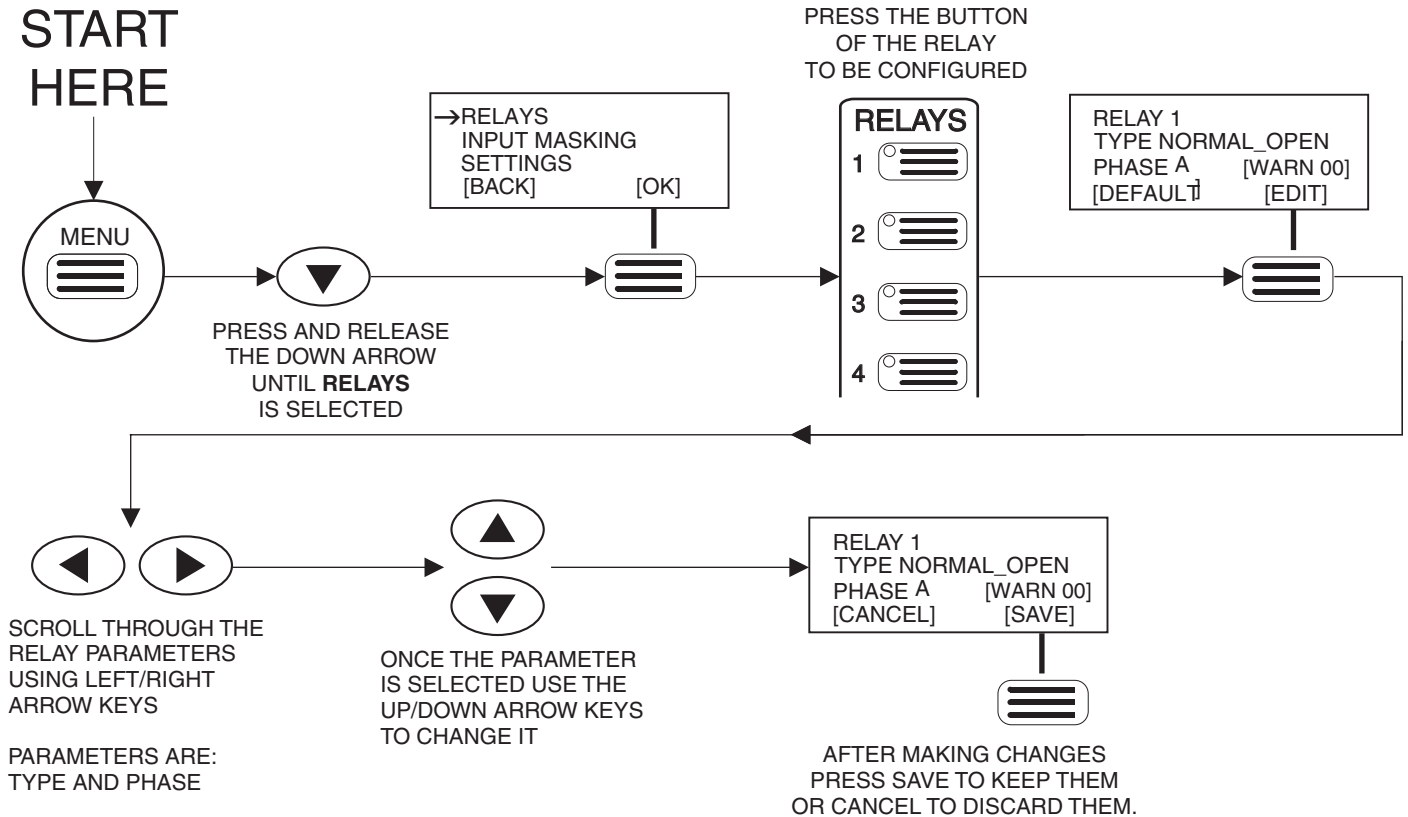


### How Do I Set Up A Relay For Different Load Types?

SwitchPak can configure its RELAYS to control different load types. This eliminates the need to wire additional interfaces between the relay output and load to achieve the desired operation. All output circuits are terminated directly to one of the eight RELAY terminals.

The PHASE of the circuit being controlled by each relay can be set, enabling the zero-cross switching feature of SwitchPak. This feature should be used when switching high inrush lighting loads, such as HID, to minimize the high start-up current of these types of loads. Zero-cross switching can also be used to minimize contact arcing when switching the relay ON or OFF, which can extend the life of the relay.

The flow diagram below shows the programming steps to configure the relay type:



### Relay Parameters

#### TYPES:

##### NORMAL\_OPEN

The relay contacts are open when the relay is in the OFF state and closed when the relay is activated ON as indicated by the LED indicator on the relay button. This is the typical setting for most applications.

##### NORMAL\_CLOSED

The relay function is inverted, which means the contacts are closed when the relay is in the OFF state and open when the relay is activated ON as indicated by the LED indicator on the relay button.

##### MOMENTARY\_ON

The relay creates a momentary ON/OFF pulse when activated by an ON command from either inputs or schedule events. This is used to control loads which require a pulse to turn the load ON. See the example in the MOMENTARY OFF section.

## Relay Parameters (Continued)

### MOMENTARY\_OFF

The relay creates a momentary ON/OFF pulse when activated by an OFF command from either inputs or schedule events. This is used to control loads which require a pulse to turn the load OFF.

Example: Mechanically held relays typically require a separate on and off pulse for operation. To create this operation, configure two relays, one as MOMENTARY ON and the other as MOMENTARY OFF. Then configure an event, or input, to control both relays. One relay will supply the ON pulse, the other the OFF pulse.

### SWEEP

This option must be used when a RELAY has Sweep Switches on the circuit for remote switching. In this mode, the relay contacts will CLOSE for the ON event. The OFF event (either from a schedule or switch input) will open the contacts for the specified time required to reset the Sweep Switch, then the relay contacts will close. When the output type is set to SWEEP, all loads connected to the relay **must** be controlled through a Sweep Switch for full ON/OFF control.

Note: With this setup, the user **can not** override the OFF command following a WARN signal. The Sweep Switch can be used to turn the lights back on following the OFF command.

### INTELISWITCH

This selection must be used when a RELAY has an IntelliSwitch® (not available from Synergy) on the circuit for remote switching. In this mode, the relay contacts will CLOSE for the ON event. The OFF event (either from a schedule or switch input) will pulse the output OFF to signal the IntelliSwitch an OFF command was activated. When the output type is set to INTELISWITCH, all loads connected to the relay **must** be controlled through an IntelliSwitch for full ON/OFF control.

Note: With this setup, the IntelliSwitch will flash the lights to provide a WARN-OFF signal. The lights will turn off following time-out of the internal timer in the IntelliSwitch (see product instructions for timer settings). The user can override the OFF command at the IntelliSwitch following the WARN-OFF signal.

### DISABLED

The relay is disabled and will not switch ON or OFF and is disabled in a NORMALLY\_OPEN state. This also disables any INPUT mapped to this relay. If the INPUT is mapped to multiple RELAYS, the input will turn the remaining relays ON, but will not turn the relays off. This disabled relay should be removed from the INPUT mapping if control of the remaining relays is required.

### WARN

Any relay can be given a WARN value up to 99 minutes. This feature will blink any relay scheduled OFF for a period of 1 second, 1 to 99 minutes before the scheduled off time. This warns the occupants the lights are about to go OFF and gives them time to exit the building, or press a switch to get additional lighting for the space. Relays programmed ON or NO CHANGE will not be affected by the WARN event. Set WARN to 00 if you do not want the WARN function to operate.

Example: If relay 1 is programmed with a 5 min. WARN, and an event has relays 1 and 2 scheduled to switch off, then **only** RELAY 1 will blink OFF, five minutes before the scheduled off event.

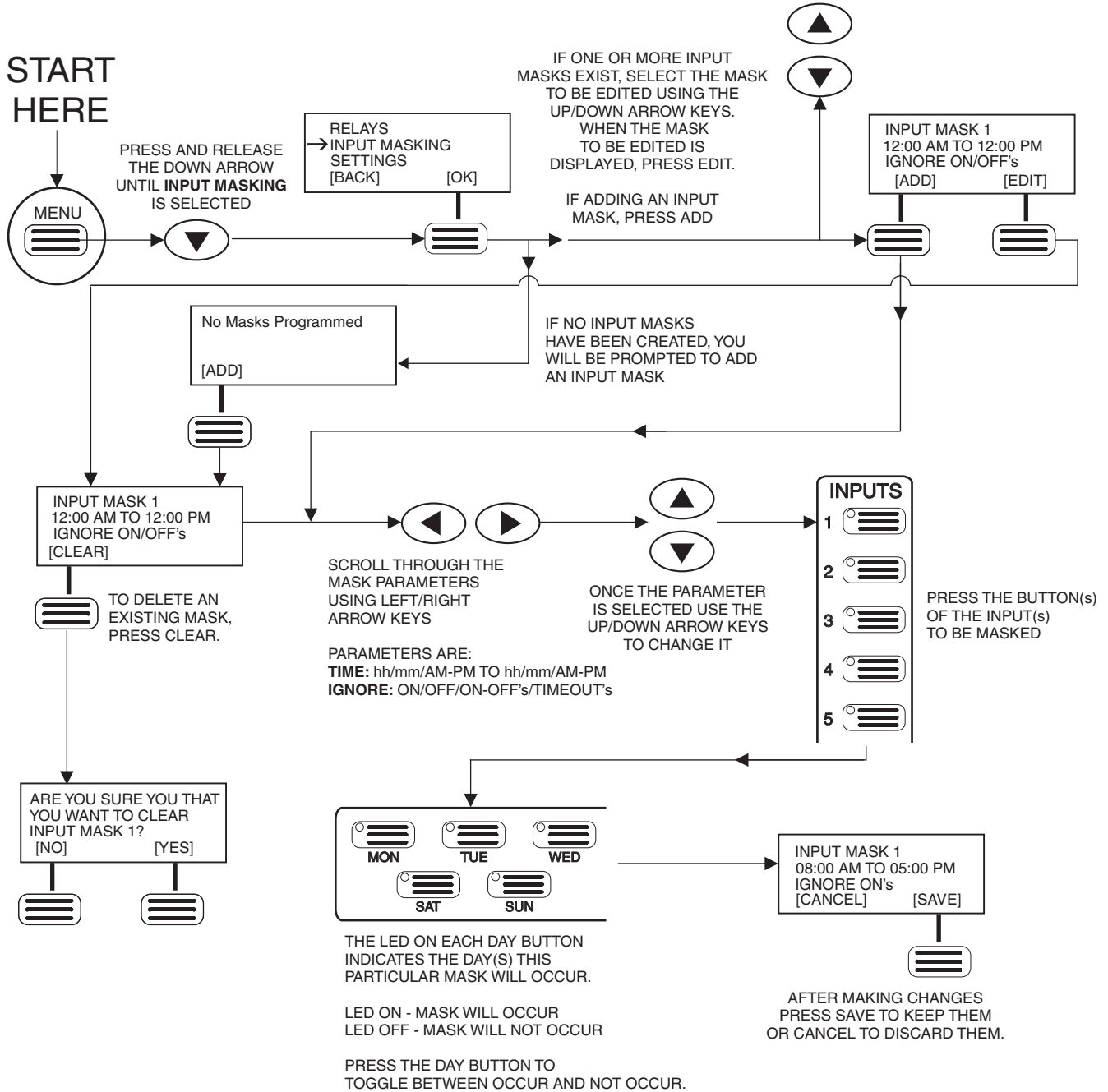
### PHASE

The PHASE for each relay can be set to A, B, C or NONE.

**How Do I Mask (Ignore) Inputs For Priority Control?**

SwitchPak can setup a maximum of 25 INPUT MASKS. INPUT MASKING causes inputs to be ignored during the time period when the MASK is active. Masking is used to setup priority relationships between SCHEDULED EVENTS and INPUTS, or between multiple INPUTS. INPUT MASKS are configured by entering a time range, selecting the DAY(s) it will occur, and choosing the desired IGNORE parameter. Each INPUT MASK can be configured to IGNORE ON's, IGNORE OFF's, IGNORE ON/OFF's, and IGNORE TIMEOUT's. Masking provides a simple and effective method for input or schedule priorities.

The flow diagram below shows the programming steps to configure INPUT MASKING:



## Input Masking Parameters

### **TIMES:**

Enter the start and ending time for each INPUT MASK.

### **IGNORE OPTIONS:**

#### **IGNORE ON's**

Ignores ON commands from the selected INPUTS during the specified times.

Example: A photocell input's ON event being MASKED (ignored) between 7 AM and 7 PM to prevent cloud cover from turning on the exterior lighting.

#### **IGNORE OFF's**

Ignores OFF commands from the selected INPUTS during the specified times. This can be used to insure lighting is not turned off during business hours or critical time periods.

Example: An off button being MASKED (ignored) between 8 AM and 8 PM to prevent the lighting in a space from being accidentally turned off.

#### **IGNORE ON/OFF's**

Ignores ON and OFF commands from the selected INPUTS during the specified times. This option totally disables selected INPUTS for times when remote overrides are not wanted.

Example: An override switch being MASKED (ignored) between 9 AM and 5 PM to prevent the lighting in a space from being overridden during normal hours.

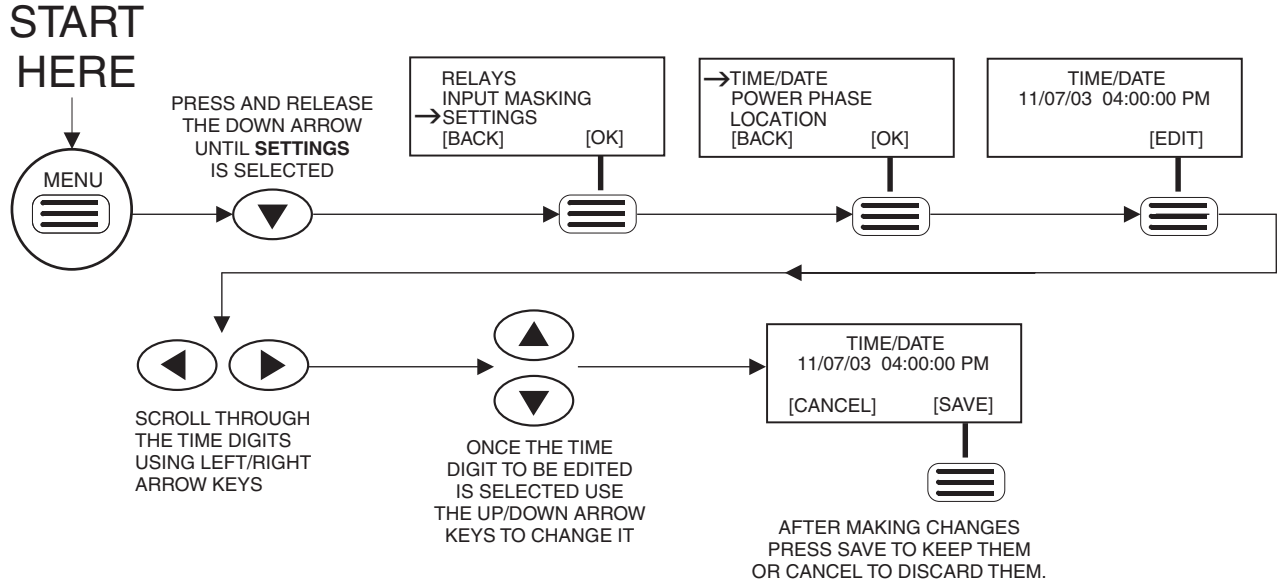
#### **IGNORE TIMEOUT's**

Ignores timeouts associated with INPUTS during the specified times. See the "How do I assign a switch to control a circuit?" section for more information on input timeouts. This option allows an INPUT to be used for normal ON/OFF operation during normal business hours, then allow the timeout feature to be activated if the switch is pressed after hours.

Example: A switch used for ON/OFF operation during normal business hours, after normal hours the timeout feature activates to turn the lights off after the specified time period.

**How Do I Set the Time and Date?**

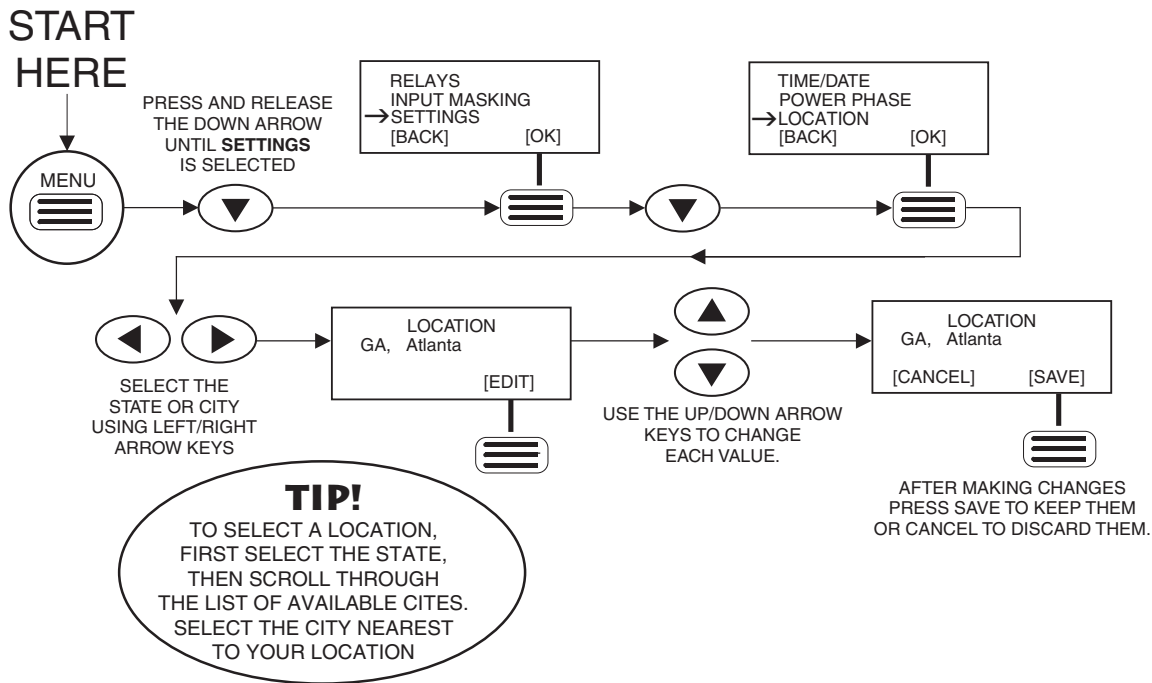
The current time and date must be correct for time schedule events to operate correctly. The flow diagram below shows the programming steps to set the time.



**How Do I Set the System Location ?**

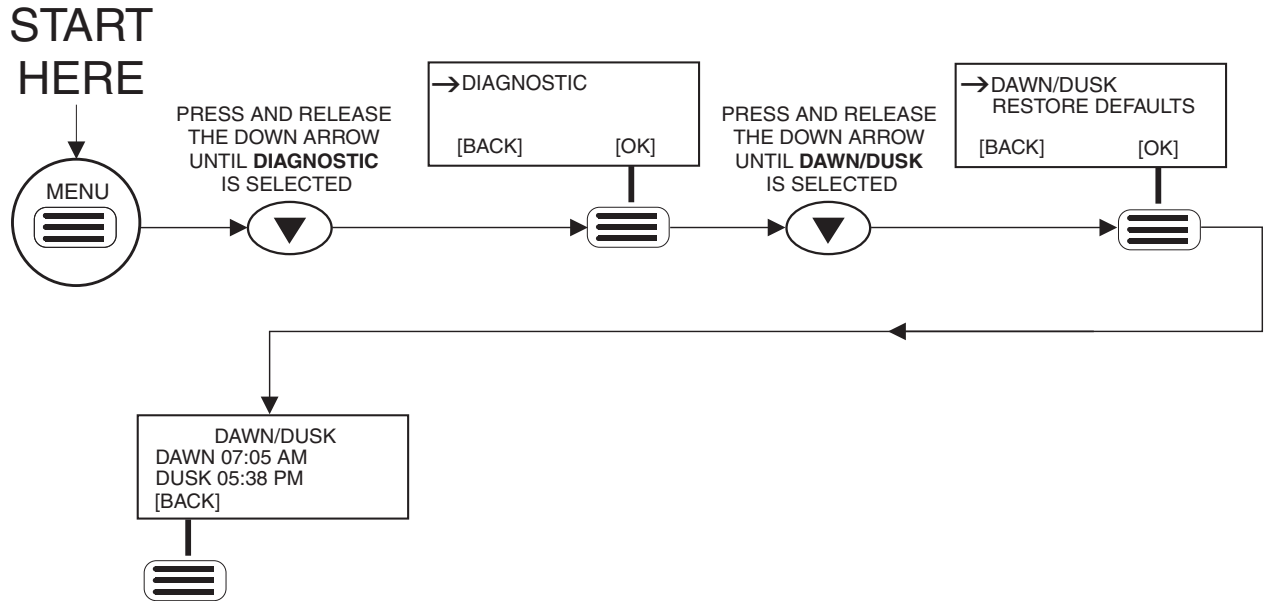
The current geographical location must be set for the DUSK/DAWN events to work properly. The Astronomical Time Clock calculates the DUSK/DAWN event times.

The flow diagram below shows the programming steps to set the Astronomical Time Clock:



**How Do I Check the Calculated Dawn and Dusk Times?**

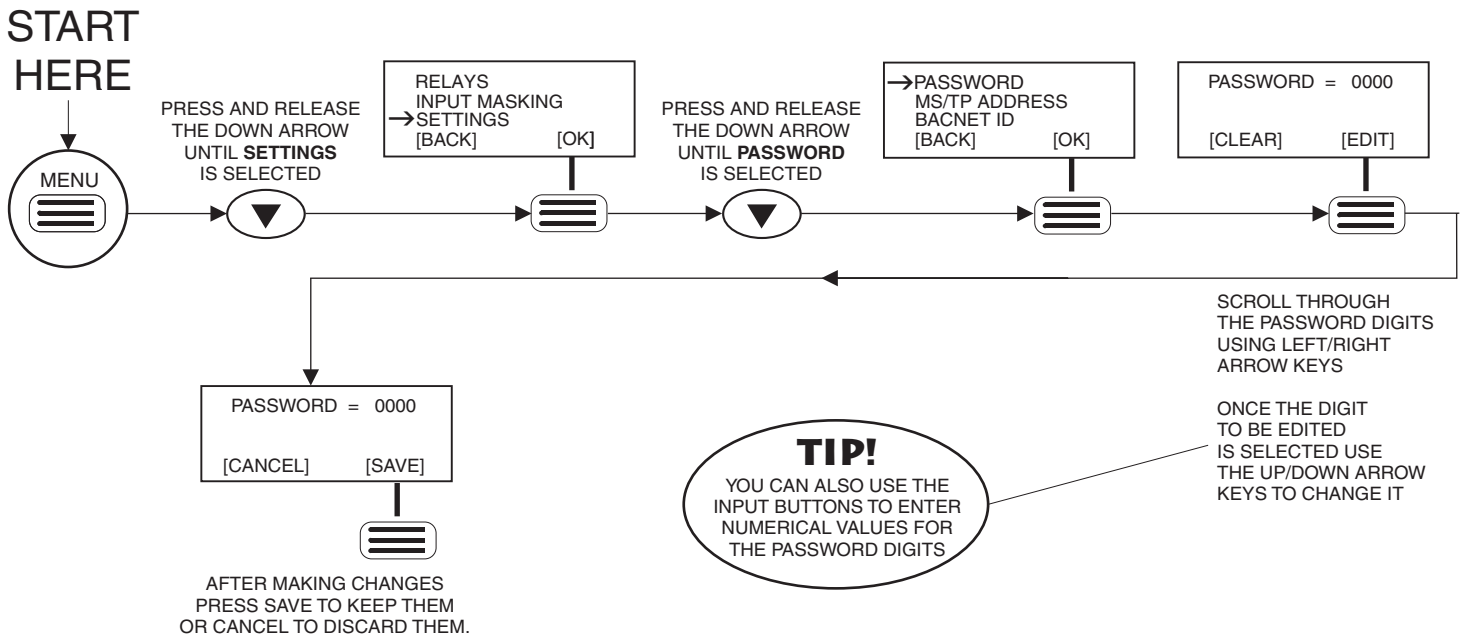
The flow diagram below shows the programming steps to check the DUSK/DAWN TIMES



**How Do I Set A System Password?**

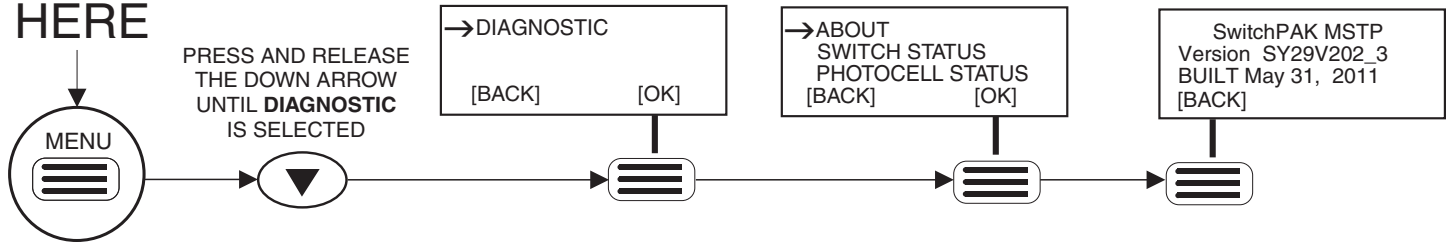
SwitchPak allows the user to configure a system password. Having a system password in effect prevents programming changes from being made by unauthorized individuals. Individual inputs and relays can still be overridden, without knowing the PASSWORD.

The flow diagram below shows the programming steps to set up a PASSWORD:



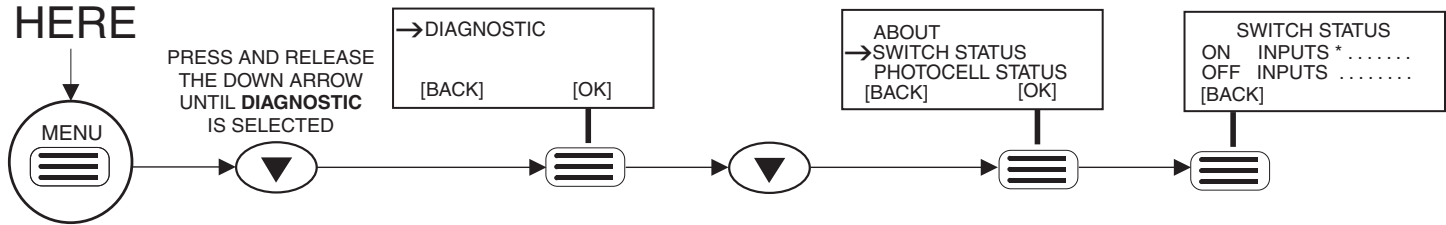
**How Do I Check the Firmware Version?**

START  
HERE



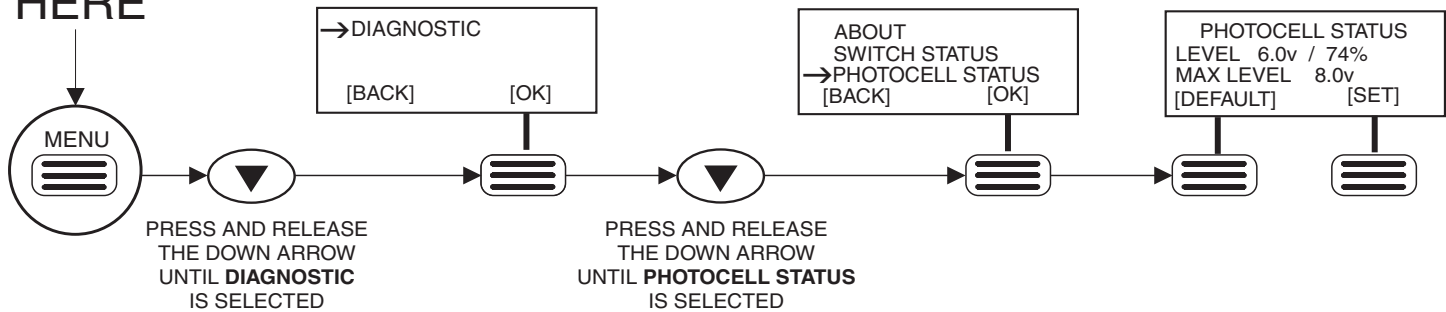
**How Do I Check the Actual Status of the Low Voltage Inputs?**

START  
HERE



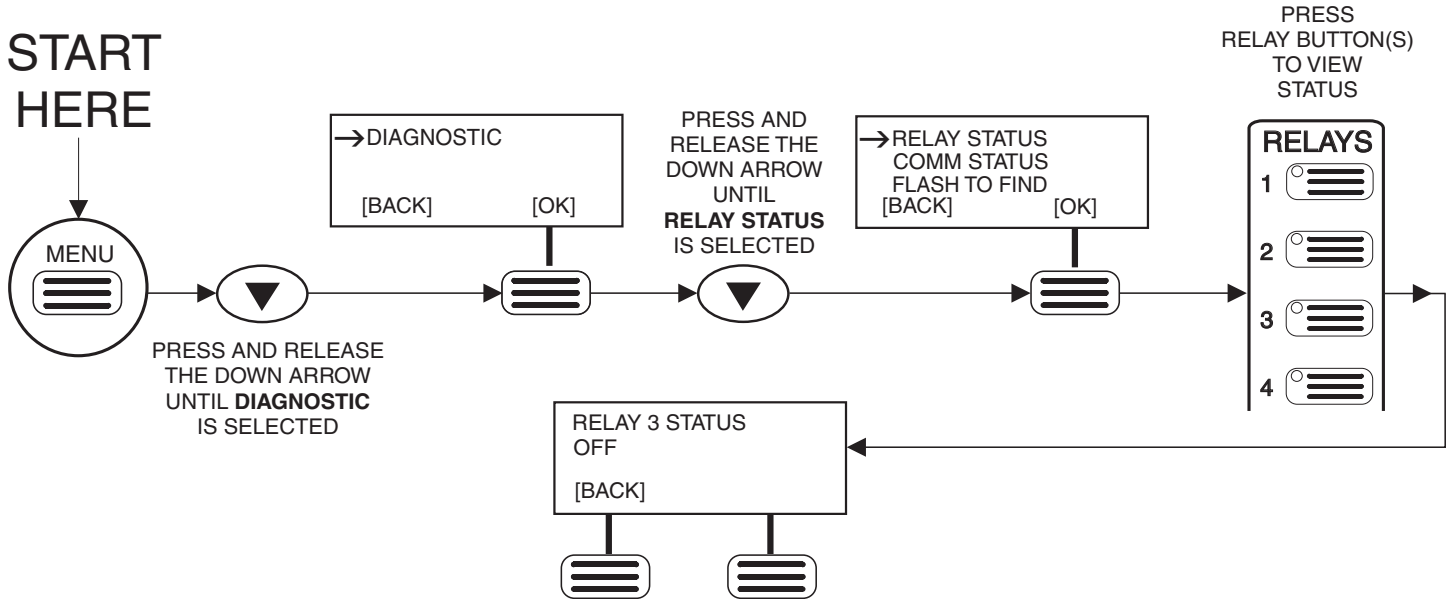
**How Do I Check the Photocell Input Level?**

START  
HERE



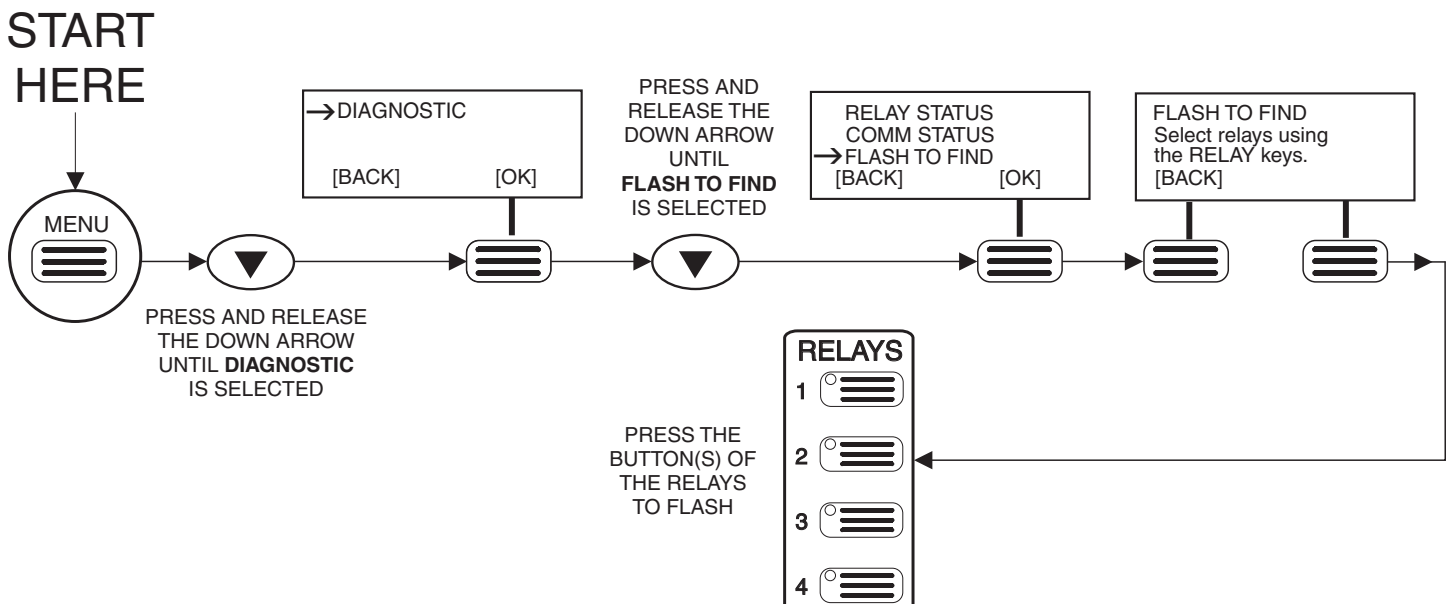
**How Do I Check the Relay Status and Timeout Value?**

SwitchPak can display each relay's status, ON or OFF, as well as the current timeout value (if there is one in effect)  
The flow diagram below shows the steps to check relay status.



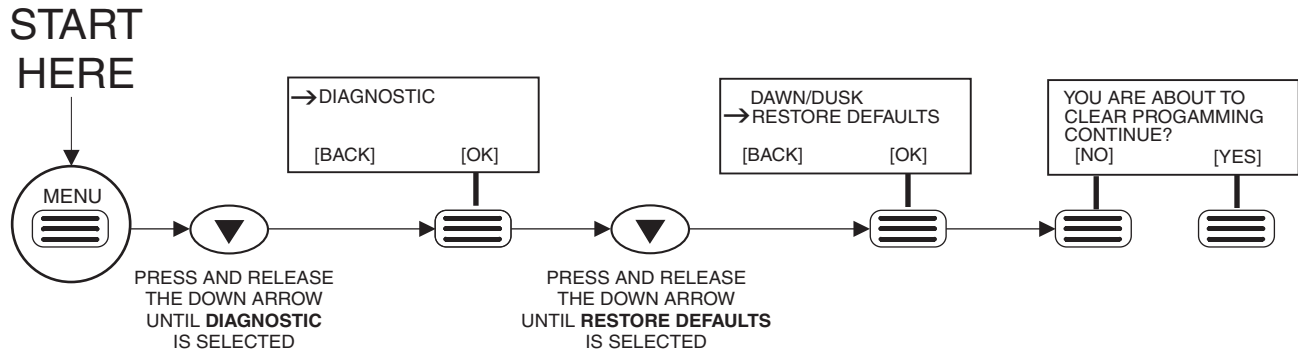
**How Do I Use Flash To Find To Locate the Circuit(s) Being Controlled?**

Flash To Find turns the selected relay on and off repeatedly, once every 2 seconds (approx), allowing you to move about the areas being controlled and locate the fixtures (loads) controlled by that particular relay.



**How Do I Restore the Factory Default Programming?**

You can erase all the user programming and return to the factory defaults. SwitchPak will give you a warning prompt to ensure you want to proceed, if you answer the warning prompt by pressing the OK key, all user programming will be lost.



Contact Synergy Lighting Controls Technical Support at 800-533-2719. Synergy Lighting Controls Technical Support is available from 8:00 a.m. to 5:00 p.m. EST Monday through Friday for phone consultation.

Visit Synergy Lighting Controls on the internet at <http://www.synergylightingcontrols.com> for additional information on products, technical data and installation instructions.

**Warranty**

Synergy Lighting Controls warrants SPAK equipment to be free from defects in manufacturing under normal and proper storage, installation and operation for a period of one (3) years. Our guarantee liability extends only to the repair or replacement of the defective part and no labor charges for correction of the defect by repair or replacement will be honored by Synergy Lighting Controls unless prior written authorization has been granted by our Customer Service Department.