GreenMAX®
Users Manual

Built by the industry, for the industry.

GreenMAX Users Manual

version 2.23

Date: Sept 18, 2011

LEVITON

If this equipment is being used as Emergency Lighting and Power Equipment, please adhere to the following information.

Apply the “Emergency Circuits” label, provided, to the front of the door

IMPORTANT SAFEGUARDS

When using electrical equipment, basic safety precautions should always be followed including the following:

a) READ AND FOLLOW ALL SAFETY INSTRUCTIONS

b) Do not use outdoors.

c) Do not mount near gas or electric heaters.

d) Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.

e) The use of accessory equipment not recommended by manufacturer may cause an unsafe condition.

f) Do not use this equipment for other than the intended use.

SAVE THESE INSTRUCTIONS

All servicing shall be performed by qualified service personnel.

If any Emergency Circuits are fed or controlled from this panel, it must be located electrically where fed from a UPS, generator, or other guaranteed source of power during emergencey and power outage situations.

LEVITON

Table of Contents

Section 1
System Introduction

Overview

The GreenMAX Lighting Control System is a micro-processor based, programmable control relay system.

It utilizes LumaCan communication protocol over CAT6 data lines to communicate between control points in a distributed control scheme.

The GreenMAX system utilizes the advanced Leviton high performance relay module. These robust relays perform at levels previously unavailable in the lighting controls market. Flexible programming capability, daylight harvesting, zero-cross technology, and unmatched control power, create an energy management system of unparalleled performance.

This Manual outlines the installation and capabilities of the control system in network and standalone commercial applications.

Structure

The main components of the GreenMAX Lighting Control System are the:

- Enclosure
- Command Module
- Relays
- Relay Insert Panels
- Handheld Display Unit
- Digital Switches
- Remote Input Cabinet

Ancillary equipment:

- Occupancy Sensors
- Photocells
- Low Voltage Switches

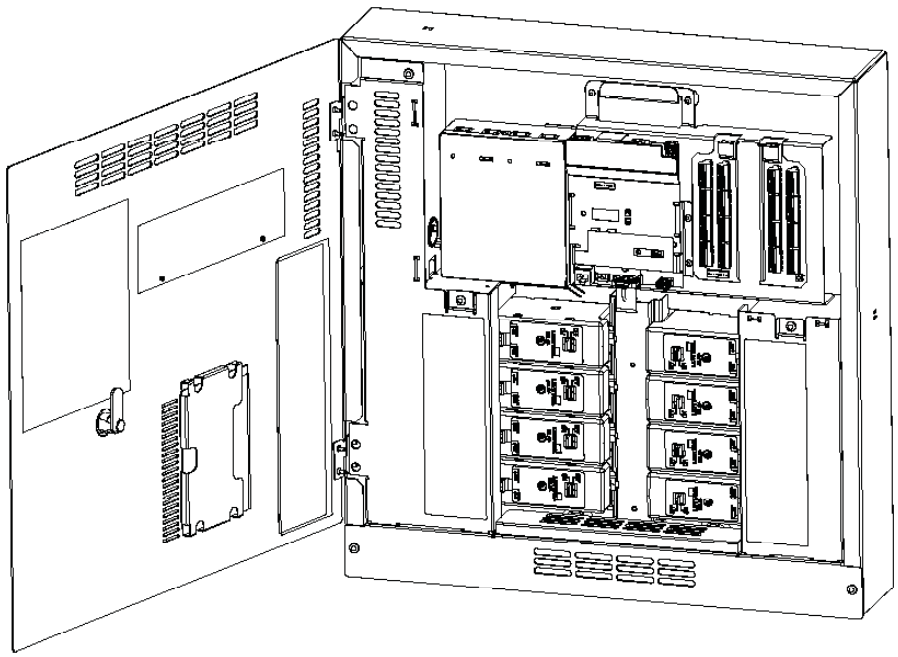
Enclosure

The base enclosures are rated NEMA 1. The enclosure is delivered to the jobsite empty without any of the electronics or relays installed.

The enclosure is divided into compartments corresponding to the voltage contained within.

- The Low Voltage area contains voltages of 24Vdc that are associated with the system controls.
- The Lighting and Circuit Wiring area contains voltages of 24 to 600Vac. These two areas are segregated and are accessible through separate covers. The cabinet door opens to provide access to the Low Voltage area only. The removal of the cabinet side and bottom covers is required to access the high voltage area. The areas in the upper left and right corners of the enclosures can be configured with the partitions provided, to be either Lighting and Power wire-way or Low Voltage.

Enclosures are available in four sizes to accommodate 8, 16, 32, or 48 relays. They also provide mounting areas for Command Modules with Low Voltage inputs in quantities of 8 or 16.



Command Module

Each Command Module has three components:

1. Power Supply

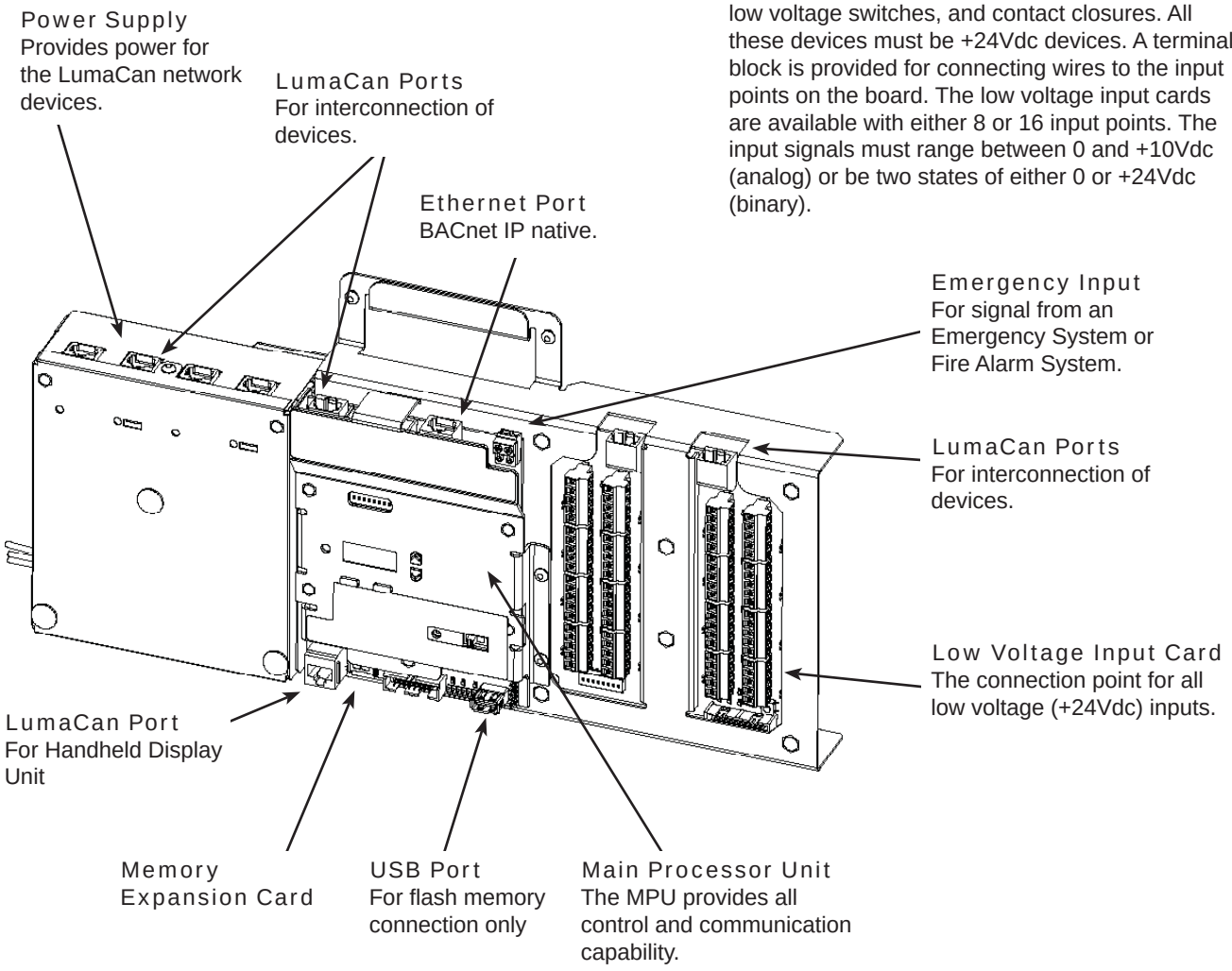
   The Power Supply is a 70W +24Vdc power supply. It can be connected to a single phase circuit up to 277Vac. Wire leads are provided for this purpose. The Power Supply provides all necessary power for the cabinet it is mounted in as well as the ancillary devices. All output connections are made with RJ45 connectors.

2. Main Processor Unit

   The Main Processor provides the systems intelligence and memory. It manages all communications between the LumaCan, Ethernet, and the relay communication bus. The Emergency input signal is terminated at the terminal block provided.

3. Low Voltage Input card

   This card provides all the connection points for low voltage inputs like occupancy sensors, photocells, low voltage switches, and contact closures. All these devices must be +24Vdc devices. A terminal block is provided for connecting wires to the input points on the board. The low voltage input cards are available with either 8 or 16 input points. The input signals must range between 0 and +10Vdc (analog) or be two states of either 0 or +24Vdc (binary).



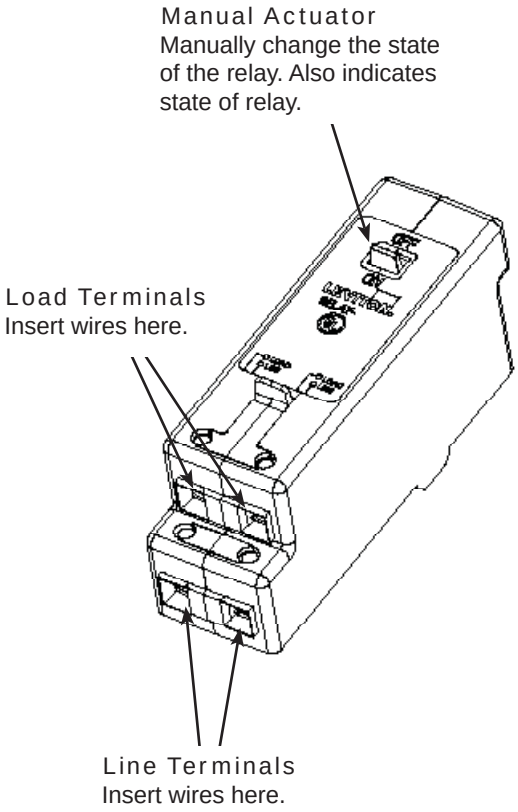
Relays

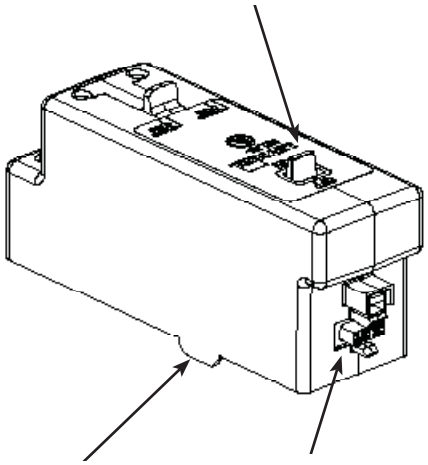
The GreenMAX Relays are available in the following configurations:

- Single Pole Latching Basic
- Single Pole Return to Closed Latching Basic
- Single Pole Dimming 0-10Vdc
- Double Pole Latching Basic
- Double Pole Return to Closed Latching Basic

All of these relay types have the same dimensions and may be installed anywhere in the cabinet. Any combination or configuration of relay types can be accomplished with the standard cabinet.

The ratings for these relays are listed in the Ratings section of this manual.





Relays

The GreenMAX Relays are “smart” relays that provide two way communication with the cabinet processor via the distribution spine of the Relay Insert Panel. Every relay can be programmed to operate with any control device connected to the system regardless of location. The relays utilize zero-cross technology to extend relay life.

Manual activation of the relay is provided by an external handle on the relay. This is a direct mechanical link to the contact set of the relay. The relay can be actuated at any time even when the Command Module is not energized.

The Dimming and Sensing Relay provides dimming control for 0-10Vdc syncing ballast or LED driver circuits. The relay provides control power to the ballast with a single pole relay contact. The dimming control is provided by the designated signal terminals on the relay module. This relay module is the exact physical size as the regular relays and can be used in any combination.

The terminals of the relays are suitable for copper wire sizes of #14 awg through # 8 awg. All wire should be twisted together before insertion into the terminals.

The insulation of the conductor should be rated for a minimum of 600Vac and 75ºC.

Relay Insert Panels

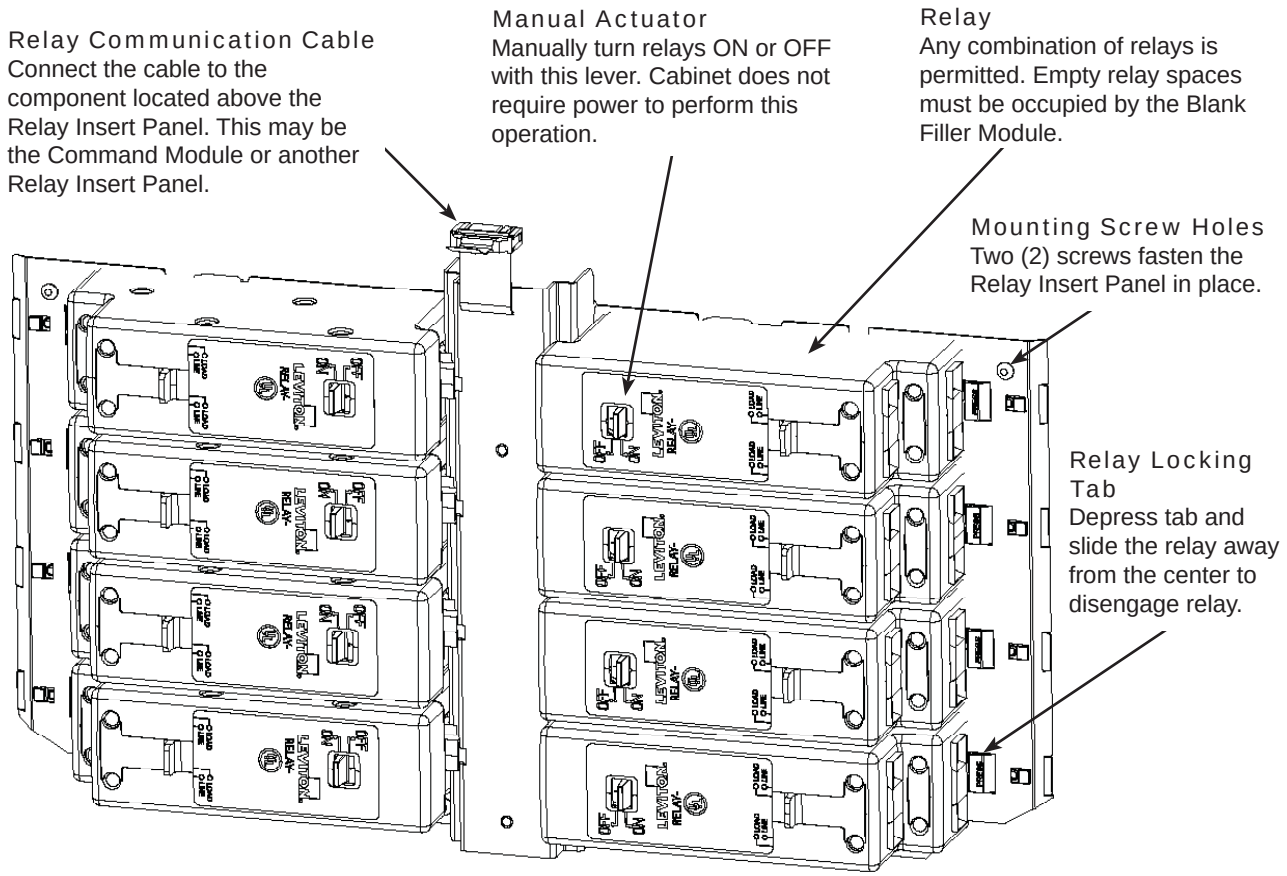
The individual GreenMAX Relays connect to Relay Insert Panels that fasten into the enclosure with two screws and are supported on two mounting tabs. The tabs on the inside of the relay cabinet align with the notches on the bottom edge of the Relay Insert Panel. Tip Panel in and fasten in place with screws provided.

No tools are required to remove or install the relays. The relays snap into place on the Relay Insert Panel. The distribution spine of the Relay Insert Panel plugs into the next component above it. This may be a Command Module or another Relay Insert Panel.

NOTE: A blank filler module is required in any space not occupied by a relay.

Relay Insert Panels contain quantities of 8 or 16 relays each. The chart outlines the quantity of Relay Insert Panel required by each size of enclosure.

Enclosure Size	Relay Insert Panels	
	Qty Required	Relay Count
8	1	8
16	1	16
32	2	16
48	3	16



Relay Insert Panel
8 Relay Size

Handheld Display Unit

The GreenMAX Handheld Display Unit provides the following levels of functionality:

- Monitoring

  The overall system operation can be monitored from a connected Handheld Display Unit (HDU). The system clock is displayed on the HDU as well as sunset and sunrise times. Alarm conditions and acknowledgements are communicated at this level.

- Control

  The Handheld Display Unit (HDU) provides an interface with the system intelligence and the scheduling details. The user can create and modify real time scheduling agendas and calendars.

- Configuration

  This area of Handheld Display Unit (HDU) provides access to the building blocks required to set up and configure the system.

The GreenMAX system will continue to operate without a HDU plugged in to the system. The system schedule is a function of the complete system and not the HDU. The HDU provides real time access to all information available in the system.

Access to the Handheld Display Unit and the various control levels are password protected. The end user can create and save their own secure passwords.

The portability of the HDU maximizes efficiency during system start-up and commissioning. The HDU can plug into any available LumaCan port and provide complete control and configuration capability from that location. A LumaCan access port is available on each GreenMAX Digital Switch, Command Module, and Remote Input Cabinet.

Handheld Display Unit: Batteries

The HDU comes complete with 4 rechargeable ‘AA’ batteries. The batteries charge when the HDU is connected to the LumaCan network. The unit has a typical battery life of 8 hours after a complete charge.

Section 2

Installation - Cabinets

Enclosure Sizes

The GreenMAX Relay System is available in standard sizes that contain space for 8, 16, 32, and 48 relays.

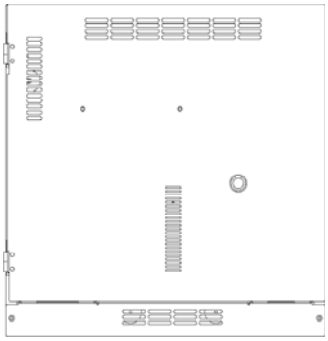
The enclosures are delivered to the jobsite empty of any relays or electronics.

The physical dimensions of the enclosures are listed in the size chart below.

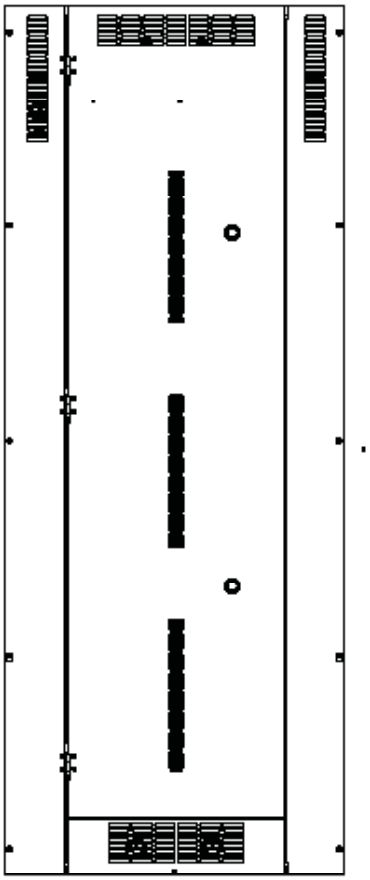
Dimensions

Cabinet Size	Width	Height	Depth
8	21”	22”	4”
16	25”	32”	4”
32	25”	48”	4”
48	25”	64”	4”

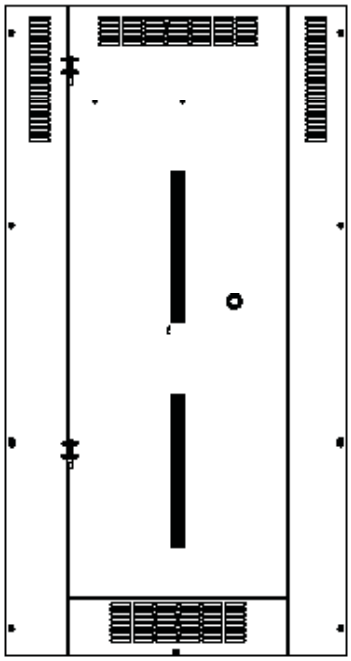
8 Relay



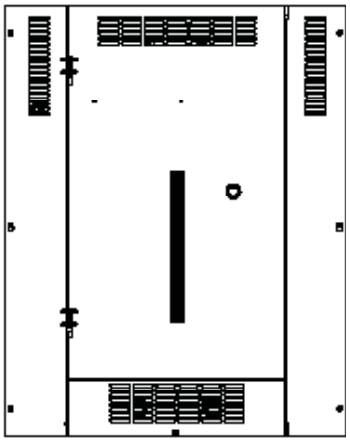
48 Relay

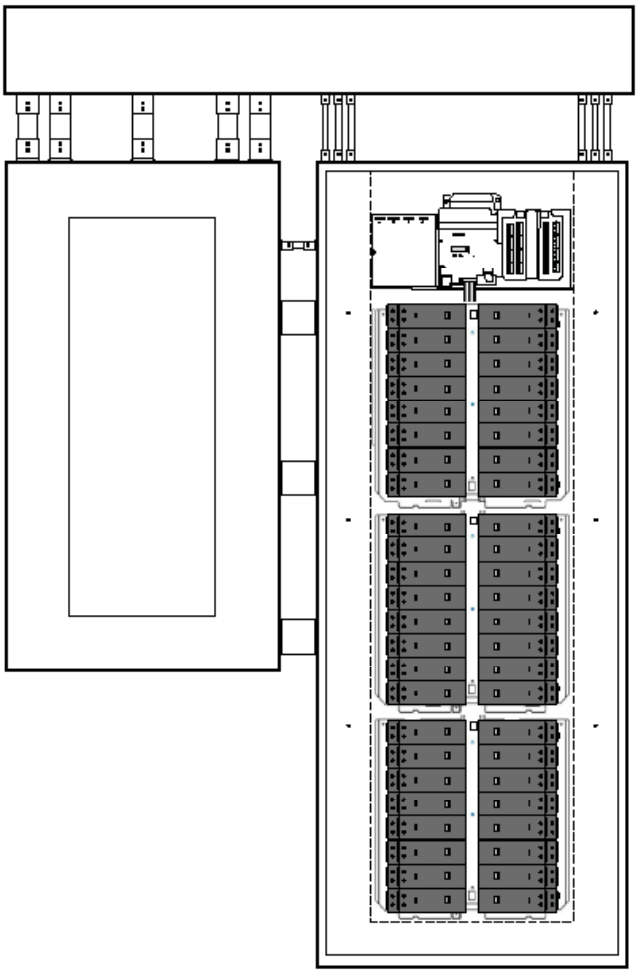


32 Relay



16 Relay





Plan Installation

It is best to mount the GreenMAX relay cabinet in an area convenient for maintenance and monitoring. It should be mounted in combination with a branch circuit panel-board or distribution panel.

Plan the layout of the installation in advance and provide adequate space for entry of conduit according to the needs of the project.

Consideration should be given for routing of circuit conductors in and out of the cabinet in the most efficient manner possible.

Locate cabinet to maintain an ambient operating temperature of 32°F to 104°F (0°C to 40°C) or 68°F to 86°F (20°C to 30°C) if used as Emergency Lighting Power Equipment.

Locations should be indoors, free of vibration, stable, dry, non-corrosive and with non-condensing humidity of less than 90%.

The GreenMAX cabinet is designed for surface mount applications only.

Mounting and Installation

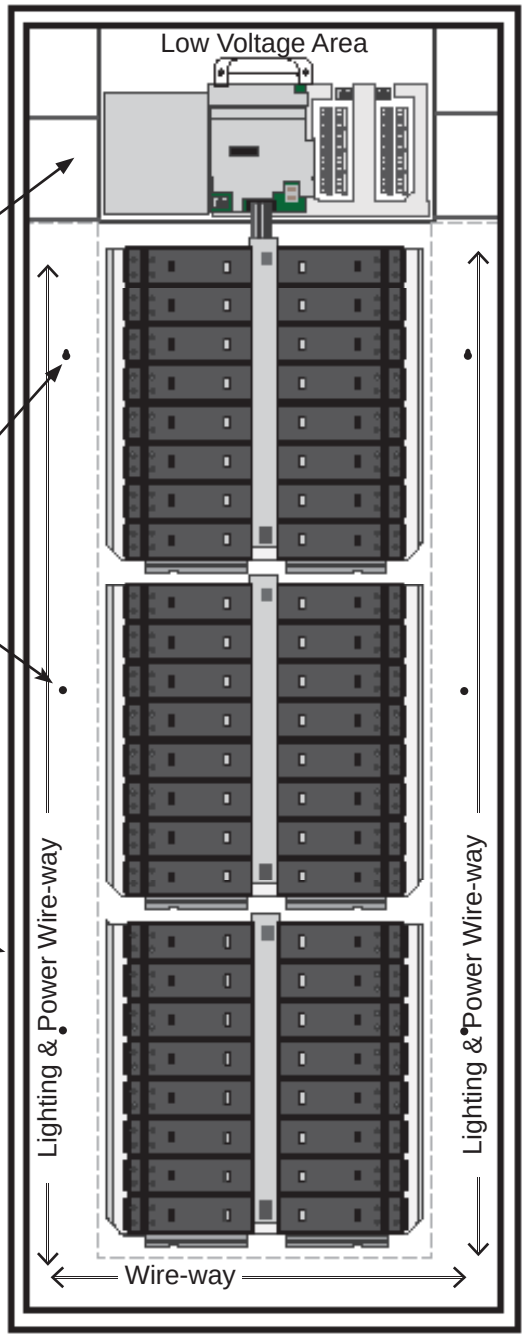
Securely mount enclosure to wall using fasteners appropriate for wall type. Mounting holes are provided in the enclosure, the upper holes are keyhole slots to facilitate easy hanging. Any field drilled mounting holes should be confined to the wire-way areas so that they do not obstruct the installation of the Relay Insert Panels or the Command Module.

Install all conduit runs and pull all lighting circuit and power wiring. It is recommended that all wire be pulled prior to installing the Command Module and Relay Insert Panels. This will prevent damage to the electrical components.

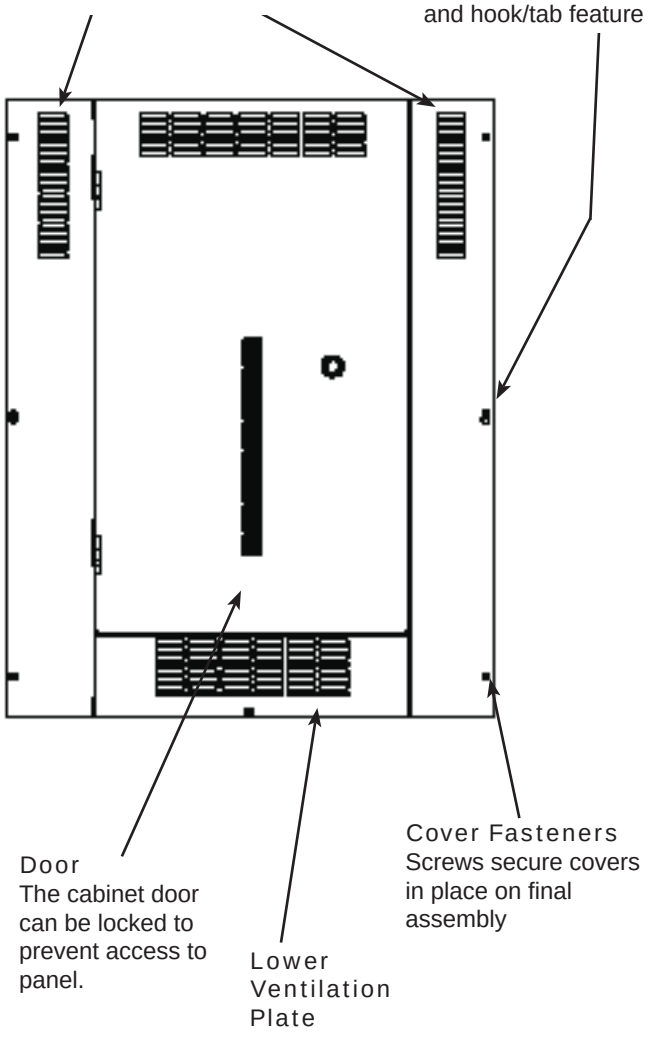
Multi-use areas.
Removable barriers partition these areas (both sides) to meet field requirements.

Mounting holes.
Quantity of holes provided depends on length of cabinet. Upper holes are slotted to ease installation. Additional holes may be added in the wire-way area only. Avoid areas reserved for the Relay Insert Panels and the Command Module.

Conduit Entry.
Conduits can enter the cabinet on all four (4) sides. Plan for Low Voltage conductors at the top of the enclosure.



48 Relay Cabinet



Door & Cover Removal
1. Unlock and open door.
2. Lift door off hinges.
3. Remove lower ventilation plate
4. Remove left and right covers.

Door and Covers

The GreenMAX relay cabinet door and cover system is designed to provide limited access to the interior components. A locking door covers the low voltage area in the cabinet. The door can be removed from the cabinet only when it is swung open and lifted off the hinges.

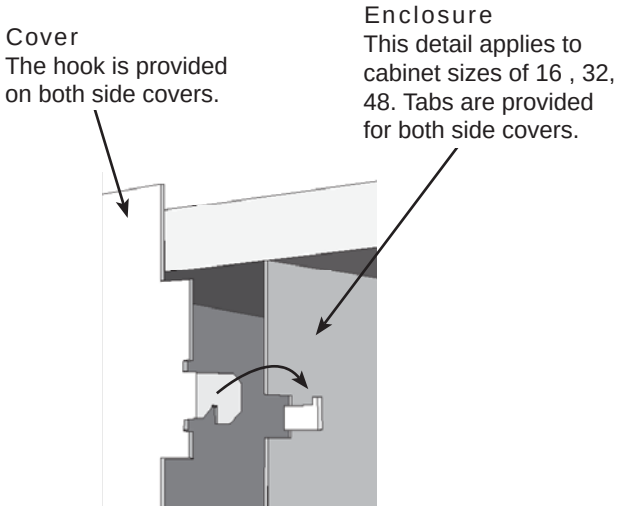
The wiring and lighting circuit wiring areas are concealed behind the panel covers. These covers are designed to be fastened in place with screws after final assembly.

During construction phases easy access to the wiring compartment is provided by the quick install features of the three part covers. The left and right covers are each held in place by a key-hole slot in the cover plate that slides over a single screw and a hook and tab feature at the top of the cover.

The cabinet ventilation is provided through the slots in the door and covers. Keep these areas free of obstructions to maximize the free flow of air through the cabinet. No fans are required for cooling.

The door cannot be removed from the hinges when the door is closed and locked. The latching arm of the lock fits into a slot in the covers and is concealed by the door. Features in the hinges also prevent removal of the door.

The inside of the door is labeled with the relay ratings, panel model number, and cabinet wiring diagram. There is also a document holder for installation instructions and relay layout schedule. The Handheld Display Unit mounts to the support pins on the inside of the cabinet.



Cover Hook and Tab Detail

Section 3
Wiring

Low Voltage Wiring - Sensing Devices

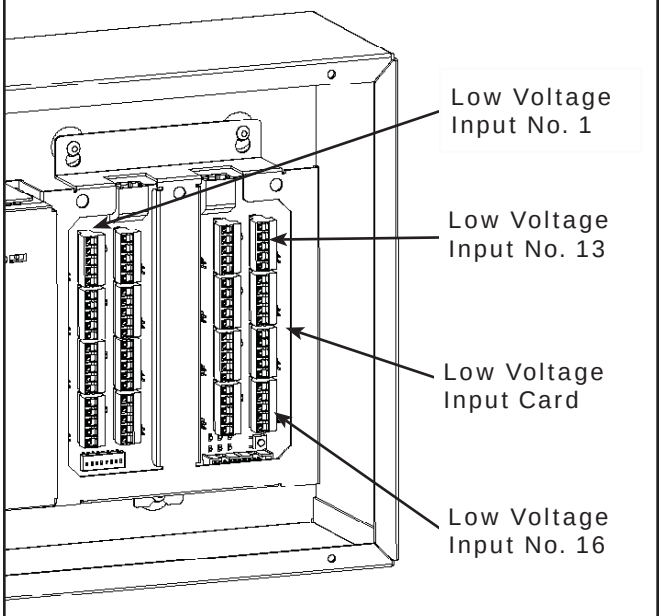
Input wiring from ancillary devices are terminated on the Low Voltage Input Card of the Command Module or Remote Input Cabinet. The card is mounted on the right side of the module.

The input terminal blocks on the Low Voltage Input Card are grouped into sets of 5 terminals. These green blocks may be removed from the Input Card by pulling straight out away from the unit. This will make terminating the individual wires easier. Take note of the terminal designations indicated on the drawing on the inside of the cabinet door, the markings on the circuit board, and on the green block itself to avoid mis-wiring. A 1/8" straight blade or a #1 Phillips screwdriver can be used to tighten the terminals. Make sure that the wires are not loose.

The terminal blocks provide the +24Vdc power to the attached devices. The power to the terminal block will not be available until the input has been configured by the user. This will take place during the configuration and commissioning phase of the installation.

The input blocks are organized in rows of four with the top terminals in the rows numbered 1, 5, 9, and 13.

Mis-wiring one of the terminal blocks will result in the +24VDC turning off until the problem is corrected. This affects only the incorrect input block and no other termination points on the card. There are no fuses involved in this method of protection. When the wiring is corrected, the power will return.



Low Voltage Inputs For Remote Input Cabinet

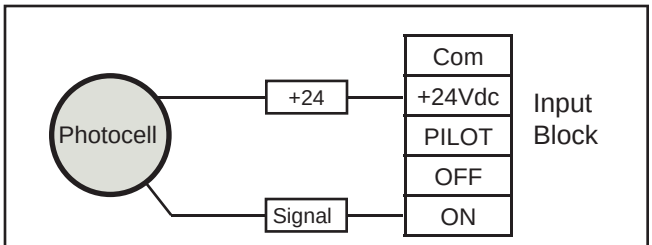


Fig. 1 - Typical 2 Wire Photocell Connections

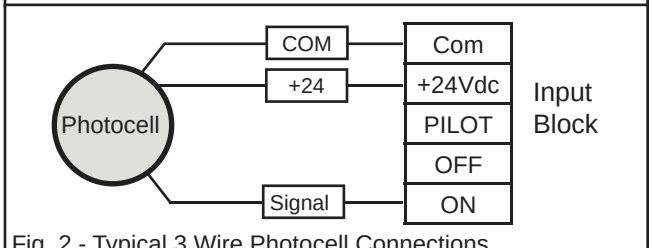


Fig. 2 - Typical 3 Wire Photocell Connections

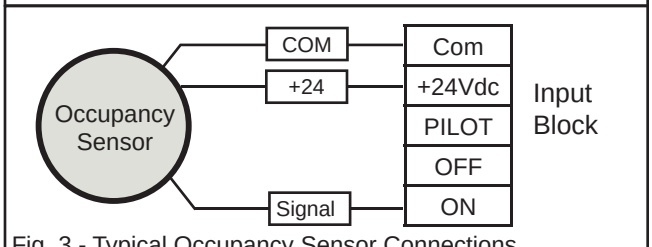


Fig. 3 - Typical Occupancy Sensor Connections

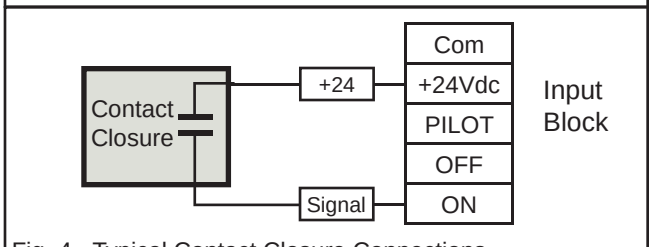


Fig. 4 - Typical Contact Closure Connections

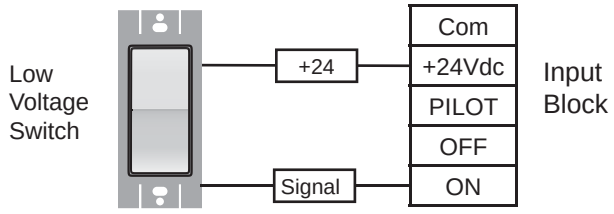


Fig. 5 - Typical Low Voltage Switch Connections

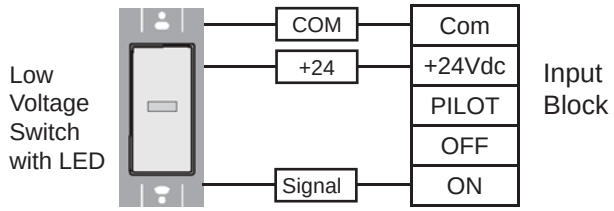


Fig. 6 - LV Switch 1 Btn Connections

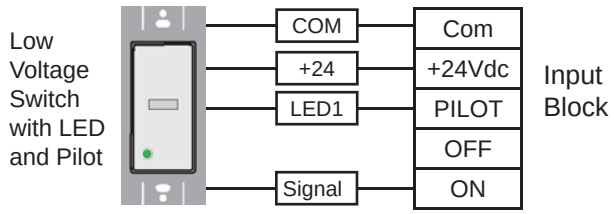


Fig. 7 - Typical LV Switch 1 Btn with Locator Connections

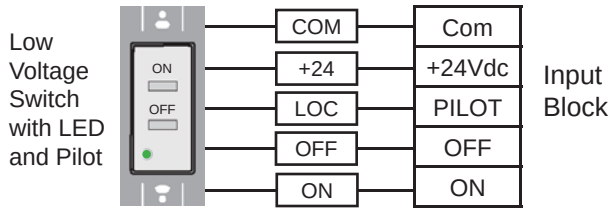


Fig. 8 - Typical LV Switch 2 Btn ON/OFF w. Locator Connections

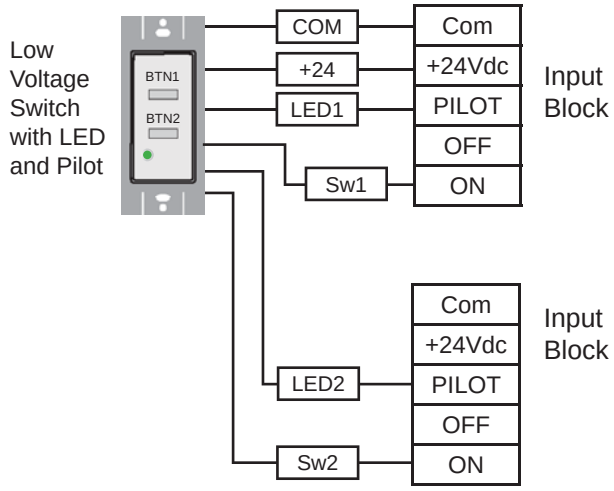


Fig. 9 - Typical LV Switch 2 Btn with Locator Connections

Low Voltage Wiring - Switches

The GreenMAX system is compatible with a wide variety of Low Voltage Switches. All Leviton Low Voltages Switches from the Z-Max product line are directly compatible with the system. All switches operating at +24Vdc are compatible with the system as well.

The wiring diagrams on this page detail the typical wiring connections at the low voltage card of the Command Module as well as the Remote Input Cabinet. There may be other configurations depending on what type of switch is being used.

The input terminal blocks on the Low Voltage Input Card are grouped into sets of 5 terminals. These green blocks may be removed from the Input Card by pulling straight out away from the unit. This will make terminating the individual wires easier. Take note of the terminal designations indicated on the drawing on the inside of the cabinet door, the markings on the circuit board, and on the green block itself to avoid mis-wiring. A 1/8" straight blade or a #1 Phillips screwdriver can be used to tighten the terminals. Make sure that the wires are not loose.

The terminal blocks provide the +24Vdc power to the attached switch. Consult the wiring diagram supplied with the switch for specific device wiring requirements.

The power to the terminal block will not be available until the input has been configured by the user. This will take place during the configuration and commissioning phase of the installation.

The input blocks are organized in rows of four with the top terminals in the rows numbered 1, 5, 9, and 13.

Mis-wiring one of the terminal blocks will result in the +24VDC turning off until the problem is corrected. This affects only the incorrect input block and no other termination points on the card. There are no fuses involved in this method of protection. When the wiring is corrected, the power will return.

Emergency Input

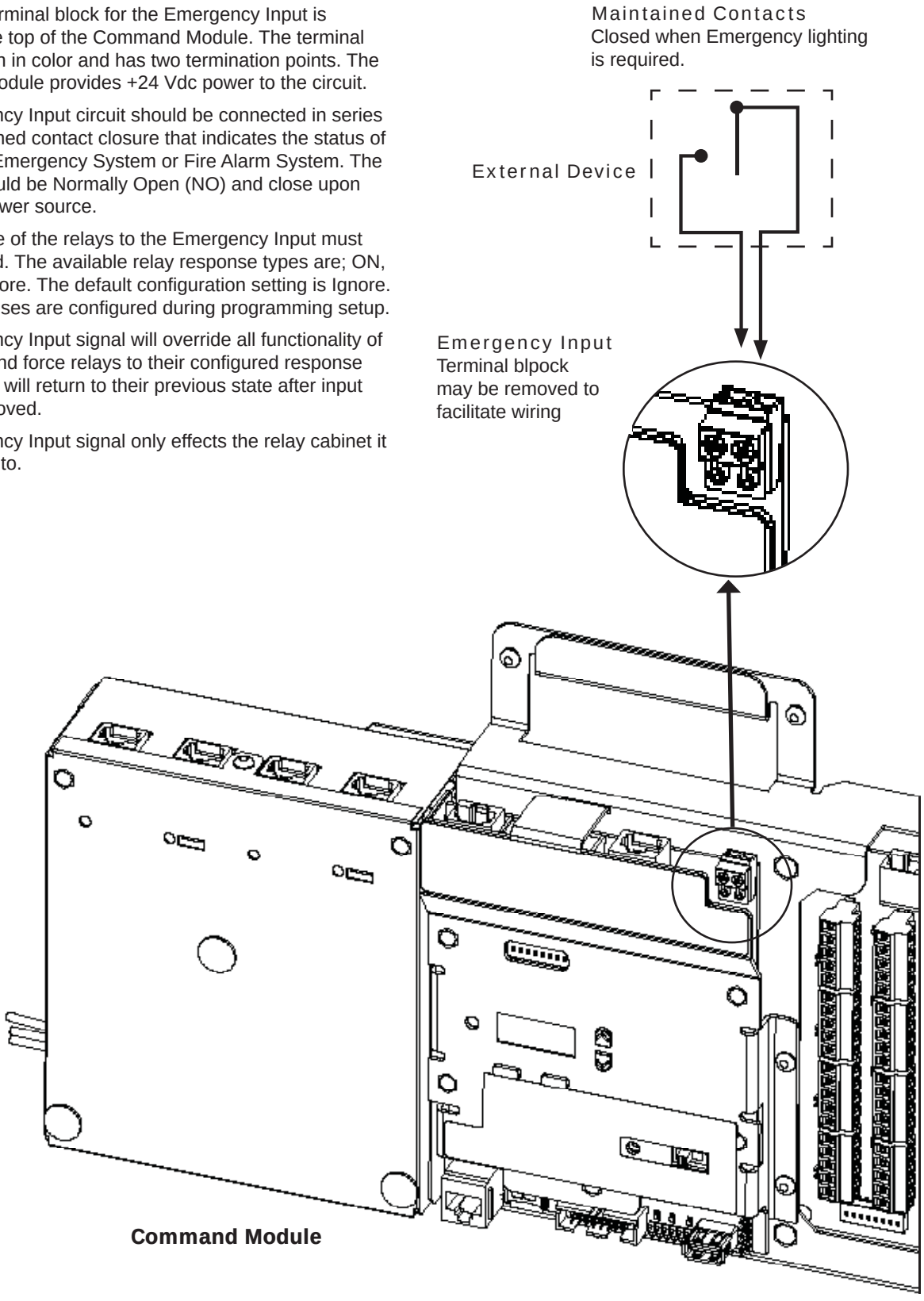
The wiring terminal block for the Emergency Input is located at the top of the Command Module. The terminal block is green in color and has two termination points. The Command Module provides +24 Vdc power to the circuit.

The Emergency Input circuit should be connected in series with a maintined contact closure that indicates the status of the building Emergency System or Fire Alarm System. The contacts should be Normally Open (NO) and close upon change of power source.

The response of the relays to the Emergency Input must be configured. The available relay response types are; ON, OFF, and Ignore. The default configuration setting is Ignore. Relay responses are configured during programming setup.

The Emergency Input signal will override all functionality of the system and force relays to their configured response state. Relays will return to their previous state after input signal is removed.

The Emergency Input signal only effects the relay cabinet it is connected to.



Command Module

Section 4
Network

LumaCan Network

The communication network used by GreenMAX is a proprietary protocol running on CAT6 network cable. The network is connected together using RJ45 connectors. Factory assembled cables or field terminated cables can be used. All connections made in the field must be tested prior to interconnecting components. Test the cables with a CAT6 cable tester that identifies the wire pairs, their orientation, and placement.

All power supplies, processors, low voltage input cards, and digital switches are interconnected via CAT6 cable and RJ45 connectors. Power is provided by the power supply and delivered over the LumaCan network.

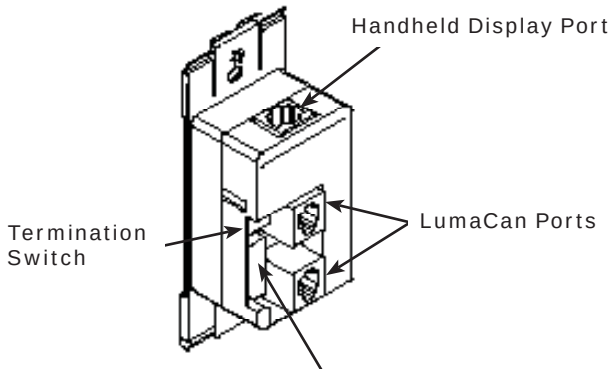
The maximum length of a continuous LumaCan network run is 1600 feet. End of run terminations must be set at the two ends of the network. A termination slide switch is provided on the back of each digital switch for this purpose. A jumper on two (2) terminal posts for termination is provided on every Main Processor board and on each Low Voltage Input Card.

Care must be taken to ensure that two (2) terminations jumpers or slide switches are set on the network. Two (2) end of run terminations provide optimum network performance, any other quantity degrades performance.

The LumaCan network must be daisy chained and “home runs” from devices must be prevented. LumaCan devices can reside on the network in any order as long as the daisy chain configuration is maintained.

A yellow LED is provided on each LumaCan device to indicate network “heartbeat.” The flashing pattern of the LED can be used to diagnose health of the network.

Do not run LumaCan cables adjacent to or in close proximity to high voltage connectors.



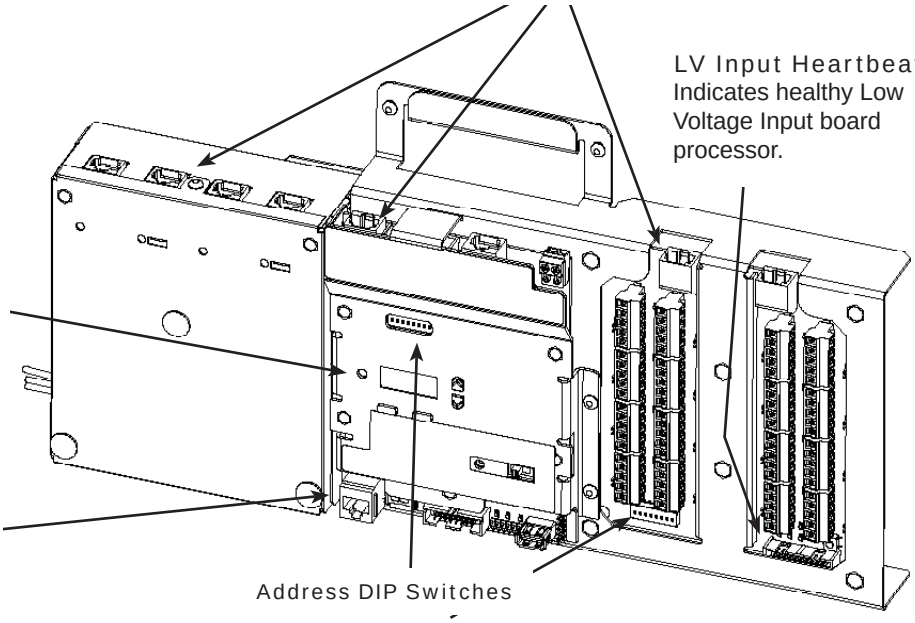
Digital Switch
Rear View

LumaCan Connectors
LumaCan network connectors on all components are green in color.

LV Input Heartbeat
Indicates healthy Low Voltage Input board processor.

MPU Heartbeat
A yellow LED is provided on each MPU to indicate proper processor “heartbeat.”

LumaCan termination
A termination jumper is provided adjacent to the Handheld Display Unit port.



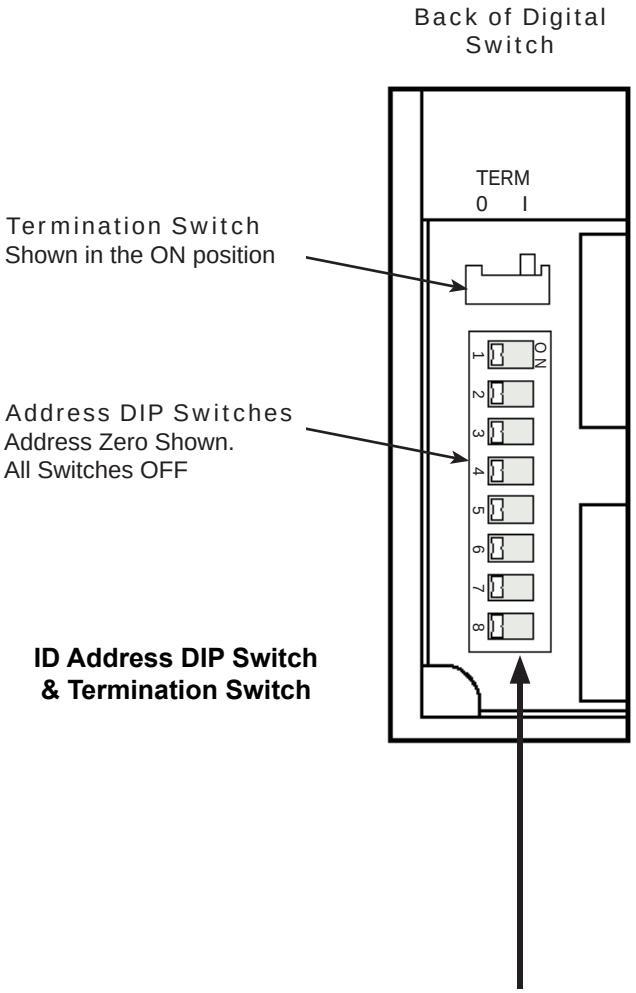
LumaCan Network Addresses

The maximum number of LumaCan addresses on a network is limited to 250 unique addresses starting with ID 1.

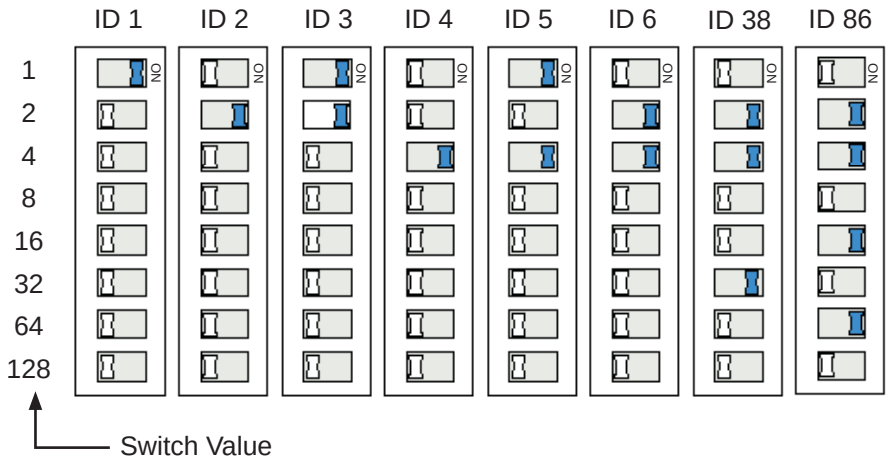
There are dip switches that must be set to provide each device with an address. The device address is calculated by adding the values of the switches set in the ON position.

Each Main Processor board and Low Voltage Input require unique addresses and account for a total of two address when mounted together in a Command Module. The number of addresses required per device is listed in the table below.

Device	Address Quantity Required
Command Module without LV Input Card	1
Command Module with LV Input Card	2
Digital Switches 1, 2, 4 Button	1
Remote Input Cabinet	1



ID Address Value = Sum of Switch Values
ID 86 = 2+4+16+64



LumaCan Network Topology

The GreenMAX power supply on the Command Module provides operating power to all digital switches on the LumaCan network up to the limits of the power supply. The power supply provides four (4) ports to connect devices and network segments. Two (2) of these ports provide continuous power and should be used to interconnect to the Main Processor board and the Low Voltage input card. The other two ports on the power supply have a slide switch provided to turn power ON or OFF to the segment of the network connected to it. An illuminated green LED indicates that there is power at the port. If the switch is turned OFF and the LumaCan cable is unplugged, the LED will be dark or OFF. If the LED illuminates after the network cable is plugged in, this indicates that power from another source is available on the cable. The switch disconnects the power supply from the network cable. If the LED remains dark or OFF when cable is plugged in, this indicates that no power is present on the cable.

The LumaCan network must be daisy chained and “home runs” from devices must be prevented. LumaCan devices can reside on the network in any order as long as the daisy chain configuration is maintained.

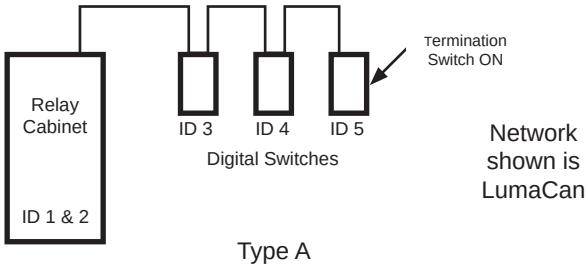
LumaCan network connectors on all components are green in color.

A yellow LED is provided on each LumaCan device to indicate network “heartbeat.” The flashing pattern of the LED can be used to diagnose health of the network.

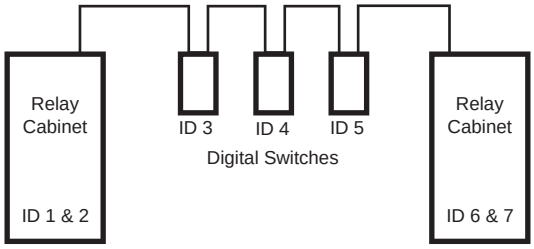
Type A - Digital switches are powered from the relay cabinet. Termination switch is set to ON in digital switch ID 5 and termination jumper is on at the Command Module, all other termination switches are in the OFF position.

Type B - Digital switches are powered from ONLY ONE of the relay cabinets. Termination jumper is set to ON in both of the Command Modules, all other termination switches are in the OFF position.

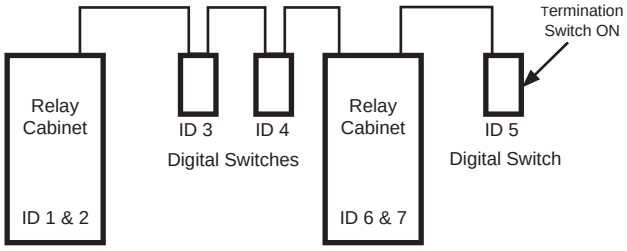
Type C - Digital switches ID 3 & 4 are powered from relay cabinet ID 1 & 2. Digital switch ID 5 is powered from Relay Cabinet ID 6 & 7. Termination switch is set to ON for digital switch ID 5 and on the Command Module of relay cabinet ID 1 & 2. All other termination switches are in the OFF position.



Type A



Type B



Type C

Section 5
The Start-Up Process

The Start-Up Process

Overview

The GreenMAX system must be assembled and commissioned prior to full operation. Follow these general guidelines to perform this operation.

1. Preparation
    - Plan addresses
    - Acquire firmware upgrade
2. Build LumaCan network
    - Test cables
    - Interconnect Relay Cabinets
    - Connect Digital Switches
    - Set termination jumpers (2 required)
    - Configure power distribution
3. Firmware Upgrade
4. Configure all Low Voltage Input Cards
5. Build Groups (if required)
6. Create Schedules
    - Daily Agendas
    - Exception Calendars
7. Build Areas
    - Assign Schedule to Area
    - Add; Relays, Switch Buttons, Occupancy Sensors, Photocells
    - Assign Relays to; Switch Buttons, Occupancy Sensors, Photocells

Preparation

1. Assemble all documentation including but not limited to; submittal drawings, single line diagrams, relay and circuit schedules, as built drawings, agenda worksheets.
2. Required equipment; CAT6/RJ45 cable tester, voltmeter, #2 Phillips screw-driver, Handheld Display Unit, control screw-driver (1/8” slotted or Phillips), 8-position modular plug breakout adaptor.
3. Visually inspect all wiring and compare to the submittal drawings. Take note of the position of any Emergency circuits, voltage barriers, separation of voltages, and routing of conductors. Work with the electrician to correct any discrepancies or errors.
4. Contact Leviton Technical Support for latest firmware version and load it on a USB thumbdrive memory stick.
5. CAUTION: Do not work on energized lighting circuits. Appropriate personal protective equipment should be worn when the covers are removed and cabinets are energized.
6. CAUTION: The manual actuators on the relays are not to be used as Lock Out or Tag Out locations. This should only be done at the circuit disconnecting means such as the circuit breaker or the disconnect.

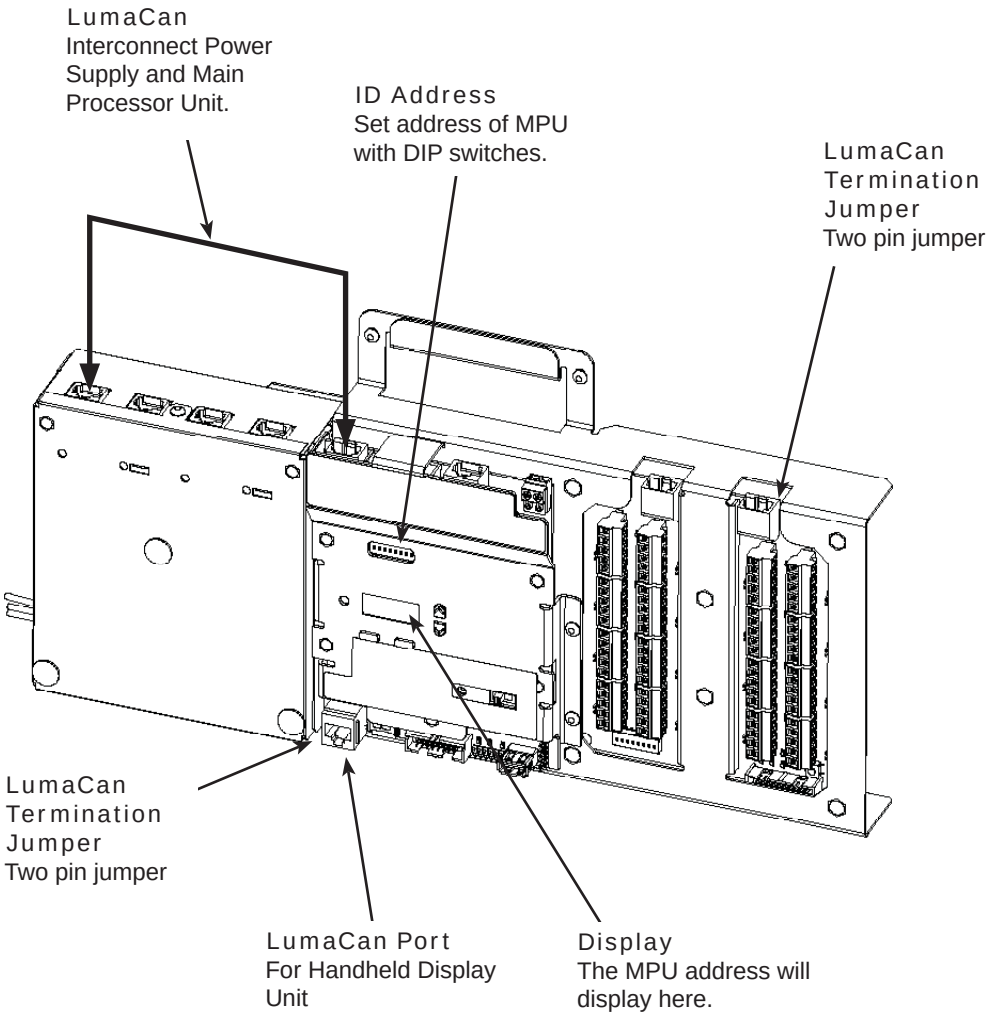
Interconnect the Relay Cabinet - Step 1

The GreenMAX system must be commissioned prior to full operation. Follow these general guidelines to perform this operation.

1. Test all LumaCan Cables that have been field terminated. The termination configuration and wire pattern must be consistent throughout the system. Replace any broken or incorrectly wired connectors.
2. Start to interconnect the system at a relay cabinet. The connections in the cabinet are indicated on the label inside the cabinet door.
3. Check the wiring connections for the circuit that feeds the Power Supply of the Command Module. Tight connections should be made to a single-phase conductor, neutral, and ground. The equipment grounding conductor should be connected to the grounding point of the cabinet.
4. The neutral wire from the Relay Insert Panel should be connected to the neutral wire of the Power Supply if the circuit originates from the same source as the lighting circuits. If this is not the case, a neutral from the lighting circuit source should be run to the cabinet and make connection with the Relay Insert Panel. Only one (1) neutral connection is required.
5. Inspect the circuit wiring of the lighting circuits and confirm that all connections are properly made and are tight. Confirm that circuit and relay layout match the submittal drawings.

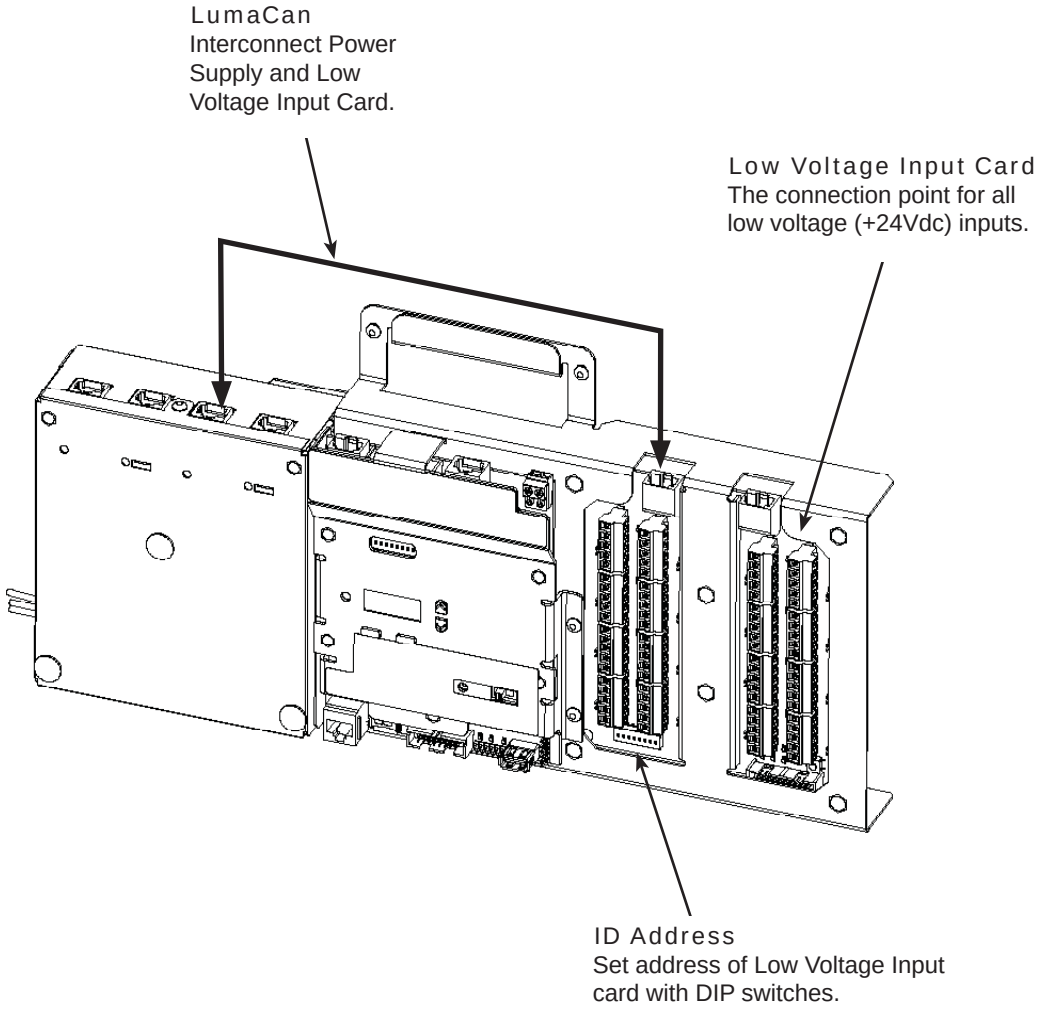
Interconnect the Relay Cabinet - Step 2

1. Set the ID of the Main Processor Unit (MPU) on the Command Module to a unique address. A block of DIP switches is provided for this purpose. Avoid duplicate addresses. The address will display on the small screen when the MPU is energized and functioning correctly.
2. If required, set the termination jumper to ON by sliding the jumper across the pins provided. These pins are located beside the forward facing LumaCan port in the bottom left of the MPU.
3. Interconnect the Power Supply and the MPU. Plug one of the supplied network cables into the first port on the power supply. This is labeled as 'MPU'. Plug the other end of the cable into the green LumaCan port at the top of the MPU.



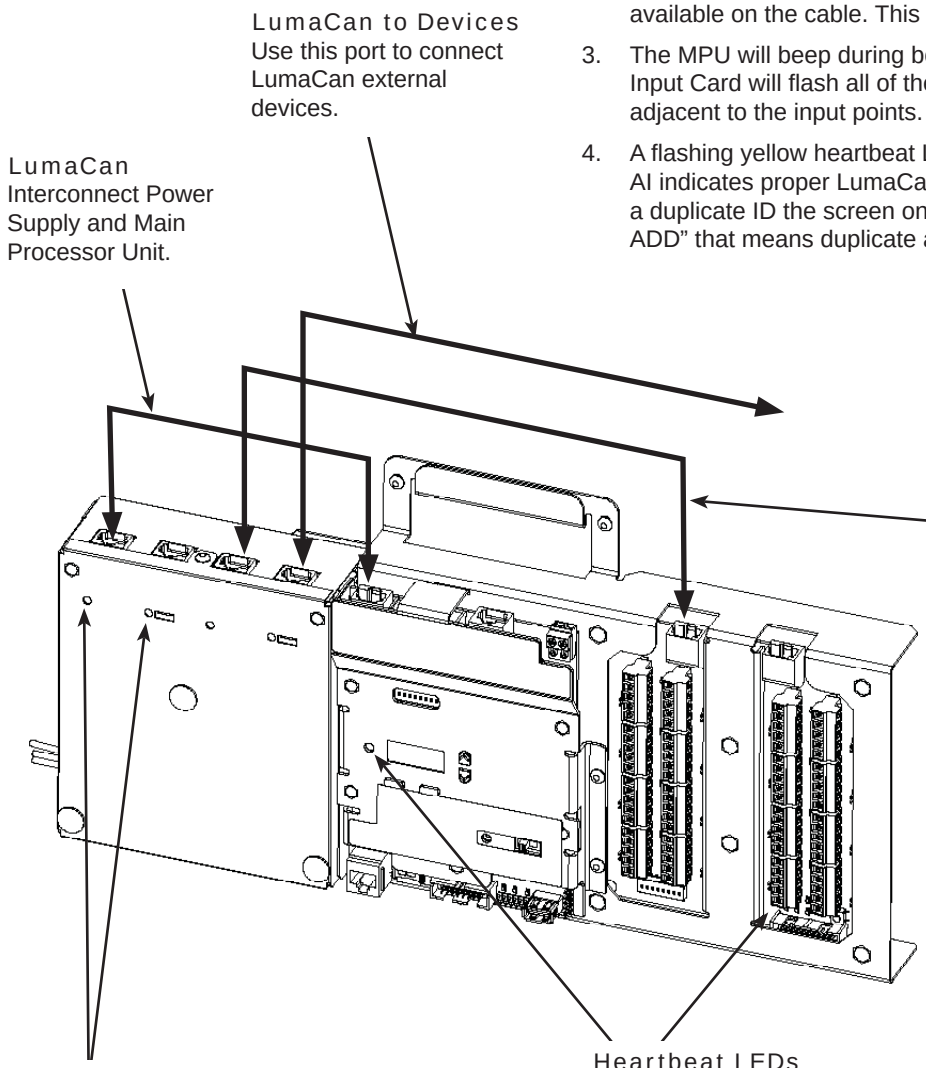
Interconnect the Relay Cabinet - Step 3

1. Set the ID of the Low Voltage Input Card (AI) on the Command Module to a unique address. A block of DIP switches is provided for this purpose. Avoid duplicate addresses.
2. If required, set the termination jumper to ON by sliding the jumper across the pins provided. These pins are located beside the forward facing LumaCan port in the top left of the Low Voltage Input Card.
3. Interconnect the Power Supply and the Low Voltage Input Card. Plug one of the supplied network cables into the third port on the power supply. This is labeled as 'AI'. Plug the other end of the cable into the green LumaCan port at the top of the Low Voltage Input Card.



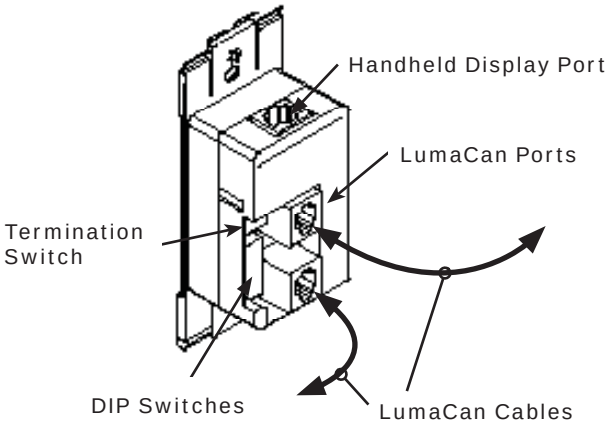
Interconnect the Relay Cabinet - Step 4

1. Turn ON the power circuit feeding the relay cabinet Command Module. The green LEDs on the power supply will illuminate indicating +24Vdc output at the network connectors.
2. The green LEDs indicate power is present at the port connector. The second and forth ports have a slide switch that will disconnect power before the connector. If power is turned OFF the LED will not illuminate. If a cable is connected to the port and the LED illuminates this indicates that power from another source is available on the cable. This is an allowed condition.
3. The MPU will beep during boot up and the Low Voltage Input Card will flash all of the troubleshooting red LEDs adjacent to the input points.
4. A flashing yellow heartbeat LED on both the MPU and AI indicates proper LumaCan configuration. If there is a duplicate ID the screen on the MPU will flash “DUP ADD” that means duplicate address.

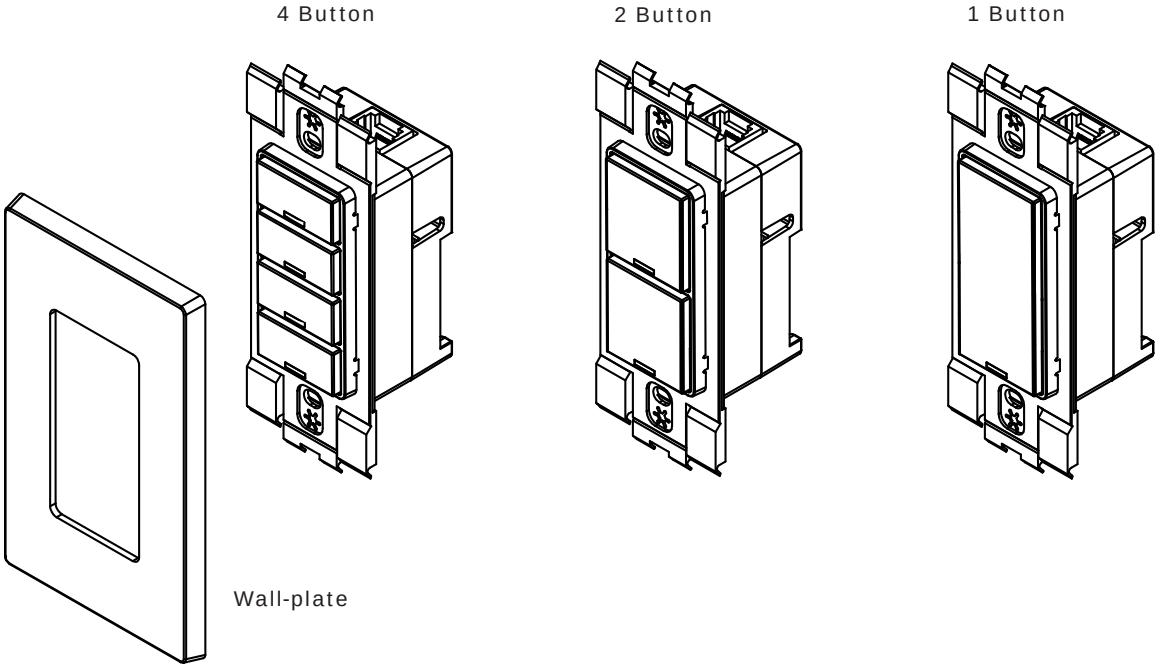


Connect Digital Switches

1. Set the ID of the Digital Switch to a unique address. A block of DIP switches is provided for this purpose. Avoid duplicate addresses.
2. If required, set the termination jumper to ON by sliding the termination switch provided to the ON position. This switch is located on the back of the Digital Switch adjacent to the LumaCan ports.
3. Plug the LumaCan cables into the Digital Switch. Plug the network cables into either of the rear jacks on the switch, do not use the top port as this is reserved for the Handheld Display Module.
4. Devices must be connected in a daisy-chain and not a star pattern. Do not 'T' connect branches of LumaCan at the switches.
5. Digital Switches can be mounted in a single gang wall-box. The switches can be ganged together as required. Single gang snap on wall-plates are supplied with each Digital Switch.
6. A flashing yellow heartbeat LED on each Digital Switch indicates a function processor. If there is a duplicate ID the LED pattern will not be consistent.
7. LumaCan activity is indictated by flashing the green LED visible through the slot on side of the Digital Switch body.



Digital Switch Rear View



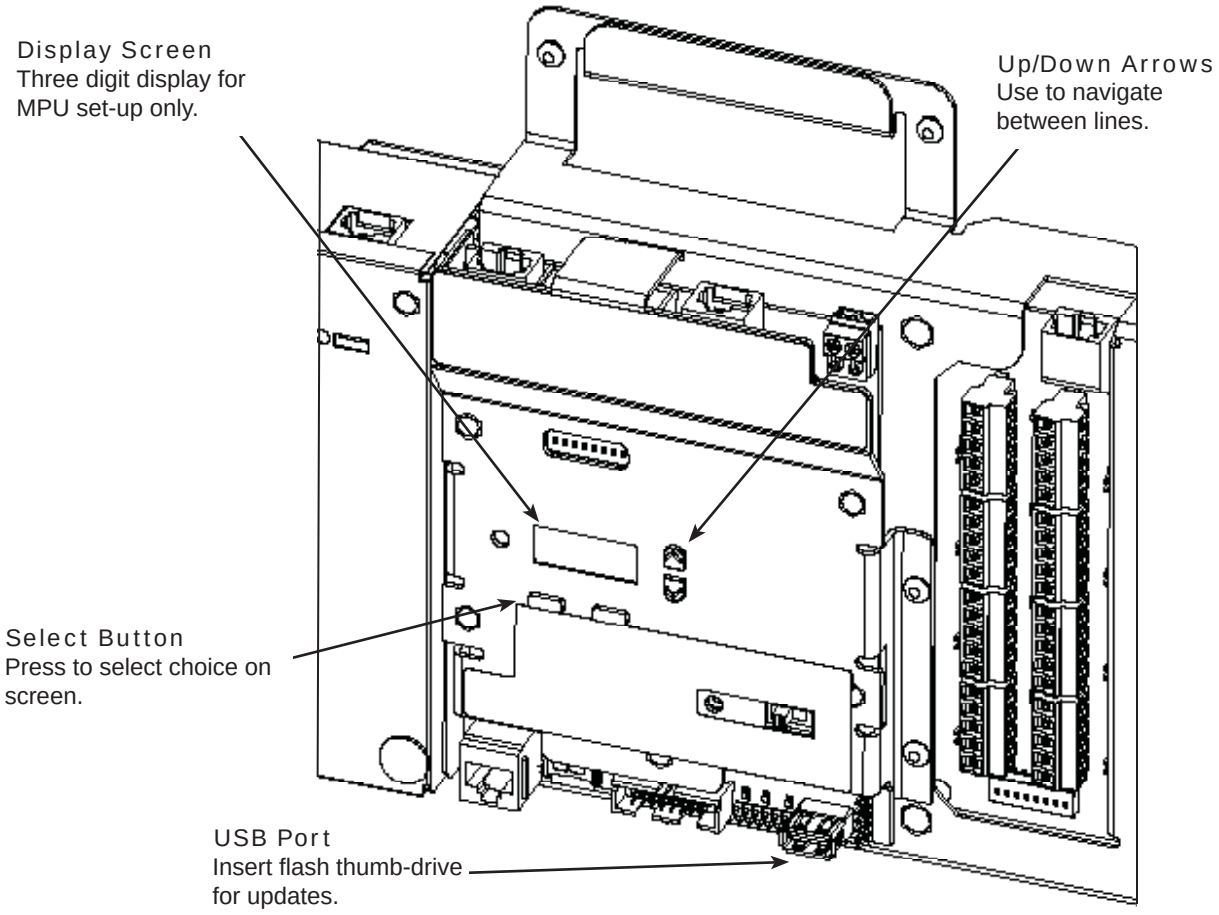
LumaCan Check List

- □ Field terminate and test all network cables. Check for proper pin configuration and connector integrity. Use the standard TYPE ‘B’ wiring configuration.
- □ The LumaCan network must have exactly two (2) termination jumpers or switches set to the ON position at the two (2) ends of the network. The termination jumpers or switches are available at the following locations:
    - A slide switch on the back of each Digital Switch is provided for this purpose. The rear plastic housing is marked with the switch position.
    - Each Command Module has a termination jumper that is shipped in the OFF position. It is located beside the LumaCan port on the front of the Main Processor Unit. Connecting the two (2) pins of the jumper together sets the termination ON.
    - The termination jumper on Low Voltage Input Card is located beside the LumaCan port. Connecting the two (2) pins of the jumper together sets the termination ON.
- □ The devices on the network must be daisy chained together. No ”home runs” or star configurations are permitted.
- □ Each device on the LumaCan network must have a unique address. There are DIP switches that must be set to provide each device with an address. The device address is calculated by adding the values of the switches set in the ON position.
- □ When plugged in to an energized LumaCan network cable, the yellow ‘heartbeat’ LED on each device should be flashing the same pattern.
- □ The maximum length of a CAT6 LumaCan network is 1600 feet. Do not run cables adjacent to or in close proximity to high voltage connectors.
- □ LumaCan network cables must be contained in the low voltage area. Do not mix the cables with any of the high voltage conductors.

Firmware Upgrade - Step 1

When the LumaCan network is stable and free of duplicate addresses, an upgrade of the device firmware should be performed. Return to the system Main cabinet or the most easily accessible relay cabinet. This local MPU must be updated first. Follow the steps below:

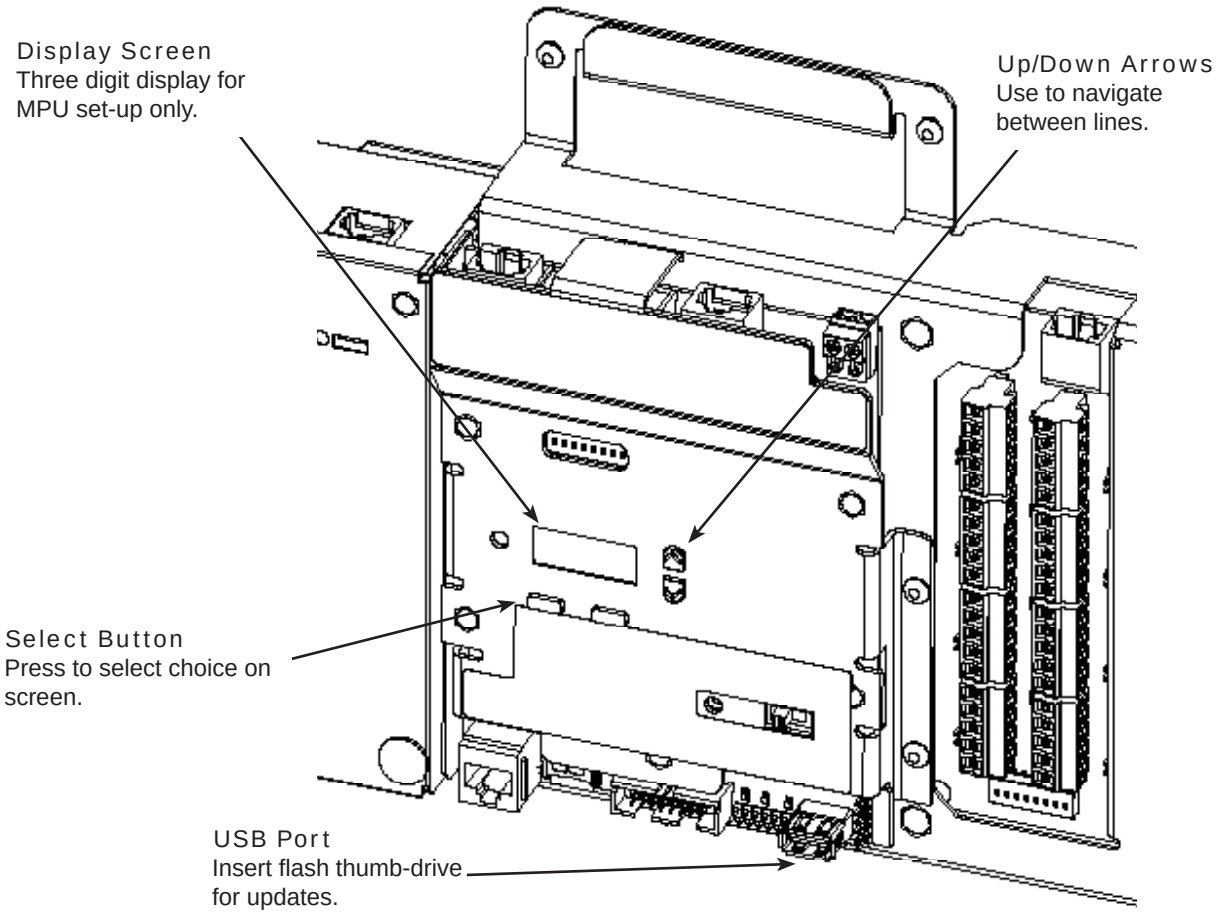
1. Contact Leviton Technical Support for instructions for downloading the firmware upgrade from the GreenMAX web-site. Savefirmware on a flash memory stick or thumb-drive.
2. Plug thumb-drive into USB port on the front of the Command Module.
3. Press and hold the SELECT button on the MPU until the letters SAV appear on the screen.
4. Press the UP or DOWN arrows until the letters UPd appear on the screen. Then press SELECT.
5. Press the UP or DOWN arrows until the letters LoC appear on the screen. Then press SELECT.
6. The cursors on the screen will begin to cycle around screen, this indicates the process has begun.
7. The screen will return to scrolling the cabinet number when the process is complete.



Firmware Upgrade - Step 2

When the Local MPU (Step 1) has been successfully updated, all of the other devices on the network should be updated. Follow the steps below:

1. Plug thumb-drive into USB port on the front of the Command Module.
2. Press and hold the SELECT button on the MPU until the letters SAV appear on the screen.
3. Press the UP or DOWN arrows until the letters UPd appear on the screen. Then press SELECT.
4. Press the UP or DOWN arrows until the letters ALL appear on the screen. Then press SELECT.
5. The cursor on the screen will begin to cycle around screen, this indicates the process has begun. The process is fully automated and will not require any further interaction.
6. The screen will return to scrolling the cabinet number when the process is complete. The larger the system the longer this will take.



Section 6
Programming Concepts

Programming Basics

The flowchart on this page outlines the steps required to program a GreenMAX system.

AGENDA
Definition: A series of BEHAVIOR transitions that comprise a 24 hour period. This is a pattern of BEHAVIORS that mimics the use or operation of a building space.

- A total of 24 behavior transitions is allowed in a 24 hour period.
- Only the start time of a BEHAVIOR is required. The shortest duration between transitions is one (1) minute.
- The maximum number of AGENDAS is 32.

BEHAVIOR
Definition: The operational association or relationship between switches, occupancy sensors, and photocells in a given area.

- Behaviors are predetermined in the system.
- The list of Behaviors is found on the next few pages.

SCHEDULE
Definition: A weekly series of AGENDAS. This 7 day series will continue to operate until the system clock encounters an EXCEPTION DATE or the start date for a new SCHEDULE.

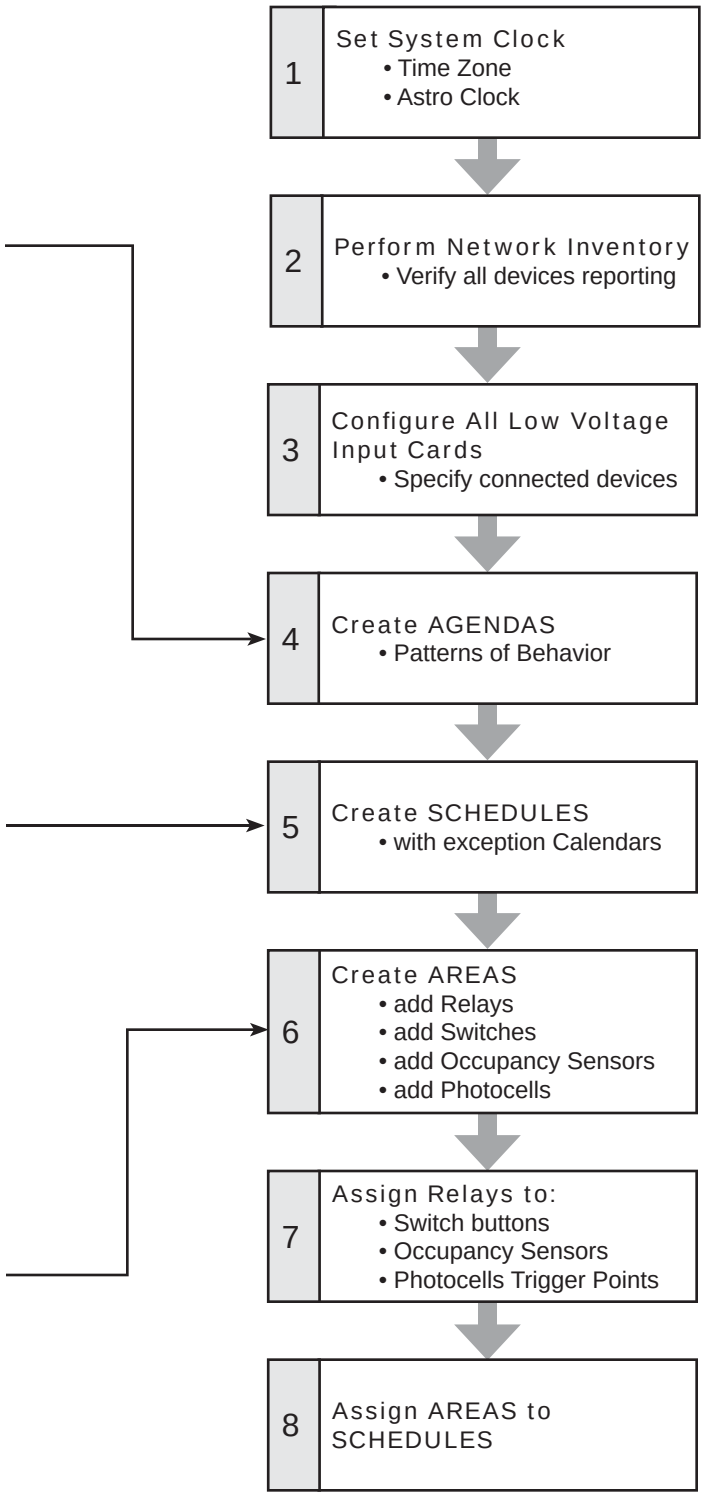
- The Start and End dates can be specified for the operational period of a SCHEDULE.
- The maximum number of SCHEDULES is 24.

EXCEPTION DATES
Definition: A date or series of dates that the current SCHEDULE will not apply and will not operate.

- There must be a corresponding additional SCHEDULE built to specify operation during the EXCEPTION DATE period.

AREA
Definition: A space or zone which corresponds to a building space or lighting circuit.

- Add Relays first



BEHAVIORS					
Number	**Description**	Occupancy Sensor	Photocell	Switch	Time
B1	Lights turned ON with the switch. Can be turned OFF with switch. Occupancy Sensor will turn OFF upon vacancy.	OFF	-	ON/OFF	-
B2	Lights turned ON with the Occupancy Sensor Can be turned OFF/ON with switch. Occupancy sensor will turn OFF upon vacancy	ON/OFF	-	ON/OFF	-
B3	Occupancy sensor turns lights ON/OFF.	ON/OFF	-	-	-
B4	Switch ON/OFF.	-	-	ON/OFF	-
B5	Time triggers a Blink Warn sequence. Switch interrupts sequence and starts interval timer. Will automatically turn Off relay if interval timer reaches zero.	-	-	ON/OFF	Blink/OFF
B6	Turn ON at specific time.	-	-	-	ON
B7	Turn OFF at specific time.	-	-	-	OFF
B8	Occupancy Sensor turns ON lights with occupancy. Measured light levels above Photocell trigger point turns OFF or keeps lights OFF, below set-point allows control by Occupancy Sensor. Occupancy Sensor turns OFF lights with vacancy.	ON/OFF	ON/OFF	-	-
B9	Switch turns ON/OFF lights. Measured light levels above Photocell trigger point turns OFF or keeps lights OFF, below set-point allows control by Switch and Occupancy Sensor. Occupancy Sensor will turn OFF lights upon vacancy	OFF	ON/OFF	ON/OFF	-
B10	Occupancy Sensor turns ON lights with occupancy. Measured light levels above Photocell trigger point turns OFF or keeps lights OFF, below set-point allows Occupancy Sensor control. Switch can turn ON/OFF lights by over-riding Occupancy Sensor control. Occupancy Sensor will turn OFF lights upon vacancy.	ON/OFF	ON/OFF	ON/OFF	-
B11	Switch ON/OFF. Measured light levels above Photocell trigger point turns OFF or keeps lights OFF, below set-point allows Switch control.	-	ON/OFF	ON/OFF	-
B12	Turn ON at specific time. Measured light levels above Photocell trigger point turns OFF or keeps lights OFF, below set-point allows Forced ON control.	-	ON/OFF	-	ON

AGENDA Name:			
Transition No.	Time	Behavior	Variables
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

Behavior
Enter the desired number from the Behavior list.

Time
Enter the desired transition or start time for the Behavior.

Variable
Enter the value for the control parameters. Some of these are listed below.

Variable Parameters

Occupancy Sensor: Delay Time
Photocell: Trigger Point, Delay Time, Deadband
Switch: Delay Time
Blink Warn: Blink length, Wait Length, ON Time

Create Agendas

Definition: A series of Behavior transitions that comprise a 24 hour period. This is a pattern of Behaviors that mimics the use or operation of a building space.

A total of 24 Behavior transistions is allowed in a 24 hour period. A transition is defined as a change to a new Behavior.

Only the start time of a Behavior is required. The shortest duration between transitions is one (1) minute.

Variable Paremeters can be set for each transition. For example the delay time on an Occupancy Sensor may be set to a new value for the next Behavior in the Agenda.

The maximum number of AGENDAS is 32.

SCHEDULE Name:		Active Date Range			
		From		To	

Date Range
Enter Always or a Start and End date.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

Active Days
Check these boxes for each day that the AGENDA applies

Exception Dates			
1		17	
2		18	
3		19	
4		20	
5		21	
6		22	
7		23	
8		24	
9		25	
10		26	
11		27	
12		28	
13		29	
14		30	
15		31	
16		32	
(Holiday, Specific Date, Relative Date, Date Range)			

Exception Dates
Enter the Holiday, Date(s), Relative pattern of dates, or the appropriate Date Range. These are the dates that this Schedule does not apply or function on.

Section 7
Programming
HDU Usage

Handheld Display Unit

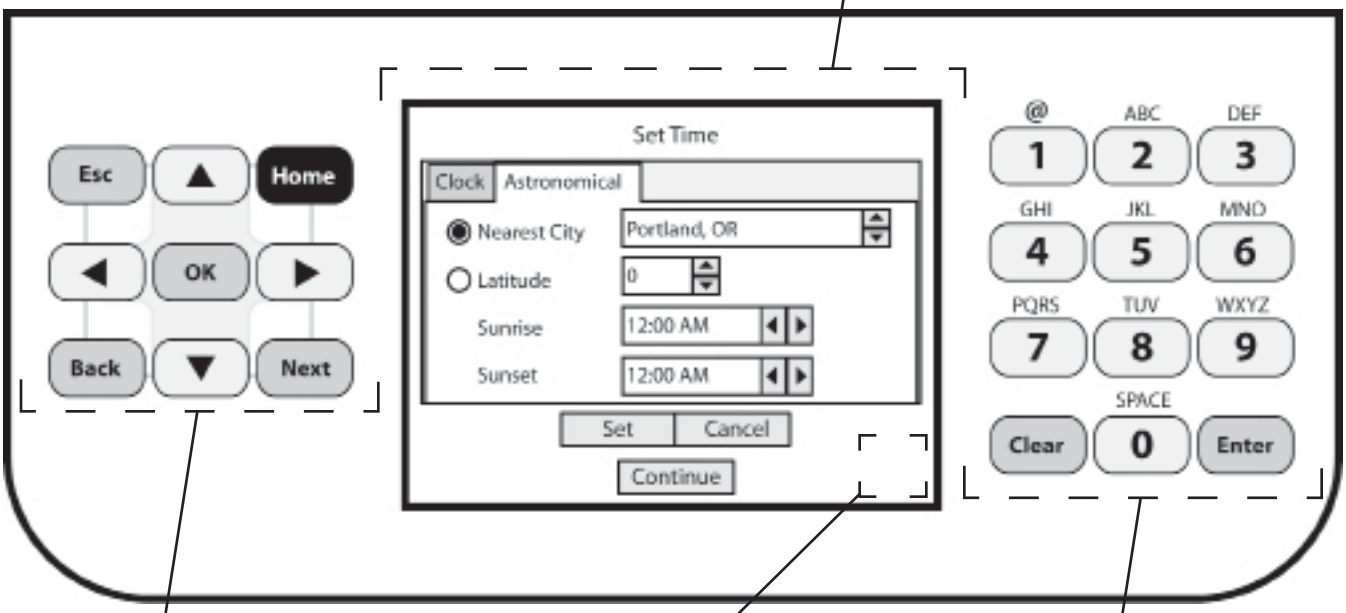
All programming is done through the use of the Handheld Display Unit (HDU). The HDU plugs into the LumaCan at any available port in the system.

The HDU is powered by rechargeable batteries which provide up to 8 hours on a complete charge. The battery charging circuit of the HDU is activated whenever the HDU is plugged into the LumaCan. This charging circuit is self managing and will keep the batteries fully charged.

The status of the batteries and the source of the HDU power are indicated at the lower right corner of the display screen.

Display Screen

High resolution graphic screen. Navigate about the screen using the Navigation Pad and enter data with the Alphanumeric Keypad. This is not a touchscreen.



Screen Navigation Keypad

Movement between areas or cells on the screen is accomplished with the button keypad on the HDU.

Power Source Indicator

The battery charge level or the power from LumaCan icon displays in this corner of the display screen.

Alphanumeric Keypad

Data entry is done with this keypad. Pressing the button multiple times changes the entry on the screen.

Screen Content

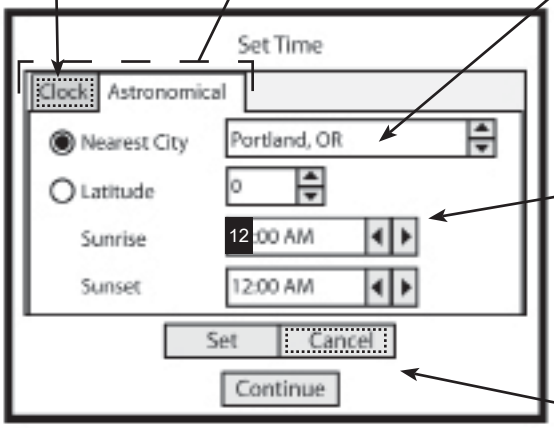
The information displayed on the screen is organized into some standard components. The concepts for their presentation are outlined here.

Highlight

The current selection is highlighted by a dashed line around the button.

Tab Buttons

Some screens have informational layers that can be access by highlighting a tab and pressing OK or ENTER.



Scrolling Box

This type of box or cell presents populated lists to choose from. use the UP or DOWN buttons to scroll through information. Once desired information is displayed in the cell select it pressing OK/ENTER or NEXT/BACK.

Combination Scrolling Box

This type of box or cell presents settings that can be manipulated several ways. The LEFT/RIGHT buttons move from character to character while UP/DOWN increments the characters. Data can be directly enter to overwrite the highlighted characters Once desired information is displayed in the cell select it pressing OK/ENTER or NEXT/BACK.

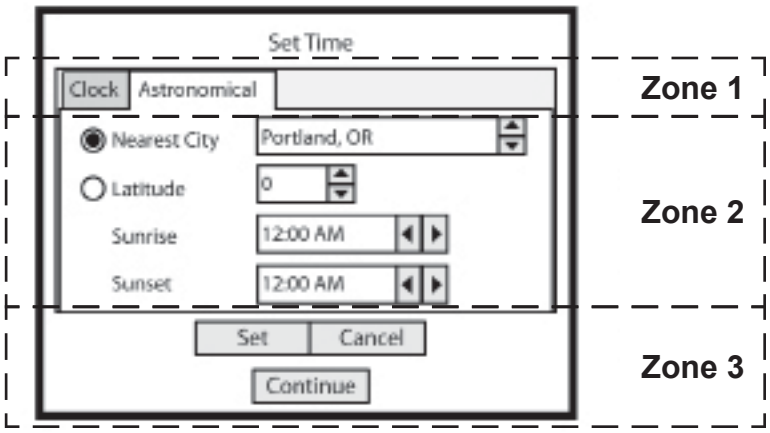
Buttons

These are simple buttons. Their operation is described by the label that appears on the button. For example:

Cancel - cancels and ignores all data changes made.

Set - accepts the data changes and entries displayed.

Continue - moves to next screen.



Zones

The display screen is organized into three general zones. Moving from zone to zone is accomplished by pressing the NEXT/BACK buttons.

Once inside a zone you may navigate between cells, boxes, tabs, or buttons with the LEFT/RIGHT/UP/DOWN arrow buttons.

Navigation Keypad

All movement of the cursor is controlled by the Navigation Keypad. When the individual buttons are pressed they will click to acknowledge input. This keypad is best operated by your left thumb if you holding the unit in your hands.

The button functions are outlined in the diagram below. In most cases the button should only be pressed once. These buttons provide dual functions based on the cursor location on the screen.

If the cursor is in a data field, the keypad will manipulate the characters in the field.

If the cursor is in one of the on-screen buttons, the keypad will move the cursor from location to location.

ESC

This is the ESCAPE button.

Nav: Back to a previous position or screen.

Data: It will escape from the immediate entry.

UP

This is the UP button.

Nav: Move upward between fields within a zone.

Data: Press to capitlize the next character entry or scroll through choices.

Home

This is the HOME button.

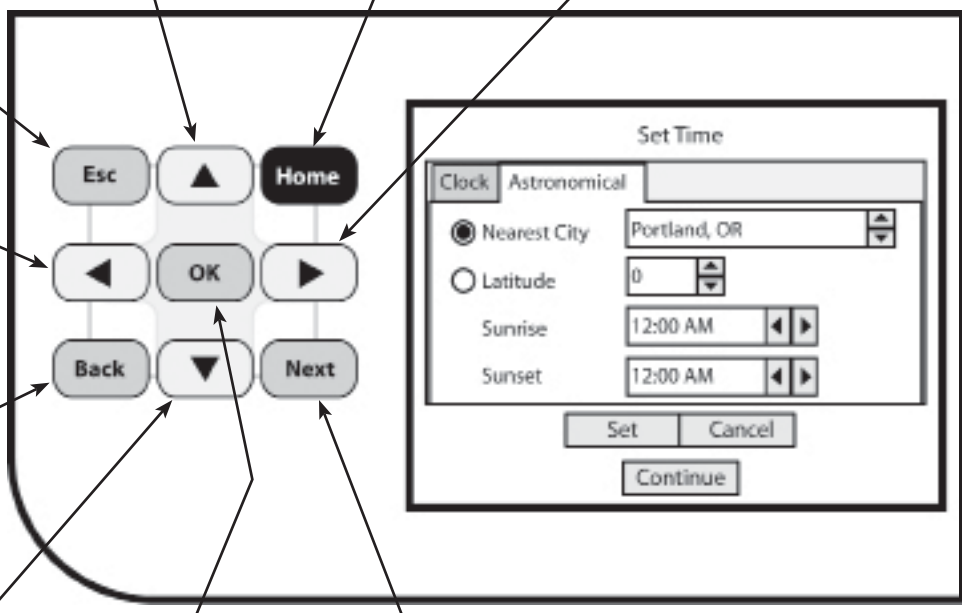
Nav: Returns to the Home screen.

Right

This is the RIGHT button.

Nav: Moves between fields within a zone.

Data: Move to next character space.



Left

This is the LEFT button.

Nav: Moves between fields within a zone.

Data: Press to move cursor left of the current character.

Back

This is the BACK button.

Nav: Moves between zones on the screen.

Data: It will escape from the immediate entry.

Down

This is the Down button.

Nav: Move downward between fields within a zone.

Data: Press to remove capitlization of the next character entry or scroll through choices.

OK

This is the OK button and is the same operation as the ENTER.

Nav: Accepts highlighted choice.

Data: Accepts highlighted choice.

Next

This is the NEXT button and is the opposite of the BACK button.

Nav: Moves between zones on the screen.

Data: It will escape from the immediate entry.

Alphanumeric Keypad

This keypad operates similar to the way a cellular telephone keypad operates for text messaging. Each time a button is pressed, a different character will appear on the screen. Each button is assigned a short series of characters. The series will cycle through each and repeat automatically.

A pause between button presses will move the cursor to the next character position. Pressing the LEFT arrow will backspace the cursor and erase the character.

To enter a capitalized or upper case character, press the UP arrow prior to entering the new character. To turn off the uppercase function, press the DOWN arrow.

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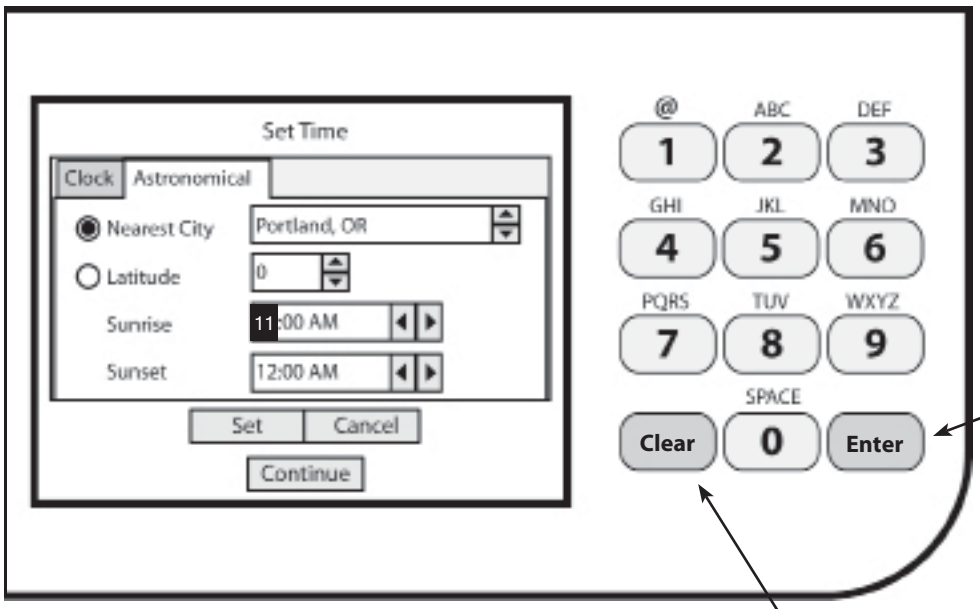


ENTER

This is the ENTER button and is the same operation as the OK.

Nav: Accepts highlighted choice.

Data: Accepts highlighted choice.

Clear

This is the CLEAR.

Data: This will function as a backspace and delete the previous character.

Data Entry Techniques

Many of the data field s in the display screens require the entry of data such as names and labels. All of this information is stored in the GreenMAX system and is accessible from any HDU that is plugged into the system. However only one HDU should be plugged into the system at a time.

It is important to know how to enter and manipulate information through the HDU. Many of these techniques follow the pattern of modern text messaging.

The example on this page demonstartes how an AREA name can be entered into a data field.

Description: Hall

			Display
First Press	▲	**Results in**	|
Press	GHI **4**	**Results in**	G|
Press again	GHI **4**	**Results in**	H|
Pause		**Results in**	H|
Press	▲	**Results in**	H|
Press	ABC **2**	**Results in**	Ha|
Pause		**Results in**	Ha|
Press	JKL **5**	**Results in**	Hal|
Press again	JKL **5**	**Results in**	Hall|
Press	**Next**	**Results in**	Save
Press	**OK**		

Section 8
Programming Details

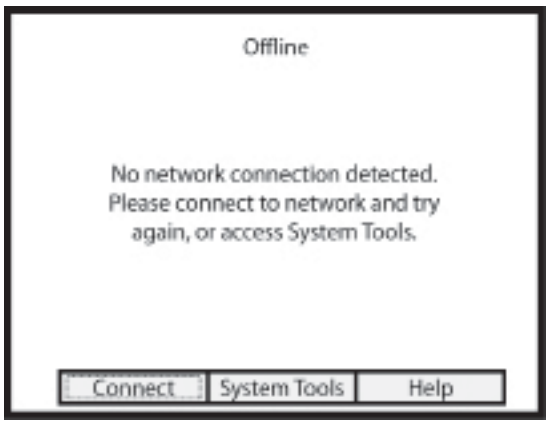
Offline Screen

If this screen is displayed on the HDU it is indicating that there is a problem with the LumaCan network.

Check the following items and correct any of the deficiencies.

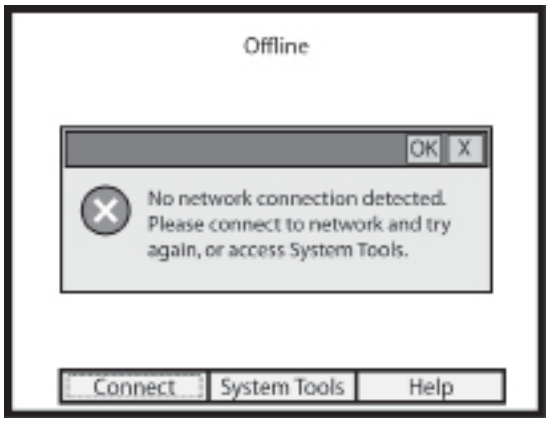
1. Check and test all cables for proper pin configuration.
2. Confirm that the run of LumaCan is continuous, without breaks or interuptions.
3. Check that all cables are properly seated in the LumaCan jacks. All devices should display a blinking amber status LED. To correct, unplug and reconnect the device or press the device reset button.
4. Check all addresses on the LumaCan to ensure there are no duplicate numbers. All devices ship with the default address of zero (0), this will prevent the device from participating on the network and must be changed.
5. Check the location of the end of line termination jumpers. There must be two (2) jumpers set on each run of LumaCan. The digital swicthes have a termination slide switch on the back of the unit for convenient jumper setting. Each MPU and Low Voltage Input Card have a pair of pins and a jumper provided for this purpose. No more than two (2) jumpers should be set on a run.
6. Confirm that all SD Cards are properly seated in their slots.
7. Confirm that all power supplies are energized and that there green LEDs are illuminated.
8. Confirm that the HDU is plugged into and part of the LumaCan network.

When all of these have been checked and corrections made, press the highlighted CONNECT screen button.



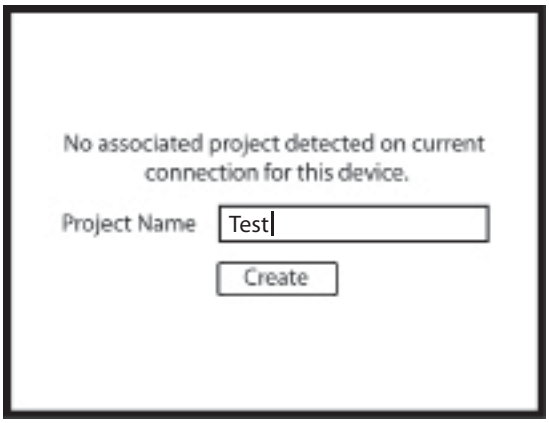
Press **OK**

If CONNECT is pressed but the screen below appears this indicates that a problem exisits. Correct and try again.



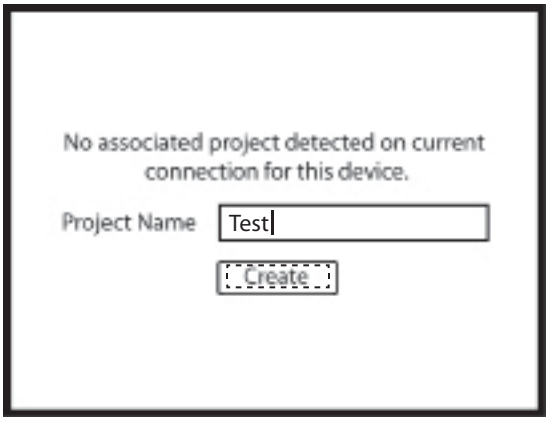
Press **OK**

To clear warning message.



Press **Next**

When complete, press NEXT to highlight the CREATE screen button.



Press **OK**

To accept information and create project. A progress bar will be displayed to indicate that a Project is being created on the system. An inventory of the network will be conducted. See Inventory screen for explanation.

Project Name Screen

This screen will appear when communication with the LumaCan has been established.

Enter the name of the project in the Data field as required.

Data Entry

Use the Alphanumeric keypad to enter the project name into the data field. Examples of the button press sequence can be found in the previous section.

Inventory Screen

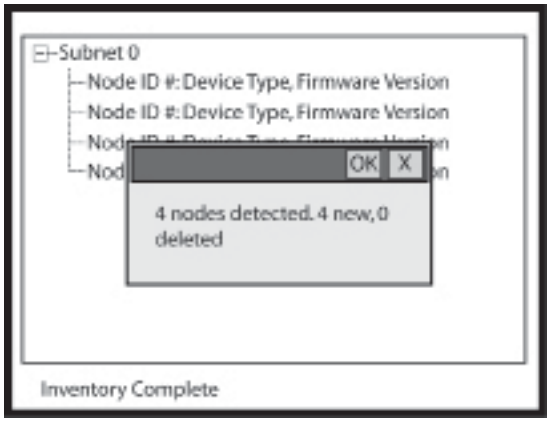
The system will perform and create a Network Inventory. All devices that are connected to the LumaCan network and active will be listed on the resulting tree diagram.

Each device will report the following information:

1. Node ID- this is the address that is set by the DIP switches.
2. Device Type - this will list the type of device such as digital switch with button count.
3. Firmware Version - the current loaded firmware version will be listed here. All similar types of devices should be at the same firmware version level.

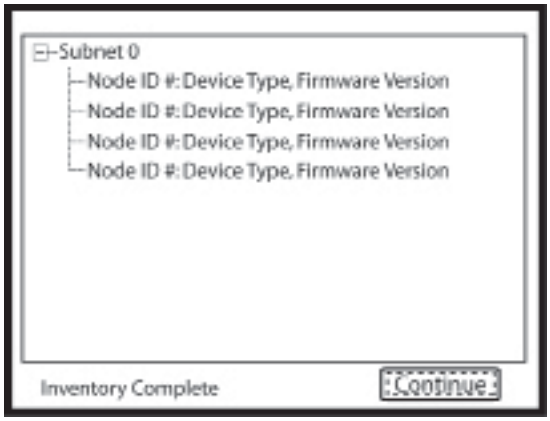
A summary message will appear at the end of the procedure. Press the OK button to close message box.

Review the Network Inventory list and make any corrections necessary to match this list to the actual installed devices.



Press **OK**

To clear result message.



Press **OK**

To accept information and continue.

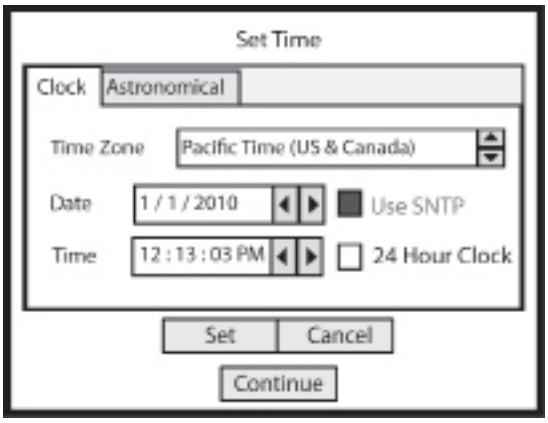
System will automatically progress to the Set Time screen.

Set Time Screen

This screen will appear automatically and display the current settings of the system clock.

Make all necessary changes and complete by clicking the Set screen button.

Time zone can be selected by pressing the NEXT button to highlight the cell and using the UP or DOWN arrow to scroll through the choices.



Press **Next**

When complete, press NEXT to highlight the SET screen button.

Press **OK**

To accept information and save the Time settings.

Press **Next**

When complete, press NEXT to highlight the CONTINUE screen button.

Press **OK**

To advance to the next screen.

System Defaults

Permanent Time Master

During the initial set up of the GreenMAX system, the Permanent Time Master for the network can be specified. This is an optional setting and if used, should be the most conveniently located cabinet in the system. This will be the cabinet that syncronizes the time clocks of all devices on the network.

Blink Warn Settings

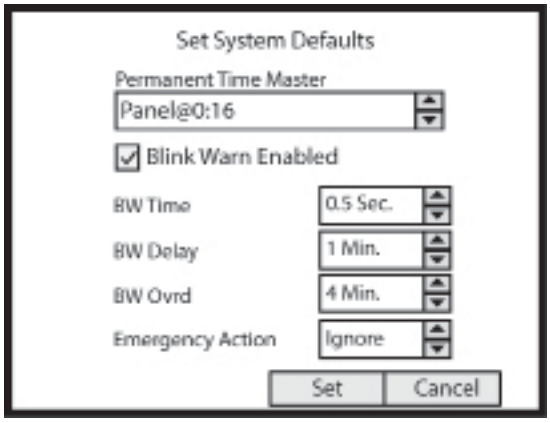
The Blink Warn function for the system is activated by check the box beside Blink Warn Enabled. The settings listed below will be distributed to all relays in the system. The settings can be changed on an individual relay basis elsewhere in the program. The variables are:

1. BW Time - this is the duration of the OFF blink in seconds
2. BW Delay - this is the length of time the system waits to receive a button press that indicates the space is occupied. No button press will turn the relays off.
3. BW Overide (Ovrd) - this is the length of time the relays remain on before the cycle continues again.

Emergency Action

The response of all of the relays to an inpout at the cabinet emergency input terminal block is set here. This setting will be distributed to all of the relays in the system. The setting can be changed on an individual relay basis elsewhere in the program. The three (3) types of response are:

1. Ignore - the relays will not change state. They will stay in the position they were in prior to the input signal.
2. ON - the relays will close to turn ON the loads.
3. OFF - the relays will open to turn of the loads.

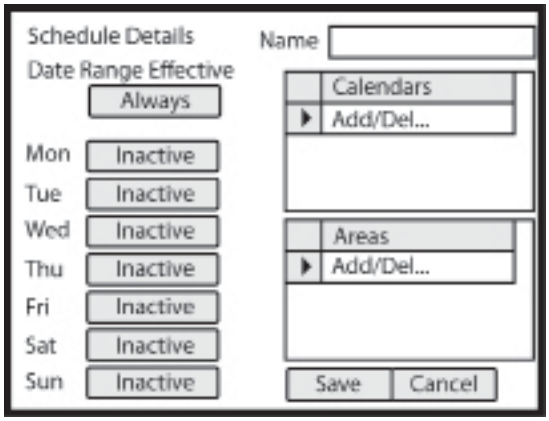


Press **Next**

When complete, press NEXT to highlight the SET screen button.

Press **OK**

To accept information and save the settings. This will also advance to the next screen.


Schedule Details
Name
Date Range Effective
Always
Calendars
Add/Del...
Mon
Inactive
Tue
Inactive
Wed
Inactive
Areas
Thu
Inactive
Add/Del...
Fri
Inactive
Sat
Inactive
Sun
Inactive
Save
Cancel

Section 9
Frequently Asked Questions

Frequently Asked Questions

What do the green LEDs on the Command Module Power Supply indicate?

There are four (4) green LEDs on the Power Supply that will illuminate when there is output power (+24Vdc) at the corresponding connection port. Two (2) of the connection ports are provided power at all times. Two (2) of the connection points have selectable power output that is configured by the slide switch adjacent to the LED window to the OFF position. This turns off the power from this individual port. If the LED illuminates when the cable is plugged in, this indicates that power from another power supply is available on the cable. This is an acceptable condition or configuration.

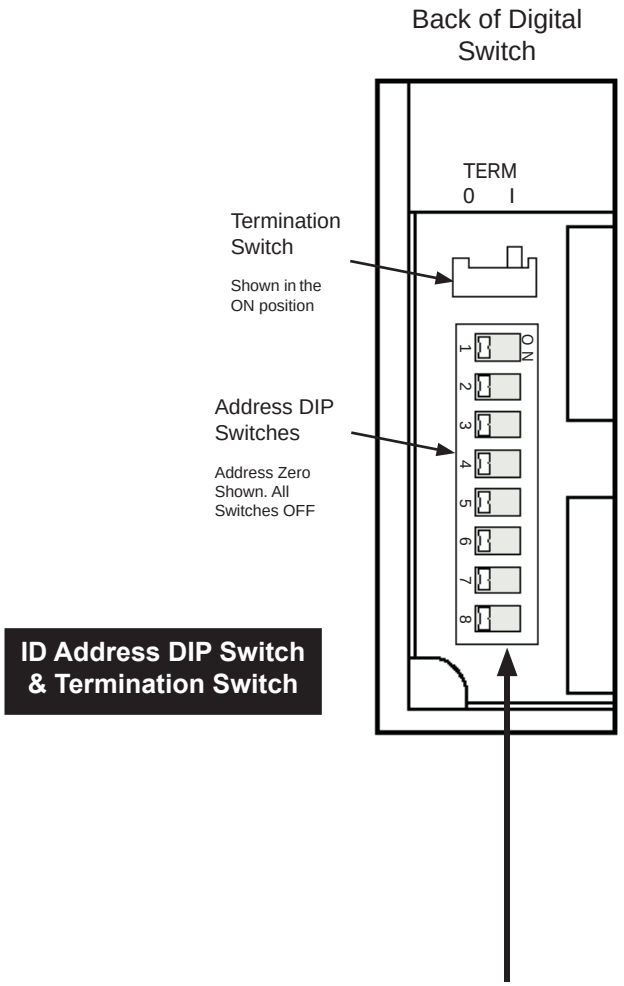
How are the GreenMAX devices powered?

The Power Supplies of the GreenMAX system are provided with each Command Module and Remote Low Voltage Input Cabinet. When interconnected, the Main Processor Unit (MPU) and Low Voltage Input Card (AI) derive their power from the Power Supply directly. The Digital Switches and the Handheld Display Unit are powered when connected to the LumaCan network.

How are LumaCan Addresses set?

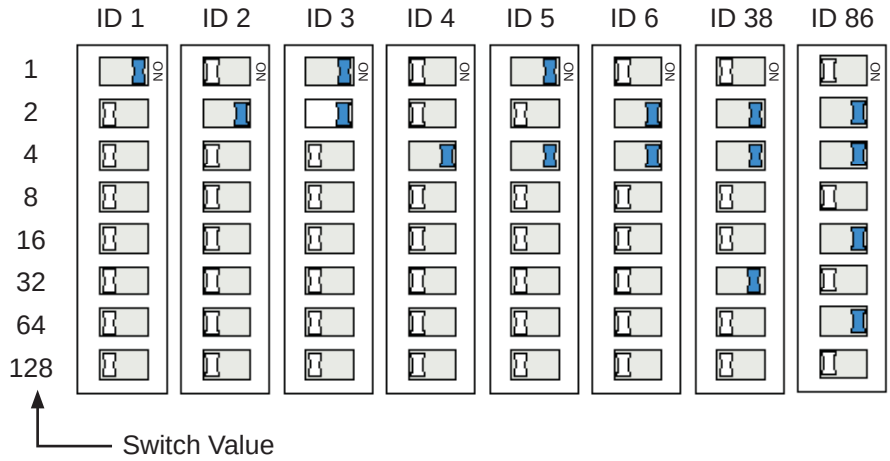
The maximum number of LumaCan addresses on a network is limited to 250 unique addresses starting with ID 1.

There are dip switches that must be set to provide each device with an address. The device address is calculated by adding the values of the switches set in the ON position.



ID Address DIP Switch & Termination Switch

ID Address Value = Sum of Switch Values
ID 86 = 2+4+16+64



What type of data cable is required for LumaCan?

Definitions:

CAT6 Cable - PREFFERED

A 4 pair high performance cable that consists of twisted pair conductors. This cable standard is much higher than that of CAT5 cable and improves the quality of manufacture, twist pattern of the wire pairs, and heavier gage wire. It was designed for performance characteristics of up to 250MHz.

CAT5E Cable

A 4 pair high performance cable that consists of twisted pair conductors. This cable type is typically used for data transmission. The twisting of the pairs provides the cable a certain amount of immunity from unwanted interference.

CAT5 Cable

Do not use this type of cable.

The table below lists the required properties for the Category types. The cable you select for the installation must meet or exceed the parameters listed.

	PREFFERED	
Characteristic	Category 6	Category 5E
Specified frequency range	1 - 250 MHz	1 - 100 MHz
Attenuation	36 dB	24 dB
NEXT	33.1 dB	30.1 dB
Power-sum NEXT	30.2 dB	27.1 dB
ACR	-2.9 dB	6.1 dB
Power-sum ACR	-5.8 dB	3.1 dB
ELFEXT	15.3 dB	17.4 dB
Power-sum ELFEXT	12.3 dB	14.4 dB
Return loss	8 dB	10 dB
Propagation delay	546 nsec	548 nsec
Delay Skew	50 nsec	50 nsec
	PREFFERED	

Blink Warn

This is the Blink Warn Functionality which briefly blinks OFF the lights to warn room occupants that the lights are about to be turned off, turns the lights ON and waits for a button press to o.

BW Time

Blink Warn Time. The BW Time is the length of the warning OFF duration. The time units are seconds. This is user configurable.

BW Delay

Blink Warn Delay. The BW Delay is the length of the waiting ON period. It is during this time that occupants may press a switch button to postpone the turning OFF of the lights. The time units are minutes. This is user configurable.

BW Ovrd

Blink Warn Override. The BW Ovrd is the length of the temporary ON period that starts when occupants press a switch button. When this period of time has elapsed, the Blinkwarn sequence will start again.The time units are

minutes. This is user configurable.

Glossary of Terms

The maximum number of LumaCan addresses on a network is limited to 250 unique addresses starting with ID 1.

There are dip switches that must be set to provide each device with an address. The device address is calculated by adding the values of the switches set in the ON position.

Section 10
Ratings

Ratings

Single-Pole Relay Ratings

RELAY-1TB

RELAY-1CB (Return To Closed)

Single-Pole, Latching Relay Module 50/60 Hz.

- 24-277VAC, 20A, Tungsten Halogen Incandescent
- 24-277VAC, 30A, Ballast
- 347VAC, 20A, Ballast
- 120VAC, 1/2 Hp Motor
- 240/277VAC, 1 Hp Motor

RELAY-1DS Single-Pole Dimming 0-10Vdc, Latching Relay Module, 50/60 Hz.

24-277VAC, 30A, Ballast

347VAC, 20A, Ballast

Class 1 Control 0-10 VDC, 50 mA max sinking

Control wire range #18-#12AWG copper

Control wire terminal torque: 14 IN-LBS

Suitable for use on a circuit capable of delivering not more than 25,000A RMS SYM. at 277VAC max when protected by a circuit breaker having an interrupting capacity of not less than 25,000A RMS SYM. at 277VAC and an ampere rating of not more than 30A.

Suitable for use on a circuit capable of delivering not more than 18,000A RMS SYM. at 347VAC max when protected by a circuit breaker having an interrupting capacity of not less than 18,000A RMS SYM. at 347VAC and an ampere rating of not more than 20A.

Double-Pole Relay Ratings

RELAY-2TB

RELAY-2CB (Return To Closed)

Double-Pole, Latching Relay Module 50/60 Hz.

- 208/240VAC, 20A, Tungsten Halogen Incandescent
- 208/240/480VAC, 30A, Ballast
- 600VAC, 20A, Ballast
- 208/240/480VAC, 1HP Motor

Suitable for use on a circuit capable of delivering not more than 25,000A RMS SYM. at 2407VAC max when protected by a circuit breaker having an interrupting capacity of not less than 25,000A RMS SYM. at 240VAC and an ampere rating of not more than 30A.

Suitable for use on a circuit capable of delivering not more than 14,000A RMS SYM. at 480VAC max when protected by a circuit breaker having an interrupting capacity of not less than 14,000A RMS SYM. at 480VAC and an ampere rating of not more than 30A.

Ratings

Command Module

Power Supply

70 Watts, Class 2

Input: 100-277Vac 50/60Hz

Output: +24Vdc

Ports 1 & 2 Combined 1500 mA ea.

Ports 3 & 4 Combined 1500 mA ea.

Command Module

Input: +24Vdc 1 Watt (plus connect loads), Class 2

Analog Input Board

Input: +24Vdc 1 Watt (plus connect loads), Class 2

Output: +24Vdc

8 Ports at 40 mA ea. (RPM08-108)

16 Ports at 40 mA ea. (RPM16-116)

Enclosure Environmental

NEMA1

Ambient Temperature Range: 0°C - 40°C (32°F - 104°F)

Relative Humidity: < 90% non-condensing

Listings

UL508, UL924, cUL, CEC Title 24 compliant, ASHRAE 90.1 compliant

Warranty

Relay Modules backed by 10-year warranty

Relay Panels backed by 2-year warranty

Remote Input Cabinet

Power Supply

70 Watts, Class 2

Input: 100-277Vac 50/60Hz

Output: +24Vdc

Ports 1 & 2 Combined 1500 mA ea.

Ports 3 & 4 Combined 1500 mA ea.

Analog Input Board

Input: +24Vdc 1 Watt (plus connected loads), Class 2

Output: +24Vdc

8 Ports at 40 mA ea. (RLV08-110)

16 Ports at 40 mA ea. (RLV16-110)

Enclosure Environmental

NEMA1

Ambient Temperature Range: 0°C - 40°C (32°F - 104°F)

Relative Humidity: < 90% non-condensing

Listings

UL508, UL924, cUL, CEC Title 24 compliant, ASHRAE 90.1 compliant

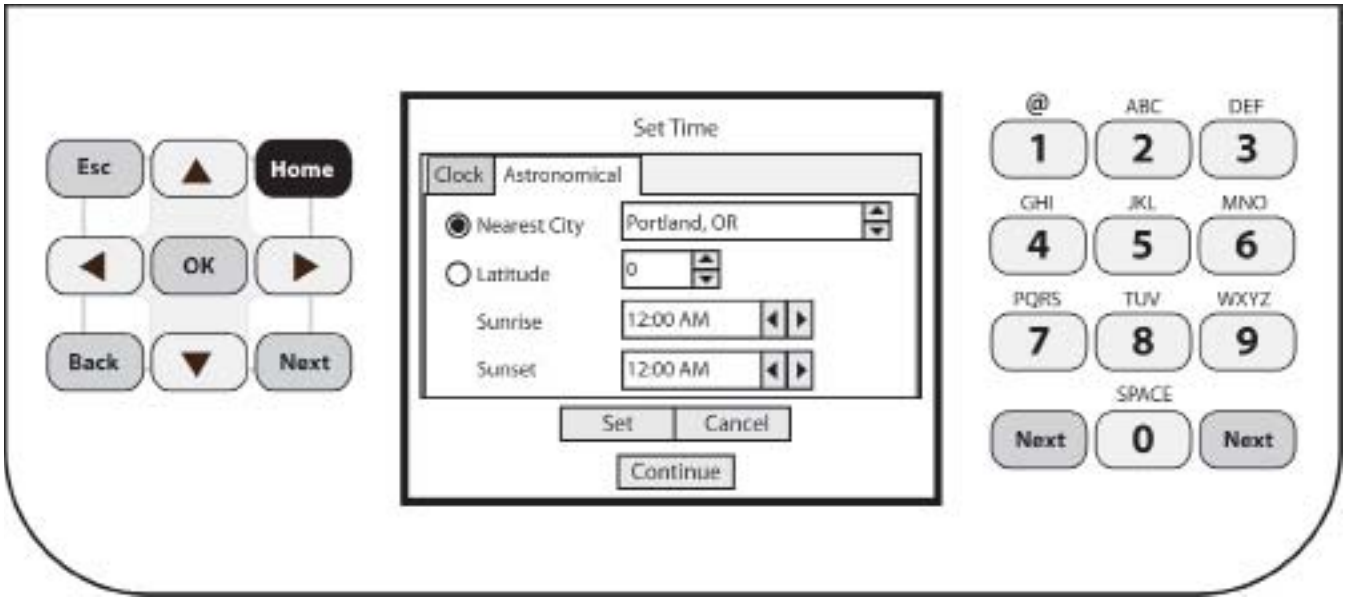
Warranty

Cabinet backed by 2-year warranty

Leviton Manufacturing Co., Inc. Lighting Management Systems

20497 SW Teton Avenue, Tualatin, OR 97062

Telephone: 1-800-736-6682 • FAX: 503-404-5594 • Tech Line (6:00AM-4:00PM P.S.T. Monday-Friday): 1-800-959-6004


Esc
Home
OK
Back
Next
Set Time
Clock
Astronomical
Nearest City
Portland, OR
Latitude
0
Sunrise
12:00 AM
Sunset
12:00 AM
Set
Cancel
Continue
@
ABC
DEF
1
2
3
GHI
JKL
MNO
4
5
6
PQRS
TUV
WXYZ
7
8
9
SPACE
Next
0
Next

GreenMAX®
Programming Manual
Daylight Harvesting and Dimming Module




Built by the industry, for the industry.

GreenMAX Programming Manual

Daylight Harvesting and Dimming Module

V2.14

INDEX **PAGE**

FILENAME
GREENMAX DIMMING AND DAYLIGHT HARVESTING MANUAL V2.14D.VSD

Section 1

Behavior Descriptions and Settings

B1 – Dimming with Manual Control and Auto Off

Operation Description

1. Occupancy Sensor will, upon vacancy, turn Off the lights after delay period expires.
2. Manual operation of dimming module. Switch buttons can be configured for ON/Bright/Dim/OFF function.
3. The Bright and Dim buttons provide fade Up/Down control of the light level.

-- B1 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Dim DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Off DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group

**Range 0 to 100%. A complete Off of relay is represented by 0%.*
***This value is set to created a timed switch button. Time will start when the button is pressed. When this time expires, lights will fade to Off.*

Occupancy Sensor

Device Type	Description	Initial Level	Delay	Override	Assign to
Occupancy Sensor	*Enter as required*	*Ignore*	*Set to a value** *Range 0 to 256*	'N/A'	Relay *or* Group

**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. This behavior can be used with any quantity of buttons and is not exclusive to the 4 button Switch.
3. This behavior can utilize either a Digital switch or a Low Voltage switch button.
4. There is no photocell involved with this behavior.
5. Switch buttons can be configured as Timed Switch buttons.
6. The Occupancy Sensor will turn the lights Off only.

B2 – Dimming with Manual Control and Auto ON/Off

Operation Description

1. Occupancy Sensor will, upon occupancy, turn On the lights to the configured Initial Level.
2. Manual operation of dimming module. Switch buttons can be configured for ON/Bright/Dim/OFF function.
3. The Bright and Dim buttons provide fade Up/Down control of the light level.
4. Occupancy Sensor will, upon vacancy, turn Off the lights after delay period expires.

-- B1 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Dim DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Off DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group

**Range 0 to 100%. A complete Off of relay is represented by 0%.*
***This value is set to created a timed switch button. Time will start when the button is pressed. When this time expires, lights will fade to Off.*

Occupancy Sensor

Device Type	Description	Initial Level	Delay	Override	Assign to
Occupancy Sensor	*Enter as required*	*Set to a value*** *Range 0 to 100%*	*Set to a value** *Range 0 to 256*	'N/A'	Relay *or* Group

**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself*
***This is percentage of output of the 0-10VDC module*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. This behavior can be used with any quantity of buttons and is not exclusive to the 4 button Switch.
3. This behavior can utilize either a Digital switch or a Low Voltage switch button.
4. There is no photocell involved with this behavior.
5. Switch buttons can be configured as Timed Switch buttons.
6. The Occupancy Sensor will turn the lights both On and Off.
7. The lights will fade from level to level including both On and Off.

B3 – Dimming with Auto ON/OFF

Operation Description

1. Occupancy Sensor will, upon occupancy, turn On the lights to the configured Initial Level.
2. Occupancy Sensor will, upon vacancy, turn Off the lights after delay period expires.

-- B3 – DEVICE SETTINGS --						
	Device Type	**Description**	**Initial Level**	**Delay**	**Override**	**Assign to**
Occupancy Sensor	Occupancy Sensor	*Enter as required*	*Set to a value*** *Range 0 to 100%*	*Set to a value** *Range 0 to 256*	'N/A'	Relay *or* Group
		**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself* ***This is percentage of output of the 0-10VDC module*				

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. There are no photocells or switches involved with this behavior.
3. The Occupancy Sensor will turn the lights both On and Off.
7. The lights will fade between On and Off.

B4 – Dimming with Manual ON/Bright/Dim/OFF

Operation Description

1. Manual operation of dimming module.
2. Switch buttons can be configured for ON/Bright/Dim/OFF function.
3. The Bright and Dim buttons provide fade Up/Down control of the light level.

-- B4 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Dim DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Off DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group

**Range 0 to 100%. A complete Off of relay is represented by 0%.*
***This value is set to created a timed switch button. Time will start when the button is pressed. When this time expires, lights will fade to Off.*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. This behavior can be used with any quantity of buttons and is not exclusive to the 4 button Switch.
3. This behavior can utilize either a Digital switch or a Low Voltage switch button.
4. There is no photocell or occupancy sensor involved with this behavior.
5. Switch buttons can be configured as Timed Switch buttons.

B6 – Dimming ON Command

Operation Description

1. Turn On at a specific time.

-- B6 – DEVICE SETTINGS --
No devices required

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. There are no photocells, occupancy sensors, or switches involved with this behavior.

B7 – Dimming OFF Command

Operation Description

1. Turn Off at a specific time.

-- B7 – DEVICE SETTINGS --
No devices required

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. There are no photocells, occupancy sensors, or switches involved with this behavior.

B8 – Dimming with Auto ON/OFF and Light Hold Off

Operation Description

1. Occupancy Sensor will, upon occupancy, turn On the lights to the configured Initial Level.
2. Occupancy Sensor will, upon vacancy, turn Off the lights after delay period expires.
3. System monitors Photocell input signal and compares it to the Photocell Target Level. Lights will turn Off or will be held Off above the Target Level. Below the Target Level, lights will be permitted to turn On.

-- B8 – DEVICE SETTINGS --

Occupancy Sensor

Device Type	Description	Initial Level	Delay	Override	Assign to
Occupancy Sensor	*Enter as required*	*Set to a value** Range 0 to 100%*	*Set to a value* Range 0 to 256*	'N/A'	Relay *or* Group

**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself*
***This is percentage of output of the 0-10VDC module*

Photocell

Device Type	Description	Daylight Harvesting Speed	Deadband	Artificial Zero	Target Level	Assign to
Closed Loop	*Enter as required*	Ignore	*Set to a value 10% is typical*	'Disabled'	*Set to required**	Relay *or* Group

** Target level is percentage of photocell input range and is the desired measured light level in the space*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. There is no switch involved with this behavior.
3. The Occupancy Sensor will turn the lights both On and Off if the light level is below the Photocell Target Level.
7. The lights will fade between On and Off.

B9 – Dimming with Manual ON/Bright/Dim/OFF, Auto OFF and Light Hold Off

Operation Description

1. Occupancy Sensor will turn OFF lights with vacany detection after delay period expires.
2. Switch buttons can be configured for ON/Bright/Dim/OFF function. The Bright and Dim buttons provide fade Up/Down control of the light level.
3. System monitors Photocell input signal and compares it to the Photocell Target Level. Lights will turn Off or will be held Off above the Target Level. Below the Target Level, lights will be permitted to turn On.

-- B9 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Dim DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Off DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group

**Range 0 to 100%. A complete Off of relay is represented by 0%.*
***This value is set to created a timed switch button. Time will start when the button is pressed. When this time expires, lights will fade to Off.*

Occupancy Sensor

Device Type	Description	Initial Level	Delay	Override	Assign to
Occupancy Sensor	*Enter as required*	*Ignore*	*Set to a value** *Range 0 to 256*	'N/A'	Relay *or* Group

**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself*

Photocell

Device Type	Description	Daylight Harvesting Speed	Deadband	Artificial Zero	Target Level	Assign to
Closed Loop	*Enter as required*	Ignore	*Set to a value 10% is typical*	'Disabled'	*Set to required**	Relay *or* Group

** Target level is percentage of photocell input range and is the desired measured light level in the space*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. This behavior can be used with any quantity of buttons and is not exclusive to the 4 button Switch.
3. This behavior can utilize either a Digital switch or a Low Voltage switch button.
3. The Occupancy Sensor will turn the lights Off.
7. The lights will fade between On and Off.

B10 – Daylight Harvesting with Photocell, Manual ON/Bright/Dim/OFF, Auto ON/OFF

Operation Description

1. Occupancy Sensor will turn On lights with detection of Area occupancy. Vacancy will turn Off the lights after delay period expires.
2. Switch buttons can be configured for ON/Bright/Dim/OFF function. The Bright and Dim buttons provide a temporary manual override of the light level. The duration of the manual override is configurable.
3. The Photocell Target Level drives the daylight harvesting by continuously measuring the light level and adjusting the output of the Dimming Module accordingly.

-- B10 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Ignore*	'N/A'	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Ignore*	'N/A'	*Set to a value* Range 0 to 256*	Relay *or* Group
Dim DS Button	*Enter as required*	*Ignore*	'N/A'	*Set to a value* Range 0 to 256*	Relay *or* Group
Off DS Button	*Enter as required*	*Ignore*	'N/A'	'N/A'	Relay *or* Group

**The Override time represents the length of time the temporary manual override of the photocell Target Level will be in effect. Pressing these buttons will initialize the override by increasing or decreasing the light level.*

Occupancy Sensor

Device Type	Description	Initial Level	Delay	Override	Assign to
Occupancy Sensor	*Enter as required*	*Ignore*	*Set to a value* Range 0 to 256*	'N/A'	Relay *or* Group

**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself*

Photocell

Device Type	Description	Daylight Harvesting Speed	Deadband	Artificial Zero	Target Level	Assign to
Closed Loop	*Enter as required*	'Fast'	*Set to a value 10% is typical*	'Disabled'	*Set to required**	Relay *or* Group

** Target level is percentage of photocell input range and is the desired measured light level in the space*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. The Closed Loop photocell is the best suited for this application.
3. The Target Level of the photocell drives the Daylight Harvesting.
4. The system monitors the input value from the photocell and compares it to the photocell Target Level. If the input value is below the Target Level the DS relay module will increase output. If the input level is above the target Level, the DS relay module will decrease output.
5. The Daylight Harvesting Speed setting will determine the speed of response from the system for changes in light levels. There are three settings; Fast, Slow, test.
6. When the occupancy sensor turns on the relay in response to someone entering the Area, the lights will fade up to the Photocell Target Level or the last known level if a manual override is still in effect.
7. All of the devices listed above must be configured for this Behavior to operate properly.

B11 – Dimming with Manual ON/OFF and Light Hold Off

Operation Description

1. Switch buttons can be configured for ON/Bright/Dim/OFF function. The Bright and Dim buttons provide fade Up/Down control of the light level.
3. System monitors Photocell input signal and compares it to the Photocell Target Level. Lights will turn Off or will be held Off above the Target Level. Below the Target Level, lights will be permitted to turn On.

-- B11 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Dim DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Off DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group

**Range 0 to 100%. A complete Off of relay is represented by 0%.*
***This value is set to created a timed switch button. Time will start when the button is pressed. When this time expires, lights will fade to Off.*

Photocell

Device Type	Description	Daylight Harvesting Speed	Deadband	Artificial Zero	Target Level	Assign to
Closed Loop	*Enter as required*	Ignore	*Set to a value 10% is typical*	'Disabled'	*Set to required**	Relay *or* Group

** Target level is percentage of photocell input range and is the desired measured light level in the space*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. This behavior can be used with any quantity of buttons and is not exclusive to the 4 button Switch.
3. This behavior can utilize either a Digital switch or a Low Voltage switch button.
3. There is no Occupancy Sensor involved with this behavior.
7. The lights will fade between On and Off.

Section 2

Programming Details

B4 Dimming with Manual Control - Programming Overview

This section will present the typical steps required to program a GreenMAX system to provide Dimming functionality.

The fundamental components required for Dimming control are:

- GreenMAX Dimming and Switching Relay Modules – RELAY-1DS
- 4 Button Switch - either Low Voltage or Digital

Office Dimming Schedule

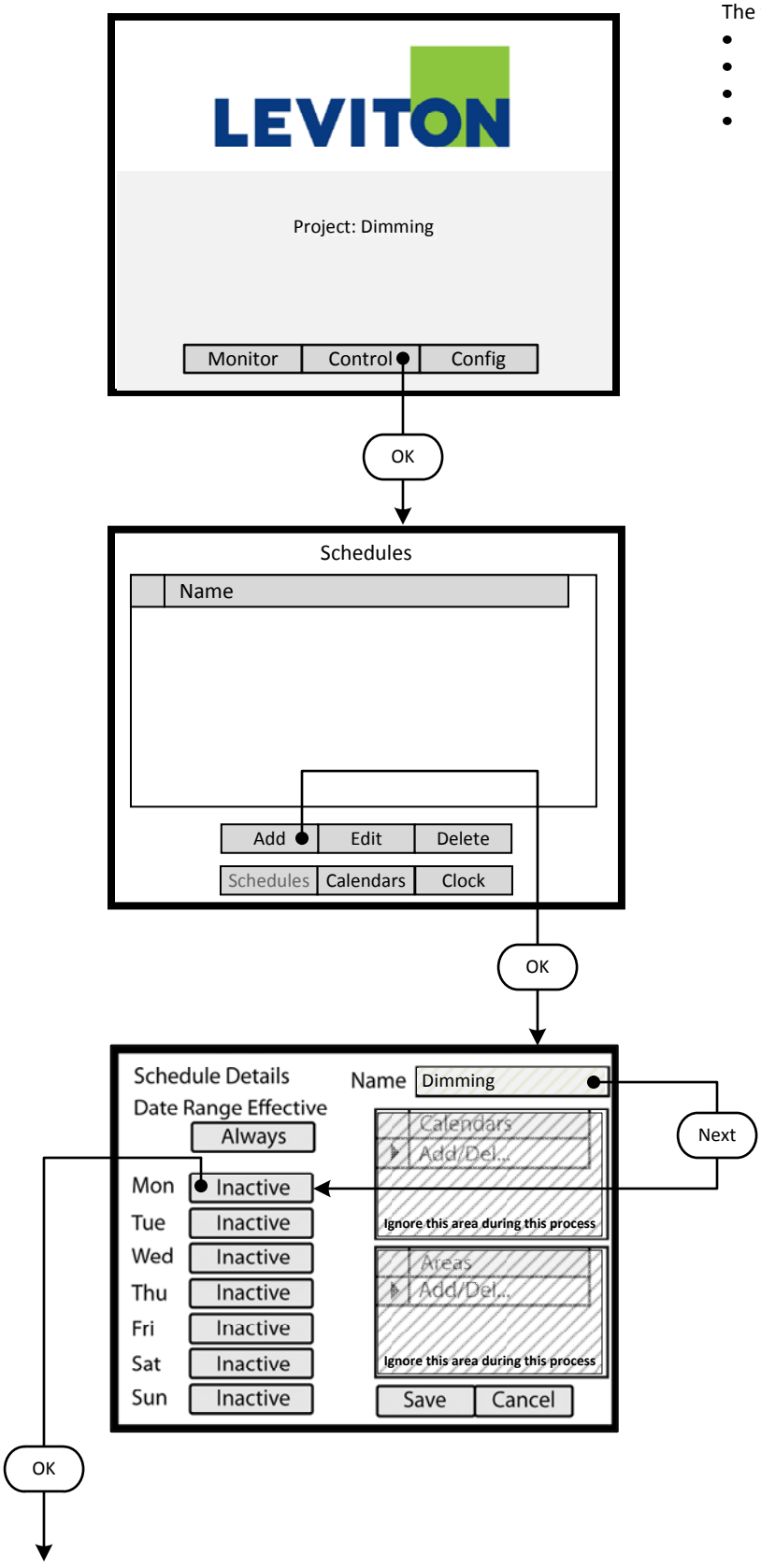
Monday to Sunday

8:00am	Office Dimming	B4 Lights will be controlled by: Switch Buttons (4): On Button – turn ON at 80% Bright Button Dim Button Off Button
5:00pm	OFF sweep	B7 Lights will be turned OFF

Programming Checklist

- ❑ Create a schedule.
- ❑ Configure switch buttons. (On/Bright/Dim/Off)
- ❑ Create an Area.
- ❑ Assign a schedule to an Area.
- ❑ Add relays to Area.
- ❑ Add switch buttons to area.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1: Create a Schedule

Programming operation of the GreenMAX is based on running Schedules. A Schedule can be considered a default seven (7) day pattern of operation.

The following rules apply:

- An Area requires a Schedule to operate.
- Only one Schedule can be assigned to an Area.
- A Schedule can be assigned to multiple Areas.
- Schedules reside in the GreenMAX system and can be accessed through the Handheld Display Unit (HDU).

Step 1.1

To create a Schedule, enter the <**Control**> section of the Handheld Display Unit (HDU) software.

Understanding the Screen
There are three sections of the HDU software. The sections under the buttons are:
<**Monitor**> - *Used to check the system time/date, relay status*
<**Control**> - *Access Scheduling*
<**Config**> - *Configuration of system including set-up of Areas*

Step 1.2

The first <**Control**> HDU screen lists the existing Schedules available in your GreenMAX System. The screen shown indicates that there are no Schedules available or created.

By navigating to <**Add**> and pressing OK, this will initiate the creation of a Schedule.

Other Options
To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Edit**> *and press OK, to initiate the modification of the selected Schedule.*

To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Delete**> *and press OK, to erase the selected Schedule.*

Step 1.3

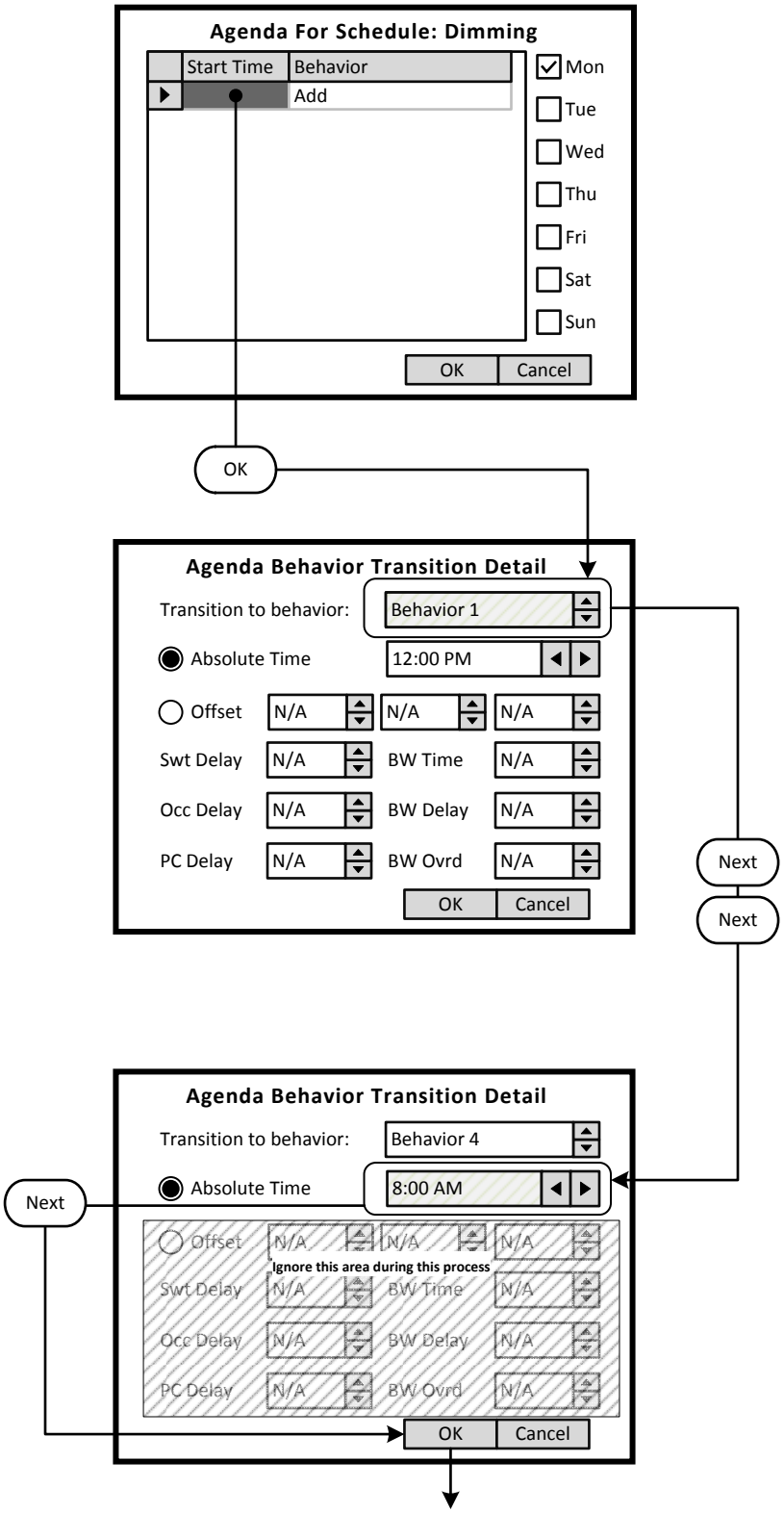
The screen is entered with the -**Name**- field highlighted. Enter the desired name of your Schedule using the alpha numeric keypad of the HDU. When complete, press the NEXT button on the navigation keypad. The cursor will advance to the <**Monday**> button.

Understanding the Screen
The label value of "Inactive" shown on the <**Monday**> *button indicates that there is currently no Behavior transitions programmed for this day. The same is true for all days, Monday through Sunday, of this schedule.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.4

The screen is entered at the first line of the Agenda. There are a total of 24 Behavior Transition times available per day. Clicking OK will advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
*<**OK**> - Will save the settings or changes*
*<**Cancel**> - Will discard the changes*

Step 1.5

The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 4.

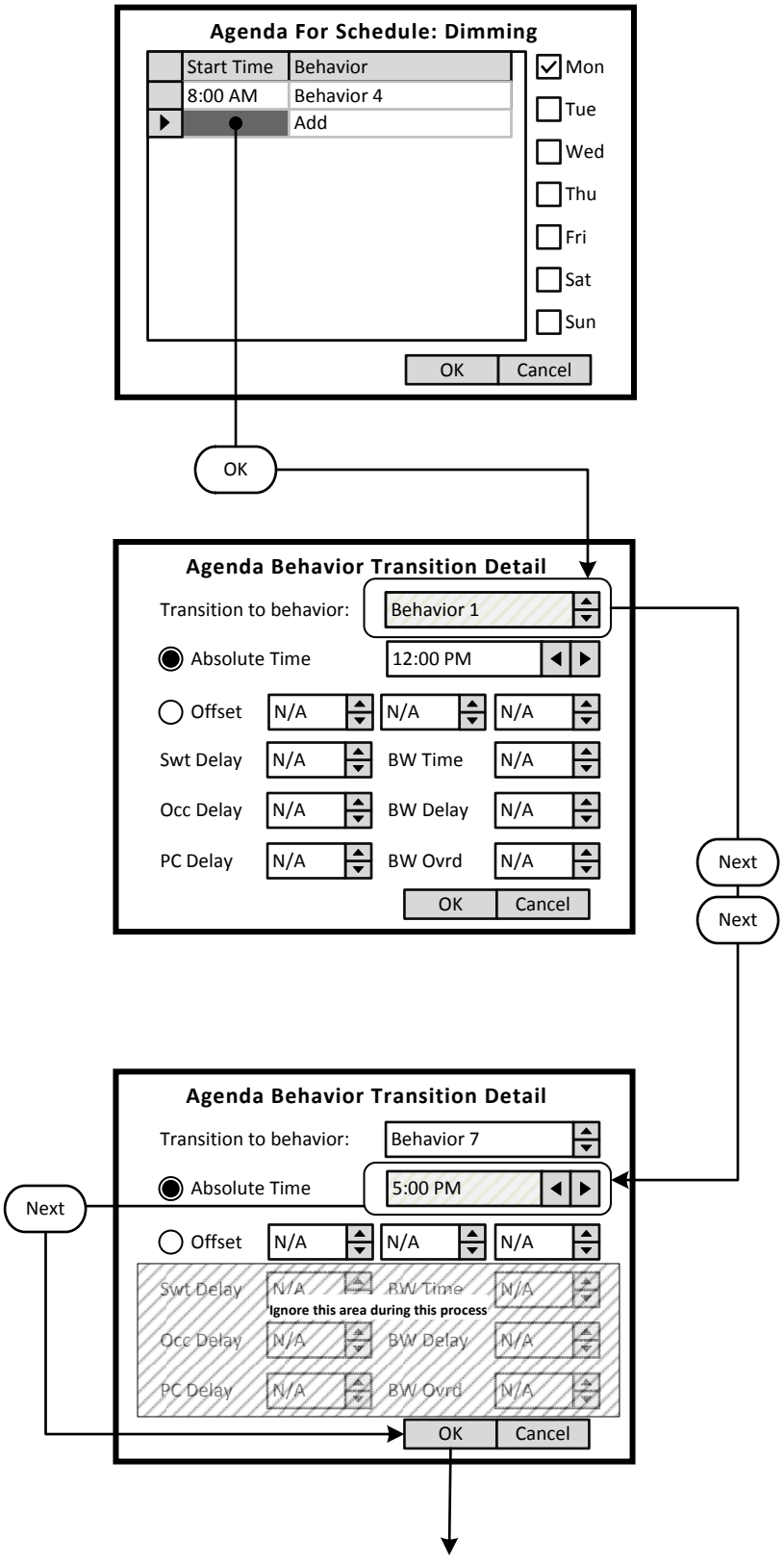
Understanding the Screen
<**Offset**> *provides access to Sunrise and Sunset settings for Astronomical clock times.*
-**BW Time**-, -**BW Delay**-, -**BW Ovrd**- - *These are the Blinkwarn settings that apply to this Behavior Transition only. They will override the Global Blinkwarn Settings set in the System Settings section.*

Step 1.6

Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 8:00 AM.

Understanding the Screen
*-**Swt Delay**- is used if the switch in the associated Area is to function as a Timed Off switch. This is the amount of time the lights will stay On after a button press, and before they will turn Off.*
*-**Occ Delay**- This is the amount of time the lights will stay On after the occupancy sensor does not detect occupancy and before they will turn Off.*
*-**PC Delay**- This is the amount of time the lights will stay On after the photocell trigger point is exceeded and before they will turn Off.*

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



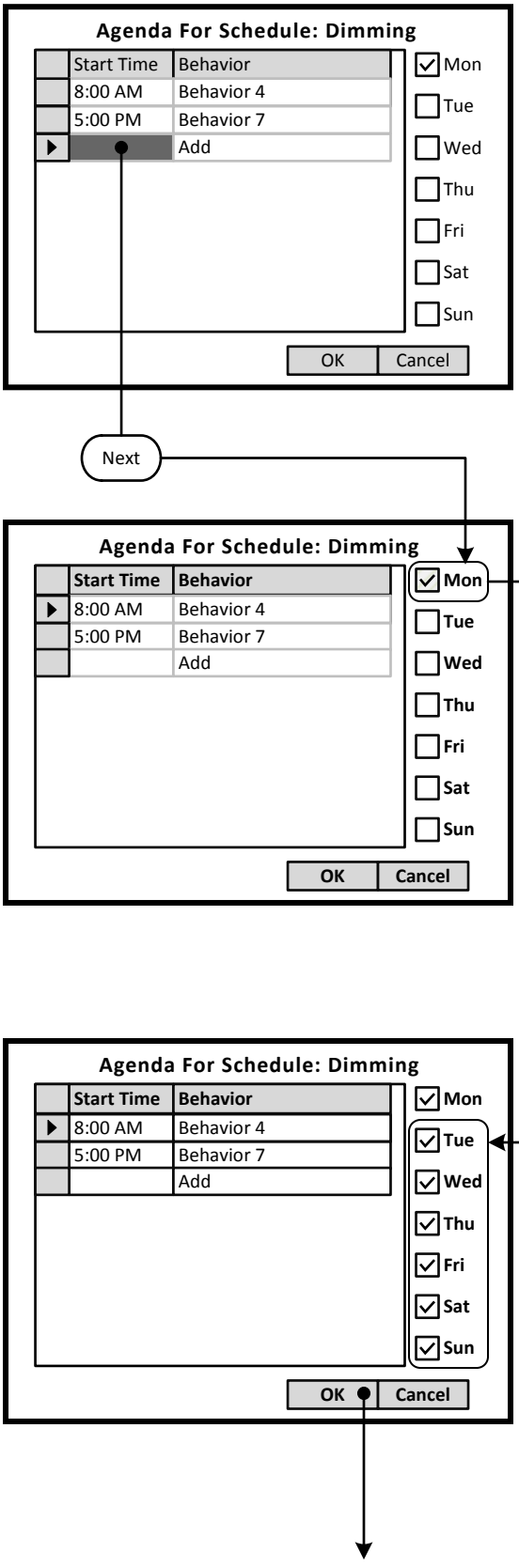
Step 1.7
Navigate to the Add line of the list, in this case the second line. Click OK to advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 4 will occur Monday at 8:00 AM.

Step 1.8
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 7 (OFF).

Step 1.9
Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 5:00 PM. When complete, use the NEXT button to navigate to the **<OK>** on screen button.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.10
To apply this Agenda or pattern of Behavior to each day of the week press Next to advance to the Day column.

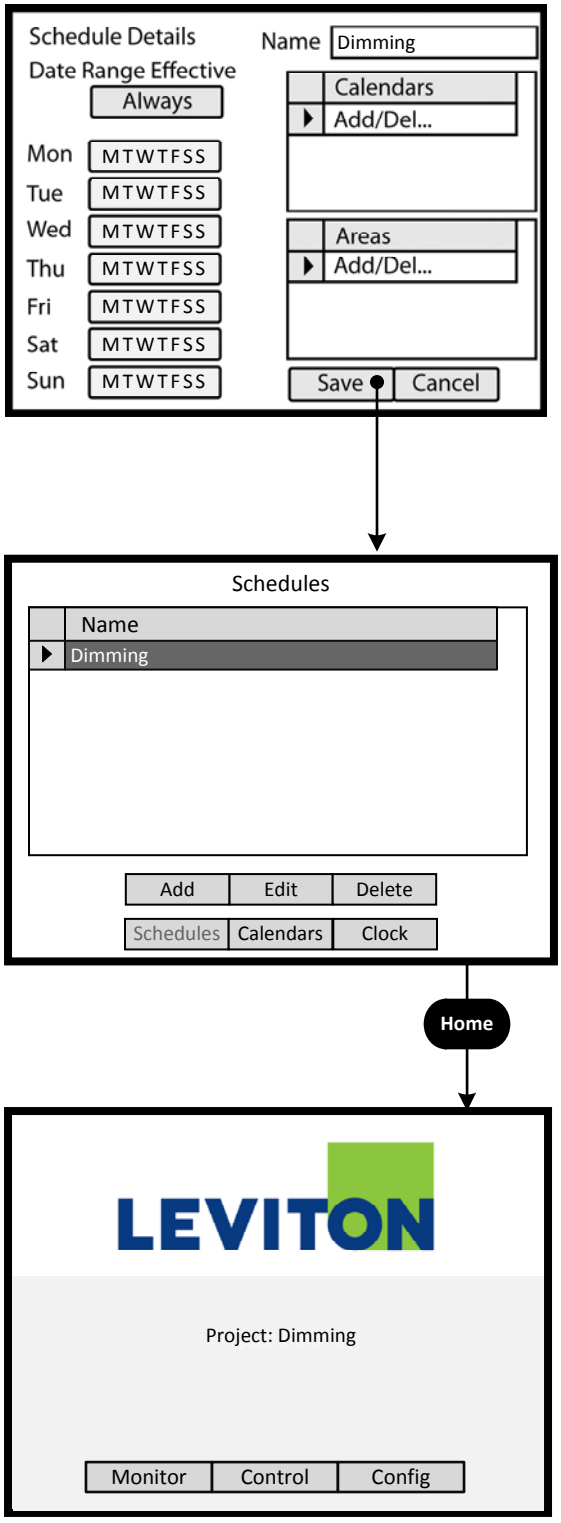
Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 4 will occur Monday at 8:00 AM.
A transition to Behavior 7 will occur Monday at 5:00 PM.

Step 1.11
Press Next to the -**Tuesday**- check box.
Press -**OK**- to check the box, this will add Tuesday to the active list.

Step 1.12
Use a combination of the NEXT and OK to fill in the Tuesday through Sunday check boxes.

Understanding the Screen
This Agenda only applies to Monday through Sunday.
A transition to Behavior 4 will occur each day at 8:00 AM.
A transition to Behavior 7 will occur each day at 5:00 PM.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.13
To save the Schedule, press the NEXT button on the navigation keypad to advance to the <**Save**> button.

Understanding the Screen
The label value of "MTWTFSS -" on the <**Monday>** *through* <**Sunday**> *indicates that the same Agenda applies to each of these days.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

Step 1.14
There is only one Schedule available in the system for the dimming pattern of behavior.

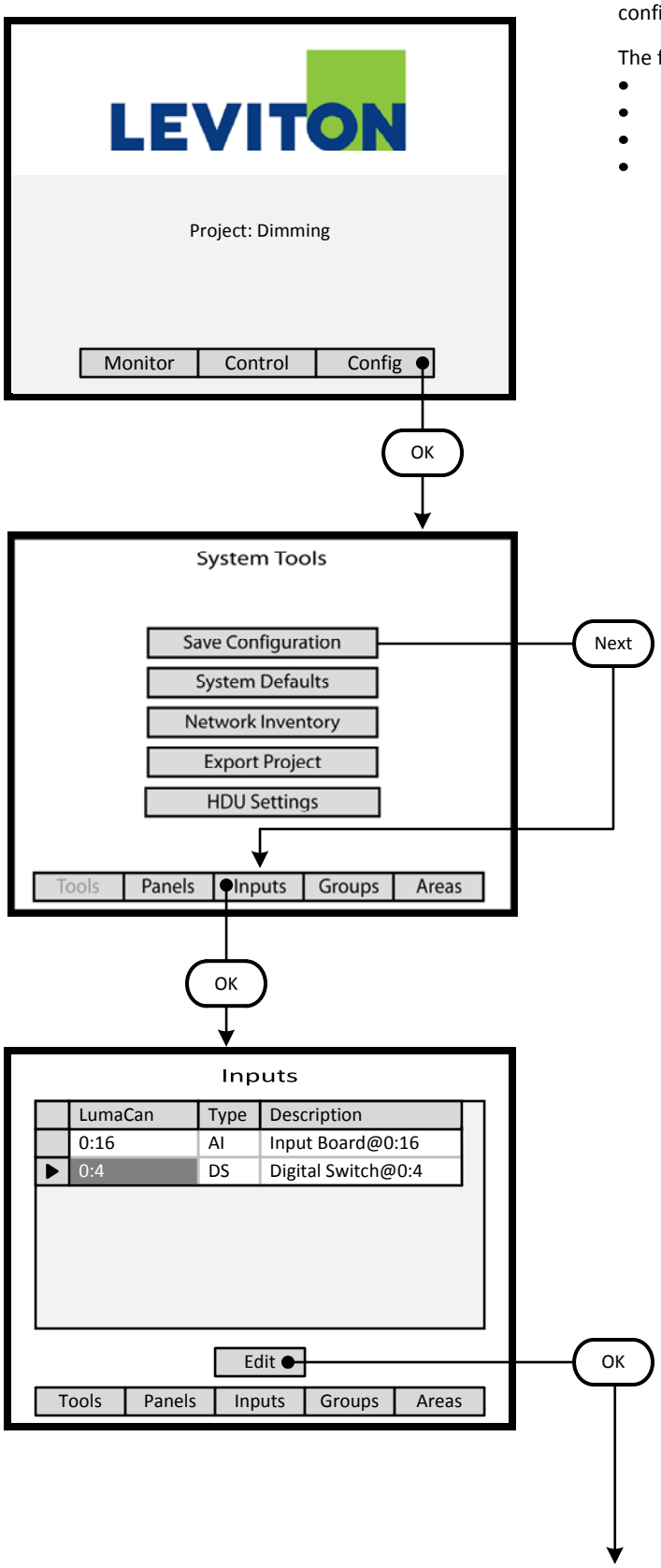
To navigate to the Home screen press the HOME button.

Other Options
To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <***Edit***> *and press OK, to initiate the modification of the selected Schedule.*

To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <***Delete***> *and press OK, to erase the selected Schedule.*

To adjust the system clock, navigate to <***Clock***> *and press OK.*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2: Configure Devices

The GreenMAX can be configured to handle a wide variety of input devices. These devices operate at +24vdc and are wired to an input terminal on the Low Voltage (AI) board. Each terminal port must be configured to match the device and its expected functionality.

The following Low Voltage input devices can be connected to the system:

- Occupancy sensors.
- Photocells.
- Switches.
- Contact closures.

Step 2.1

The configuration steps of the Low Voltage Input Card is performed in the <**Config>** section of the HDU software.

Understanding the Screen

There are three sections of the HDU software. The other two sections under the buttons are:
*<**Monitor**> - Used to check the system time, relay status*
*<**Control**> - Access Scheduling*

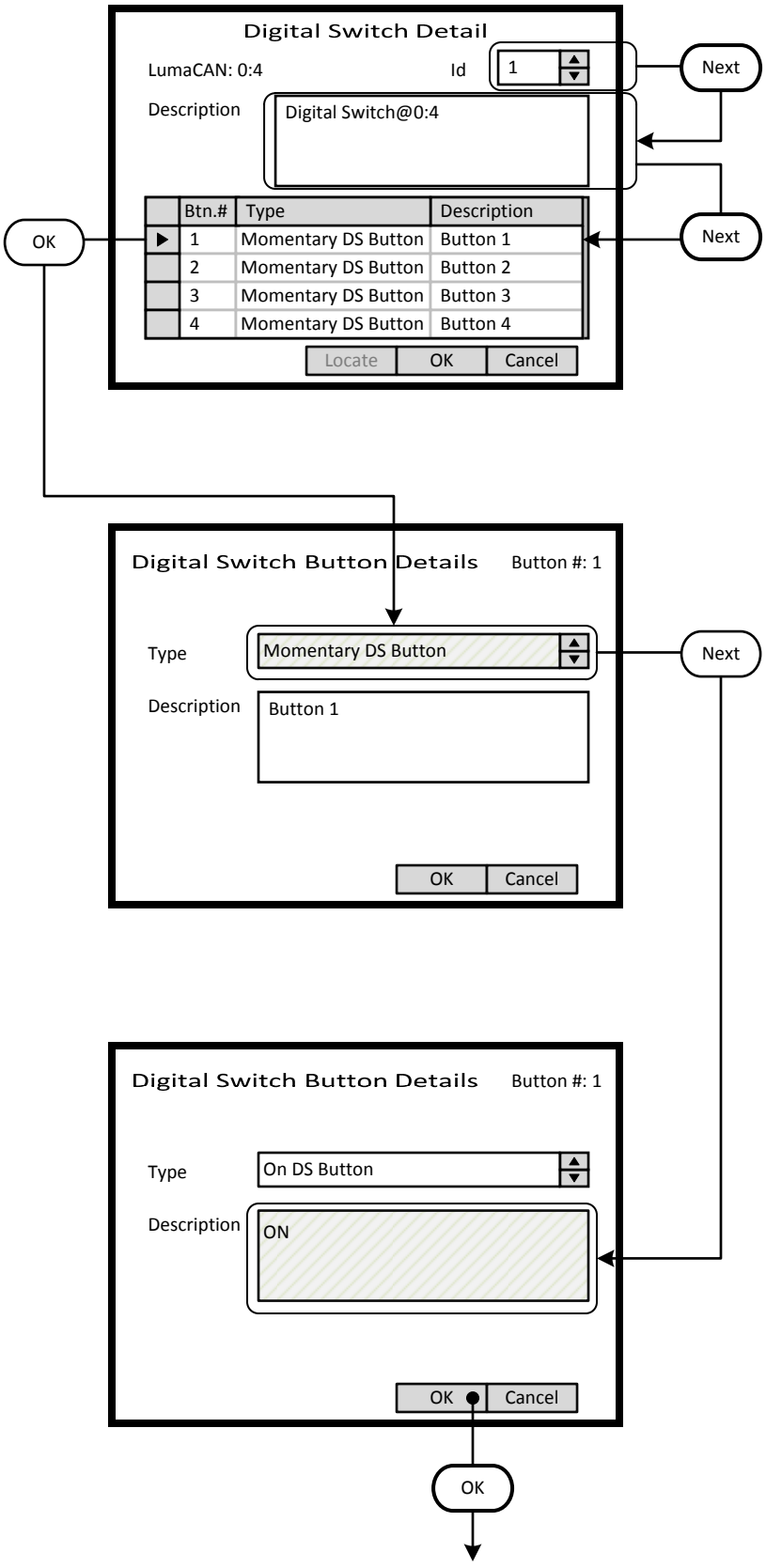
Step 2.2

Use a combination of the UP and DOWN arrows as well as the NEXT button to navigate to the <**Inputs**> onscreen button. Press OK to select.

Step 2.3

The **Inputs** listing shows a Digital Switch at LumaCan ID 4. This is a 4 button Digital Switch to be used for Dimming control. Highlight the device and move the indicator to the appropriate device line. Use the UP and DOWN arrows to move about the list. Use NEXT to navigate to the <**Edit**> button.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.4

The **Digital Switch Detail** screen provides an ID setting for informational purposes. This can match the switch number on the building floor plan. For this exercise this will be set to 12.

A switch -**Description**- field is provided that can be filled with a maximum of 25 characters of information.

Button function must be configured. Highlight the Button number and press OK to enter the editing screen.
These fields fill the list on the previous screen.

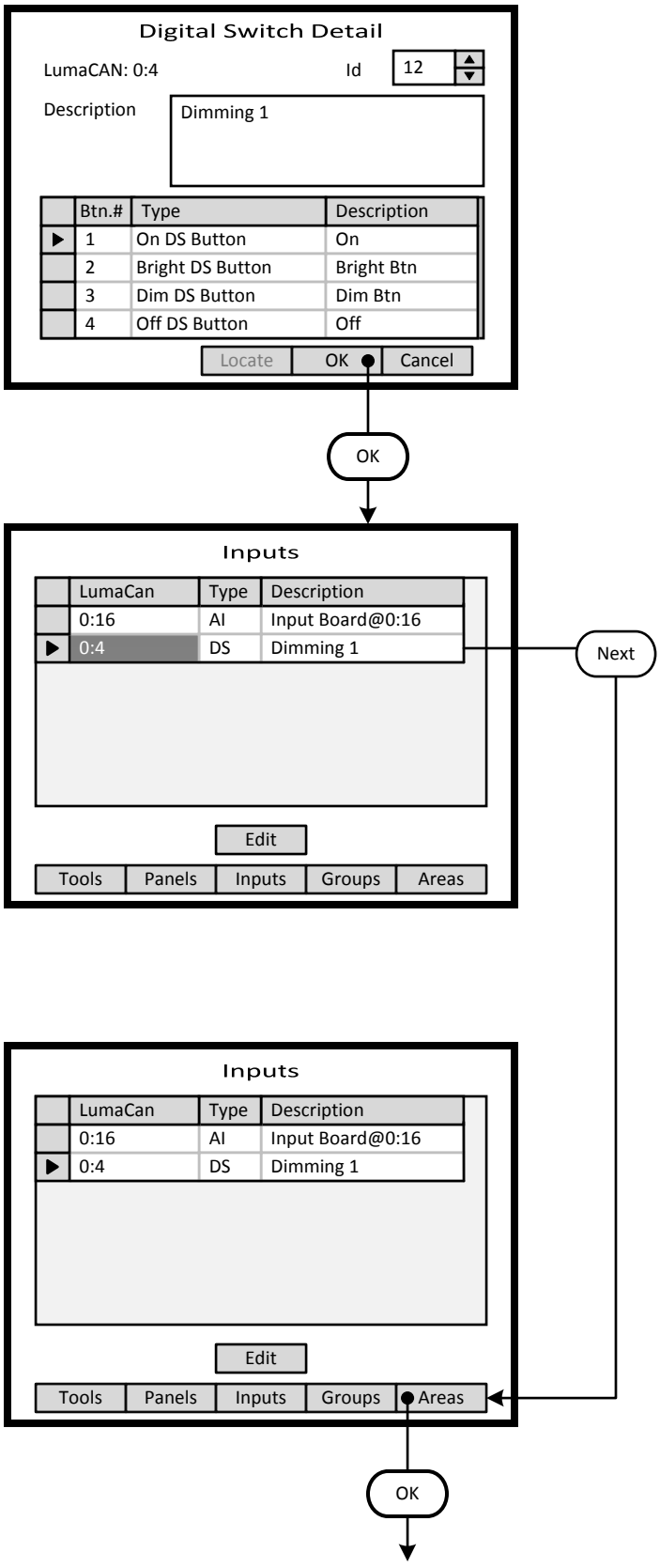
Use the UP or DOWN arrows on the keypad to navigate up or down the list.

Step 2.5

The Digital Switch Button Details screen is used to configure the individual button function and to name the button. Use the UP and DOWN arrows on the keypad to display the desired button function.
The Description field should be used to document the function of the individual buttons. This field is for user reference only.

Understanding the Screen
The type options are:
- *Momentary DS Button*
- *On DS Button*
- *Bright DS Button*
- *Dim DS Button*
- *Off DS Button*

Key
<Add> On screen button.
-Name- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.6
This illustration shows the recommended configuration for a Digital Switch used for dimming control application. The button Type fields should match those shown. Each field should be adjusted individually. Button descriptions are entered on the Button Detail Screen shown previous.

Use the UP or DOWN arrows on the keypad to navigate up or down the list.

Use NEXT and BACK to navigate between sections on the screen.

Understanding the Screen
The ID number are for information purposes and can be used to match assigned project switch numbers.

Step 2.7
The Inputs list has a Digital Switch at ID 4 and is described as Dimming 1.

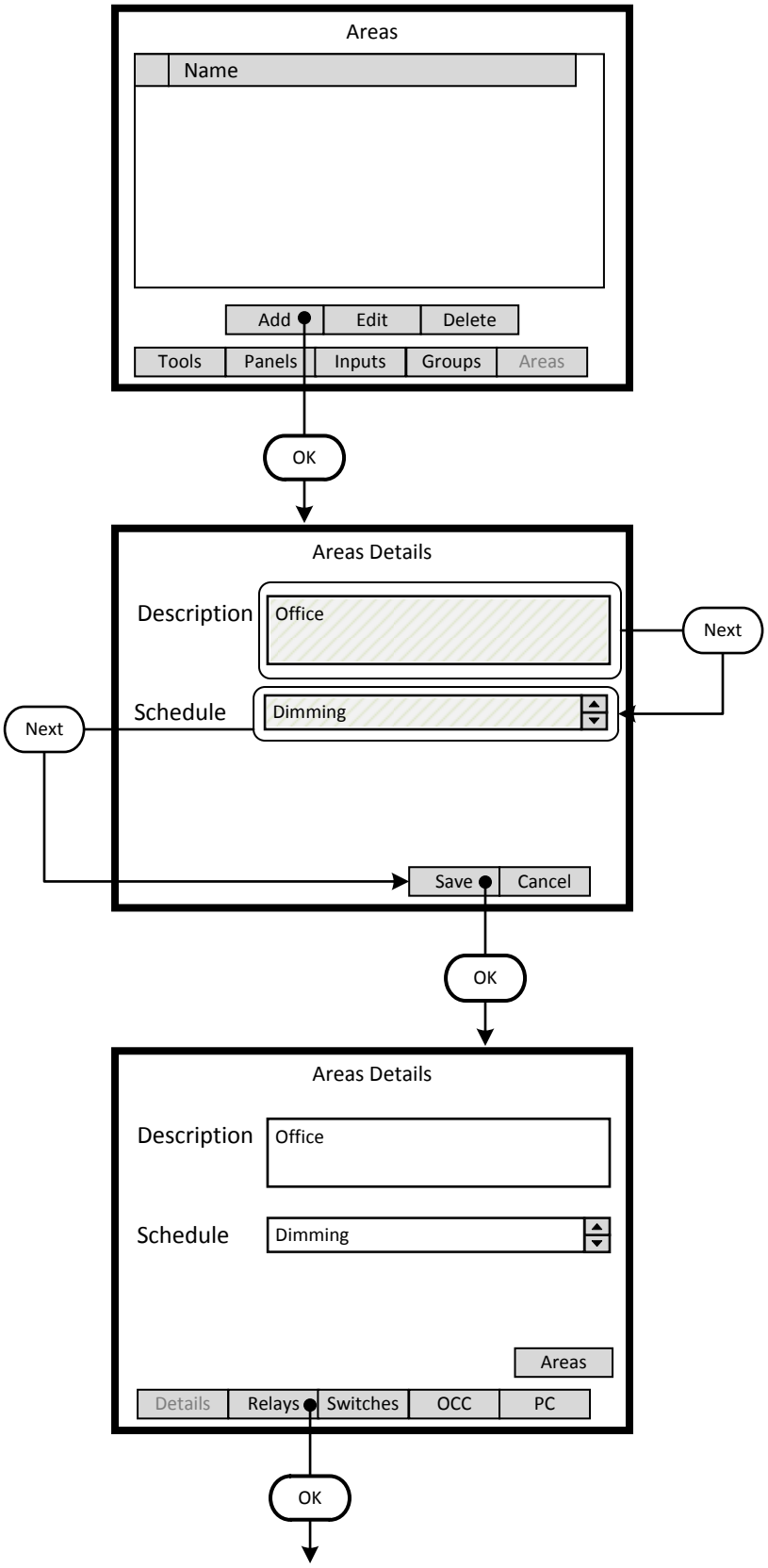
Use the UP and DOWN arrows to move about the list. Use NEXT to navigate to the <**Areas**> button.

Step 2.8
The Inputs list has an Low Voltage Input Board (AI) at LumaCan ID 16 and a Digital Switch (DS) at LumaCan ID 4 that is described as Dimming 1.

Use NEXT to navigate to the <**Areas**> button. Press OK to advance to the Areas maintenance screen.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

Step 3: Create an Area



Step 3.1

The **Areas** screen lists all the current Areas available in the system. At this step there are no existing Areas. To create a new Area navigate to the <**Add**> onscreen button and press OK.

Understanding the Screen
There are no Areas in this system.
Description of the onscreen buttons:
<***Edit***> *selecting this onscreen button will allow editing of the highlighted Area in the list.*
<***Delete***> *selecting this onscreen button will permanently remove the highlighted Area from the list.*
<***Tools***> *use to navigate to the System Tools screen.*
<***Panels***> *use to navigate to the Relay Panel Detail Screen*
<***Groups***> *use to navigate to the Group building screen*
<***Areas***> *use to navigate to the Areas configuration screen*

Step 3.2

Enter the desired Area name and detail in the **-Description-** field. Enter as much information as practical.
The Area must be assigned to a Schedule. An area can only be assigned to one schedule at a time. All of the available system Schedules will appear in the **-Schedule-** list box.

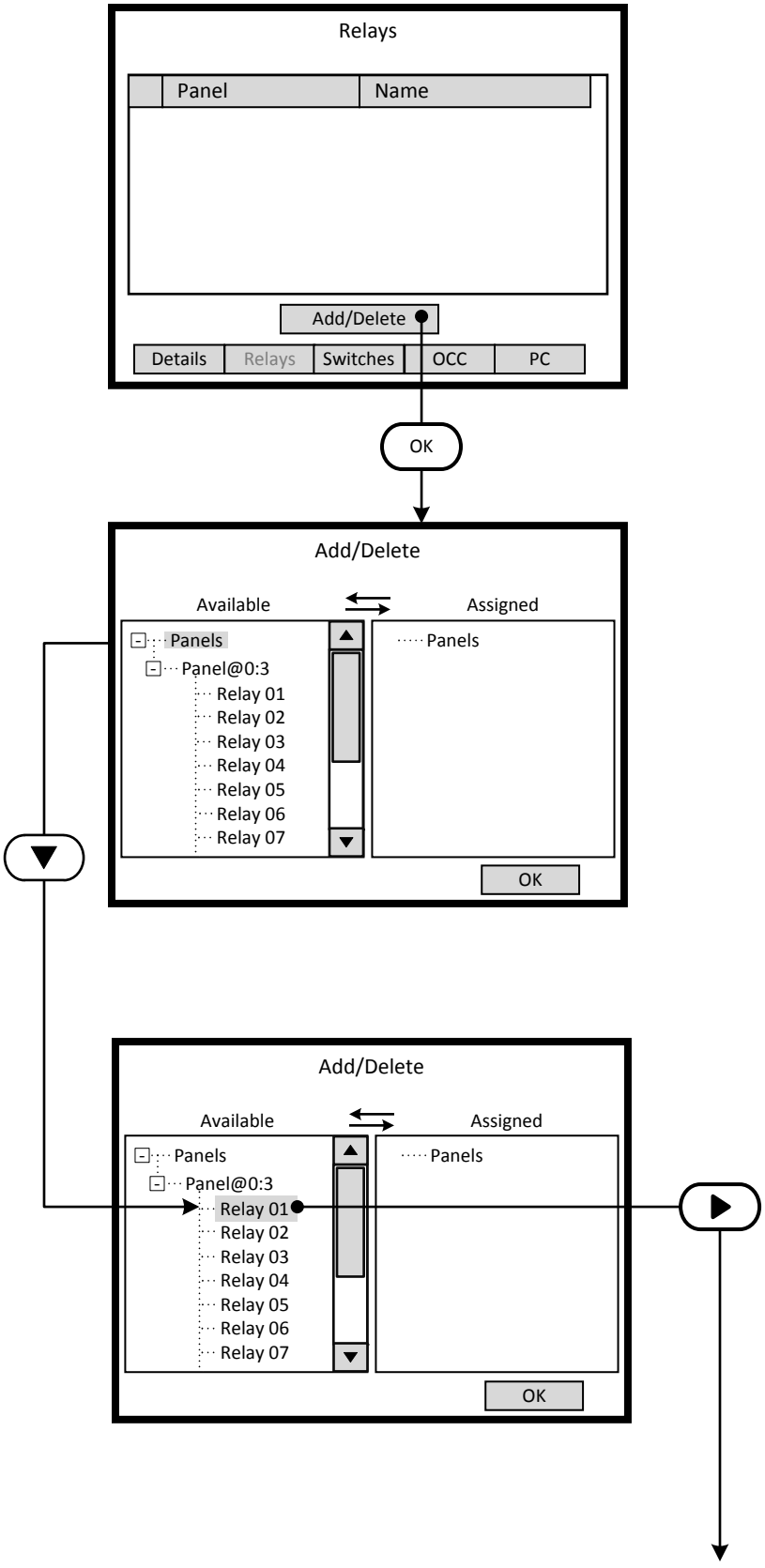
Understanding the Screen
*To appear in the **-Schedule-** list box, Schedules must be created prior to entering this screen. See the "Create a Schedule" section.*
Description of the onscreen buttons:
<***Save***> *selecting this onscreen button will create the Area, save it, and add advance to the next screen*
<***Cancel***> *used to discard entries*

Step 3.3

The newly created Area will contain relays and associated control devices. Additional navigation buttons are available to navigate to screens that populate or edit the contents of the Area. To add relays to the Area, navigate to the <**Relay**> onscreen button and press OK.

Understanding the Screen
Description of the onscreen buttons:
<***Areas***> *use to navigate to the Areas list screen*
<***Relays***> *selecting this onscreen button will allow the addition/editing of assigned relays*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***OCC***> *selecting this onscreen button to add/edit assigned Occupancy Sensors*
<***PC***> *selecting this onscreen button to add/edit assigned Photocells*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 3.4

The **Relays** screen lists all the current relays assigned to the Area. To add a new relay to the Area navigate to the <**Add/Delete**> onscreen button and press OK.

Understanding the Screen
There are currently no relays assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the **Area Details** screen*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***OCC***> *selecting this onscreen button to add/edit assigned Occupancy Sensors*
<***PC***> *selecting this onscreen button to add/edit assigned Photocells*

Step 3.5

The left side of the screen under the heading -**Available**- lists all of the relays that have not been assigned to an Area. If the desired relay is not on this list it has been assigned to another Area. Relays are displayed according to the panel they are installed in. All unassigned relays in the system can be seen on this list.

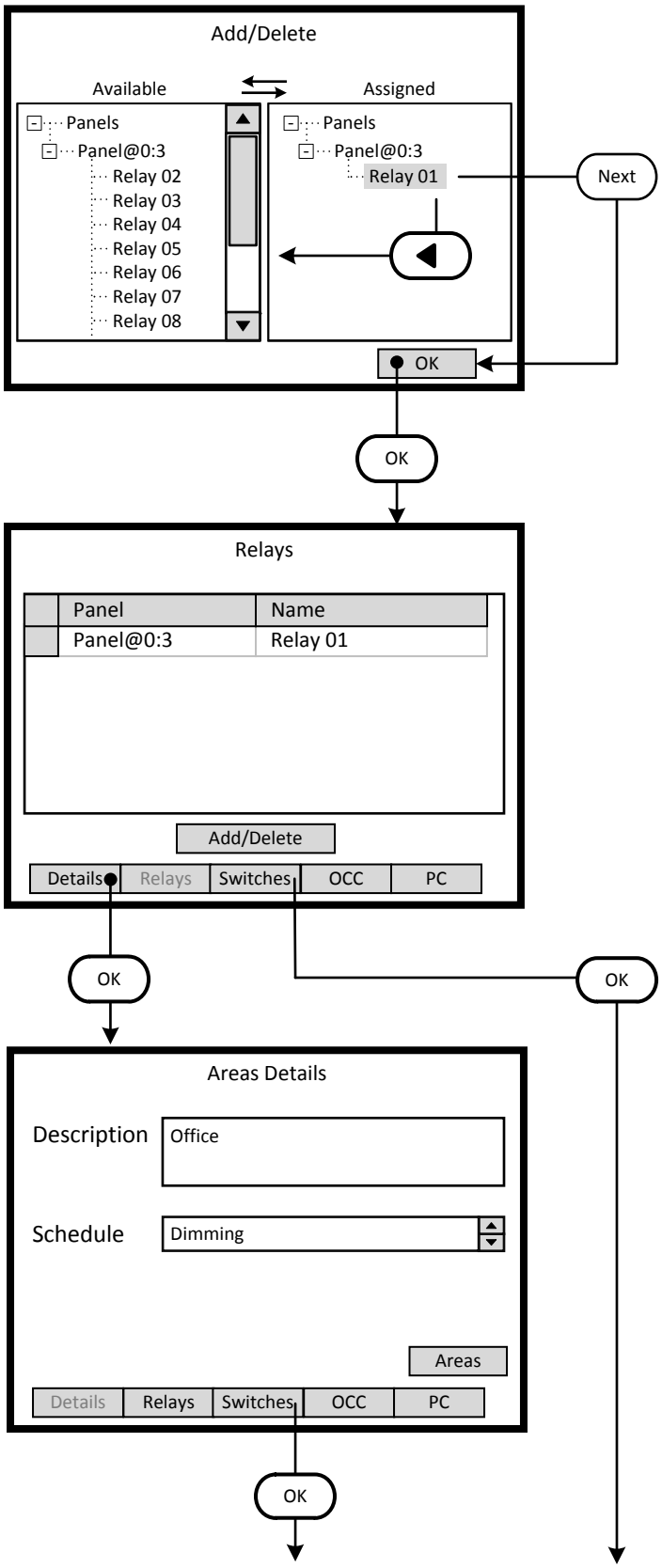
Understanding the Screen
Complete panels may be collapsed by highlighting name on the list pressing OK.
Description of the onscreen button:
<***OK***> *selecting this onscreen button will save the selections made and return to the **Relays** list screen.*

Step 3.6

Relays are added to the Area by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this Area.
Relays 01 through 07 are available for assignment.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the Area.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 3.7

Relays are deleted from the Area by moving them from the -**Assigned**- list to the -**Available**- list. This is accomplished by highlighting the desired relay on the right side of the screen and using the left arrow to move it to the right side of the screen. To accept the assignment, navigate to the -**OK**- onscreen button and press OK or Enter.

Understanding the Screen
Currently Relay 01 of Panel 3 has been assignment to the Area.
Relays 02 through 07 are available for assignment.

Step 3.8

The -Relays- screen lists the relays assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next common step is to add switch buttons to the Area.

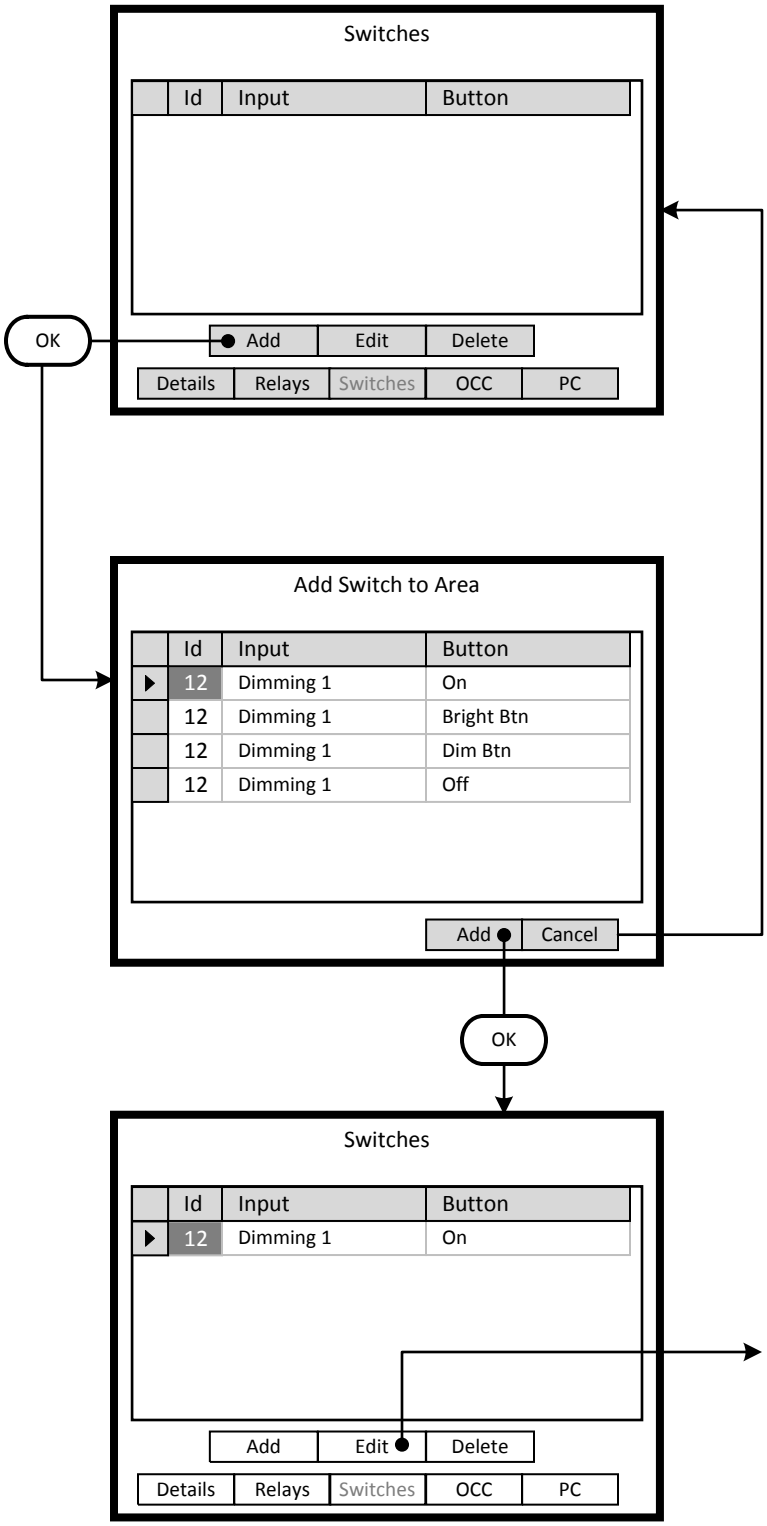
Understanding the Screen
Currently only Relay 01 of Panel 3 has been assignment to the Area.
*There are two navigating paths to the next screen. Using the <**Switches**> onscreen button skips a screen and goes directly to the -**Switches**- screen.*

Description of the onscreen buttons:

*<**Details**>*	*use to navigate to the -**Area Details**- screen*
*<**Switches**>*	*use to navigate to the -**Switches**- screen*
*<**OCC**>*	*use to navigate to the -**Occupancy Sensors**- screen*
*<**PC**>*	*use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

Step 4: Switch Buttons



Step 4.1

The -**Switches**- screen lists the switch buttons assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next common step is to add switch buttons to the Area.

Understanding the Screen
Currently there are no switch buttons assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.2

The -**Add Switch to Area**- screen lists the available and unassigned switch buttons for the system. As a switch button is assigned to an Area, it is removed from this list.

Understanding the Screen
*The highlighted button, button 1 of the switch at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

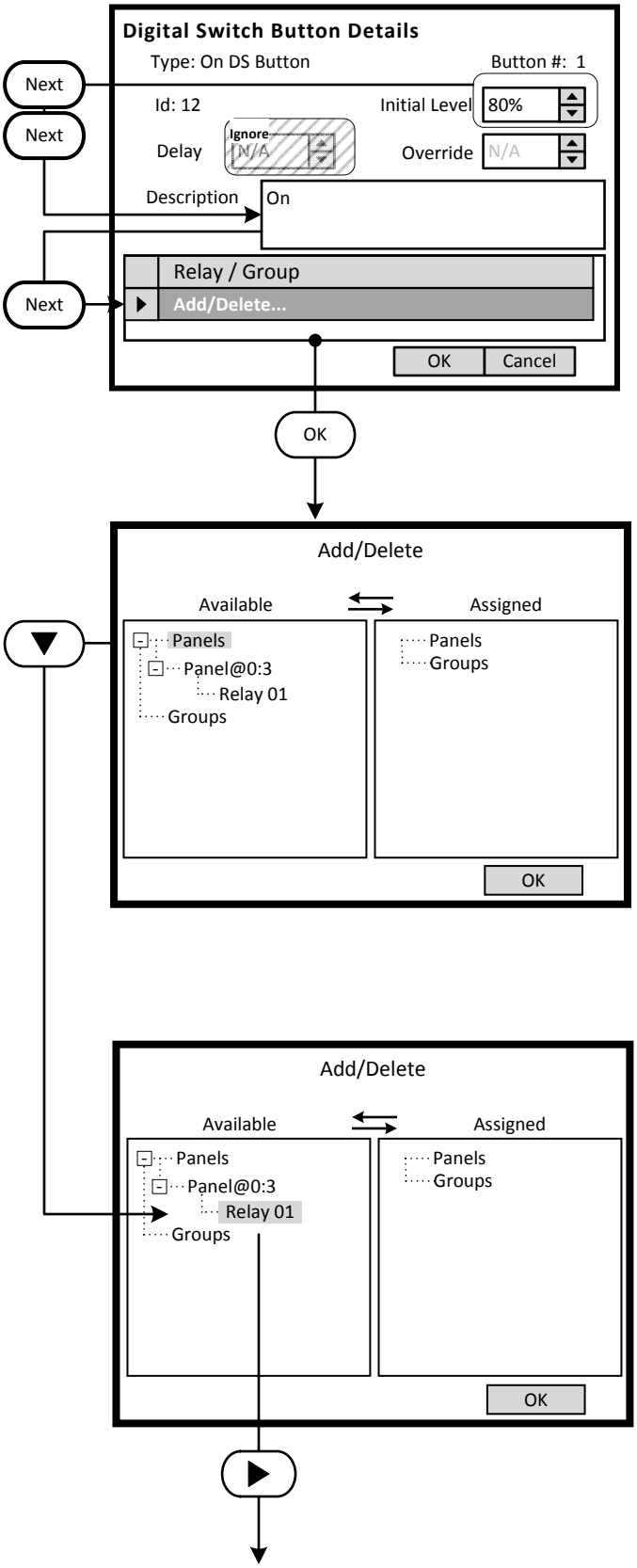
Step 4.3

The -**Switches**- screen lists the switch buttons assigned to the Area. This list will be displayed each time this section of the Area information is entered.

Understanding the Screen
Currently button 1 of the switch at LumaCan address 4 is assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.4

This screen configures the characteristics of the switch button. Enter the value for On in the -**Initial Level**- field, this exercise requires 80%. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*The -**Description**- field can be edited on this screen.*
*Information from the **Digital Switch Detail** screen will be displayed here.*
*Ignore the settings of -**Delay**- and -**Override**-.*

Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

Step 4.5

The left side of the screen under the heading -**Available**- lists all of the relays that have been assigned to an Area. If the desired relay is not on this list it has not been assigned to this Area. Relays are displayed according to the panel they are installed in. Use the navigation keypad to highlight the desired relay.

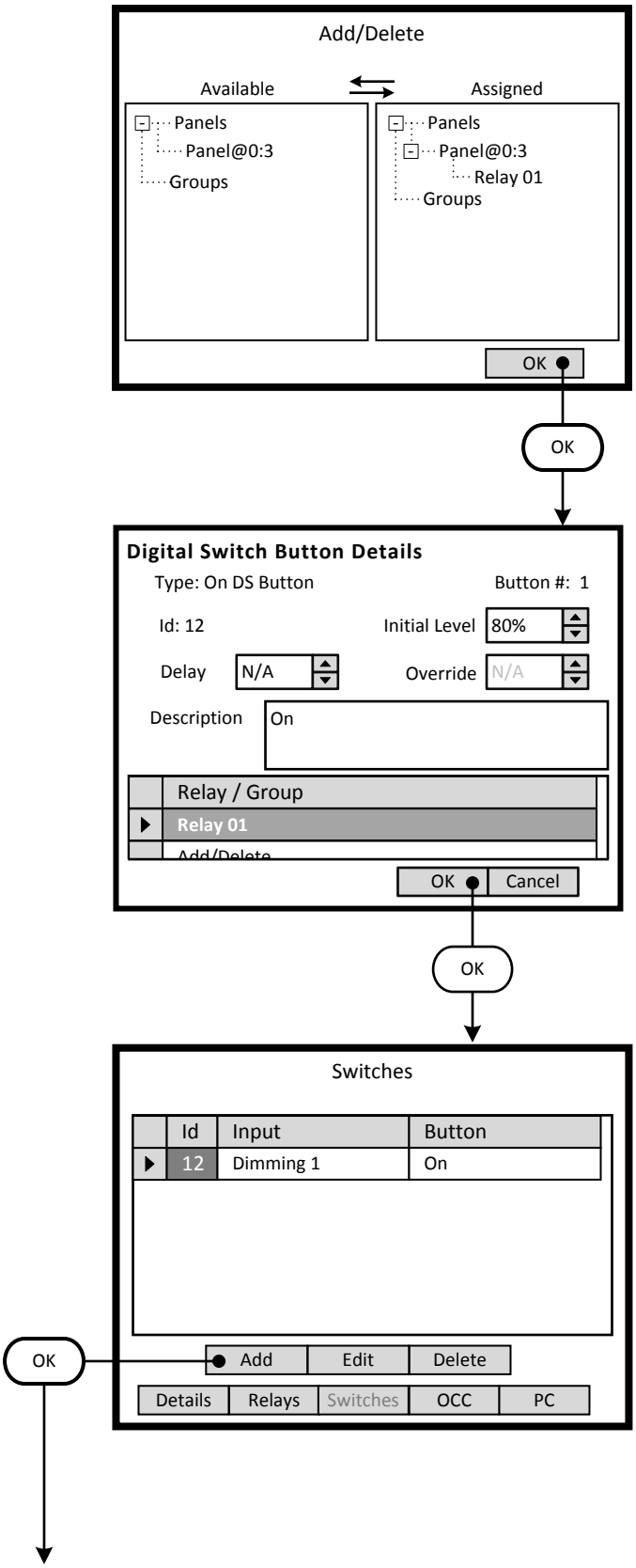
Understanding the Screen
Complete panels may be collapsed by highlighting name on the list pressing OK.
Description of the onscreen button:
<***OK***> *selecting this onscreen button will save the selections made and return to the **Relays** list screen.*

Step 4.6

Relays are assigned to the Switch button by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this Switch Button.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the Switch Button.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.7

Relay 01 is assigned to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned-** list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -**Digital Switch Button Details**- screen*

Step 4.8

Relay 01 is assigned to the control of the Switch Button 1.
To remove it, highlight the relay in the -**Assigned-** list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
Relay 01 of Panel 3 will start daylight harvesting when button 1 of switch ID: 12 is pressed.
*The settings of -**Initial Level**-, -**Delay**- and -**Override**- do not apply.*

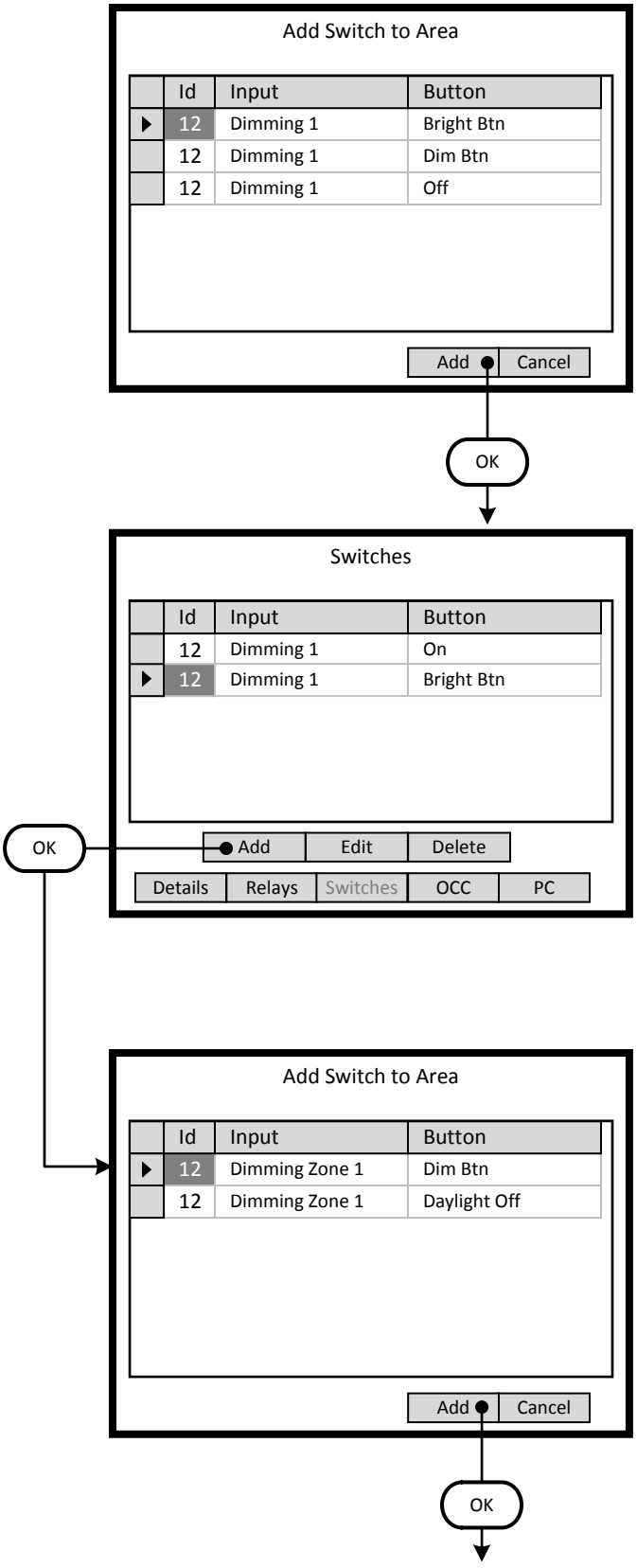
Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -**Switches**- screen*
<***Cancel***> *use to abandon entries and navigate to the -**Switches**- screen*

Step 4.9

All four of the Buttons for the Switch must be assigned to the Area. This summary list will be displayed each time this section of the Area information is entered. Navigate to the <**Add**> button and press **OK** button on the keypad.

Understanding the Screen
Currently there is one switch button assigned to the Area.
Description of the onscreen buttons:
<***Edit***> *use to navigate to the -**Digital Switch Button Details**- screen to make modifications to settings of the highlighted button*
<***Delete***> *use to delete the highlighted button from the Area*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.10

The -**Add Switch to Area**- screen lists the available and unassigned switch buttons for the system. As a switch button is assigned to an Area, it is removed from this list.

Understanding the Screen

*The highlighted button, Bright Btn button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:

<***Cancel***> *use to navigate to the -**Area Details**- screen*

Step 4.11

The -**Switches**- screen lists the switch buttons assigned to the Area. This summary list will be increase as each button is added.

Understanding the Screen

Currently 2 buttons are assigned; On, Bright Btn of switch ID 12 at LumaCan address 4.

Description of the onscreen buttons:

<***Add***> *use to navigate to the -**Add Switch to Area**- screen*

<***Delete***> *use to delete the highlighted button*

<***Details***> *use to navigate to the -**Area Details**- screen*

<***Relays***> *use to navigate to the -**Relays**- screen*

<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*

<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.12

Continue to add all of the relevant buttons to the Area.

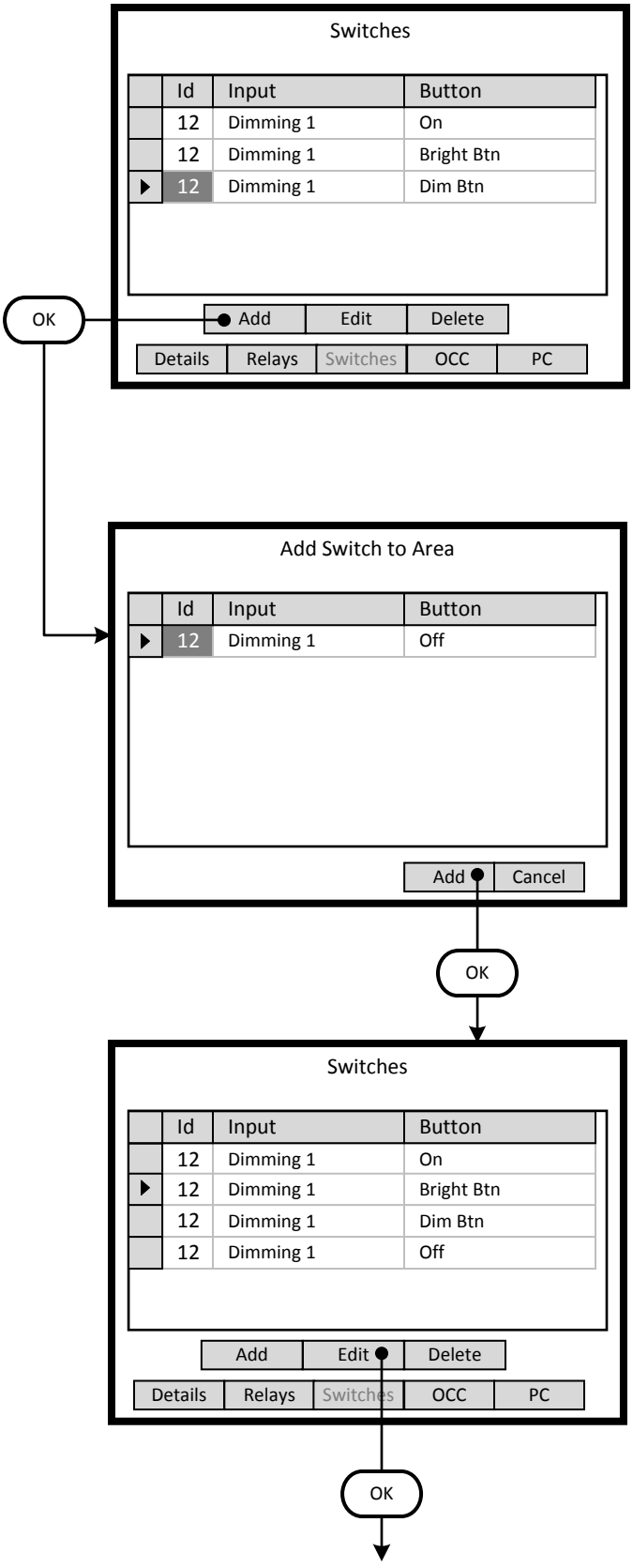
Understanding the Screen

*The highlighted button, Dim Btn button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:

<***Cancel***> *use to navigate to the -**Area Details**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.13
The -**Switches**- screen lists the switch buttons assigned to the Area. This summary list will be increase as each button is added.

Understanding the Screen
Currently 3 buttons are assigned; On, Bright Btn, Dim Btn of switch ID 12 at LumaCan address 4.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.14
Continue to add all of the relevant buttons to the Area.

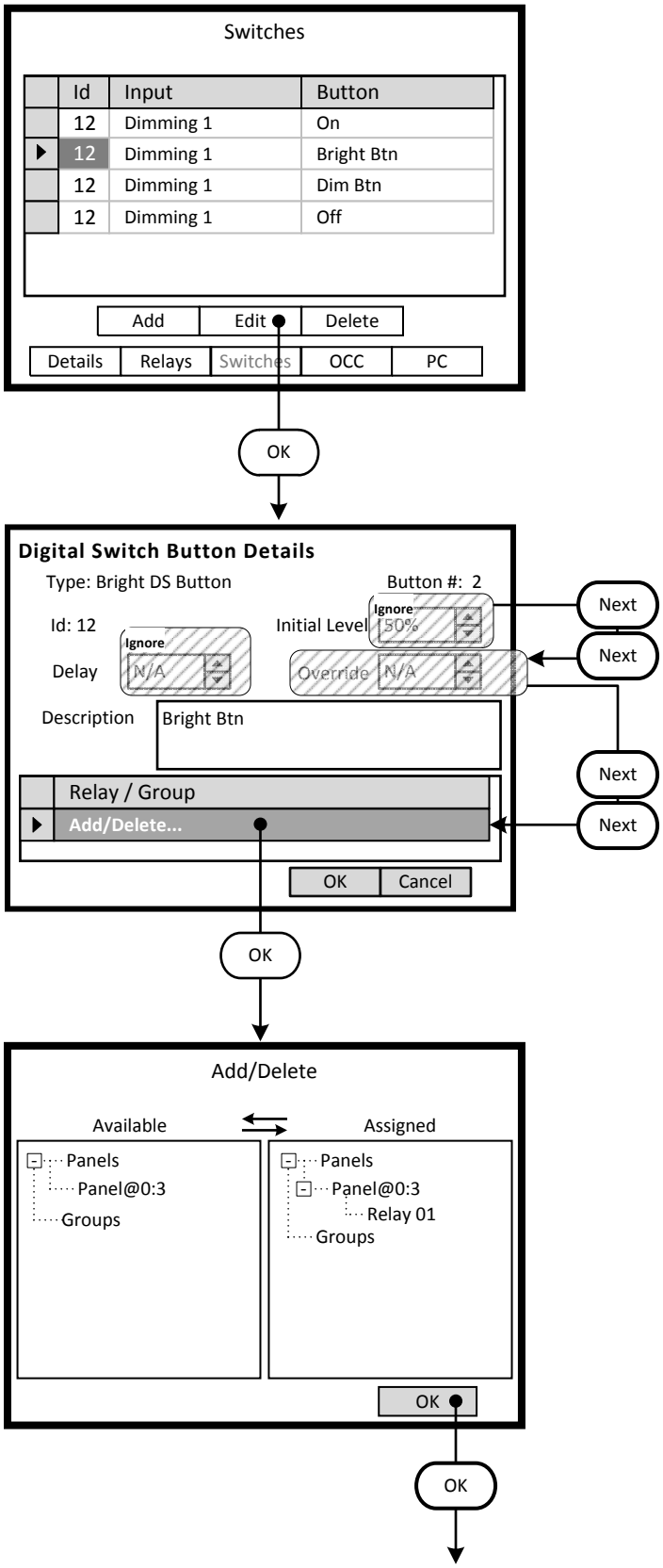
Understanding the Screen
*The highlighted button, Off button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

Step 4.15
All four of the buttons for the switch have been added to the Area. Each of the buttons must be assigned to the relay to be controlled. The On button was previously configured in Step 4.4. Navigate to the <**Edit**> button and press **OK** button on the keypad to configure each button of the remaining three buttons.

Understanding the Screen
Currently there is one switch button assigned to the Area.
Description of the onscreen buttons:
<***Delete***> *use to delete the highlighted button from the Area*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.16

The three new buttons listed on the -**Switches**- screen require configuration. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.17

The Bright DS button will temporarily increase the light level from the Target Level of the photocell. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Initial Level**-, -**Delay**-, and -**Override**-.*
Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

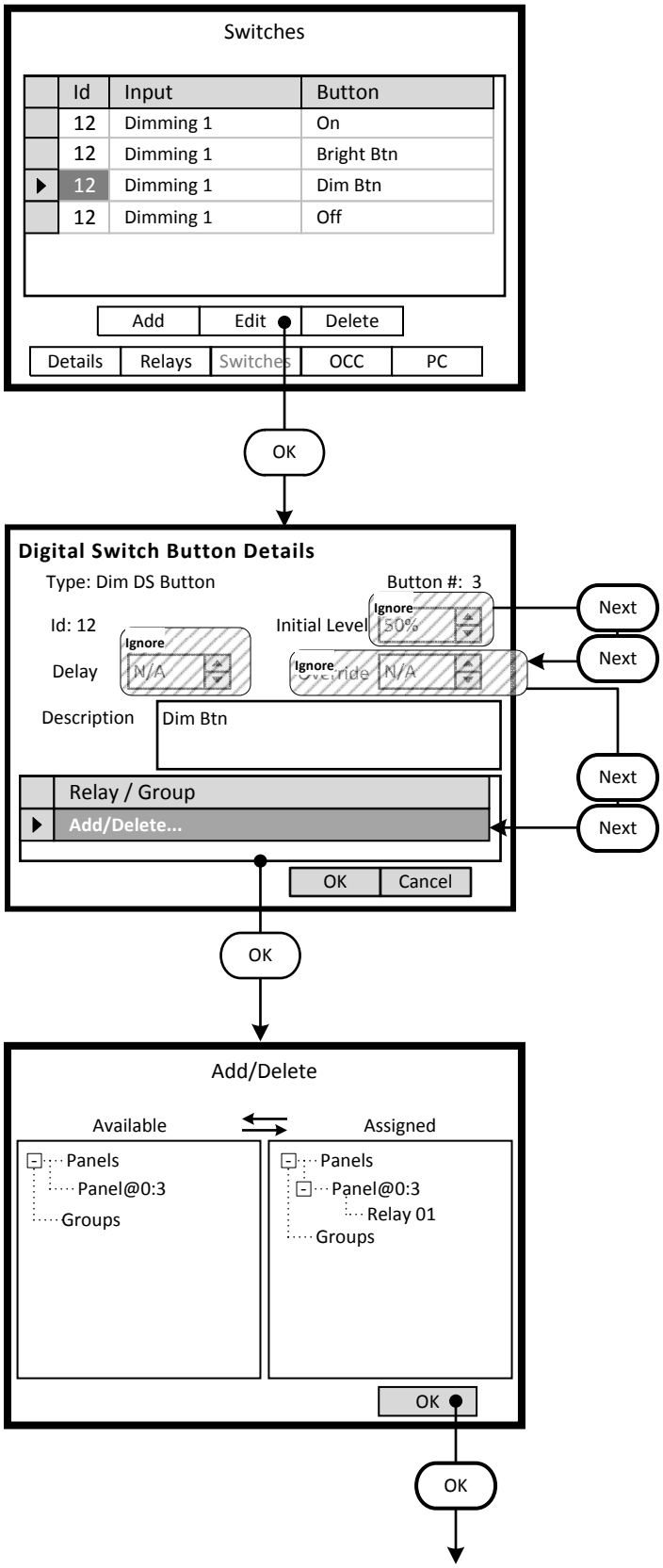
Step 4.18

Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.19

Configure the next button listed on the -**Switches**- screen. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.20

The Bright DS button will temporarily decrease the light level from the Target Level of the photocell. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Initial Level**-, -**Delay**-, and -**Override**-.*
Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

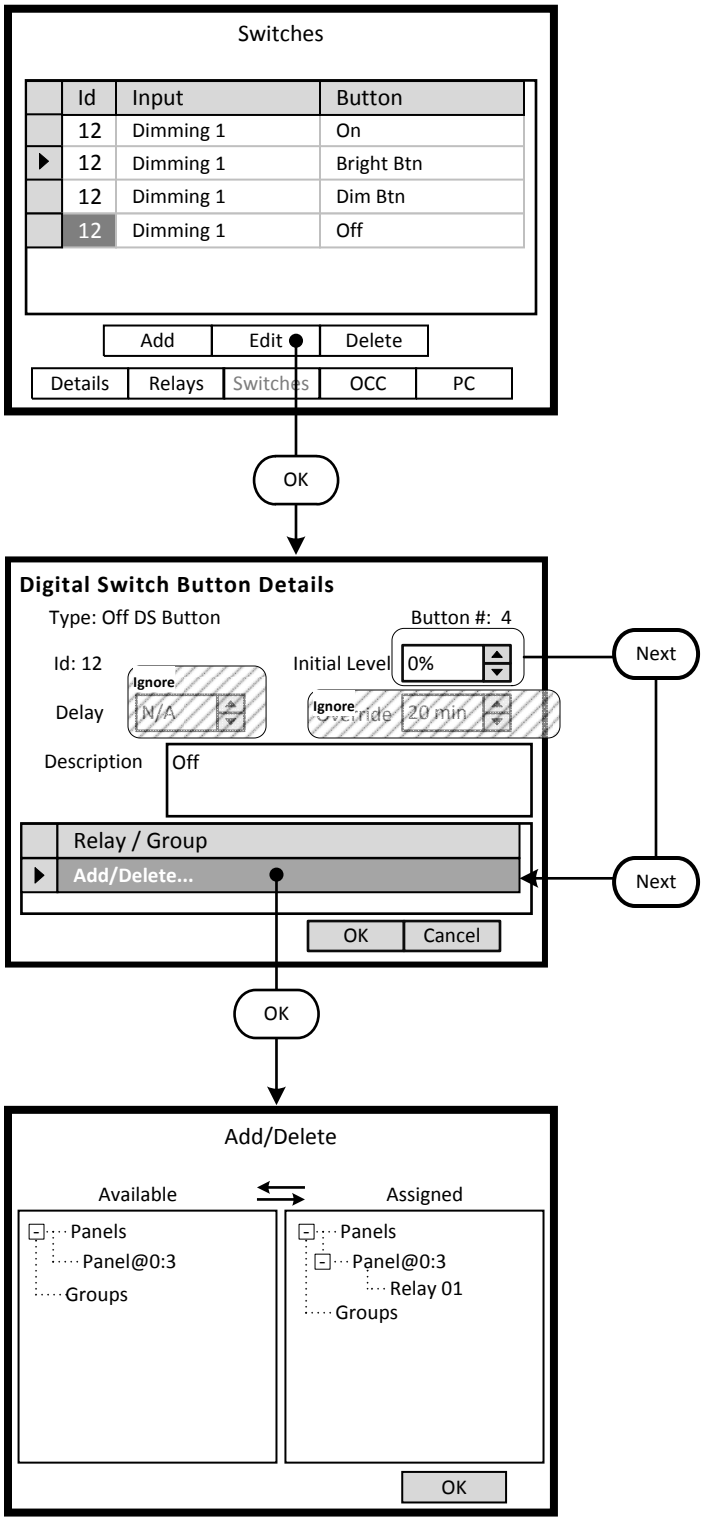
Step 4.21

Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.22

The three new buttons listed on the -**Switches**- screen require configuration. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.23

The Off DS button will turn Off the zone. The light level will dim to zero output and turn off the relay. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Delay**- and -**Override**-.*

Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

Step 4.24

Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

B10 Daylight Harvesting - Programming Overview

This section will present the typical steps required to program a GreenMAX system to provide Dimming functionality.

The fundamental components required for Dimming control are:

- GreenMAX Dimming and Switching Relay Modules – RELAY-1DS
- Low Voltage Photocell – 24VDC with analogue 0 to 10VDC output range - mandatory
- Low Voltage Occupancy Sensor – 24VDC with On/Off signal output – optional
- 4 Button Switch - either Low Voltage or Digital

Office Dimming Schedule

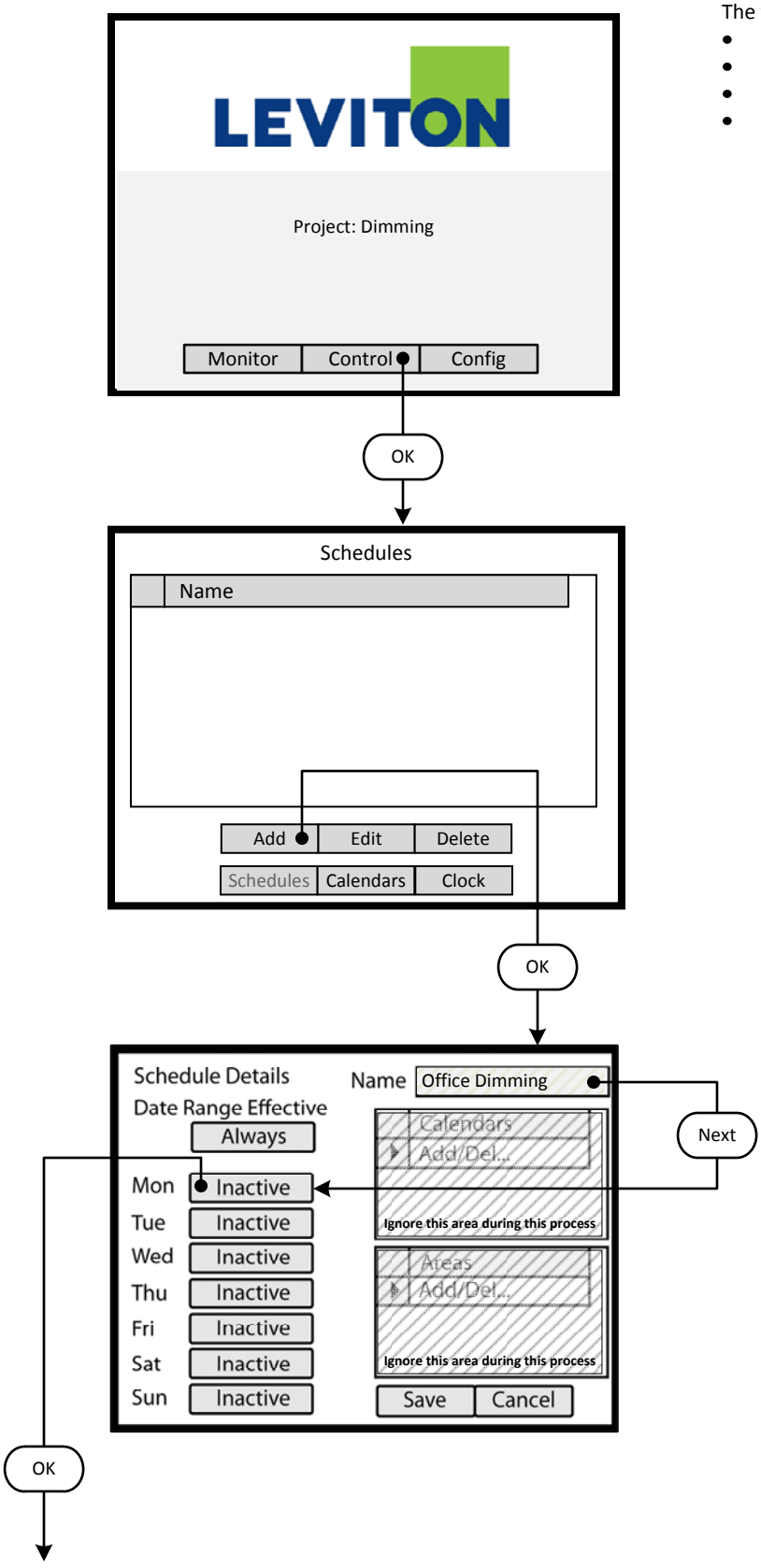
Monday to Sunday

8:00am	Office Dimming	B10 Lights will be controlled by their respective devices: Occupancy Sensors – 10 minute delay Photocells – 35 foot-candle initial target value – 10 minute delay Switch Buttons (4): On Button – starts Daylight Harvesting Bright Button – with Over- ride time Dim Button – with Over-ride time Off Button – fades lights to OFF
5:00pm	OFF sweep	B7 Lights will be turned OFF

Programming Checklist

- ❑ Create a schedule.
- ❑ Configure Low Voltage inputs as required.
  (occupancy sensors, photocells, low voltage switches)
- ❑ Configure switch buttons. (On/Bright/Dim/Off)
- ❑ Create an Area.
- ❑ Assign a schedule to an Area.
- ❑ Add relays to Area.
- ❑ Add switch buttons to area.
- ❑ Assign relays to switch buttons
- ❑ Add occupancy sensor to Area.
- ❑ Assign relays to occupancy sensor.
- ❑ Add photocell to area.
- ❑ Assign relays to the photocell.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1: Create a Schedule

Programming operation of the GreenMAX is based on running Schedules. A Schedule can be considered a default seven (7) day pattern of operation.

The following rules apply:

- An Area requires a Schedule to operate.
- Only one Schedule can be assigned to an Area.
- A Schedule can be assigned to multiple Areas.
- Schedules reside in the GreenMAX system and can be accessed through the Handheld Display Unit (HDU).

Step 1.1

To create a Schedule, enter the <**Control**> section of the Handheld Display Unit (HDU) software.

Understanding the Screen
There are three sections of the HDU software. The sections under the buttons are:
<**Monitor**> - *Used to check the system time/date, relay status*
<**Control**> - *Access Scheduling*
<**Config**> - *Configuration of system including set-up of Areas*

Step 1.2

The first <**Control**> HDU screen lists the existing Schedules available in your GreenMAX System. The screen shown indicates that there are no Schedules available or created.

By navigating to <**Add**> and pressing OK, this will initiate the creation of a Schedule.

Other Options
To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Edit**> *and press OK, to initiate the modification of the selected Schedule.*

To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Delete**> *and press OK, to erase the selected Schedule.*

Step 1.3

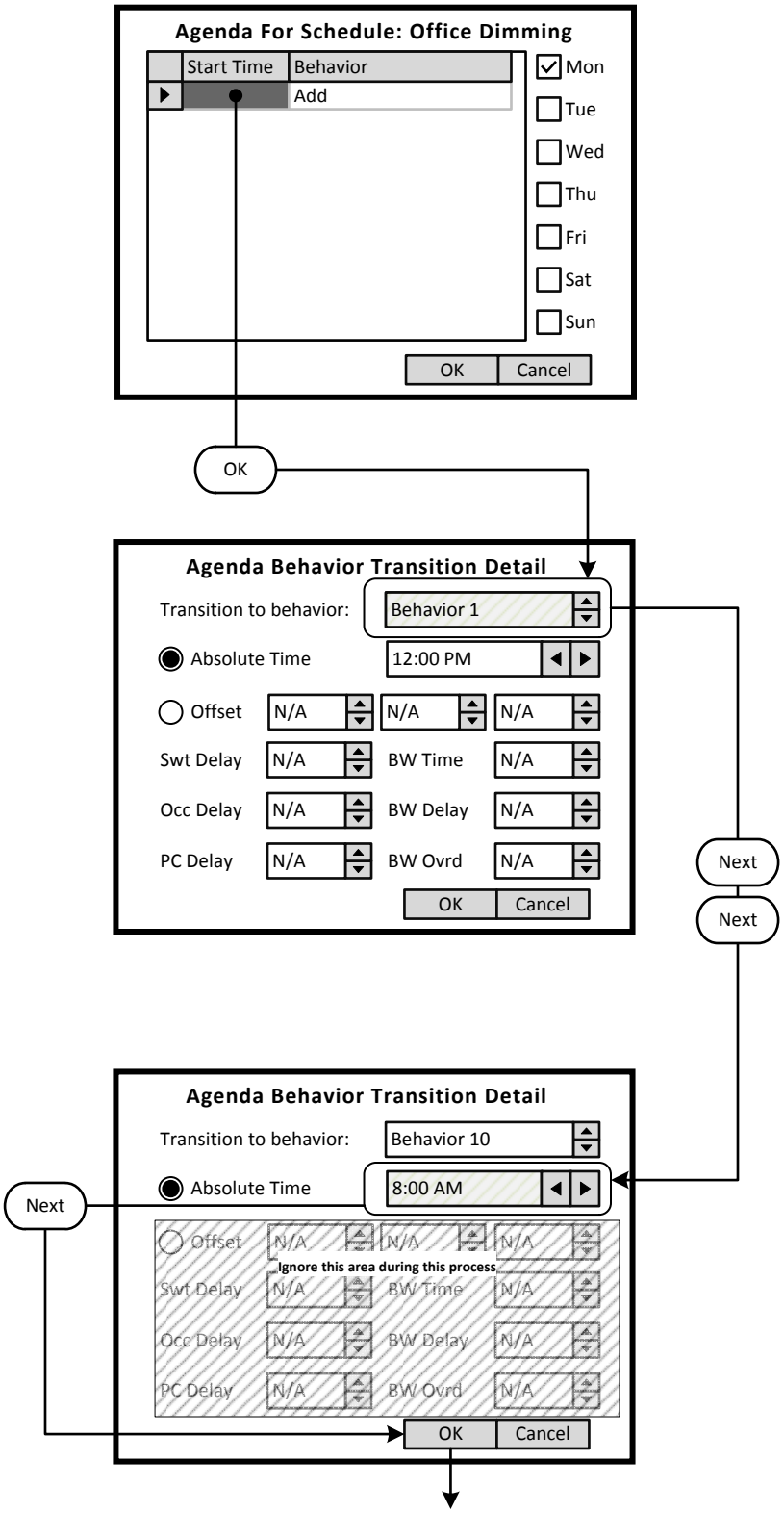
The screen is entered with the -**Name**- field highlighted. Enter the desired name of your Schedule using the alpha numeric keypad of the HDU. When complete, press the NEXT button on the navigation keypad. The cursor will advance to the <**Monday**> button.

Understanding the Screen
The label value of "Inactive" shown on the <**Monday**> *button indicates that there is currently no Behavior transitions programmed for this day. The same is true for all days, Monday through Sunday, of this schedule.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.4

The screen is entered at the first line of the Agenda. There are a total of 24 Behavior Transition times available per day. Clicking OK will advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
*<**OK**> - Will save the settings or changes*
*<**Cancel**> - Will discard the changes*

Step 1.5

The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 10.

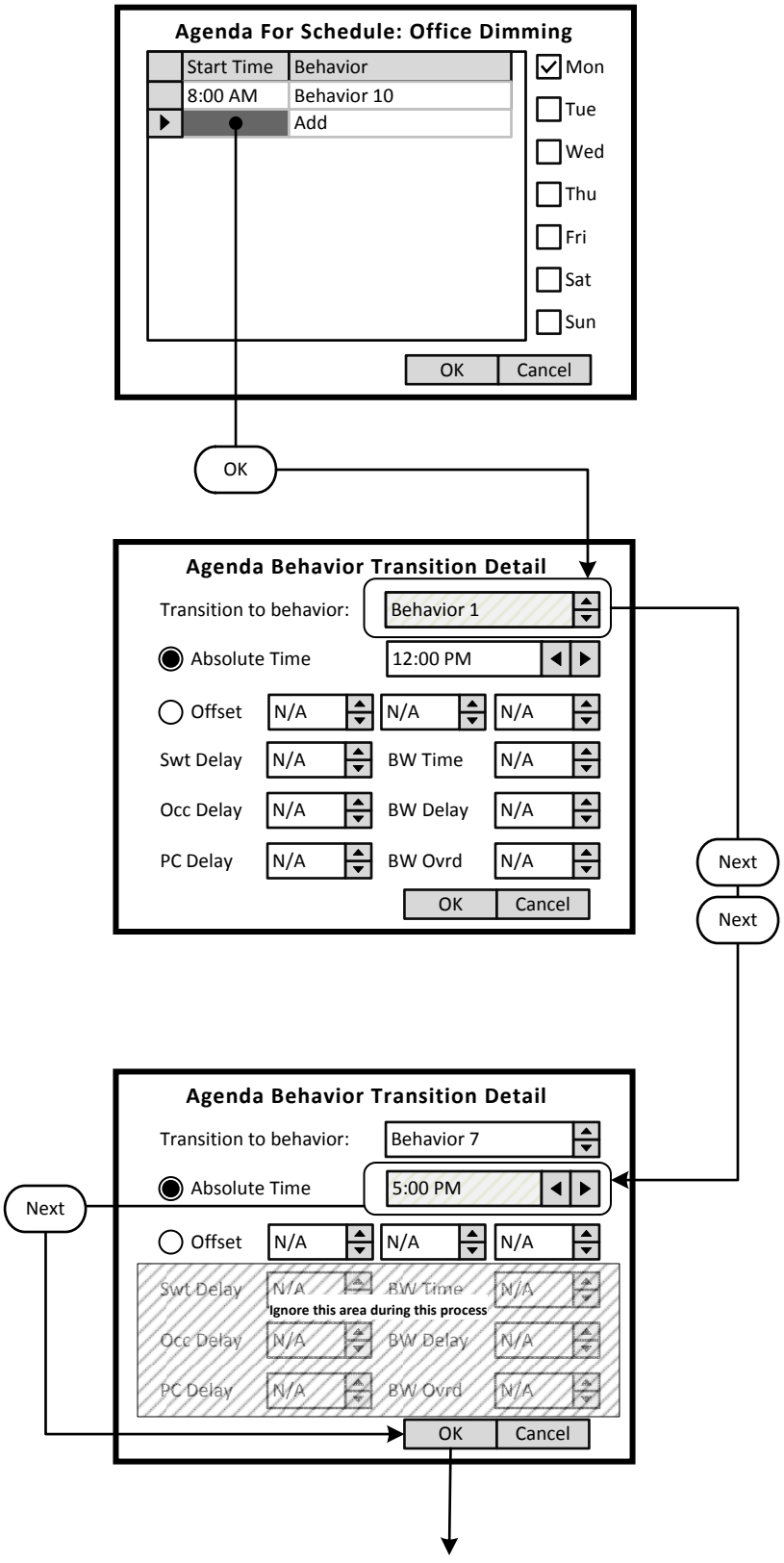
Understanding the Screen
<**Offset**> *provides access to Sunrise and Sunset settings for Astronomical clock times.*
-**BW Time**-, -**BW Delay**-, -**BW Ovrd**- - *These are the Blinkwarn settings that apply to this Behavior Transition only. They will override the Global Blinkwarn Settings set in the System Settings section.*

Step 1.6

Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 8:00 AM.

Understanding the Screen
*-**Swt Delay**- is used if the switch in the associated Area is to function as a Timed Off switch. This is the amount of time the lights will stay On after a button press, and before they will turn Off.*
*-**Occ Delay**- This is the amount of time the lights will stay On after the occupancy sensor does not detect occupancy and before they will turn Off.*
*-**PC Delay**- This is the amount of time the lights will stay On after the photocell trigger point is exceeded and before they will turn Off.*

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



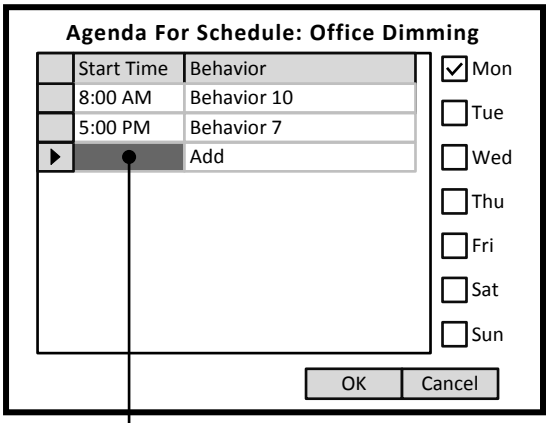
Step 1.7
Navigate to the Add line of the list, in this case the second line. Click OK to advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 10 will occur Monday at 8:00 AM.

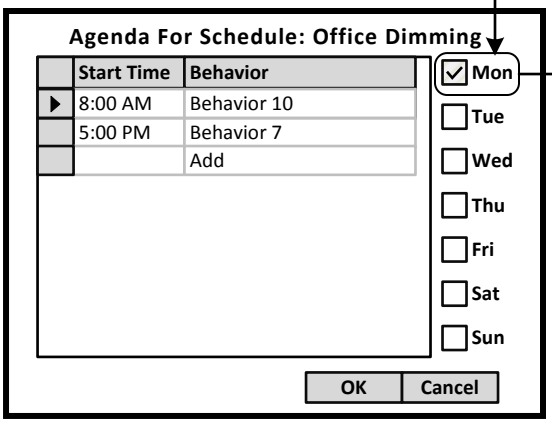
Step 1.8
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 7 (OFF).

Step 1.9
Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 5:00 PM. When complete, use the NEXT button to navigate to the **<OK>** on screen button.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



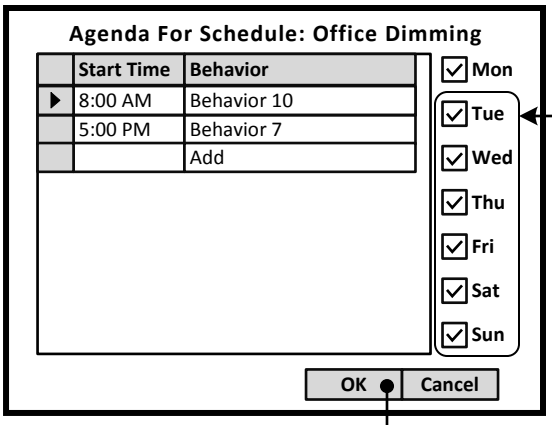
Next



Repeat this button press combination to fill all check boxes (Mon thru Sun)

Next

OK



Step 1.10
To apply this Agenda or pattern of Behavior to each day of the week press Next to advance to the Day column.

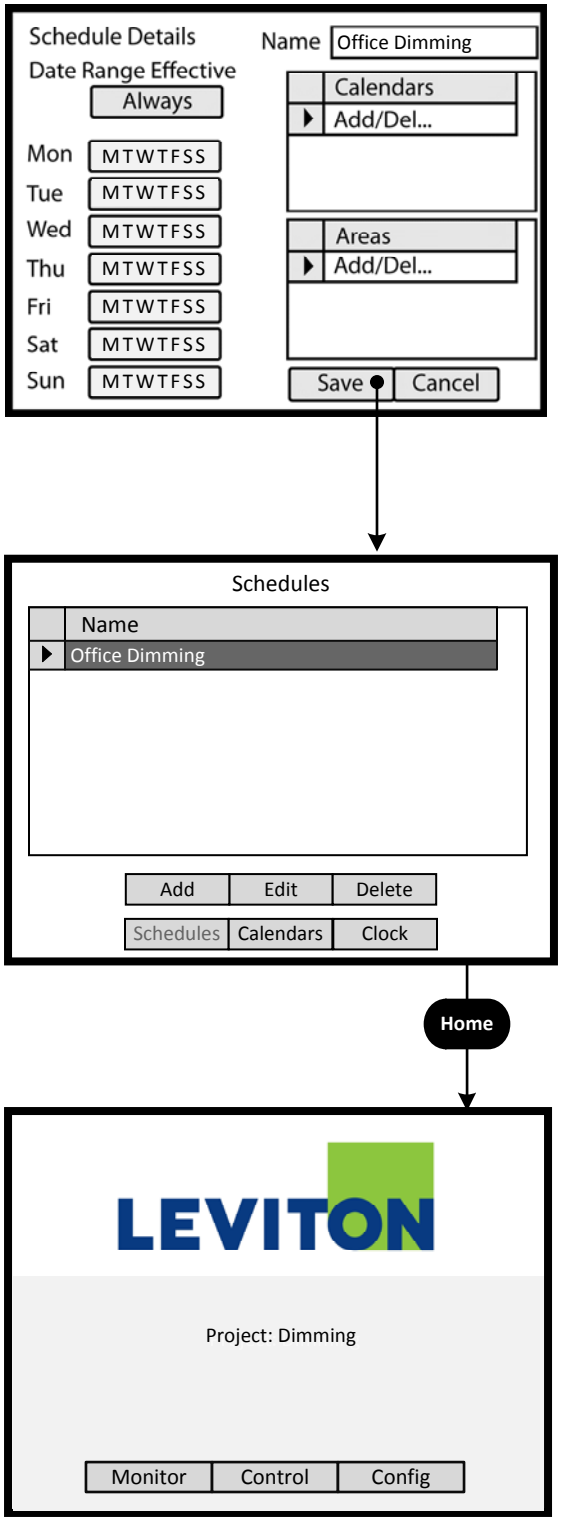
Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 10 will occur Monday at 8:00 AM.
A transition to Behavior 7 will occur Monday at 5:00 PM.

Step 1.11
Press Next to the -**Tuesday**- check box.
Press -**OK**- to check the box, this will add Tuesday to the active list.

Step 1.12
Use a combination of the NEXT and OK to fill in the Tuesday through Sunday check boxes.

Understanding the Screen
This Agenda only applies to Monday through Sunday.
A transition to Behavior 10 will occur each day at 8:00 AM.
A transition to Behavior 7 will occur each day at 5:00 PM.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.13
To save the Schedule, press the NEXT button on the navigation keypad to advance to the <**Save**> button.

Understanding the Screen
The label value of "MTWTFSS -" on the <**Monday>** *through* <**Sunday**> *indicates that the same Agenda applies to each of these days.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

Step 1.14
There is only one Schedule available in the system for the dimming pattern of behavior.

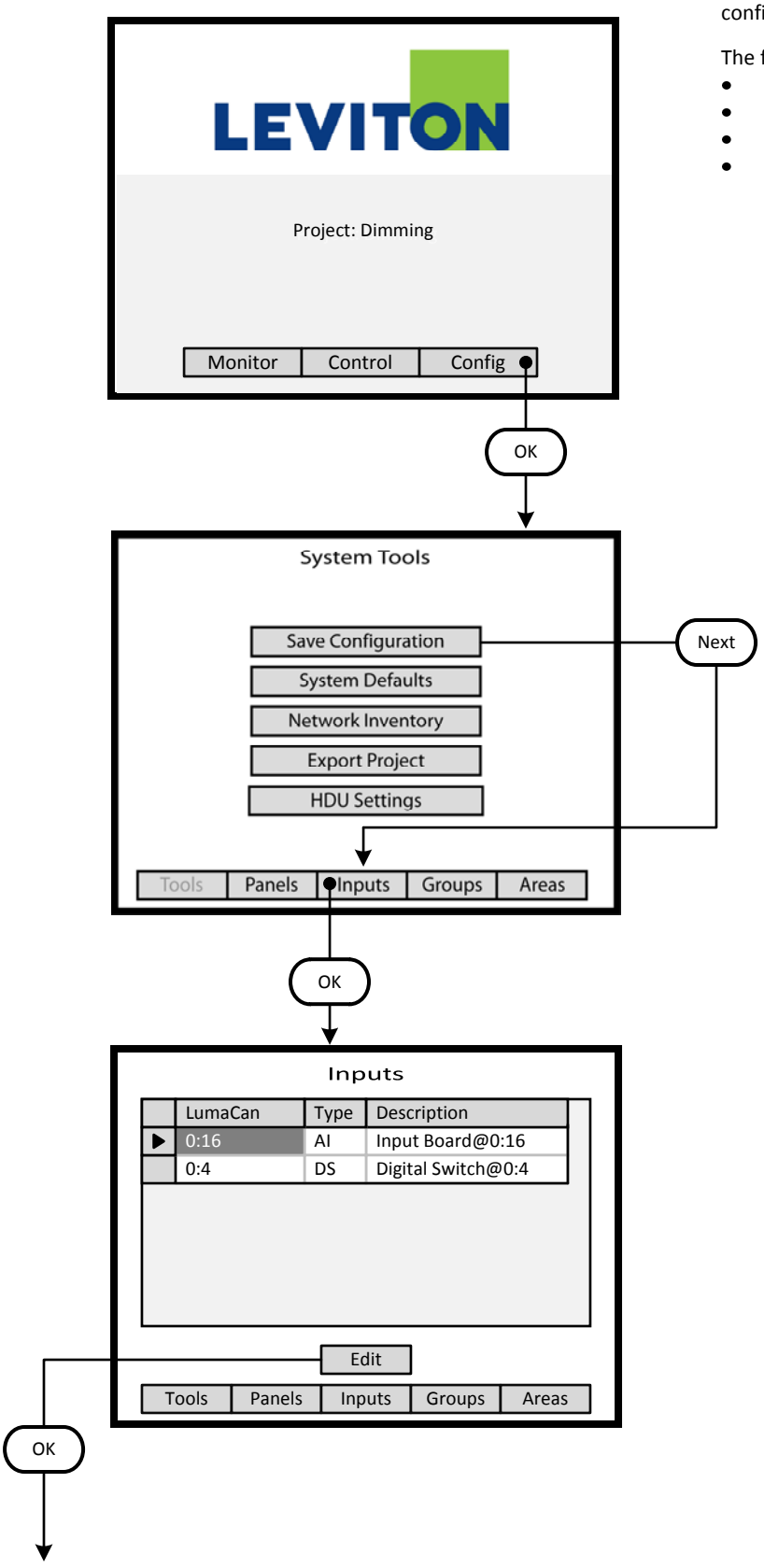
To navigate to the Home screen press the HOME button.

Other Options
To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <***Edit***> *and press OK, to initiate the modification of the selected Schedule.*

To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <***Delete***> *and press OK, to erase the selected Schedule.*

To adjust the system clock, navigate to <***Clock***> *and press OK.*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2: Configure Devices

The GreenMAX can be configured to handle a wide variety of input devices. These devices operate at +24vdc and are wired to an input terminal on the Low Voltage (AI) board. Each terminal port must be configured to match the device and its expected functionality.

The following Low Voltage input devices can be connected to the system:

- Occupancy sensors.
- Photocells.
- Switches.
- Contact closures.

Step 2.1

The configuration steps of the Low Voltage Input Card is performed in the <**Config>** section of the HDU software.

Understanding the Screen

There are three sections of the HDU software. The other two sections under the buttons are:
*<**Monitor**> - Used to check the system time, relay status*
*<**Control**> - Access Scheduling*

Step 2.2

Use a combination of the UP and DOWN arrows as well as the NEXT button to navigate to the <**Inputs**> onscreen button. Press OK to select.

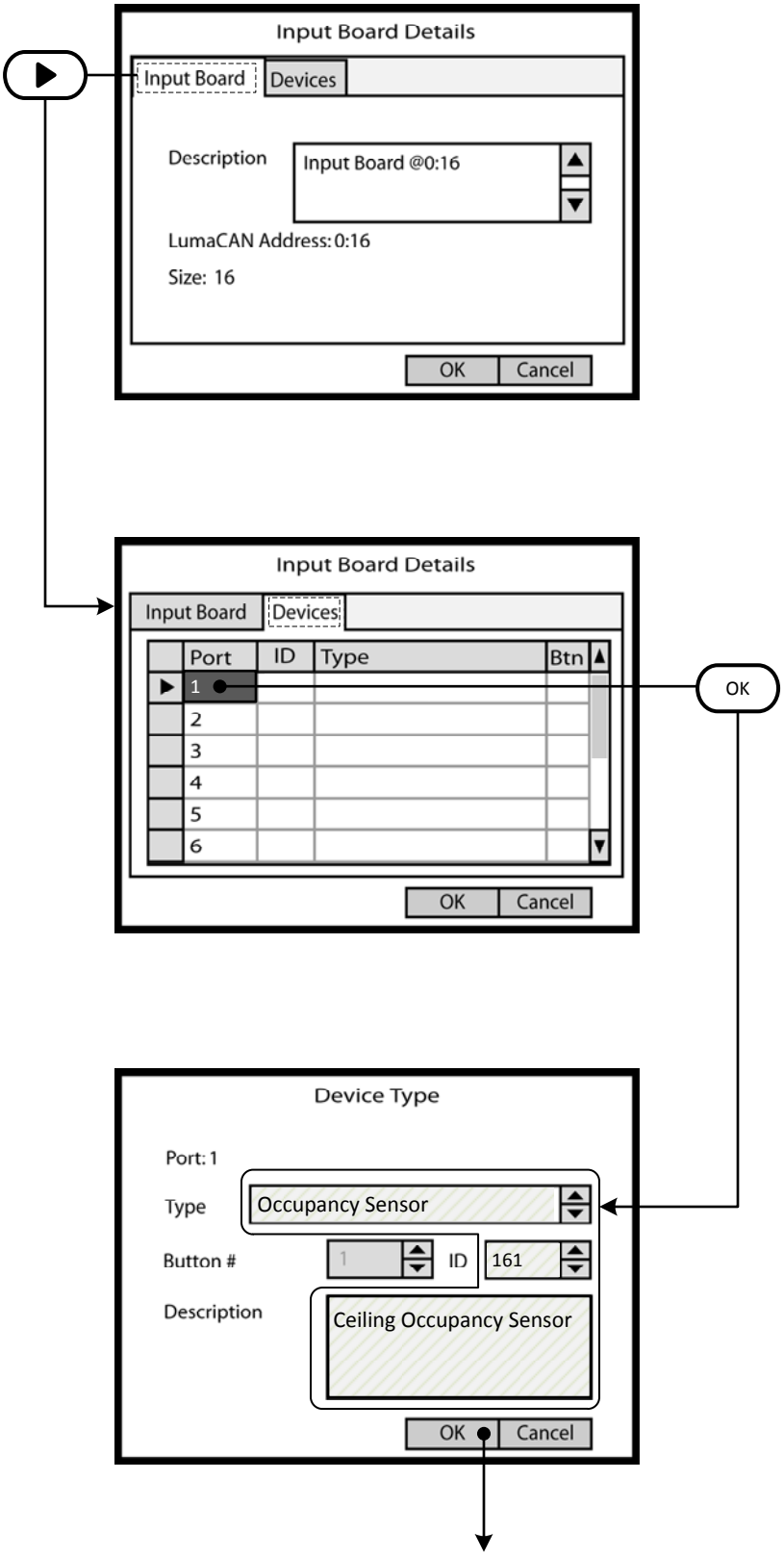
Step 2.3

The Network Inventory will provide a listing of all system Input devices. This includes both Low Voltage Input Boards (AI) and Digital switches.

Understanding the Screen
There are two Input Devices in this system.
There is a 16 input AI board at address ID 16.
There is a 4 button Digital Switch at address ID 4.

Description of the onscreen buttons:
*<**Edit**> selecting this onscreen button will allow editing of the highlighted device in the list.*
*<**Tools**> use to navigate to the **System Tools** screen.*
*<**Panels**> use to navigate to the **Relay Panel Detail Screen***
*<**Groups**> use to navigate to the **Group** building screen*
*<**Areas**> use to navigate to the **Areas** configuration screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.4

The **Input Board Details** screen displays the number of inputs, the LumaCan address ID and the -**Description**- field. Enter job specific description in this field.
Once the correct information is entered, use the RIGHT arrow to move to the -**Devices**- tab at the top of the screen.

Understanding the Screen
The other onscreen buttons are:
*<**OK**> - Used to accept the entries*
*<**Cancel**> - Used to discard entries*

Step 2.5

The -**Devices**- tab reveals a list of the Input Ports on the AI Board being configured. Ports are numbered sequentially in quantities of 8 or 16. No data entry can be made on this screen. Highlight the Input Port number and press OK to enter the editing screen.

Use the UP or DOWN arrows on the keypad to navigate up or down the list. The scroll bar to the right indicates position on the list.

If the wrong device type appears on the list, highlight the Input Port number and press CLEAR on the keypad.

Understanding the Screen
No devices have been configured for this AI board.
The onscreen buttons are:
*<**OK**> - Used to accept the entries*
*<**Cancel**> - Used to discard entries*

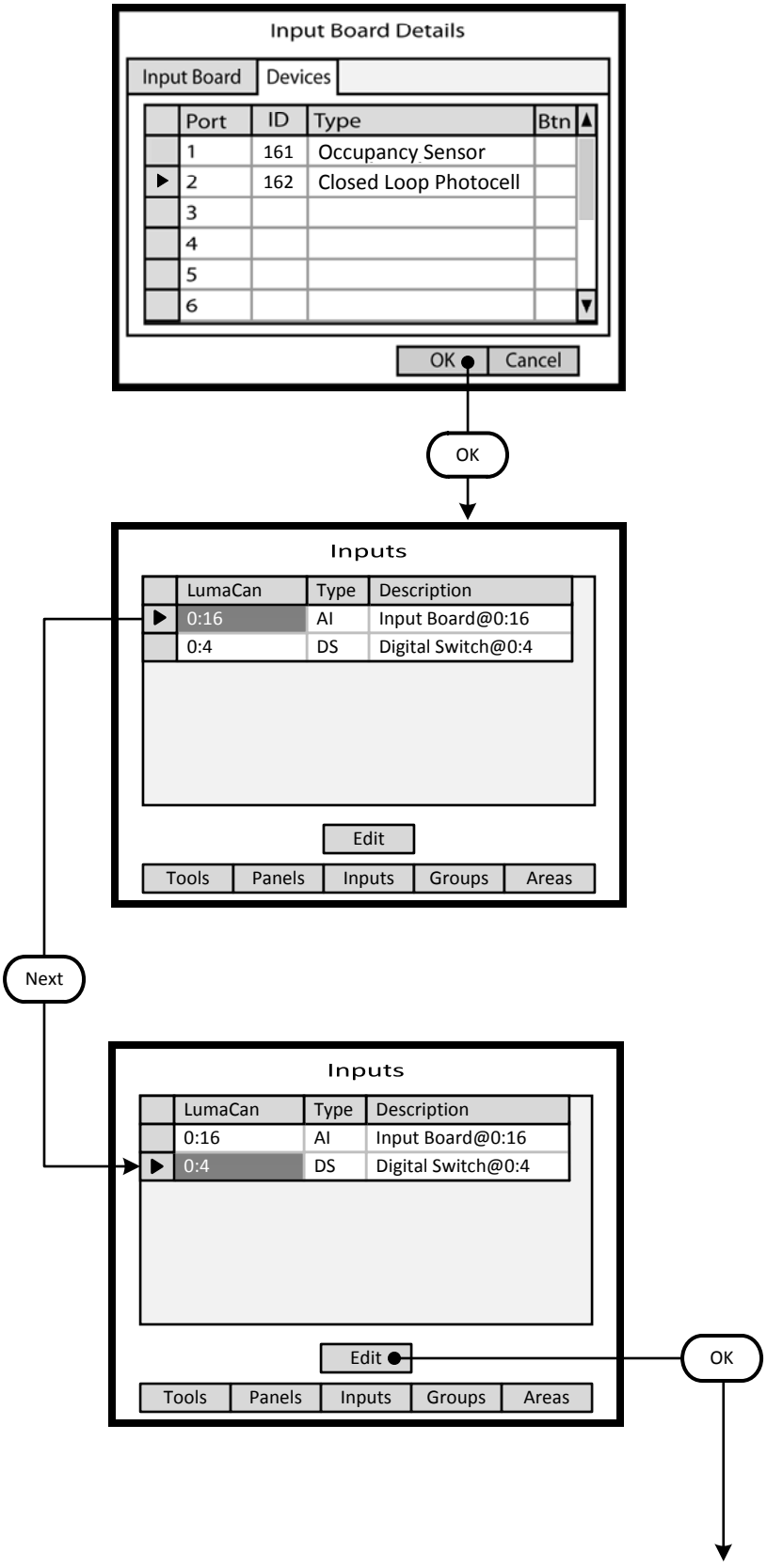
Step 2.6

The Device Type screen is used to select the type of device that is wired to the input port. Use the UP and DOWN arrows on the keypad to display the desired device.
The Description field should be used to document the location of the device.

Understanding the Screen
The -Button #- is available for display purposes only and does not have any configuration value.
The description is limited to 25 characters.

The -ID- is available for display purposes only and does not have any configuration value. It can be used to match the numbering on project drawings. Maximum value is 1000.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



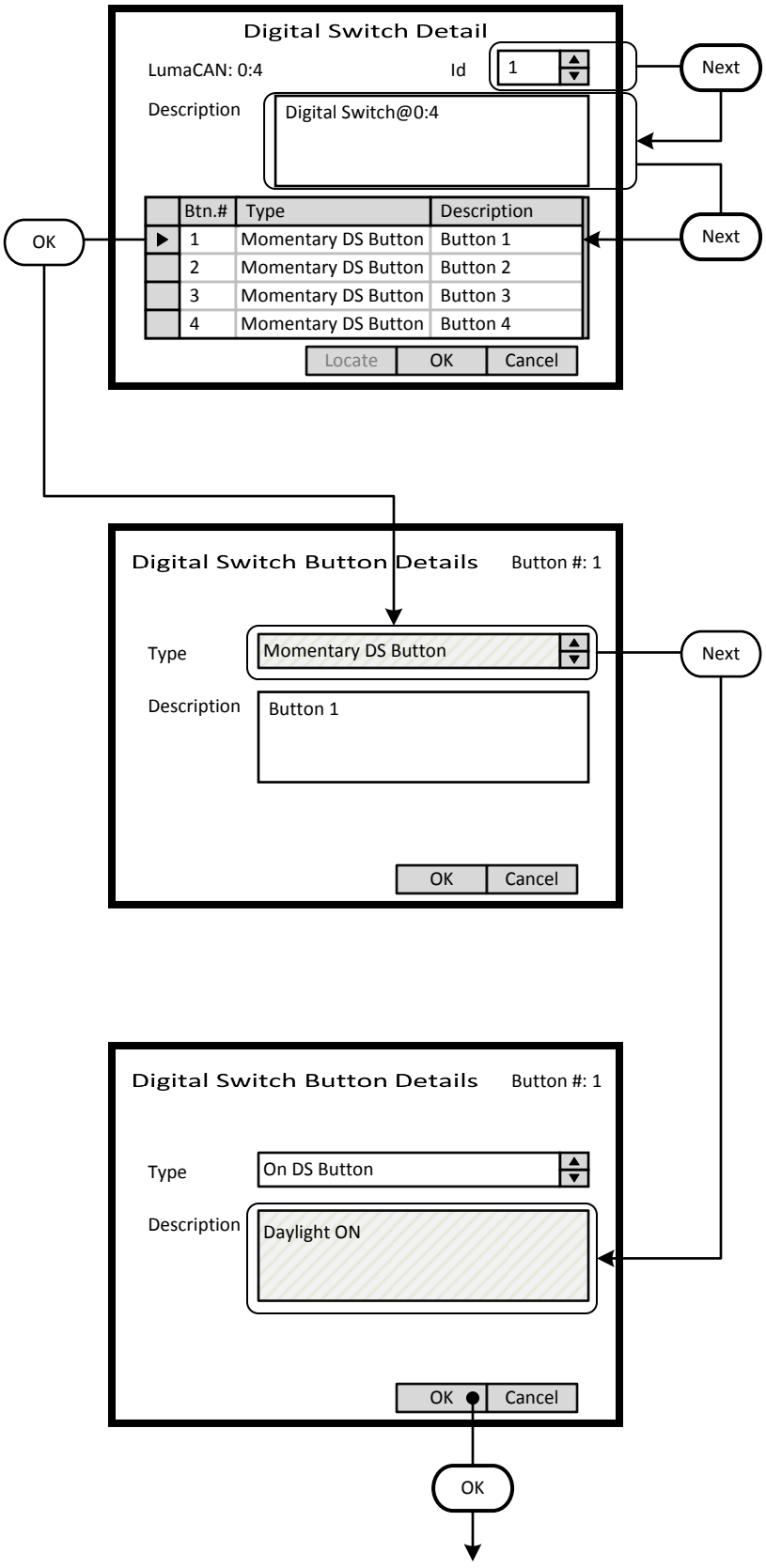
Step 2.8
A populated **Input Board Details** screen will look as shown here. The Input Ports can be configured in any order as necessary.

Understanding the Screen
Only Ports 1 & 2 are populated.
The ID numbers are for information purposes. They can be any number that makes sense to the user. The system only stores these numbers and does not use them for any function other than identification.
The 'Btn" column will be populated with switch button numbers if Low Voltage Switches are configured at the Port location.

. *The other onscreen buttons are:*
*<**OK**> - Used to accept the entries*
*<**Cancel**> - Used to discard entries*

Step 2.9
The **Inputs** listing shows a Digital Switch at LumaCan ID 4. This is a 4 button Digital Switch to be used for Dimming control. Highlight the device and move the indicator to the appropriate device line. Use the UP and DOWN arrows to move about the list. Use NEXT to navigate to the <**Edit**> button.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.10

The **Digital Switch Detail** screen provides an ID setting for informational purposes. This can match the switch number on the building floor plan. For this exercise this will be set to 12.

A switch -**Description**- field is provided that can be filled with a maximum of 25 characters of information.

Button function must be configured. Highlight the Button number and press OK to enter the editing screen.
These fields fill the list on the previous screen.

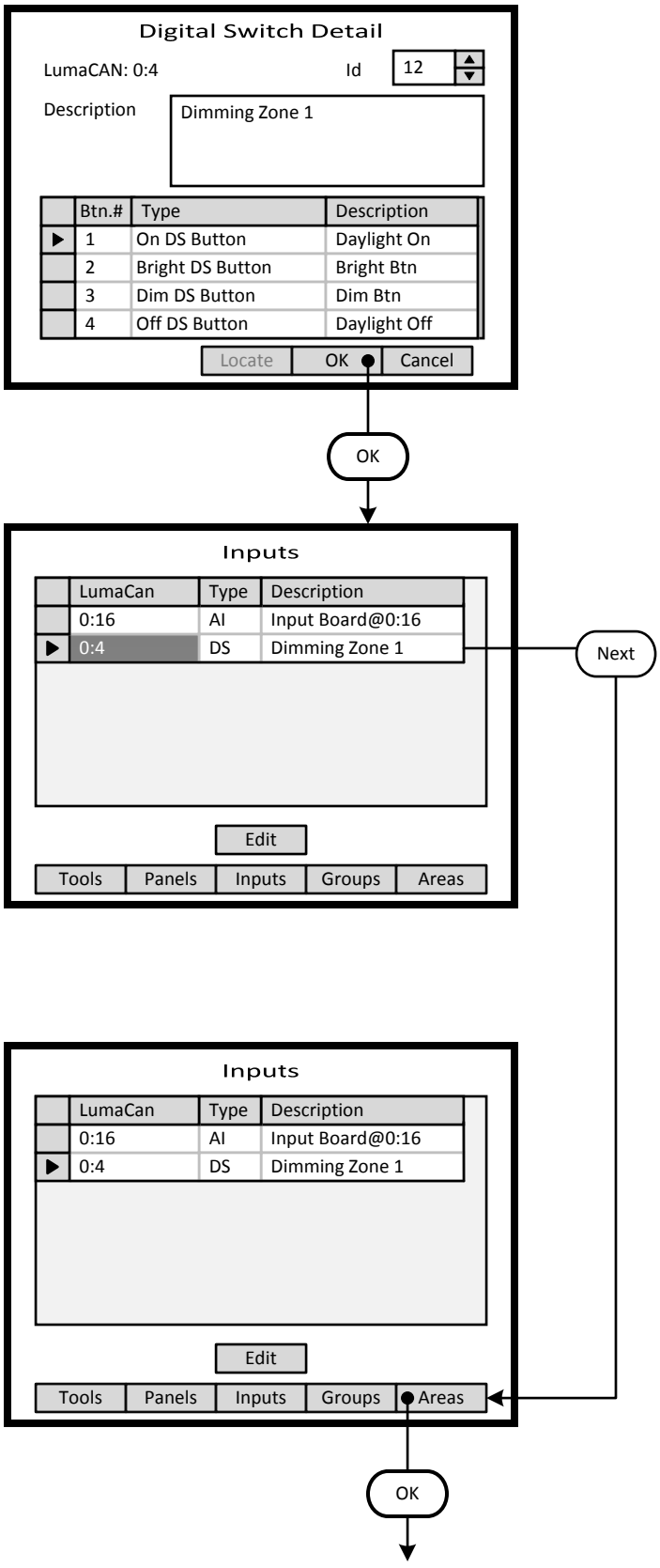
Use the UP or DOWN arrows on the keypad to navigate up or down the list.

Step 2.11

The Digital Switch Button Details screen is used to configure the individual button function and to name the button. Use the UP and DOWN arrows on the keypad to display the desired button function.
The Description field should be used to document the function of the individual buttons. This field is for user reference only.

Understanding the Screen
The type options are:
- *Momentary DS Button*
- *On DS Button*
- *Bright DS Button*
- *Dim DS Button*
- *Off DS Button*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.12
This illustration shows the recommended configuration for a Digital Switch used for dimming control application. The button Type fields should match those shown. Each field should be adjusted individually. Button descriptions are entered on the Button Detail Screen shown previous.

Use the UP or DOWN arrows on the keypad to navigate up or down the list.

Use NEXT and BACK to navigate between sections on the screen.

Understanding the Screen
The ID number are for information purposes and can be used to match assigned project switch numbers.

Step 2.13
The Inputs list has a Digital Switch at ID 4 and is described as Dimming Zone 1.

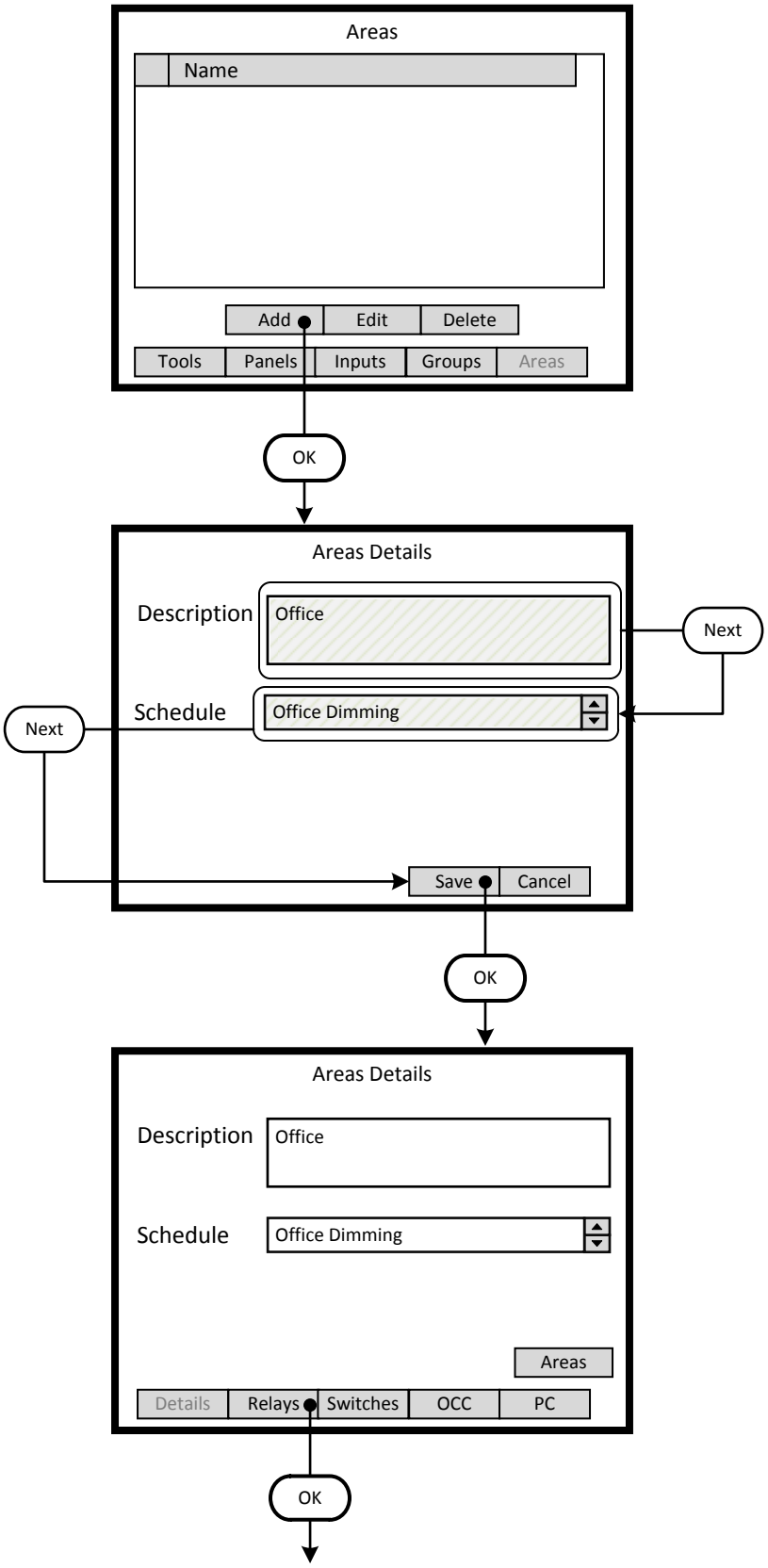
Use the UP and DOWN arrows to move about the list. Use NEXT to navigate to the <**Areas**> button.

Step 2.14
The Inputs list has an Low Voltage Input Board (AI) at LumaCan ID 16 and a Digital Switch (DS) at LumaCan ID 4 that is described as Dimming Zone 1.

Use NEXT to navigate to the <**Areas**> button. Press OK to advance to the Areas maintenance screen.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

Step 3: Create an Area



Step 3.1

The **Areas** screen lists all the current Areas available in the system. At this step there are no existing Areas. To create a new Area navigate to the <**Add**> onscreen button and press OK.

Understanding the Screen
There are no Areas in this system.
Description of the onscreen buttons:
<***Edit***> *selecting this onscreen button will allow editing of the highlighted Area in the list.*
<***Delete***> *selecting this onscreen button will permanently remove the highlighted Area from the list.*
<***Tools***> *use to navigate to the System Tools screen.*
<***Panels***> *use to navigate to the Relay Panel Detail Screen*
<***Groups***> *use to navigate to the Group building screen*
<***Areas***> *use to navigate to the Areas configuration screen*

Step 3.2

Enter the desired Area name and detail in the **-Description-** field. Enter as much information as practical.
The Area must be assigned to a Schedule. An area can only be assigned to one schedule at a time. All of the available system Schedules will appear in the **-Schedule-** list box.

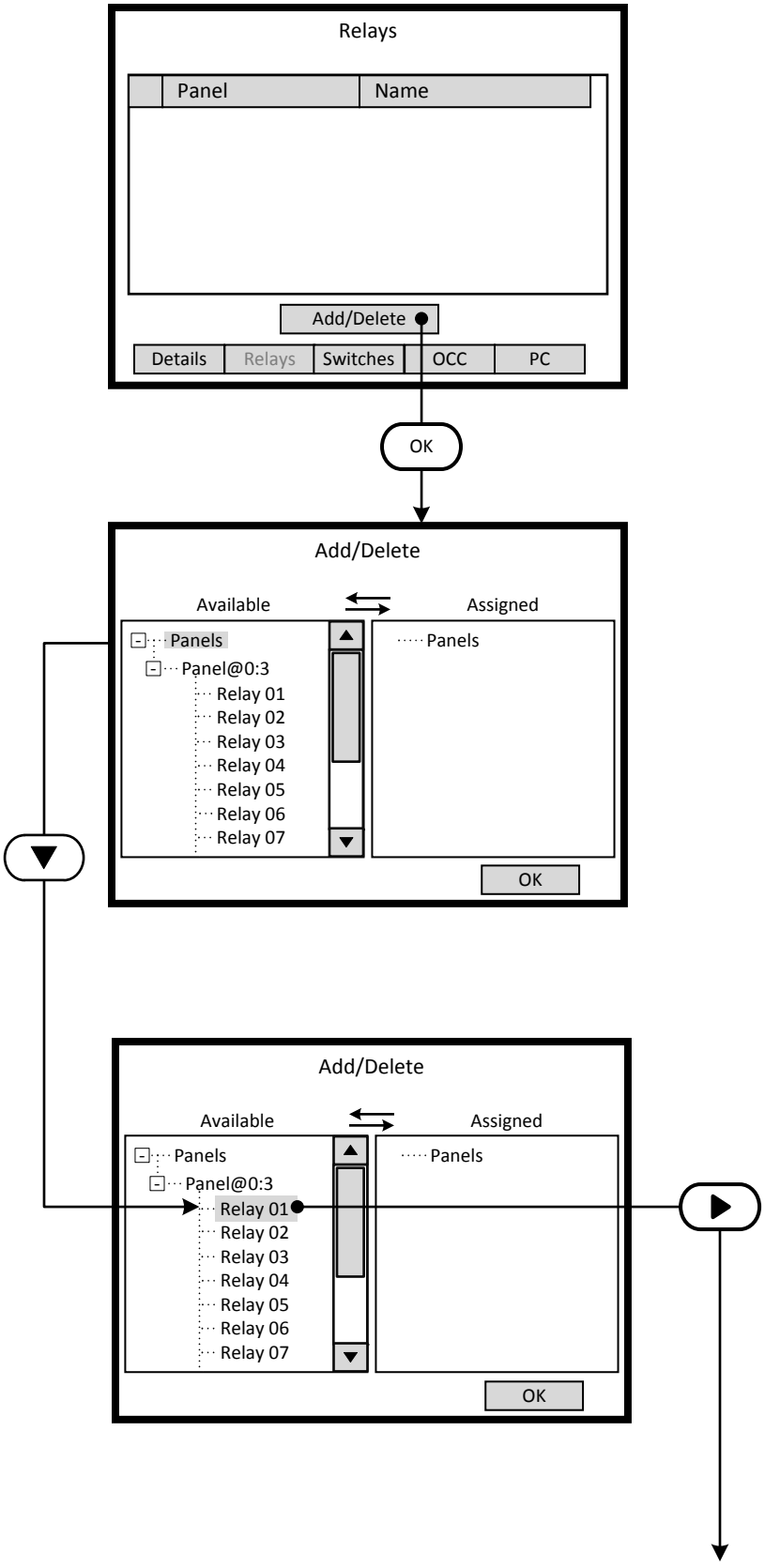
Understanding the Screen
*To appear in the **-Schedule-** list box, Schedules must be created prior to entering this screen. See the "Create a Schedule" section.*
Description of the onscreen buttons:
<***Save***> *selecting this onscreen button will create the Area, save it, and add advance to the next screen*
<***Cancel***> *used to discard entries*

Step 3.3

The newly created Area will contain relays and associated control devices. Additional navigation buttons are available to navigate to screens that populate or edit the contents of the Area. To add relays to the Area, navigate to the <**Relay**> onscreen button and press OK.

Understanding the Screen
Description of the onscreen buttons:
<***Areas***> *use to navigate to the Areas list screen*
<***Relays***> *selecting this onscreen button will allow the addition/editing of assigned relays*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***OCC***> *selecting this onscreen button to add/edit assigned Occupancy Sensors*
<***PC***> *selecting this onscreen button to add/edit assigned Photocells*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 3.4

The **Relays** screen lists all the current relays assigned to the Area. To add a new relay to the Area navigate to the <**Add/Delete**> onscreen button and press OK.

Understanding the Screen
There are currently no relays assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the **Area Details** screen*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***OCC***> *selecting this onscreen button to add/edit assigned Occupancy Sensors*
<***PC***> *selecting this onscreen button to add/edit assigned Photocells*

Step 3.5

The left side of the screen under the heading -**Available**- lists all of the relays that have not been assigned to an Area. If the desired relay is not on this list it has been assigned to another Area. Relays are displayed according to the panel they are installed in. All unassigned relays in the system can be seen on this list.

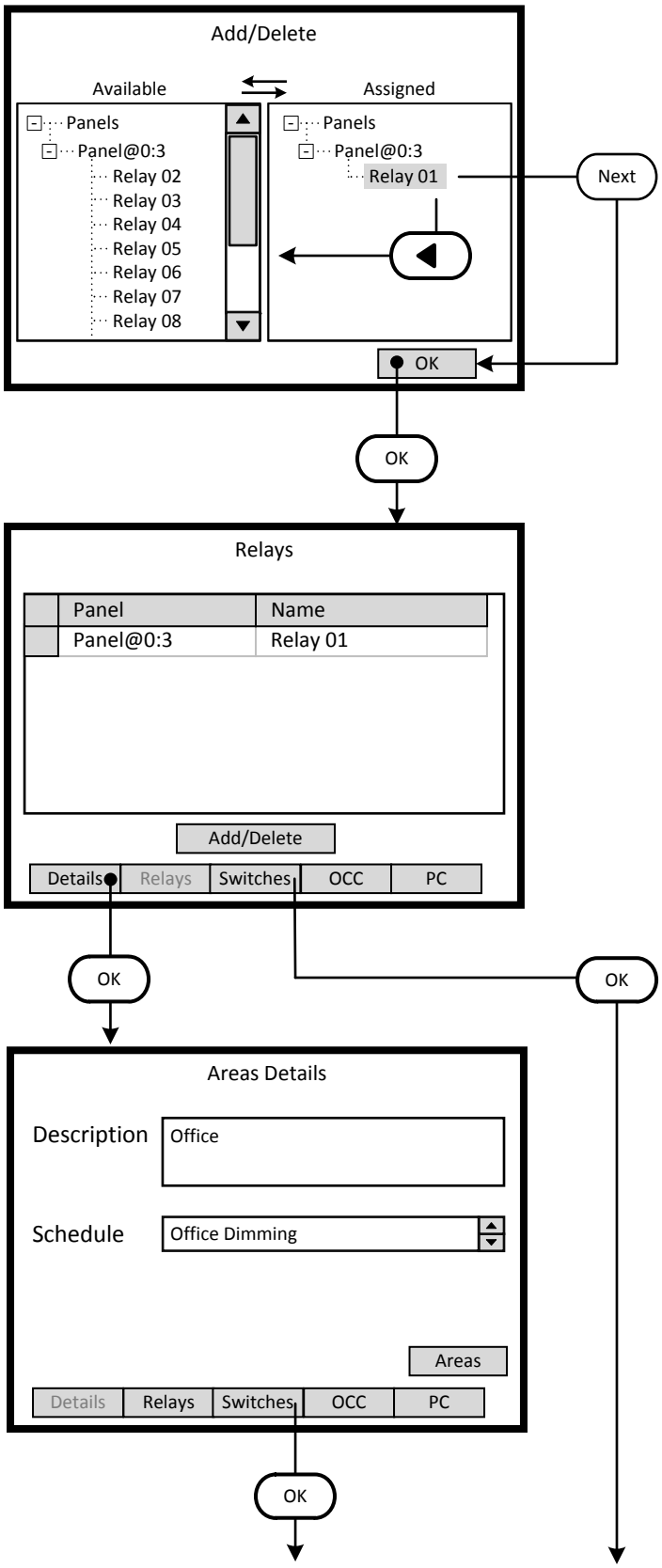
Understanding the Screen
Complete panels may be collapsed by highlighting name on the list pressing OK.
Description of the onscreen button:
<***OK***> *selecting this onscreen button will save the selections made and return to the **Relays** list screen.*

Step 3.6

Relays are added to the Area by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this Area.
Relays 01 through 07 are available for assignment.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the Area.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 3.7

Relays are deleted from the Area by moving them from the -**Assigned**- list to the -**Available**- list. This is accomplished by highlighting the desired relay on the right side of the screen and using the left arrow to move it to the right side of the screen. To accept the assignment, navigate to the -**OK**- onscreen button and press OK or Enter.

Understanding the Screen
Currently Relay 01 of Panel 3 has been assignment to the Area.
Relays 02 through 07 are available for assignment.

Step 3.8

The -Relays- screen lists the relays assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next common step is to add switch buttons to the Area.

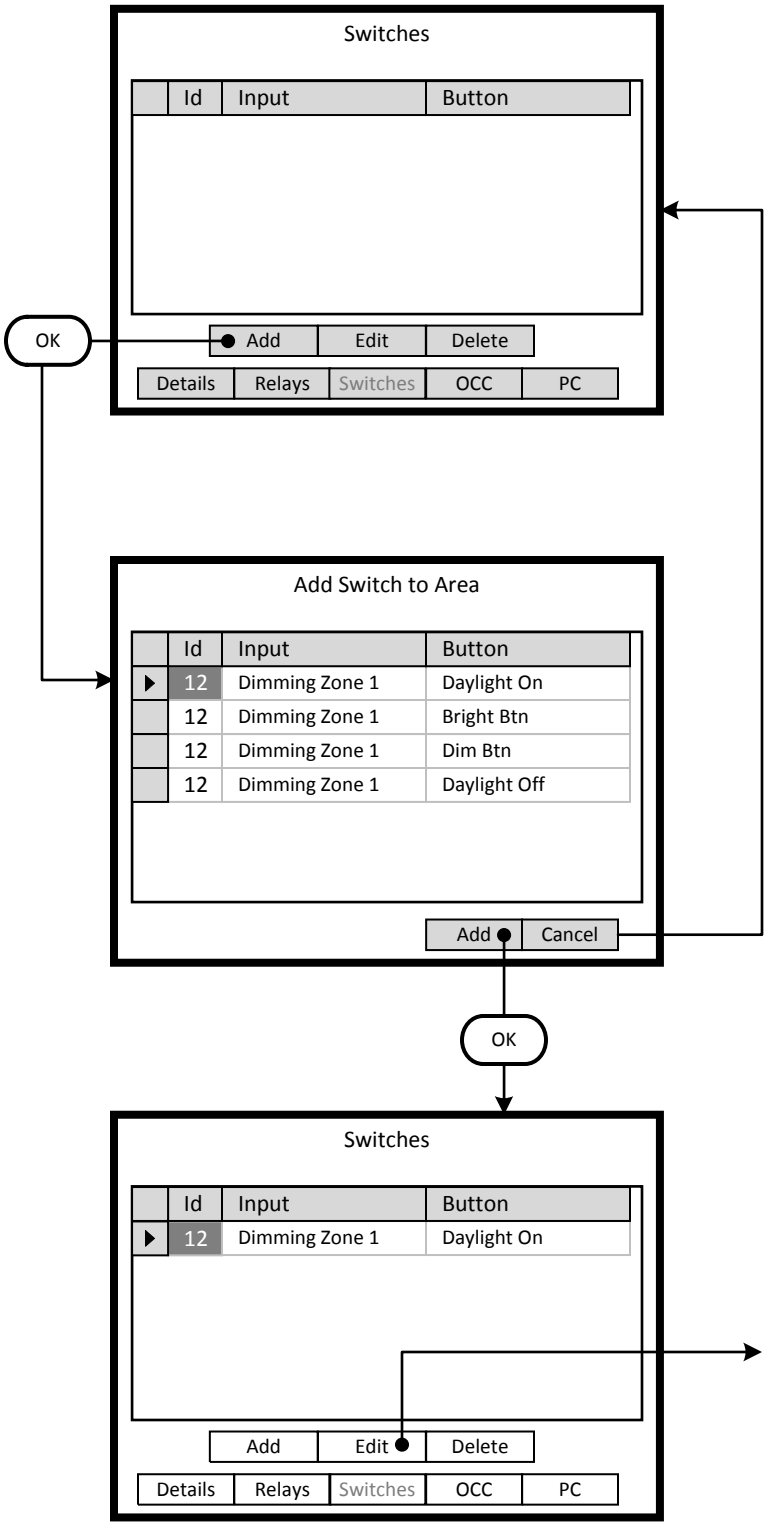
Understanding the Screen
Currently only Relay 01 of Panel 3 has been assignment to the Area.
*There are two navigating paths to the next screen. Using the <**Switches**> onscreen button skips a screen and goes directly to the -**Switches**- screen.*

Description of the onscreen buttons:

*<**Details**>*	*use to navigate to the -**Area Details**- screen*
*<**Switches**>*	*use to navigate to the -**Switches**- screen*
*<**OCC**>*	*use to navigate to the -**Occupancy Sensors**- screen*
*<**PC**>*	*use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

Step 4: Switch Buttons



Step 4.1

The -**Switches**- screen lists the switch buttons assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next common step is to add switch buttons to the Area.

Understanding the Screen
Currently there are no switch buttons assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.2

The -**Add Switch to Area**- screen lists the available and unassigned switch buttons for the system. As a switch button is assigned to an Area, it is removed from this list.

Understanding the Screen
*The highlighted button, button 1 of the switch at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

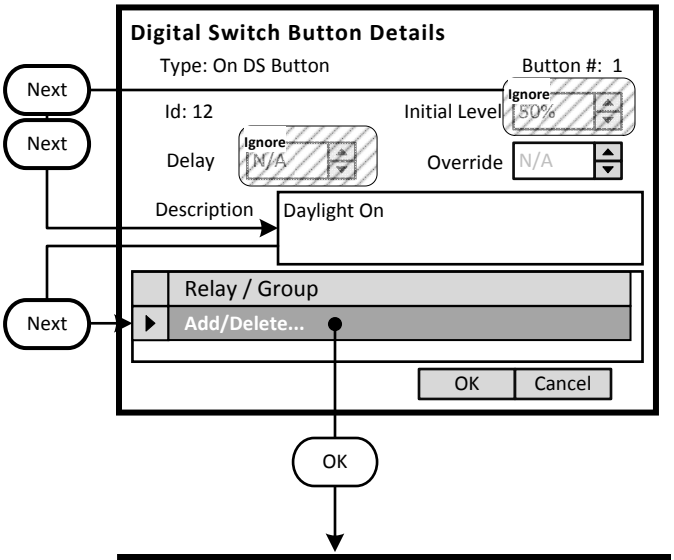
Step 4.3

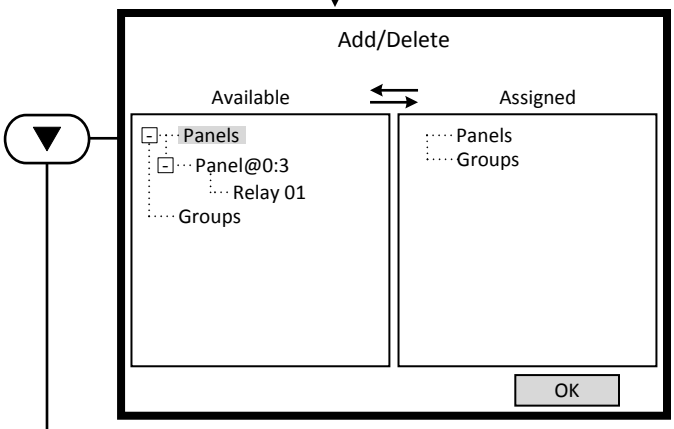
The -**Switches**- screen lists the switch buttons assigned to the Area. This list will be displayed each time this section of the Area information is entered.

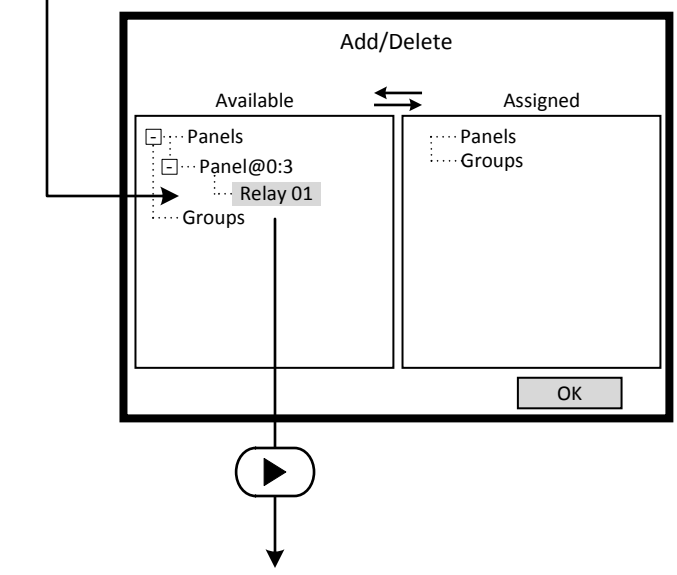
Understanding the Screen
Currently button 1 of the switch at LumaCan address 4 is assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name







Step 4.4

This screen configures the characteristics of the switch button. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*The -**Description**- field can be edited on this screen.*
*Information from the **Digital Switch Detail** screen will be displayed here.*
*Ignore the settings of -**Initial Level**-, -**Delay**- and -**Override**-.*

Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

Step 4.5

The left side of the screen under the heading -**Available**- lists all of the relays that have been assigned to an Area. If the desired relay is not on this list it has not been assigned to this Area. Relays are displayed according to the panel they are installed in. Use the navigation keypad to highlight the desired relay.

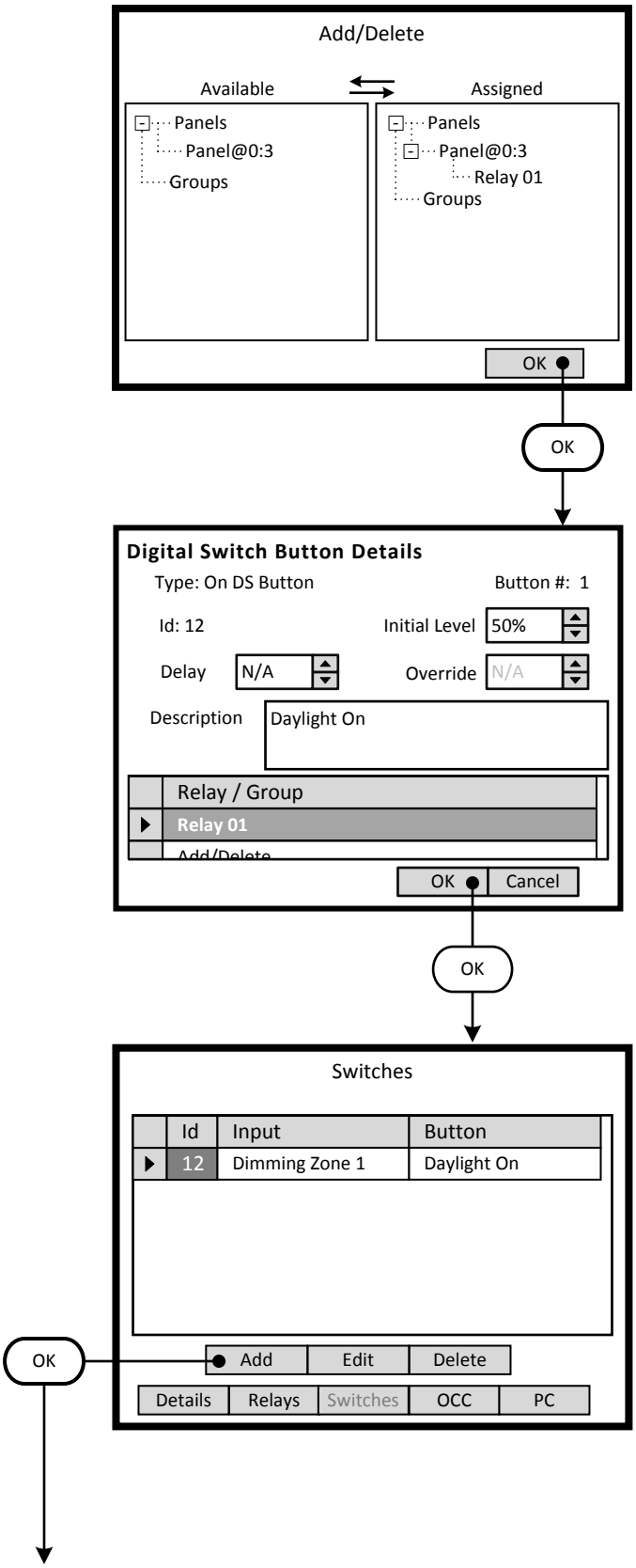
Understanding the Screen
Complete panels may be collapsed by highlighting name on the list pressing OK.
Description of the onscreen button:
<***OK***> *selecting this onscreen button will save the selections made and return to the **Relays** list screen.*

Step 4.6

Relays are assigned to the Switch button by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this Switch Button.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the Switch Button.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.7

Relay 01 is assigned to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned-** list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -**Digital Switch Button Details**- screen*

Step 4.8

Relay 01 is assigned to the control of the Switch Button 1.
To remove it, highlight the relay in the -**Assigned-** list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
Relay 01 of Panel 3 will start daylight harvesting when button 1 of switch ID: 12 is pressed.
*The settings of -**Initial Level**-, -**Delay**- and -**Override**- do not apply.*

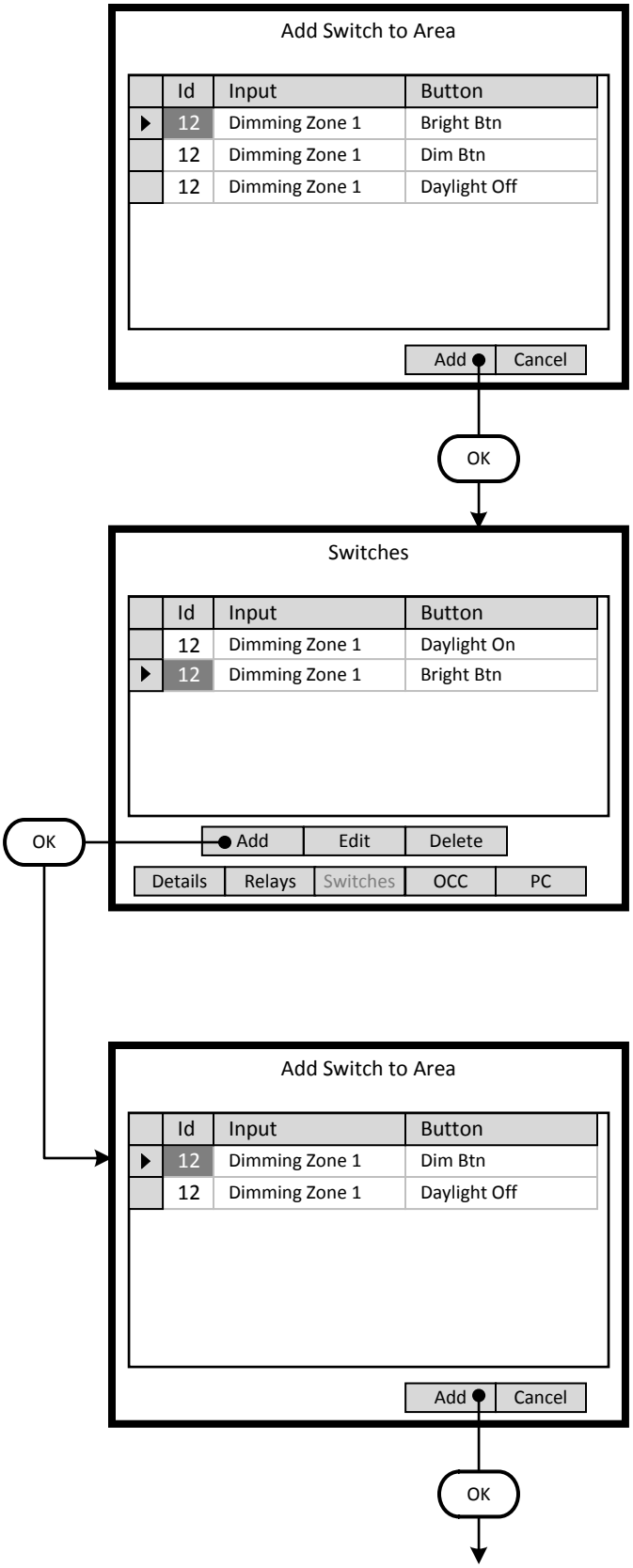
Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -**Switches**- screen*
<***Cancel***> *use to abandon entries and navigate to the -**Switches**- screen*

Step 4.9

All four of the Buttons for the Switch must be assigned to the Area. This summary list will be displayed each time this section of the Area information is entered. Navigate to the <**Add**> button and press **OK** button on the keypad.

Understanding the Screen
Currently there is one switch button assigned to the Area.
Description of the onscreen buttons:
<***Edit***> *use to navigate to the -**Digital Switch Button Details**- screen to make modifications to settings of the highlighted button*
<***Delete***> *use to delete the highlighted button from the Area*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.10

The -**Add Switch to Area**- screen lists the available and unassigned switch buttons for the system. As a switch button is assigned to an Area, it is removed from this list.

Understanding the Screen
*The highlighted button, Bright Btn button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
*<**Cancel**> use to navigate to the -**Area Details**- screen*

Step 4.11

The -**Switches**- screen lists the switch buttons assigned to the Area. This summary list will be increase as each button is added.

Understanding the Screen
Currently 2 buttons are assigned; Daylight On, Bright Btn of switch ID 12 at LumaCan address 4.

Description of the onscreen buttons:
*<**Add**> use to navigate to the -**Add Switch to Area**- screen*
*<**Delete**> use to delete the highlighted button*
*<**Details**> use to navigate to the -**Area Details**- screen*
*<**Relays**> use to navigate to the -**Relays**- screen*
*<**OCC**> use to navigate to the -**Occupancy Sensors**- screen*
*<**PC**> use to navigate to the -**Photocells**- screen*

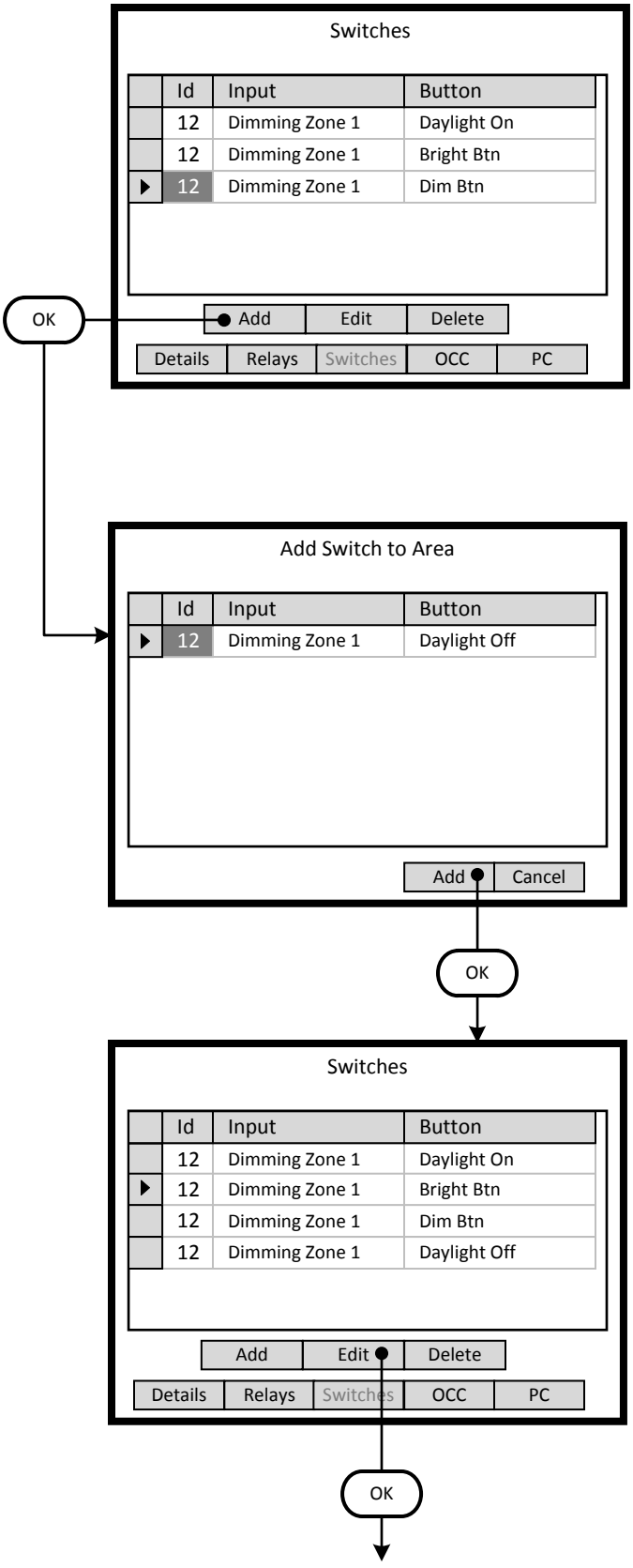
Step 4.12

Continue to add all of the relevant buttons to the Area.

Understanding the Screen
*The highlighted button, Dim Btn button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
*<**Cancel**> use to navigate to the -**Area Details**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.13

The -**Switches**- screen lists the switch buttons assigned to the Area. This summary list will be increase as each button is added.

Understanding the Screen
Currently 3 buttons are assigned; Daylight On, Bright Btn, Dim Btn of switch ID 12 at LumaCan address 4.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.14

Continue to add all of the relevant buttons to the Area.

Understanding the Screen
*The highlighted button, Daylight Off button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

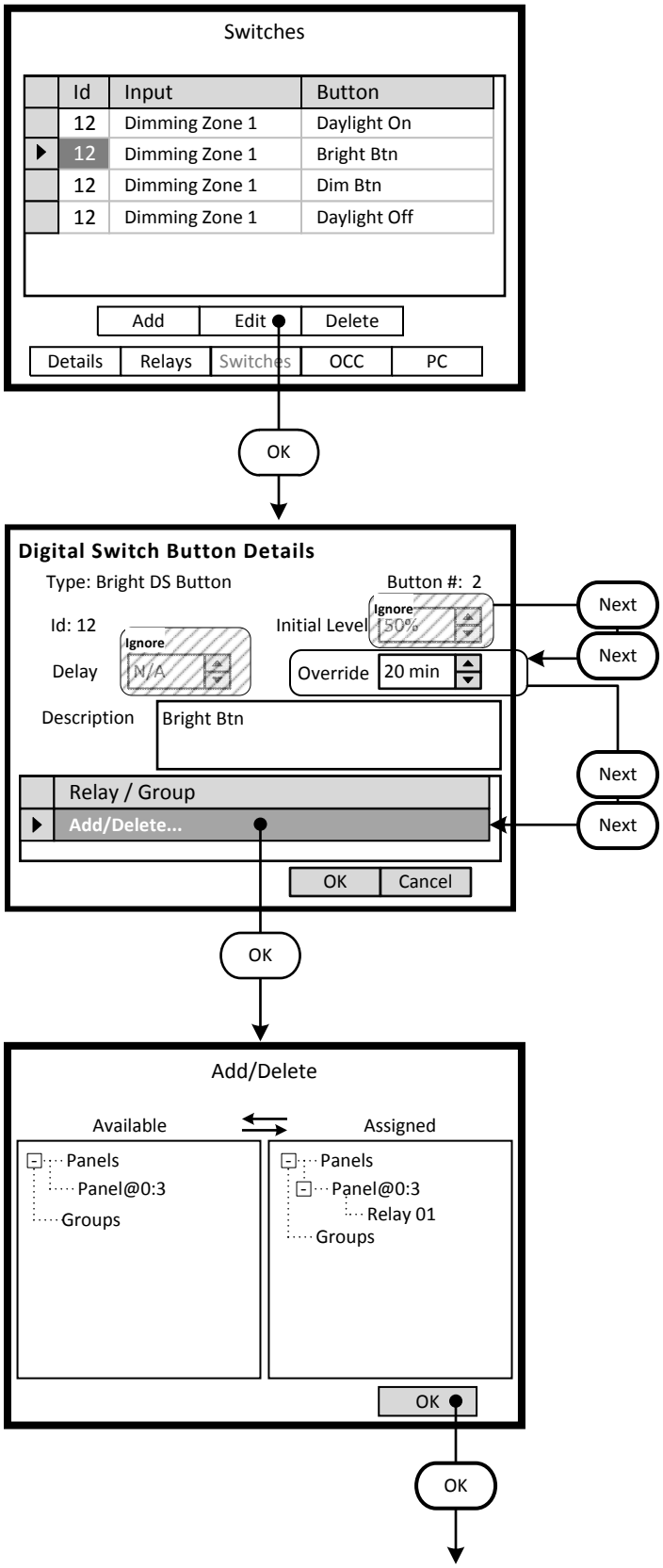
Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

Step 4.15

All four of the buttons for the switch have been added to the Area. Each of the buttons must be assigned to the relay to be controlled. The Daylight On button was previously configured in Step 4.4. Navigate to the <**Edit**> button and press **OK** button on the keypad to configure each button of the remaining three buttons.

Understanding the Screen
Currently there is one switch button assigned to the Area.
Description of the onscreen buttons:
<***Delete***> *use to delete the highlighted button from the Area*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.16

The three new buttons listed on the -**Switches**- screen require configuration. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.17

The Bright DS button will temporarily increase the light level from the Target Level of the photocell. The -**Override**- field is set for the duration that the Bright manual override is active. At the conclusion of this interval, the zone will return to the photocell Target Level. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Initial Level**- and -**Delay**-.*
Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

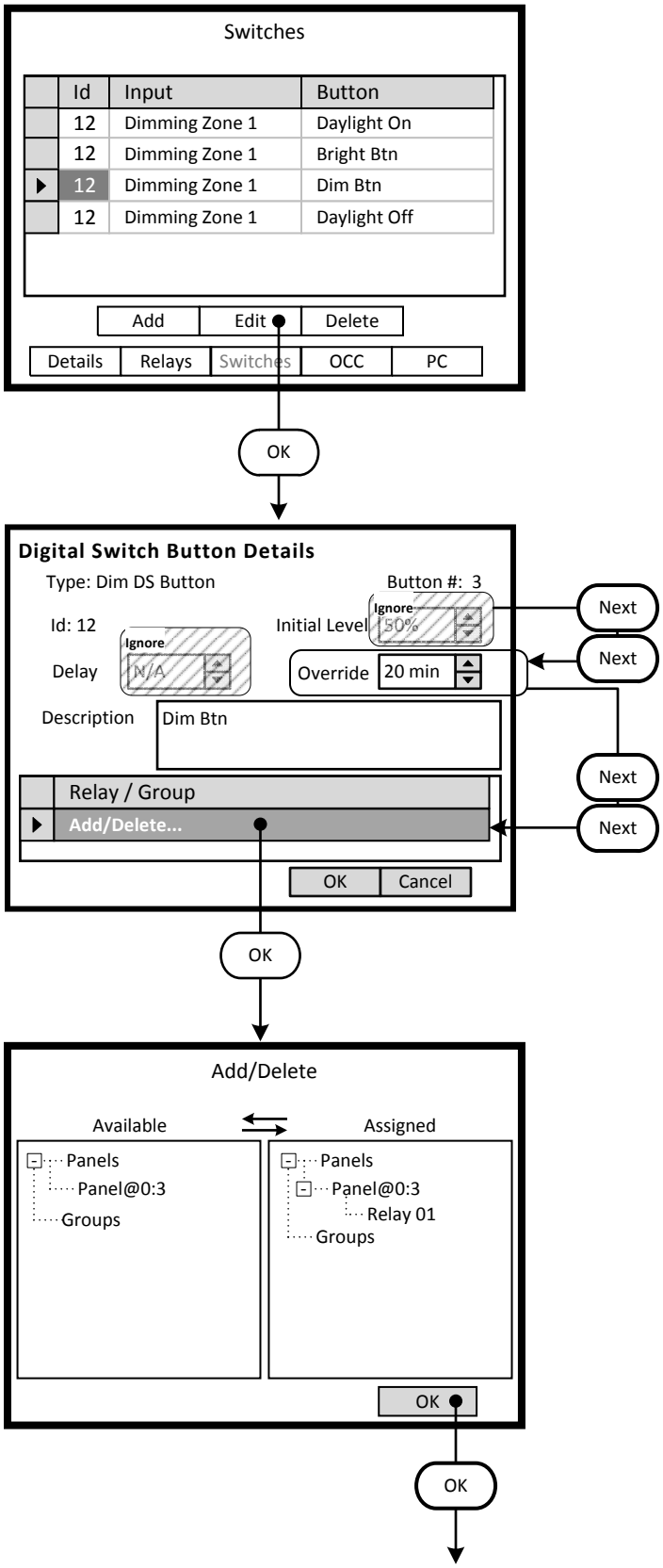
Step 4.18

Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.19

Configure the next button listed on the -**Switches**- screen. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.20

The Bright DS button will temporarily decrease the light level from the Target Level of the photocell. The -**Override**- field is set for the duration that the Dim manual override is active. At the conclusion of this interval, the zone will return to the photocell Target Level. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Initial Level**- and -**Delay**-.*
Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

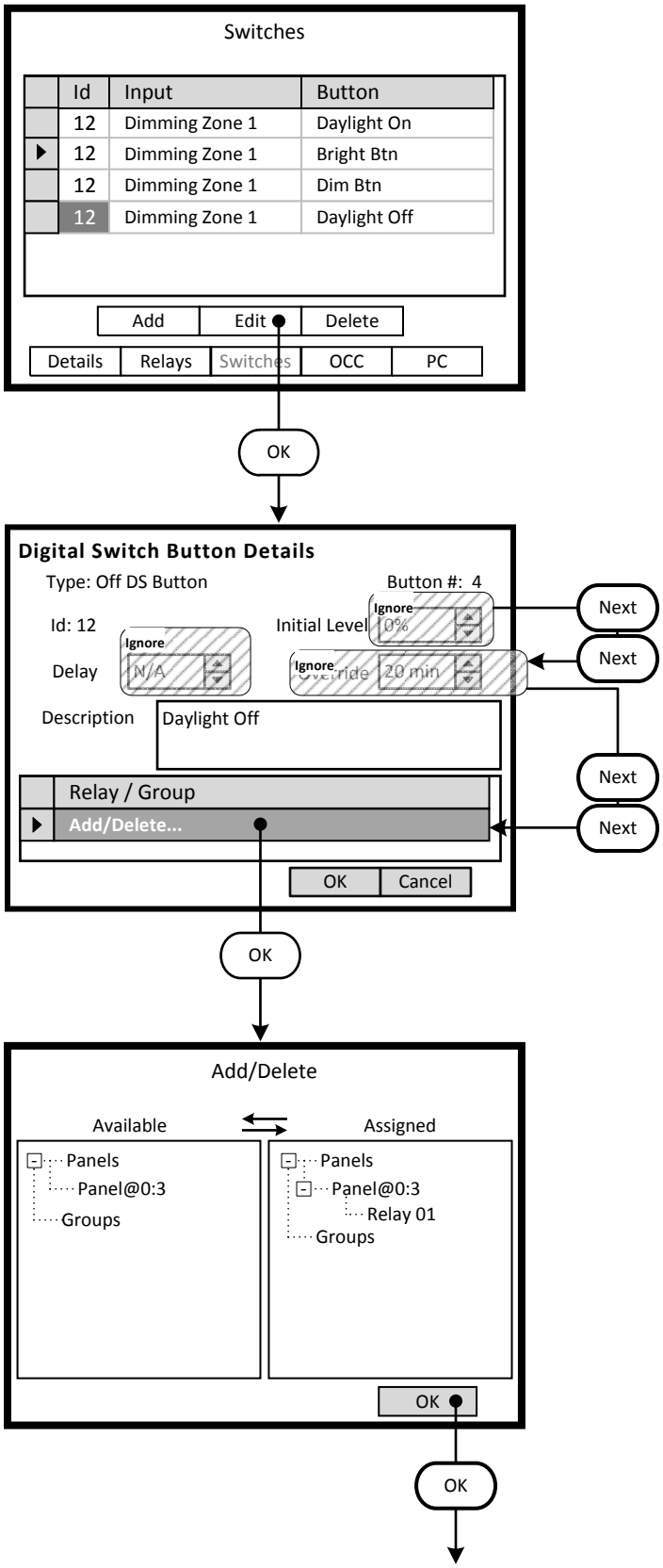
Step 4.21

Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.22

The three new buttons listed on the -**Switches**- screen require configuration. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.23

The Off DS button will turn Off the zone. The light level will dim to zero output and turn off the relay. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Initial Level**-, -**Delay**- and -**Override**-.*

Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

Step 4.24

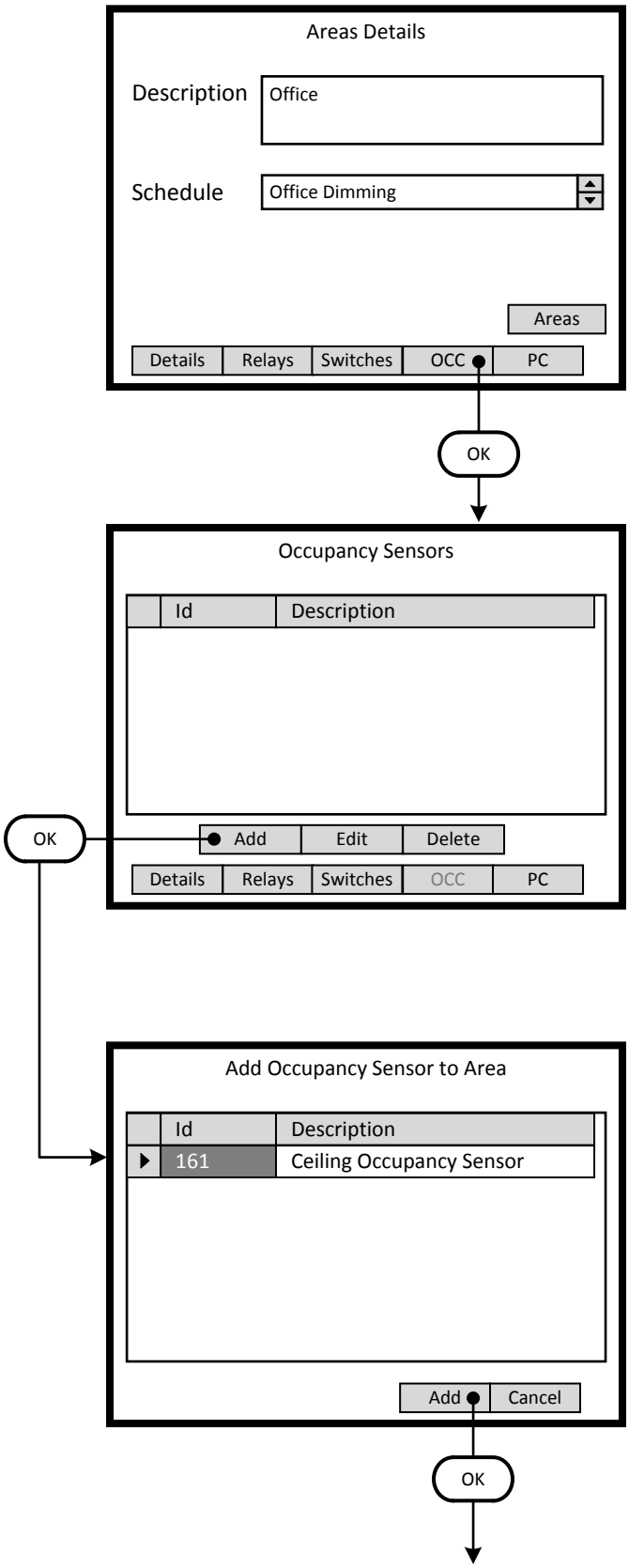
Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on screenen entry field
NEXT Button on keypad
Details Screen Name

Step 4: Occupancy Sensor



Step 5.1

The Office Dimming Area requires occupancy sensors assigned to control of the relay. To add occupancy sensors to the Area, navigate to the <**OCC**> onscreen button and press OK.

Understanding the Screen
Description of the onscreen buttons:
<***Areas***> *use to navigate to the -**Areas**- list screen*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *selecting this onscreen button will allow the addition/editing of assigned relays*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***PC***> *selecting this onscreen button to add/edit assigned Photocells*

Step 5.2

The -**Occupancy Sensors**- screen lists the sensors assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next step is to add these devices to the Area.

Understanding the Screen
Currently there are no occupancy sensors assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***Switches***> *use to navigate to the -**Switches**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

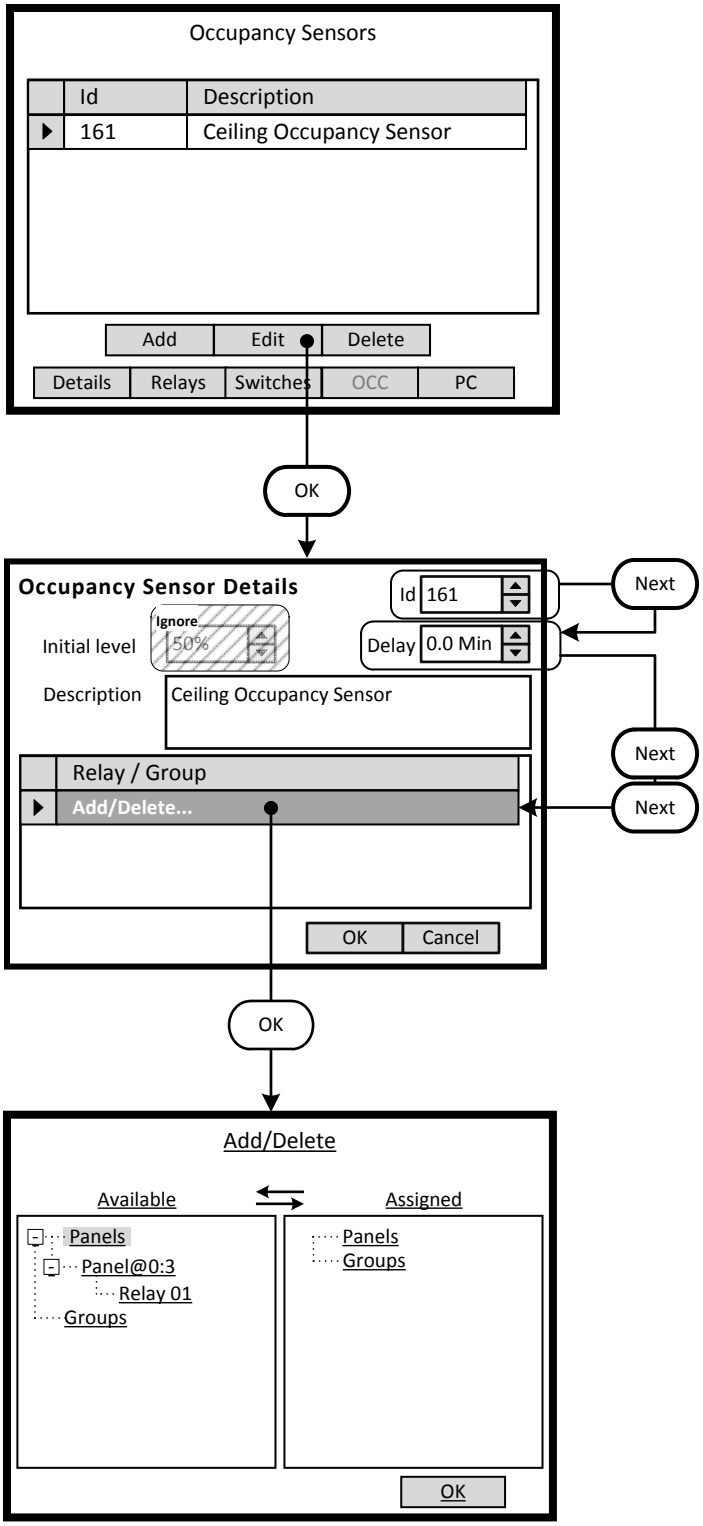
Step 5.3

The -**Add Occupancy Sensor to Area**- screen lists the available and yet unassigned occupancy sensors for the system. As an occupancy sensor is assigned to an Area, it is removed from this list.

Understanding the Screen
*The highlighted occupancy sensor can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 5.4

The -**Occupancy Sensors**- screen lists the sensors assigned to the Area. This device must be configured and have one or more relays assigned to it. Highlight the desired occupancy sensor and navigate to the <**Edit**> button.

Understanding the Screen
Currently there is only one occupancy sensor assigned to the Area.

Description of the onscreen buttons:
*<**Details**>* *use to navigate to the -**Area Details**- screen*
*<**Relays**>* *use to navigate to the -**Relays**- screen*
*<**Switches**>* *use to navigate to the -**Switches**- screen*
*<**PC**>* *use to navigate to the -**Photocells**- screen*

Step 5.5

This screen configures the characteristics of the occupancy sensor.
The -**Delay**- setting is adjusted to provide a time delay after vacancy is determined by the sensor. The Off signal from the sensor will be received at the end of this delay period.
The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

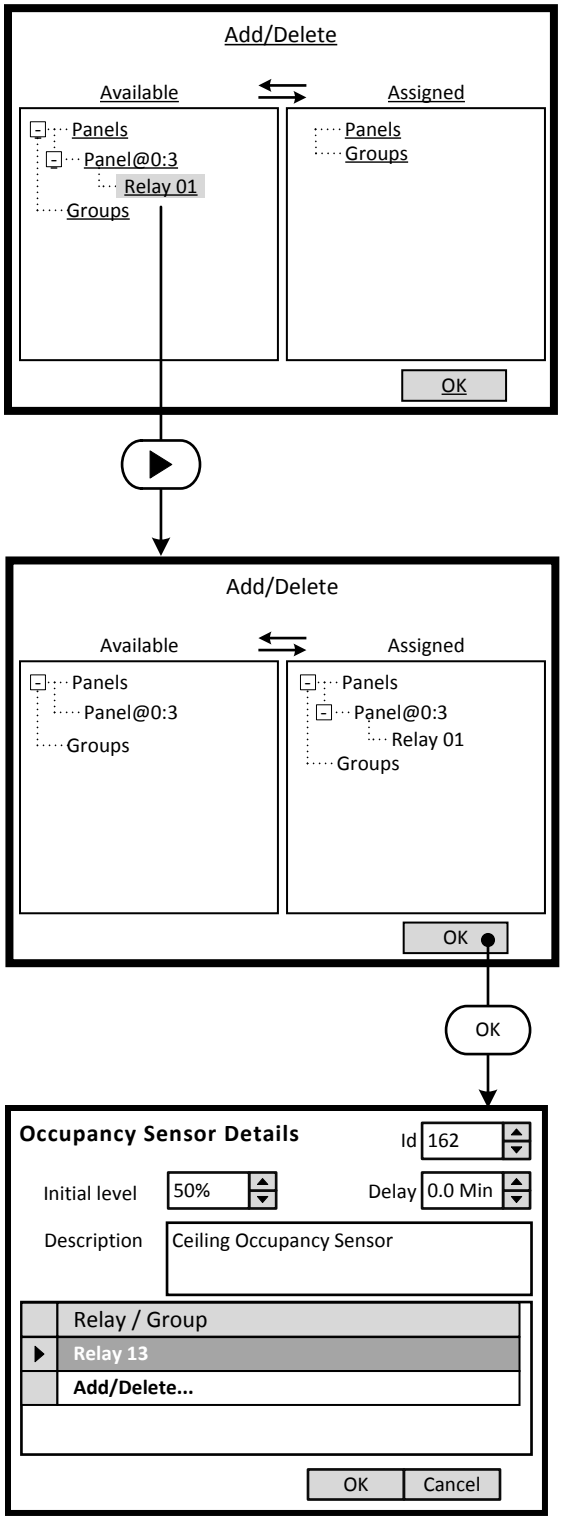
Understanding the Screen
*The -**Description**- field can be edited on this screen.*
*The -**Id**- can be changed .*
*Ignore the settings of -**Delay**- and -**Initial Level**-.*

Step 5.5

The left side of the screen under the heading -**Available**- lists all of the relays that have been assigned to an Area. If the desired relay is not on this list it has not been assigned to this Area. Relays are displayed according to the panel they are installed in. Use the navigation keypad to highlight the desired relay.

Understanding the Screen
Complete panels may be collapsed by highlighting name on the list pressing OK.
Description of the onscreen button:
*<**OK**>* *selecting this onscreen button will save the selections made and return to the **Relays** list screen.*

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



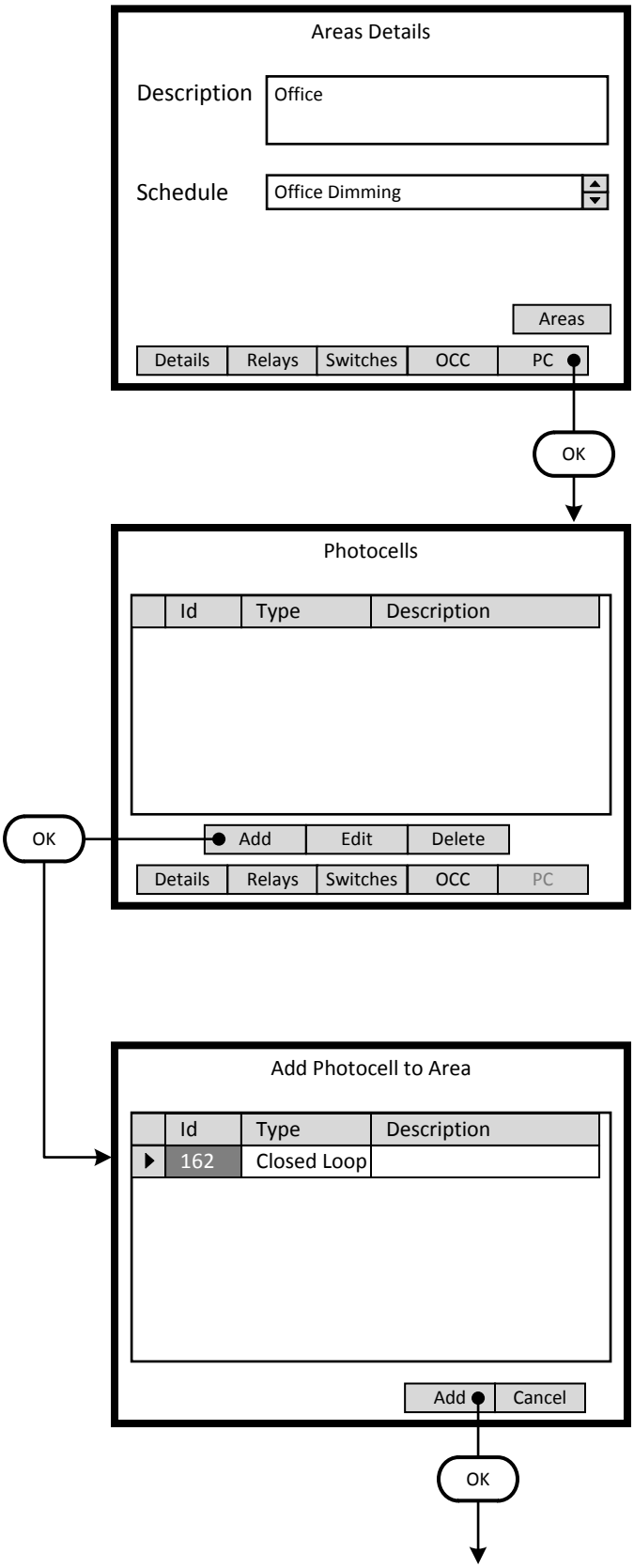
Step 5.6

Relays are assigned to the occupancy sensor by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this occupancy sensor.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the occupancy sensor.

Key
<**Add**> On screen button.
-**Name**- Label of on screenen entry field
NEXT Button on keypad
Details Screen Name

Step 4: Photocell



Step 6.1

The Office Dimming Area requires a photocell assigned to control of the relay. The photocell is mandatory for Behaviors that involve a photocell in their control scheme. To add a photocell to the Area, navigate to the <**PC**> onscreen button and press OK.

Understanding the Screen
Description of the onscreen buttons:
<***Areas***> *use to navigate to the -**Areas**- list screen*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *selecting this onscreen button will allow the addition/editing of assigned relays*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***OCC***> *selecting this onscreen button to add/edit assigned occupancy sensors*

Step 6.2

The -**Photocell**- screen lists the photocells assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next step is to add these devices to the Area.

Understanding the Screen
Currently there are no Photocell assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***Switches***> *use to navigate to the -**Switches**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*

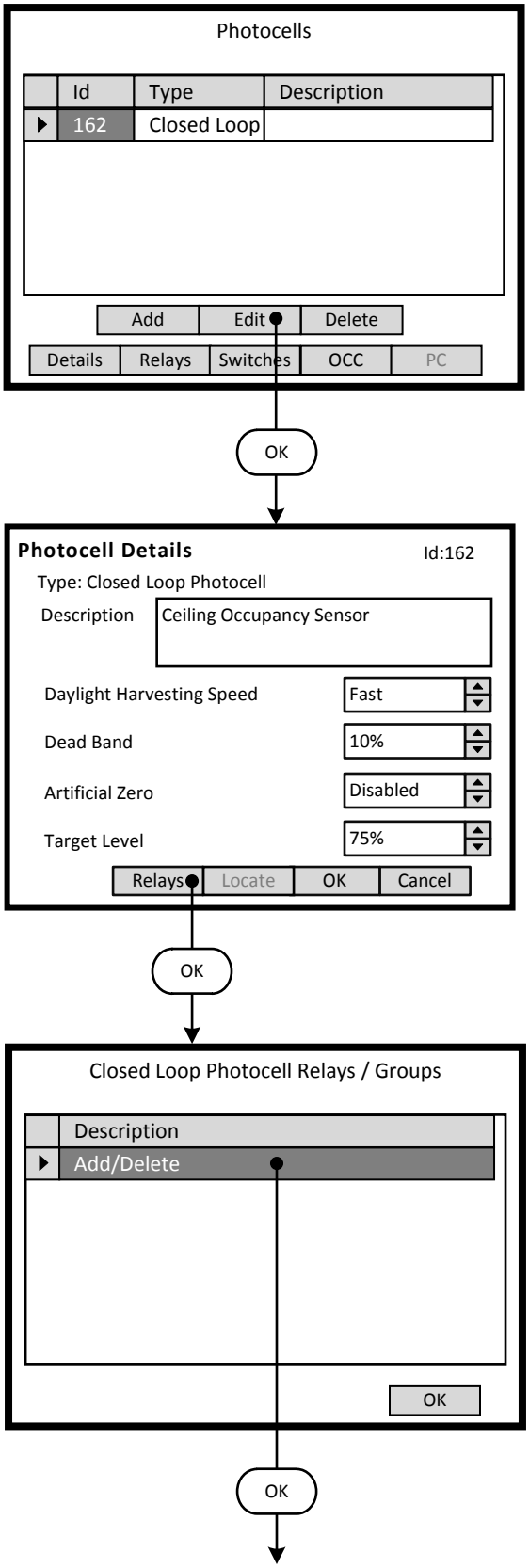
Step 6.3

The -**Add Photocell to Area**- screen lists the available and yet unassigned photocells for the system. As an photocell is assigned to an Area, it is removed from this list.

Understanding the Screen
*The highlighted photocell can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 6.4

The -**Photocells**- screen lists the photocell assigned to the Area. This device must be configured and have one or more relays assigned to it. Highlight the desired photocell and navigate to the <**Edit**> button.

Understanding the Screen
Currently there is only one photocell assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***Switches***> *use to navigate to the -**Switches**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensor**- screen*

Step 6.5

This screen configures the characteristics of the Closed Loop Photocell.
The -**Daylight Harvesting Speed**- setting is the speed of response to measured changes in light level.
The -**Dead Band**- setting is applied to the target level to reduce sensitivity of the system relative to the target level.
The -**Artificial Zero**- can be used to change the percentage of output of the relay that represents the off value .
The -**Target Level**- is the desired light level in the space. This is the percentage of measured signal at the input terminals.

Understanding the Screen
*The -**Description**- field can be edited on this screen.*

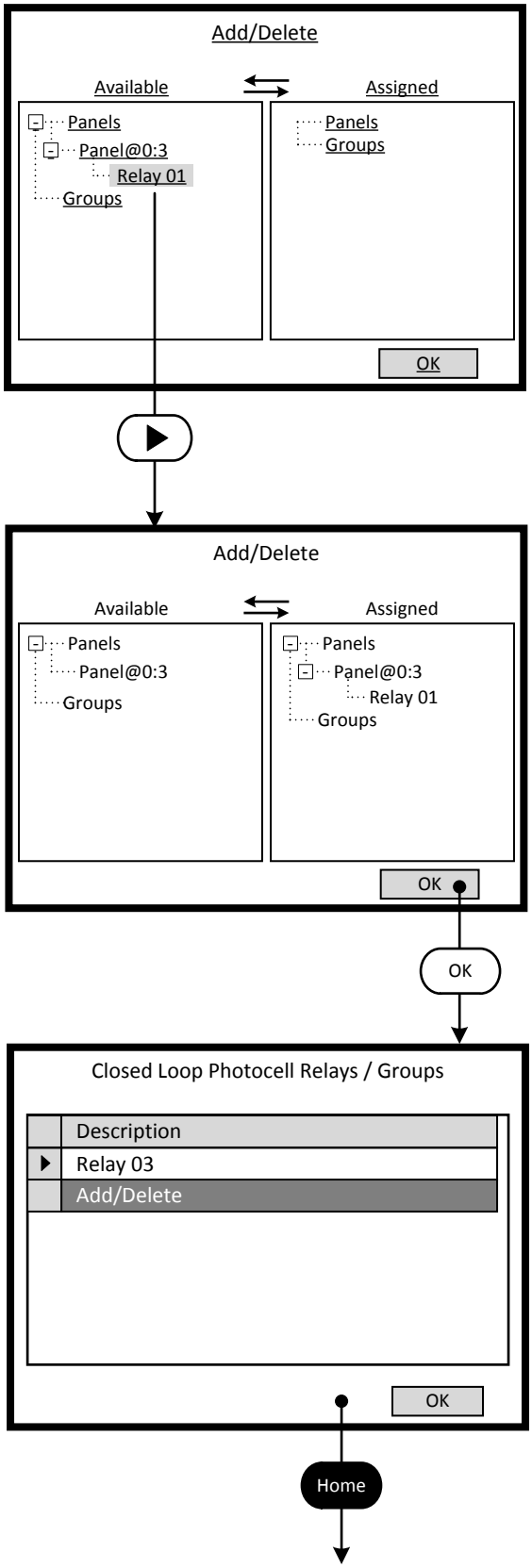
Step 6.6

This is a list of the assigned Relays or Groups in the Area.
Use the navigation keypad to highlight the desired relay or option. Pressing the OK button with the highlight as shown, will advance to the **Add/Delete** screen

Understanding the Screen
No Relays or Groups are assigned to the photocell .

Description of the onscreen button:
<***OK***> *selecting this onscreen button will save the selections made and return to the **Photocell Details** screen.*

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 6.7
Relays are assigned to the Photocell by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this occupancy sensor.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the occupancy sensor.

Step 6.8
Relays are assigned to the Photocell by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently relay 01 of Panel 3 has been assigned to the photocell.

Step 6.9
This is a list of the assigned Relays or Groups in the Area.
Use the navigation keypad to highlight the desired relay or option. Pressing the OK button with the highlight as shown, will advance to the **Add/Delete** screen
This completes the set-up. Press HOME or follow the string of OK buttons back to the **Area** list.

Understanding the Screen
Only one Relay is assigned to the photocell .

Description of the onscreen button:
*<**OK**>* *selecting this onscreen button will save the selections made and return to the **Photocell Details** screen.*

Section 3
Support Information

Definitions

Agenda	A pattern of Behaviors or list of Behavior Transitions that cover a 24 hour period. Each Agenda provides a maximum of 24 transitions for that period. Time between Transitions can be as short as one minute apart.
Behavior	A predefined control scheme that, when applied to an Area, establishes the interactive priorities among the input devices in that Area. Certain behaviors can change device settings at the time of Transition. The system will stay in the last Behavior until the next Transition is triggered.
Behavior Transition	A point in time that an Agenda triggers an operational change to new Behavior. The transition will only occur in an Area that is assigned to the schedule.
Exceptions Calendar	This is a list of dates that requires specific Agenda that is a departure from the scheduled default Agenda. For example, a list of Holidays that require a unique Agenda.
Schedule	This is a series of seven Agendas corresponding with the days of the week. It is the fundamental or default week that will routinely function. Agendas for dates listed on the Exceptions Calendar will override the default Agenda for that day.
Low Voltage Inputs	Devices that interface with the controlled environment to detect the presence or absence of conditions or people. Devices include occupancy sensors, photocells, low voltage switches, and contact closures. These devices connect to a port on the Low Voltage input card and operate at +24vdc. The input signals from the devices are measured at 0 to +10vdc and can be analog or binary.
Analog Input	This is a signal from a device that will vary in voltage directly proportional to devices' measured detection value. For example, a photocell is used to measure the light level in a space. Full range or maximum light level at the photocell will measure +10vdc and conversely no light level will be 0vdc.
Binary Input	This is a signal from a device that will only have two state or measured voltage levels. Typically these values will be +10vdc (full On signal) or 0vdc (Off signal). An occupancy sensor provides this type of signal, On when occupant is present or Off when no occupant is sensed.
Astronomical Clock	This timing feature tracks the Sunset and Sunrise in the Northern hemisphere as it seasonally changes. The times change or update on a weekly basis. This allows Behavior Transitions based on Sunset and Sunrise times. Offsets from these times are also programmable.
Time/Date Clock	This is the main system clock used to coordinate all Behavior Transitions.

Definitions

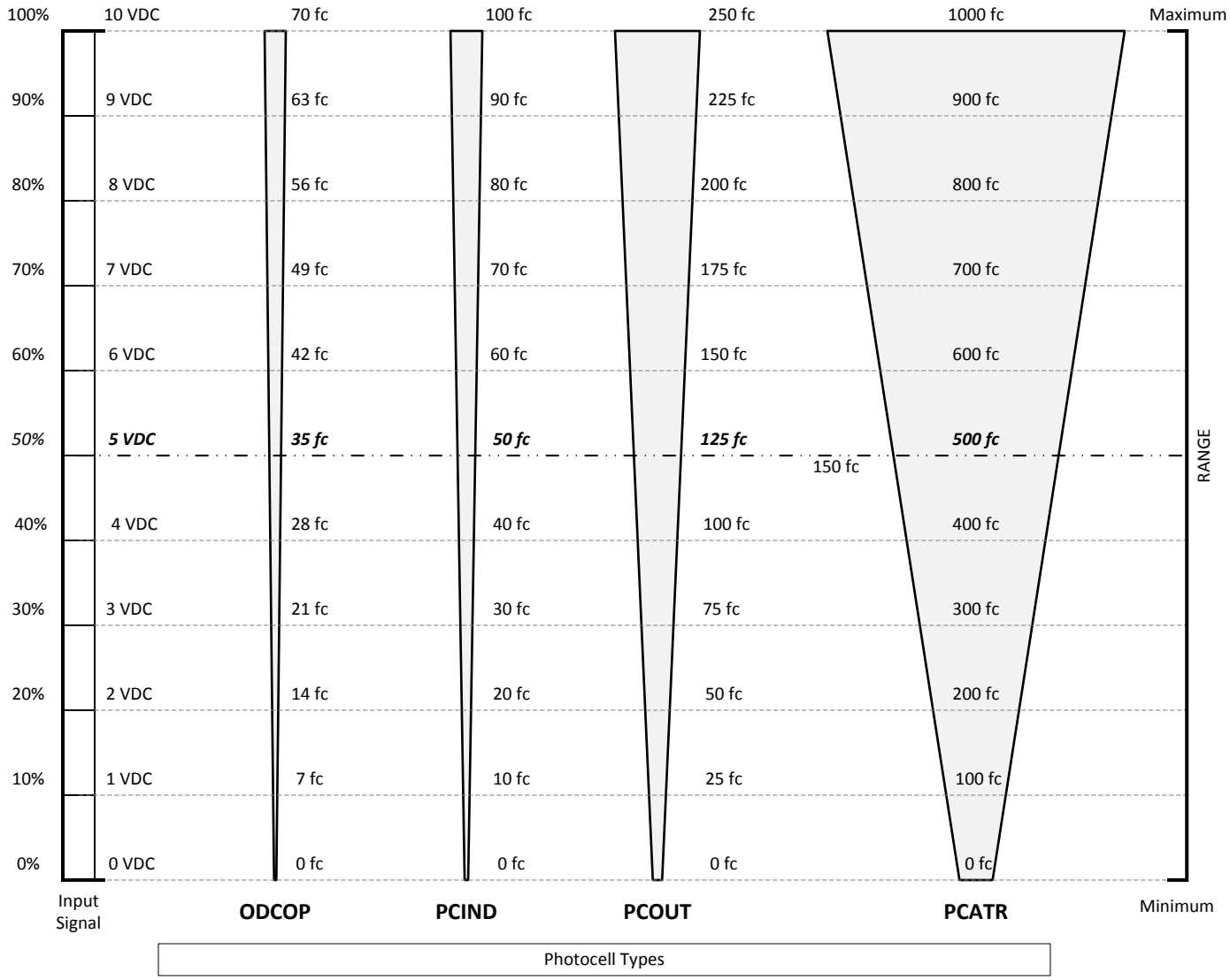
Digital Switch	A manual control switch station that connects to the system via the LumaCan network. They are available in one, two, and four button configurations. Each button on the Digital Switch is programmable for a variety of functions and features.
LumaCan	This is the communication network platform that interconnects all components in the system.
Low Voltage Input Board	This board provides the connection of Low Voltage devices to the system. This board is available in two sizes, 8 and 16 independent inputs.
Closed Loop Photocell	This device measures the light in a specific space or area and provides a proportional signal to the input port. This device will typically measure the light on a surface. It is used to drive the system response for daylight harvesting functions. The light level measured will be the sum of natural and artificial light on the surface. A Target Level is the percentage of measured range that the measured light should maintain. The Closed Loop Photocell controls a single zone.
Open Loop Photocell	This device measures the light level of a source of natural light that is intended to illuminate an area. It should be mounted facing toward the light source as a glass Atrium or sky light. It will be used to vary the artificial light output proportionally to the intensity of the natural light. The Open Loop Photocell can be used to control up to 8 zones with varying degrees of dimming percentage.

Photocell Signals and Calibration

There are several types of photocells available for connection to the GreenMAX system. All photocells must operate at +24VDC and provide an input signal proportional to the foot-candle value being measured. This input signal must range between 0 and +10VDC. The selected photocell must match the application range of measurement.

The chart on this page illustrates the relationship between foot-candles and percentage of scale. Notice the following items:

- The maximum of the range is 100%, minimum is 0%.
- Each type of photocell has a unique maximum range value.
- The proportional values through the signal range while maintaining the relationship between percentage, voltage, and foot-candles.



Low Voltage Connection Diagrams

Diagram 1 - Typical Occupancy Sensor Wiring

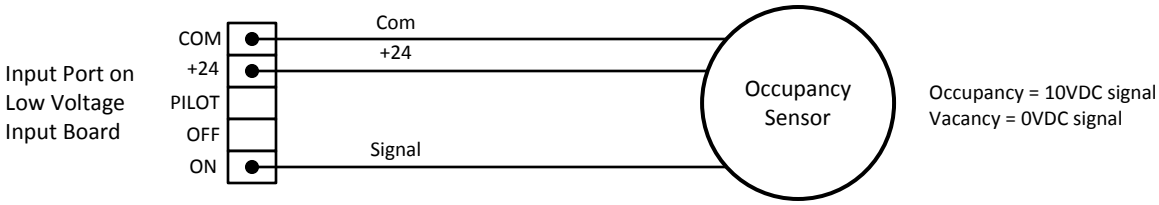
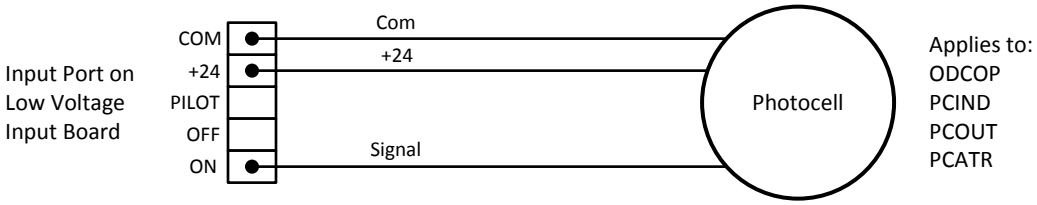
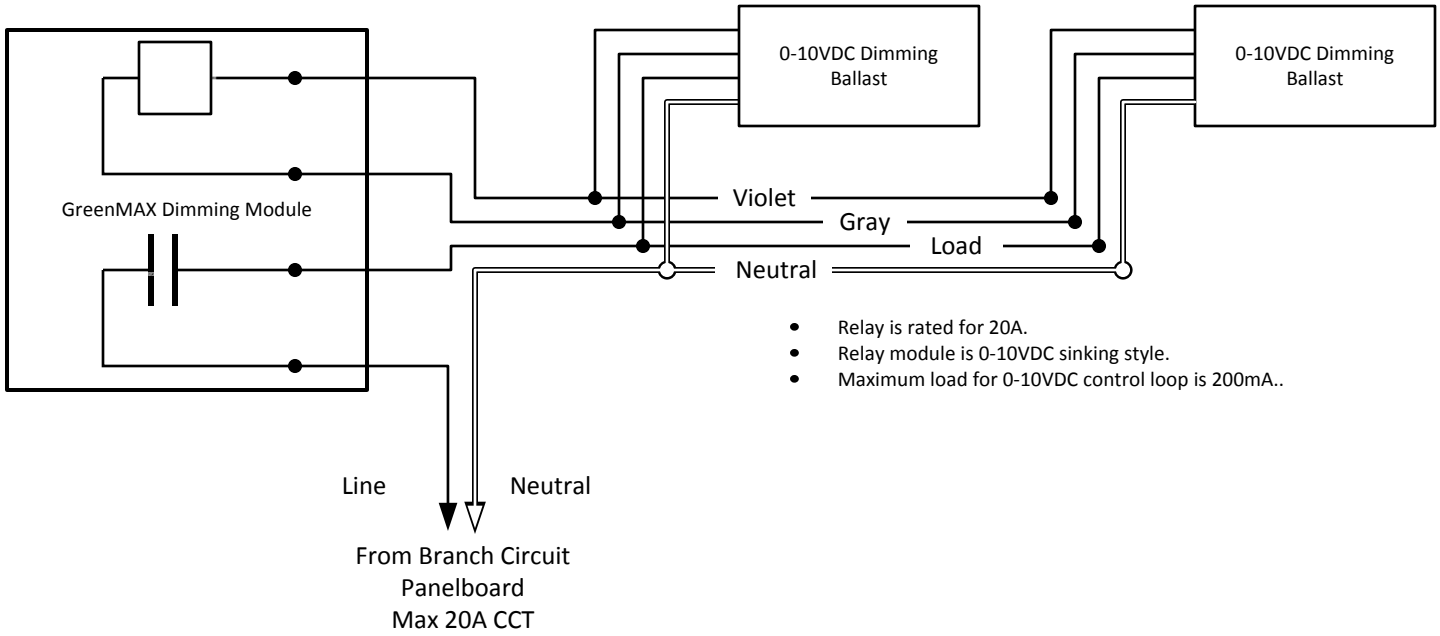


Diagram 2 - Typical Photocell Wiring



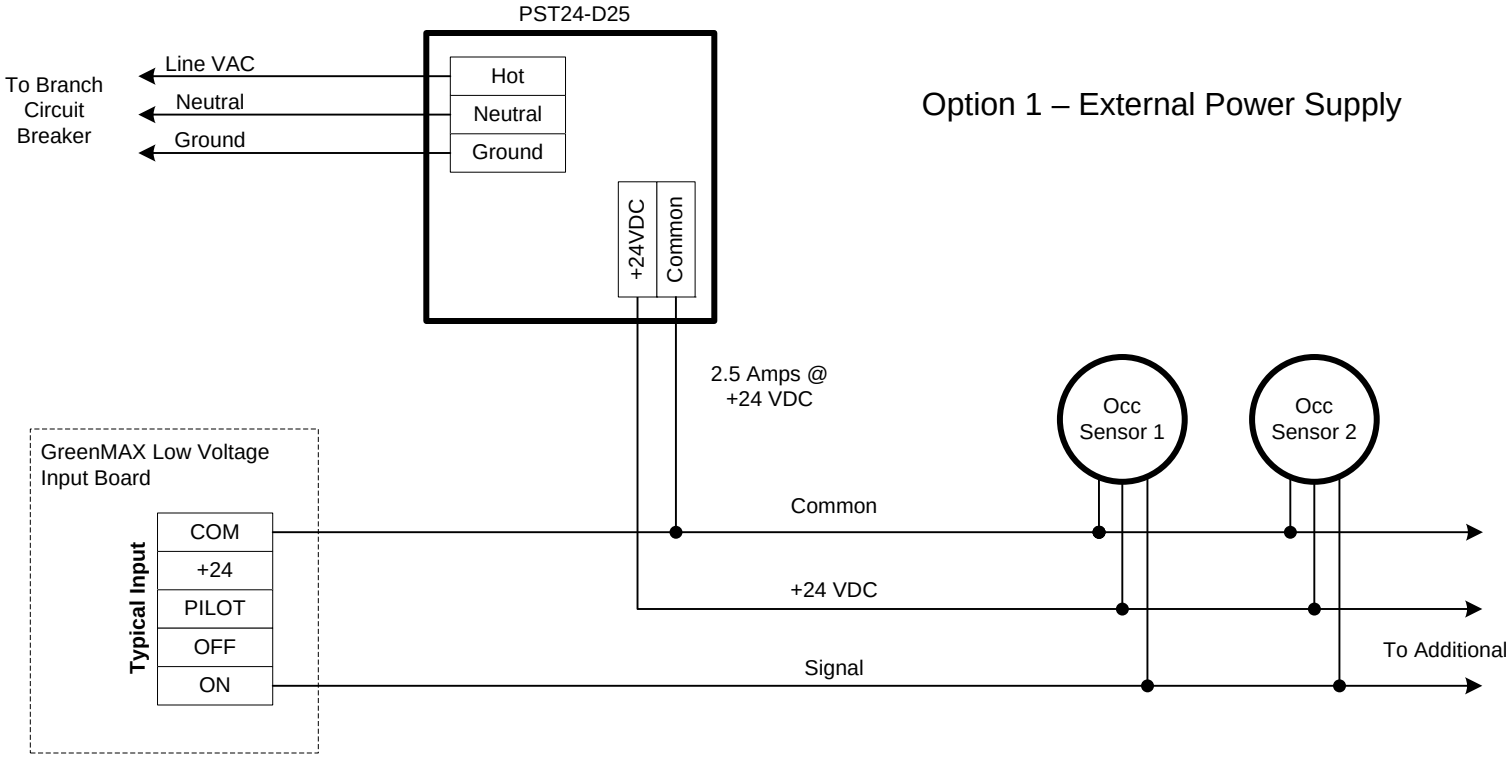
- Signal is proportional to measured value in the 0 to 10VDC range.
- Maximum foot-candle reading varies by model.

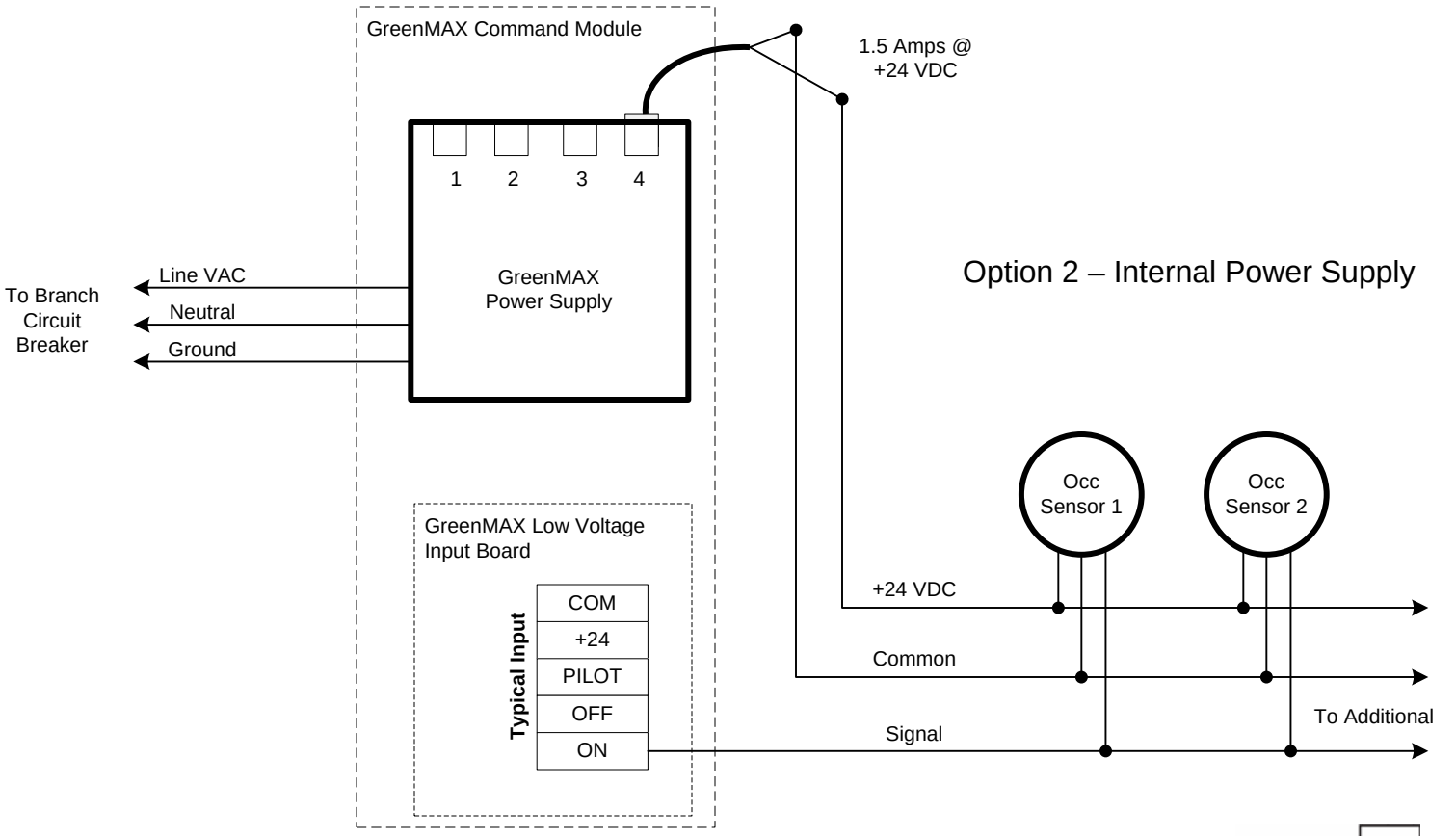
Diagram 3 - Typical Dimming Module Wiring



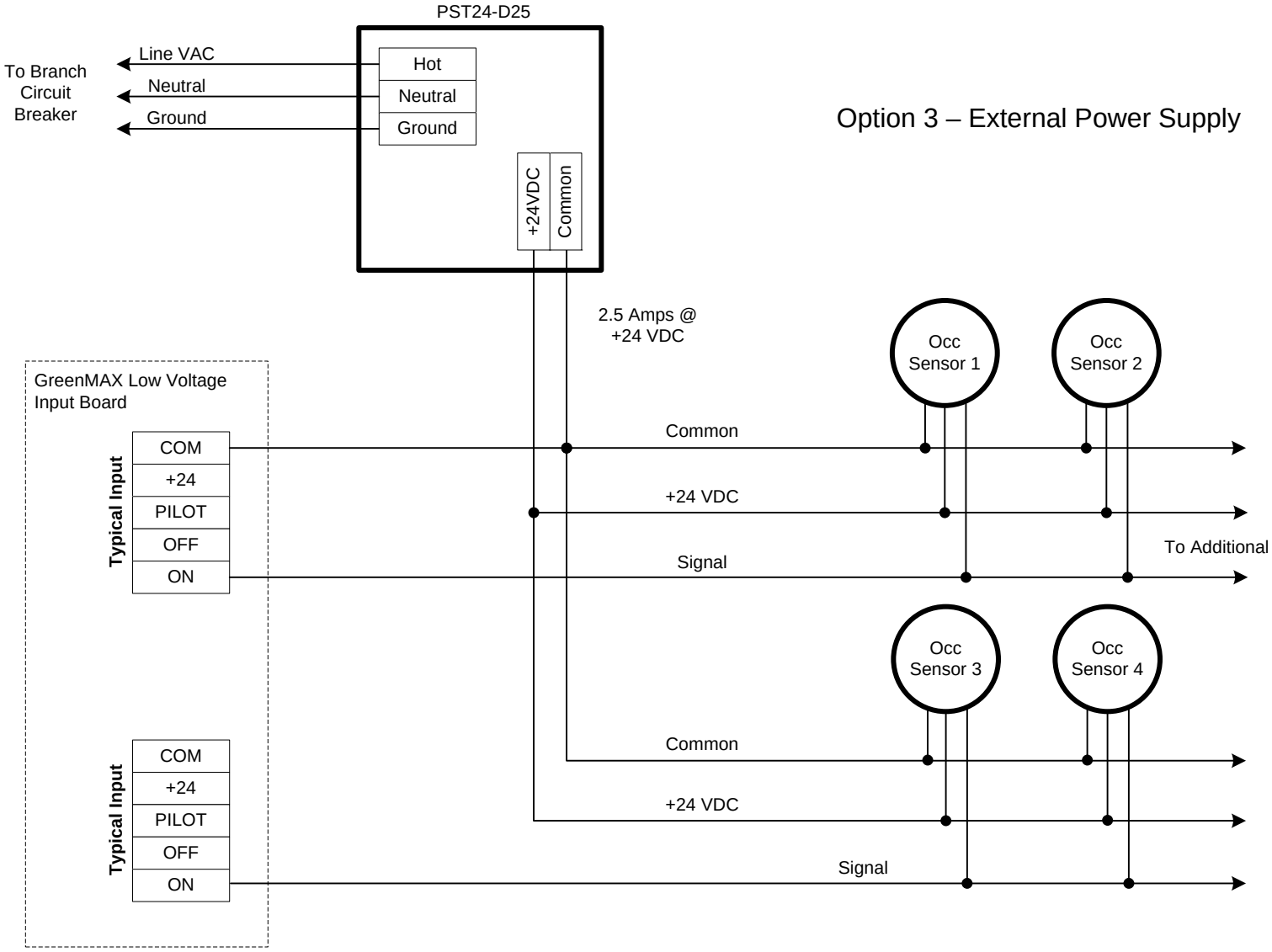
- Relay is rated for 20A.
- Relay module is 0-10VDC sinking style.
- Maximum load for 0-10VDC control loop is 200mA..

GREENMAX™ WIRING DIAGRAMS AND DETAILS	Multiple Occupancy Sensor Power Options #1 & 2	Created by : Kevin Parsons Leviton Manufacturing Date: Feb 22, 2012

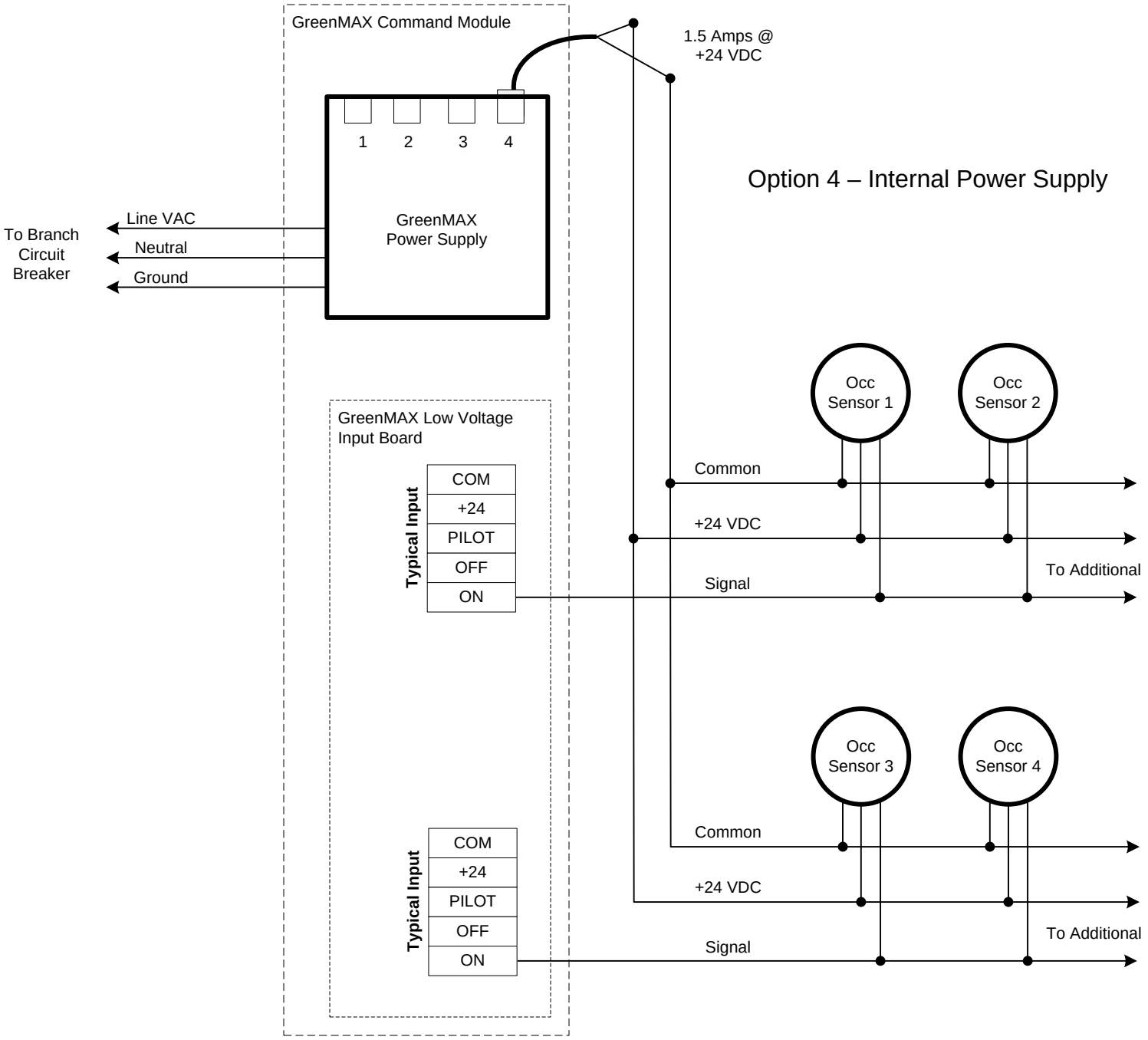




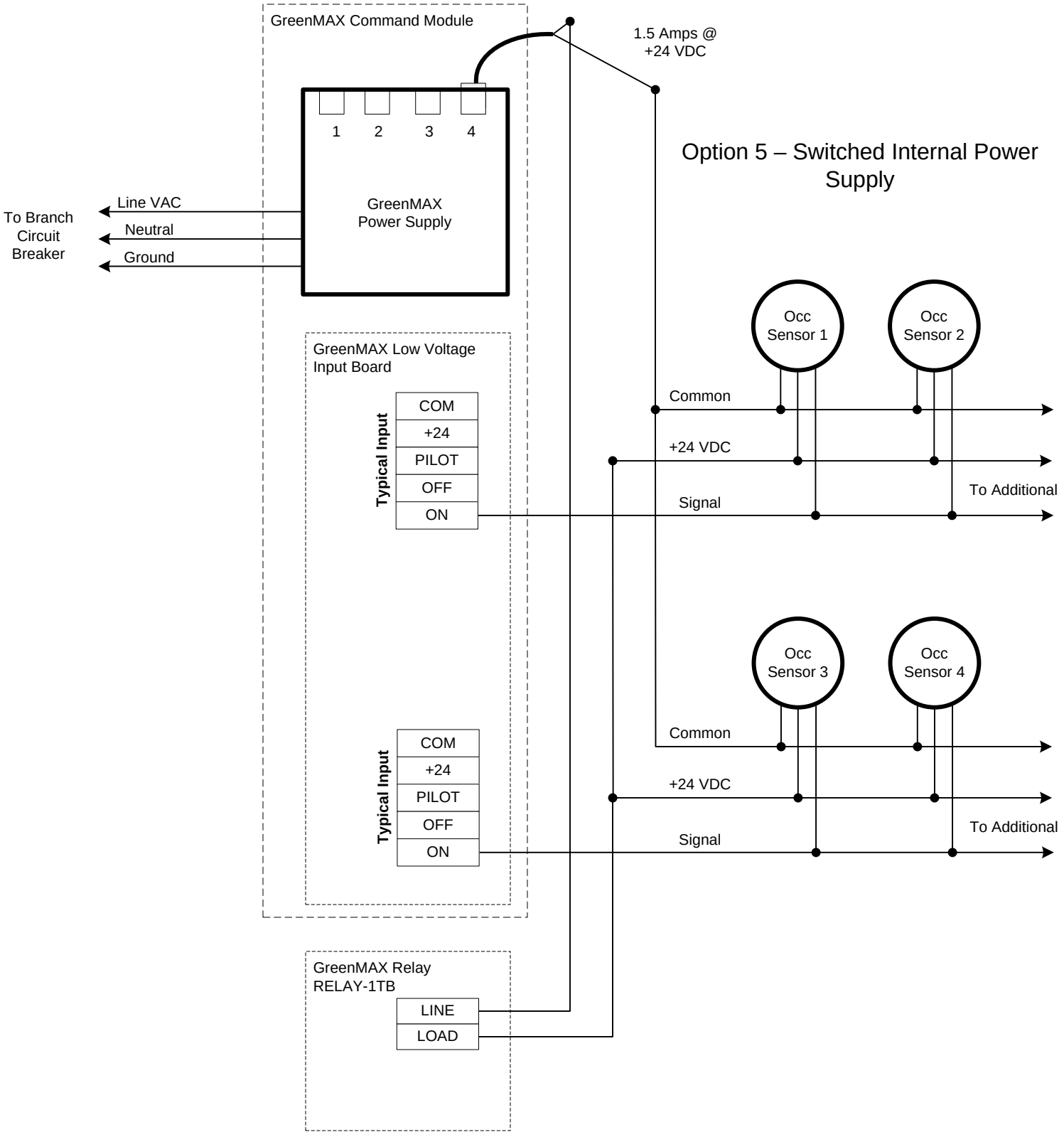
GREENMAX™ WIRING DIAGRAMS AND DETAILS	Multiple Occupancy Sensor Power Options #3	Created by : Kevin Parsons Leviton Manufacturing Date: Feb 22, 2012



GREENMAX™ WIRING DIAGRAMS AND DETAILS	Multiple Occupancy Sensor Power Options #4	Created by : Kevin Parsons Leviton Manufacturing Date: Feb 22, 2012

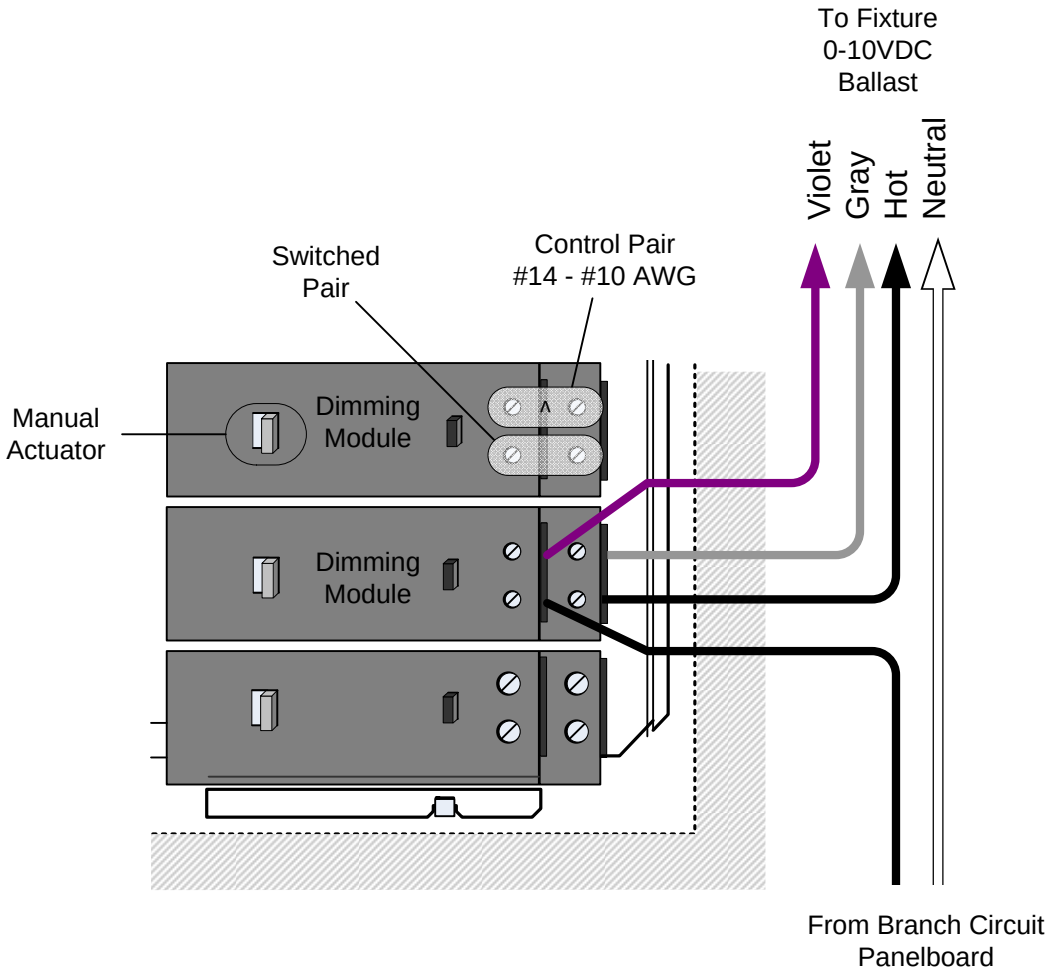


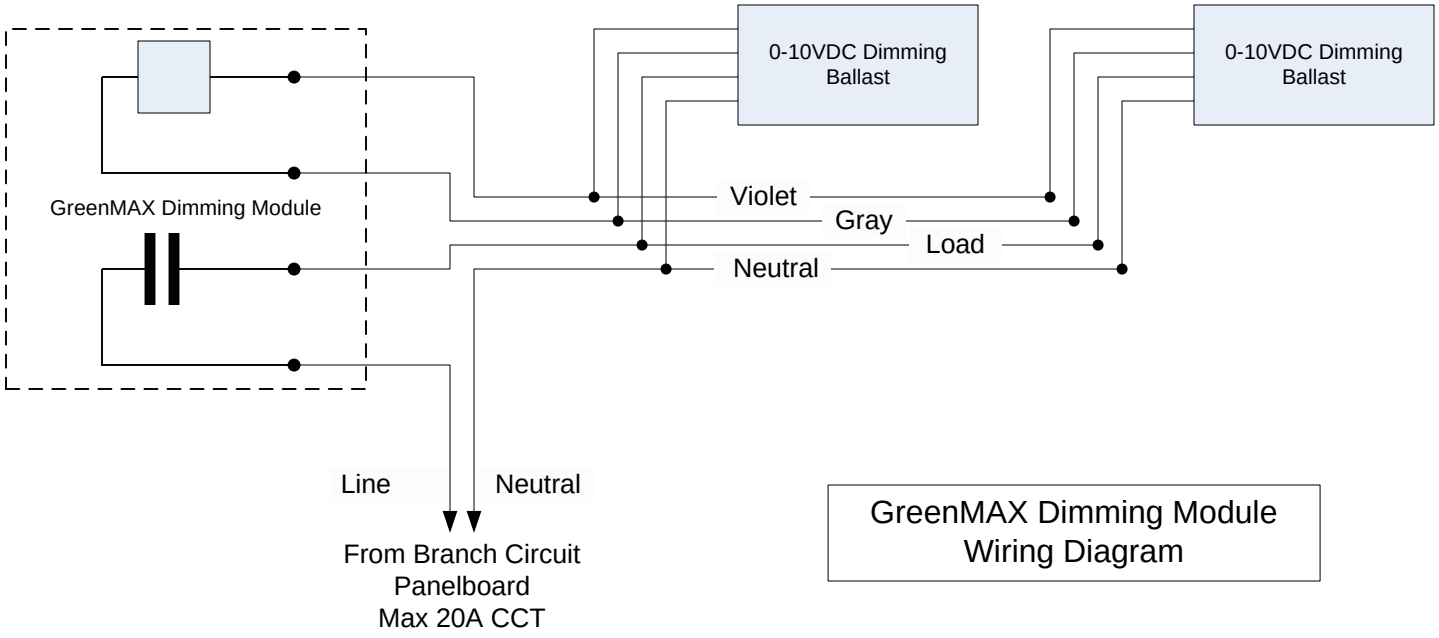
GREENMAX™ WIRING DIAGRAMS AND DETAILS	Multiple Occupancy Sensor Power Options #5	Created by : Kevin Parsons Leviton Manufacturing Date: Feb 22, 2012



Dimming Module Detail

Created by : Kevin Parsons
Leviton Manufacturing
Date: Feb 22, 2012

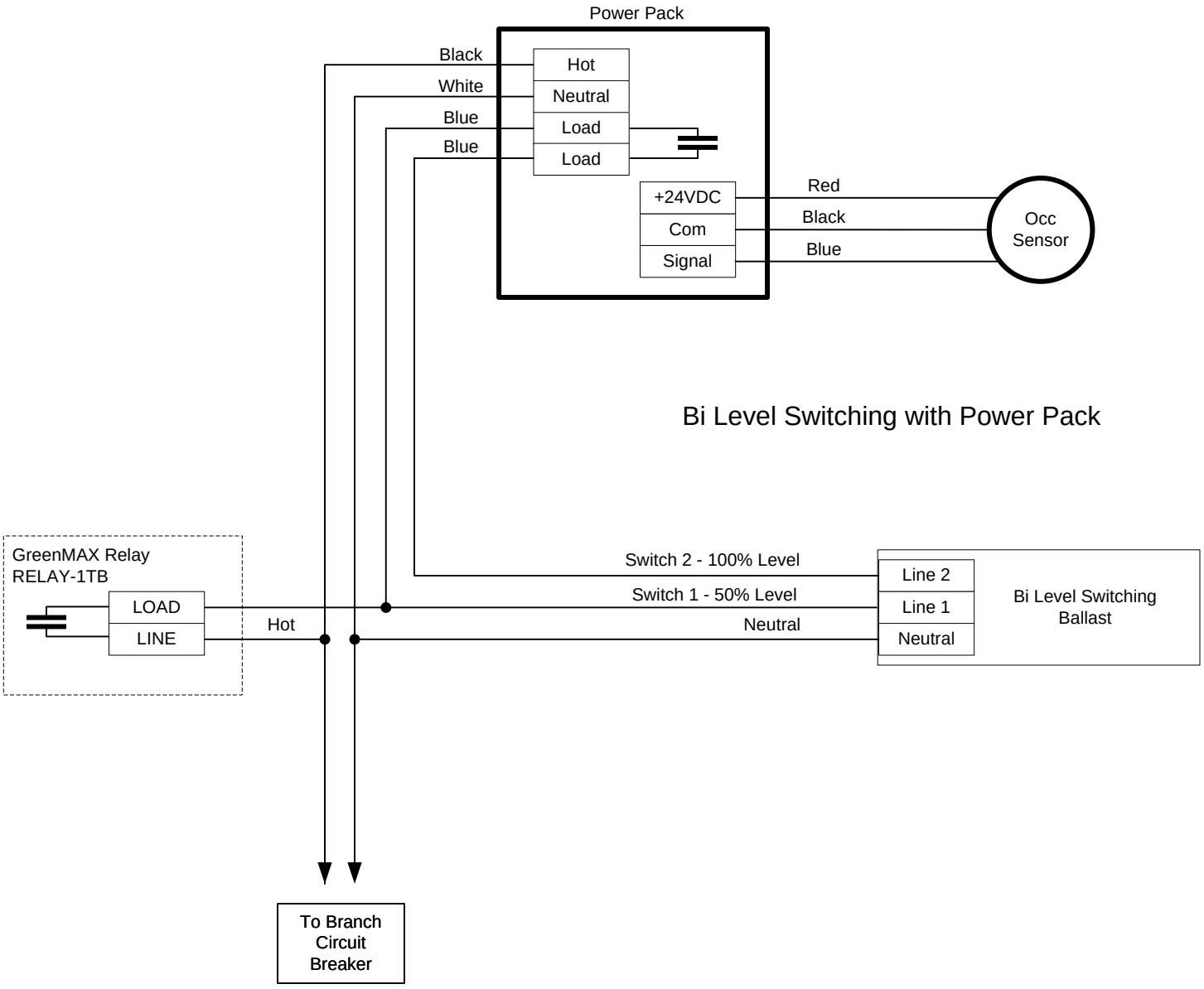


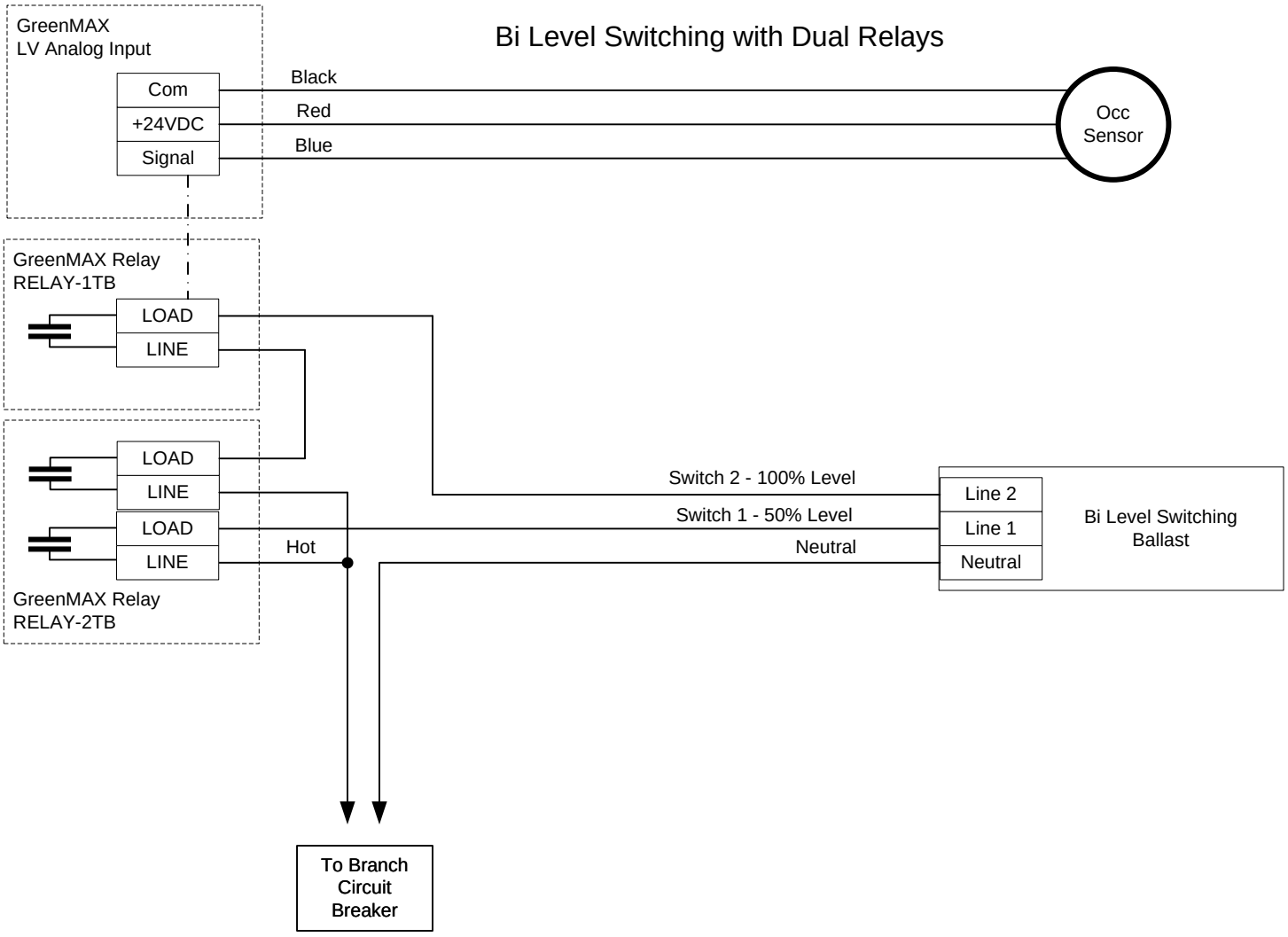


GreenMAX Dimming Module
Wiring Diagram

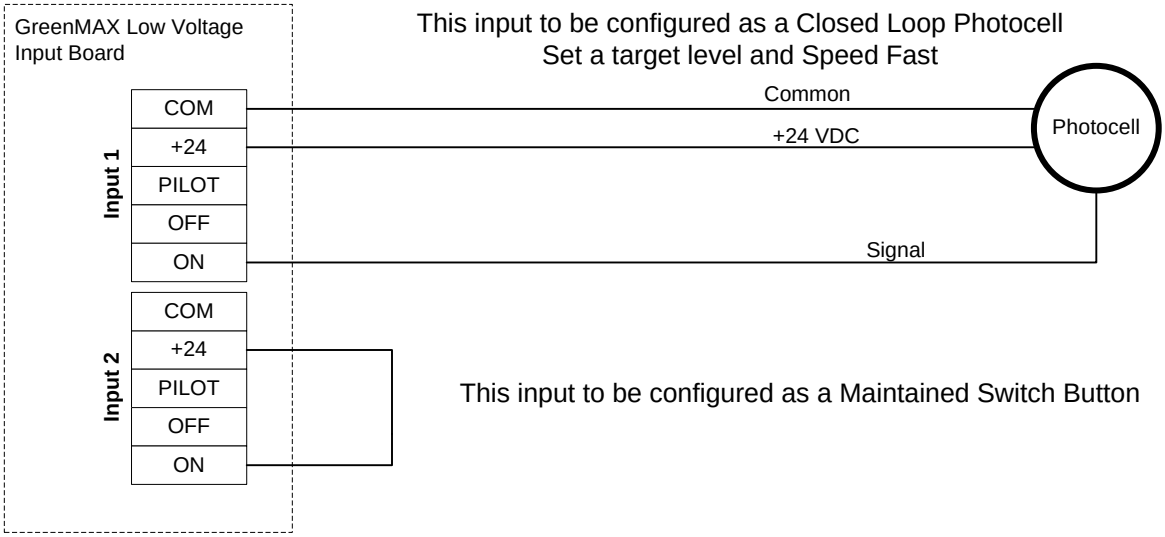
LEVITON

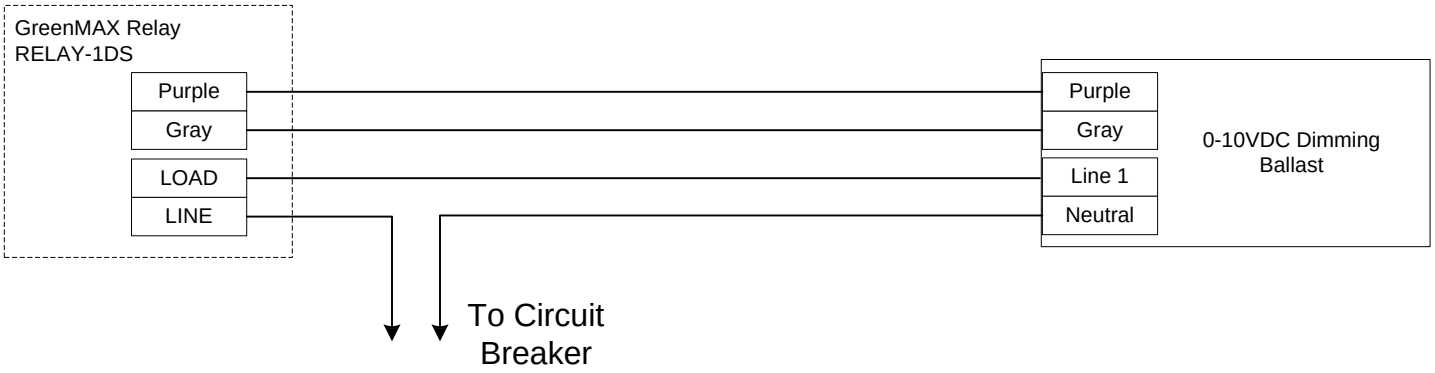
GREENMAX™ WIRING DIAGRAMS AND DETAILS	Bi Level Switching with Power Pack	Created by : Kevin Parsons Leviton Manufacturing Date: Feb 22, 2012




Bi Level Switching with Dual Relays
GreenMAX
LV Analog Input
Com
+24VDC
Signal
Black
Red
Blue
Occ
Sensor
GreenMAX Relay
RELAY-1TB
LOAD
LINE
LOAD
LINE
LOAD
LINE
GreenMAX Relay
RELAY-2TB
Switch 2 - 100% Level
Switch 1 - 50% Level
Hot
Neutral
Line 2
Line 1
Neutral
Bi Level Switching
Ballast
To Branch
Circuit
Breaker

GREENMAX™ WIRING DIAGRAMS AND DETAILS	Daylight Harvesting Option 1	Created by : Kevin Parsons Leviton Manufacturing Date: Feb 22, 2012

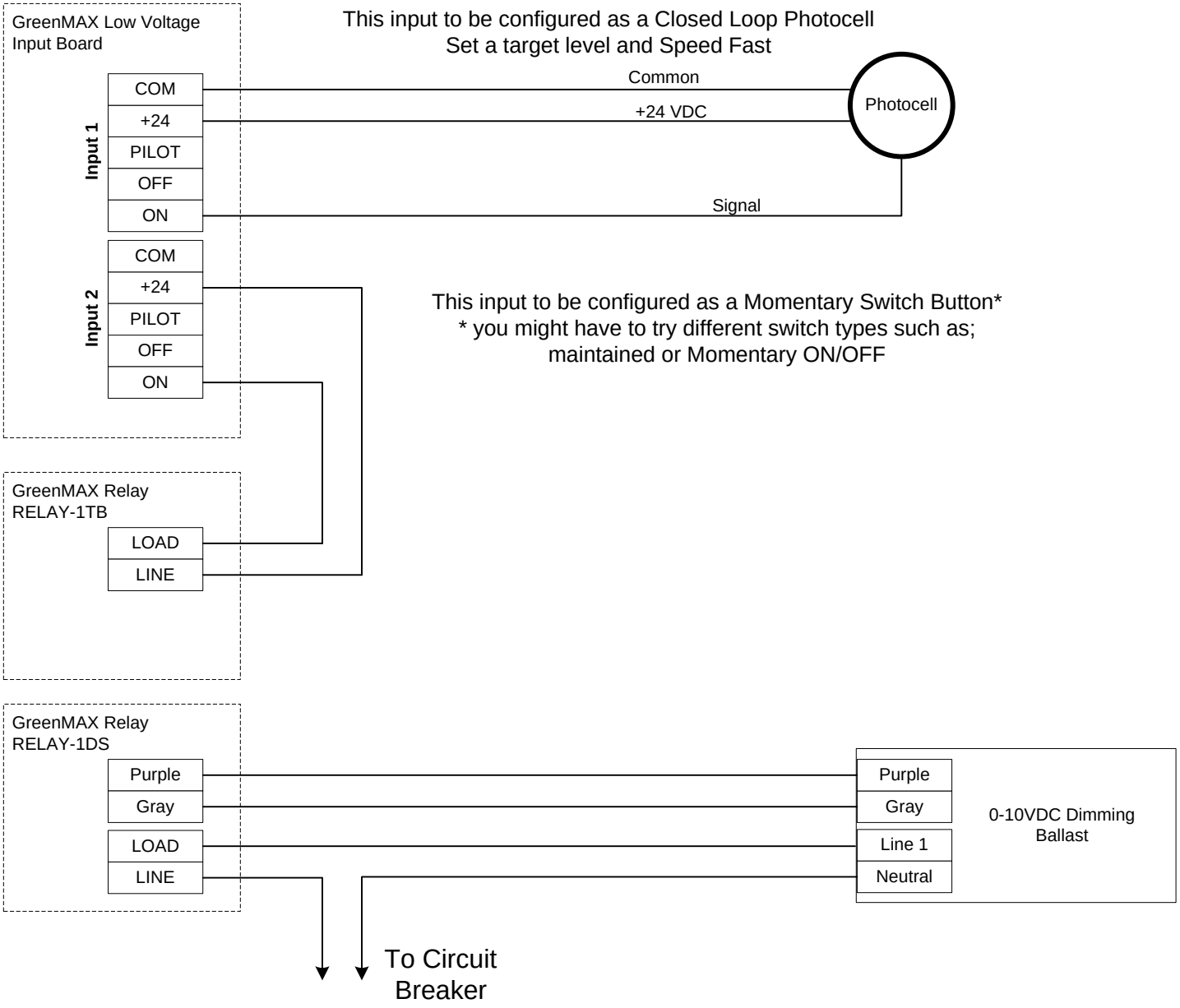




This will require 2 Areas:
Area 1 – Daylight Harvesting with RELAY 1DS and Inputs 1 and 2; running Agenda 1

Agenda 1
8:00AM B10 (start Daylighting)
5:00PM B7 off (turn OFF lights)

GREENMAX™ WIRING DIAGRAMS AND DETAILS	Daylight Harvesting Option 1	Created by : Kevin Parsons Leviton Manufacturing Date: Feb 22, 2012

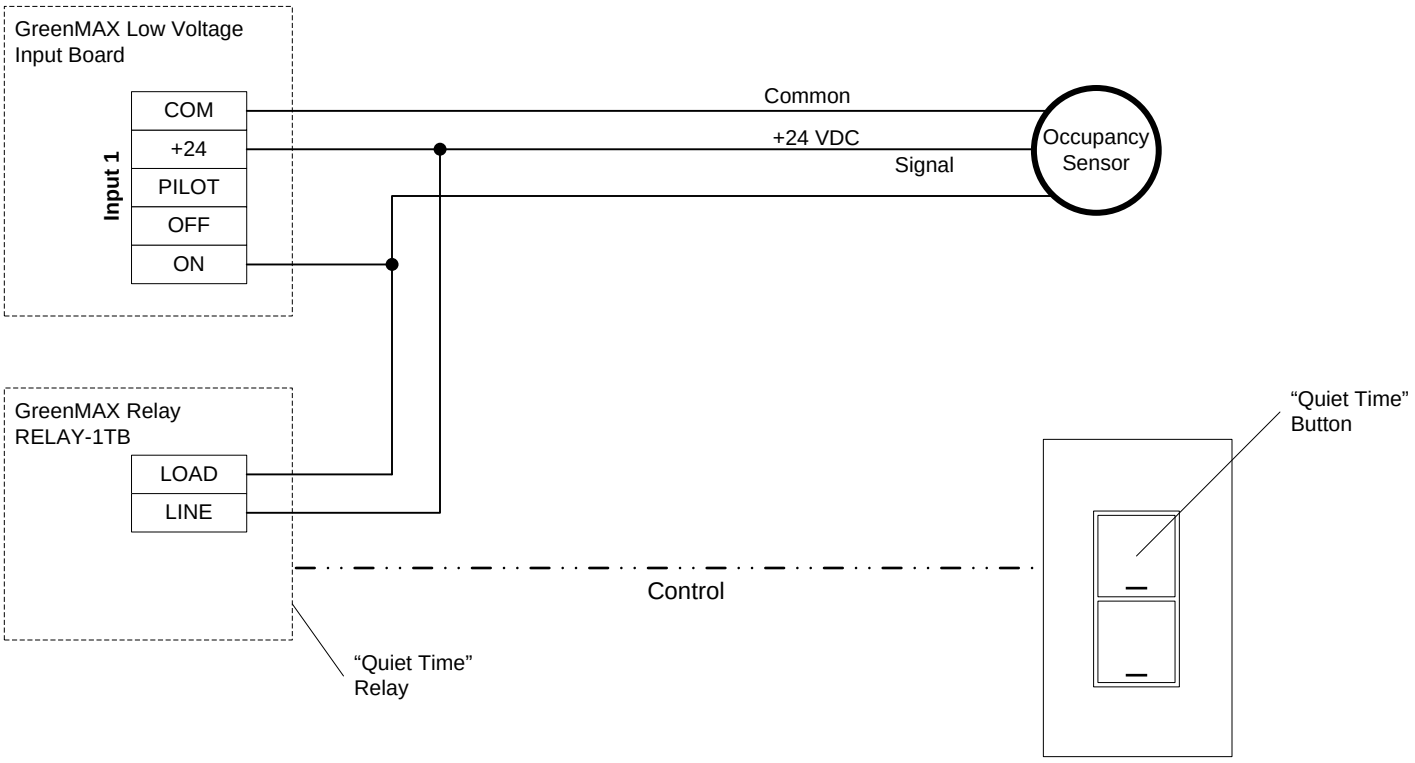


This will require 2 Areas:
Area 1 – Daylight Harvesting with RELAY 1DS and Inputs 1 and 2; running Agenda 1
Area 2 – Button Press control with RELAY 1TB; running Agenda 2

Agenda 1	Agenda 2
8:00AM B10 (start Daylighting)	8:01AM B6 ON (makes a button press
5:00PM B7 off (turn OFF lights)	5:00PM B7 off (releases button press)

These agendas are staggered by one minute with daylighting starting first.

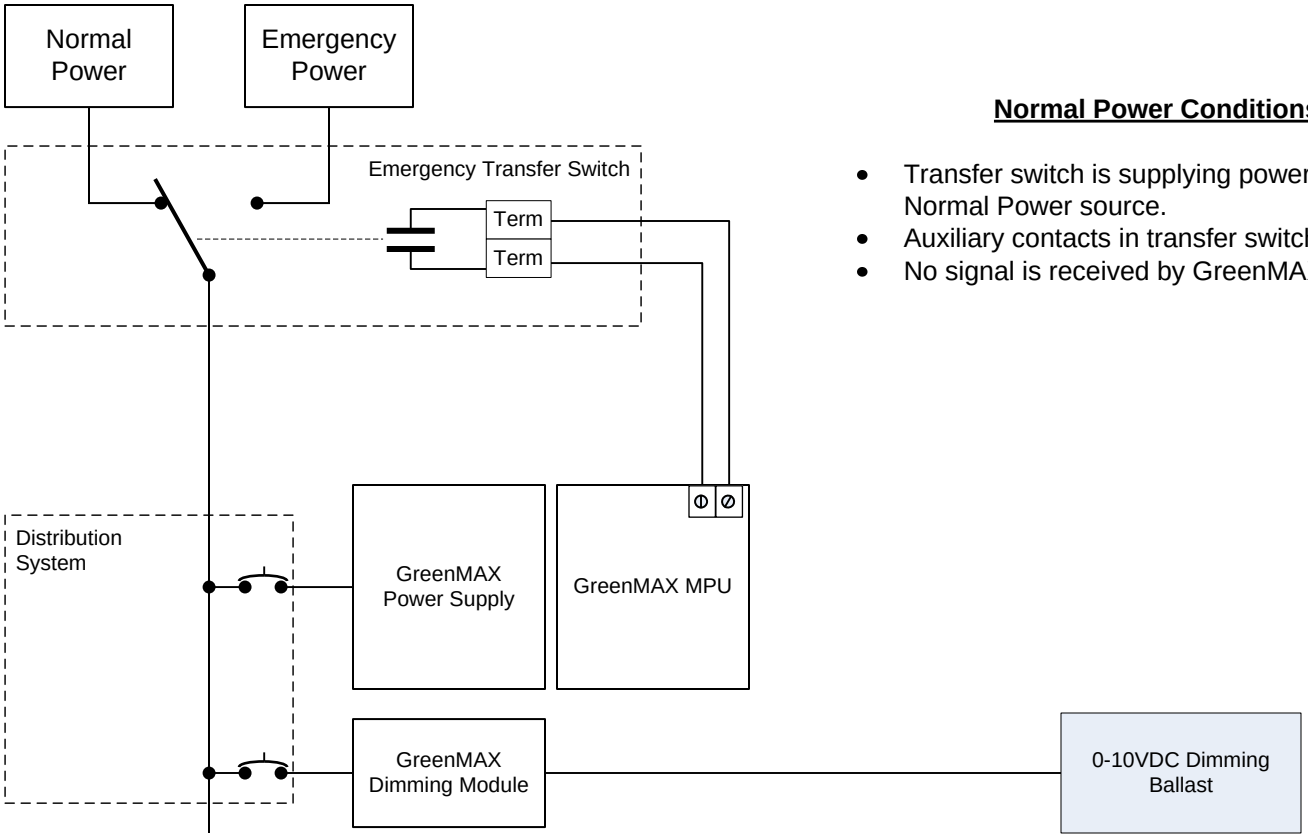
LEVITON



Scheduling Items:

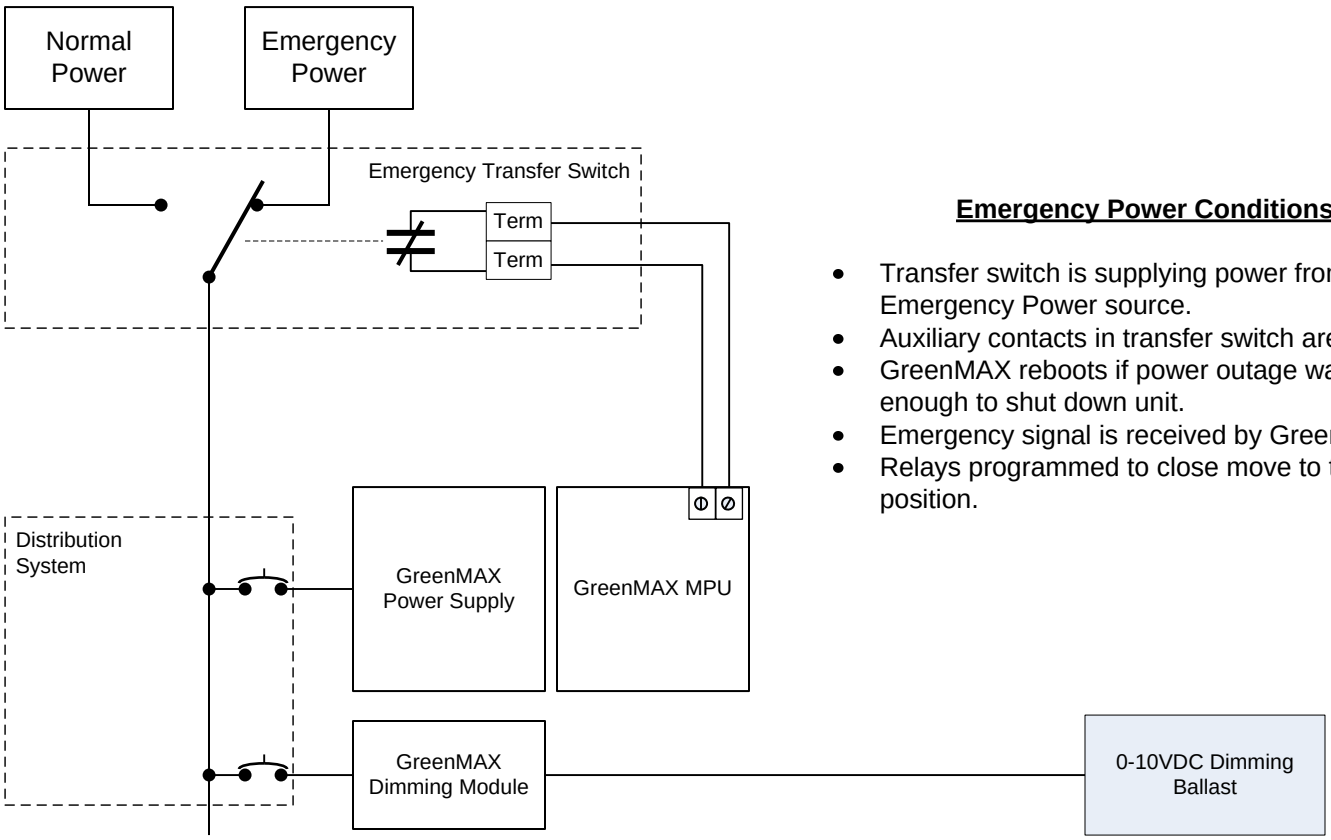
The Quiet Time button will be programmed as a Timed Switch with a 2 hour delay. The relay will hold the occupied signal (On) of the occupancy sensor signal. This will prevent the Off signal from occupancy sensor from controlling the lights. At the end of the delay time, the relay will open and return the control to the occupancy sensor.

GREENMAX™ WIRING DIAGRAMS AND DETAILS	Emergency Power Strategy Options #1	Created by : Kevin Parsons Leviton Manufacturing Date: Feb 22, 2012



Normal Power Conditions

- Transfer switch is supplying power from Normal Power source.
- Auxiliary contacts in transfer switch are open.
- No signal is received by GreenMAX.

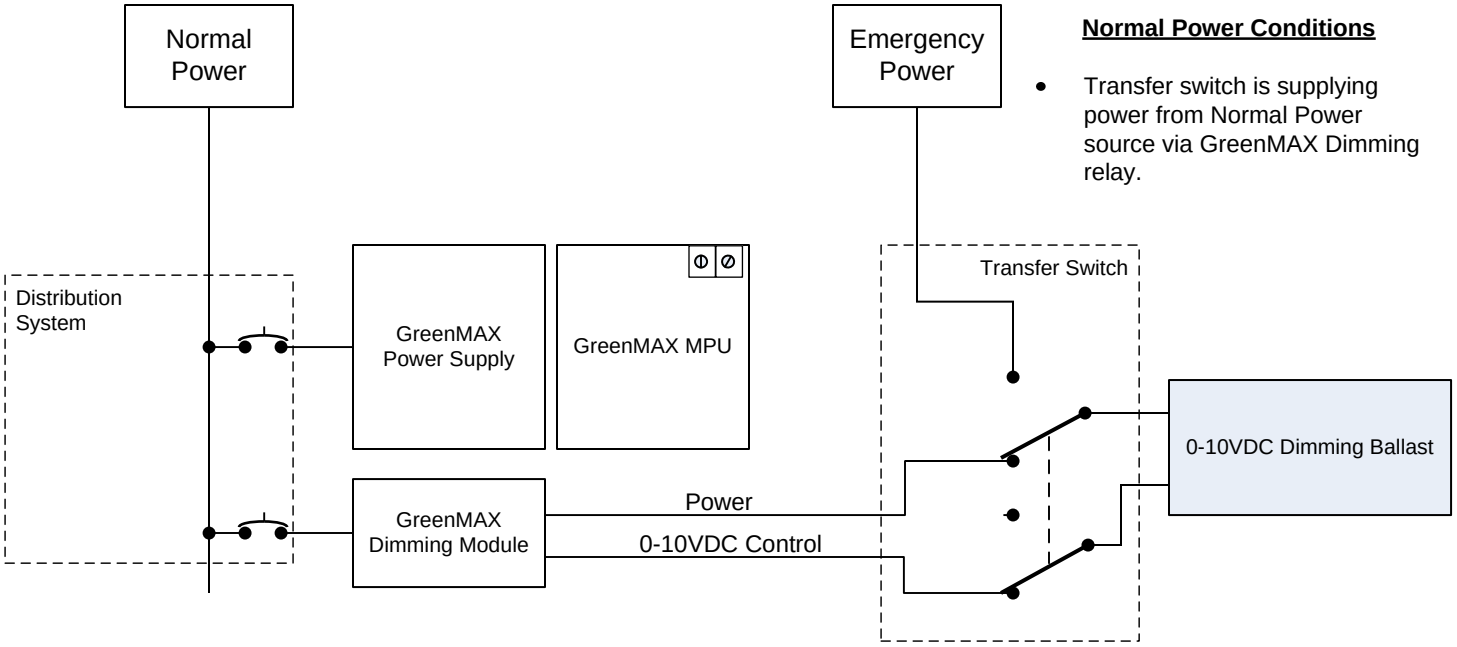


Emergency Power Conditions

- Transfer switch is supplying power from Emergency Power source.
- Auxiliary contacts in transfer switch are closed.
- GreenMAX reboots if power outage was long enough to shut down unit.
- Emergency signal is received by GreenMAX.
- Relays programmed to close move to the closed position.

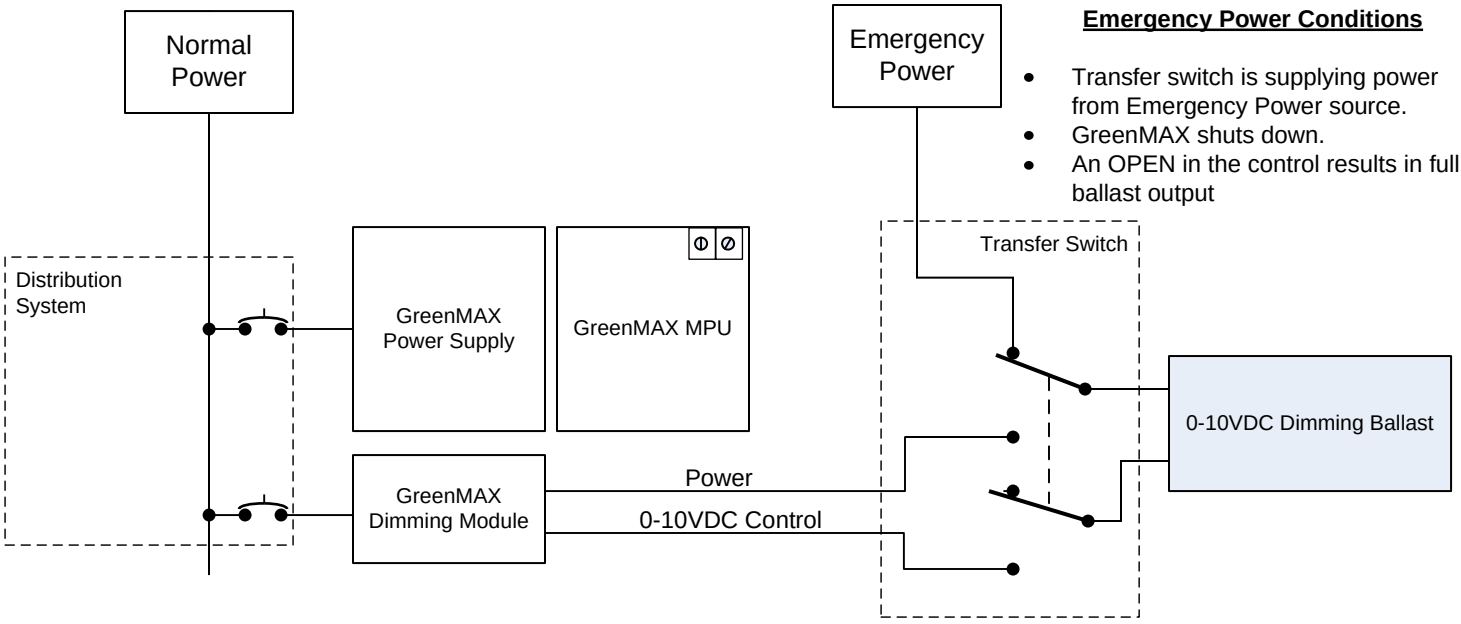
LEVITON

GREENMAX™ WIRING DIAGRAMS AND DETAILS	Emergency Power Strategy Options #2	Created by : Kevin Parsons Leviton Manufacturing Date: Feb 22, 2012



Normal Power Conditions

- Transfer switch is supplying power from Normal Power source via GreenMAX Dimming relay.

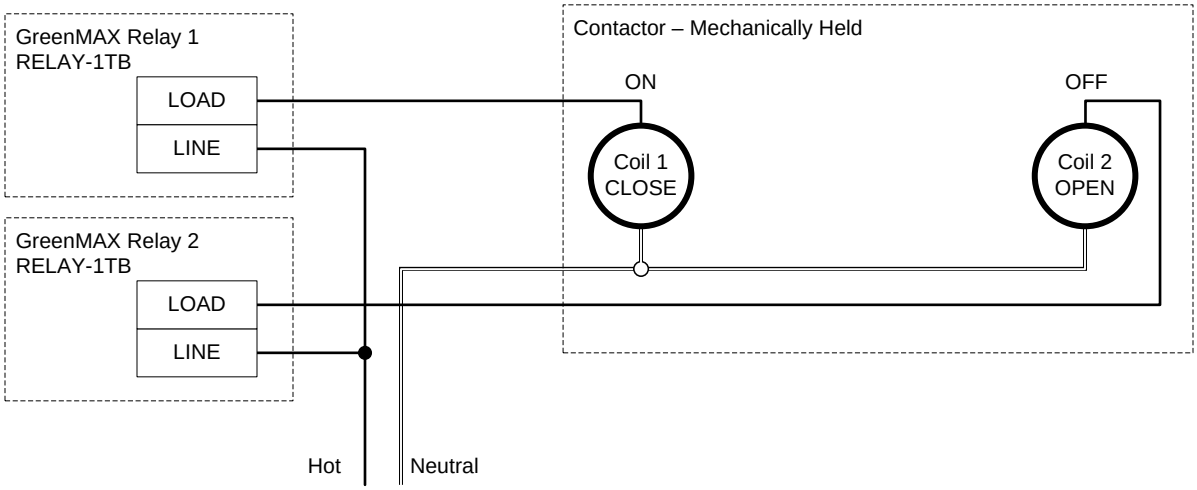


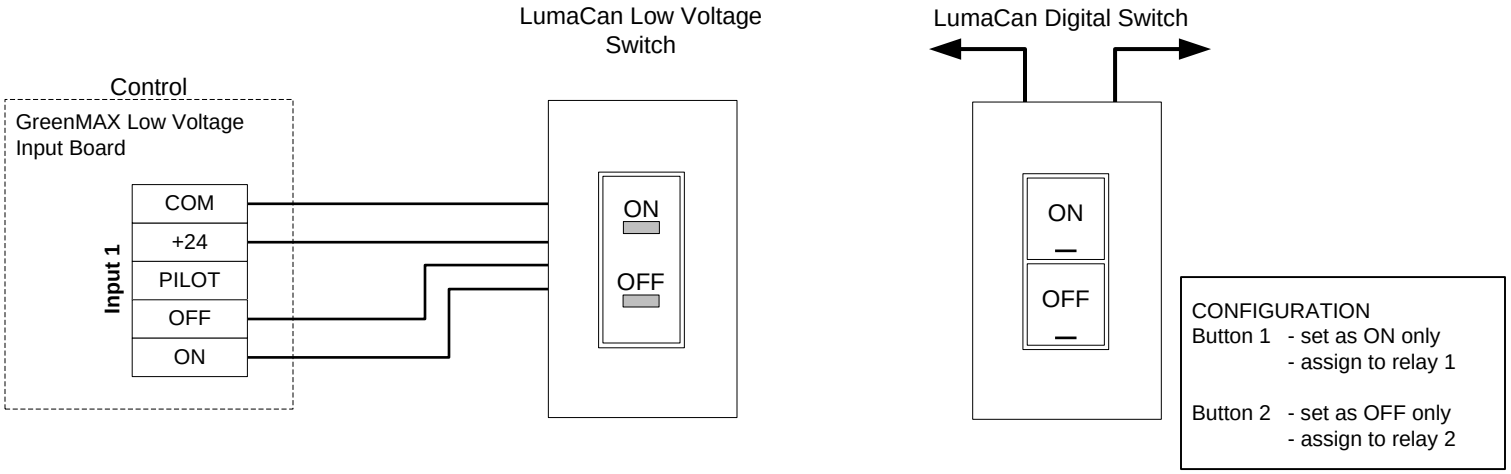
Emergency Power Conditions

- Transfer switch is supplying power from Emergency Power source.
- GreenMAX shuts down.
- An OPEN in the control results in full ballast output

GREENMAX™ WIRING DIAGRAMS AND DETAILS	Pulsed Relay Function **Lighting Contactor**	Created by : Kevin Parsons Leviton Manufacturing Date: Feb 22, 2012

WIRING DIAGRAM

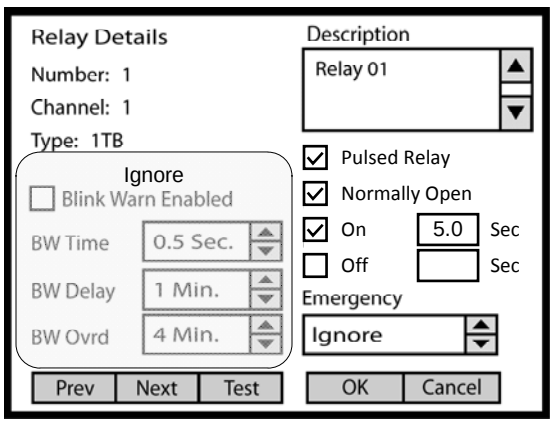


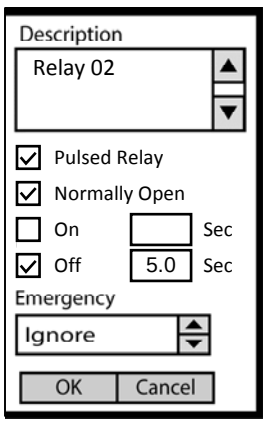


CONFIGURATION
Button 1 - set as ON only
- assign to relay 1

Button 2 - set as OFF only
- assign to relay 2

CONFIGURATION DETAILS





RELAY CONFIGURATION
After entering the configuration details shown, cycle the Normal/Override switch to push changes down to the relay. If this step is missed, no changes will take effect.

LEVITON

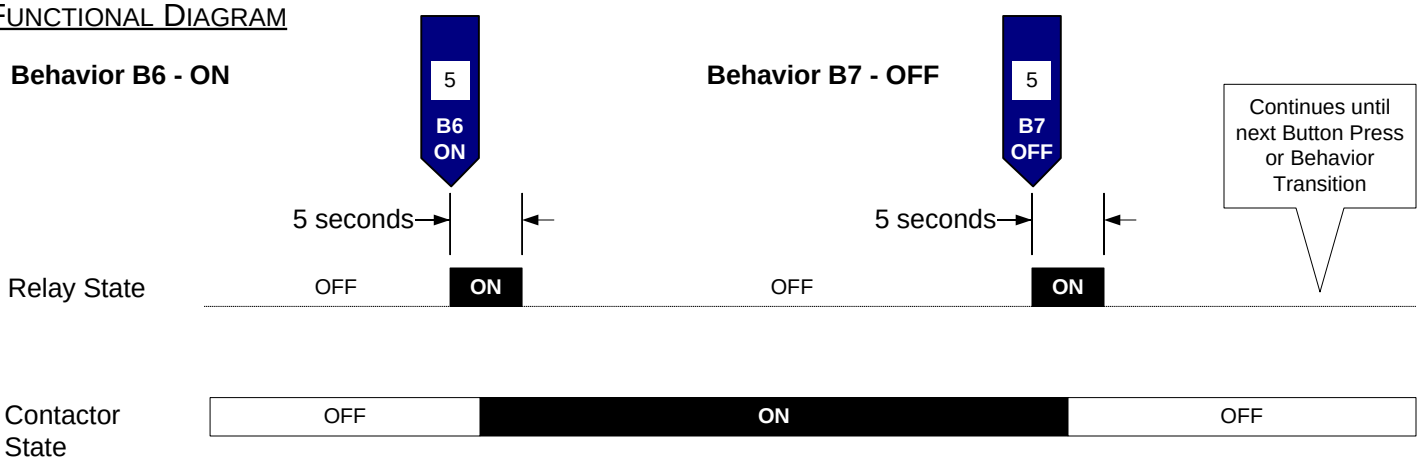
Pulsed Relay Function
Lighting Contactor

Created by : Kevin Parsons
Leviton Manufacturing
Date: Feb 22, 2012

FUNCTIONAL DIAGRAM

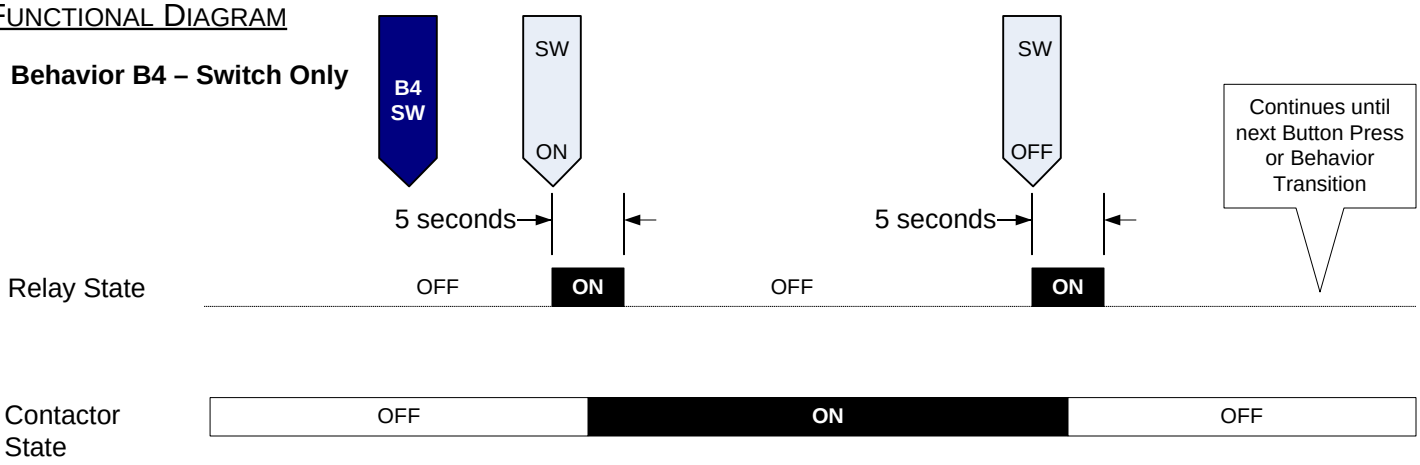
Behavior B6 - ON

Behavior B7 - OFF



FUNCTIONAL DIAGRAM

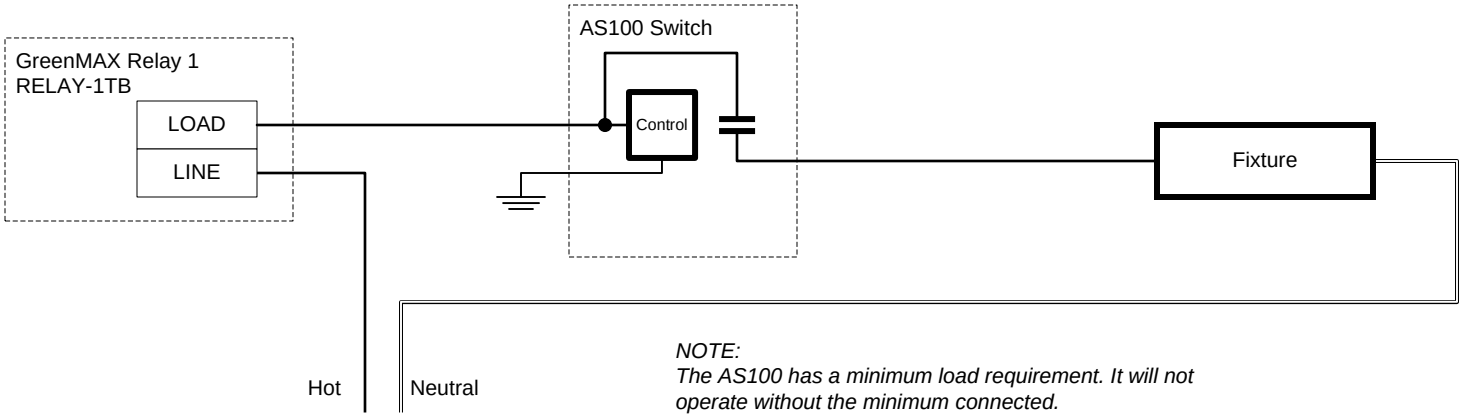
Behavior B4 – Switch Only



LEVITON

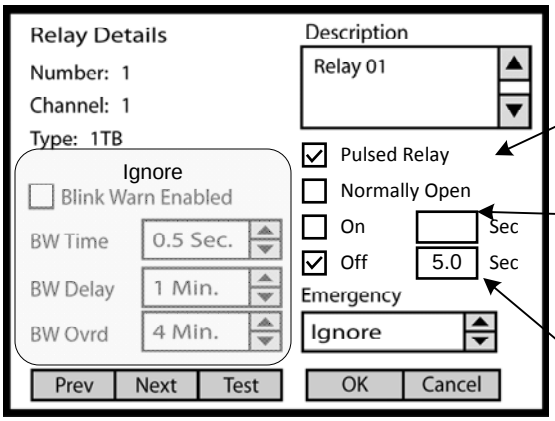
GREENMAX™ WIRING DIAGRAMS AND DETAILS	Pulsed Relay Function **AS100**	Created by : Kevin Parsons, Leviton Manufacturing Date: Feb 22, 2012

WIRING DIAGRAM



NOTE:
The AS100 has a minimum load requirement. It will not operate without the minimum connected.

CONFIGURATION DETAILS



NOTE:
These settings will not be applied until the Normal/Override switch is cycled.

PULSED RELAY

When this box is checked the relay will:

- Respond to a Behavior B7 OFF with a short OFF pulse. The duration of the pulse is determined by the value in the OFF field.
- Respond to a Behavior B6 ON with a short OFF pulse. The duration of the pulse is determined by the value in the ON field.
- The relay will return to the closed position and maintain that position until the next scheduled Behavior B6 or B7.

ON PULSE LENGTH

AS100 NORMAL OPERATING MODE

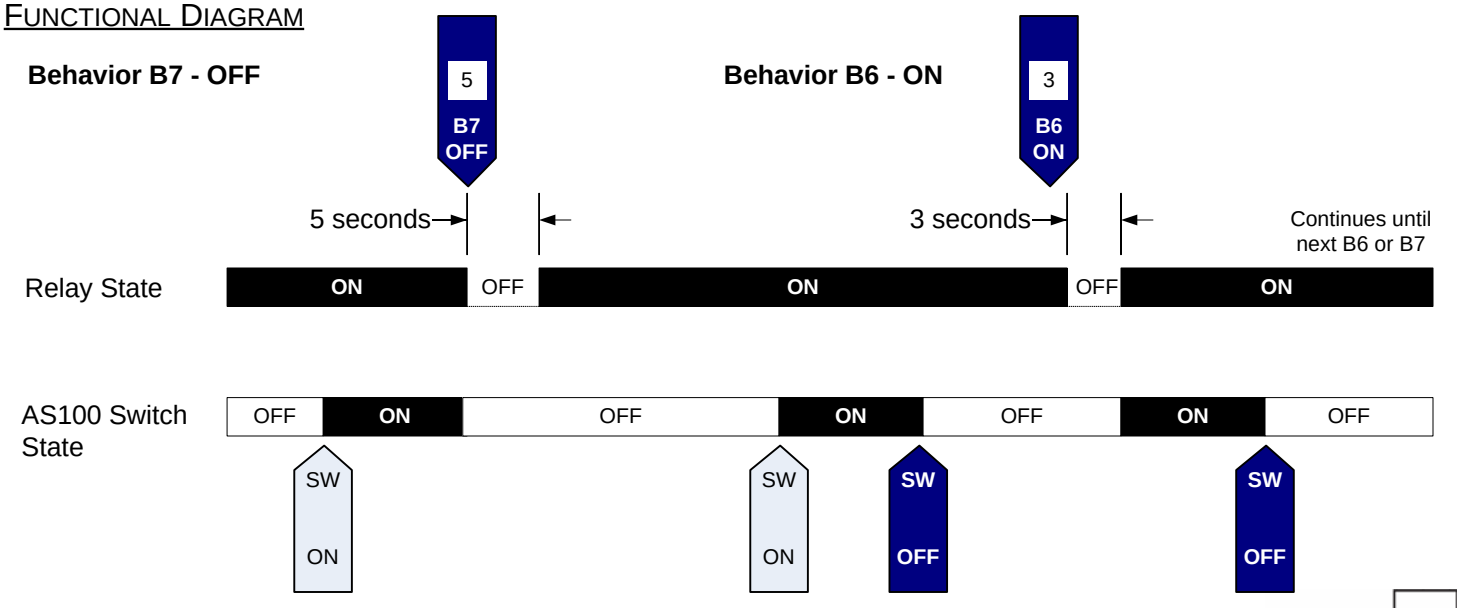
3 Sec Turn ON

OFF PULSE LENGTH

AS100 NORMAL OPERATING MODE

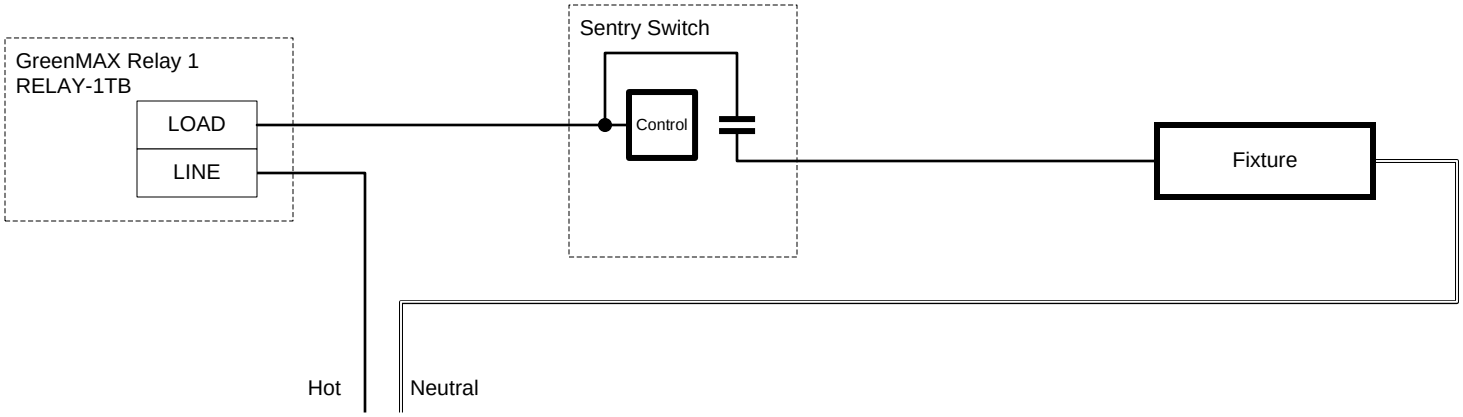
1-2 Sec Delay OFF Initiates 5-minute delay before shutting load Off.
5 Sec Turn OFF

FUNCTIONAL DIAGRAM

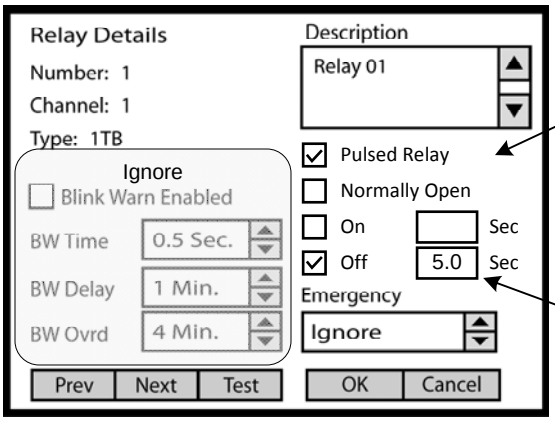


GREENMAX™ WIRING DIAGRAMS AND DETAILS	Pulsed Relay Function **Sentry Switch**	Created by : Kevin Parsons, Leviton Manufacturing Date: Feb 22, 2012

WIRING DIAGRAM



CONFIGURATION DETAILS



PULSED RELAY

When this box is checked the relay will:

- Respond to a Behavior B7 OFF with a short OFF pulse. The duration of the pulse is determined by the value in the OFF field.
- The relay will return to the closed position and maintain that position until the next scheduled Behavior B7.

OFF PULSE LENGTH

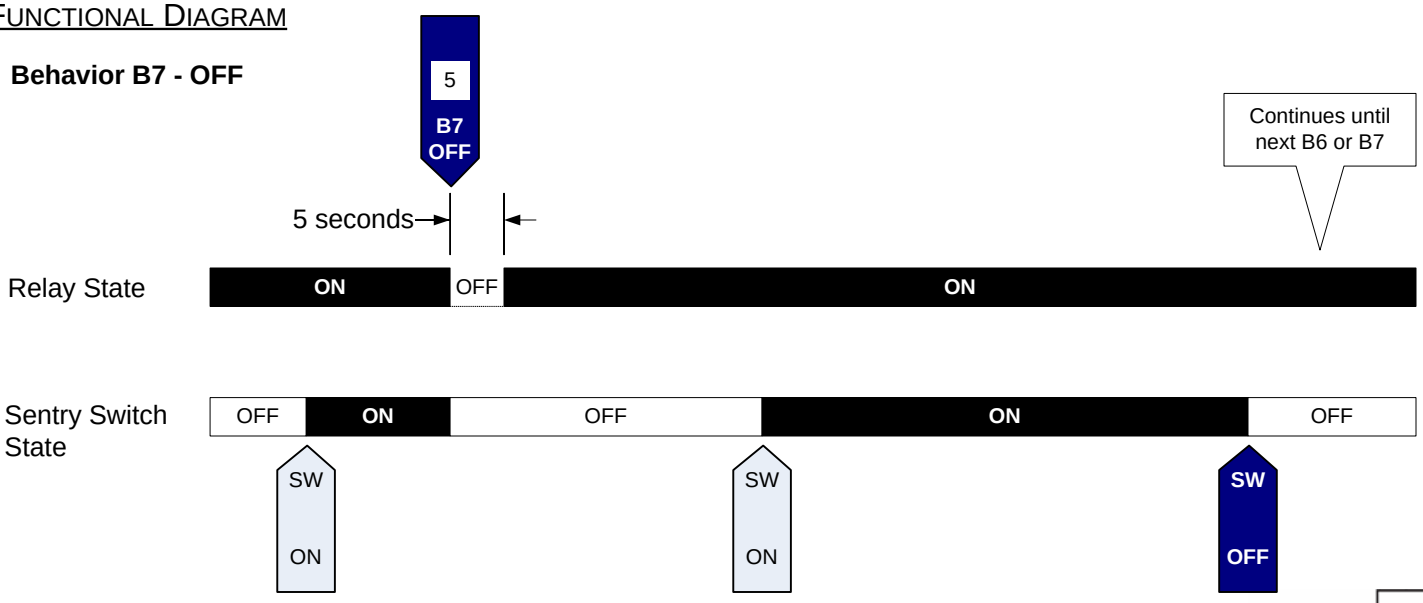
SENTRY SWITCH NORMAL OPERATING MODE

3 Sec Turn OFF

NOTE:
These settings will not be applied until the Normal/Override switch is cycled.

FUNCTIONAL DIAGRAM

Behavior B7 - OFF

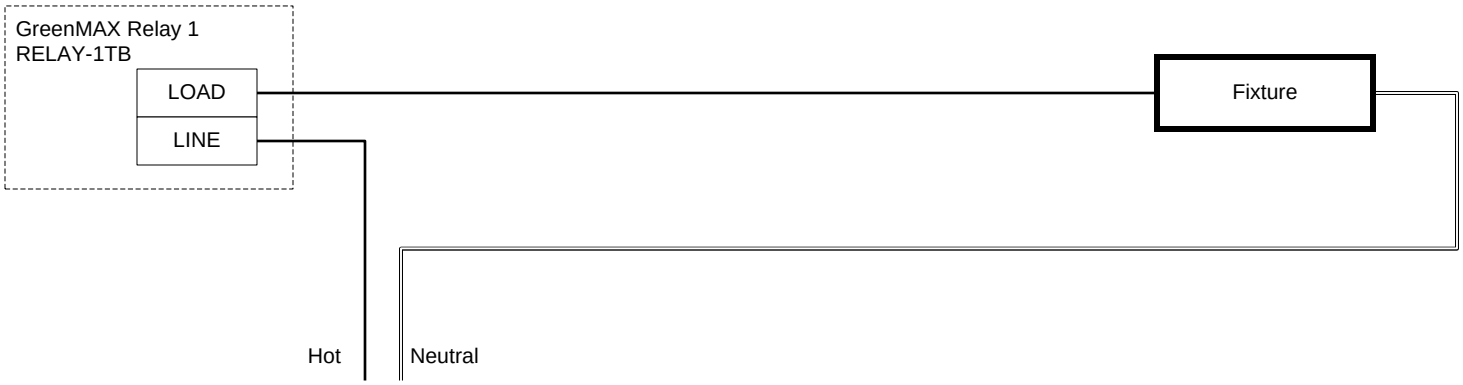


LEVITON

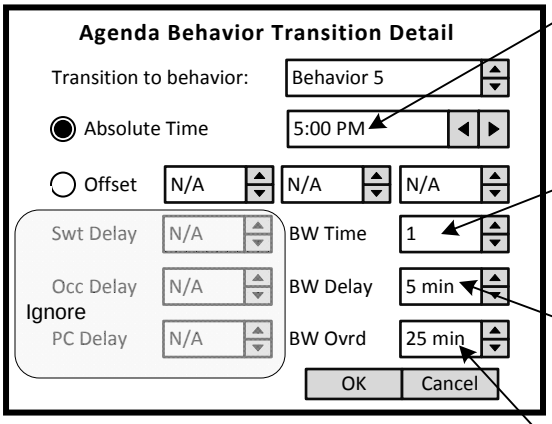
Behavior 5 – Blink Warn
Programming Details

Created by : Kevin Parsons
Leviton Manufacturing
Date: Feb 22, 2012

WIRING DIAGRAM



CONFIGURATION DETAILS



NOTE:
These settings associated with a Behavior Transition will supersede any of the similar settings found in the System Defaults or Relay Detail Screens.

BEHAVIOR TRANSITION TIME

The exact time that the Blink Warn sequence will start, the Blink will signify the start.

- Can also be scheduled relative to Sunset or Sunrise offset times.

BW TIME

Set for the length of the OFF Blink.

- This is intended to warn any occupants of the affected space that the lights will be turning OFF.
- The relay will turn ON once the Blink duration has expired.

BW DELAY

Set for the length of time the relay should be ON after the OFF Blink.

- This is intended to allow occupants of the affected space to interrupt the Blink Warn sequence and keep the lights on for the Over-ride duration.
- A button press will interrupt the sequence.
- If no button press is detected during this period, the relay will turn OFF.

BW OVER-RIDE

Set for the length of time the relay should be ON after a button press.

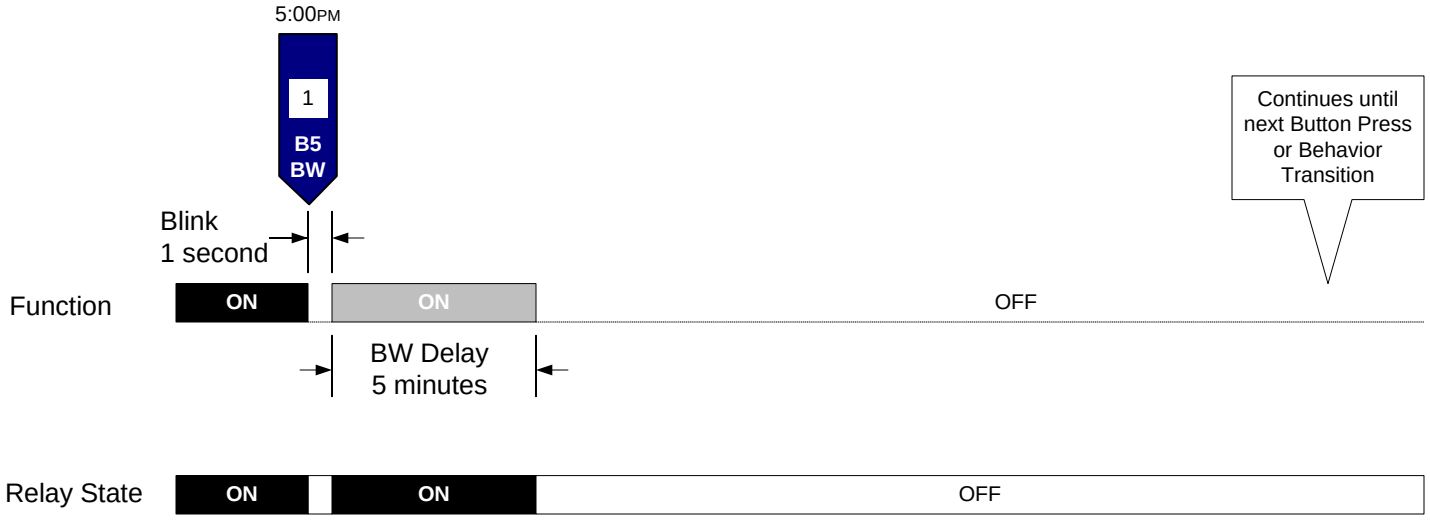
- The relay will remain ON for this duration. A button press will turn the relay OFF and stop all timing functions.
- At the end of this period, another complete Blink Warn sequence will start.

LEVITON

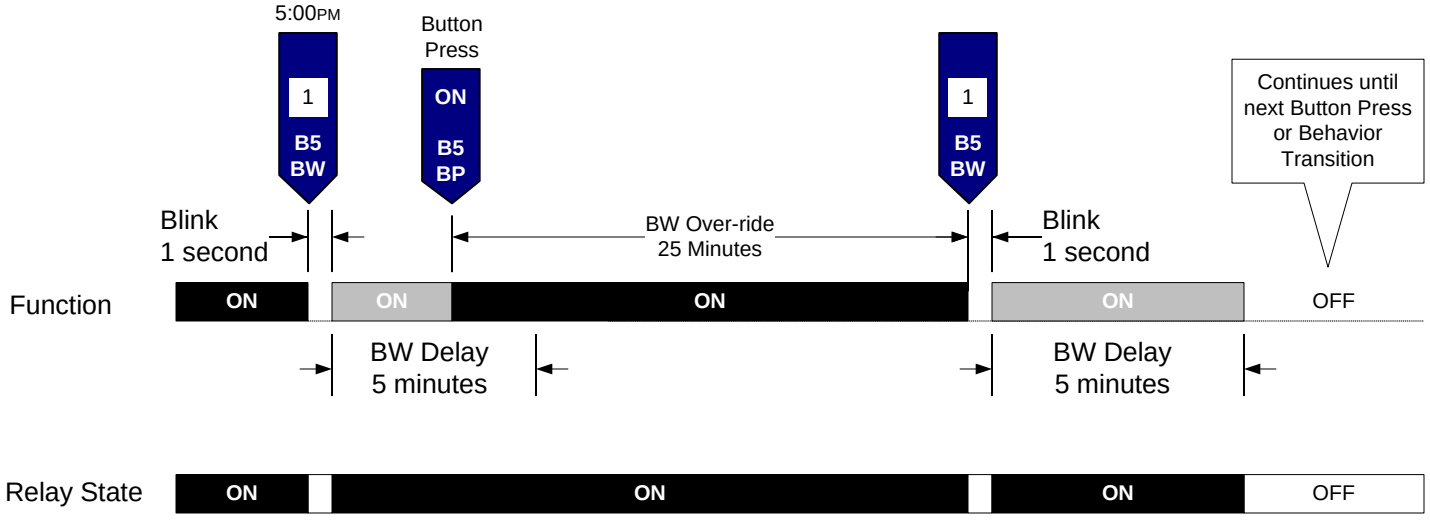
Behavior 5 – Blink Warn
Functional Diagrams

Created by : Kevin Parsons
Leviton Manufacturing
Date: Feb 22, 2012

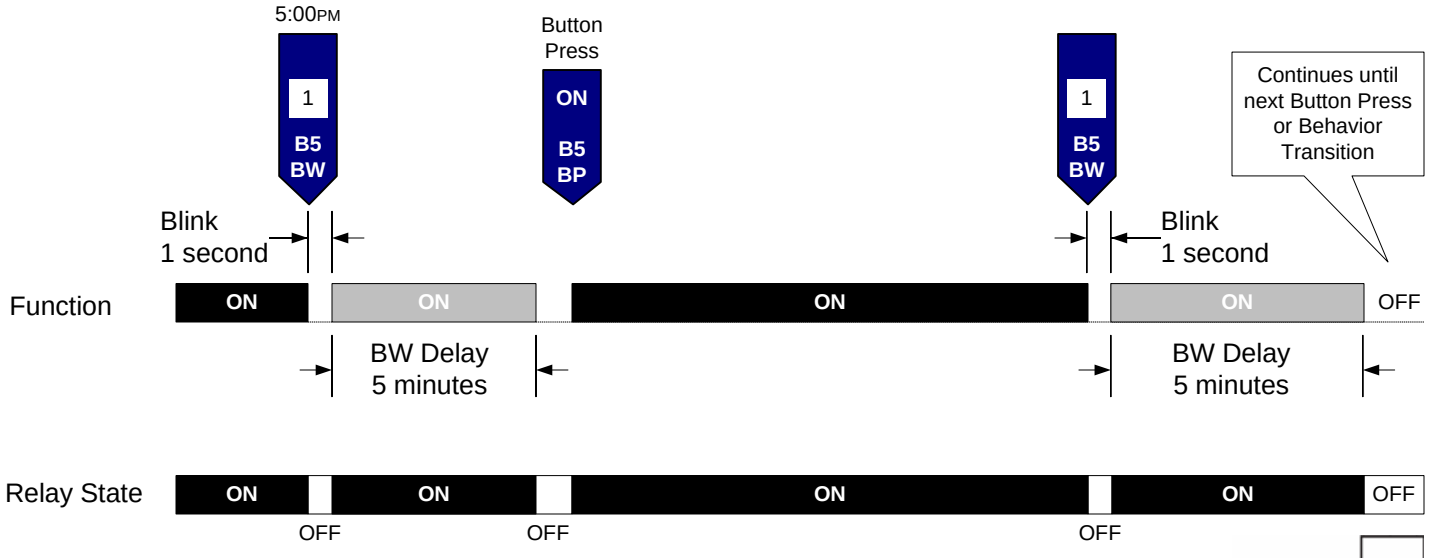
Scenario 1 - Behavior B5 – Blink Warn



Scenario 2 - Behavior B5 – Blink Warn



Scenario 3 - Behavior B5 – Blink Warn

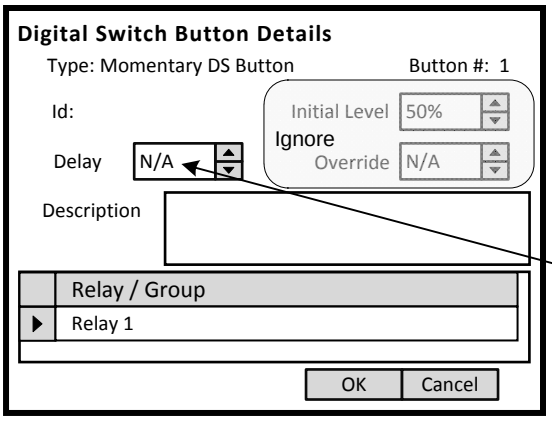


LEVITON

Behavior 4 – Timed Switch
Programming Details

Created by : Kevin Parsons
Leviton Manufacturing
Date: Feb 22, 2012

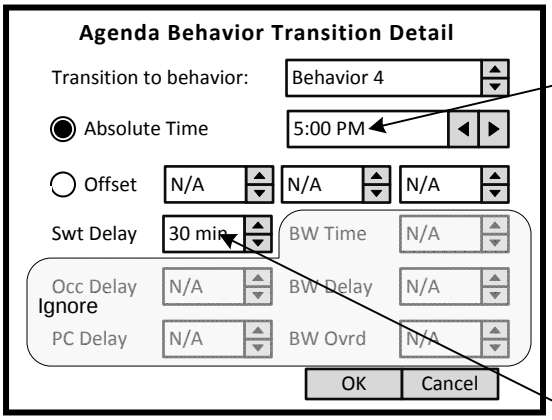
CONFIGURATION DETAILS



DELAY

To initialize the timed switch functionality, adjust the DELAY to a value other than N/A. Once this value is changed, the switch will always be in timed switch mode and will require a value.

- This is value represents the default value for the switch.
- A value of INF (infinite) will prevent the switch delay timer from timing out. The switch will function as a normal switch.
- His value will be over-written by the Delay value of the Behavior Transition



BEHAVIOR TRANSITION TIME

The exact time that the Blink Warn sequence will start, the Blink will signify the start.

- Can also be scheduled relative to Sunset or Sunrise offset times.

SWT DELAY (SWITCH DELAY)

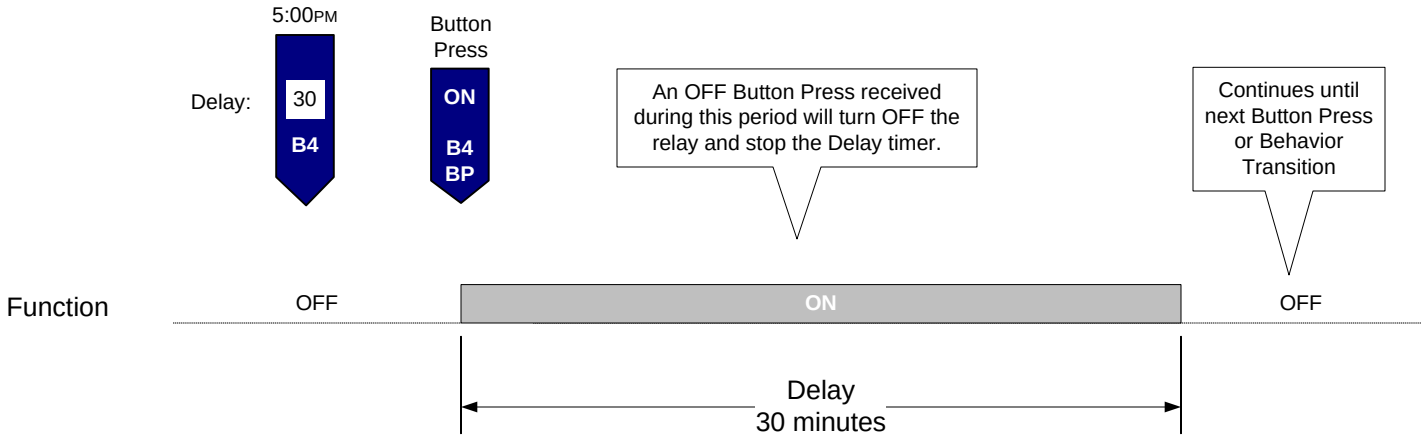
Set for the length of time the relay should be ON after a button press.

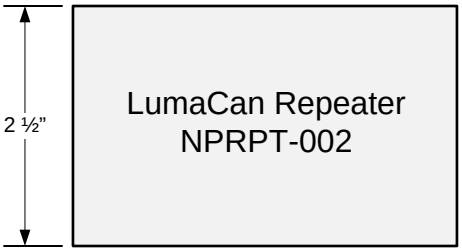
- The relay will remain ON for this duration. A button press will turn the relay OFF and stop all timing functions.
- At the end of this period the relay will turn OFF

NOTE:
Both of these screens must be configured to provide the Timed Switch functionality. The Timed Switch will work with any Behavior that contains a switch.

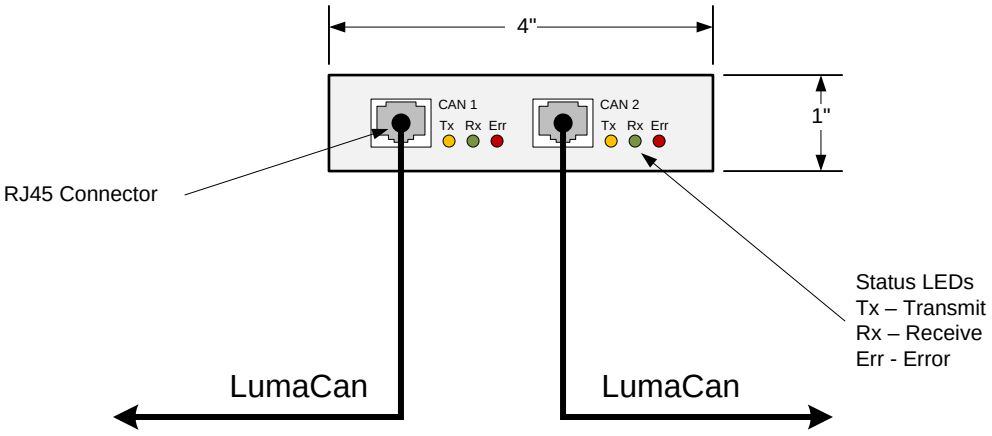
FUNCTIONAL DIAGRAM

Behavior B4 – with Off Delay – Timed Switch





Top View



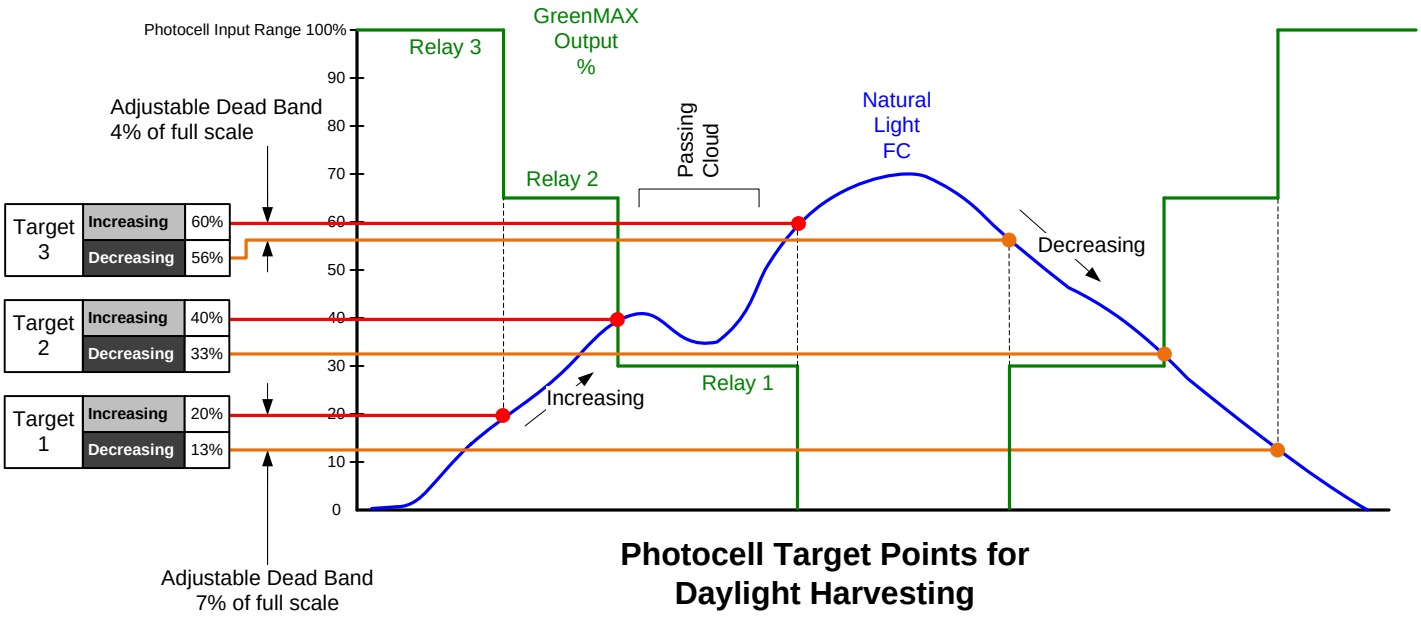
Front View
with
Connections

NOTES:

- Surface top and bottom is smooth.
- Mounted using two sided tape.
- Derives its power from the LumaCan.
- Draws 50mA at +24VDC when connected.
- Can be powered by either CAN 1 or CAN 2.

Daylight Harvesting
Open Loop

Created by : Kevin Parsons
Leviton Manufacturing
Date: Feb 22, 2012

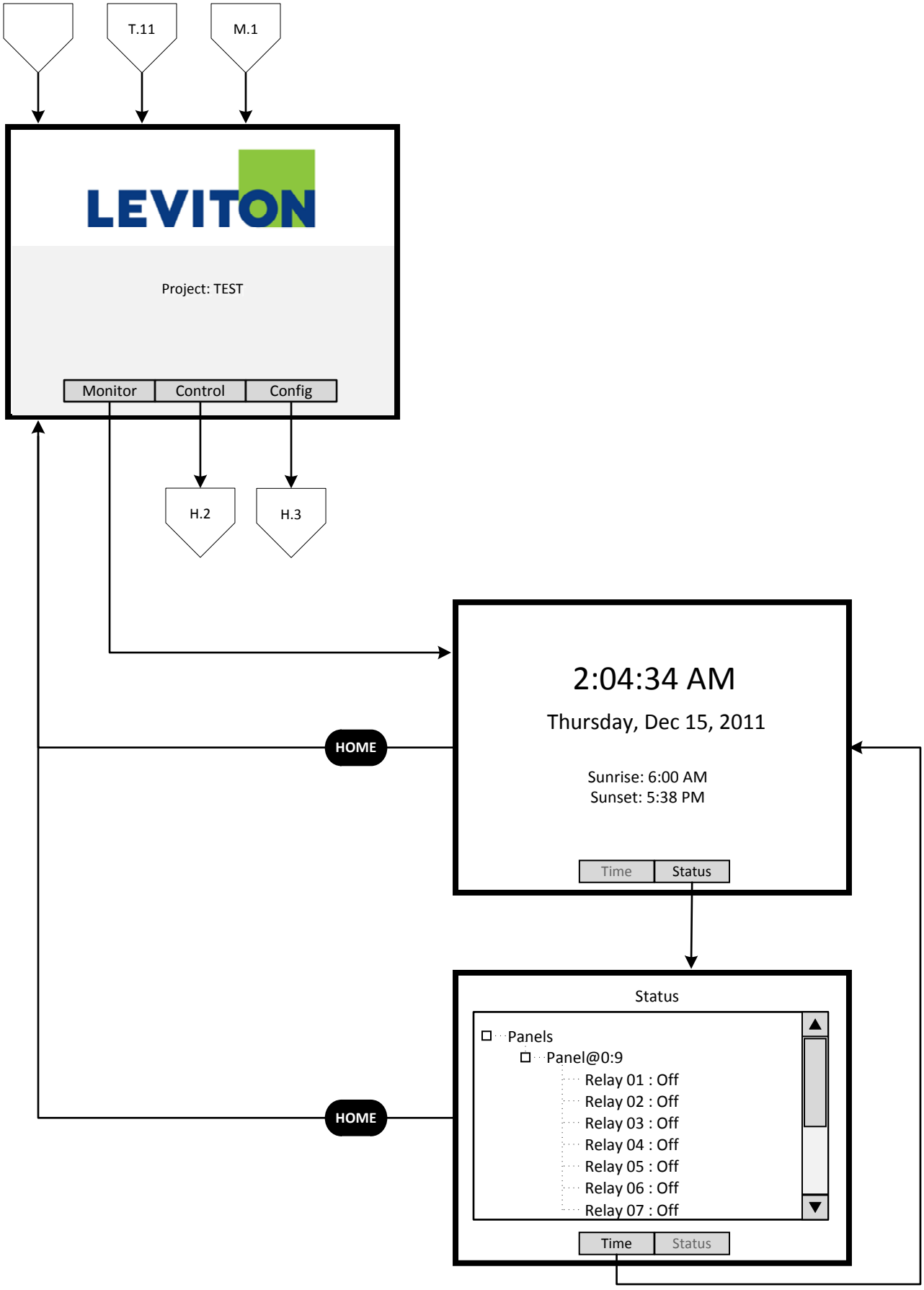


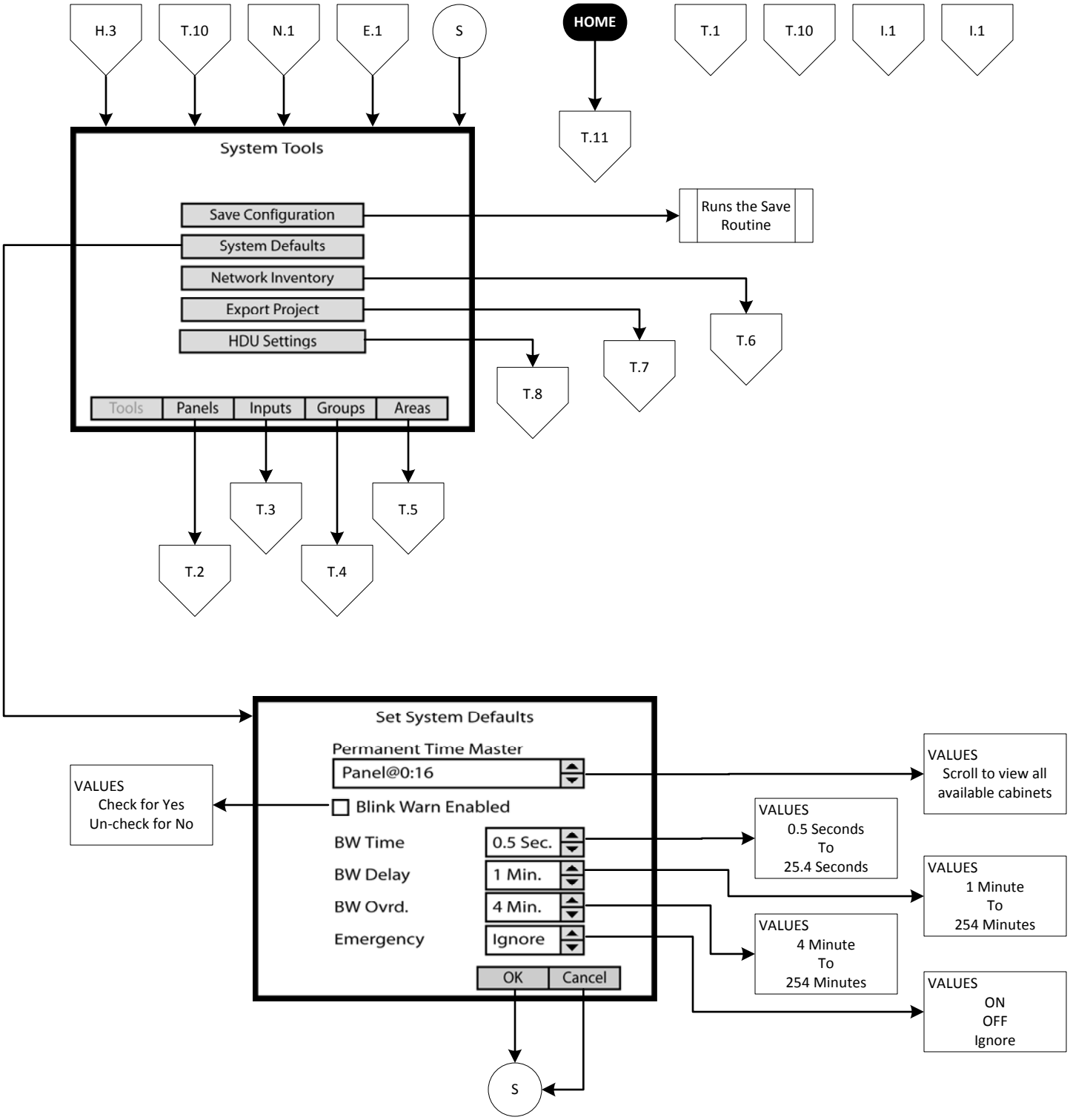
Photocell Target Points for Daylight Harvesting Open Loop

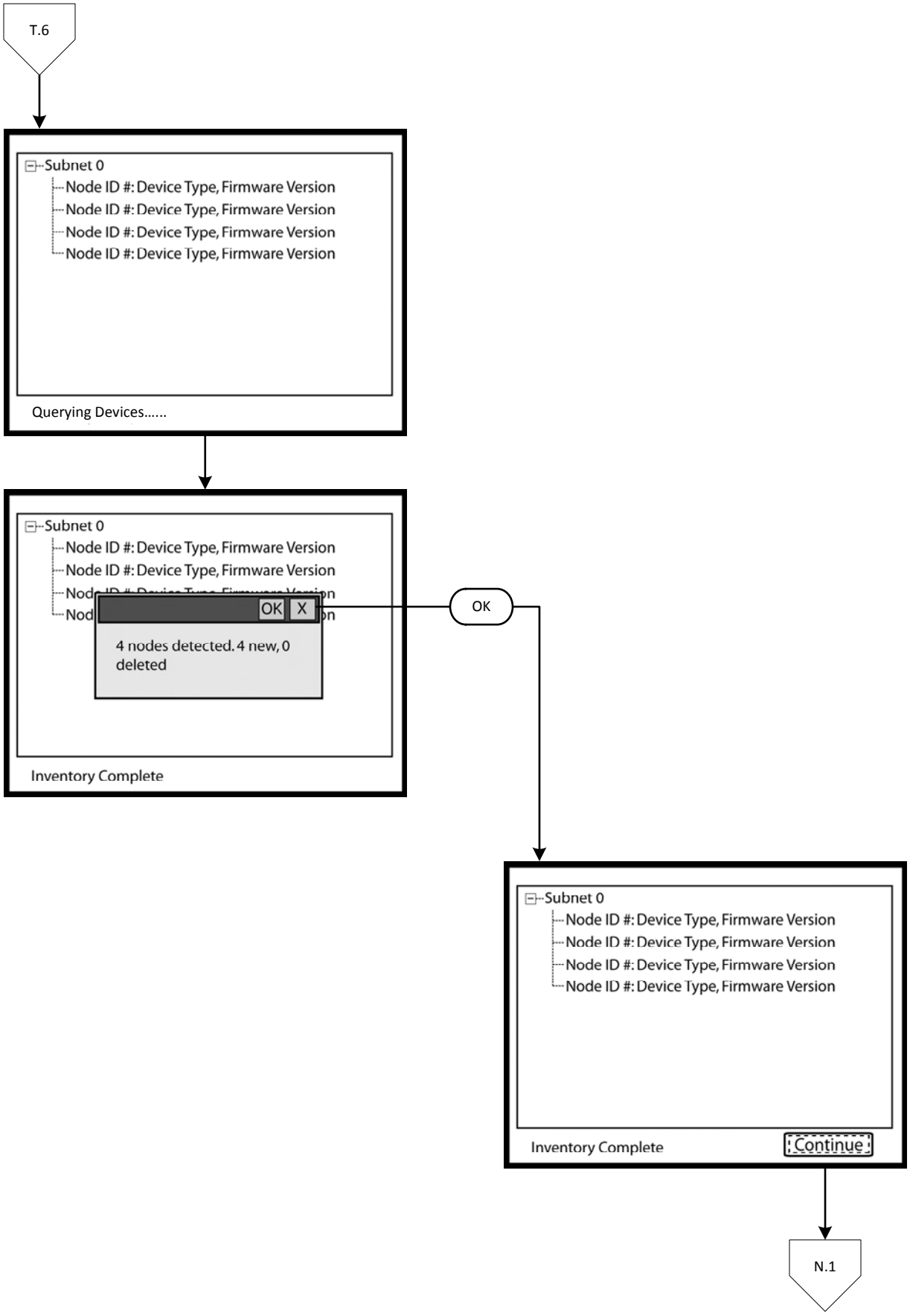
LEVITON

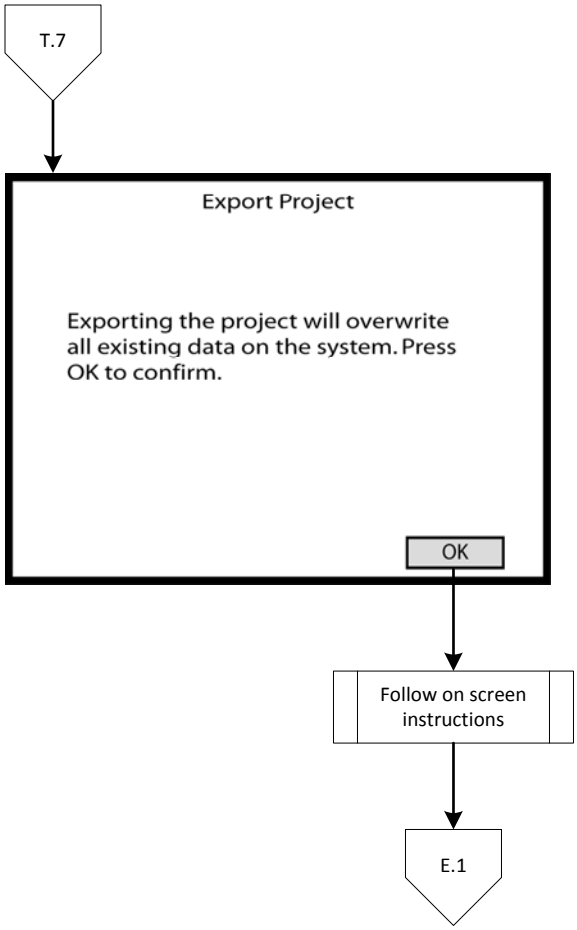
GreenMAX Programming Manual

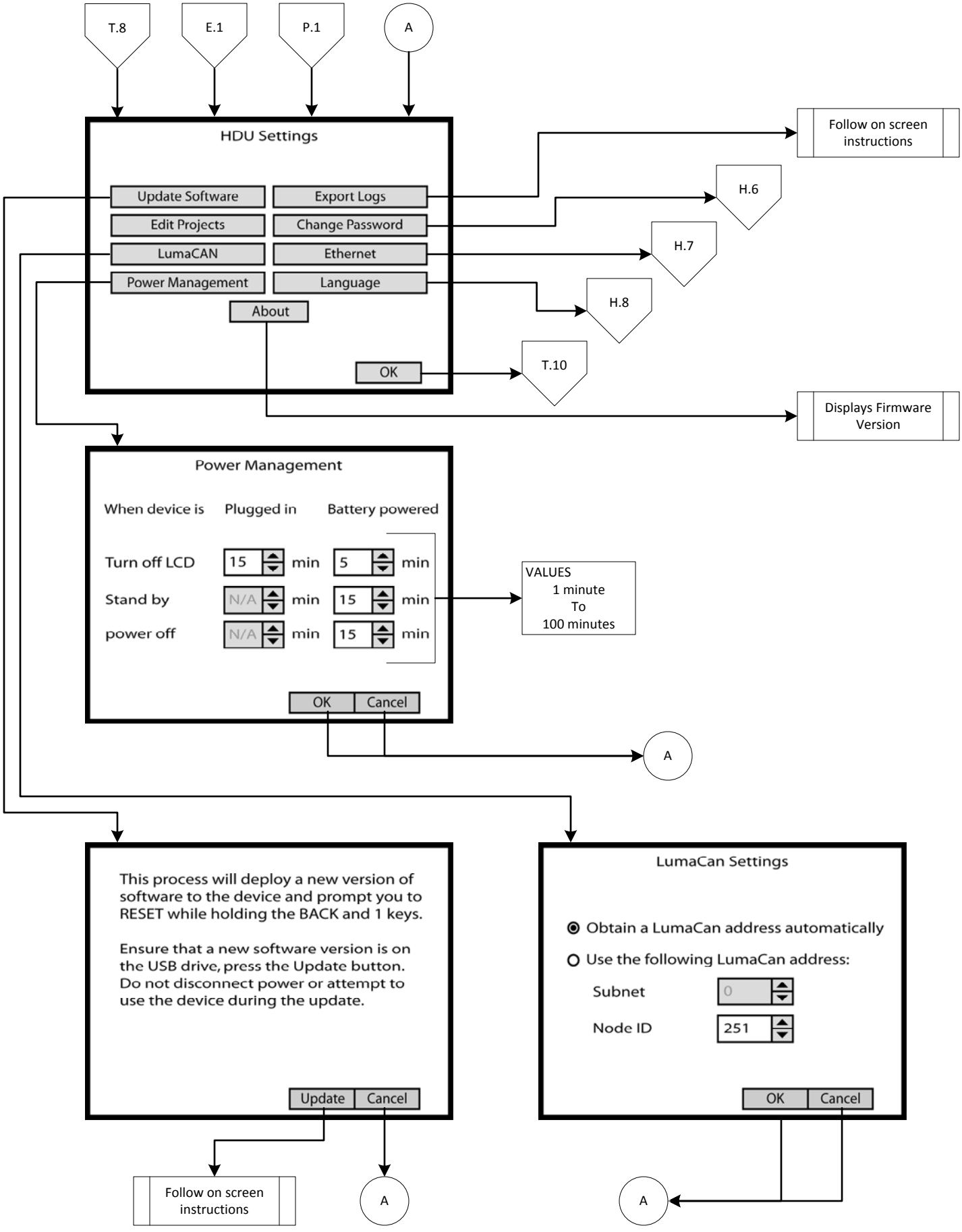
V2.14

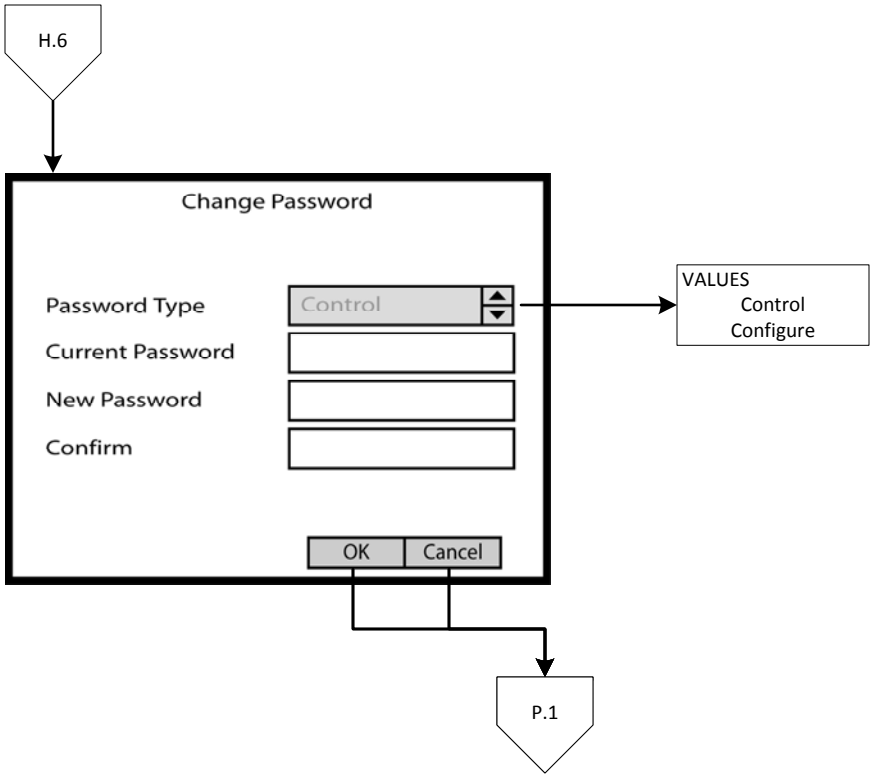

T.11
M.1
LEVITON
Project: TEST
Monitor
Control
Config
H.2
H.3
2:04:34 AM
Thursday, Dec 15, 2011
Sunrise: 6:00 AM
Sunset: 5:38 PM
Time
Status
HOME
Status
Panels
Panel@0:9
Relay 01 : Off
Relay 02 : Off
Relay 03 : Off
Relay 04 : Off
Relay 05 : Off
Relay 06 : Off
Relay 07 : Off
Time
Status
HOME

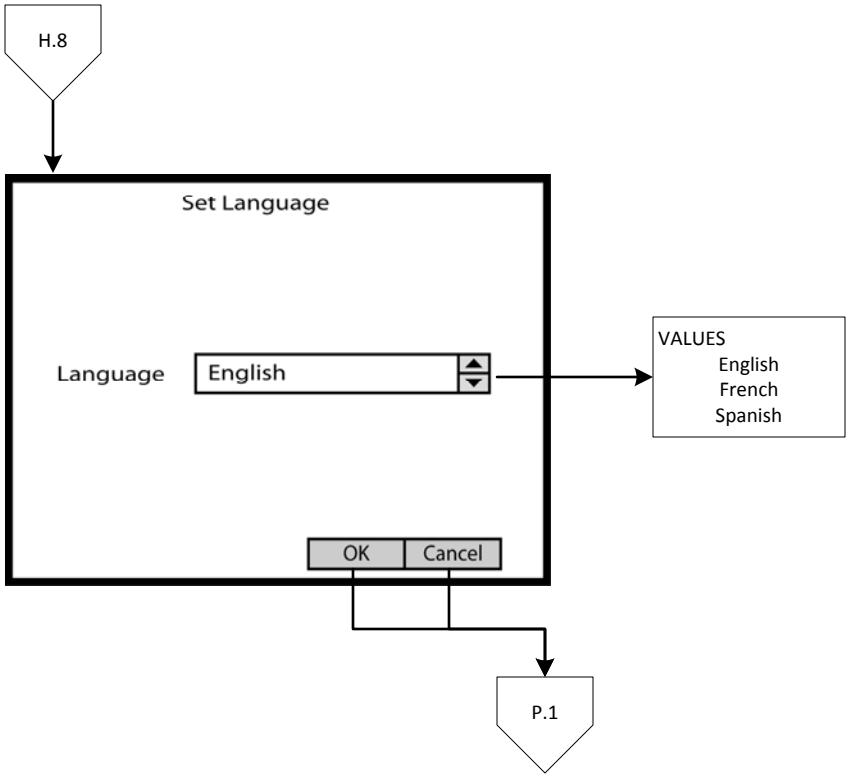

H.3
T.10
N.1
E.1
S
HOME
T.1
T.10
I.1
I.1
T.11
System Tools
Save Configuration
System Defaults
Network Inventory
Export Project
HDU Settings
Runs the Save Routine
T.6
T.7
T.8
Tools
Panels
Inputs
Groups
Areas
T.3
T.5
T.2
T.4
Set System Defaults
Permanent Time Master
Panel@0:16
Blink Warn Enabled
BW Time
0.5 Sec.
BW Delay
1 Min.
BW Ovrd.
4 Min.
Emergency
Ignore
OK
Cancel
VALUES
Check for Yes
Un-check for No
VALUES
Scroll to view all available cabinets
VALUES
0.5 Seconds
To
25.4 Seconds
VALUES
1 Minute
To
254 Minutes
VALUES
4 Minute
To
254 Minutes
VALUES
ON
OFF
Ignore
S

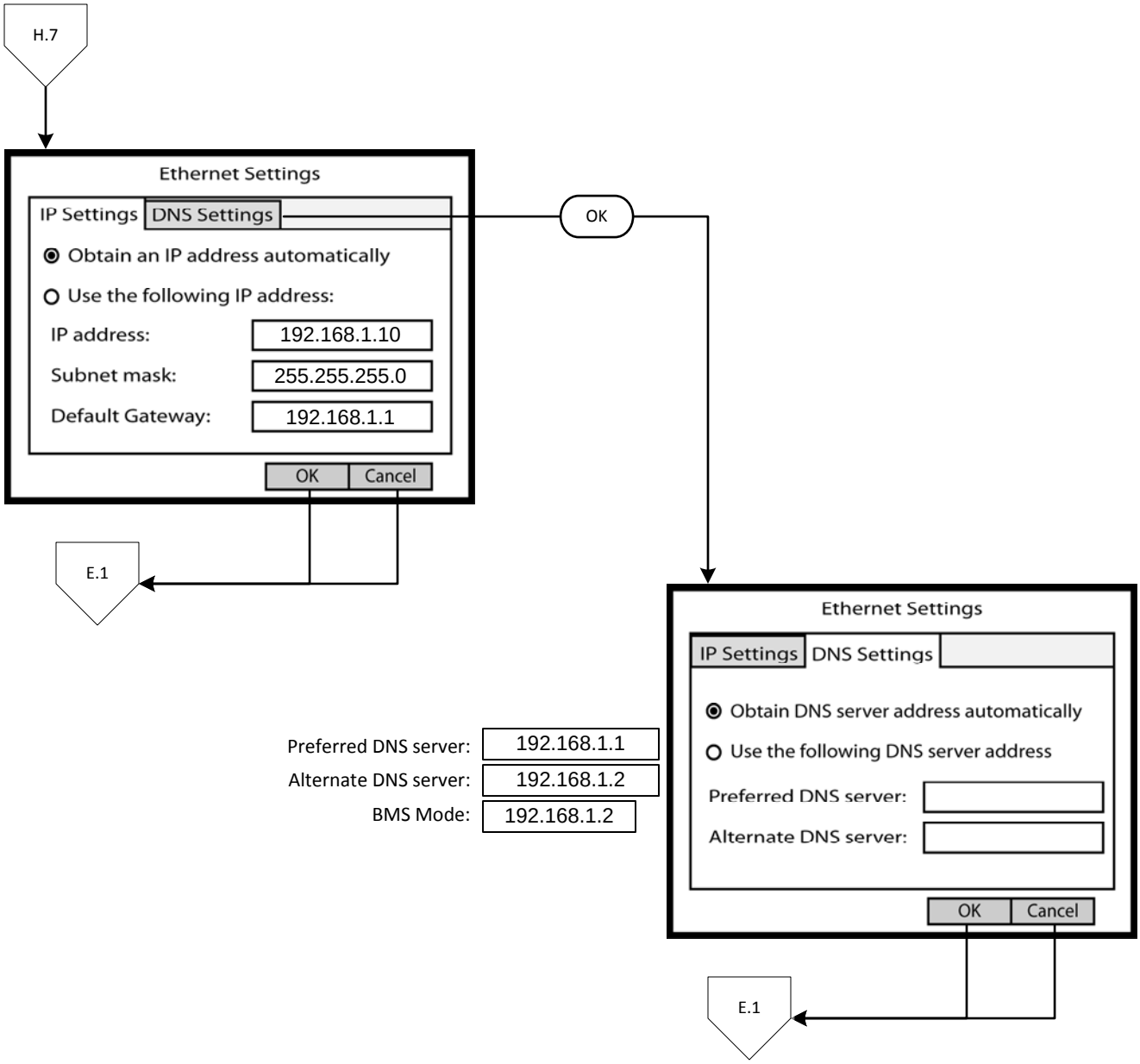

T.6
Subnet 0
Node ID #: Device Type, Firmware Version
Node ID #: Device Type, Firmware Version
Node ID #: Device Type, Firmware Version
Node ID #: Device Type, Firmware Version
Querying Devices.....
Subnet 0
Node ID #: Device Type, Firmware Version
Node ID #: Device Type, Firmware Version
OK
X
4 nodes detected. 4 new, 0 deleted
Inventory Complete
OK
Subnet 0
Node ID #: Device Type, Firmware Version
Node ID #: Device Type, Firmware Version
Node ID #: Device Type, Firmware Version
Node ID #: Device Type, Firmware Version
Inventory Complete
Continue
N.1

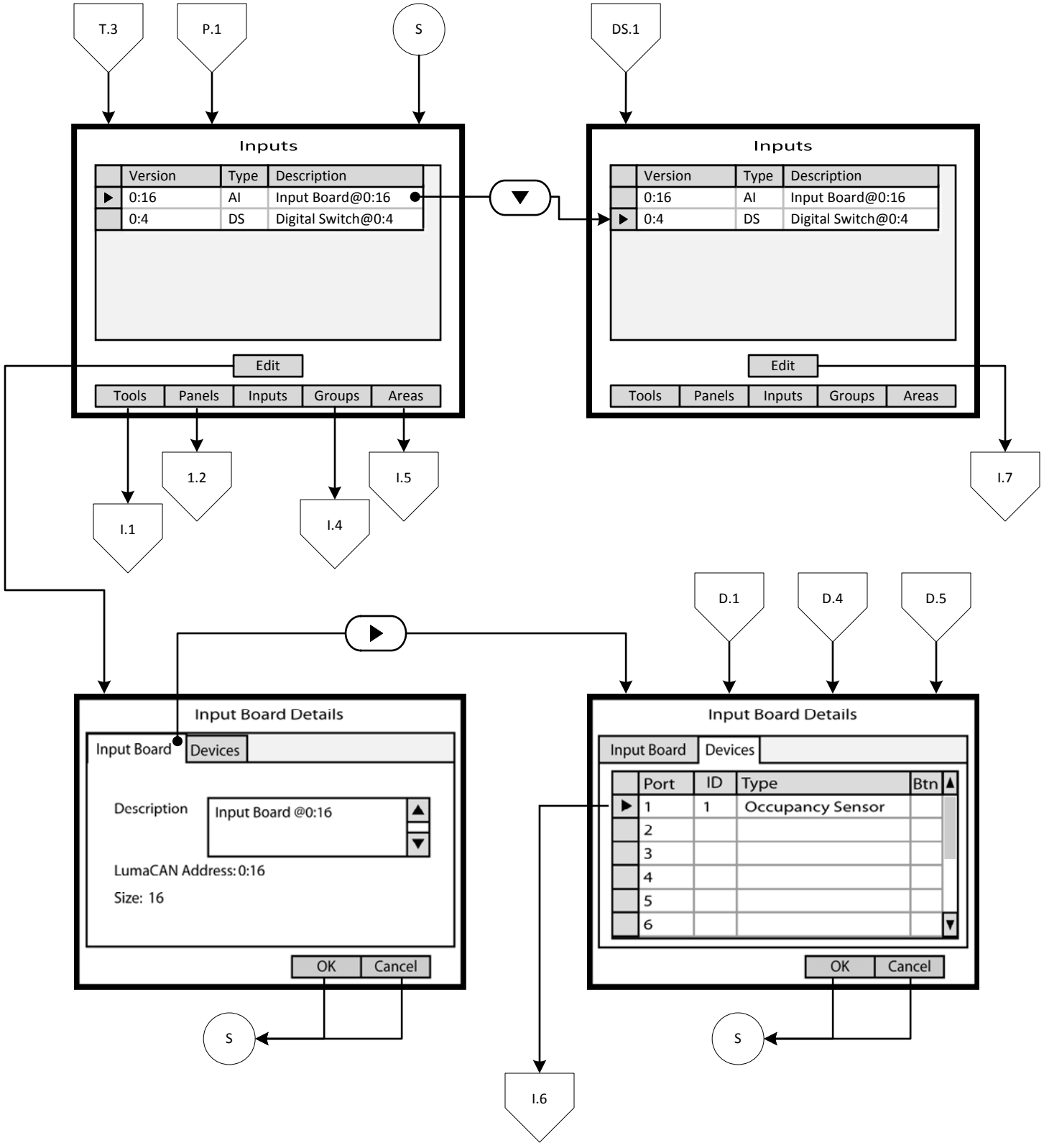

T.7
Export Project
Exporting the project will overwrite all existing data on the system. Press OK to confirm.
OK
Follow on screen instructions
E.1

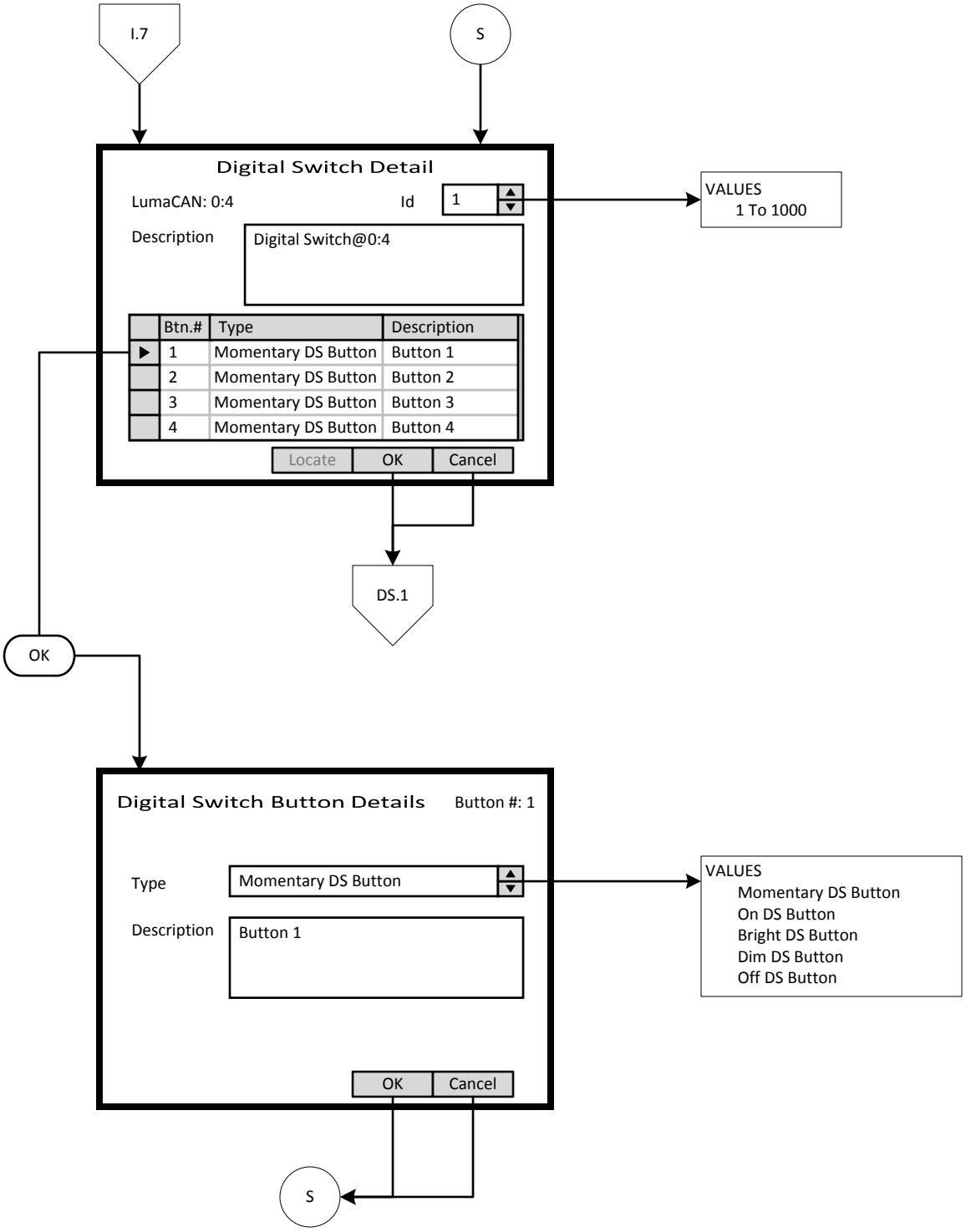

T.8
E.1
P.1
A
HDU Settings
Update Software
Export Logs
Edit Projects
Change Password
LumaCAN
Ethernet
Power Management
Language
About
OK
Follow on screen instructions
H.6
H.7
H.8
T.10
Displays Firmware Version
Power Management
When device is
Plugged in
Battery powered
Turn off LCD
15
min
5
min
Stand by
N/A
min
15
min
power off
N/A
min
15
min
VALUES
1 minute
To
100 minutes
OK
Cancel
A
This process will deploy a new version of software to the device and prompt you to RESET while holding the BACK and 1 keys.
Ensure that a new software version is on the USB drive, press the Update button. Do not disconnect power or attempt to use the device during the update.
Update
Cancel
Follow on screen instructions
A
LumaCan Settings
Obtain a LumaCan address automatically
Use the following LumaCan address:
Subnet
0
Node ID
251
OK
Cancel
A

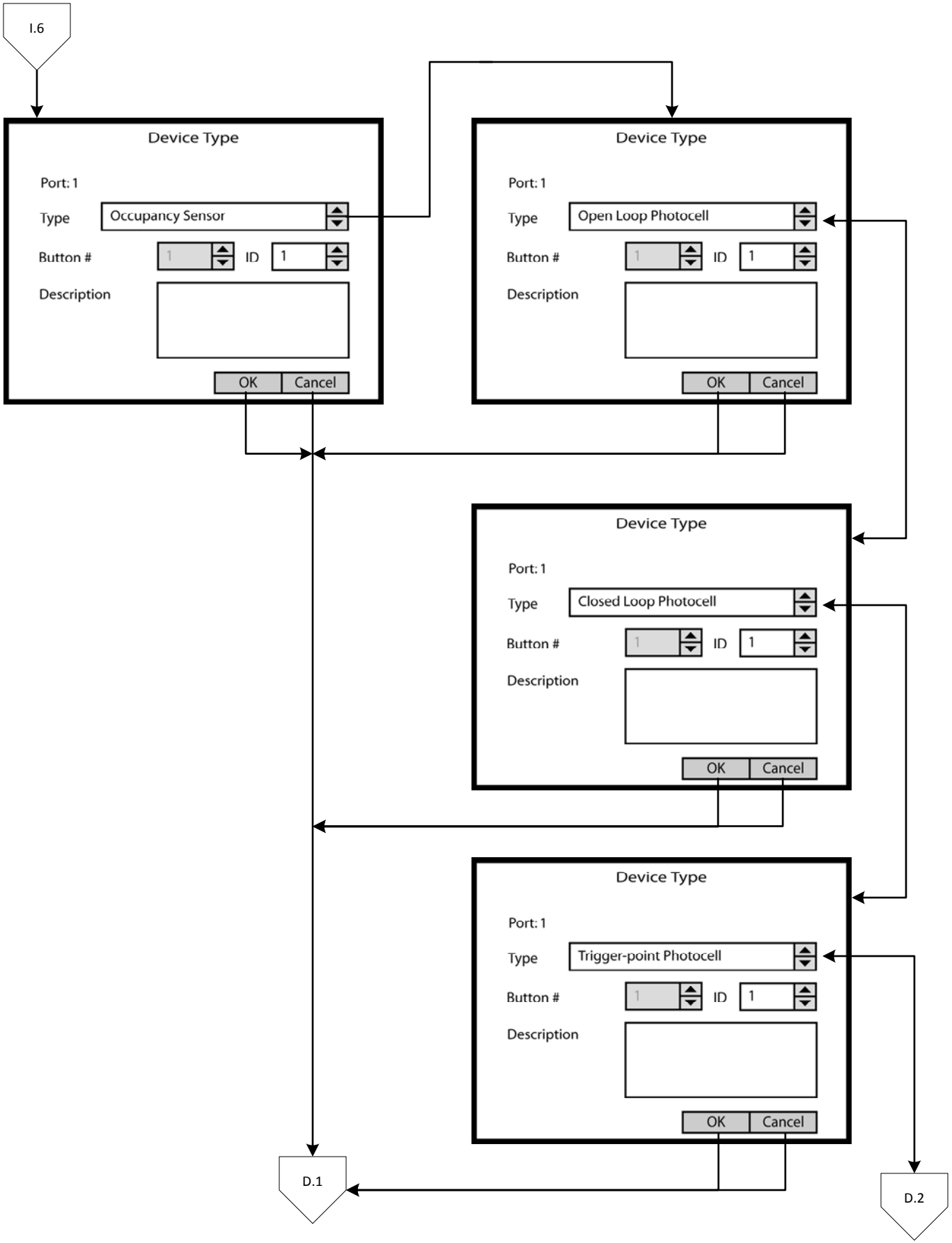

H.6
Change Password
Password Type
Control
Current Password
New Password
Confirm
OK
Cancel
VALUES
Control
Configure
P.1

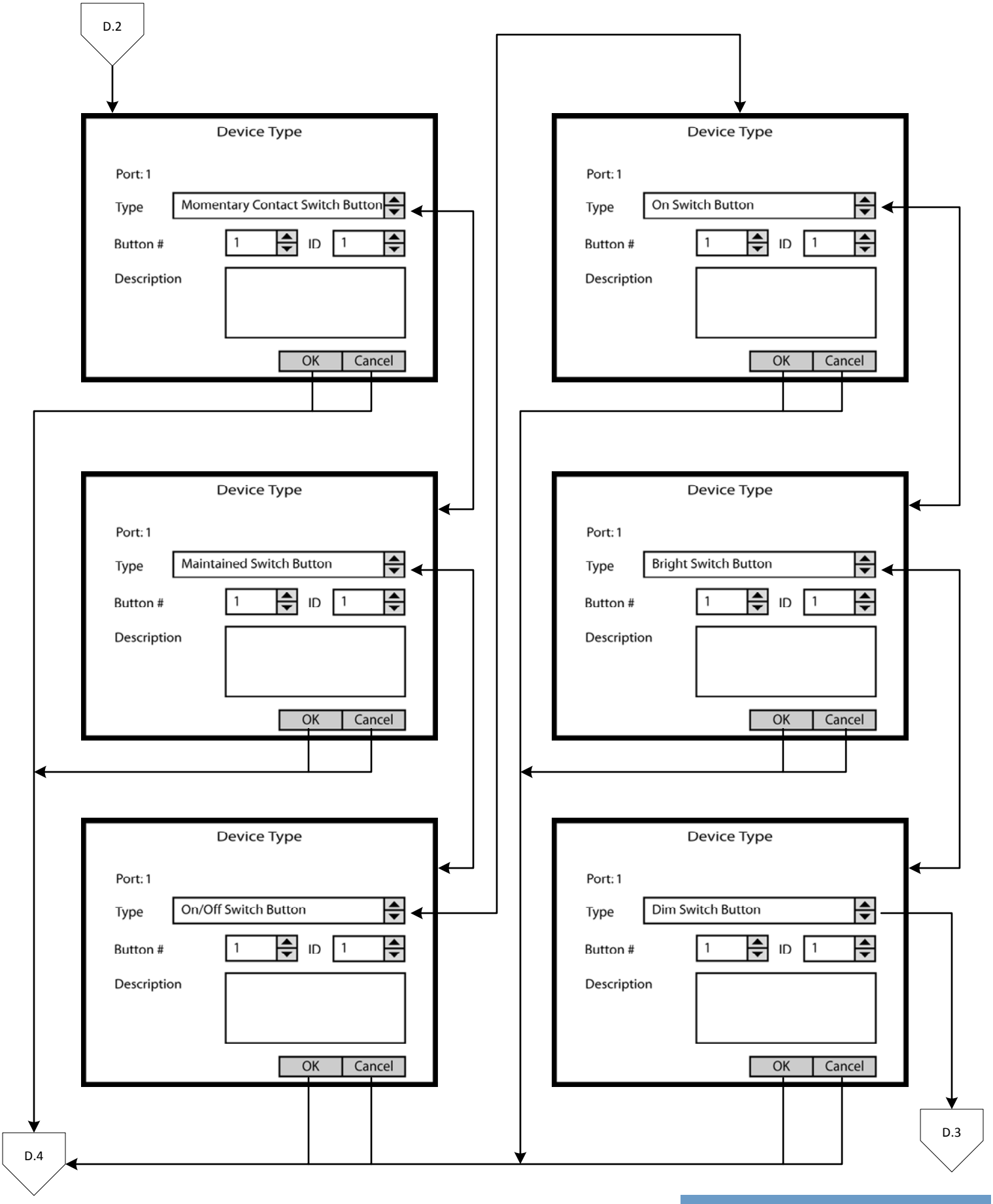

H.8
Set Language
Language
English
OK
Cancel
VALUES
English
French
Spanish
P.1

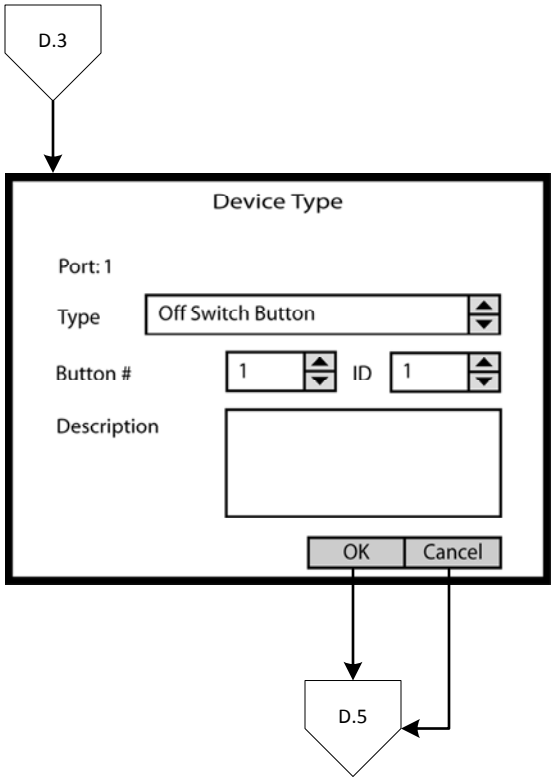

H.7
Ethernet Settings
IP Settings
DNS Settings
Obtain an IP address automatically
Use the following IP address:
IP address:
192.168.1.10
Subnet mask:
255.255.255.0
Default Gateway:
192.168.1.1
OK
Cancel
OK
E.1
Ethernet Settings
IP Settings
DNS Settings
Obtain DNS server address automatically
Use the following DNS server address
Preferred DNS server:
Alternate DNS server:
OK
Cancel
E.1
Preferred DNS server:
192.168.1.1
Alternate DNS server:
192.168.1.2
BMS Mode:
192.168.1.2

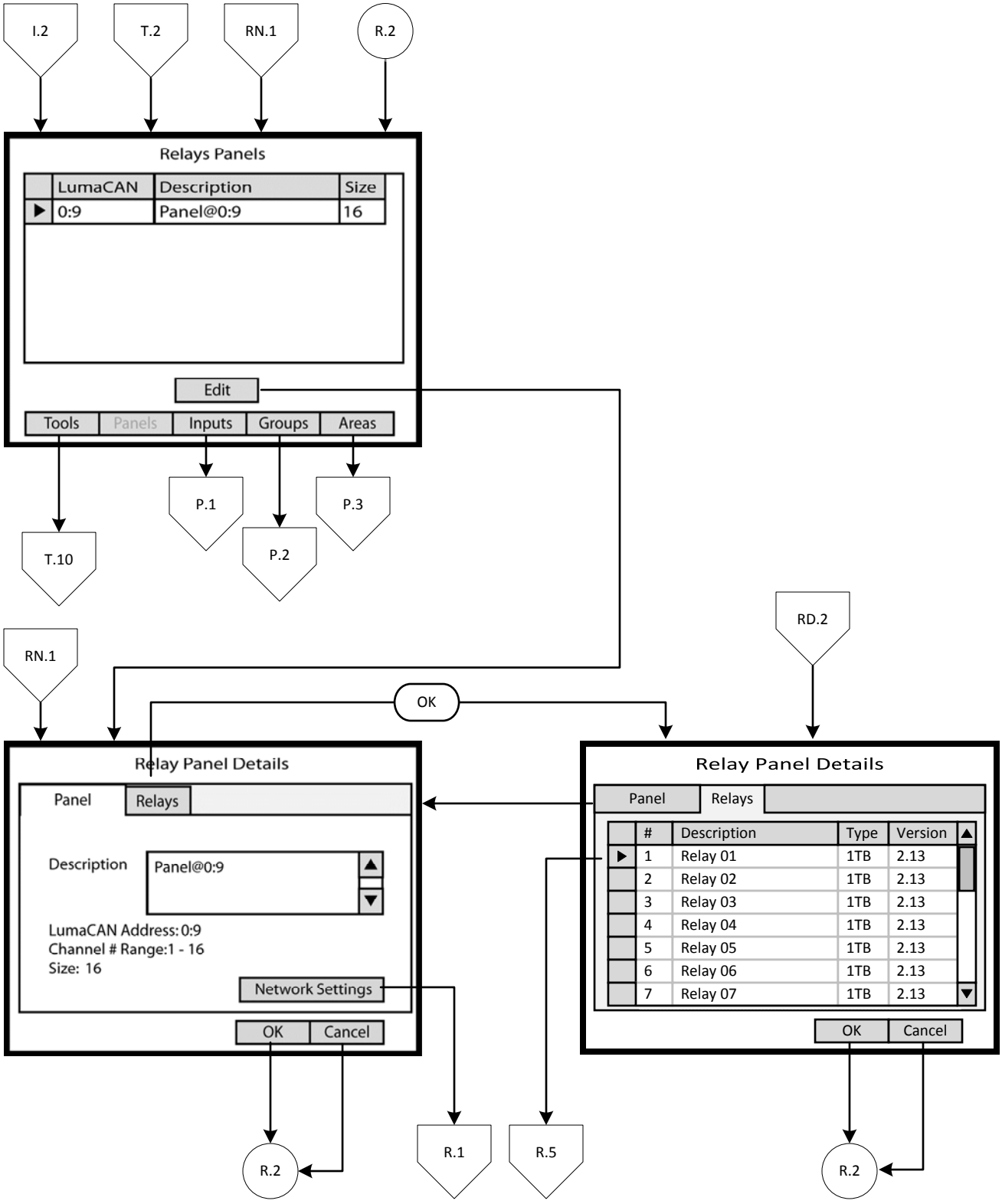

T.3
P.1
S
DS.1
Inputs
Version
Type
Description
0:16
AI
Input Board@0:16
0:4
DS
Digital Switch@0:4
Edit
Tools
Panels
Inputs
Groups
Areas
1.2
I.5
I.1
I.4
I.7
D.1
D.4
D.5
Input Board Details
Input Board
Devices
Description
Input Board @0:16
LumaCAN Address: 0:16
Size: 16
OK
Cancel
Port
ID
Type
Btn
1
Occupancy Sensor
2
3
4
5
6
I.6

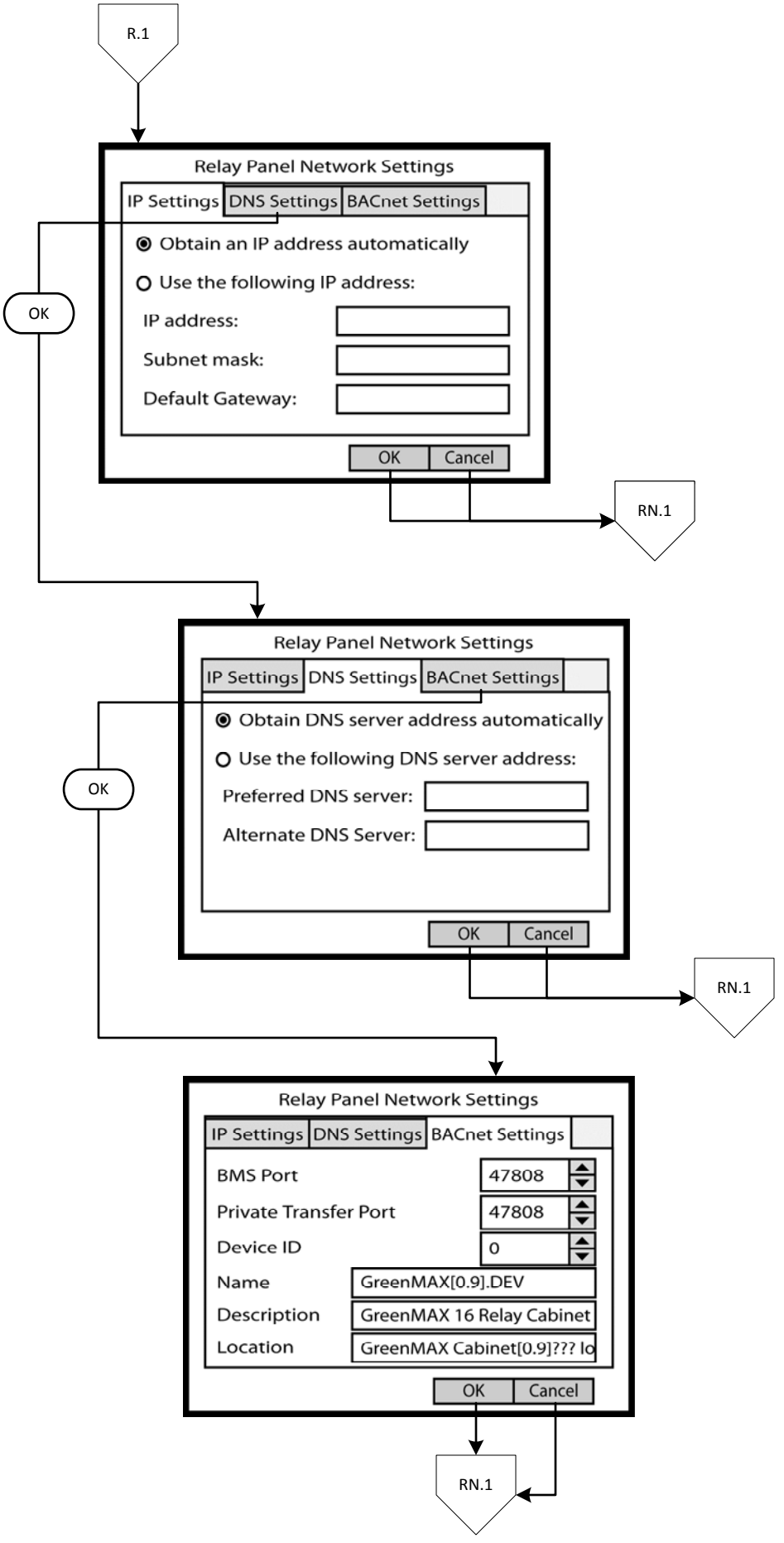

I.7
S
Digital Switch Detail
LumaCAN: 0:4
Id
1
VALUES
1 To 1000
Description
Digital Switch@0:4
Btn.#
Type
Description
1
Momentary DS Button
Button 1
2
Momentary DS Button
Button 2
3
Momentary DS Button
Button 3
4
Momentary DS Button
Button 4
Locate
OK
Cancel
DS.1
OK
Digital Switch Button Details
Button #: 1
Type
Momentary DS Button
VALUES
Momentary DS Button
On DS Button
Bright DS Button
Dim DS Button
Off DS Button
Description
Button 1
OK
Cancel
S

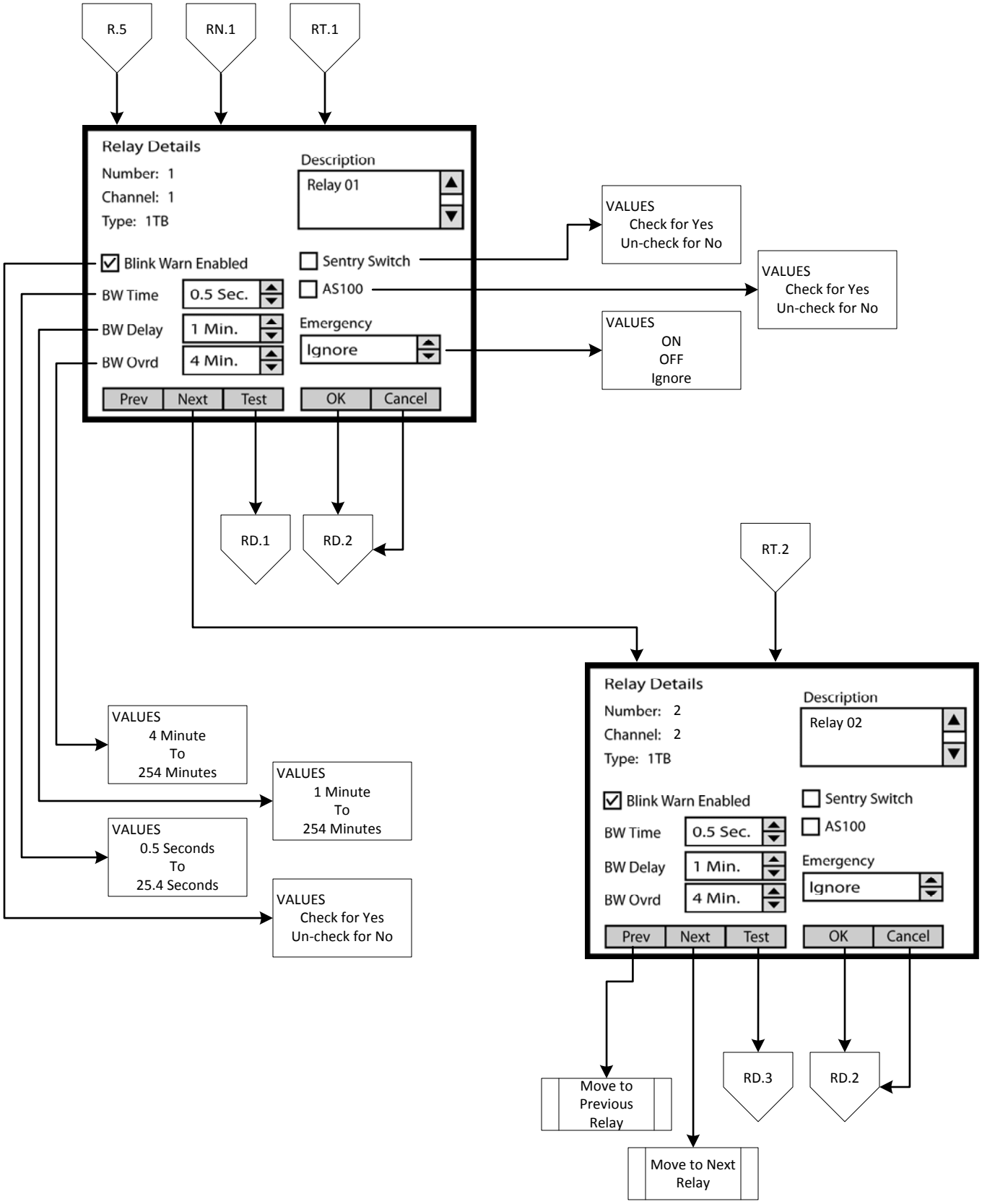

I.6
Device Type
Port: 1
Type
Occupancy Sensor
Button #
1
ID
1
Description
OK
Cancel
Device Type
Port: 1
Type
Open Loop Photocell
Button #
1
ID
1
Description
OK
Cancel
Device Type
Port: 1
Type
Closed Loop Photocell
Button #
1
ID
1
Description
OK
Cancel
Device Type
Port: 1
Type
Trigger-point Photocell
Button #
1
ID
1
Description
OK
Cancel
D.1
D.2

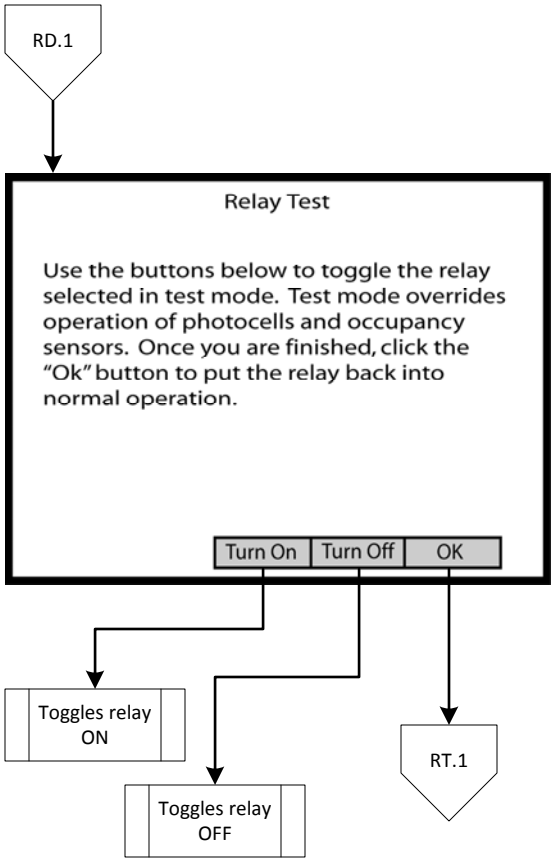

D.2
Device Type
Port: 1
Type
Momentary Contact Switch Button
Button #
1
ID
1
Description
OK
Cancel
Device Type
Port: 1
Type
On Switch Button
Button #
1
ID
1
Description
OK
Cancel
Device Type
Port: 1
Type
Maintained Switch Button
Button #
1
ID
1
Description
OK
Cancel
Device Type
Port: 1
Type
Bright Switch Button
Button #
1
ID
1
Description
OK
Cancel
Device Type
Port: 1
Type
On/Off Switch Button
Button #
1
ID
1
Description
OK
Cancel
Device Type
Port: 1
Type
Dim Switch Button
Button #
1
ID
1
Description
OK
Cancel
D.3
D.4

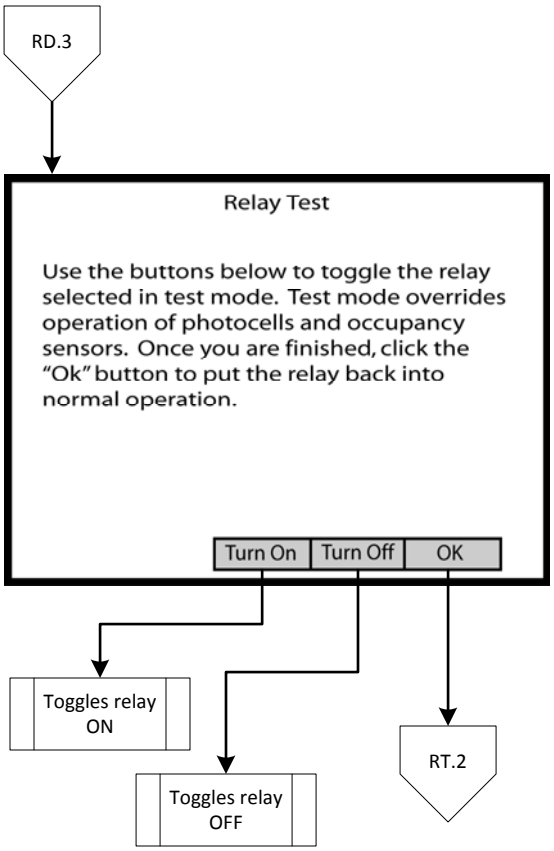

D.3
Device Type
Port: 1
Type
Off Switch Button
Button #
1
ID
1
Description
OK
Cancel
D.5

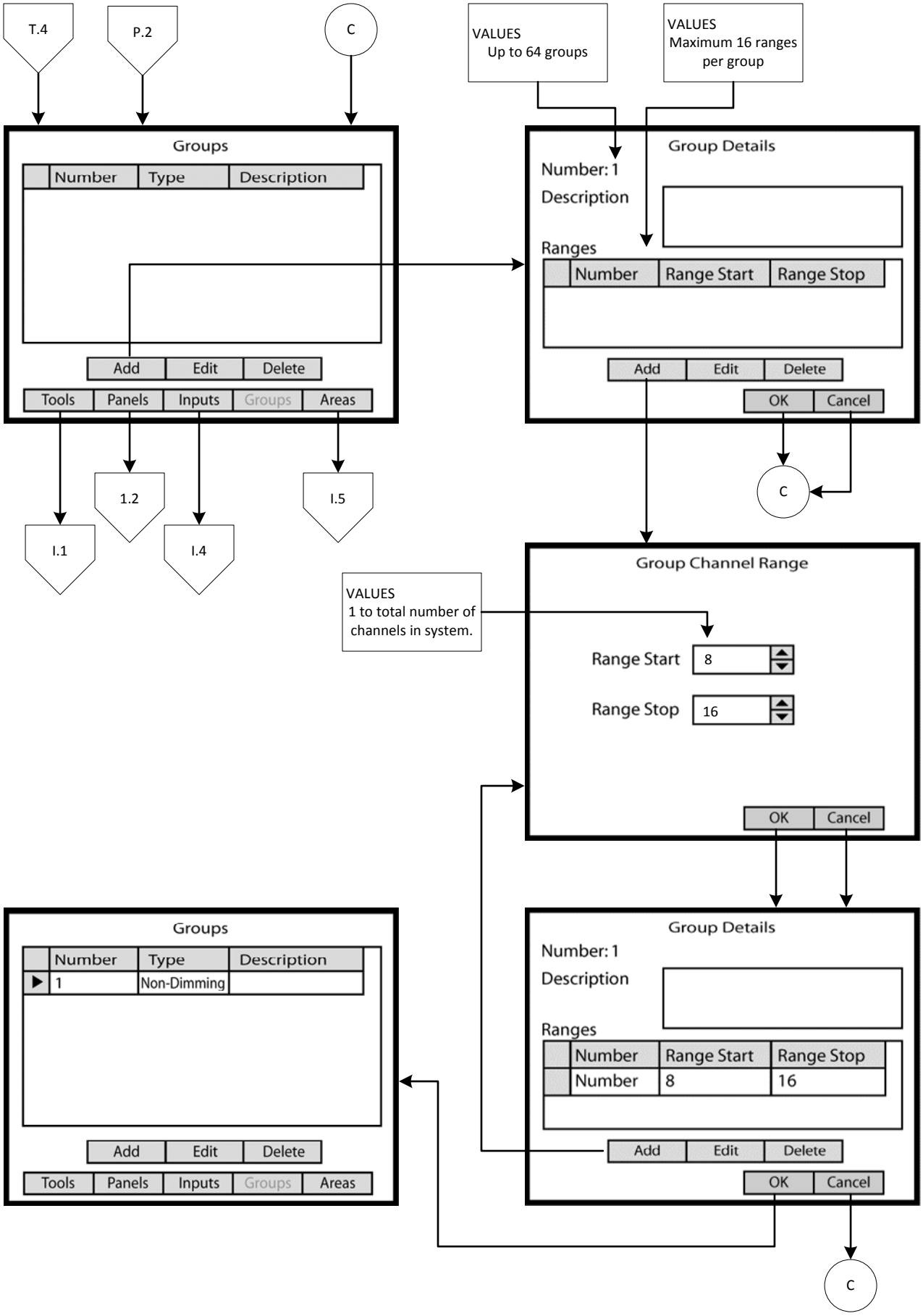

I.2
T.2
RN.1
R.2
Relays Panels
LumaCAN
Description
Size
0:9
Panel@0:9
16
Edit
Tools
Panels
Inputs
Groups
Areas
P.1
P.3
P.2
T.10
RN.1
RD.2
OK
Relay Panel Details
Panel
Relays
Description
Panel@0:9
LumaCAN Address: 0:9
Channel # Range:1 - 16
Size: 16
Network Settings
OK
Cancel
Relay Panel Details
Panel
Relays
#
Description
Type
Version
1
Relay 01
1TB
2.13
2
Relay 02
1TB
2.13
3
Relay 03
1TB
2.13
4
Relay 04
1TB
2.13
5
Relay 05
1TB
2.13
6
Relay 06
1TB
2.13
7
Relay 07
1TB
2.13
OK
Cancel
R.2
R.1
R.5
R.2

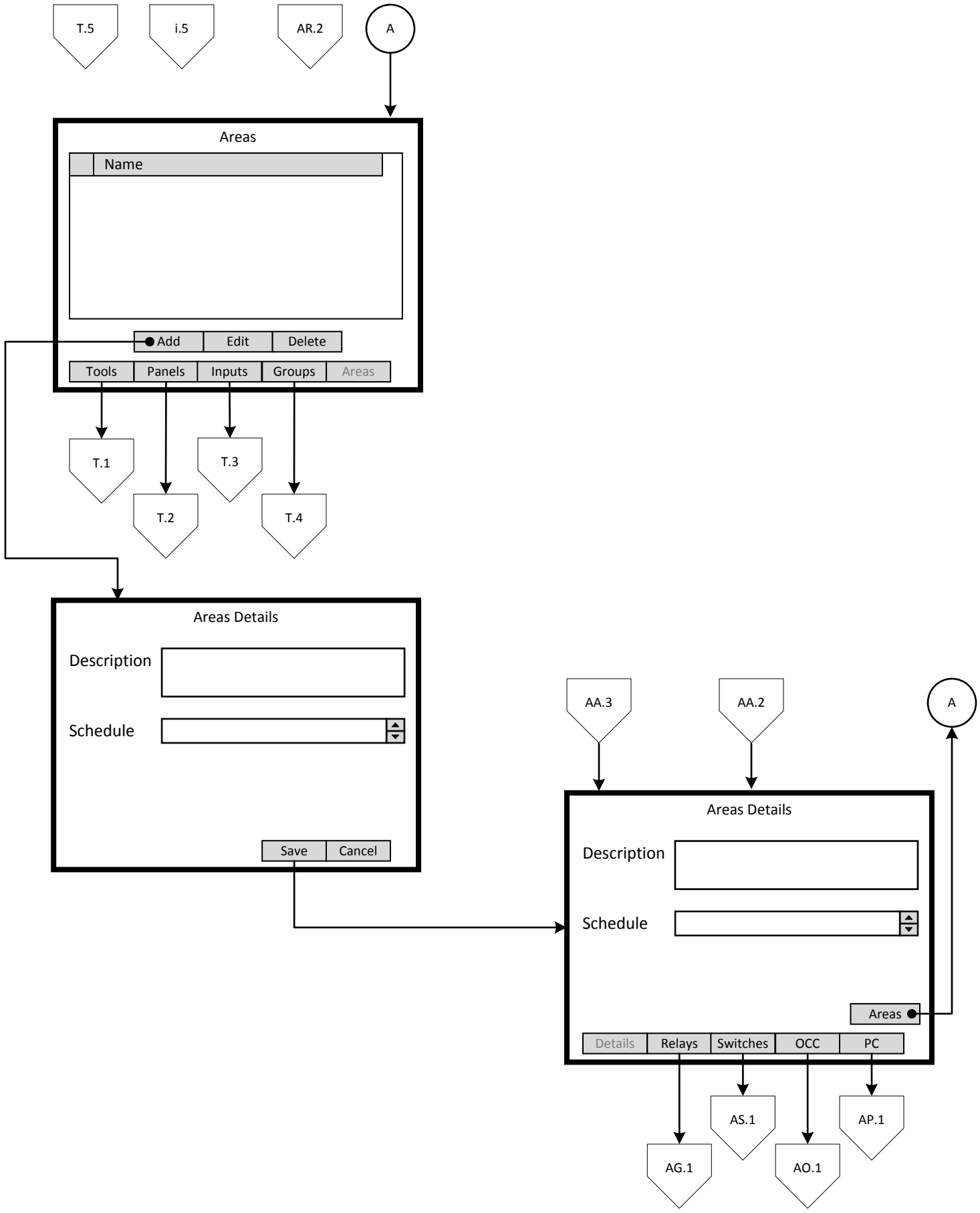

R.1
Relay Panel Network Settings
IP Settings
DNS Settings
BACnet Settings
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default Gateway:
OK
Cancel
OK
RN.1
Relay Panel Network Settings
IP Settings
DNS Settings
BACnet Settings
Obtain DNS server address automatically
Use the following DNS server address:
Preferred DNS server:
Alternate DNS Server:
OK
Cancel
OK
RN.1
Relay Panel Network Settings
IP Settings
DNS Settings
BACnet Settings
BMS Port
47808
Private Transfer Port
47808
Device ID
0
Name
GreenMAX[0.9].DEV
Description
GreenMAX 16 Relay Cabinet
Location
GreenMAX Cabinet[0.9]??? lo
OK
Cancel
RN.1

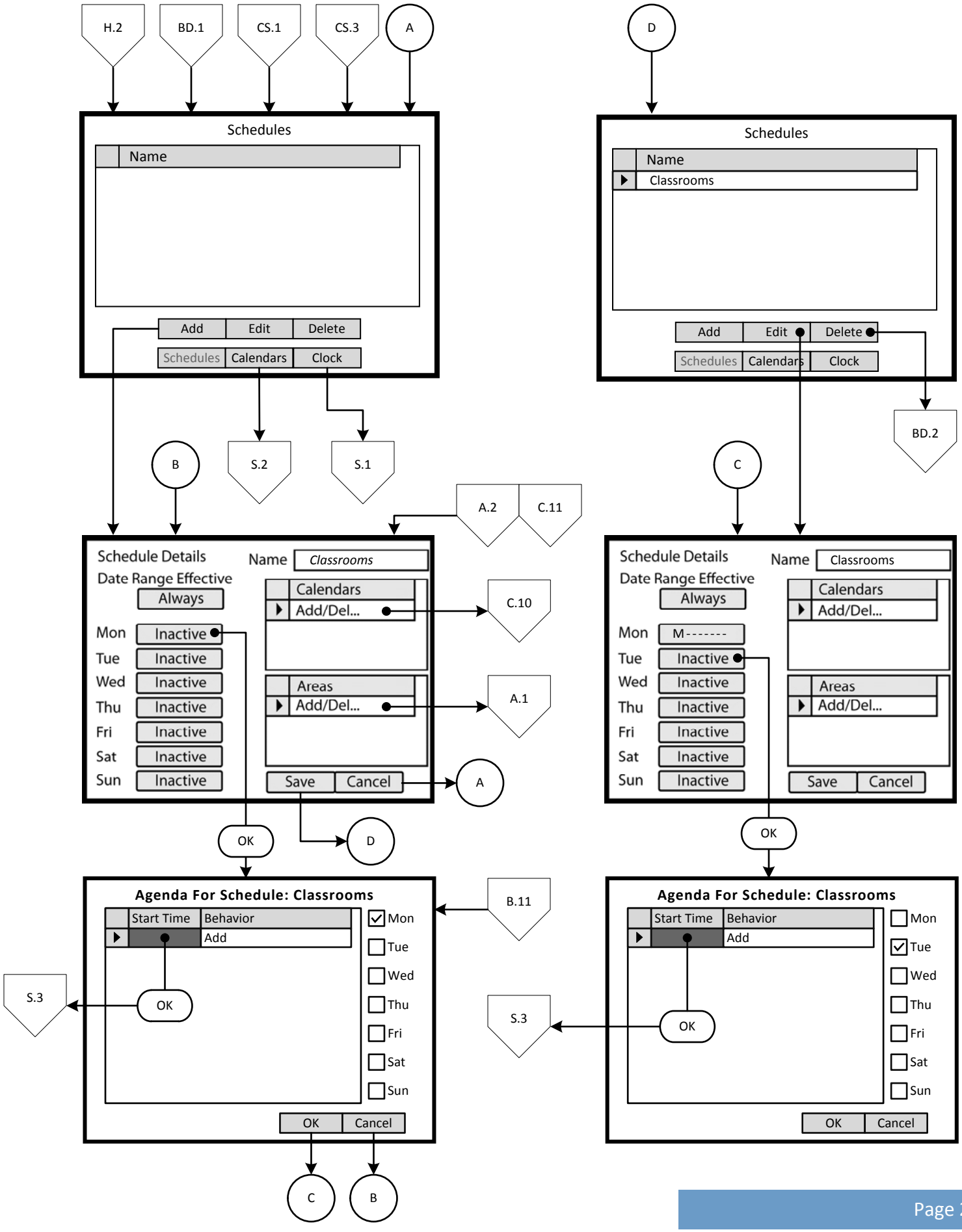

R.5
RN.1
RT.1
Relay Details
Number: 1
Channel: 1
Type: 1TB
Description
Relay 01
Blink Warn Enabled
Sentry Switch
AS100
BW Time
0.5 Sec.
BW Delay
1 Min.
BW Ovrd
4 Min.
Emergency
Ignore
Prev
Next
Test
OK
Cancel
VALUES
Check for Yes
Un-check for No
VALUES
Check for Yes
Un-check for No
VALUES
ON
OFF
Ignore
RD.1
RD.2
RT.2
VALUES
4 Minute
To
254 Minutes
VALUES
1 Minute
To
254 Minutes
VALUES
0.5 Seconds
To
25.4 Seconds
VALUES
Check for Yes
Un-check for No
Relay Details
Number: 2
Channel: 2
Type: 1TB
Description
Relay 02
Blink Warn Enabled
Sentry Switch
AS100
BW Time
0.5 Sec.
BW Delay
1 Min.
BW Ovrd
4 Min.
Emergency
Ignore
Prev
Next
Test
OK
Cancel
Move to Previous Relay
RD.3
RD.2
Move to Next Relay

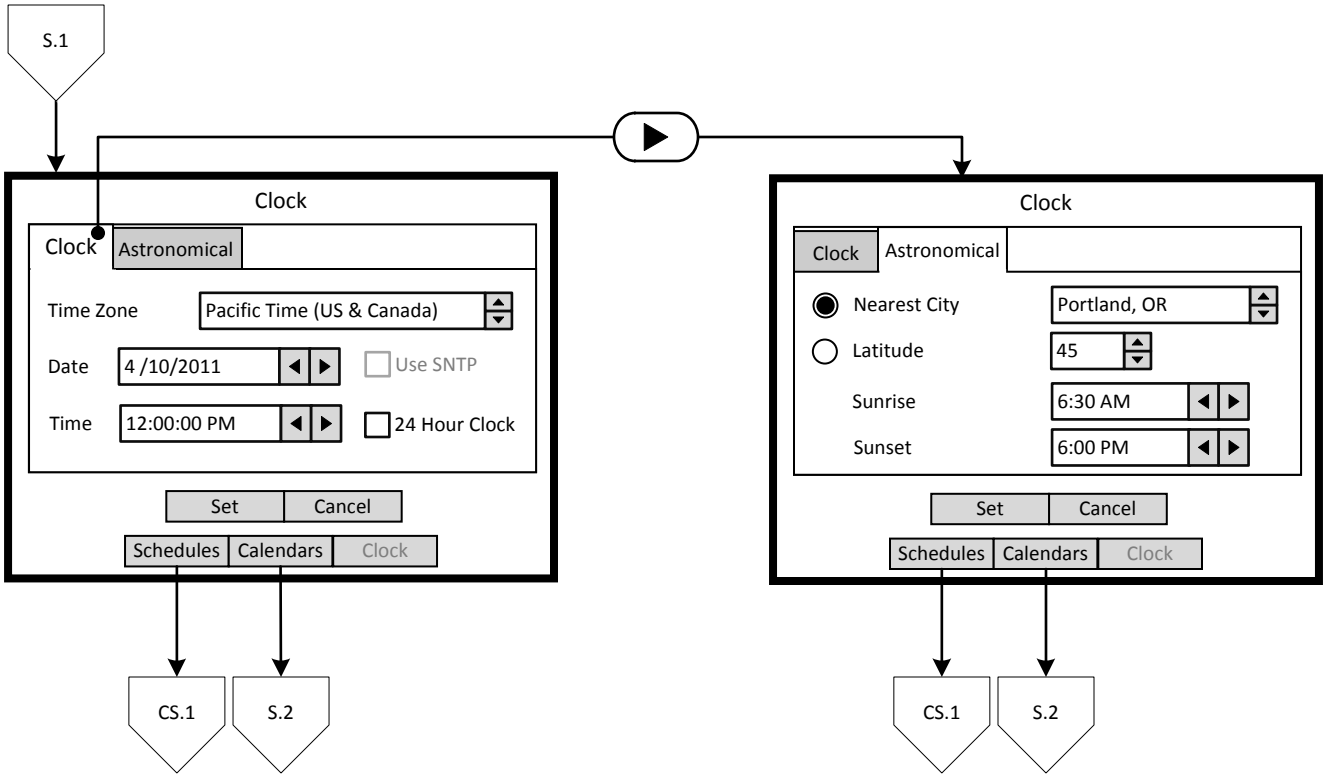

RD.1
Relay Test
Use the buttons below to toggle the relay selected in test mode. Test mode overrides operation of photocells and occupancy sensors. Once you are finished, click the "Ok" button to put the relay back into normal operation.
Turn On
Turn Off
OK
Toggles relay ON
Toggles relay OFF
RT.1

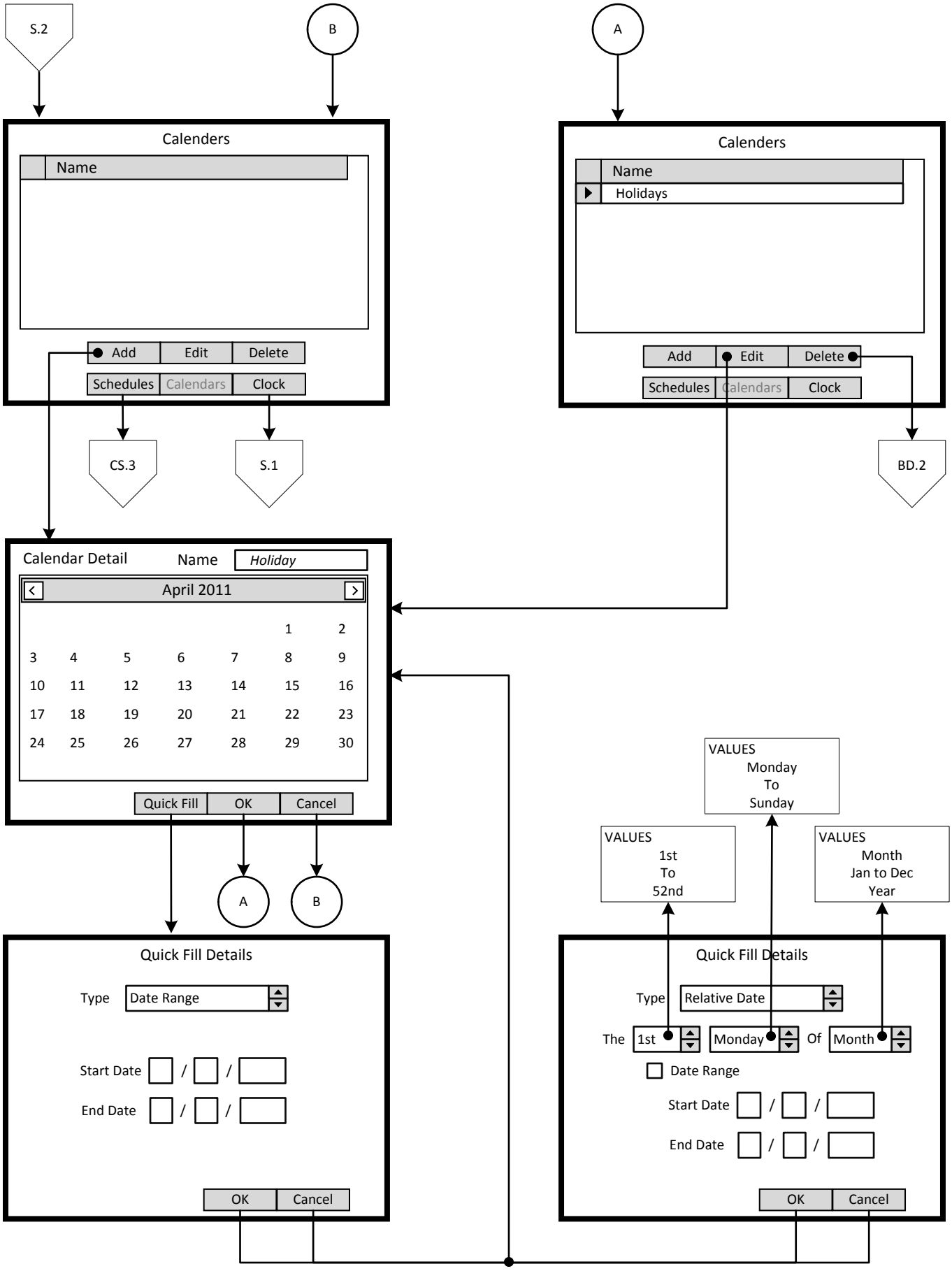

RD.3
Relay Test
Use the buttons below to toggle the relay selected in test mode. Test mode overrides operation of photocells and occupancy sensors. Once you are finished, click the "Ok" button to put the relay back into normal operation.
Turn On
Turn Off
OK
Toggles relay ON
Toggles relay OFF
RT.2

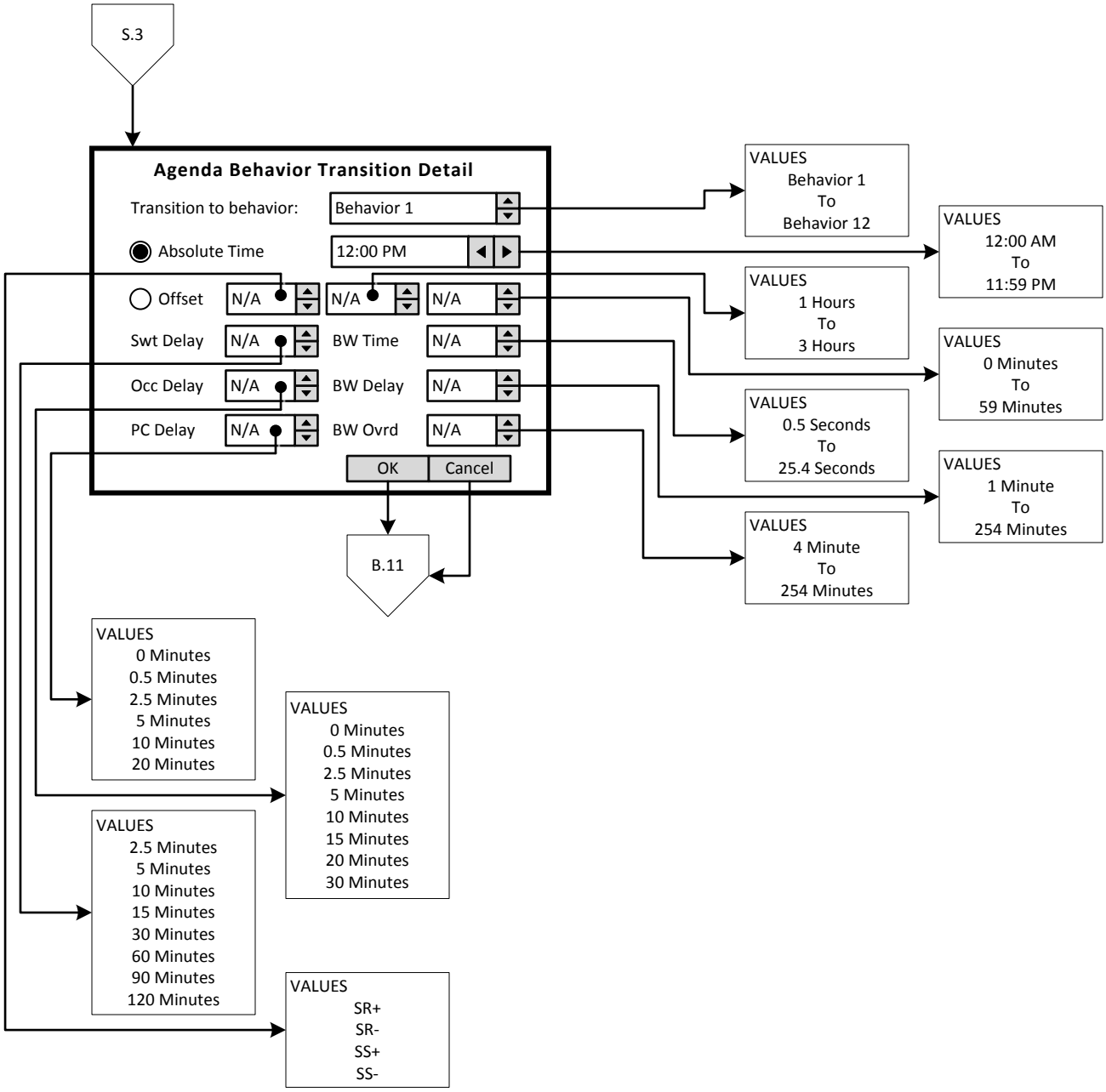

T.4
P.2
C
VALUES
Up to 64 groups
VALUES
Maximum 16 ranges
per group
Groups
Number
Type
Description
Add
Edit
Delete
Tools
Panels
Inputs
Groups
Areas
Group Details
Number: 1
Description
Ranges
Number
Range Start
Range Stop
Add
Edit
Delete
OK
Cancel
C
1.2
I.5
I.1
I.4
VALUES
1 to total number of
channels in system.
Group Channel Range
Range Start
8
Range Stop
16
OK
Cancel
Groups
Number
Type
Description
1
Non-Dimming
Add
Edit
Delete
Tools
Panels
Inputs
Groups
Areas
Group Details
Number: 1
Description
Ranges
Number
Range Start
Range Stop
Number
8
16
Add
Edit
Delete
OK
Cancel
C

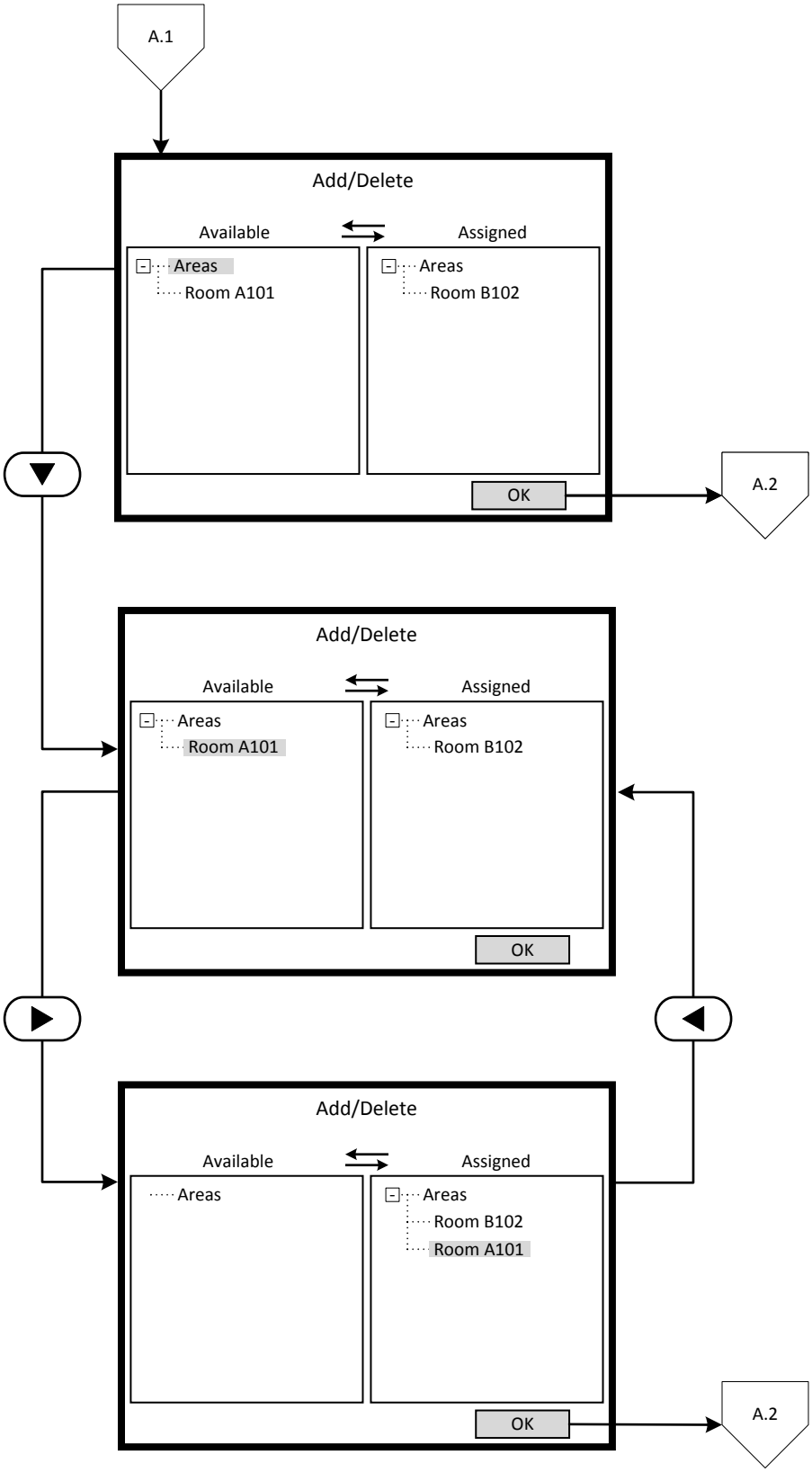

T.5
i.5
AR.2
A
Areas
Name
Add
Edit
Delete
Tools
Panels
Inputs
Groups
Areas
T.1
T.2
T.3
T.4
Areas Details
Description
Schedule
Save
Cancel
AA.3
AA.2
A
Areas Details
Description
Schedule
Areas
Details
Relays
Switches
OCC
PC
AG.1
AS.1
AO.1
AP.1

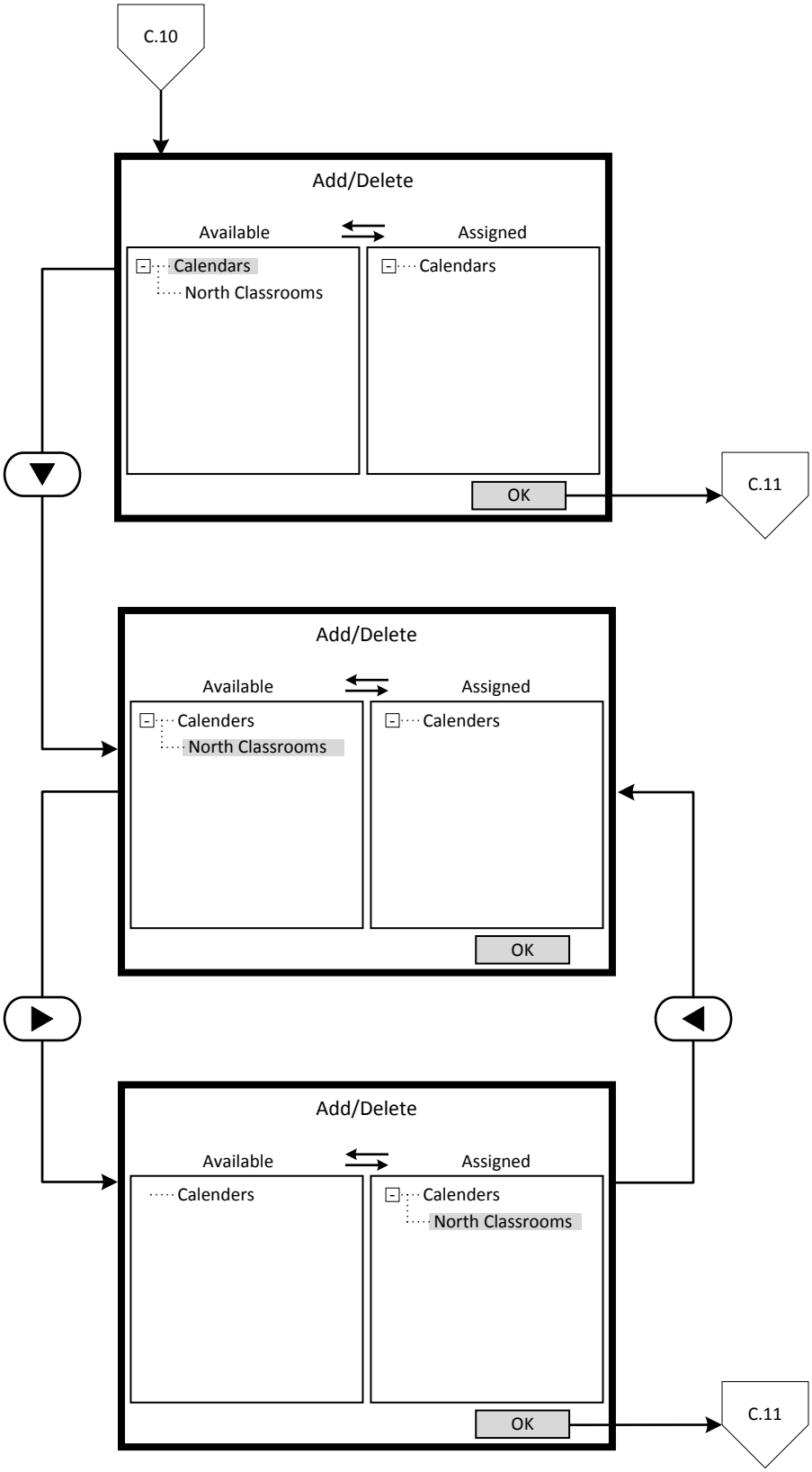

H.2
BD.1
CS.1
CS.3
A
Schedules
Name
Add
Edit
Delete
Schedules
Calendars
Clock
D
Schedules
Name
Classrooms
Add
Edit
Delete
Schedules
Calendars
Clock
BD.2
B
S.2
S.1
C
A.2
C.11
Schedule Details
Name
Classrooms
Date Range Effective
Always
Mon
Tue
Wed
Thu
Fri
Sat
Sun
Inactive
Calendars
Add/Del...
C.10
Areas
Add/Del...
A.1
Save
Cancel
A
Schedule Details
Name
Classrooms
Date Range Effective
Always
Mon
M-------
Tue
Inactive
Wed
Inactive
Thu
Inactive
Fri
Inactive
Sat
Inactive
Sun
Inactive
Calendars
Add/Del...
Areas
Add/Del...
Save
Cancel
OK
D
OK
Agenda For Schedule: Classrooms
Start Time
Behavior
Add
Mon
Tue
Wed
Thu
Fri
Sat
Sun
OK
Cancel
B.11
S.3
OK
C
B
Agenda For Schedule: Classrooms
Start Time
Behavior
Add
Mon
Tue
Wed
Thu
Fri
Sat
Sun
OK
Cancel
S.3
OK

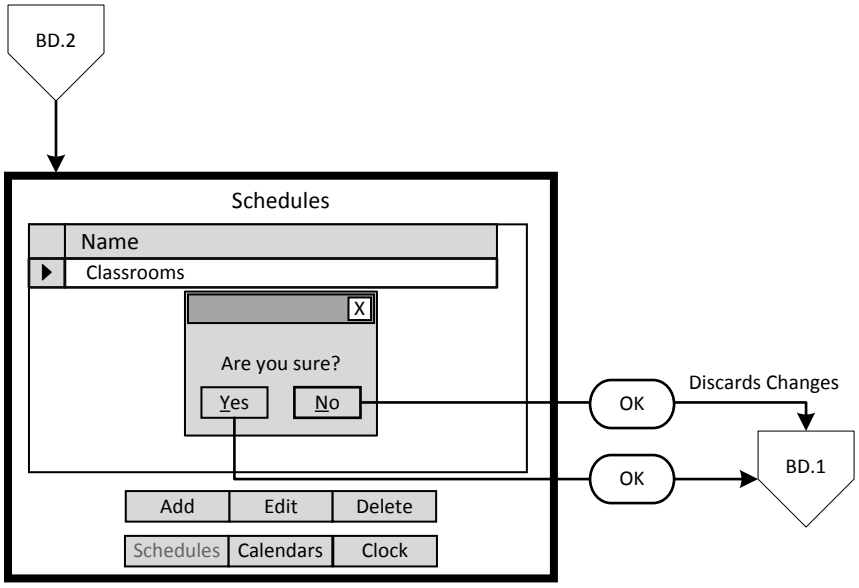

S.1
Clock
Clock
Astronomical
Time Zone
Pacific Time (US & Canada)
Date
4 /10/2011
Use SNTP
Time
12:00:00 PM
24 Hour Clock
Set
Cancel
Schedules
Calendars
Clock
CS.1
S.2
Clock
Clock
Astronomical
Nearest City
Portland, OR
Latitude
45
Sunrise
6:30 AM
Sunset
6:00 PM
Set
Cancel
Schedules
Calendars
Clock
CS.1
S.2

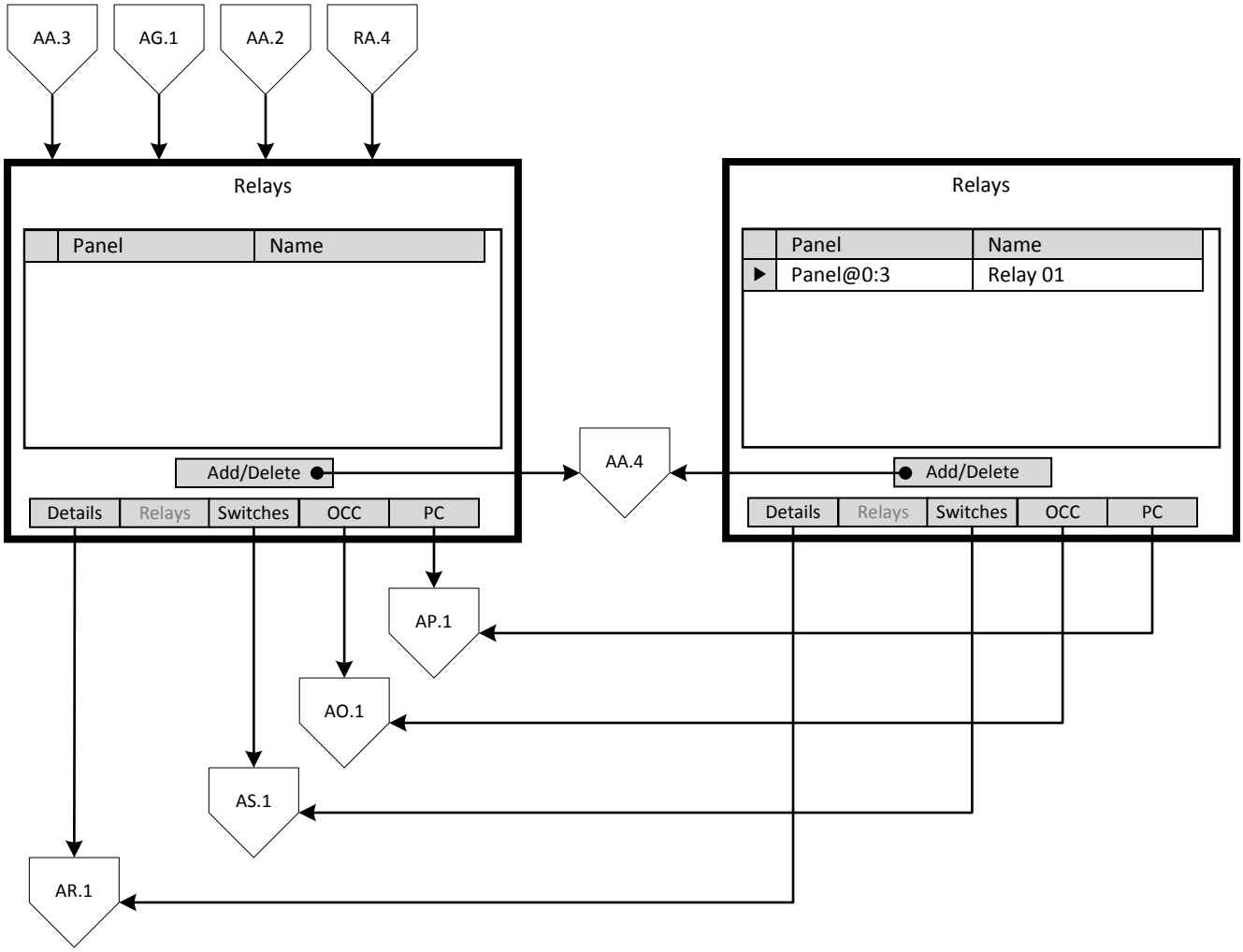

S.2
B
A
Calenders
Name
Add
Edit
Delete
Schedules
Calendars
Clock
Calenders
Name
Holidays
Add
Edit
Delete
Schedules
Calendars
Clock
CS.3
S.1
BD.2
Calendar Detail
Name
Holiday
April 2011
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
Quick Fill
OK
Cancel
A
B
VALUES
Monday
To
Sunday
VALUES
1st
To
52nd
VALUES
Month
Jan to Dec
Year
Quick Fill Details
Type
Date Range
Start Date
End Date
OK
Cancel
Quick Fill Details
Type
Relative Date
The
1st
Monday
Of
Month
Date Range
Start Date
End Date
OK
Cancel

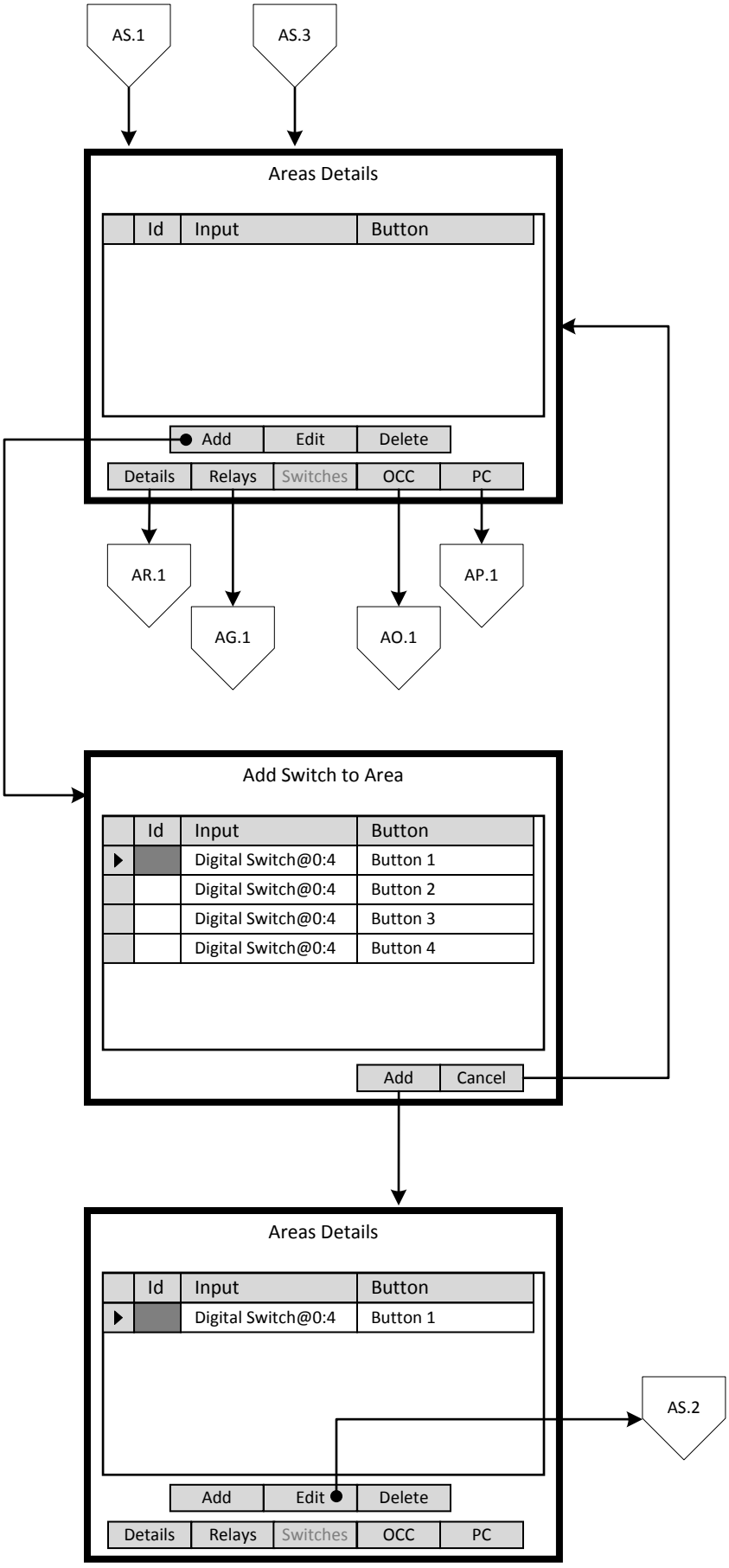

S.3
Agenda Behavior Transition Detail
Transition to behavior:
Behavior 1
Absolute Time
12:00 PM
Offset
N/A
N/A
N/A
Swt Delay
N/A
BW Time
N/A
Occ Delay
N/A
BW Delay
N/A
PC Delay
N/A
BW Ovrd
N/A
OK
Cancel
B.11
VALUES
Behavior 1
To
Behavior 12
VALUES
12:00 AM
To
11:59 PM
VALUES
1 Hours
To
3 Hours
VALUES
0 Minutes
To
59 Minutes
VALUES
0.5 Seconds
To
25.4 Seconds
VALUES
1 Minute
To
254 Minutes
VALUES
4 Minute
To
254 Minutes
VALUES
0 Minutes
0.5 Minutes
2.5 Minutes
5 Minutes
10 Minutes
20 Minutes
VALUES
0 Minutes
0.5 Minutes
2.5 Minutes
5 Minutes
10 Minutes
15 Minutes
20 Minutes
30 Minutes
VALUES
2.5 Minutes
5 Minutes
10 Minutes
15 Minutes
30 Minutes
60 Minutes
90 Minutes
120 Minutes
VALUES
SR+
SR-
SS+
SS-

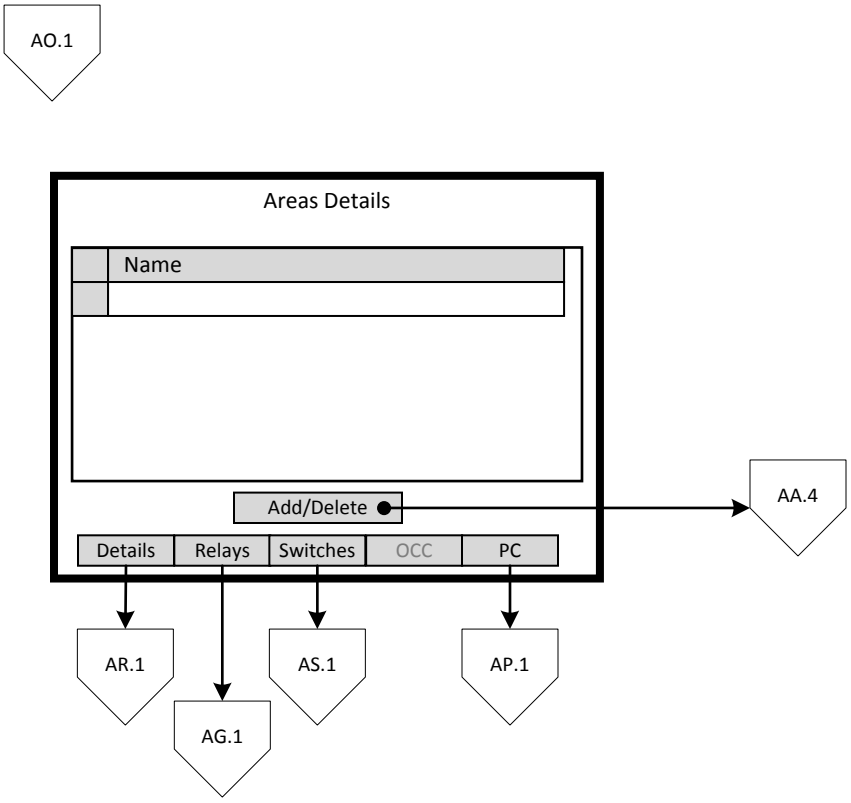

A.1
Add/Delete
Available
Assigned
Areas
Room A101
Areas
Room B102
OK
A.2
Add/Delete
Available
Assigned
Areas
Room A101
Areas
Room B102
OK
Add/Delete
Available
Assigned
Areas
Areas
Room B102
Room A101
OK
A.2

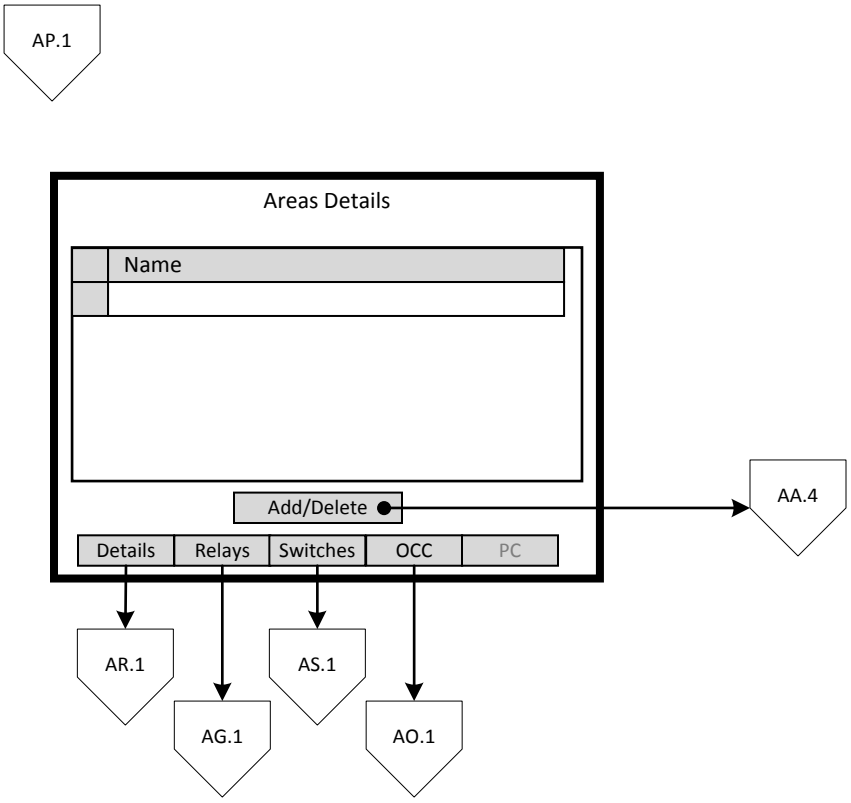

C.10
Add/Delete
Available
Assigned
Calendars
North Classrooms
Calendars
OK
C.11
Add/Delete
Available
Assigned
Calenders
North Classrooms
Calenders
OK
Add/Delete
Available
Assigned
Calenders
Calenders
North Classrooms
OK
C.11

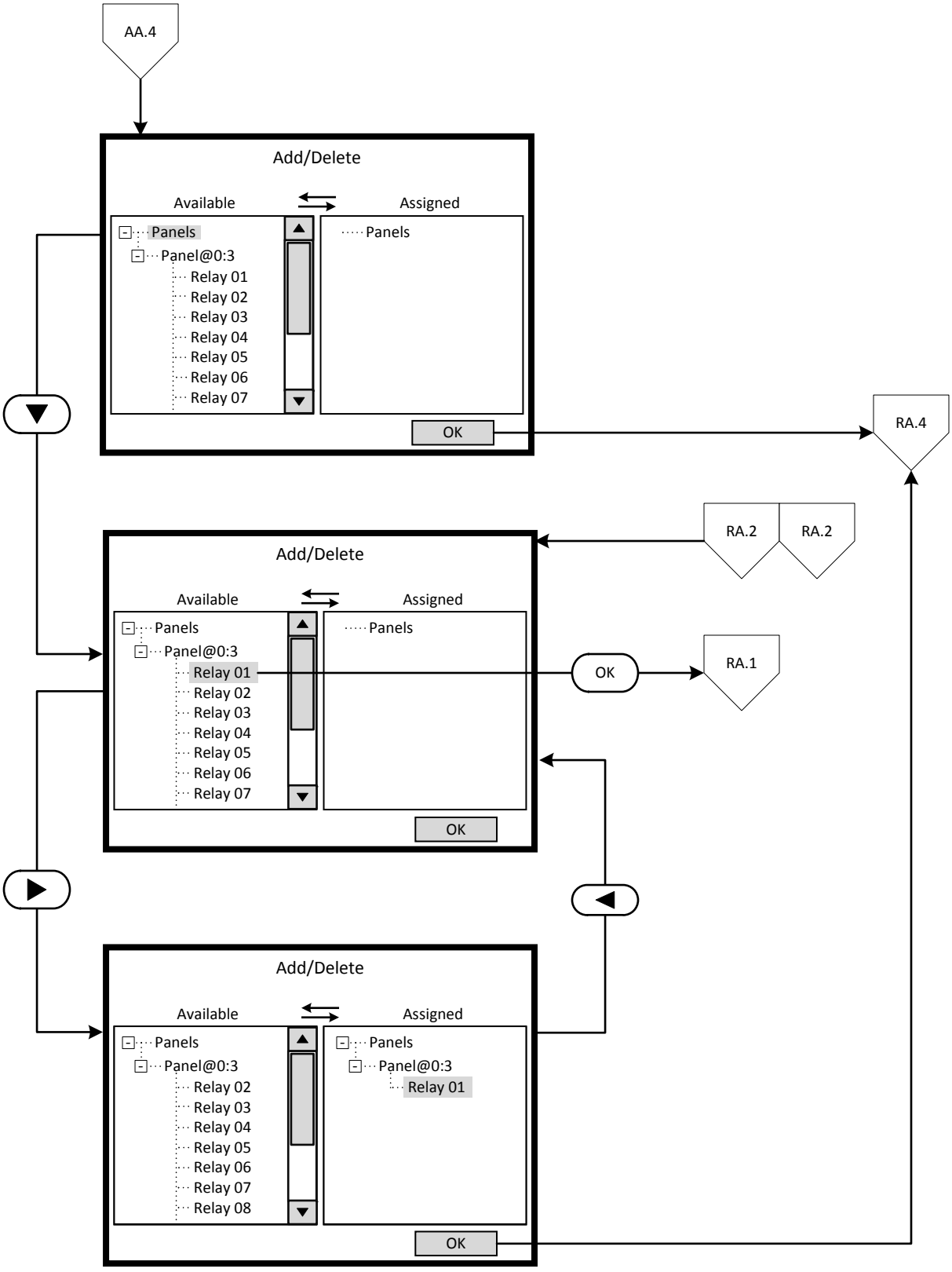

BD.2
Schedules
Name
Classrooms
X
Are you sure?
Yes
No
OK
Discards Changes
OK
BD.1
Add
Edit
Delete
Schedules
Calendars
Clock

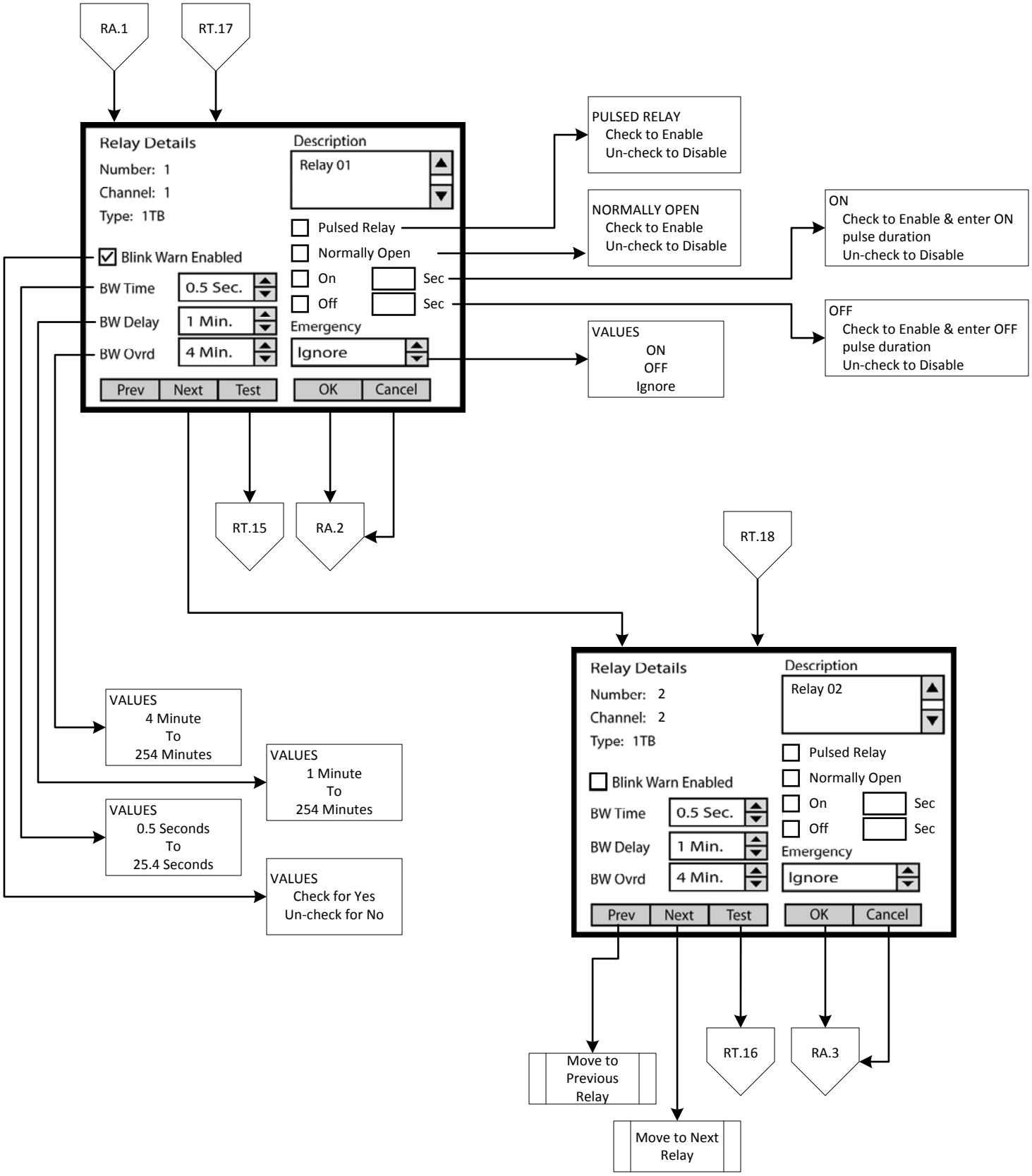

AA.3
AG.1
AA.2
RA.4
Relays
Panel
Name
Add/Delete
Details
Relays
Switches
OCC
PC
AA.4
Relays
Panel
Name
Panel@0:3
Relay 01
Add/Delete
Details
Relays
Switches
OCC
PC
AP.1
AO.1
AS.1
AR.1

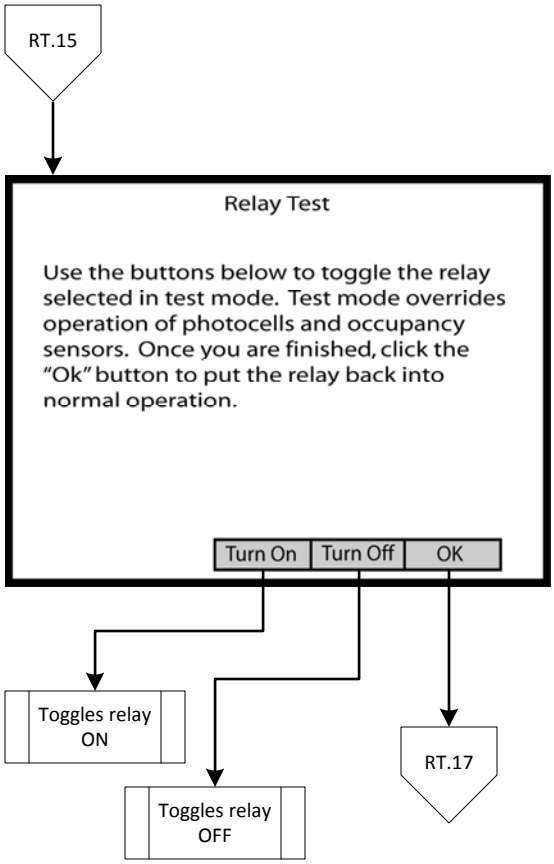

AS.1
AS.3
Areas Details
Id
Input
Button
Add
Edit
Delete
Details
Relays
Switches
OCC
PC
AR.1
AG.1
AO.1
AP.1
Add Switch to Area
Id
Input
Button
Digital Switch@0:4
Button 1
Digital Switch@0:4
Button 2
Digital Switch@0:4
Button 3
Digital Switch@0:4
Button 4
Add
Cancel
Areas Details
Id
Input
Button
Digital Switch@0:4
Button 1
AS.2
Add
Edit
Delete
Details
Relays
Switches
OCC
PC

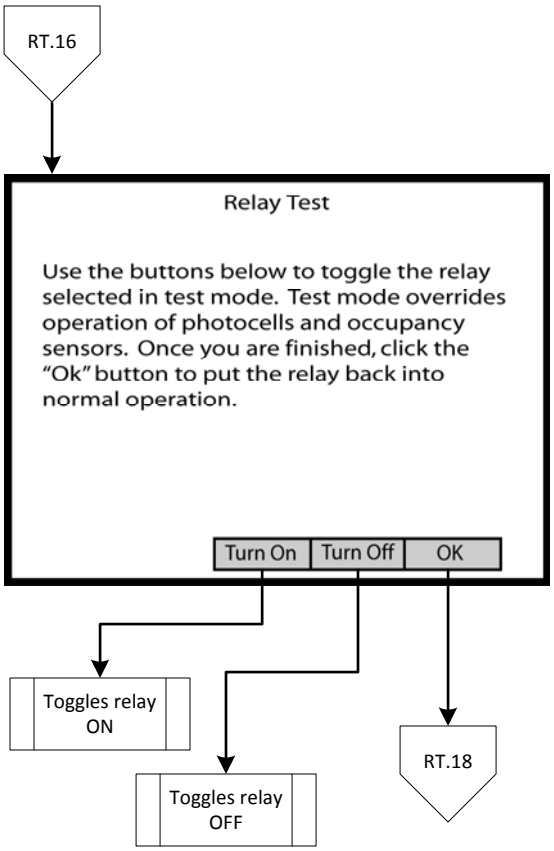

AO.1
Areas Details
Name
Add/Delete
AA.4
Details
Relays
Switches
OCC
PC
AR.1
AG.1
AS.1
AP.1

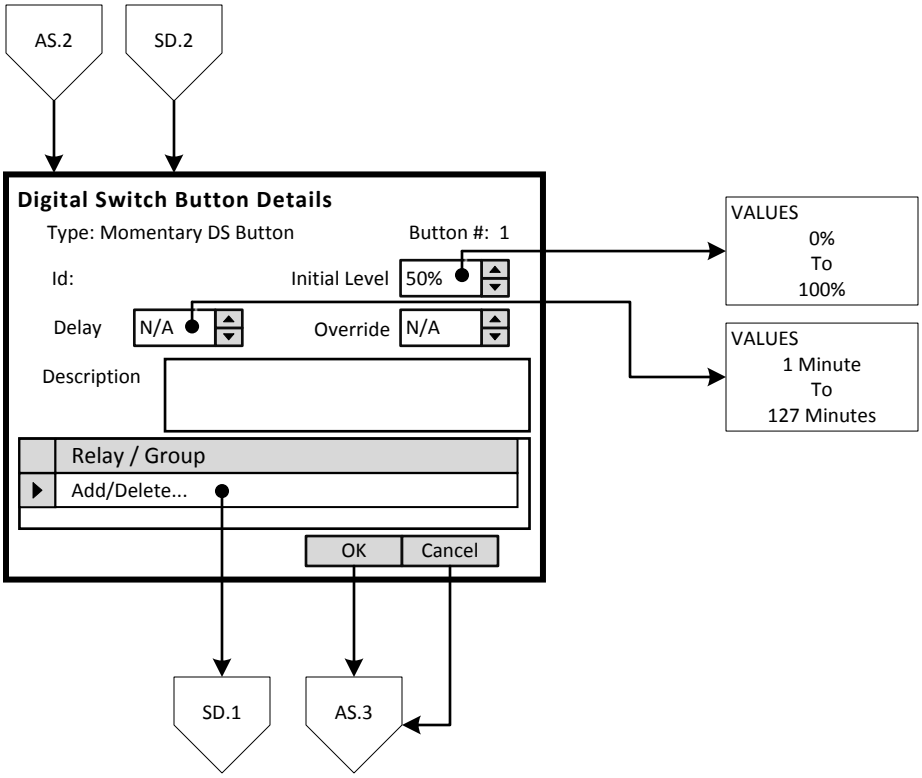

AP.1
Areas Details
Name
Add/Delete
AA.4
Details
Relays
Switches
OCC
PC
AR.1
AG.1
AS.1
AO.1

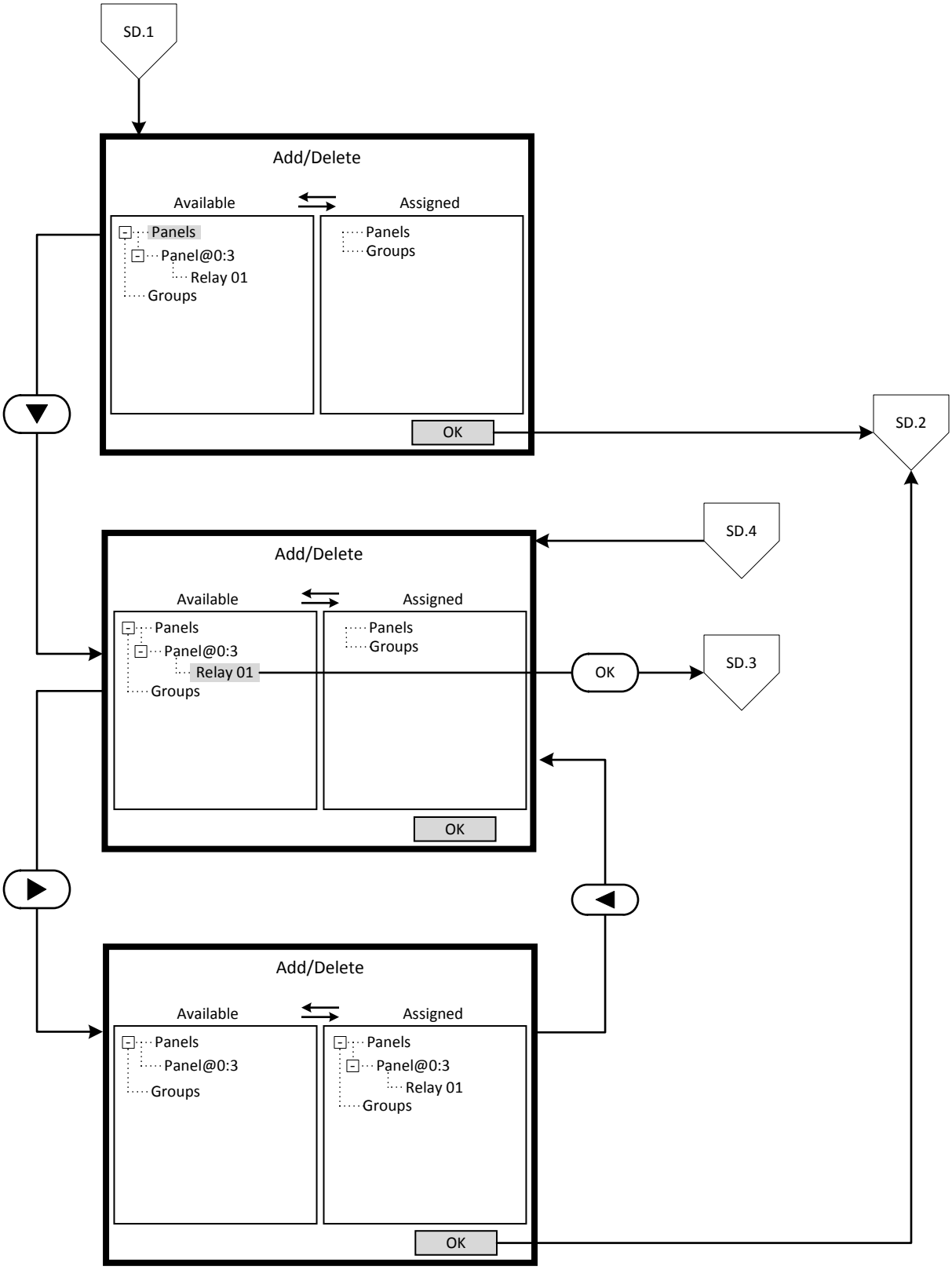

AA.4
Add/Delete
Available
Assigned
Panels
Panel@0:3
Relay 01
Relay 02
Relay 03
Relay 04
Relay 05
Relay 06
Relay 07
Panels
OK
RA.4
RA.2
RA.2
Add/Delete
Available
Assigned
Panels
Panel@0:3
Relay 01
Relay 02
Relay 03
Relay 04
Relay 05
Relay 06
Relay 07
Panels
OK
OK
RA.1
Add/Delete
Available
Assigned
Panels
Panel@0:3
Relay 02
Relay 03
Relay 04
Relay 05
Relay 06
Relay 07
Relay 08
Panels
Panel@0:3
Relay 01
OK

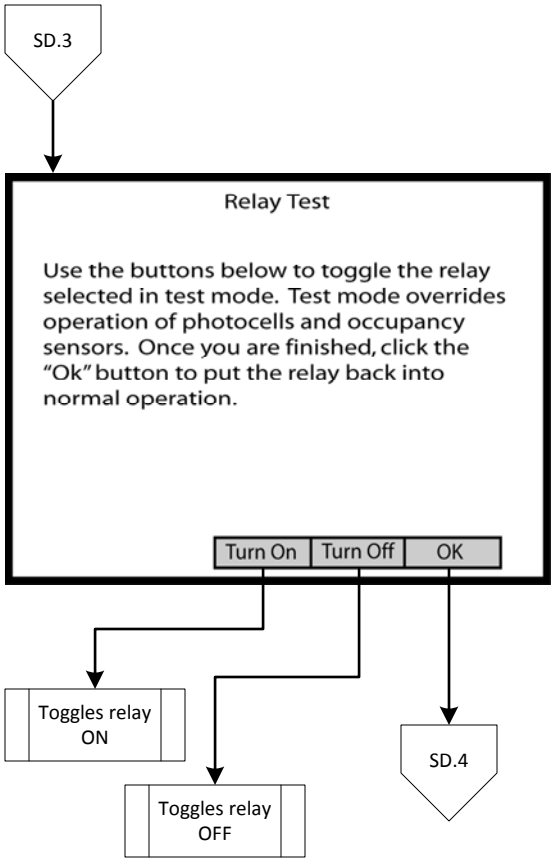

RA.1
RT.17
Relay Details
Number: 1
Channel: 1
Type: 1TB
Description
Relay 01
Pulsed Relay
Normally Open
On
Off
Sec
Sec
Blink Warn Enabled
BW Time
0.5 Sec.
BW Delay
1 Min.
BW Ovrd
4 Min.
Emergency
Ignore
Prev
Next
Test
OK
Cancel
PULSED RELAY
Check to Enable
Un-check to Disable
NORMALLY OPEN
Check to Enable
Un-check to Disable
ON
Check to Enable & enter ON pulse duration
Un-check to Disable
OFF
Check to Enable & enter OFF pulse duration
Un-check to Disable
VALUES
ON
OFF
Ignore
RT.15
RA.2
RT.18
VALUES
4 Minute
To
254 Minutes
VALUES
1 Minute
To
254 Minutes
VALUES
0.5 Seconds
To
25.4 Seconds
VALUES
Check for Yes
Un-check for No
Relay Details
Number: 2
Channel: 2
Type: 1TB
Description
Relay 02
Pulsed Relay
Normally Open
On
Off
Sec
Sec
Blink Warn Enabled
BW Time
0.5 Sec.
BW Delay
1 Min.
BW Ovrd
4 Min.
Emergency
Ignore
Prev
Next
Test
OK
Cancel
Move to Previous Relay
Move to Next Relay
RT.16
RA.3


RT.15
Relay Test
Use the buttons below to toggle the relay selected in test mode. Test mode overrides operation of photocells and occupancy sensors. Once you are finished, click the "Ok" button to put the relay back into normal operation.
Turn On
Turn Off
OK
Toggles relay ON
Toggles relay OFF
RT.17


RT.16
Relay Test
Use the buttons below to toggle the relay selected in test mode. Test mode overrides operation of photocells and occupancy sensors. Once you are finished, click the "Ok" button to put the relay back into normal operation.
Turn On
Turn Off
OK
Toggles relay ON
Toggles relay OFF
RT.18


AS.2
SD.2
Digital Switch Button Details
Type: Momentary DS Button
Button #: 1
Id:
Initial Level
50%
Delay
N/A
Override
N/A
Description
Relay / Group
Add/Delete...
OK
Cancel
VALUES
0%
To
100%
VALUES
1 Minute
To
127 Minutes
SD.1
AS.3


SD.1
Add/Delete
Available
Assigned
Panels
Panel@0:3
Relay 01
Groups
Panels
Groups
OK
SD.2
SD.4
Add/Delete
Available
Assigned
Panels
Panel@0:3
Relay 01
Groups
Panels
Groups
OK
SD.3
OK
Add/Delete
Available
Assigned
Panels
Panel@0:3
Groups
Panels
Panel@0:3
Relay 01
Groups
OK


SD.3
Relay Test
Use the buttons below to toggle the relay selected in test mode. Test mode overrides operation of photocells and occupancy sensors. Once you are finished, click the "Ok" button to put the relay back into normal operation.
Turn On
Turn Off
OK
Toggles relay ON
Toggles relay OFF
SD.4

Programming Concepts

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The main phases of programming the GreenMAX are:

- ❑ Build Schedules
- ❑ Populate Low Voltage Inputs
- ❑ Configure Digital Switches
- ❑ Build Areas

Overview of Schedules

Programming operation of the GreenMAX is based on running Schedules. A Schedule can be considered a default seven (7) day pattern of operation

The implementation of the features and functions of GreenMAX is driven by the Scheduling System. This powerful tool provides control of the interaction between system input devices and their associated relays. The list of input devices include occupancy sensors, photocells, and switches.

The main building blocks of programming the Scheduling System:

- ❑ Agendas
- ❑ Behaviors
- ❑ Exception Calendars
- ❑ Schedules
- ❑ Astronomical Clock
- ❑ Time/Date Clock

Definitions

Agenda	A pattern of Behaviors or list of Behavior Transitions that cover a 24 hour period. Each Agenda provides a maximum of 24 transitions for that period. Time between Transitions can be as short as one minute apart.
Behavior	A predefined control scheme that, when applied to an Area, establishes the interactive priorities among the input devices in that Area. Certain behaviors can change device settings at the time of Transition. The system will stay in the last Behavior until the next Transition is triggered.
Behavior Transition	A point in time that an Agenda triggers an operational change to new Behavior. The transition will only occur in an Area that is assigned to the schedule.
Exceptions Calendar	This is a list of dates that requires specific Agenda that is a departure from the scheduled default Agenda. For example, a list of Holidays that require a unique Agenda.
Schedule	This is a series of seven Agendas corresponding with the days of the week. It is the fundamental or default week that will routinely function. Agendas for dates listed on the Exceptions Calendar will override the default Agenda for that day.
Low Voltage Inputs	Devices that interface with the controlled environment to detect the presence or absence of conditions or people. Devices include occupancy sensors, photocells, low voltage switches, and contact closures. These devices connect to a port on the Low Voltage input card and operate at +24vdc. The input signals from the devices are measured at 0 to +10vdc and can be analog or binary.
Analog Input	This is a signal from a device that will vary in voltage directly proportional to devices' measured detection value. For example, a photocell is used to measure the light level in a space. Full range or maximum light level at the photocell will measure +10vdc and conversely no light level will be 0vdc.
Binary Input	This is a signal from a device that will only have two state or measured voltage levels. Typically these values will be +10vdc (full On signal) or 0vdc (Off signal). An occupancy sensor provides this type of signal, On when occupant is present or Off when no occupant is sensed.
Astronomical Clock	This timing feature tracks the Sunset and Sunrise in the Northern hemisphere as it seasonally changes. The times change or update on a weekly basis. This allows Behavior Transitions based on Sunset and Sunrise times. Offsets from these times are also programmable.
Time/Date Clock	This is the main system clock used to coordinate all Behavior Transitions.

Definitions

Digital Switch	A manual control switch station that connects to the system via the LumaCan network. They are available in one, two, and four button configurations. Each button on the Digital Switch is programmable for a variety of functions and features.
LumaCan	This is the communication network platform that interconnects all components in the system.
Low Voltage Input Board	This board provides the connection of Low Voltage devices to the system. This board is available in two sizes, 8 and 16 independent inputs.

Programming Excercise: Classroom

This exercise will be used to demonstrate the steps required to program a GreenMAX system. A school has been selected as the setting for this exercise.

The following details apply to this exercise:

- There are mutliple classrooms in the school that will operate on the same schedule.
- All exterior lights will operate on their own schedule.

Classroom Schedule

Monday to Friday

8:00am	Teaching Time	Lights will be controlled by their respective devices: Occupancy Sensors – 10 minute delay Photocells – 35 footcandle target Digital Switches – On/Off, no delay, no blink warn	B10
5:00pm	Janitor Mode	Lights will be controlled by: Occupancy Sensors only – 20 minute delay	B5
11:00pm	OFF sweep	Lights will be turned OFF	B7
11:01pm	Security	Lights will be controlled by: Occupancy Sensors only – 1 minute delay	B5

Saturday & Sunday

8:00am	Janitor Mode	Lights will be controlled by: Occupancy Sensors only – 20 minute delay	B5
11:00pm	OFF sweep	Lights will be turned OFF	B7
11:01pm	Security	Lights will be controlled by: Occupancy Sensors only – 1 minute delay	B5

Exceptions

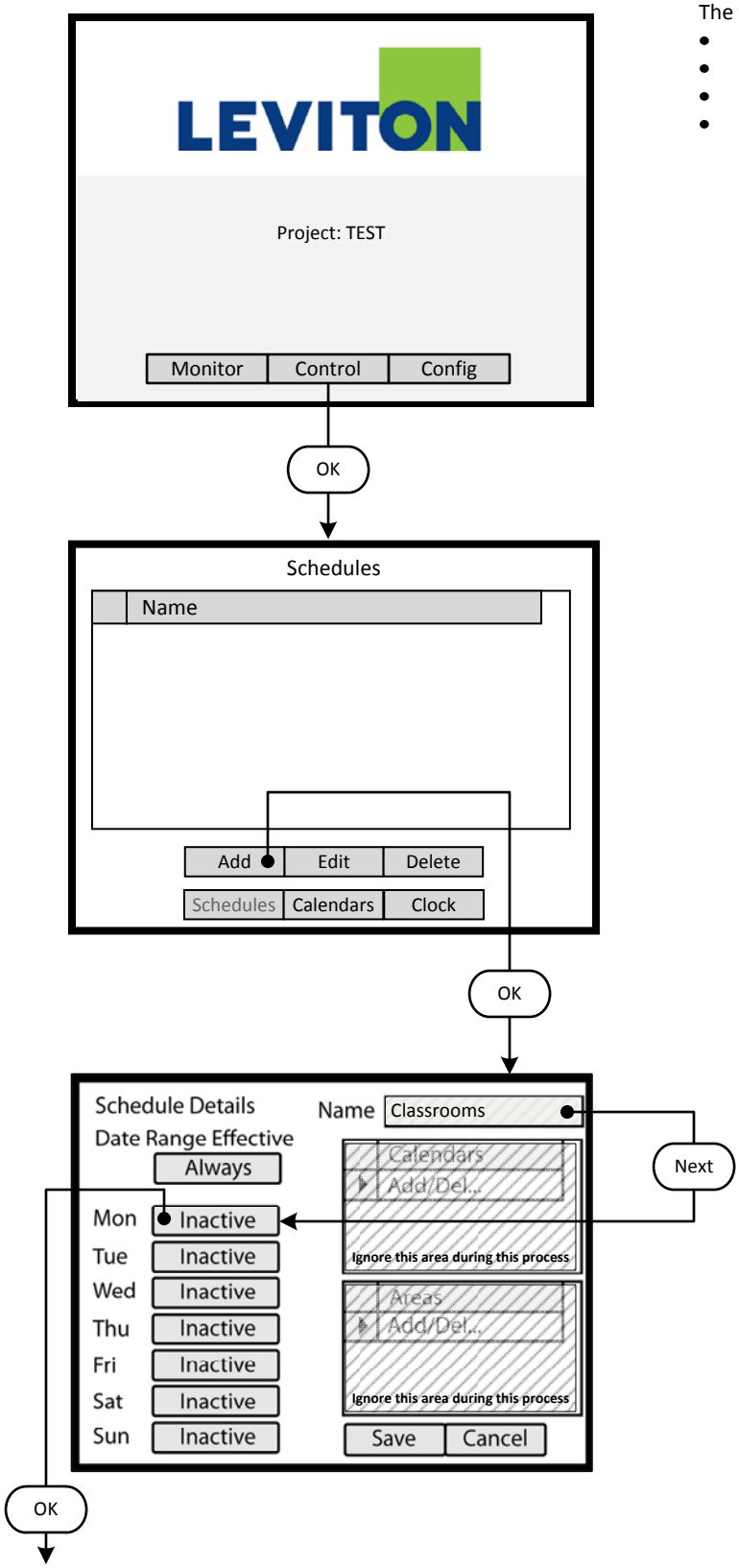
April 11 to April 15, each year

11:01pm	Security	Lights will be controlled by: Occupancy Sensors only – 1 minute delay	B5

Exterior Schedule

SS +30m	Turn ON	Lights will be turned ON	B6
SR +30m	Turn OFF	Lights will be turned OFF	B7

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1: Create a Schedule

Programming operation of the GreenMAX is based on running Schedules. A Schedule can be considered a default seven (7) day pattern of operation.

The following rules apply:

- An Area requires a Schedule to operate.
- Only one Schedule can be assigned to an Area.
- A Schedule can be assigned to multiple Areas.
- Schedules reside in the GreenMAX system and can be accessed through the Handheld Display Unit (HDU).

Step 1.1

To create a Schedule, enter the <**Control**> section of the Handheld Display Unit (HDU) software.

Understanding the Screen
There are three sections of the HDU software. The sections under the buttons are:
*<**Monitor**> - Used to check the system time/date, relay status*
*<**Control**> - Access Scheduling*
*<**Config**> - Configuration of system including set-up of Areas*

Step 1.2

The first <**Control**> HDU screen lists the existing Schedules available in your GreenMAX System. The screen shown indicates that there are no Schedules available or created.

By navigating to <**Add**> and pressing OK, this will initiate the creation of a Schedule.

Other Options
*To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Edit**> and press OK, to initiate the modification of the selected Schedule.*

*To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Delete**> and press OK, to erase the selected Schedule.*

Step 1.3

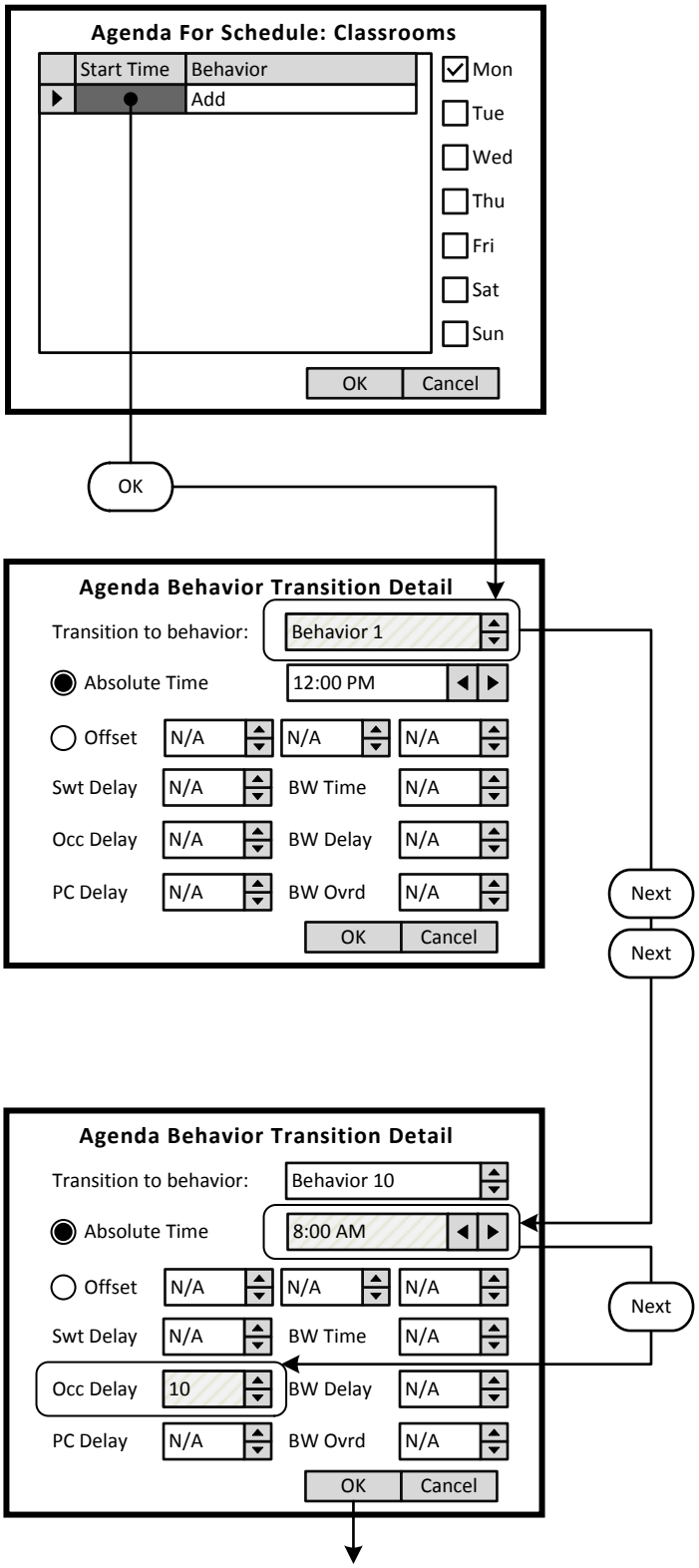
The screen is entered with the -**Name**- field highlighted. Enter the desired name of your Schedule using the alpha numeric keypad of the HDU. When complete, press the NEXT button on the navigation keypad. The cursor will advance to the <**Monday**> button.

Understanding the Screen
*The label value of "Inactive" shown on the <**Monday**> button indicates that there is currently no Behavior transitions programmed for this day. The same is true for all days, Monday through Sunday, of this schedule.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.4

The screen is entered at the first line of the Agenda. There are a total of 24 Behavior Transition times available per day. Clicking OK will advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
*<**OK**> - Will save the settings or changes*
*<**Cancel**> - Will discard the changes*

Step 1.5

The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 10.

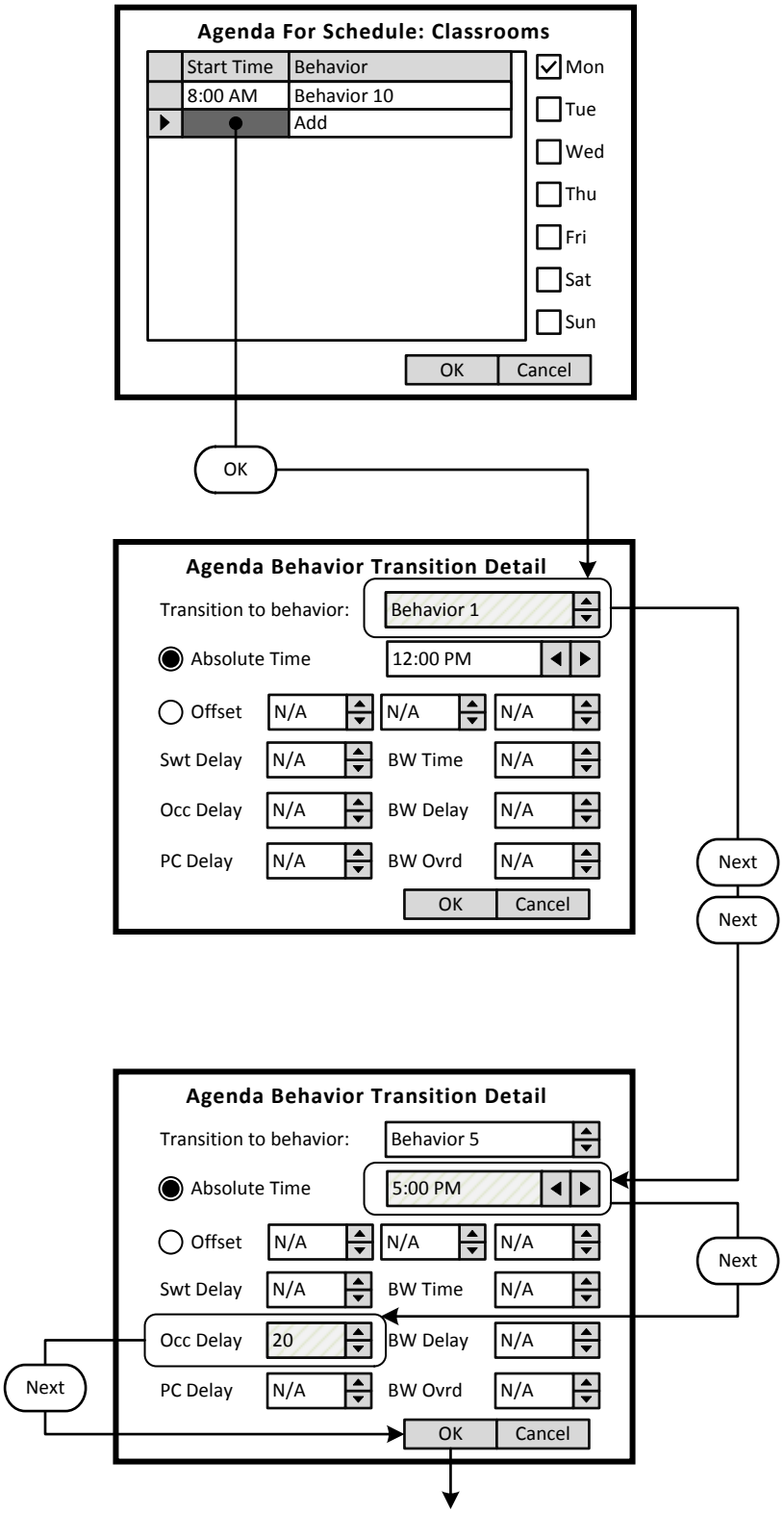
Understanding the Screen
*<**Offset**> provides access to Sunrise and Sunset settings for Astronomical clock times.*
-**BW Time**-, -**BW Delay**-, -**BW Ovrd**- - These are the Blinkwarn settings that apply to this Behavior Transition only. They will override the Global Blinkwarn Settings set in the System Settings section.

Step 1.6

Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 8:00 AM. When complete, use the NEXT button to navigate to the -**Occ Delay**- field. Adjust this setting to 10 minutes.

Understanding the Screen
*-**Swt Delay**- is used if the switch in the associated Area is to function as a Timed Off switch. This is the amount of time the lights will stay On after a button press, and before they will turn Off.*
*-**Occ Delay**- This is the amount of time the lights will stay On after the occupancy sensor does not detect occupancy and before they will turn Off.*
*-**PC Delay**- This is the amount of time the lights will stay On after the photocell trigger point is exceeded and before they will turn Off.*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



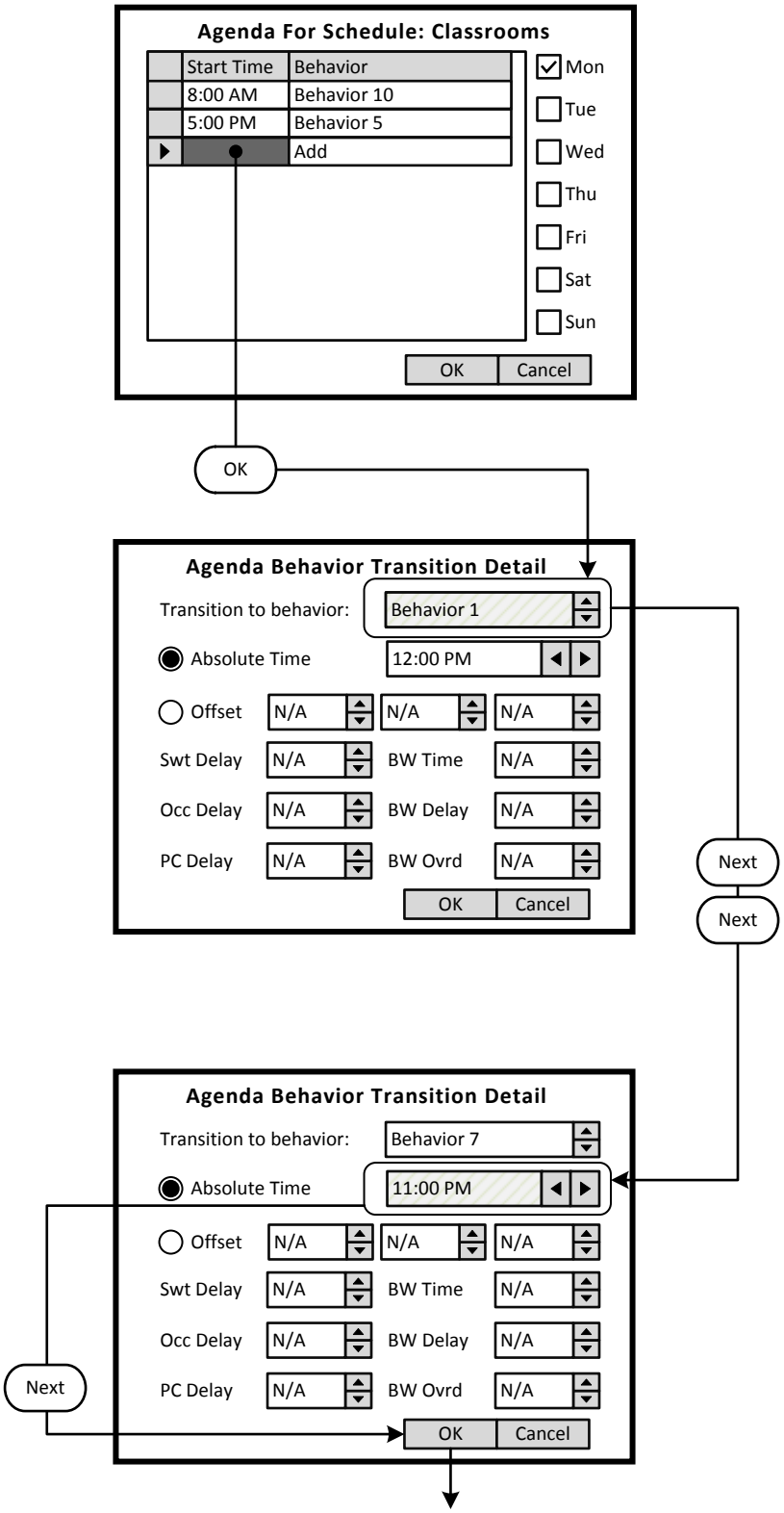
Step 1.7
Navigate to the Add line of the list, in this case the second line. Click OK to advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 10 will occur Monday at 8:00 AM.

Step 1.8
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 5.

Step 1.9
Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 5:00 PM. When complete, use the NEXT button to navigate to the -**Occ Delay**- field. Enter the value of 20 minutes.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



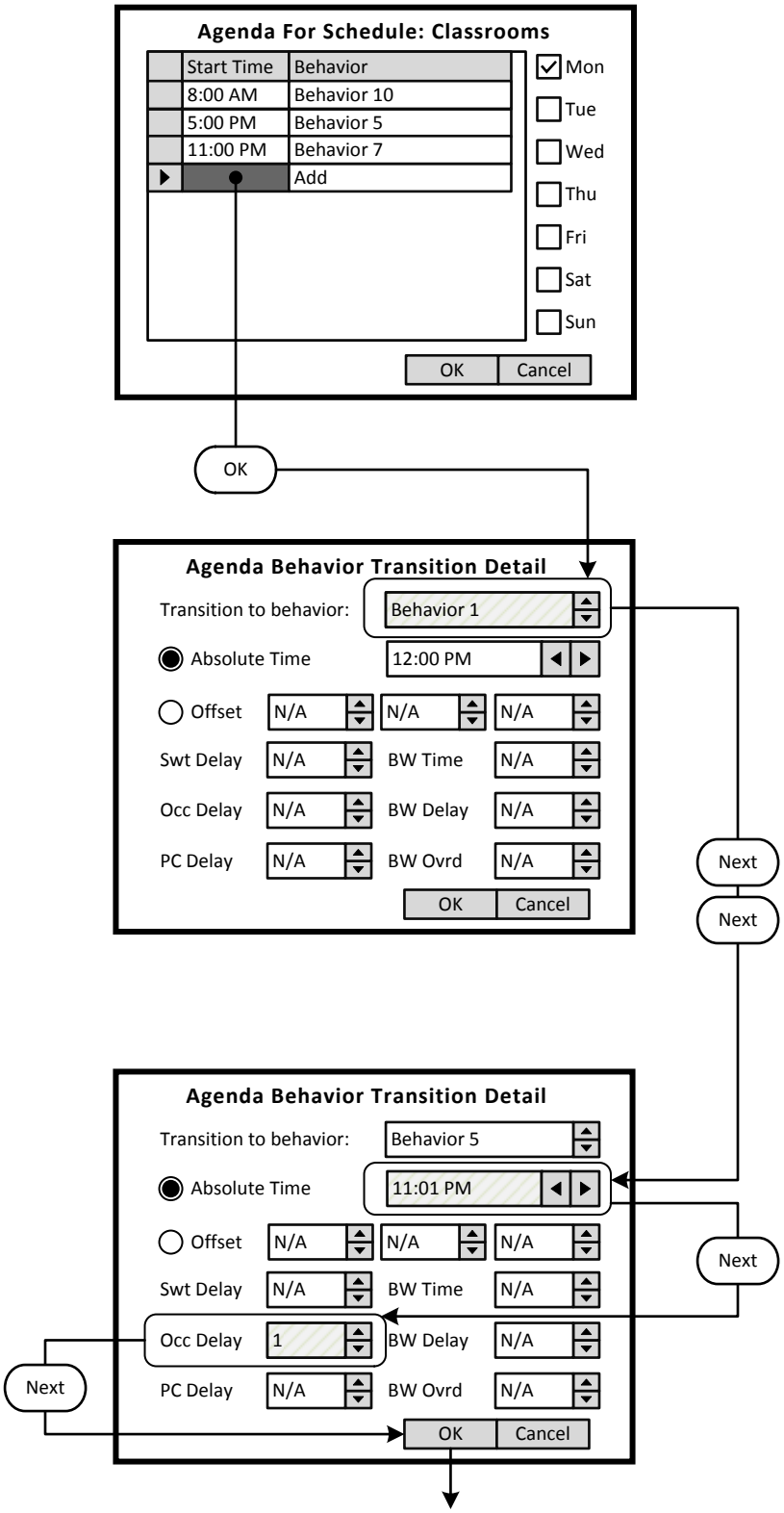
Step 1.10
Navigate to the Add line of the list, in this case the second line. Click OK to advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 10 will occur Monday at 8:00 AM.
A transition to Behavior 5 will occur Monday at 11:00 PM.

Step 1.11
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 7.

Step 1.12
Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 11:00 PM. When complete, use the NEXT button to navigate to the <**OK**> onscreen button.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



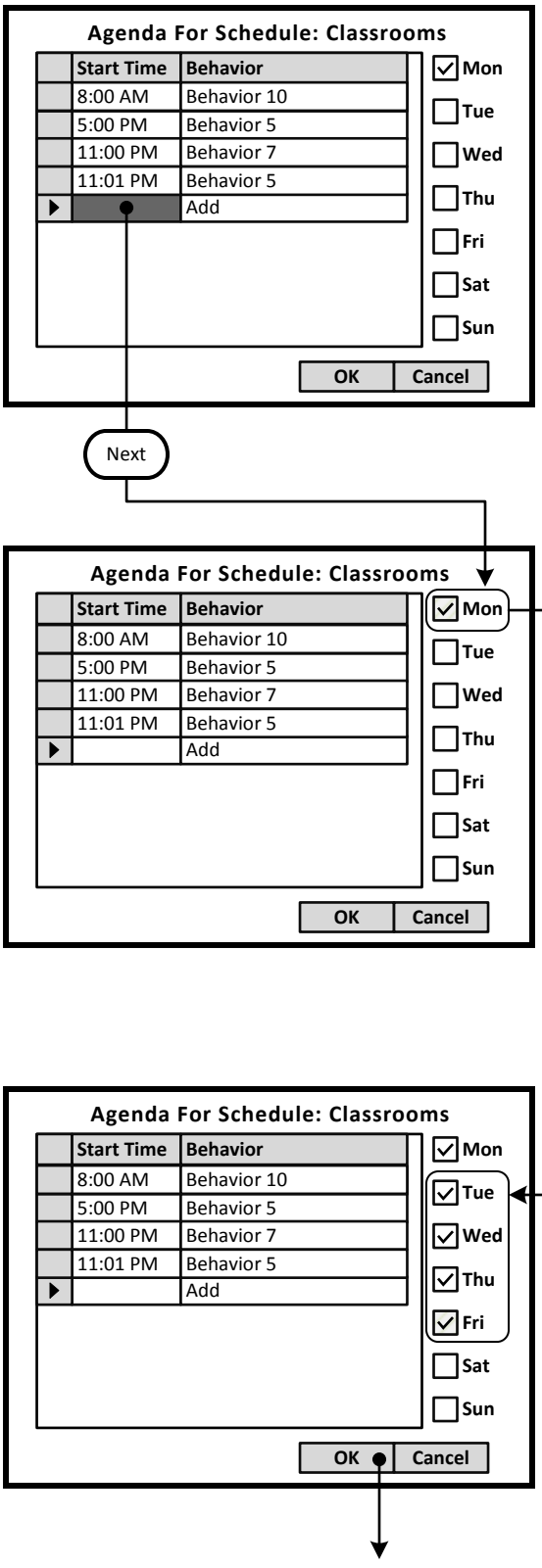
Step 1.13
Navigate to the Add line of the list, in this case the second line. Click OK to advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 10 will occur Monday at 8:00 AM.
A transition to Behavior 5 will occur Monday at 5:00 PM.
A transition to Behavior 7 will occur Monday at 11:00 PM.

Step 1.14
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 5.

Step 1.15
Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 11:01 PM. When complete, use the NEXT button to navigate to the -**Occ Delay**- field. Adjust this setting to 1 minute.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.16
To apply this Agenda or pattern of Behavior to each day of the week press Next to advance to the Day column.

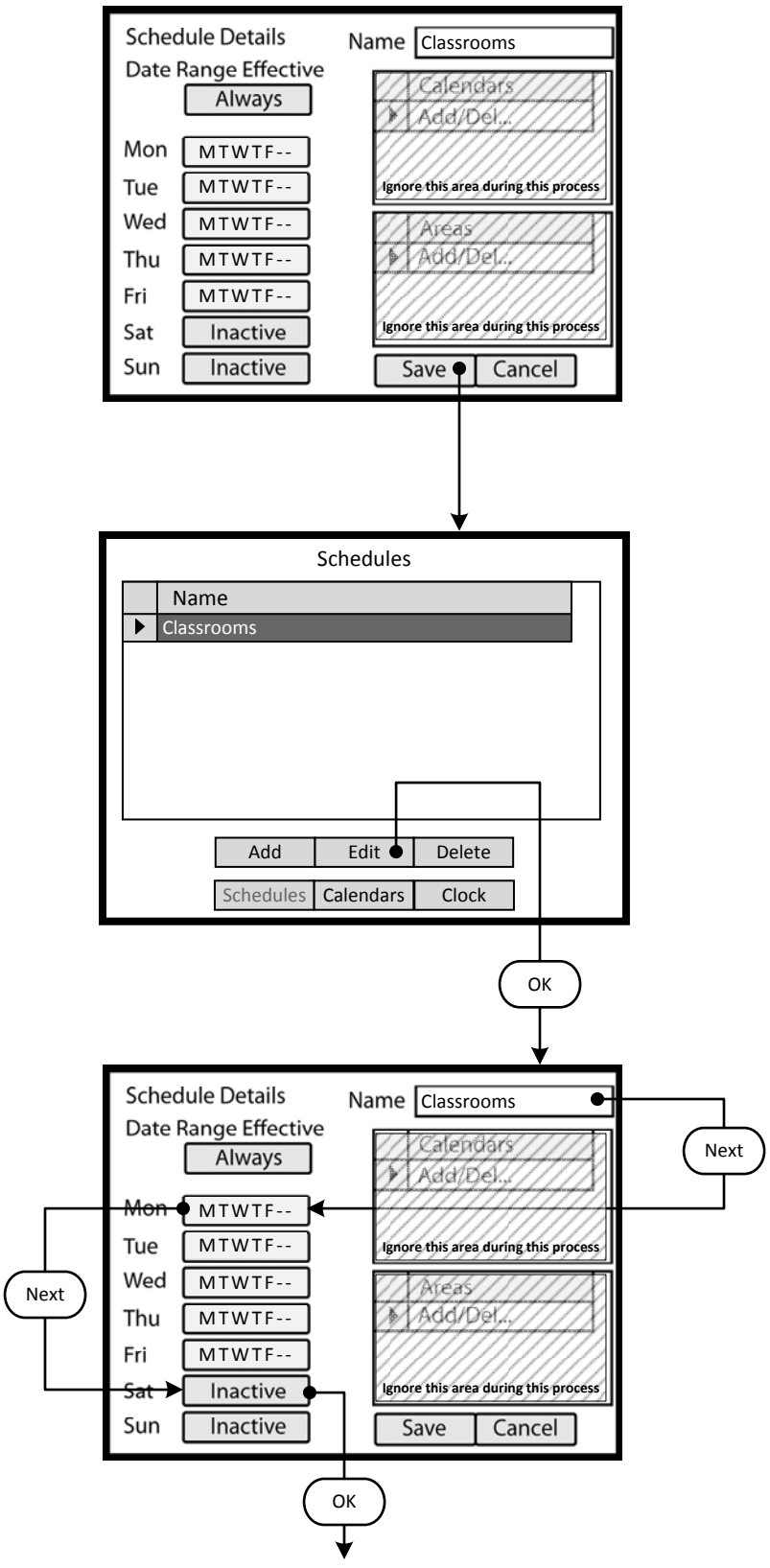
Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 10 will occur Monday at 8:00 AM.
A transition to Behavior 5 will occur Monday at 5:00 PM.
A transition to Behavior 7 will occur Monday at 11:00 PM.
A transition to Behavior 5 will occur Monday at 11:01 PM.

Step 1.17
Press Next to the -**Tuesday**- check box.
Press -**OK**- to check the box, this will add Tuesday to the active list.

Step 1.18
Use a combination of the NEXT and OK to fill in the Tuesday through Friday check boxes.

Understanding the Screen
This Agenda only applies to Monday through Friday.
A transition to Behavior 10 will occur Monday at 8:00 AM.
A transition to Behavior 5 will occur Monday at 5:00 PM.
A transition to Behavior 7 will occur Monday at 11:00 PM.
A transition to Behavior 5 will occur Monday at 11:01 PM.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.19
To save the Schedule, press the NEXT button on the navigation keypad to advance to the <**Save**> button.

Understanding the Screen
*The label value of "Inactive" shown on the <**Saturday**> and <**Sunday**> button indicates that there are currently no Behavior transitions programmed for this day.*

*The "MTWTF - -" on the <**Monday**> through <**Friday**> indicate that the same Agenda applies to each of these days.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

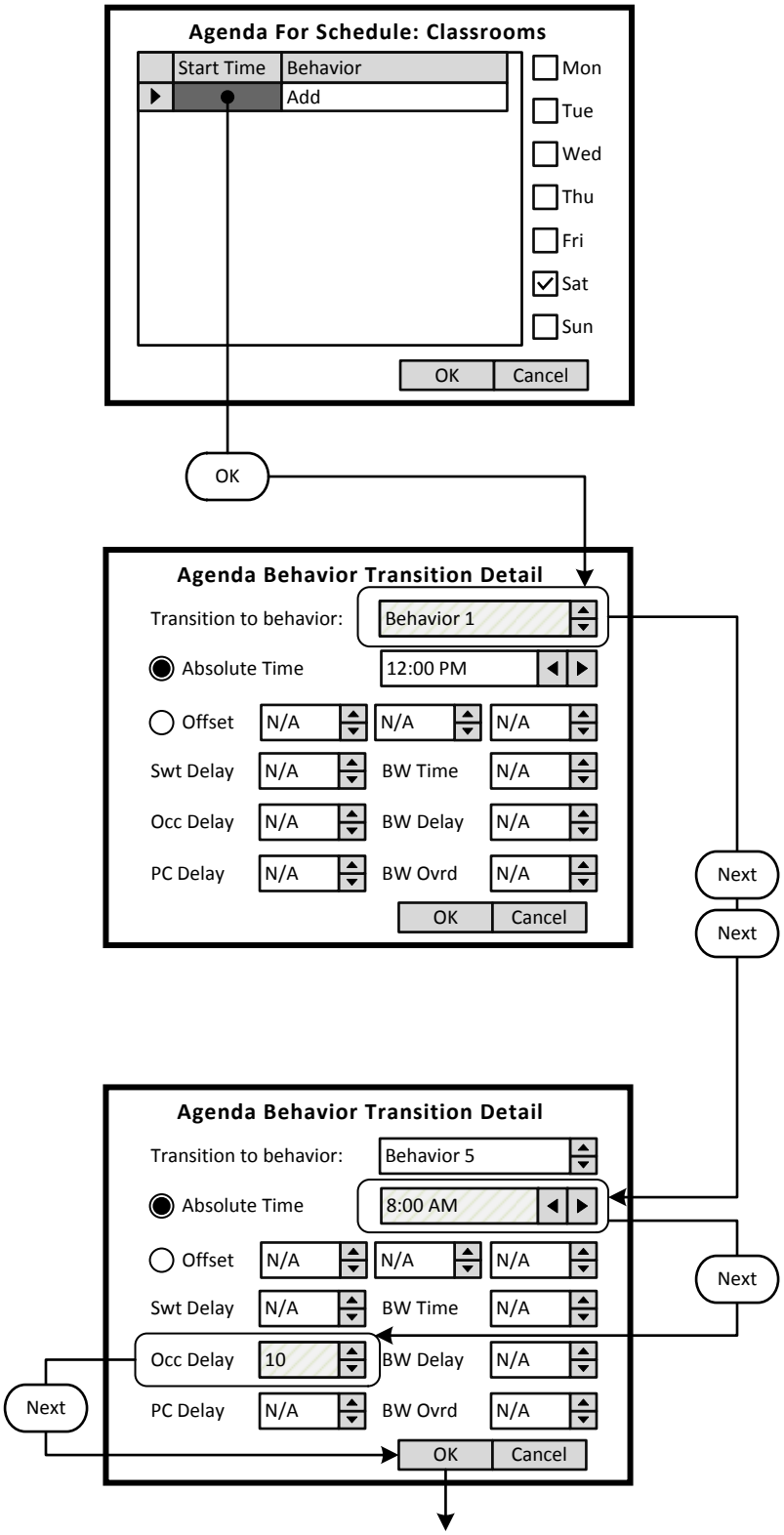
Step 1.20
The Classrooms Schedule must be modified to include a specific Agenda for both Saturday and Sunday. Highlight the Classroom Schedule on the list of available Schedules in the GreenMAX system. Navigate to the <**Edit**> button by pressing NEXT and then press OK.

Other Options
*To add a new Schedule, navigate to <**Add**> and press OK, to initiate the addition of a Schedule.*

*To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Delete**> and press OK, to erase the selected Schedule.*

Step 1.21
The screen is entered in the -**Name**- button highlighted. Navigate by pressing the NEXT button on the navigation keypad to advance to the <**Saturday**> button.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.22

The screen is entered at the first line of the Agenda. There are a total of 24 Behavior Transition times available per day. Clicking OK will advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Saturday, as shown here.
*<**OK**> - Will save the settings or changes*
*<**Cancel**> - Will discard the changes*

Step 1.23

The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 5.

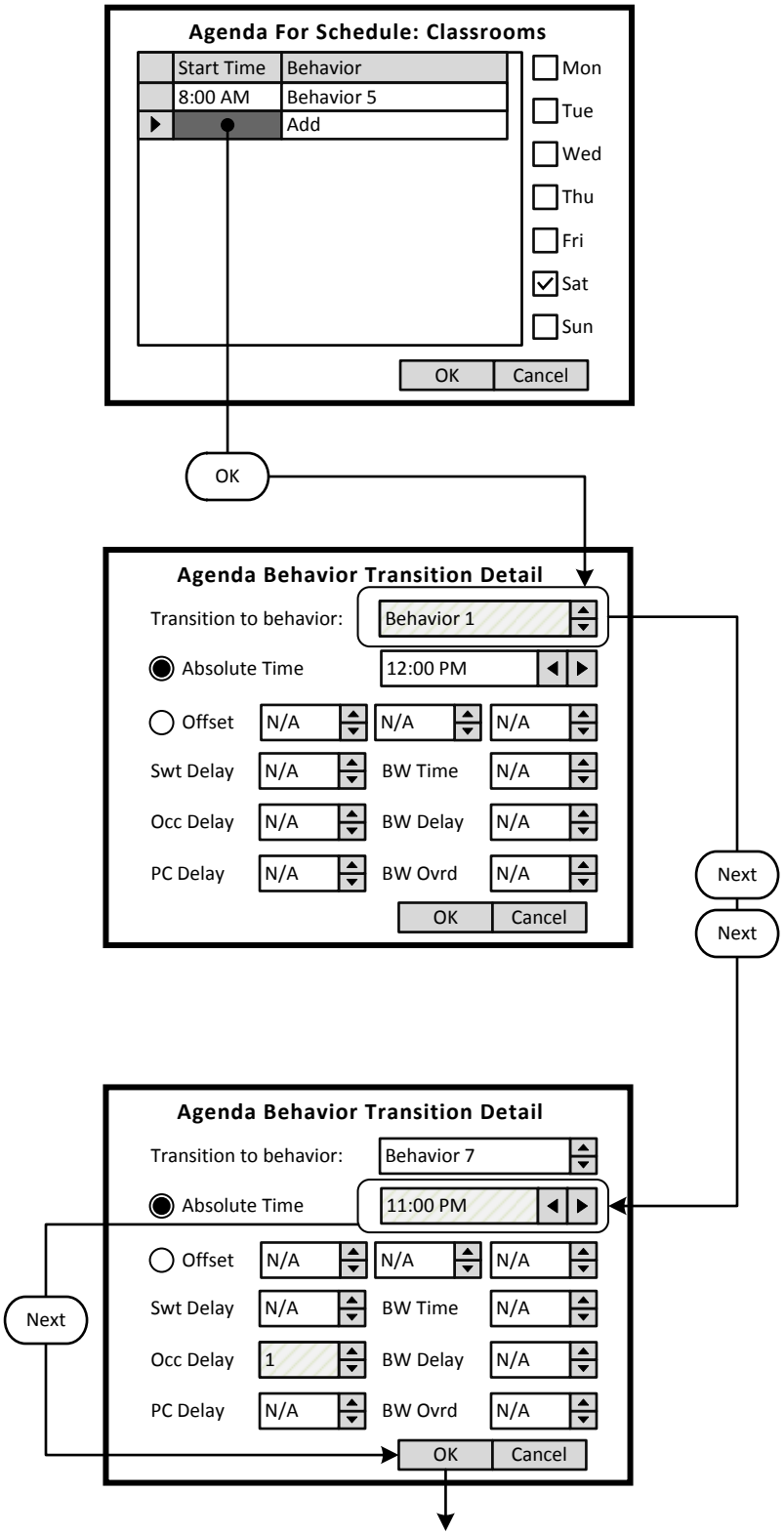
Understanding the Screen
*<**Absolute Time**> setting for a specific time of the day to trigger a Behavior Transition.*

Step 1.24

Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 8:00 AM. When complete, use the NEXT button to navigate to the -**Occ Delay**- field. Adjust this setting to 10 minutes.

Understanding the Screen
*-**Occ Delay**- This is the amount of time the lights will stay On after the occupancy sensor does not detect occupancy and before they will turn Off.*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.25
Navigate to the Add line of the list, in this case the second line. Click OK to advance to the Behavior Transition Detail screen.

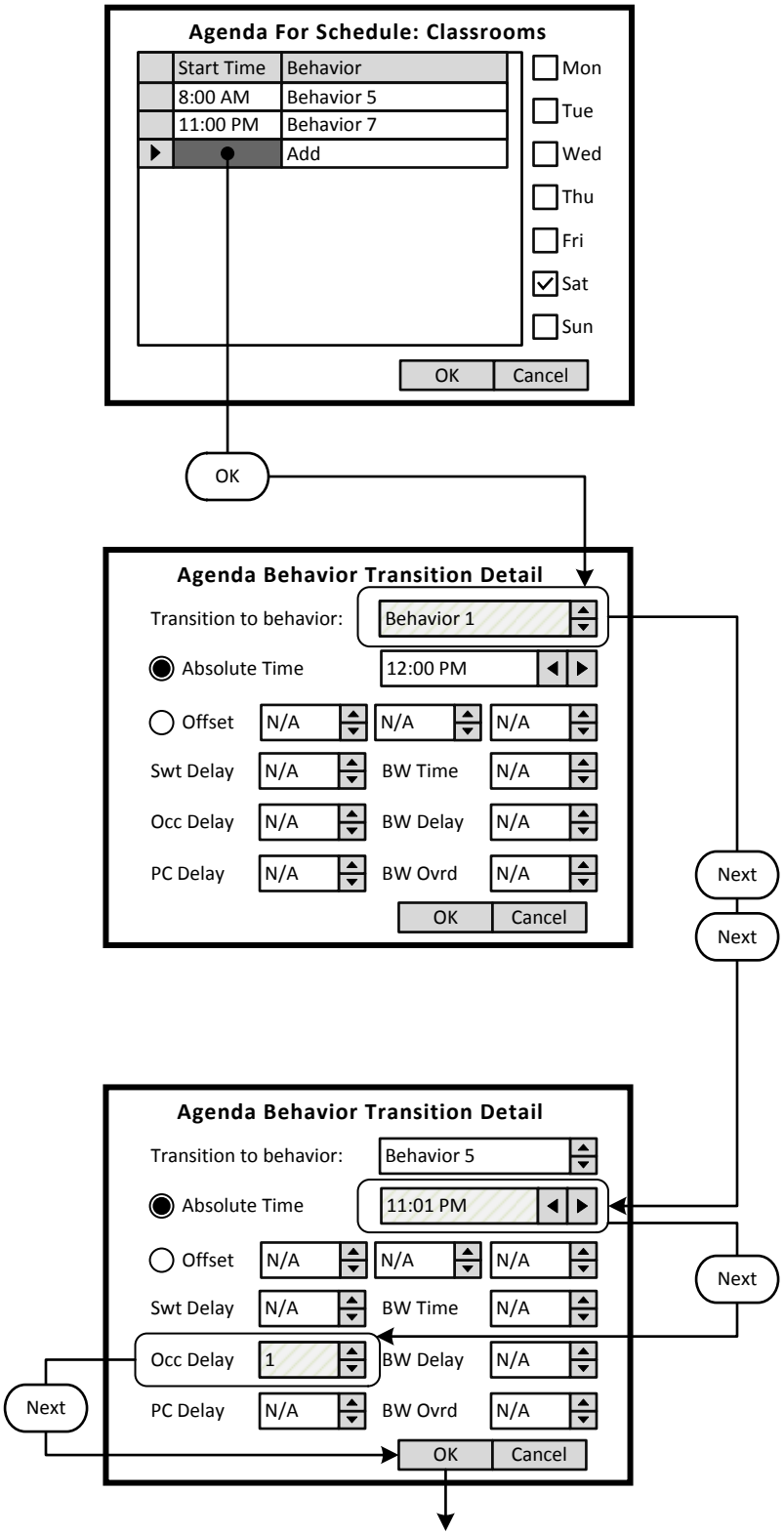
Understanding the Screen
This Agenda only applies to Saturday, as shown here.
A transition to Behavior 5 will occur at 8:00 AM.

Step 1.26
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 7.

Understanding the Screen
*<**Absolute Time**> setting for a specific time of the day to trigger a Behavior Transition.*

Step 1.27
Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 11:00 PM. When complete, use the NEXT button to navigate to the -**OK**- field

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.28
Navigate to the Add line of the list, in this case the third line. Click OK to advance to the Behavior Transition Detail screen.

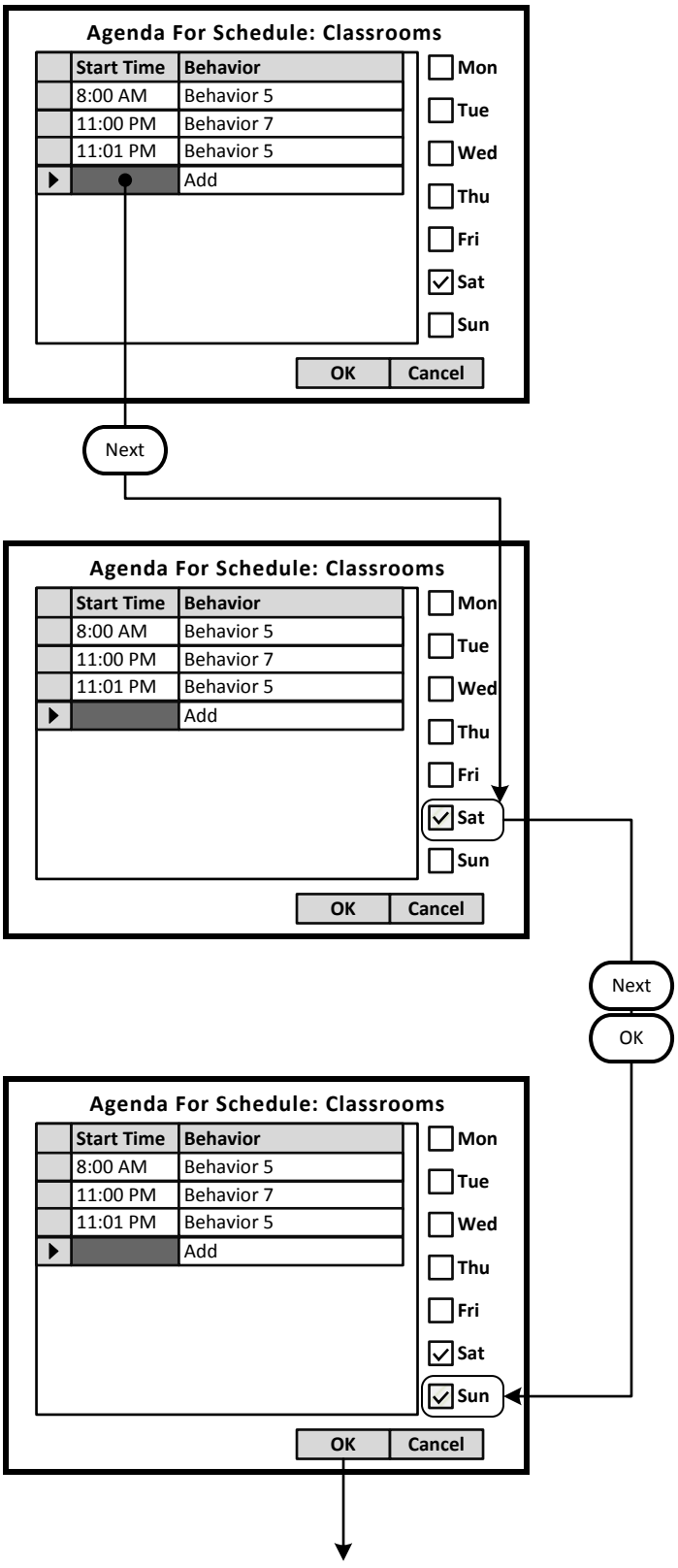
Understanding the Screen
This Agenda only applies to Saturday, as shown here.
A transition to Behavior 5 will occur at 8:00 AM.
A transition to Behavior 7 will occur at 11:00 PM.

Step 1.29
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 5.

Understanding the Screen
*<**Absolute Time**> setting for a specific time of the day to trigger a Behavior Transition.*

Step 1.30
Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 11:01 PM. When complete, use the NEXT button to navigate to the -**Occ Delay**- field. Adjust this setting to 1 minute.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.31
To apply this Agenda or pattern of Behavior to each day of the week press Next to advance to the Day column.

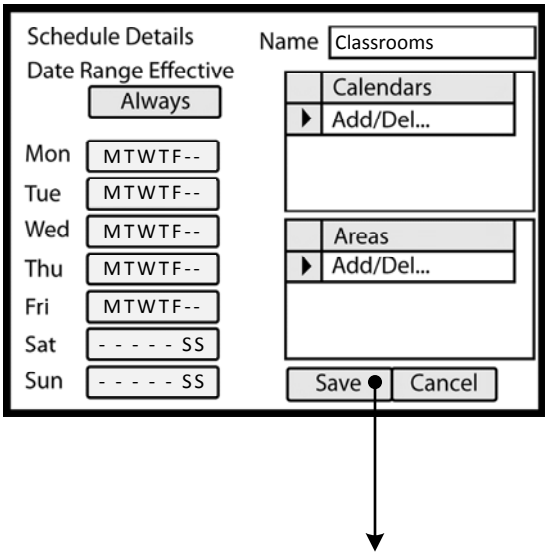
Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 5 will occur Monday at 8:00 AM.
A transition to Behavior 7 will occur Monday at 11:00 PM.
A transition to Behavior 5 will occur Monday at 11:01 PM.

Step 1.32
Press Next to the -**Sunday**- check box.
Press OK to check the box, this will add Sunday to the active list.

Step 1.33
Navigate to the <**OK**> button to return to the Schedule detail screen.

Understanding the Screen
This Agenda only applies to Saturday and Sunday.
A transition to Behavior 5 will occur Monday at 8:00 AM.
A transition to Behavior 7 will occur Monday at 11:00 PM.
A transition to Behavior 5 will occur Monday at 11:01 PM.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.34
To save the Schedule, press the NEXT button on the navigation keypad to advance to the <**Save**> button.

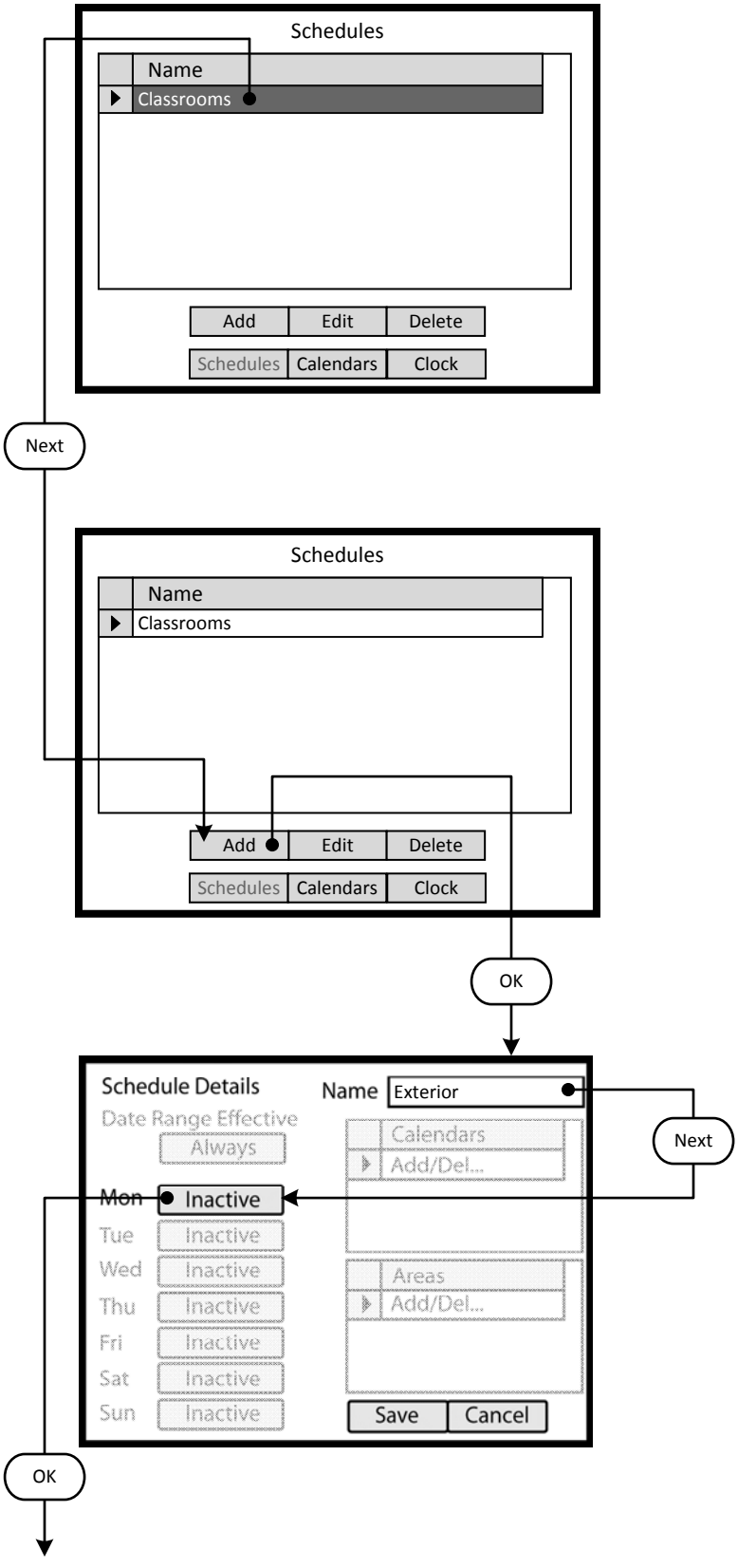
Understanding the Screen
*The label value of "MTWTF - -" on the <**Monday**> through <**Friday**> indicates that the same Agenda applies to each of these days.*

*The label value of "- - - - - SS" shown on the <**Saturday**> and <**Sunday**> button indicates that a specific Agenda applies to both of these days. This Agenda is different than the other days of the week.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.35
The second schedule named Exterior must be created to accommodate the exterior lighting for Monday through Sunday. Navigate to the <**Add**> button by pressing NEXT and then press OK.

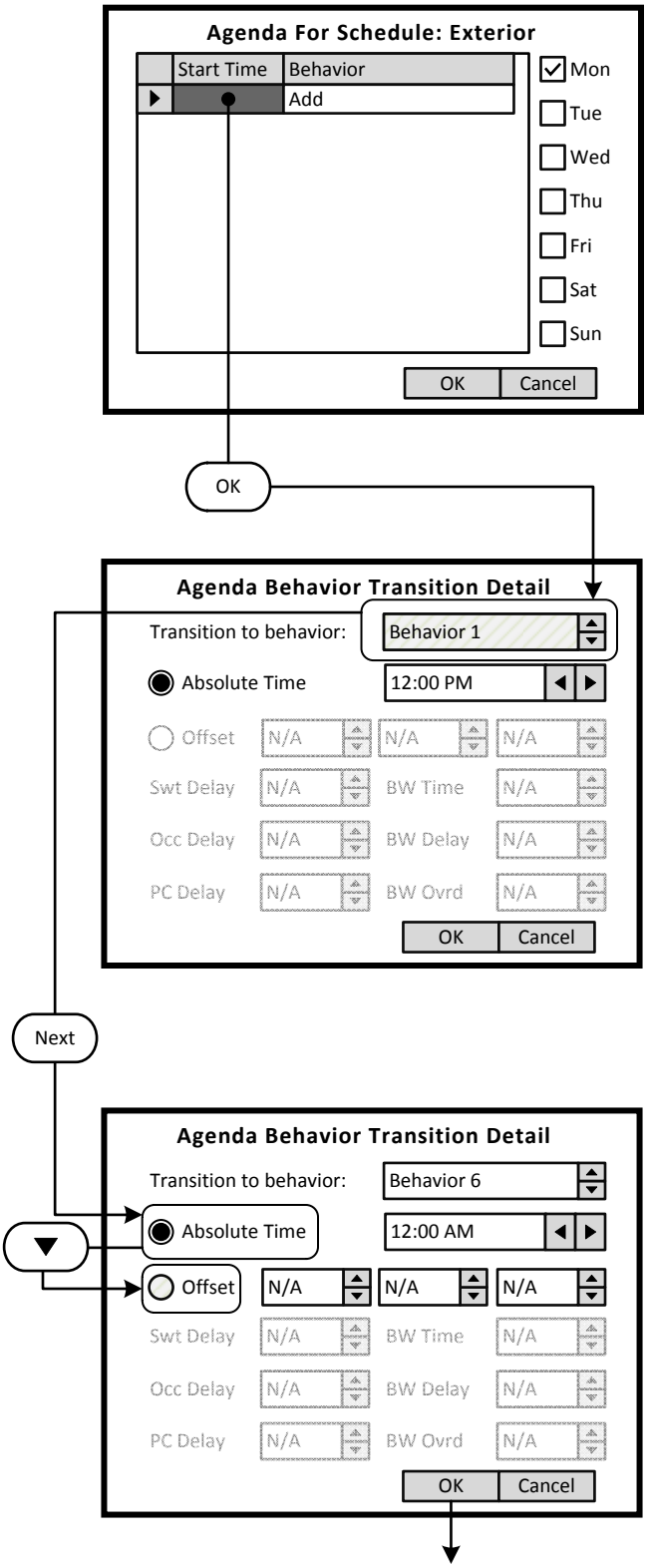
Other Options
*To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Edit**> and press OK, to initiate the modification of the selected Schedule.*

*To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Delete**> and press OK, to erase the selected Schedule.*

Step 1.36
Navigate to the <**Add**> button by pressing NEXT and then press OK.

Step 1.37
The screen is entered in the -**Name**- button highlighted. Navigate by pressing the NEXT button on the navigation keypad to advance to the <**Monday**> button.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.38
The screen is entered at the first line of the Agenda. There are a total of 24 Behavior Transition times available per day. Clicking OK will advance to the Behavior Transition Detail screen.

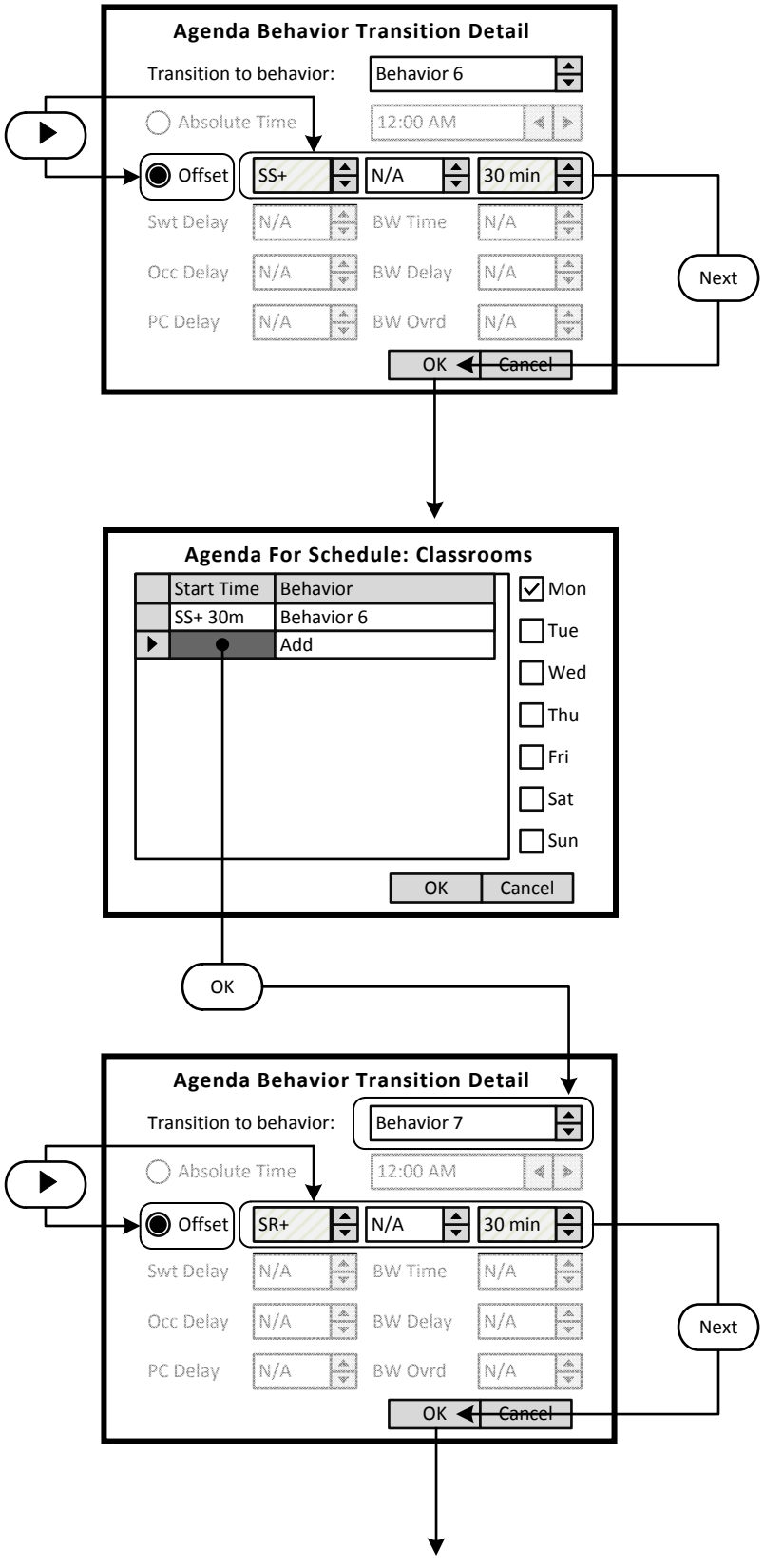
Understanding the Screen
This Agenda only applies to Monday, as shown here.
*<**OK**> - Will save the settings or changes*
*<**Cancel**> - Will discard the changes*

Step 1.39
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 6.

Understanding the Screen
*<**Offset**> provides access to Sunrise and Sunset settings for Astronomical clock times.*
-**BW Time**-, -**BW Delay**-, -**BW Ovrd**- - These are the Blinkwarn settings that apply to this Behavior Transition only. They will override the Global Blinkwarn Settings set in the System Settings section.

Step 1.40
Use the NEXT button to navigate to the -**Absolute Time**- check button.
Use the DOWN arrow to move to the -**Offset**- check button.
Press OK to activate the -**Offset**- setting.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.41
The Exterior Schedule requires the lights to turn On 30 minutes after Sunset.

Use the RIGHT arrow to navigate to the -**SS+**- list. Use the UP and DOWN arrows to select; sunrise plus a time value after (SR+), sunrise minus a time value before (SR-), sunset plus a time value after (SS+), sunset minus a time value before (SS-).

Use the RIGHT arrow to move to the -**Hour**- list box. Use the UP and DOWN arrows to set time offset in hours.

Use the RIGHT arrow to move to the -**Minutes**- list box. Use the UP and DOWN arrows to set time offset in minutes.

Use the NEXT button on the keypad to navigate to the -**OK**- button when finished.

Step 1.42
Navigate to the Add line of the list, in this case the second line. Click OK to advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 6 will occur 30 minutes after Sunset.

Step 1.43
The Exterior Schedule requires the lights to turn Off 30 minutes after Sunrise.

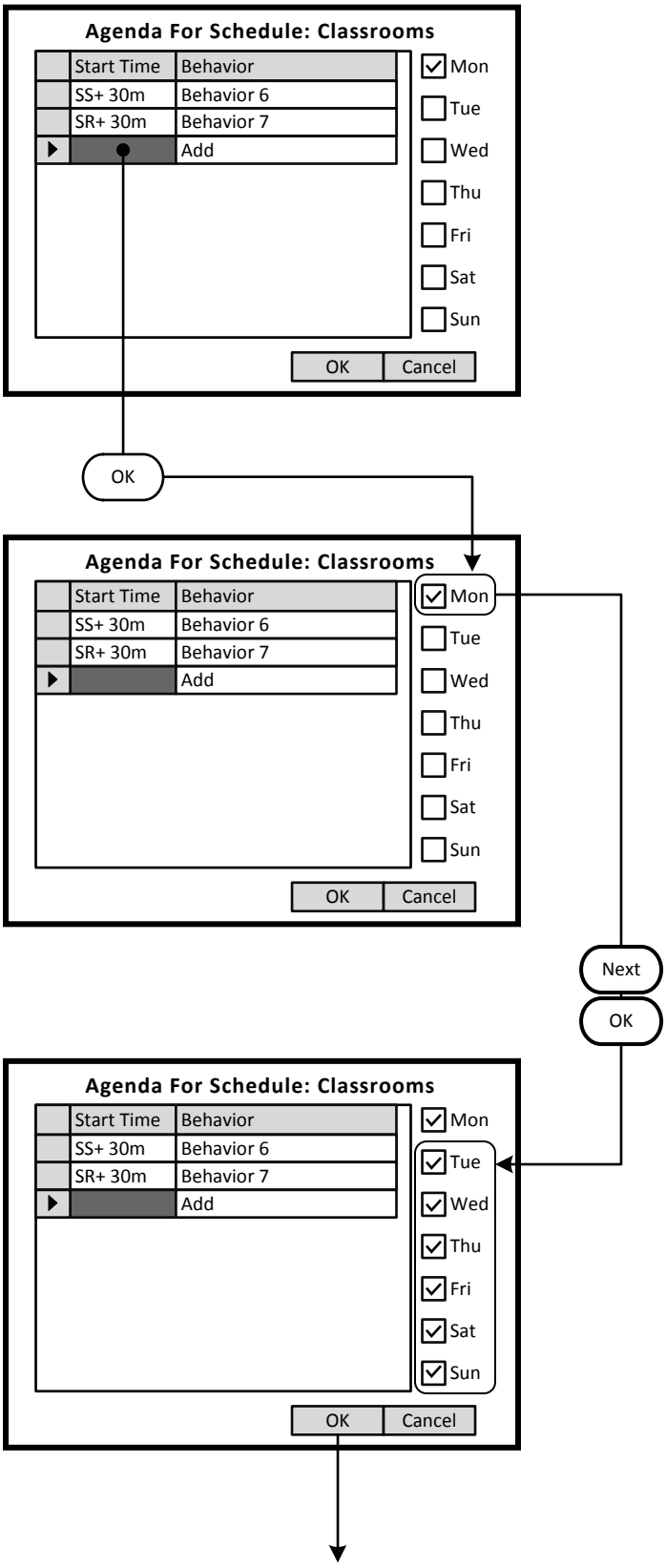
Use the RIGHT arrow to navigate to the -**SS+**- list. Use the UP and DOWN arrows to select; sunrise plus a time value after (SR+), sunrise minus a time value before (SR-), sunset plus a time value after (SS+), sunset minus a time value before (SS-).

Use the RIGHT arrow to move to the -**Hour**- list box. Use the UP and DOWN arrows to set time offset in hours.

Use the RIGHT arrow to move to the -**Minutes**- list box. Use the UP and DOWN arrows to set time offset in minutes.

Use the NEXT button on the keypad to navigate to the -**OK**- button when finished.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.44
Navigate to the -**Mon**- check box by pressing NEXT.

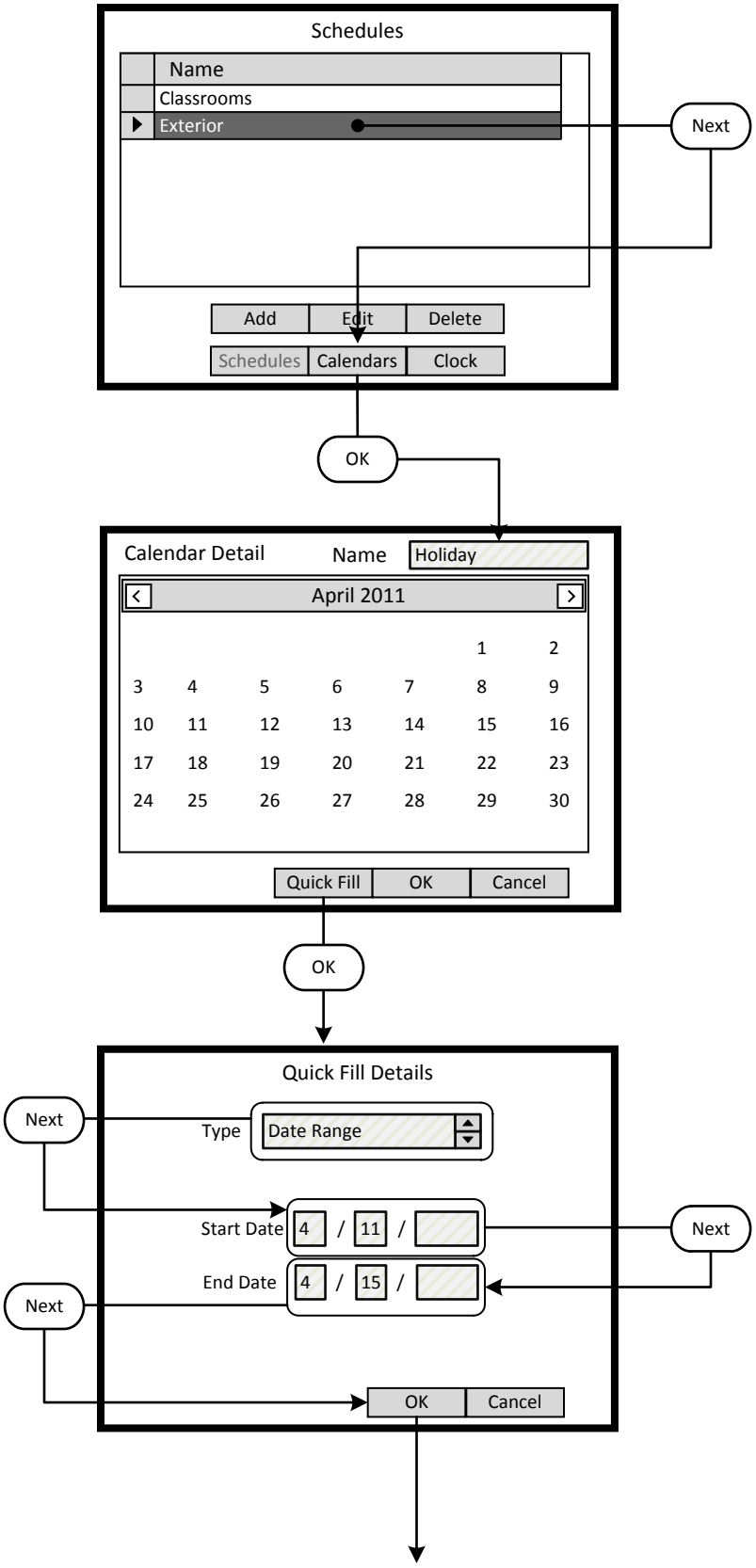
Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 6 will occur 30 minutes after Sunset.

Step 1.45
Navigate to the -**Tue**- check box by pressing NEXT.
Press OK to check the box.
Repeat these steps to fill check all boxes.

Step 1.46
Navigate to the -**OK**- onscreen button by pressing NEXT.
Press OK to save settings and return to the Schedules screen.

Understanding the Screen
This Agenda applies to Monday through Sunday.
A transition to Behavior 6 will occur 30 minutes after Sunset.
A transition to Behavior 7 will occur 30 minutes after Sunrise.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.47
There are now two Schedules available in the system for two different uses and patterns of behavior.
To add an Exceptions Calendar to the schedule, navigate to the <**Calendars**> button and press OK.

To navigate to the Home screen press the HOME button.

Other Options
*To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Edit**> and press OK, to initiate the modification of the selected Schedule.*

*To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Delete**> and press OK, to erase the selected Schedule.*

*To adjust the system clock, navigate to <**Clock**> and press OK.*

Step 1.48
The Exception Calendar can be custom named. This Calendar is to be named -**Holiday**- and will include April 11 through April 15. A specific pattern of behavior will run on these dates.
To add a range of dates to the Exceptions Calendar, navigate to the <**Quick Fill**> button and press OK.

Understanding the Screen
This Exception Calendar has no highlighted dates.
To view dates in May, navigate to <>> (right) by pressing the NEXT button. Press OK to select.

To view dates in March, navigate to <>> (right) by pressing the NEXT button. Press OK to select.

To select a specific date on the Calendar, press the NEXT button to move into the date fields. Use the arrow buttons to move to the desired date. Press OK to select.

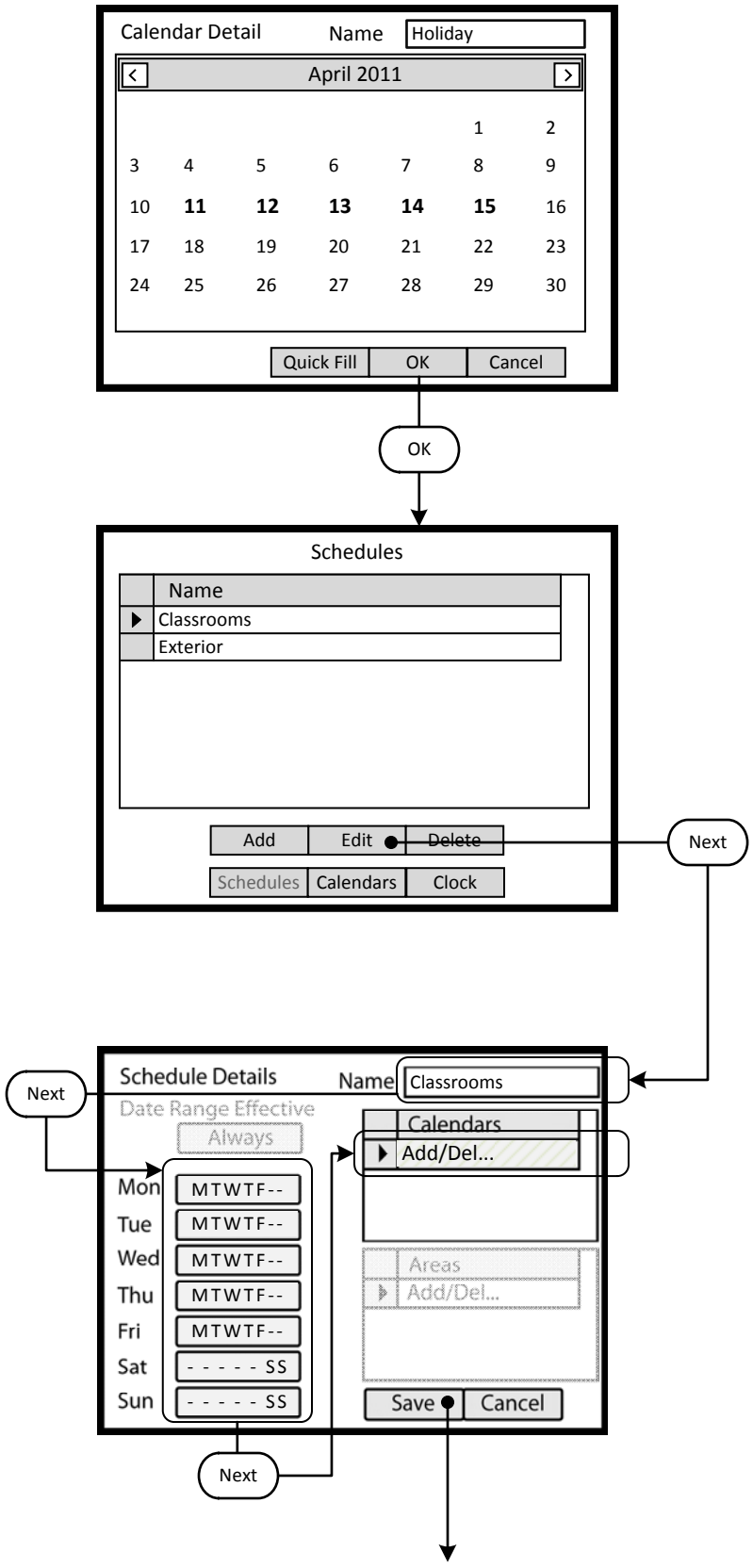
Step 1.49
The selected method of date entry is -**Date Range**-, the other mode is -**Relative Date**-. Navigate to and enter the -**Start Date**-. Fields are provided for month, day, and year. A specific pattern of behavior will run on these dates.
To accept changes navigate to the <**OK**> button and press OK.

Understanding the Screen
*This Exception Calendar will include the dates between April 11 and April 15. Since the year field has been left blank, these dates will apply each year moving forward. The dates will be highlighted on the calendar named -**Holiday**-.*

*To abandon changes, navigate to the <**Cancel**> button and press OK.*

To erase entries in a field use the CLEAR button on the keypad.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

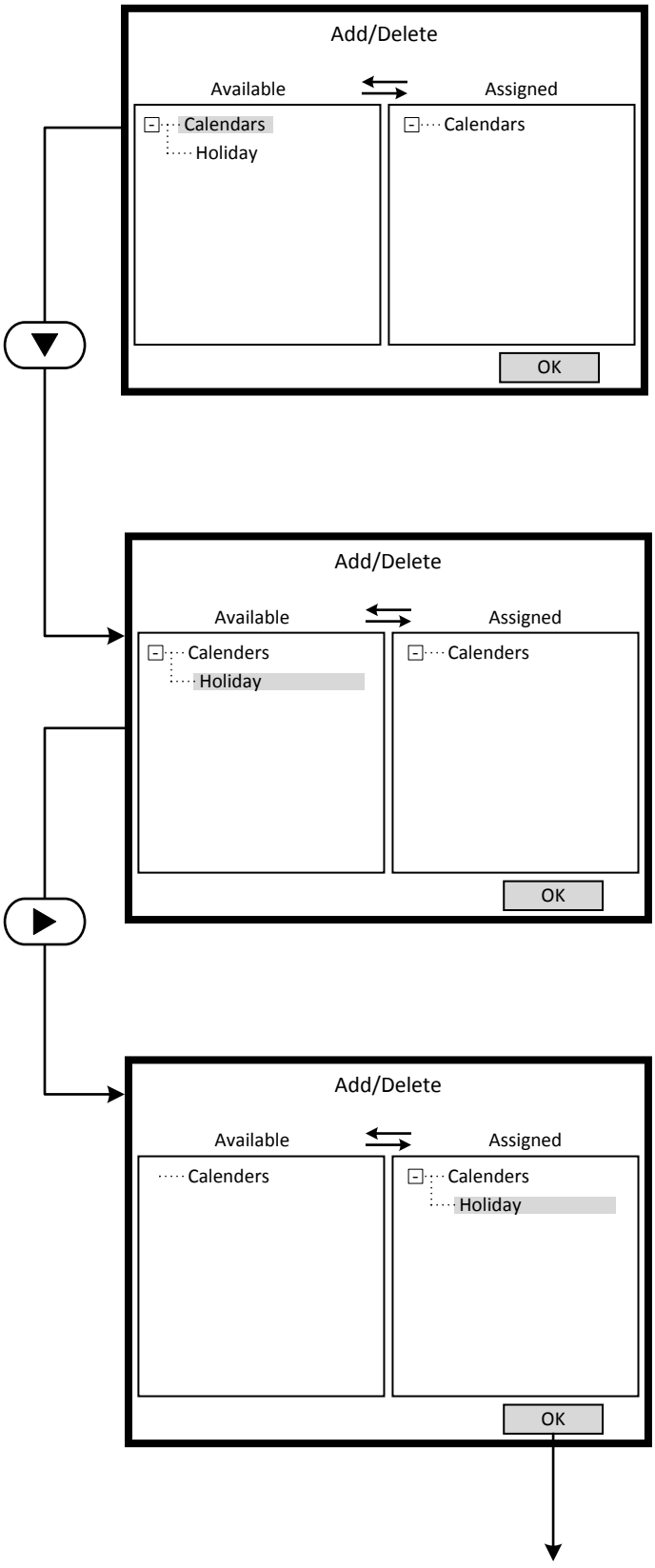


Step 1.50
The Exception Calendar named Holiday has highlighted dates from April 11 through April 15. No behavior patterns have been specified, this is done in the Schedule Detail screen.
To add additional range of dates to the Exceptions Calendar, navigate to the <**Quick Fill**> button and press OK.

Step 1.51
Once the dates have been added to the Exceptions Calendar, the Calendar can be added to a Schedule. Select the Schedule from the list of two Schedules available in the system.
To add an Exceptions Calendar to the schedule, navigate to the <**Edit**> button and press OK.

Step 1.52
To add an Exception Calendar to the Schedule, press the NEXT button on the navigation keypad to advance to the -**Add/Del**- field. Press OK to select.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



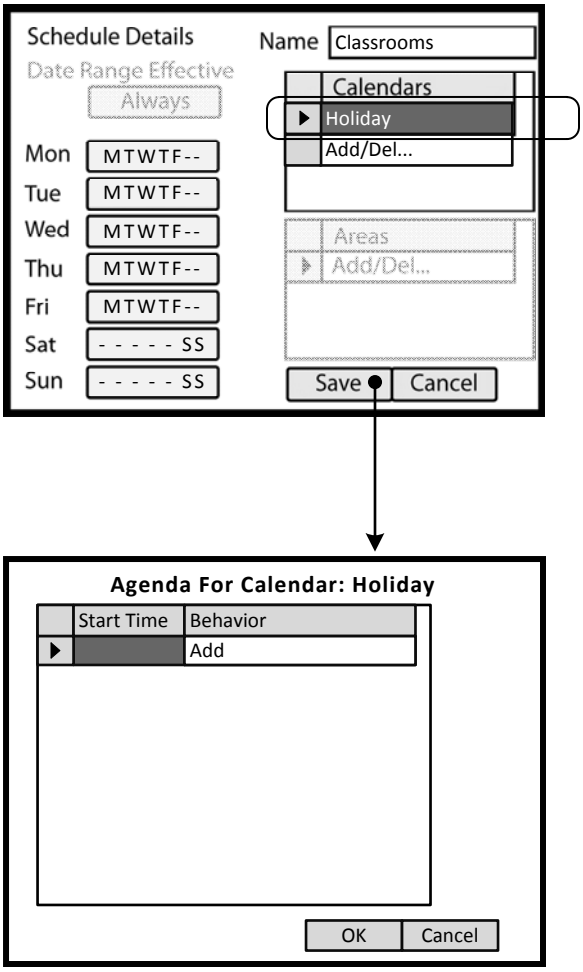
Step 1.53
The Exception Calendar named Holiday can be viewed on the list of Available Calendars. Each Exception Calendar that is created appears on the list. Multiple Exception Calendars can be added to a schedule.
Exception Calendars can be Assigned Schedules.

The desired Exception Calendar must be moved from the Available list, on the left side of the screen, to the Assigned list on the right.

Step 1.54
Use the DOWN arrow to highlight the desired Exceptions Calendar.

Step 1.55
Use the RIGHT arrow to move the highlighted Exceptions Calendar to the Assigned List.
Reversing the procedure will un-assign the Calendar.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

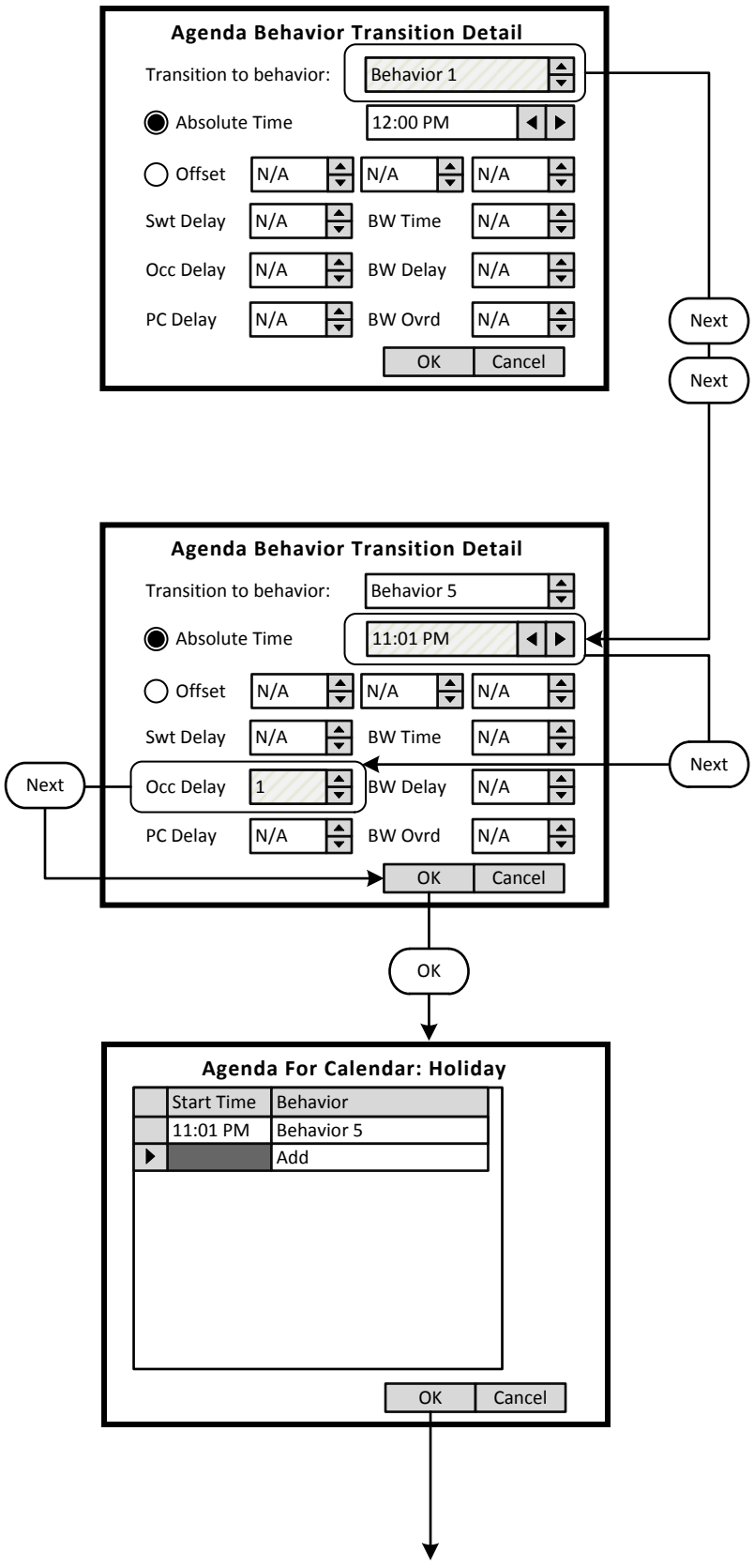


Step 1.52
The Holiday Exception Calendar is now listed as assigned to the Schedule. Press the OK button on the navigation keypad to create or edit the -**Holiday**- Agenda.

Step 1.44
Navigate to the -**Mon**- check box by pressing NEXT.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 6 will occur 30 minutes after Sunset.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.29
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 5.

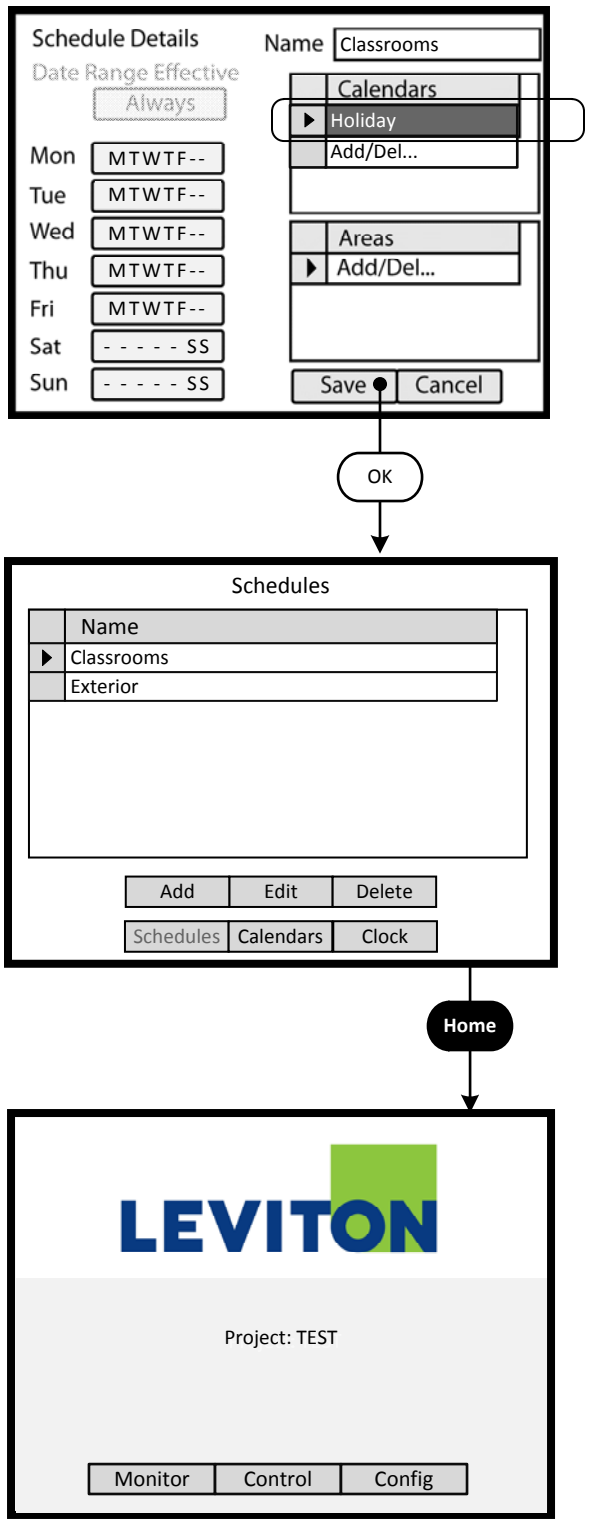
Understanding the Screen
*<**Absolute Time**> setting for a specific time of the day to trigger a Behavior Transition.*

Step 1.30
Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 11:01 PM. When complete, use the NEXT button to navigate to the -**Occ Delay**- field. Adjust this setting to 1 minute.

Step 1.44
Navigate to the -**Mon**- check box by pressing NEXT.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 6 will occur 30 minutes after Sunset.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

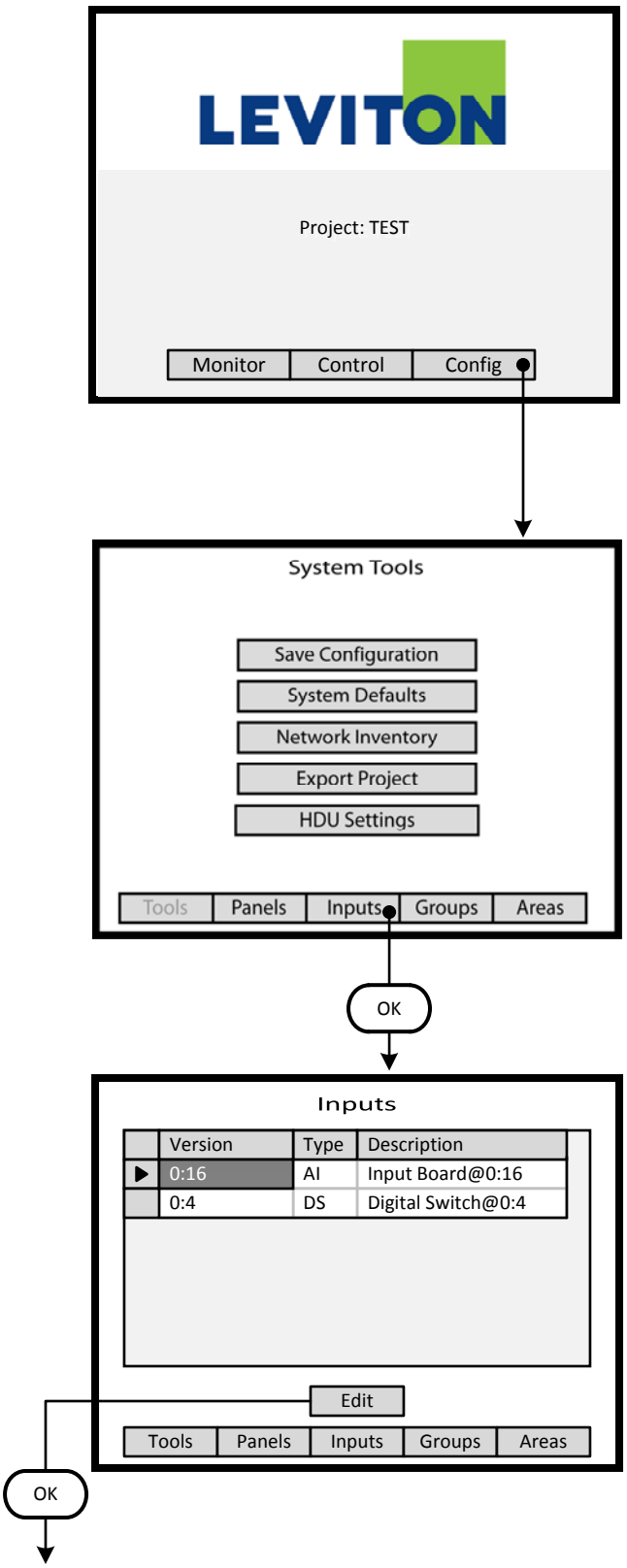


Step 1.52
The Holiday Exception Calendar is now listed as assigned to the Schedule. Press the OK button on the navigation keypad to create or edit the -**Holiday**- Agenda.

Step 1.51
Once the dates have been added to the Exceptions Calendar, the Calendar can be added to a Schedule. Select the Schedule from the list of two Schedules available in the system.
To add an Exceptions Calendar to the schedule, navigate to the <**Edit**> button and press OK.

Programming Excercise: Classroom

-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2: Configure Devices

The GreenMAX can be configured to handle a wide variety of input devices. These devices operate at +24vdc and are wired to an input terminal on the Low Voltage (AI) board. Each terminal port must be configured to match the device and its expected functionality.

The following Low Voltage input devices can be connected to the system:

- Occupancy sensors.
- Photocells.
- Switches.
- Contact closures.

Step 2.1

The configuration steps of the Low Voltage Input Card is performed in the <**Config>** section of the HDU software.

Understanding the Screen

There are three sections of the HDU software. The other two sections under the buttons are:
*<**Monitor**> - Used to check the system time, relay status*
*<**Control**> - Access Scheduling*

Step 2.2

Use a combination of the UP and DOWN arrows as well as the NEXT button to navigate to the <**Inputs**> onscreen button. Press OK to select.

Step 2.3

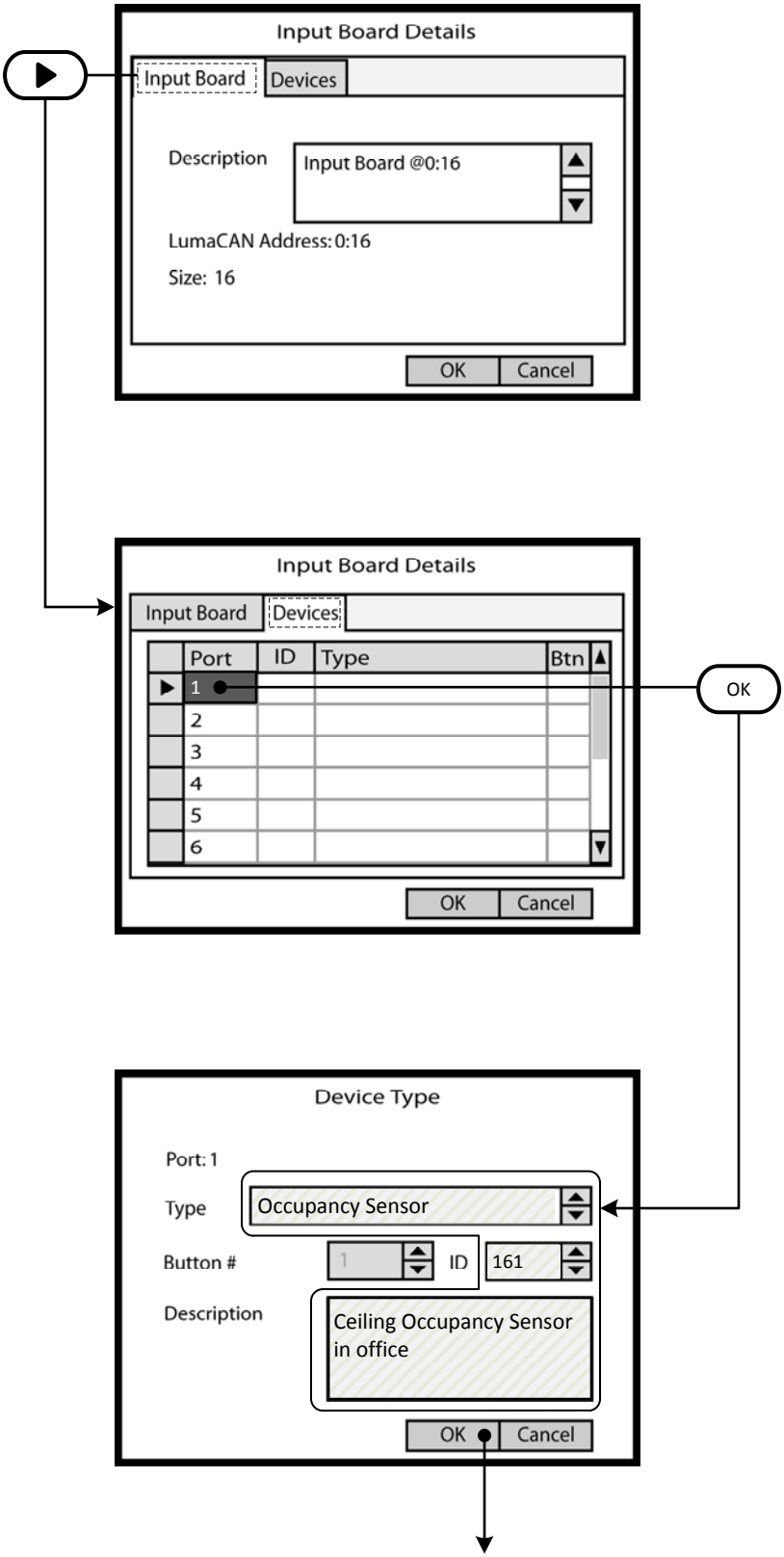
The Network Inventory will provide a listing of all system Input devices. This includes both Low Voltage Input Boards (AI) and Digital switches.

Understanding the Screen
There are two Input Devices in this system.
There is a 16 input AI board at address ID 16.
There is a 4 button Digital Switch at address ID 4.

Description of the onscreen buttons:

<**Edit**> selecting this onscreen button will allow editing of the highlighted device in the list.
<**Tools**> use to navigate to the System Tools screen.
<**Panels**> use to navigate to the Relay Panel Detail Screen
<**Groups**> use to navigate to the Group building screen
<**Areas**> use to navigate to the Areas configuration screen

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.4

The **Input Board Details** screen displays the number of inputs, the LumaCan address ID and the -**Description**- field. Enter job specific description in this field.
Once the correct information is entered, use the RIGHT arrow to move to the -**Devices**- tab at the top of the screen.

Understanding the Screen
The other onscreen buttons are:
*<**OK**> - Used to accept the entries*
*<**Cancel**> - Used to discard entries*

Step 2.5

The -**Devices**- tab reveals a list of the Input Ports on the AI Board being configured. Ports are numbered sequentially in quantities of 8 or 16. No data entry can be made on this screen. Highlight the Input Port number and press OK to enter the editing screen.

Use the UP or DOWN arrows on the keypad to navigate up or down the list. The scroll bar to the right indicates position on the list.

If the wrong device type appears on the list, highlight the Input Port number and press CLEAR on the keypad.

Understanding the Screen
No devices have been configured for this AI board.
The onscreen buttons are:
*<**OK**> - Used to accept the entries*
*<**Cancel**> - Used to discard entries*

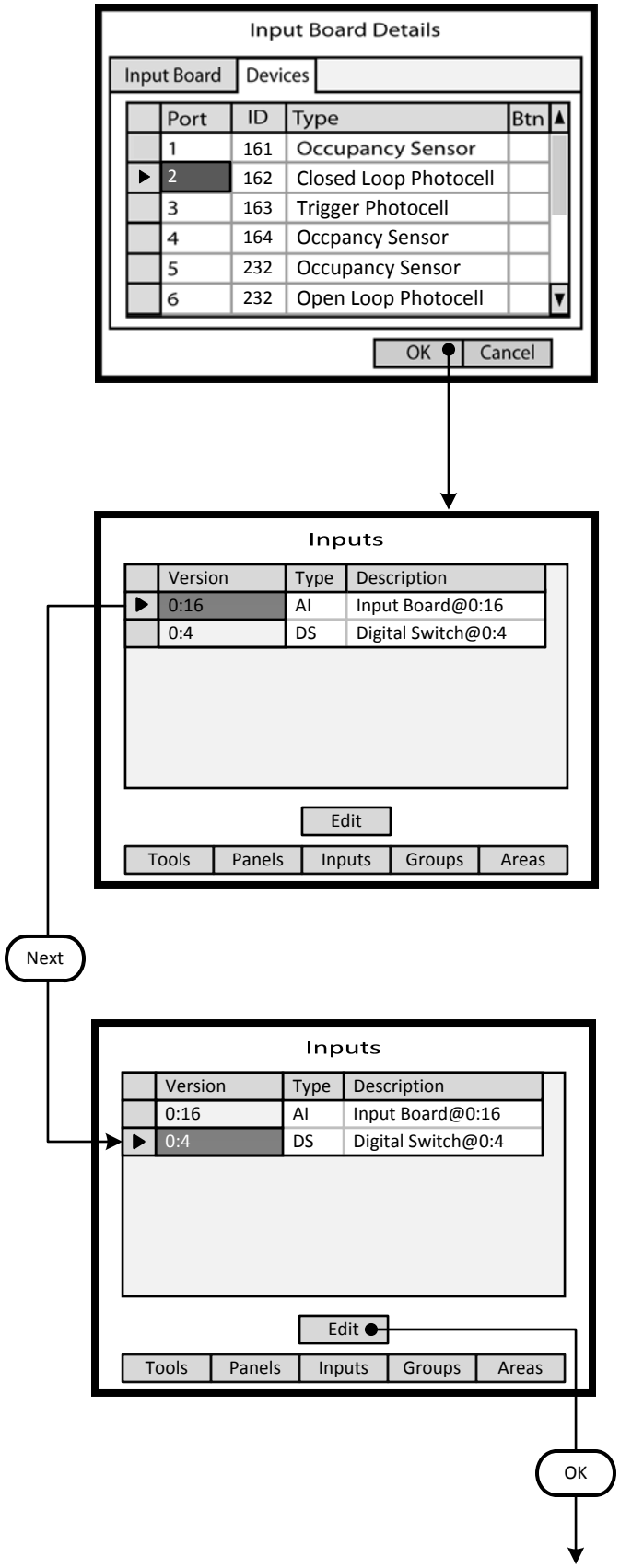
Step 2.6

The Device Type screen is used to select the type of device that is wired to the input port. Use the UP and DOWN arrows on the keypad to display the desired device.
The Description field should be used to document the location of the device.

Understanding the Screen
The -Button #- is available for display purposes only and does not have any configuration value.

The -ID- is available for display purposes only and does not have any configuration value. It can be used to match the numbering on project drawings. Maximum value is 1000.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.8

The fully populated **Input Board Details** screen will look as shown here. The Input Ports can be configured in any order as necessary.

Understanding the Screen

The ID numbers are for information purposes. They can be any number that makes sense to the user. The system only stores these numbers and does not use them for any function other than identification.

The 'Btn" column will be populated with switch button numbers if Low Voltage Switches are configured at the Port location.

. *The other onscreen buttons are:*

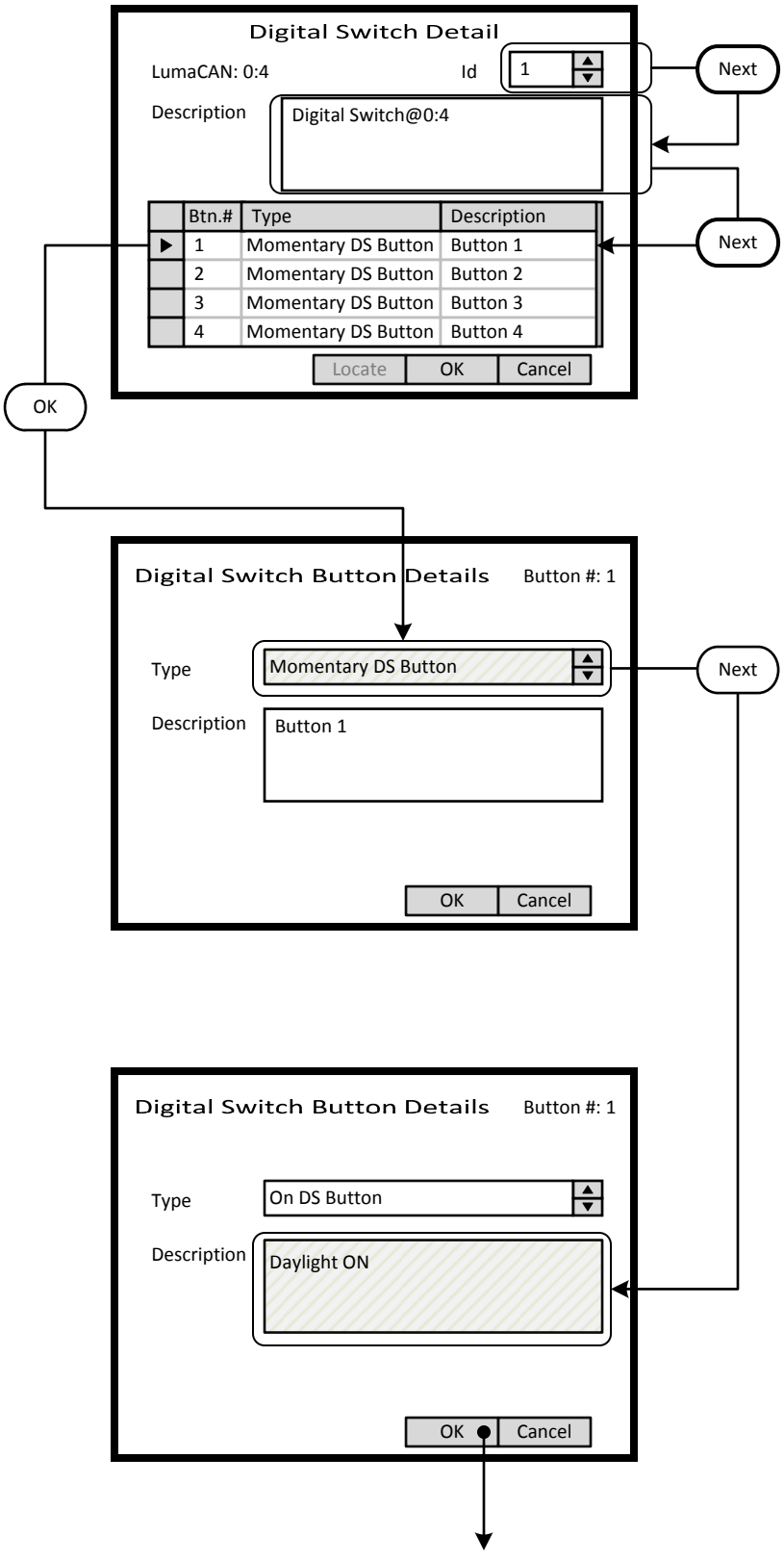
*<**OK**> - Used to accept the entries*

*<**Cancel**> - Used to discard entries*

Step 2.9

The **Inputs** listing shows a Digital Switch at LumaCan ID 4. This is a 4 button Digital Switch to be used for Dimming control. Highlight the device and move the indicator to the appropriate device line. Use the UP and DOWN arrows to move about the list. Use NEXT to navigate to the <**Edit**> button.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.10

The **Digital Switch Detail** screen provides an ID setting for informational purposes and a description field. These fields fill the list on the previous screen. Button function must be configured. Highlight the Button number and press OK to enter the editing screen.

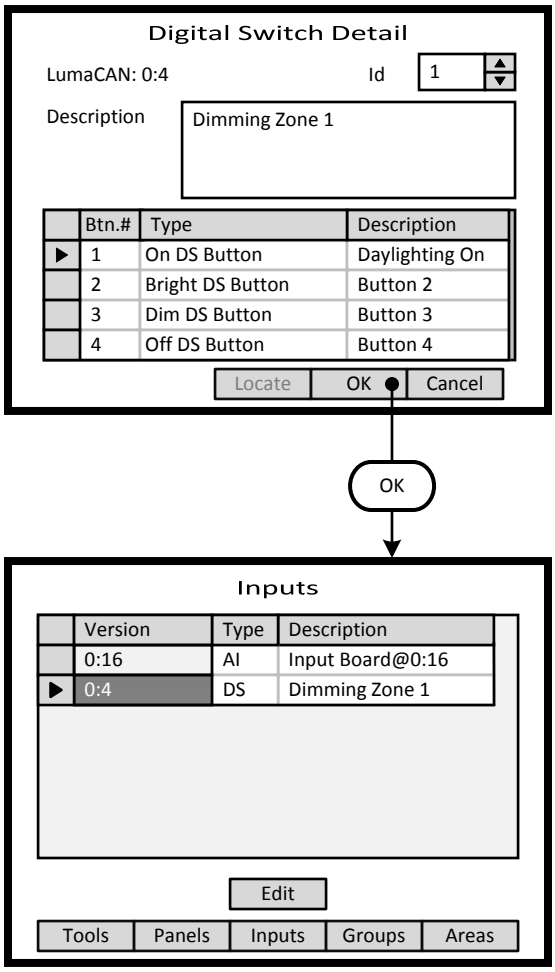
Use the UP or DOWN arrows on the keypad to navigate up or down the list.

Step 2.11

The Digital Switch Button Details screen is used to configure the individual button function and to name the button. Use the UP and DOWN arrows on the keypad to display the desired button function.
The Description field should be used to document the function of the individual buttons. This field is for user reference only.

Understanding the Screen
The type options are:
Momentary DS Button
On DS Button
Bright DS Button
Dim DS Button
Off DS Button

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.12
This illustration shows the recommended configuration for a Digital Switch used for dimming control application. The button Type fields should match those shown. Each field should be adjusted individually. Button descriptions are entered on the Button Detail Screen shown previous.

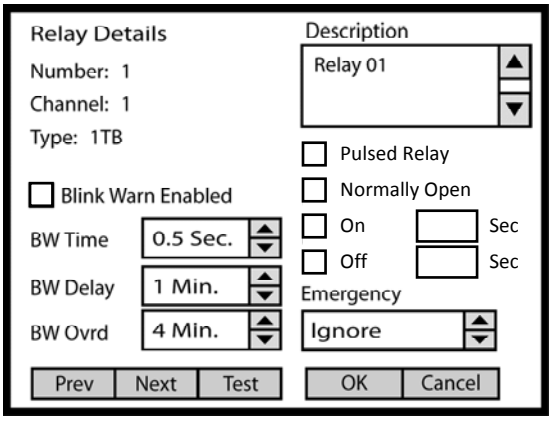
Use the UP or DOWN arrows on the keypad to navigate up or down the list.

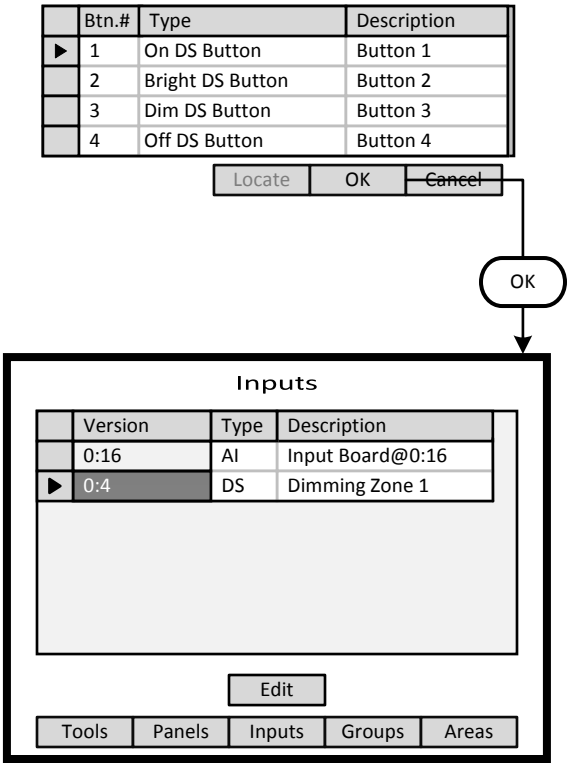
Use NEXT and BACK to navigate between sections on the screen.

Understanding the Screen
The ID number are for information purposes and can be used to match assigned project switch numbers.

Step 2.13
The Inputs list has a Digital Switch at ID 4 and is described as Dimming Zone 1.

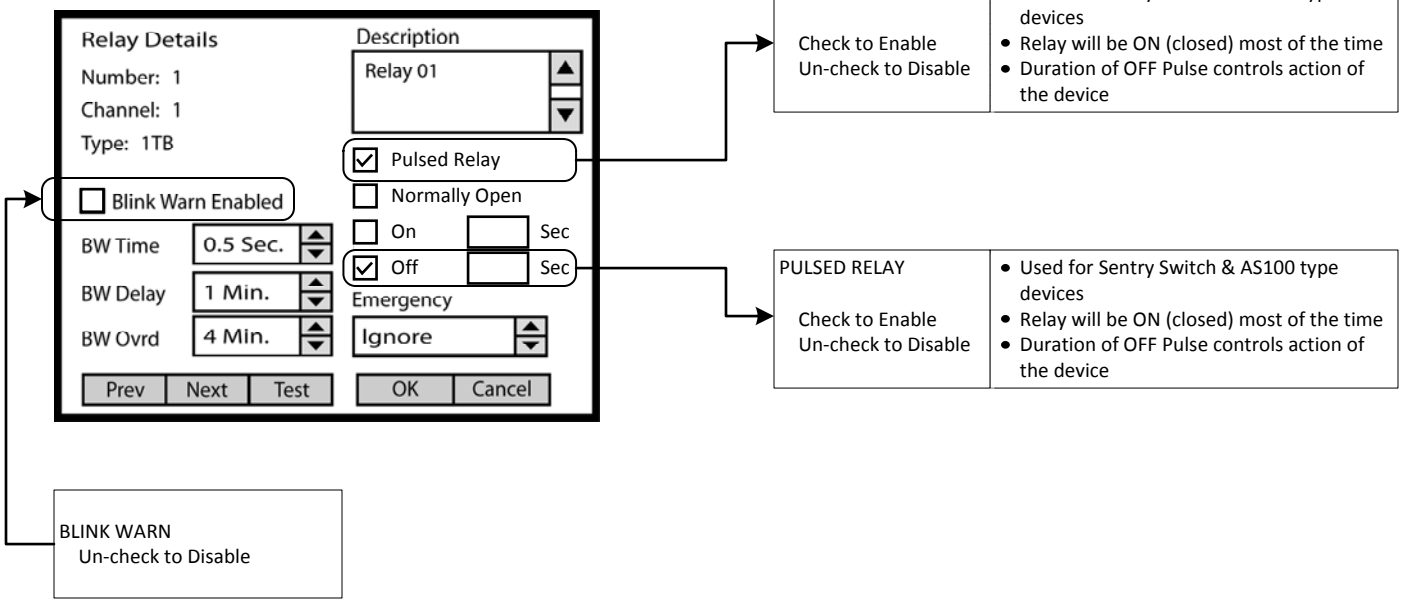
Use the UP and DOWN arrows to move about the list. Use NEXT to navigate to the <**Areas**> button.


Relay Details
Number: 1
Channel: 1
Type: 1TB
Description
Relay 01
Pulsed Relay
Normally Open
Blink Warn Enabled
On
Sec
Off
Sec
BW Time
0.5 Sec.
BW Delay
1 Min.
Emergency
BW Ovrd
4 Min.
Ignore
Prev
Next
Test
OK
Cancel


Btn.#
Type
Description
1
On DS Button
Button 1
2
Bright DS Button
Button 2
3
Dim DS Button
Button 3
4
Off DS Button
Button 4
Locate
OK
Cancel
OK
Inputs
Version
Type
Description
0:16
AI
Input Board@0:16
0:4
DS
Dimming Zone 1
Edit
Tools
Panels
Inputs
Groups
Areas


LEVITON
Project: TEST
Monitor
Timing
Set Up

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.11

This illustration shows the recommended configuration for a Digital Switch used for dimming control application. The button Type fields should match those shown. Each field should be adjusted individually. Button descriptions are entered on the Button Detail Screen shown previous.

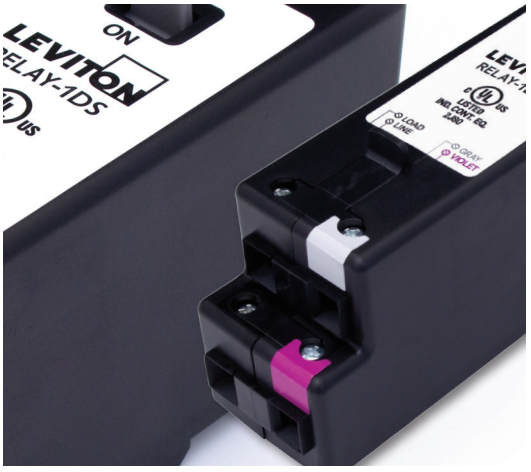
Use the UP or DOWN arrows on the keypad to navigate up or down the list.

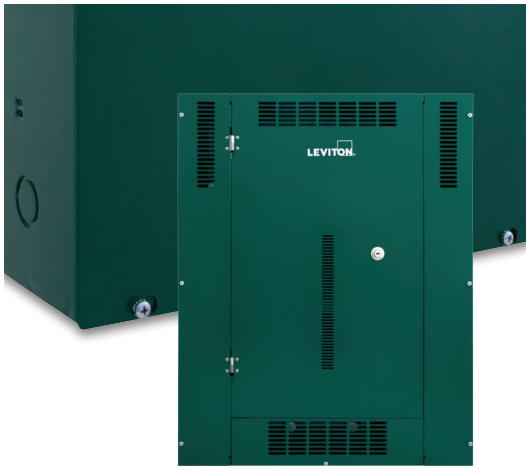
Use NEXT and BACK to navigate between sections on the screen.

Understanding the Screen

The ID number are for information purposes and can be used to match assigned project switch numbers.

GreenMAX™
Relay Control Panels
Smart Lighting Control





Built by the industry, for the industry.

BENEFITS OF GreenMAX

EXCLUSIVELY FROM GreenMAX— DIMMING AND SWITCHING IN THE SAME CABINET

GreenMAX allows you to set advanced control schemes from a single cabinet

EASY TO INSTALL

GreenMAX cabinets are shipped empty to increase ease of installation and components can be shipped separately to meet your lighting demands, schedule and help manage cash flow

EASY TO DESIGN

Unlimited and flexible lighting configurations allow you to program based on behavioral relationship commands

EASY TO MONITOR, MANAGE AND MAINTAIN

Configure your lighting system in the space with a portable Handheld Display Unit (HDU) or from a remote location

EASY CODE COMPLIANCE

Meets strict energy code performance requirements

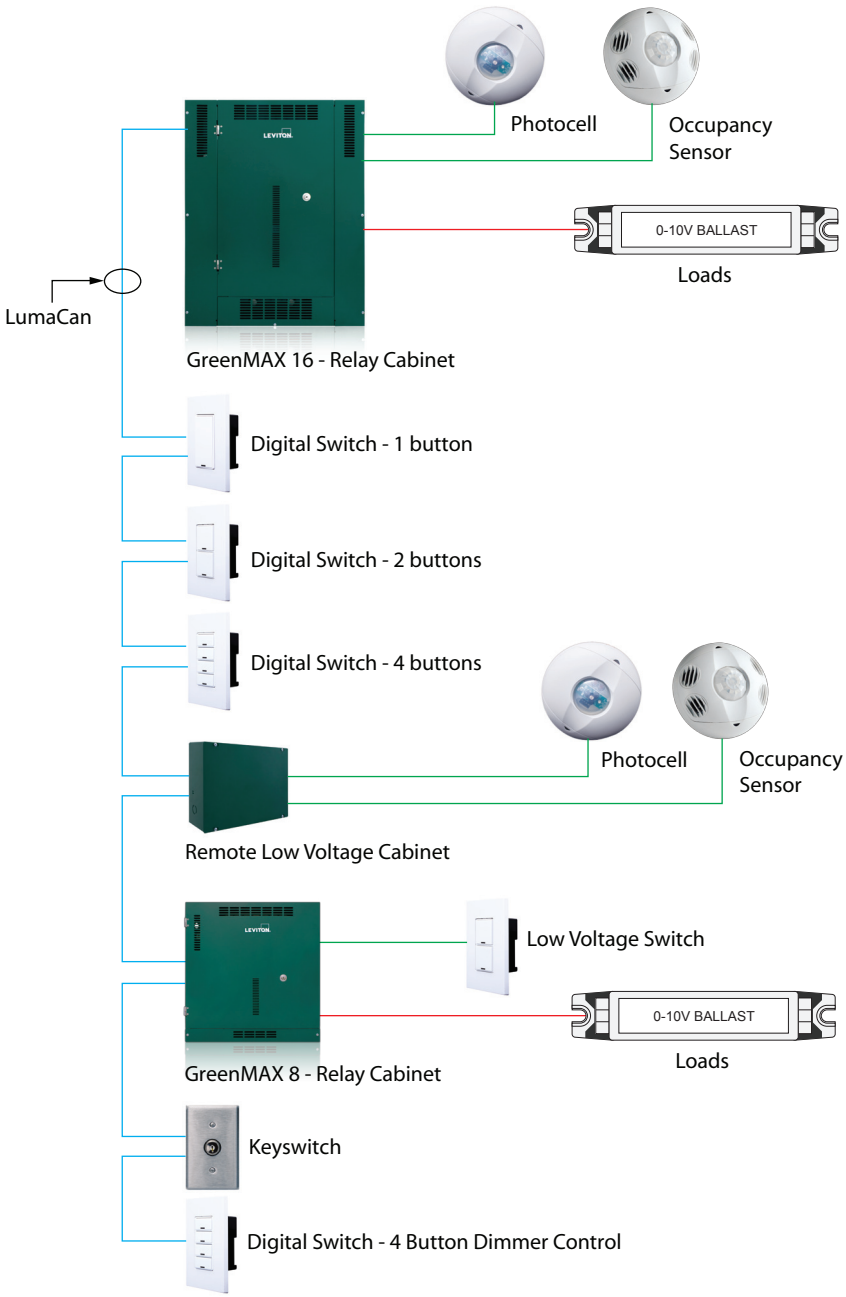
BUILDING PROFESSIONALS, ARCHITECTS, SYSTEM INTEGRATORS, PLANNERS AND INSTALLERS
Flexibility, installation interoperability, simplicity, environmentally friendly

BUILDING OWNERS, FACILITY MANAGERS AND PRIVATE CONSUMERS
Energy savings, cost benefits, flexibility, comfort, simplicity

LEVITON GreenMAX

WHAT IS GreenMAX?

GreenMAX is a completely modular design offering a wide variety of relay options. GreenMAX includes integrated dimming, a 25,000A Short Circuit Current Rating (SCCR) and daylight harvesting. Programming and monitoring GreenMAX is quick and simple with a portable Handheld Display Unit (HDU) that allows for onsite or remote access. The modular design allows total installation flexibility and labor savings. Designed for the contractor, specifier and end user, GreenMAX offers the best performance, reliability, flexibility and energy savings of any relay control available.



FLEXIBLE AND TIME-SAVING DESIGN FOR SPECIFYING ENGINEERS AND ARCHITECTS

- Ultimate time-saving design flexibility—easily integrate various lighting control capabilities like switching, dimming, Behavior controls, scheduling, occupancy sensing and daylight harvesting all from one system
- Scalable solution offers future expansion opportunities
- Easy energy code compliance
- Eligible for LEED points

SIMPLE, SAFE AND COST-EFFECTIVE INSTALLATION FOR CONTRACTORS

- Modular system was designed to make installation of cabinet and conduits easy
- Wiring covers and isolation barriers provide total Arc Flash Protection and allow work to be done with power on without chance of exposure to high voltage—no Arc Flash Suit needed

OCCUPANT SATISFACTION AND MAXIMUM CONTROL FOR END USERS

- Manage your lighting system in the space from a portable Handheld Display Unit (HDU)—no more walking to and from the electrical room
- Programming logic by Behaviors reduces programming time and increases functionality

PROGRAMMING GreenMAX WITH LIGHTING BEHAVIORS

LIGHTING CUSTOMIZATION

GreenMAX controls allow different Behavior settings to be programmed throughout the day. Using the HDU, any room can be set with just a few button selections:

- Select the Behavior desired and time Behavior will take place
- Choose any additional Behavior transitions and the time transition will take place
- Optional override to sunrise/sunset astronomical clock prevents lights from activating prematurely in summer or too late in winter
- Set Behaviors to scale on a daily, weekly, monthly or holiday schedule
- Up to 24 Behaviors per 24 hour period can be programmed and can be as close together as one minute

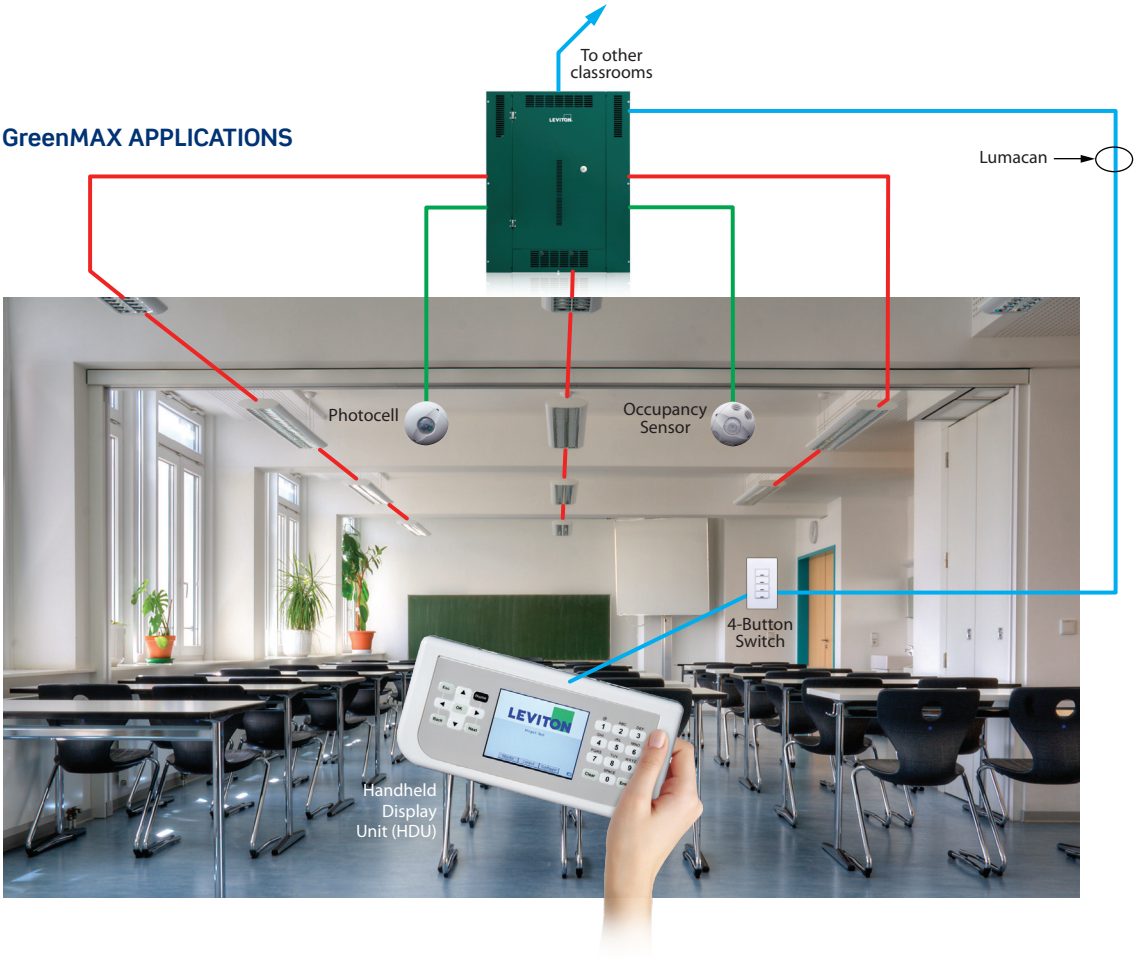
SIMPLE AND EASY PROGRAMMING

- Using the HDU, select the number on the screen corresponding with the desired Behavior
- Enter time and dates to be in effect and any corresponding Behavior Modifiers. Behaviors can be set for entire system or individual rooms/relays

BEHAVIORS

NUMBER	DESCRIPTION
B1	Lights turned ON with the switch. Can be turned OFF with switch. Occupancy Sensor will turn OFF upon vacancy.
B2	Lights turned ON with the Occupancy Sensor. Can be turned ON/OFF with switch. Occupancy Sensor will turn OFF upon vacancy.
B3	Occupancy Sensor turns lights ON/OFF.
B4	Switch ON/OFF.
B5	Time triggers a Blink Warn sequence, an OFF blink followed by a variable ON delay. Switch interrupts sequence and starts override timer. Will automatically turn OFF relay if override timer reaches zero.
B6	Turn ON at specific time.
B7	Turn OFF at specific time.
B8	Occupancy Sensor turns ON lights with occupancy. Measured light levels above Photocell trigger point turns OFF or keeps lights OFF, below set-point allows control by Occupancy Sensor. Occupancy Sensor turns OFF lights with vacancy.
B9	Switch turns ON/OFF lights. Measured light levels above Photocell trigger point turns OFF or keep lights OFF, below set-point allows control by Occupancy Sensor. Occupancy Sensor turns OFF lights with vacancy.
B10	Occupancy Sensor turns ON lights with occupancy. Measured light levels above Photocell trigger point turns OFF or keep lights OFF, below set-point allows Occupancy Sensor control. Switch can turn ON/OFF lights by overriding Occupancy Sensor control. Occupancy Sensor will turn OFF lights upon vacancy.
B11	Switch ON/OFF. Measured light levels above Photocell trigger point turns OFF or keep lights OFF, below set-point allows Switch control.
B12	Turn ON at specific time (Used for Exterior Lighting). Measured light levels above Photocell trigger point turns OFF or keep lights OFF, below set-point relinquishes control to the constant ON state.

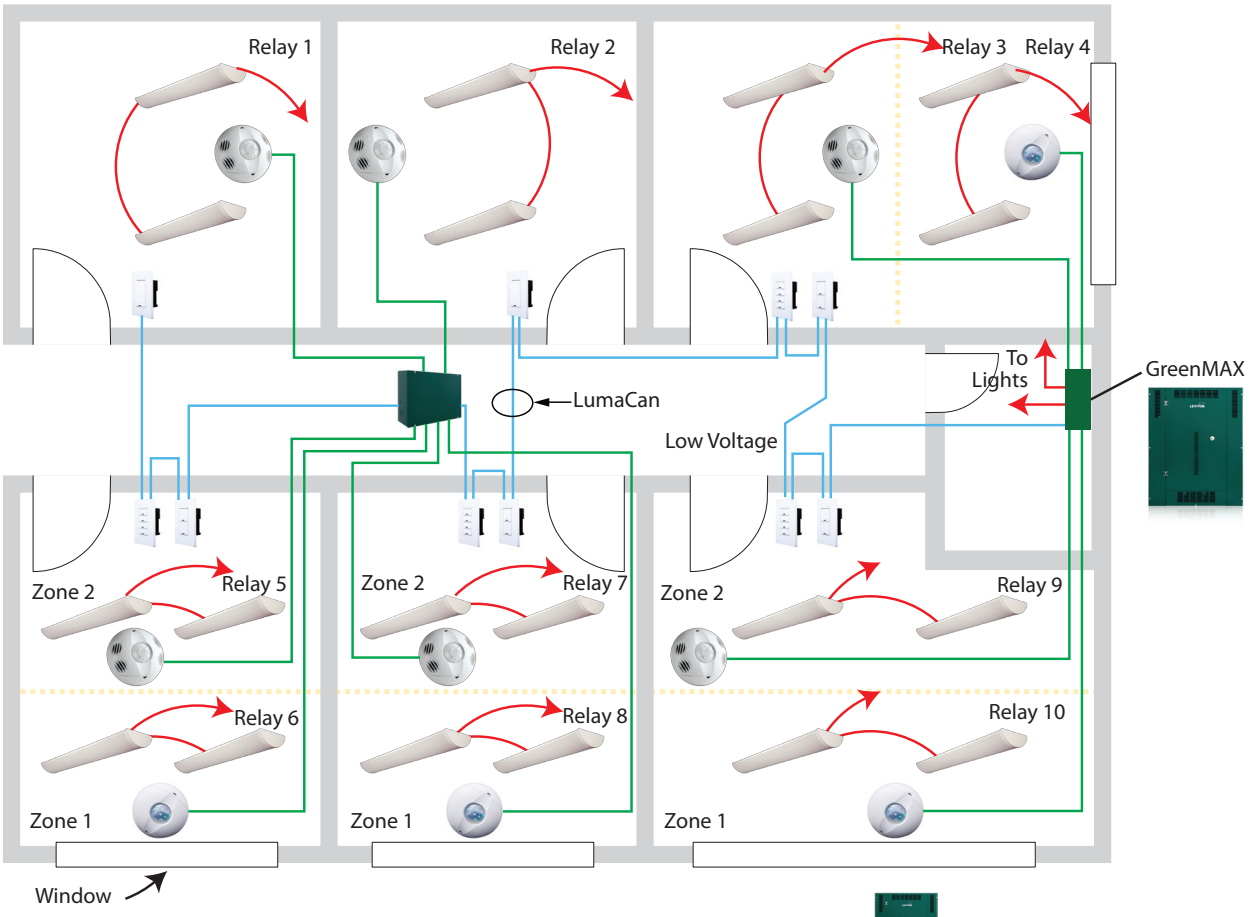
GreenMAX APPLICATIONS



Proven interoperability and seamless integration with building management systems allows GreenMAX Relay Control Panels to follow set Behaviors based on time, day and the relationship between the switches, occupancy sensors and photocells in a given area.

- Schools
- Convention Centers
- Government Facilities
- Offices
- Airports
- Hospitals/Medical Offices
- Retail Stores
- Restaurants
- Virtually Any Commercial Building

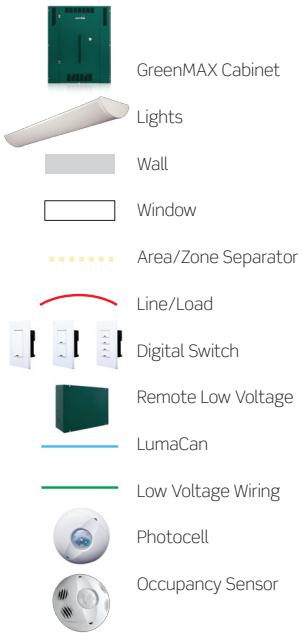
OFFICE EXAMPLE



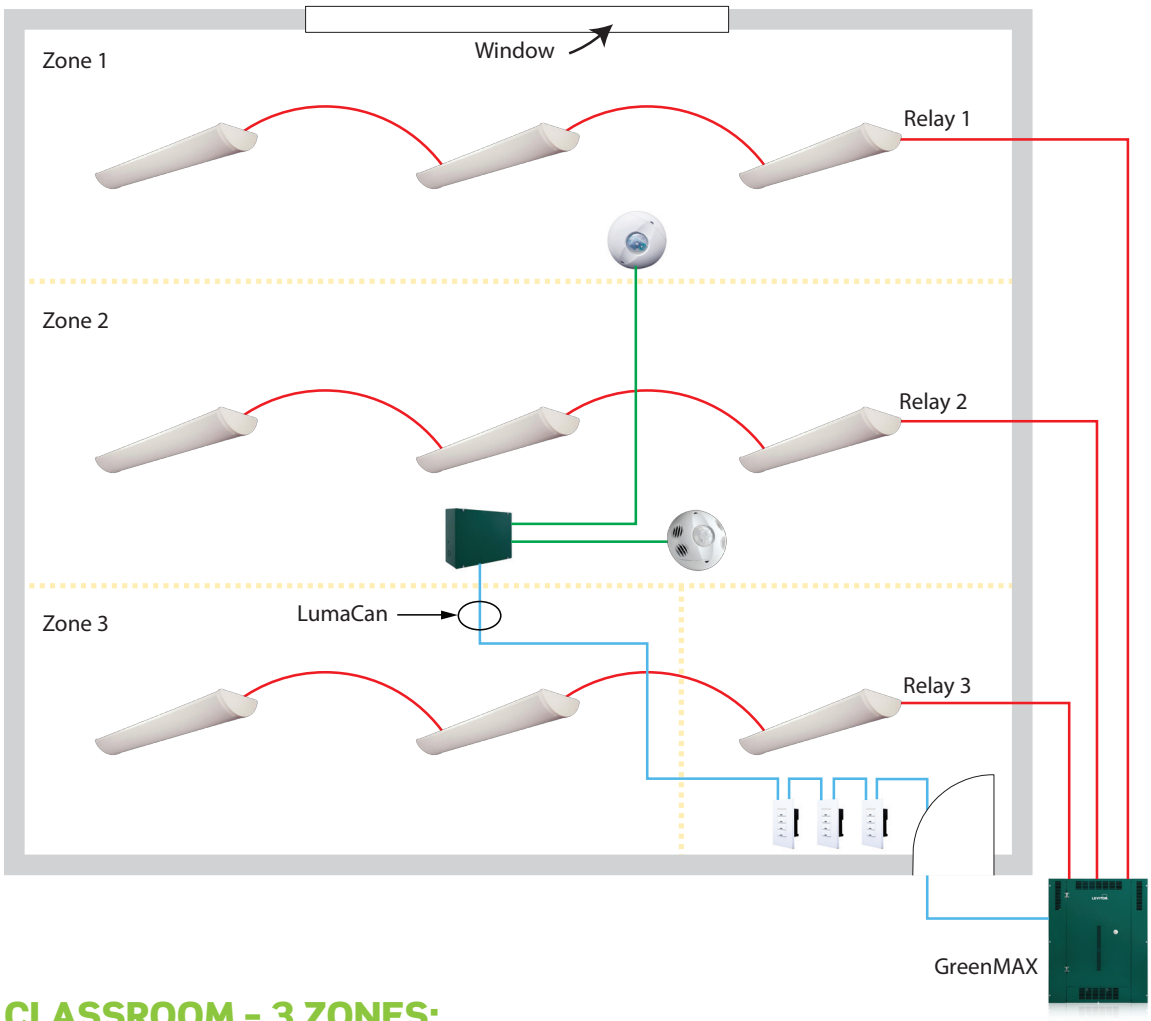
OFFICE AREA – MULTIPLE ZONES:

Each area may be controlled independently and each room can be segregated by zone for customizable control.

- Rooms are equipped with photocells and occupancy sensors to achieve optimal daylight harvesting
- Using the Remote Low Voltage cabinet to connect sensors and switches allows shorter and less expensive wiring options
- Centralized control for time settings; ready to integrate with building automation systems



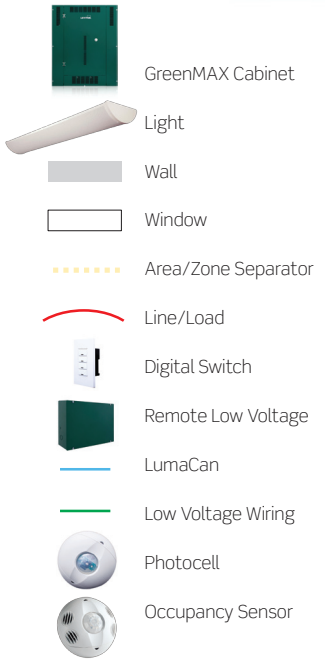
CLASSROOM EXAMPLE

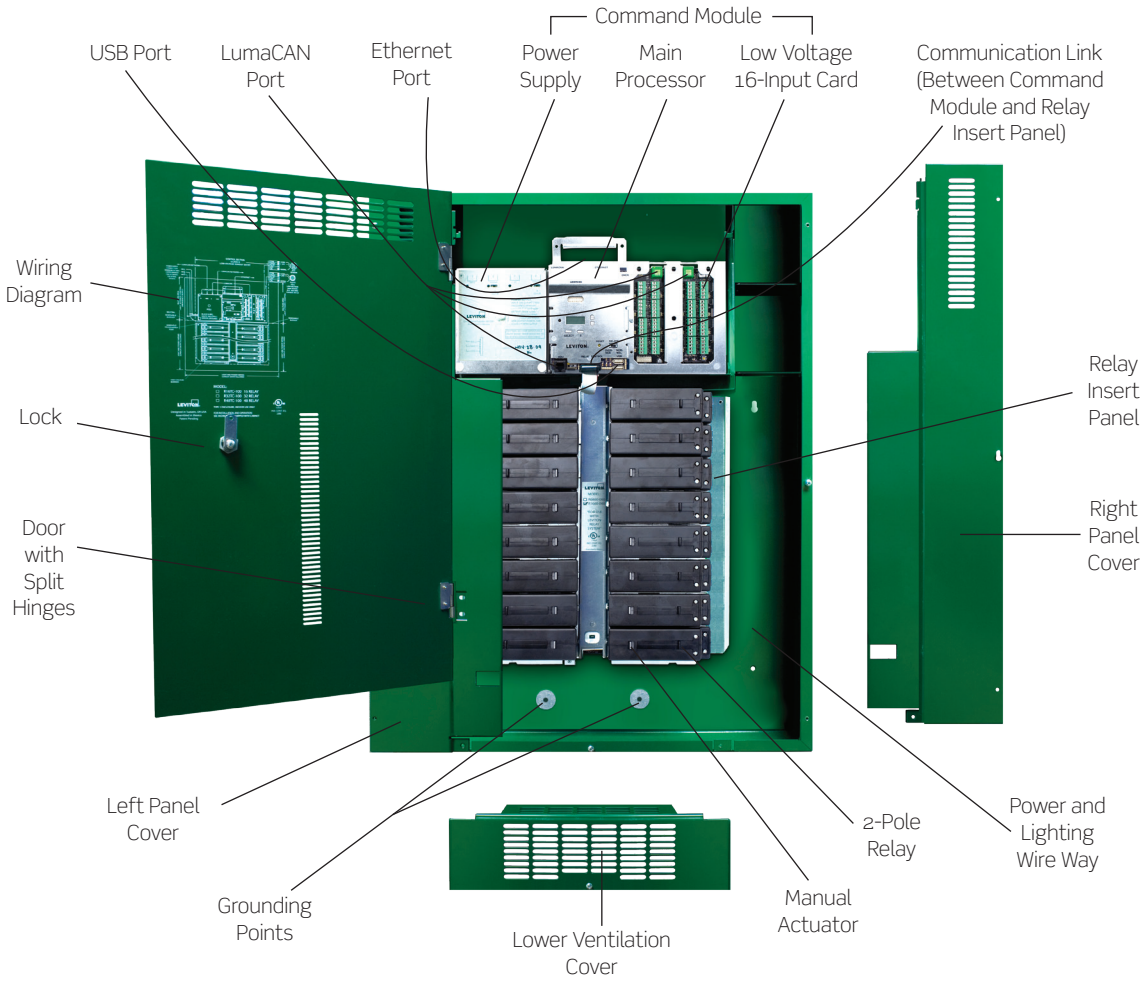


CLASSROOM – 3 ZONES:

This typical classroom configuration achieves daylight harvesting with a photocell and occupancy sensor that turns off the light when the room is vacant

- GreenMAX relays can dim all the lighting within the zone to the same lighting percentage
- Each row of lighting can be dimmed to different levels based on the availability of natural light; this setting will dim the lights nearest the window to match the lighting output of fixtures further away





GreenMAX INNOVATION

Leviton—developing innovative electrical products for over 100 years

GreenMAX SYSTEM

- Industry leading 25,000A Short Circuit Current Rating (SCCR) at 277 VAC withstands circuit faults for increased safety
- Native communication network protocols—BACnet IP, Ethernet and LumaCAN—are built into each command module to offer unparalleled connectivity; no additional parts or adapters are needed to communicate with other products utilizing these protocols
- Modular system includes separate empty cabinet enclosures, command modules and Relay Insert Panels to minimize handling and subsequent damage during installation
- Easy updates—loading firmware is automated and only requires plugging in a flash memory card and pressing a button
- System can be connected via Ethernet or LumaCAN networks
- All network connections are made with RJ45 connectors and cabling is standard CAT6
- Low Voltage Remote Input Card can be combined with LevNet RF Wireless Self-Powered Solutions to create a wireless hybrid system of inputs
- All programming and configurations are stored on a MicroSD memory card, which eliminates need for non-volatile memory

GreenMAX RELAY CABINETS

- Empty cabinet enclosures ship separately from electronic components making the cabinets lighter and easier to handle and requiring less effort to install
- Empty cabinet also provides unobstructed access to conduit entry points and reduces the risk of damaging electronics
- Relay cabinets can hold 8, 16, 32 and 48 relays, each with unlimited and flexible configuration capabilities. The 0-10VDC dimming and switching relay models can be installed in any available relay slot
- Increased Arc Flash Protection—the cabinet door opens to expose only the low voltage area of the cabinet
- Remote Low Voltage Panels allow the connection points of the low voltage wiring enclosure to be installed closer to the devices it serves, reducing wiring and labor costs and making commissioning or troubleshooting easier
- Takes only eight screws to assemble the internal Relay Insert Panels and command module of a 48-Relay GreenMAX cabinet
- A single relay or group of relays can be separated by sliding an isolation barrier between relays to eliminate the need for an additional cabinet to handle emergency loads

GreenMAX SWITCHES

- Available in 1-, 2-, 4-button and keyswitch configurations
- The GreenMAX digital keyswitch provides solutions for public use areas by preventing unauthorized personnel from turning the switch ON or OFF
- Custom engraved labeling available on switch buttons and screwless wall plates
- Switch colors available: white, light almond, ivory, gray, black and red; all come with a matching wallplate. Keyswitch comes with a stainless steel wallplate and tamper-resistant screws (tool included)
- Each button of the digital switch has a green LED pilot light to report corresponding relay state (No LED on keyswitch)
- Switches can be ganged together in wallboxes (multi-gang wallplate sold separately)
- RJ45 connectors to provide inline connection to the LumaCAN network
- Any 4-button switch model can be configured to control 0-10VDC dimming circuits
- Easy to access port on top of switch provides connectivity for the GreenMAX HDU

GreenMAX RELAY MODULES

- Same physical footprint for 1-pole, 2-pole and dimming latching relays, allowing the optimal mix of relays to be customized for each application
- Self-contained Dimming and Sensing Relay Module in 1-pole configurations features daylight harvesting capabilities
- All four wires required for 0-10VDC dimming ballast wiring connect directly to the module—no additional control board required
- All relays are latching with a manual actuator that allows users to manually bypass the system to turn lights ON or OFF without CPU power
- Relay terminals are connected directly to copper bus for greater strength than soldered circuit board mounted terminals
- Latching relay design retains state during power outages, unlike spring return relays that may change state in absence of processor signal power
- Power supply provides 3-5 second ride-through to maintain processor operation during power loss or brown-outs
- Selective emergency signal response relays may be programmed to turn ON, OFF or ignore an emergency signal from the command module
- The return to closed relay design for 1-pole and 2-pole provides closed contacts on loss of power for emergency response

HANDHELD DISPLAY UNIT (HDU)

- Allows programming, system configuration and scheduling to be done in the space being controlled rather than the electrical room to make commissioning and set-up functions easier
- Configure and control the entire GreenMAX system (or multiple systems) from any convenient network access point—relay cabinet, Remote Low Voltage Panels or digital switches
- Provides interface with all devices and relays in the system
- One Handheld Display Unit (HDU) can be used for multiple systems—manage any GreenMAX system remotely from any network device location
- Communicates via LumaCAN or Ethernet
- Includes four AAA rechargeable batteries that charge when connected to LumaCAN

ORDERING INFORMATION

CAT. NO.	DESCRIPTION
Tubs and Covers (all cabinets are surface mount with a locking door)	
R08TC-100	GreenMAX Relay Cabinet, 8-Relay Size, NEMA 1
R16TC-100	GreenMAX Relay Cabinet, 16-Relay Size, NEMA 1
R32TC-100	GreenMAX Relay Cabinet, 32-Relay Size, NEMA 1
R48TC-100	GreenMAX Relay Cabinet, 48-Relay Size, NEMA 1
Command Modules (includes power supply and main processor unit)	
RPM00-100	Main Command Module, 100-277VAC, no inputs
RPM08-108	Main Command Module with 8-Port Low Voltage Input Card, 100-277VAC, 50/60Hz
RPM16-116	Main Command Module with 16-Port Low Voltage Input Card, 100-277VAC, 50/60Hz
Panel Interiors	
R0800-000	Relay Insert Panel, Empty with (8) Spaces
R1600-000	Relay Insert Panel, Empty with (16) Spaces
R1616-1CB	Relay Insert Panel with (16) 1-Pole RTC Basic Relays
R1616-1TB	Relay Insert Panel with (16) 1-Pole Basic Relays
R1616-2CB	Relay Insert Panel with (16) 2-Pole RTC Relays
R1616-2TB	Relay Insert Panel with (16) 2-Pole Basic Relays
Dimming and Switching Interior	
R1616-1DS	Relay Insert Panel with (16) 1-Pole
Handheld Display Unit (HDU)	
RHDU1-000	Handheld Display Unit, Cabinet Mounting
RHDU1-BKT	Handheld Display Unit, Mounting Bracket Requires 2 Gang Back Box
Remote Inputs with Power Supply (all remote inputs are rated 100-277VAC)	
RLV08-110	Remote Low Voltage Input Cabinet, 8 Inputs, NEMA 1 Enclosure
RLV16-110	Remote Low Voltage Input Cabinet, 16 Inputs, NEMA 1 Enclosure
Relays (all relays are rated 30A, 120-230-277/347VAC, 50/60Hz)	
RELAY-1CB	GreenMAX Latching Relay, 1-Pole RTC Basic
RELAY-1DS	GreenMAX Latching Relay, 1-Pole Dimming and Switching
RELAY-1TB	GreenMAX Latching Relay, 1-Pole Basic
RELAY-2CB	GreenMAX Latching Relay, 2-Pole RTC
RELAY-2TB	GreenMAX Latching Relay, 2-Pole Basic
RELAY-BFM	Blank Filler Module
RGBAR-008	GreenMAX Voltage Barriers for 8 Relay Cabinets
RGBAR-016	GreenMAX Voltage Barriers for 16, 32 and 48 Relay Cabinets

Leviton Manufacturing. Co., Inc. Lighting & Energy Solutions
20497 SW Teton Avenue, Tualatin, OR 97062
Telephone: 1-800-736-6682 • FAX: 503-404-5594 • Tech Line (6:00AM-4:00PM P.S.T. Monday-Friday): 1-800-959-6004

Leviton Manufacturing of Canada, Ltd.
165 Hymus Boulevard, Pointe Claire, Quebec H9R 1E9 • Telephone: 1-800-469-7890 • FAX: 1-800-563-1853

Leviton S. de R.L. de C.V.
Lago Tana 43, Mexico DF, Mexico CP 11290 • Tel. (+52) 55-5082-1040 • www.leviton.com.mx

Visit our Website at www.leviton.com/les

G-8323A/K11-ak
Rev Nov 2011

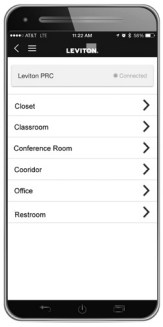
PRODUCT DATA

LEVITON

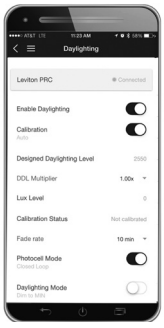
Provolt™ 0-10V Dimming Room Controllers (PRC)

Easy-to-Install Self-Contained Lighting Control Solution

Light Pipe



Easy Multi-Room Application



PRC Daylighting Screen

DESCRIPTION

The Leviton exclusive Provolt™ Room Controllers (PRC) offer high performance, code compliant, advanced room configuration in one easy-to-install device. Installers can download the Provolt Bluetooth Mobile App for quick-and-easy room configuration and testing with any iOS or Android device.

The PRC's features meet advanced design requirements for single room/area dimming applications offering easy configuration and operational testing for single 0-10V manual dimming zone, occupancy sensing, plug load control, partial-ON, partial-OFF, two daylight harvesting zones, area control and demand response.

AUTOMATIC ROOM CONFIGURATION (ARC)

The industry-exclusive enhanced automation feature optimizes lighting by monitoring and adjusting to new technology introduced to a room while preventing interferences to the PRCs signal during the life of the product.

- Initial power-up automatically starts room specific calibration
  - Automatic Daylight Harvesting Calibration (AutoCal)
- Continual room optimization
  - Room behavior and trending data adjusts automatic OFF timer
  - Ultrasonic (U/S) sensor sensitivity adjustments to reduce false ONs and false OFFs
  - U/S processing keeps room lighting operational by detecting other U/S sources and adjusting or shutting lights OFF as required
- Uploading and downloading room configuration templates reduces errors, speeds installation and testing and troubleshooting

FEATURES

- Meets energy code requirements for ASHRAE 90.1, CA Title 24 and IECC
  - Continuous 0-10V dimming control
  - Area control (ON, dim-up,dim-down, OFF) manually dimmable
  - Occupancy sensing auto-ON and Manual-ON
  - Partial-ON
  - Partial-OFF
  - Demand response
- Available in 450 to 2,000 square foot field-of-view units
- Uses U/S (Doppler shift) motion detection gives maximum sensitivity and PIR motion detection and prevents false triggers
- Manual area control available for 3-way/multi-way applications with the Provolt (PLVSW) keypads (must all be same style)
- Manual control for single area dimming (dim both primary and secondary daylighting zones up and down simultaneously)
- AutoCal feature—Digital Daylighting Level (DDL) automatically calibrates photocell to specified lighting design
- Simplified daylight harvesting control of primary and secondary daylighting zones with full range 0-10V dimming
  - Primary zone dimmed up and down from photocell
  - Secondary zone dimmed up and down with offset from primary zone
- Two light pipes are included for both open (angled) and closed loop (flat and angled) daylight harvesting
  - The angled light pipe provides directional fine tuning and alignment to natural light source for closed loop applications
- Ladderless Commissioning™ and programming through Bluetooth-enabled iOS or Android smart devices
- Visual RGB LED indicator for status and troubleshooting

LED READY

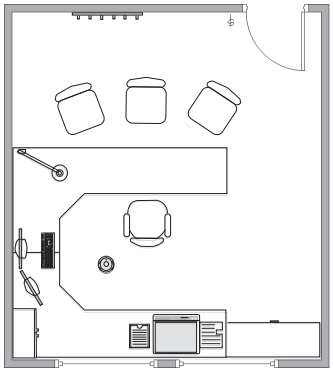
Leviton Manufacturing Co., Inc. Energy Management, Controls and Automation
201 North Service Road, Melville, NY 11747-3138 **tech line** 800-824-3005 **fax** 800-832-9538

LEVITON

FEATURES, Continued

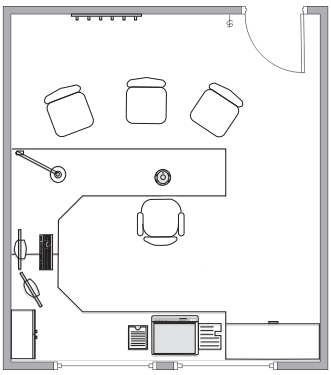
- Easily test room configuration using a smart device as a calibration, measurement and testing tool
- Connect a OPP20 power pack to a two circuit room controller for a plug load control solution
- Industry-exclusive H.I.S. (High Inrush Stability) technology
  - Tested to 1.2 million switching cycles under standard loads
  - Zero-crossing circuitry for extended life of the relay
  - Latching relay provides dependability and robust performance for all load types

PLACEMENT DIAGRAMS



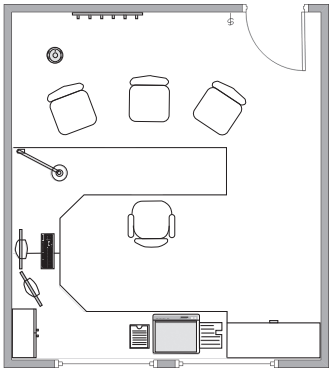
Open Loop Mode

- Angled light pipe
- Mounted within 4 feet of window



Closed Loop Mode

- Flat light pipe
- Mounted 6-8 feet from window or within the primary daylight zone
- Mounted above work surface



Closed Loop Mode

- Angled light pipe angled toward work surface
- Mounted 12 feet of window
- Mounted in location optimized to prevent false occupancy triggers

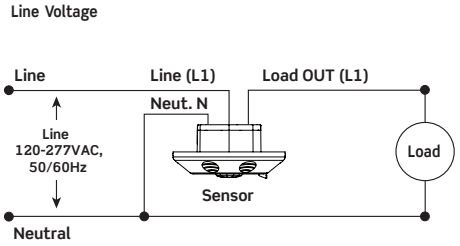
APP FEATURES

Easily download the Provolt Bluetooth Mobile App to an iOS or Android smart device and pair to the PRC using Bluetooth technology.

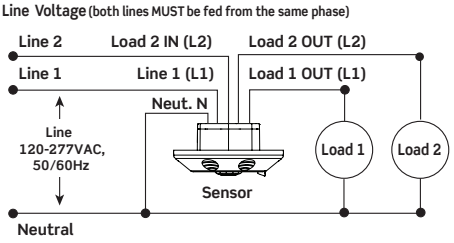
- Create custom templates for easy multi-room replication of room controller settings
- Select between Auto-ON/Auto-OFF and Manual-ON/Auto-OFF
- Enable/disable partial-ON and partial-OFF and set the partial-ON and partial-OFF levels
- Set occupancy sensor time-out
- Set secondary timer for partial-OFF to full-OFF state (infinity by default)
- Set vacancy and secondary timeouts between 30s-30mins
- Enable/disable receptacle/HVAC control for secondary relay
- Set the offset of the secondary daylight zone based off the primary daylight zone
- Initiate field-of-view walk test
- Single-tech and multi-tech selection for either PIR, U/S or Multi-Tech solutions
  - Set PIR or U/S sensitivity independently
- Monitor status of all inputs
  - Integrated occupancy sensor(s)
  - Integrated photocell
  - Local wall keypad
  - Demand response
- Enable 24 hour automatic daylight harvesting calibration
- Daylight harvesting adjustments: open loop, closed loop, increase/decrease DDL, fade rate, dim to min, dim to OFF
- Manually adjust DDL set point to fine tune for room type after auto-configuration
- Over-the-Air (OTA) updates: allows user to update PRC firmware in the field via the App
- Reset to factory defaults

WIRING DIAGRAMS

Single Room Single Daylighting Control



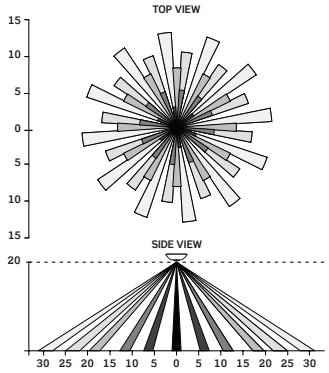
Single Room Multiple Daylighting Control



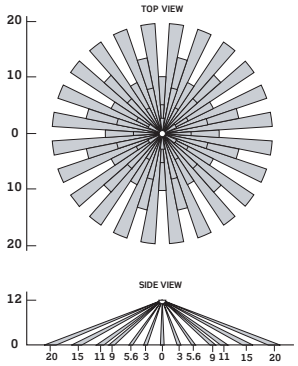
0-10V runs CLASS 1 or CLASS 2 per NEC standards

LEVITON®

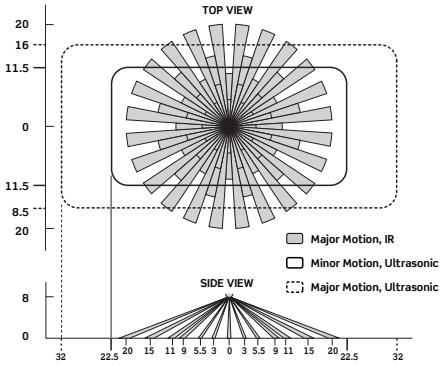
FIELD OF VIEWS



Mid-Range Lens - Red

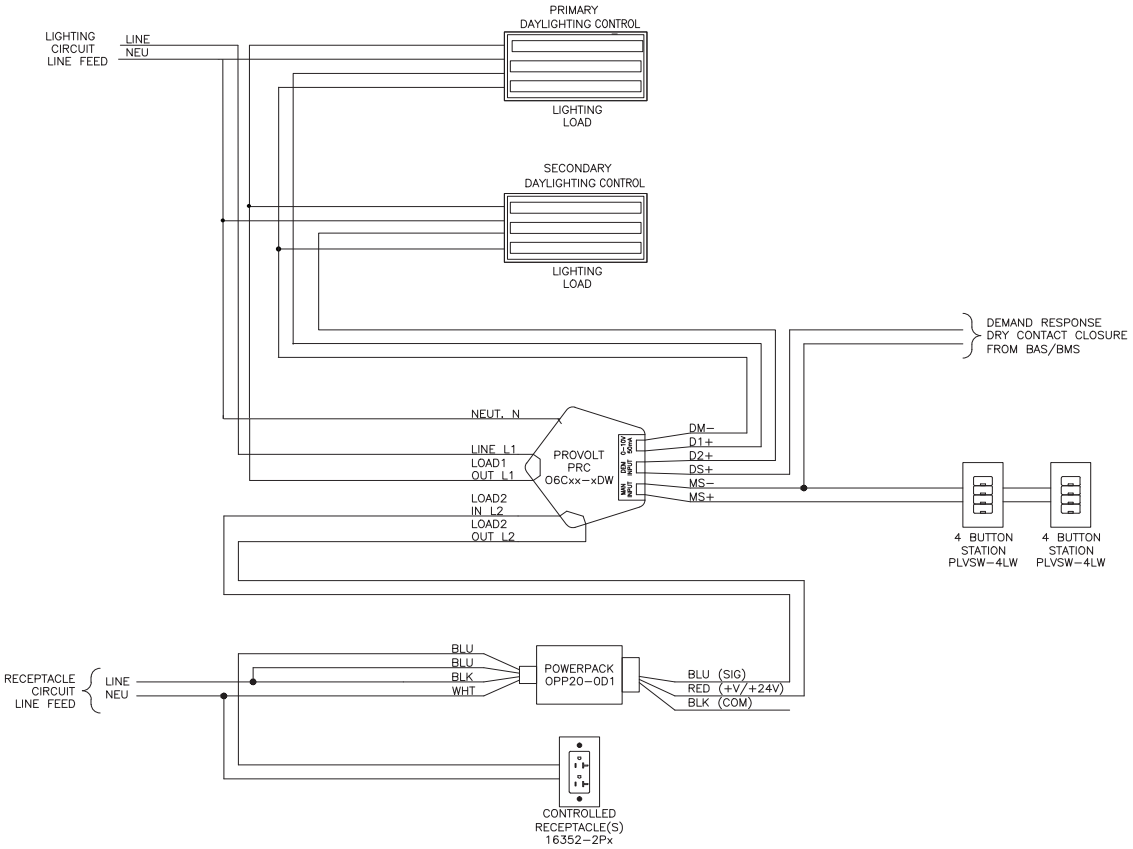


Extended Range - Black



Multi-Tech Models - extended range, black lens

APPLICATION DIAGRAM*



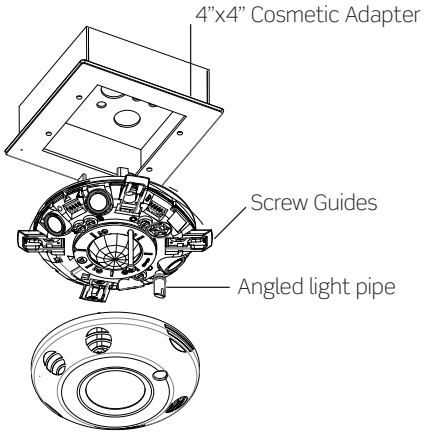
*See the PRC Application Cookbook for additional wiring diagrams.

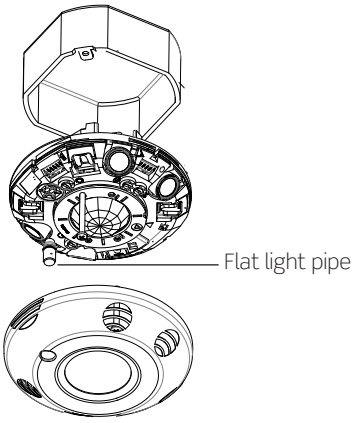
Leviton Manufacturing Co., Inc. Global Headquarters
201 North Service Road, Melville, NY 11747-3138 **tech line** 800-824-3005 **fax** 800-832-9538

LEVITON®

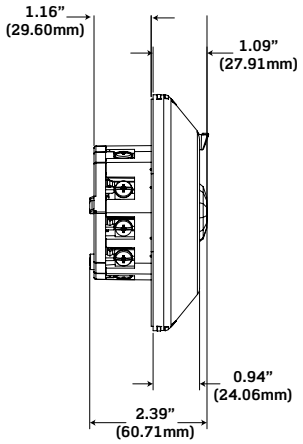
INSTALLATION

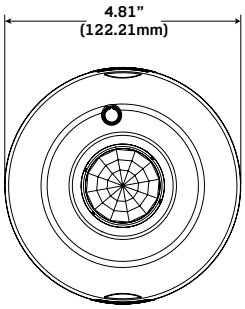
- Easy installation into junction boxes with Leviton-exclusive screw guides, coasters and terminal blocks
- Front cover snaps on and off for ease of installation
- Sensors conveniently mount to a standard 4" x 4" square or octagon electrical box per NEC standards. The square junction box requires a mud ring.
- Color matching via paintable front cover





DIMENSIONS

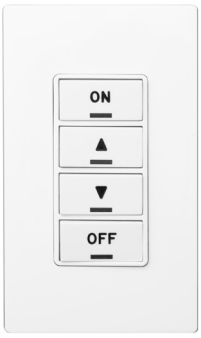




PRC LOW VOLTAGE KEYPADS

PLVSW-1LW

PLVSW-2LW



PLVSW-4LW

Provolt Low Voltage Keypads are available in 1, 2, and 4 button options. See ordering information or the Provolt Low Voltage Keypads Data Sheet for more information.

LEVITON

SPECIFICATIONS

ELECTRICAL		
	120V	**277V**
Input Voltage	120V 50/60Hz	277V 50/60Hz
Current Consumption	8A, Electronic Ballast/LED Driver, 800 W (VA), Tungsten, Ballast, 1/4 HP	5A, Electronic Ballast/LED Driver, 1200W (VA), Ballast, 1/3 HP
Low Voltage Wiring	**Class 2 0-10V Wiring**	
	18 gauge stranded recommended, 0-10V sinking 50mA max	
	Class 2 Low Voltage Wiring	
	18 gauge stranded recommended, maximum wiring: 500 feet total system, 0-28VDC, 2mA-50mA	
GENERAL		
Daylighting Zones	Single and dual zone daylighting available	
Dimming Area Control	Single area control (keypad simultaneously controls primary and secondary daylighting zones)	
Field of View	**PIR**	**U/S**
	450 sqft or 1,500 sqft with included lenses	2,000 sqft
Ultrasonic Frequency	40 Khz	
Photocell	0-200FC (0-2,000 LUX)	
WIRELESS		
Bluetooth	2.4 Ghz, 30ft max	
ENVIRONMENTAL		
Operating Temperature	32 to 104°F (0 to 40°C)	
Storage Temperature	15 to 160°F (-26 to 71°C)	
Relative Humidity	0-90% non-condensing	
OTHER		
Listings	Meets energy code requirements for CA Title 24, ASHRAE 90.1 and IECC, UL 773A (Occupancy Standard), UL 924 (Emergency Equipment), cUL Listed, CE Compliant, NOM Certified, RoHS Compliant, NY LLC48 Compliant	
Warranty	Limited 5-year warranty	

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ORDERING INFORMATION

PROVOLT 0-10V DIMMING ROOM CONTROLLERS	
CAT. NO.	**DESCRIPTION**
O5C20-MDW	Provolt Room Controller, primary daylighting control, ceiling mount, M/T, 2,000sqft, 0-10V DC sinking signal for dimming ballast or LED driver, 120-277V (both lenses included)
O6C20-MDW	Provolt Room Controller, primary and secondary daylighting control, ceiling mount, M/T, 2,000sqft, 0-10V DC sinking signal for dimming ballast or LED driver, 120-277V (both lenses included)
O5C04-IDW	Provolt Room Controller, primary daylighting control, ceiling mount, PIR, 450-1,500sqft, 0-10V DC sinking signal for dimming ballast or LED driver, 120-277V (both lenses included)
O6C04-IDW	Provolt Room Controller, primary and secondary daylighting control, ceiling mount, PIR, 450-1,500sqft, 0-10V DC sinking signal for dimming ballast or LED driver, 120-277V (both lenses included)
Provolt Mobile App	Download for free from Google Play or the Apple App Store
PROVOLT LOW VOLTAGE KEYPADS	
CAT. NO.	**DESCRIPTION**
PLVSW-1LW	Provolt Keypads, 1-button ON/OFF controller for use with Provolt Room Controllers
PLVSW-2LW	Provolt Keypads, 2-button ON/OFF controller for use with Provolt Room Controllers
PLVSW-4LW	Provolt Keypads, 4-button ON/OFF controller for use with Provolt Room Controllers
RDGSW-1Ex*	1-button Color Change Kit (blank)
RDGSW-2Ex*	2-button Color Change Kit (blank)
RDGSW-4Ex*	4-button Color Change Kit (blank)
RDGSW-1Fx*	1-button Custom Engraved Color Change Kit
RDGSW-2Fx*	2-button Custom Engraved Color Change Kit
RDGSW-4Fx*	4-button Custom Engraved Color Change Kit

*Replace x to indicate color: White (W), Ivory (I), Light Almond (T), Gray (G), Black (E) and Red (R). Color change kits are blank and available for custom engraving for button markings.

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G-9661G/J17-aa
REV OCT 2017

LEVITON

GreenMAX® Relay Modules

Offers Latching, Dimming and Daylight Harvesting Capabilities

Standard Relay

Dimming Relay

Metering Relay

DESCRIPTION

The Leviton line of GreenMAX® Relay Modules offers features and performance not available from any competing product on the market today. For increased reliability and durability, GreenMAX Relay Modules have a 25,000A Short Circuit Current Rating (SCCR) at 277VAC. All GreenMAX Relay Modules are 1-pole or 2-pole latching relay types that reduce parasitic energy use. All relay modules are the same physical size, allowing the optimal mix of relays to be customized for each application. Models include a basic control relay module, a Return- To-Closed relay module, and a self-contained 0-10VDC (sinking) dimming relay module featuring daylight harvesting capabilities. The GreenMAX Metering Relays allow energy usage monitoring to each relay in the cabinet. Monitored parameters include: Energy, Apparent Energy, Reactive Energy, Voltage, Current, Power Factor, and Harmonic Distortion.

All relays must be used in a GreenMAX system cabinet.

APPLICATIONS

- Heavy retrofit applications
- New construction projects
- Government facilities
- Office buildings
- Hospitals/medical offices
- Universities
- Restaurants
- Large campuses
- Any other location requiring daylight harvesting and demand response

FEATURES

- All GreenMAX relay modules have a 25,000A at 277VAC Short Circuit Current Rating (SCCR) for increased reliability and durability
- Rated at 30A General Fluorescent Ballast and 20A Incandescent, HID, Electronic Ballast
- Meets energy code requirements for IECC, ASHRAE 90.1 and California Title 24
- All relay models are latching with a manual actuator to reduce parasitic energy waste over NO/NC relays
- Manual actuation lever on all GreenMAX relays allow users to manually turn lights ON or OFF without a CPU or power
- No exposed printed circuit boards or components. The encased plastic housing provides the perimeter of safety. Wire terminations are safely contained within the plastic housing. Wires connect directly to terminators rather than terminals that are soldered to a circuit board, which are prone to breaking connections to the board.
- Self-contained 20A, 0-10VDC (sinking) dimming relay module in 1-pole configurations features daylight harvesting capabilities for compatible fluorescent and LED drivers
- Conductors for the 20A, 0-10VDC (sinking) dimming relay circuit must be run in the Line and Load conductor area in the GreenMAX cabinet. The insulation of these conductors must be in compliance with all applicable electrical codes. The NEC will allow this condition if the insulation of the low voltage wires is rated for the highest voltage available in the compartment.
- Metering relays provide 3% accuracy and are not suitable for revenue grade applications. Data is provided over BACnet through analog output objects and may be aggregated using Leviton's Measurement & Verification products.
- Green and red LED indicators showing ON/OFF status

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LEVITON®

GreenMAX® Relay Modules

SPECIFICATIONS

Environmental

- Ambient Temperature Range: 32-122°F (0-50°C)
- Relative Humidity: < 90% non-condensing

Listings

- UL916, UL508, UL924, cUL, meets energy code requirements for IECC, ASHRAE 90.1 and CA Title 24

Warranty

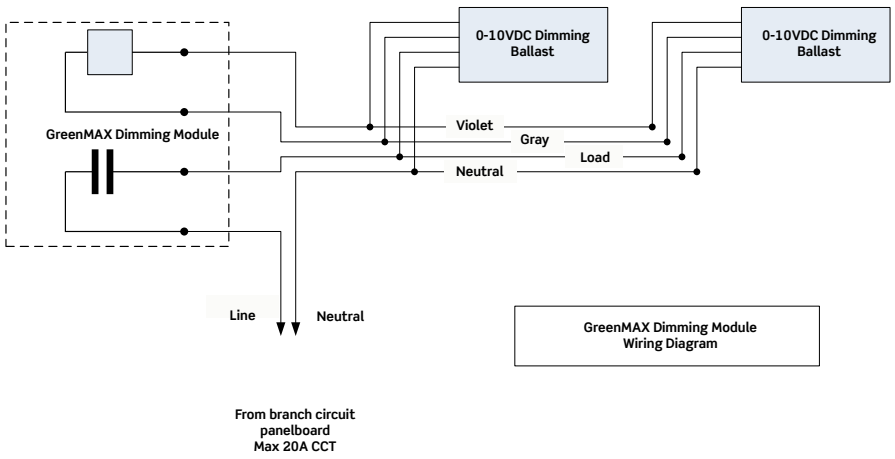
- Relay Modules backed by 10-year warranty

ORDERING INFORMATION

CAT. NO.	DESCRIPTION	LOAD RATINGS
SINGLE POLE RELAYS		
RELAY-1C*	Return to Closed (RTC) Latching Relay	24-277VAC, 347VAC, 20A Tungsten Halogen Incandescent, 20A Electronic Ballast and HID 24-277VAC, 347VAC, 30A Magnetic Ballast, 20A Electronic Ballast, 120VAC 1/2 Hp Motor, 277VAC 1 Hp Motor, 240VAC 1Hp Motor Wire Range: #14 - #6 AWG Copper, Torque 16 in.-lbs. 25,000A SCCR Rating at 277VAC
RELAY-1T*	Latching Relay	24-277VAC, 347VAC, 20A Tungsten Halogen Incandescent, 20A Electronic Ballast and HID 24-277VAC, 347VAC, 30A Magnetic Ballast, 20A Electronic Ballast, 120VAC 1/2 Hp Motor, 277VAC 1 Hp Motor, 240VAC 1Hp Motor Wire Range: #14 - #6 AWG Copper, Torque 16 in.-lbs 25,000A SCCR Rating at 277VAC
RELAY-1D**	Dimming and Switching Latching Relay	24-277VAC, 347VAC, 20A 0-10V (sinking) Dimming Fluorescent and LED Driver Wire Range #14 - #6 AWG Copper, Torque 16 in.-lbs. Control Wire Range: #14 - 12 AWG Copper, Torque 14 in.-lbs. Maximum 0-10VDC (sinking) Dimming control circuit load: 200mA 25,000A SCCR Rating at 277VAC
DOUBLE POLE RELAYS		
RELAY-2CB	Return to Closed (RTC) Latching Relay	208/240/480/600VAC, 20A Tungsten Halogen Incandescent, 20A Electronic Ballast and HID 208/240/480/600, 30A Magnetic Ballast, 20A Magnetic Ballast, 208/240VAC 1Hp Motor Wire Range: #14 - #6 AWG Copper, Torque 16 in.-lbs.
RELAY-2TB	Latching Relay	208/240/480/600VAC, 20A Tungsten Halogen Incandescent, 20A Electronic Ballast and HID 208/240/480/600, 30A Magnetic Ballast, 20A Magnetic Ballast, 208/240VAC 1Hp Motor Wire Range: #14 - #6 AWG Copper, Torque 16 in.-lbs.
RELAY-BFM	Blank Filler Module	-

Replace * with B for Standard Relay or M for Metering Relay
Replace ** with S for Standard Relay or M for Metering Relay

WIRING DIAGRAM



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LEVITON

GreenMAX® Digital Switches

Offers Programming Flexibility

GreenMAX Digital Switches

GreenMAX Key Switch

Leviton GreenMAX® Digital Switches are 100% digital. Specifically designed for use with GreenMAX Relay Control Panels, GreenMAX Digital Switches utilize LumaCAN protocols for unparalleled programming flexibility. All communication and monitoring functions can be performed from any GreenMAX Digital Switch location. Simply connect the GreenMAX Handheld Display Unit (HDU) to any GreenMAX Digital Switch for easy programming and system control of all devices on the GreenMAX network. Available in 1-, 2-, 4-, 8-button and keyswitch configurations, these switches connect using RJ45 connectors and CAT6 cabling. For dimming applications, use 4-button switch with dimming module for control of 0-10V dimming circuits.

APPLICATIONS

- Heavy retrofit applications
- New construction projects
- Government facilities
- Office buildings
- Hospitals/medical offices
- Universities
- Restaurants
- Large campuses
- Any other location where centralized lighting control, programming and monitoring are required

FEATURES

- Models include 1-, 2-, 4-, 8-button and keyswitch configurations
- RJ45 connectors to provide IN and OUT connections to the LumaCAN network
- Complies with energy code requirements for IECC, ASHRAE 90.1 and Title 24 when used with GreenMAX Relay Systems
- Any button can be configured to control 0-10VDC dimming circuits
- Easy-to-access port on top of switch provides connectivity for the GreenMAX HDU
- Custom engraved labeling available on switch buttons and screwless wall plates
  - 1, 2, 4 button: up to 8 characters per two lines of text*
  - 8 button: up to 4 characters per one line of text*
- Install a mix of GreenMAX Relay Panels, Remote Input Cabinets and Digital Switches on a single LumaCAN
- Buttons can be programmed for ON, OFF, ON/OFF, dimmed raise/lower or single zone preset ON level
- Status LED for each button provides true relay status
- Matching screwless single-gang wall plate is supplied and digital switches are compatible with all available Decora® wall plates*
- Mounts in a standard depth wall box. All switches can be installed in a multi-gang application. The multi-gang wall plate is sold separately.
- Use with GreenMAX Relay Systems
- Available in White, Ivory, Light Almond and Gray. Color change kit available for Black and Red buttons (key switch stainless only).
- Draws its power from the LumaCAN
- Keyswitch includes a set of 2 keys, stainless steel wall plate, tamper resistant screws and installation tool*
- Keyswitch is spring return to the center position. Quarter turn of the key functions as a momentary switch input. Key can be removed in the center position only.

*Excluding keyswitch

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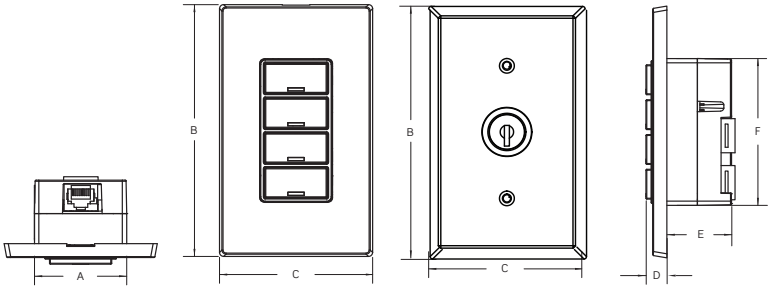
LEVITON

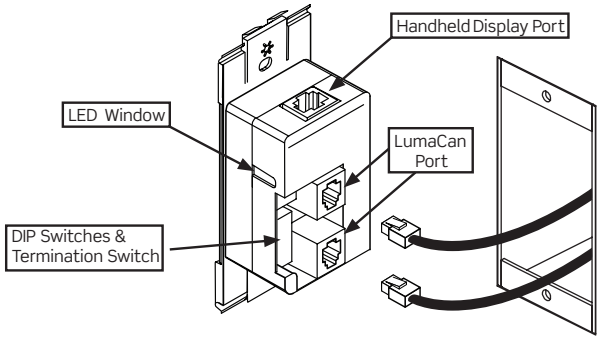
GreenMAX® Digital Switches

DIMENSIONS



	1,2,4,8 Button Switches	Keyswitch
A	1.65" (42.06mm)	1.70" (43.18mm)
B	4.60" (117.07mm)	4.50" (114.30mm)
C	2.75" (69.85mm)	2.75" (69.85mm)
D	0.37" (9.55mm)	0.28" (7.21mm)
E	1.16" (29.51mm)	1.88" (47.88mm)
F	2.68" (68.25mm)	2.70" (68.58mm)

WIRING DIAGRAM



Rear View

SPECIFICATIONS

Electrical
- Input Power: 24VDC (LumaCAN integral)
- Consumption: 1 Unit Load = 25mA (max)
- Connectors: RJ45
- Class 2
- Cables: CAT6

Environmental
- Ambient Temperature Range: 32 - 122°F (0 - 50°C)
- Relative Humidity: <90% non-condensing

Listings
- Complies with energy code requirements for IECC, ASHRAE 90.1 and Title 24

Warranty
- Limited 2-Year Warranty

ORDERING INFORMATION

CAT. NO.*	DESCRIPTION
RDGSW-1Cx	GreenMAX Digital Switch, 1-Button, LumaCAN3 (includes single gang wallplate)
RDGSW-2Cx	GreenMAX Digital Switch, 2-Button, LumaCAN3 (includes single gang wallplate)
RDGSW-4Cx	GreenMAX Digital Switch, 4-Button, LumaCAN3 (includes single gang wallplate)
RDGSW-8CW	GreenMAX Digital Switch, 8-Button, LumaCAN3 (includes single gang wallplate), Color: White
RDGSW-1K3	GreenMAX Keyswitch (includes single gang Stainless Steel wallplate)**
RDGSW-1Ey	GreenMAX 1 Button Color Change Kit (includes single gang wallplate)
RDGSW-2Ey	GreenMAX 2 Button Color Change Kit (includes single gang wallplate)
RDGSW-4Ey	GreenMAX 4 Button Color Change Kit (includes single gang wallplate)
RDGSW-8Ey	GreenMAX 8 Button Color Change Kit (includes single gang wallplate)
RDGSW-1Fy	GreenMAX 1 Button Color Change Kit with Engraving (includes single gang wallplate)
RDGSW-2Fy	GreenMAX 2 Button Color Change Kit with Engraving (includes single gang wallplate)
RDGSW-4Fy	GreenMAX 4 Button Color Change Kit with Engraving (includes single gang wallplate)
RDGSW-8Fy	GreenMAX 8 Button Color Change Kit with Engraving (includes single gang wallplate)

* Replace x to indicate color: (W) = White, (I) = Ivory, (T) = Light Almond, (G) = Gray
Replace y to indicate color: (W) = White, (I) = Ivory, (T) = Light Almond, (G) = Gray (R) = Red, (E) = Black
ARRA compliant models available - consult factory for availability
** Stainless steel wallplate cannot be engraved. Multi-gang keyswitch order requires a custom wallplate

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GreenMAX®
Programming Manual
Daylight Harvesting and Dimming Module




Built by the industry, for the industry.

GreenMAX Programming Manual

Daylight Harvesting and Dimming Module

V2.14

INDEX **PAGE**

FILENAME
GREENMAX DIMMING AND DAYLIGHT HARVESTING MANUAL V2.14D.VSD

Section 1

Behavior Descriptions and Settings

B1 – Dimming with Manual Control and Auto Off

Operation Description

1. Occupancy Sensor will, upon vacancy, turn Off the lights after delay period expires.
2. Manual operation of dimming module. Switch buttons can be configured for ON/Bright/Dim/OFF function.
3. The Bright and Dim buttons provide fade Up/Down control of the light level.

-- B1 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Dim DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Off DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group

**Range 0 to 100%. A complete Off of relay is represented by 0%.*
***This value is set to created a timed switch button. Time will start when the button is pressed. When this time expires, lights will fade to Off.*

Occupancy Sensor

Device Type	Description	Initial Level	Delay	Override	Assign to
Occupancy Sensor	*Enter as required*	*Ignore*	*Set to a value** *Range 0 to 256*	'N/A'	Relay *or* Group

**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. This behavior can be used with any quantity of buttons and is not exclusive to the 4 button Switch.
3. This behavior can utilize either a Digital switch or a Low Voltage switch button.
4. There is no photocell involved with this behavior.
5. Switch buttons can be configured as Timed Switch buttons.
6. The Occupancy Sensor will turn the lights Off only.

B2 – Dimming with Manual Control and Auto ON/Off

Operation Description

1. Occupancy Sensor will, upon occupancy, turn On the lights to the configured Initial Level.
2. Manual operation of dimming module. Switch buttons can be configured for ON/Bright/Dim/OFF function.
3. The Bright and Dim buttons provide fade Up/Down control of the light level.
4. Occupancy Sensor will, upon vacancy, turn Off the lights after delay period expires.

-- B1 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Dim DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Off DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group

**Range 0 to 100%. A complete Off of relay is represented by 0%.*
***This value is set to created a timed switch button. Time will start when the button is pressed. When this time expires, lights will fade to Off.*

Occupancy Sensor

Device Type	Description	Initial Level	Delay	Override	Assign to
Occupancy Sensor	*Enter as required*	*Set to a value*** *Range 0 to 100%*	*Set to a value** *Range 0 to 256*	'N/A'	Relay *or* Group

**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself*
***This is percentage of output of the 0-10VDC module*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. This behavior can be used with any quantity of buttons and is not exclusive to the 4 button Switch.
3. This behavior can utilize either a Digital switch or a Low Voltage switch button.
4. There is no photocell involved with this behavior.
5. Switch buttons can be configured as Timed Switch buttons.
6. The Occupancy Sensor will turn the lights both On and Off.
7. The lights will fade from level to level including both On and Off.

B3 – Dimming with Auto ON/OFF

Operation Description

1. Occupancy Sensor will, upon occupancy, turn On the lights to the configured Initial Level.
2. Occupancy Sensor will, upon vacancy, turn Off the lights after delay period expires.

-- B3 – DEVICE SETTINGS --						
	Device Type	**Description**	**Initial Level**	**Delay**	**Override**	**Assign to**
Occupancy Sensor	Occupancy Sensor	*Enter as required*	*Set to a value*** *Range 0 to 100%*	*Set to a value** *Range 0 to 256*	'N/A'	Relay *or* Group
		**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself* ***This is percentage of output of the 0-10VDC module*				

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. There are no photocells or switches involved with this behavior.
3. The Occupancy Sensor will turn the lights both On and Off.
7. The lights will fade between On and Off.

B4 – Dimming with Manual ON/Bright/Dim/OFF

Operation Description

1. Manual operation of dimming module.
2. Switch buttons can be configured for ON/Bright/Dim/OFF function.
3. The Bright and Dim buttons provide fade Up/Down control of the light level.

-- B4 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Dim DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Off DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group

**Range 0 to 100%. A complete Off of relay is represented by 0%.*
***This value is set to created a timed switch button. Time will start when the button is pressed. When this time expires, lights will fade to Off.*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. This behavior can be used with any quantity of buttons and is not exclusive to the 4 button Switch.
3. This behavior can utilize either a Digital switch or a Low Voltage switch button.
4. There is no photocell or occupancy sensor involved with this behavior.
5. Switch buttons can be configured as Timed Switch buttons.

B6 – Dimming ON Command

Operation Description

1. Turn On at a specific time.

-- B6 – DEVICE SETTINGS --
No devices required

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. There are no photocells, occupancy sensors, or switches involved with this behavior.

B7 – Dimming OFF Command

Operation Description

1. Turn Off at a specific time.

-- B7 – DEVICE SETTINGS --
No devices required

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. There are no photocells, occupancy sensors, or switches involved with this behavior.

B8 – Dimming with Auto ON/OFF and Light Hold Off

Operation Description

1. Occupancy Sensor will, upon occupancy, turn On the lights to the configured Initial Level.
2. Occupancy Sensor will, upon vacancy, turn Off the lights after delay period expires.
3. System monitors Photocell input signal and compares it to the Photocell Target Level. Lights will turn Off or will be held Off above the Target Level. Below the Target Level, lights will be permitted to turn On.

-- B8 – DEVICE SETTINGS --

Occupancy Sensor

Device Type	Description	Initial Level	Delay	Override	Assign to
Occupancy Sensor	*Enter as required*	*Set to a value** Range 0 to 100%*	*Set to a value* Range 0 to 256*	'N/A'	Relay *or* Group

**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself*
***This is percentage of output of the 0-10VDC module*

Photocell

Device Type	Description	Daylight Harvesting Speed	Deadband	Artificial Zero	Target Level	Assign to
Closed Loop	*Enter as required*	Ignore	*Set to a value 10% is typical*	'Disabled'	*Set to required**	Relay *or* Group

** Target level is percentage of photocell input range and is the desired measured light level in the space*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. There is no switch involved with this behavior.
3. The Occupancy Sensor will turn the lights both On and Off if the light level is below the Photocell Target Level.
7. The lights will fade between On and Off.

B9 – Dimming with Manual ON/Bright/Dim/OFF, Auto OFF and Light Hold Off

Operation Description

1. Occupancy Sensor will turn OFF lights with vacany detection after delay period expires.
2. Switch buttons can be configured for ON/Bright/Dim/OFF function. The Bright and Dim buttons provide fade Up/Down control of the light level.
3. System monitors Photocell input signal and compares it to the Photocell Target Level. Lights will turn Off or will be held Off above the Target Level. Below the Target Level, lights will be permitted to turn On.

-- B9 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Dim DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Off DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group

**Range 0 to 100%. A complete Off of relay is represented by 0%.*
***This value is set to created a timed switch button. Time will start when the button is pressed. When this time expires, lights will fade to Off.*

Occupancy Sensor

Device Type	Description	Initial Level	Delay	Override	Assign to
Occupancy Sensor	*Enter as required*	*Ignore*	*Set to a value** *Range 0 to 256*	'N/A'	Relay *or* Group

**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself*

Photocell

Device Type	Description	Daylight Harvesting Speed	Deadband	Artificial Zero	Target Level	Assign to
Closed Loop	*Enter as required*	Ignore	*Set to a value 10% is typical*	'Disabled'	*Set to required**	Relay *or* Group

** Target level is percentage of photocell input range and is the desired measured light level in the space*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. This behavior can be used with any quantity of buttons and is not exclusive to the 4 button Switch.
3. This behavior can utilize either a Digital switch or a Low Voltage switch button.
3. The Occupancy Sensor will turn the lights Off.
7. The lights will fade between On and Off.

B10 – Daylight Harvesting with Photocell, Manual ON/Bright/Dim/OFF, Auto ON/OFF

Operation Description

1. Occupancy Sensor will turn On lights with detection of Area occupancy. Vacancy will turn Off the lights after delay period expires.
2. Switch buttons can be configured for ON/Bright/Dim/OFF function. The Bright and Dim buttons provide a temporary manual override of the light level. The duration of the manual override is configurable.
3. The Photocell Target Level drives the daylight harvesting by continuously measuring the light level and adjusting the output of the Dimming Module accordingly.

-- B10 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Ignore*	'N/A'	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Ignore*	'N/A'	*Set to a value* Range 0 to 256*	Relay *or* Group
Dim DS Button	*Enter as required*	*Ignore*	'N/A'	*Set to a value* Range 0 to 256*	Relay *or* Group
Off DS Button	*Enter as required*	*Ignore*	'N/A'	'N/A'	Relay *or* Group

**The Override time represents the length of time the temporary manual override of the photocell Target Level will be in effect. Pressing these buttons will initialize the override by increasing or decreasing the light level.*

Occupancy Sensor

Device Type	Description	Initial Level	Delay	Override	Assign to
Occupancy Sensor	*Enter as required*	*Ignore*	*Set to a value* Range 0 to 256*	'N/A'	Relay *or* Group

**This Delay setting is the typical occupancy sensor delay before lights will turn off. It is in addition to the value set in the device itself*

Photocell

Device Type	Description	Daylight Harvesting Speed	Deadband	Artificial Zero	Target Level	Assign to
Closed Loop	*Enter as required*	'Fast'	*Set to a value 10% is typical*	'Disabled'	*Set to required**	Relay *or* Group

** Target level is percentage of photocell input range and is the desired measured light level in the space*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. The Closed Loop photocell is the best suited for this application.
3. The Target Level of the photocell drives the Daylight Harvesting.
4. The system monitors the input value from the photocell and compares it to the photocell Target Level. If the input value is below the Target Level the DS relay module will increase output. If the input level is above the target Level, the DS relay module will decrease output.
5. The Daylight Harvesting Speed setting will determine the speed of response from the system for changes in light levels. There are three settings; Fast, Slow, test.
6. When the occupancy sensor turns on the relay in response to someone entering the Area, the lights will fade up to the Photocell Target Level or the last known level if a manual override is still in effect.
7. All of the devices listed above must be configured for this Behavior to operate properly.

B11 – Dimming with Manual ON/OFF and Light Hold Off

Operation Description

1. Switch buttons can be configured for ON/Bright/Dim/OFF function. The Bright and Dim buttons provide fade Up/Down control of the light level.
3. System monitors Photocell input signal and compares it to the Photocell Target Level. Lights will turn Off or will be held Off above the Target Level. Below the Target Level, lights will be permitted to turn On.

-- B11 – DEVICE SETTINGS --

Switch Button Settings

Button Type	Description	Initial Level	Delay	Override	Assign to
On DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Bright DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Dim DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group
Off DS Button	*Enter as required*	*Set to a value**	*Set to a value***	'N/A'	Relay *or* Group

**Range 0 to 100%. A complete Off of relay is represented by 0%.*
***This value is set to created a timed switch button. Time will start when the button is pressed. When this time expires, lights will fade to Off.*

Photocell

Device Type	Description	Daylight Harvesting Speed	Deadband	Artificial Zero	Target Level	Assign to
Closed Loop	*Enter as required*	Ignore	*Set to a value 10% is typical*	'Disabled'	*Set to required**	Relay *or* Group

** Target level is percentage of photocell input range and is the desired measured light level in the space*

NOTES

1. This Dimming Behavior applies only to the Dimming and Sensing relays.
2. This behavior can be used with any quantity of buttons and is not exclusive to the 4 button Switch.
3. This behavior can utilize either a Digital switch or a Low Voltage switch button.
3. There is no Occupancy Sensor involved with this behavior.
7. The lights will fade between On and Off.

Section 2

Programming Details

B4 Dimming with Manual Control - Programming Overview

This section will present the typical steps required to program a GreenMAX system to provide Dimming functionality.

The fundamental components required for Dimming control are:

- GreenMAX Dimming and Switching Relay Modules – RELAY-1DS
- 4 Button Switch - either Low Voltage or Digital

Office Dimming Schedule

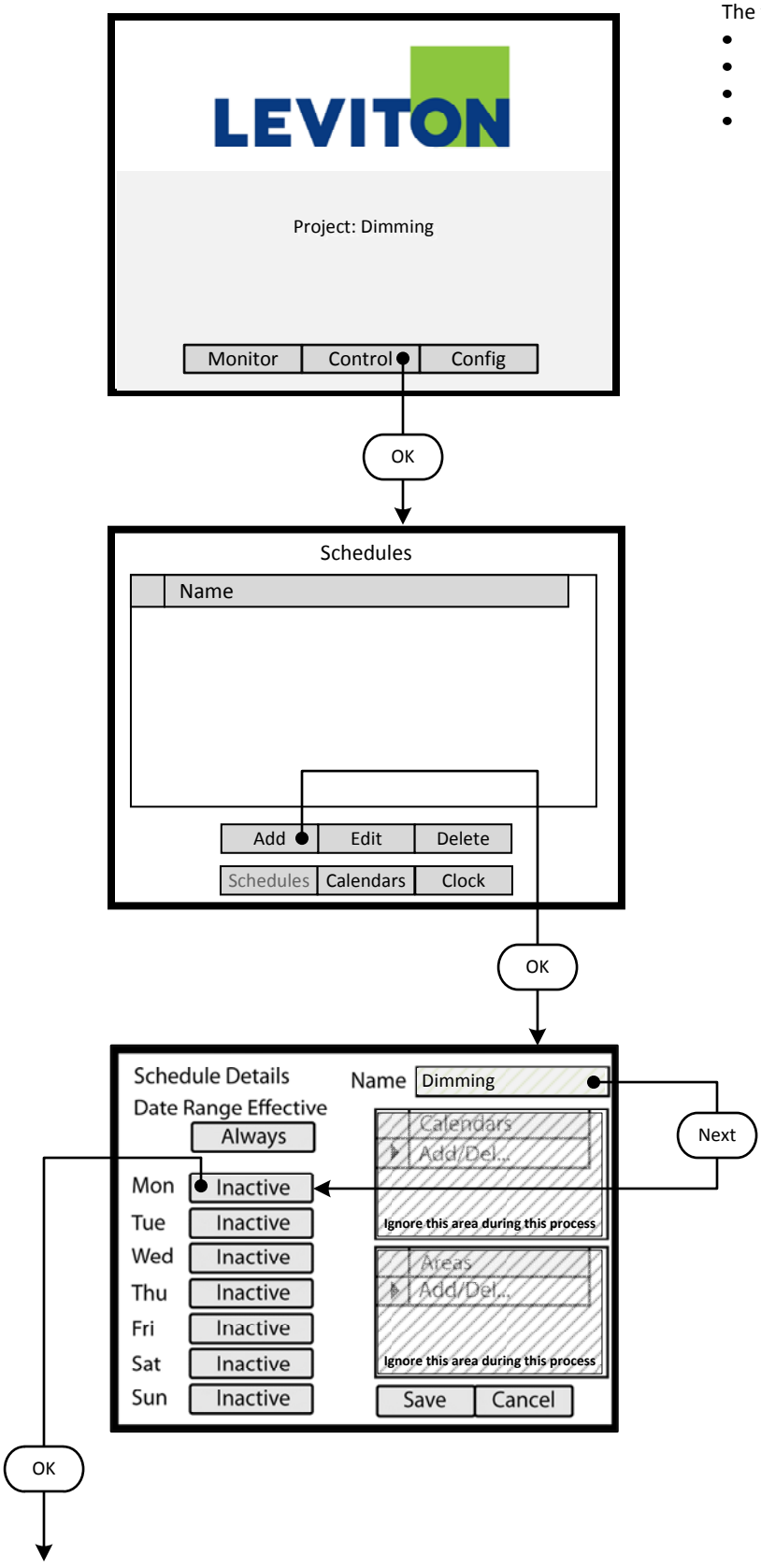
Monday to Sunday

8:00am	Office Dimming	B4 Lights will be controlled by: Switch Buttons (4): On Button – turn ON at 80% Bright Button Dim Button Off Button
5:00pm	OFF sweep	B7 Lights will be turned OFF

Programming Checklist

- ❑ Create a schedule.
- ❑ Configure switch buttons. (On/Bright/Dim/Off)
- ❑ Create an Area.
- ❑ Assign a schedule to an Area.
- ❑ Add relays to Area.
- ❑ Add switch buttons to area.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1: Create a Schedule

Programming operation of the GreenMAX is based on running Schedules. A Schedule can be considered a default seven (7) day pattern of operation.

The following rules apply:

- An Area requires a Schedule to operate.
- Only one Schedule can be assigned to an Area.
- A Schedule can be assigned to multiple Areas.
- Schedules reside in the GreenMAX system and can be accessed through the Handheld Display Unit (HDU).

Step 1.1

To create a Schedule, enter the <**Control**> section of the Handheld Display Unit (HDU) software.

Understanding the Screen
There are three sections of the HDU software. The sections under the buttons are:
<**Monitor**> - *Used to check the system time/date, relay status*
<**Control**> - *Access Scheduling*
<**Config**> - *Configuration of system including set-up of Areas*

Step 1.2

The first <**Control**> HDU screen lists the existing Schedules available in your GreenMAX System. The screen shown indicates that there are no Schedules available or created.

By navigating to <**Add**> and pressing OK, this will initiate the creation of a Schedule.

Other Options
To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Edit**> *and press OK, to initiate the modification of the selected Schedule.*

To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Delete**> *and press OK, to erase the selected Schedule.*

Step 1.3

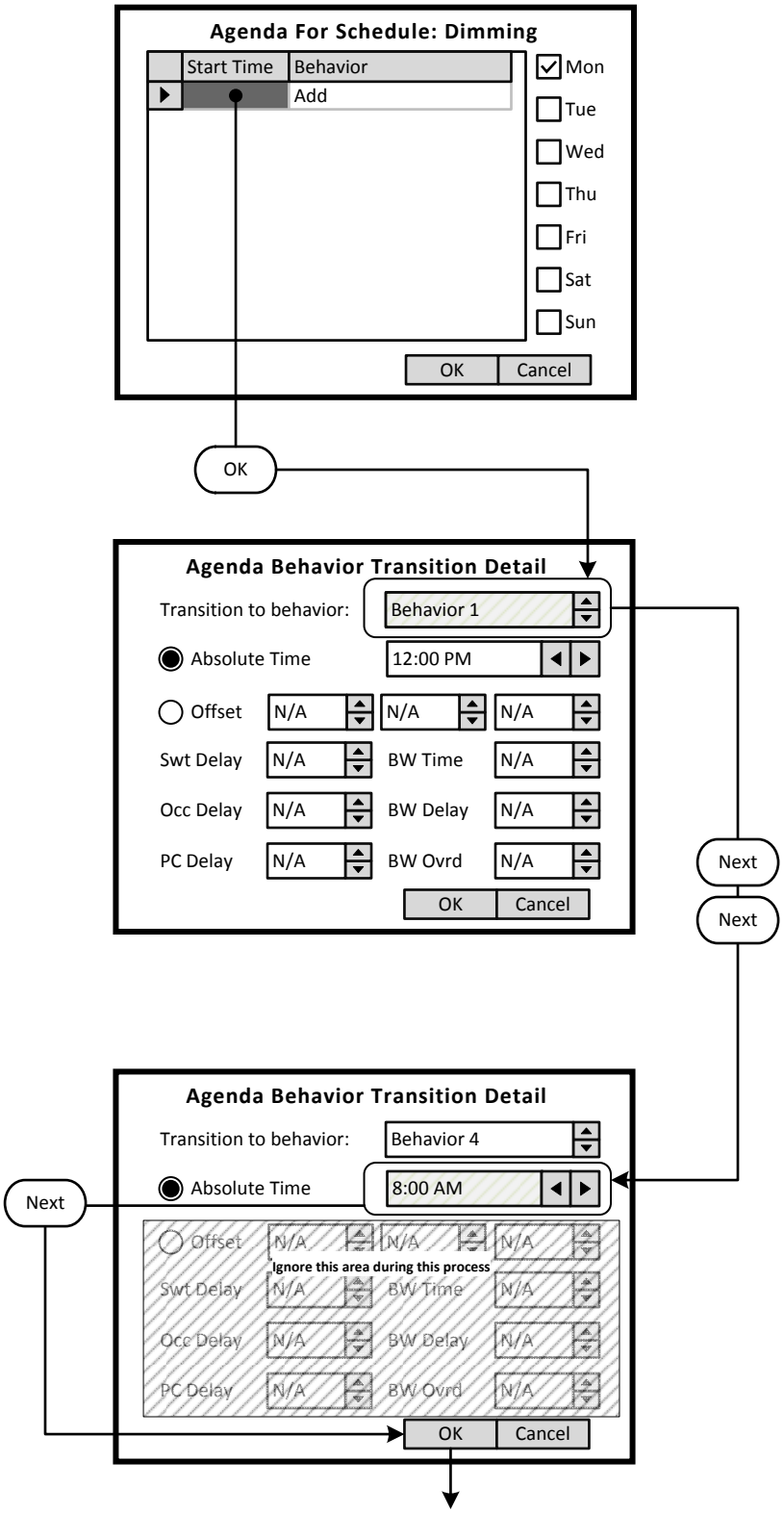
The screen is entered with the -**Name**- field highlighted. Enter the desired name of your Schedule using the alpha numeric keypad of the HDU. When complete, press the NEXT button on the navigation keypad. The cursor will advance to the <**Monday**> button.

Understanding the Screen
The label value of "Inactive" shown on the <**Monday**> *button indicates that there is currently no Behavior transitions programmed for this day. The same is true for all days, Monday through Sunday, of this schedule.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.4

The screen is entered at the first line of the Agenda. There are a total of 24 Behavior Transition times available per day. Clicking OK will advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
*<**OK**> - Will save the settings or changes*
*<**Cancel**> - Will discard the changes*

Step 1.5

The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 4.

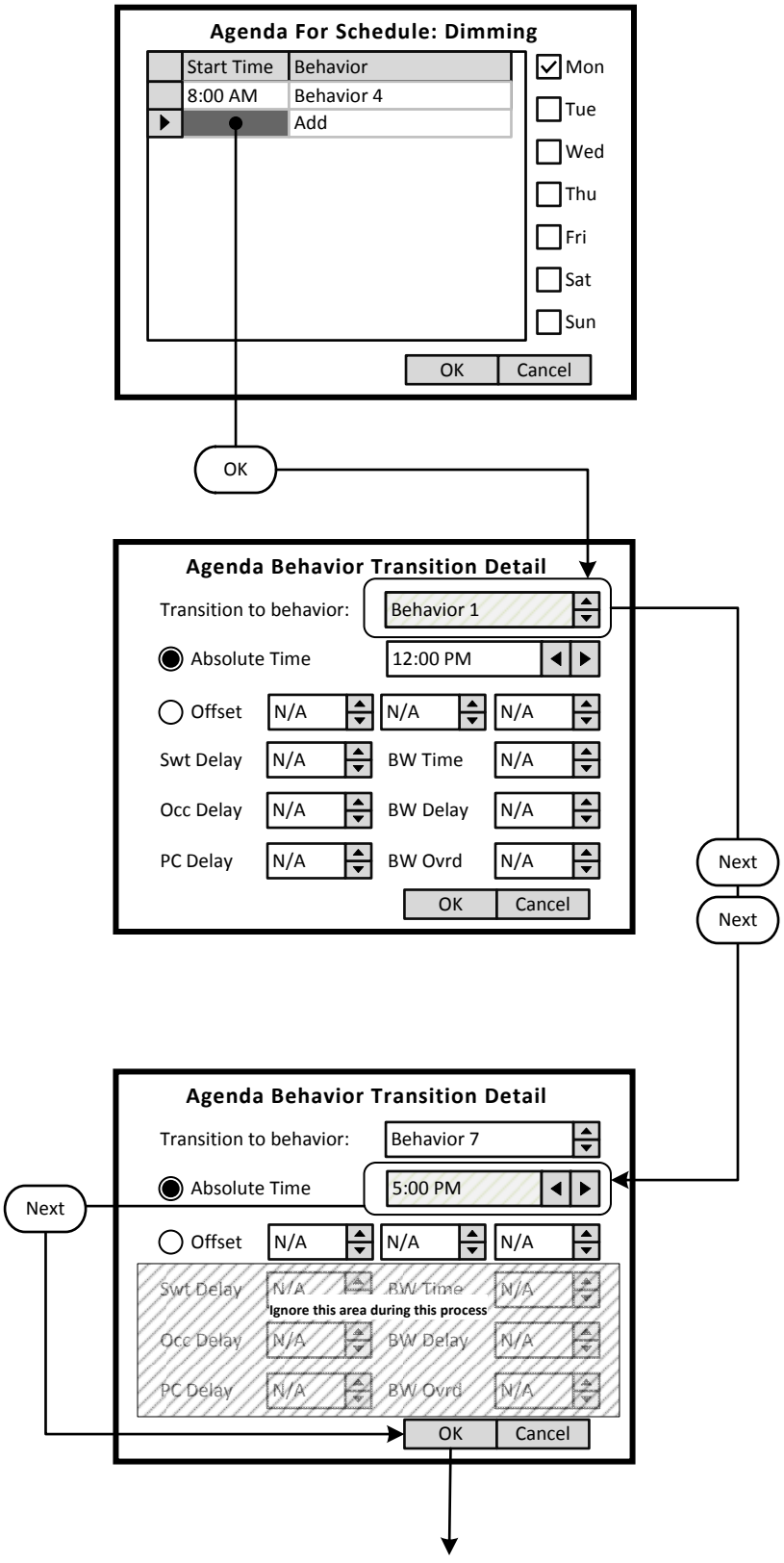
Understanding the Screen
<**Offset**> *provides access to Sunrise and Sunset settings for Astronomical clock times.*
-**BW Time**-, -**BW Delay**-, -**BW Ovrd**- - *These are the Blinkwarn settings that apply to this Behavior Transition only. They will override the Global Blinkwarn Settings set in the System Settings section.*

Step 1.6

Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 8:00 AM.

Understanding the Screen
*-**Swt Delay**- is used if the switch in the associated Area is to function as a Timed Off switch. This is the amount of time the lights will stay On after a button press, and before they will turn Off.*
*-**Occ Delay**- This is the amount of time the lights will stay On after the occupancy sensor does not detect occupancy and before they will turn Off.*
*-**PC Delay**- This is the amount of time the lights will stay On after the photocell trigger point is exceeded and before they will turn Off.*

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



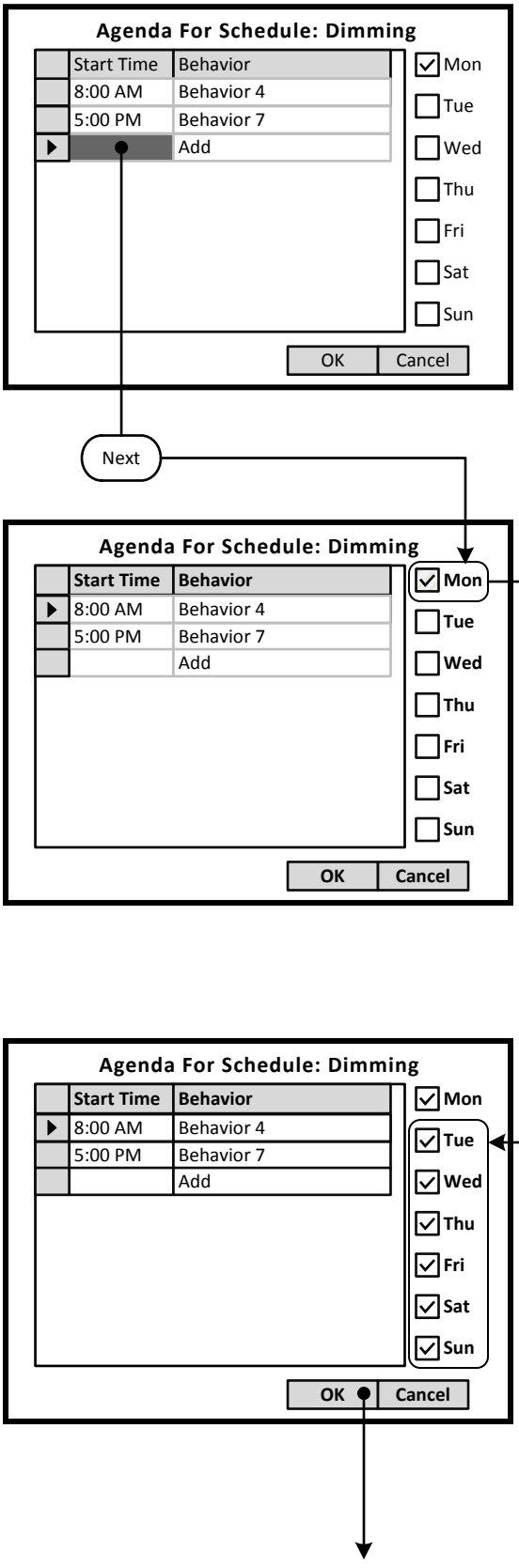
Step 1.7
Navigate to the Add line of the list, in this case the second line. Click OK to advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 4 will occur Monday at 8:00 AM.

Step 1.8
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 7 (OFF).

Step 1.9
Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 5:00 PM. When complete, use the NEXT button to navigate to the **<OK>** on screen button.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.10
To apply this Agenda or pattern of Behavior to each day of the week press Next to advance to the Day column.

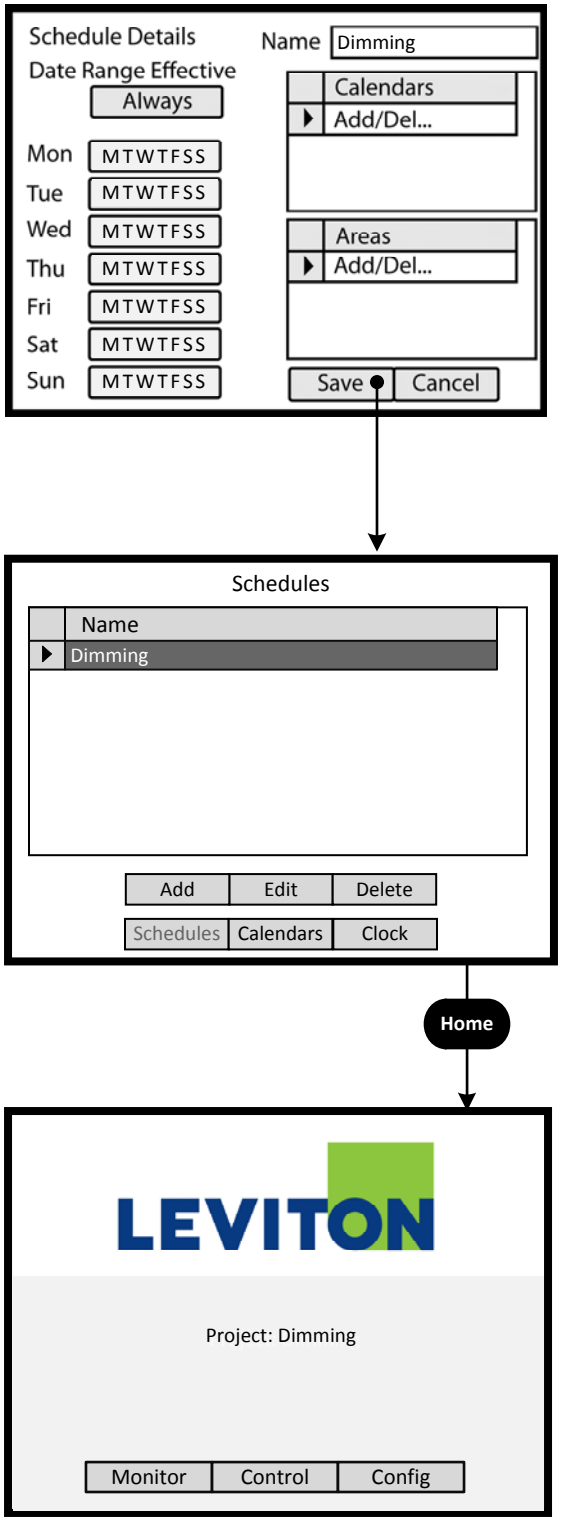
Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 4 will occur Monday at 8:00 AM.
A transition to Behavior 7 will occur Monday at 5:00 PM.

Step 1.11
Press Next to the -**Tuesday**- check box.
Press -**OK**- to check the box, this will add Tuesday to the active list.

Step 1.12
Use a combination of the NEXT and OK to fill in the Tuesday through Sunday check boxes.

Understanding the Screen
This Agenda only applies to Monday through Sunday.
A transition to Behavior 4 will occur each day at 8:00 AM.
A transition to Behavior 7 will occur each day at 5:00 PM.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.13
To save the Schedule, press the NEXT button on the navigation keypad to advance to the <**Save**> button.

Understanding the Screen
The label value of "MTWTFSS -" on the <**Monday>** *through* <**Sunday**> *indicates that the same Agenda applies to each of these days.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

Step 1.14
There is only one Schedule available in the system for the dimming pattern of behavior.

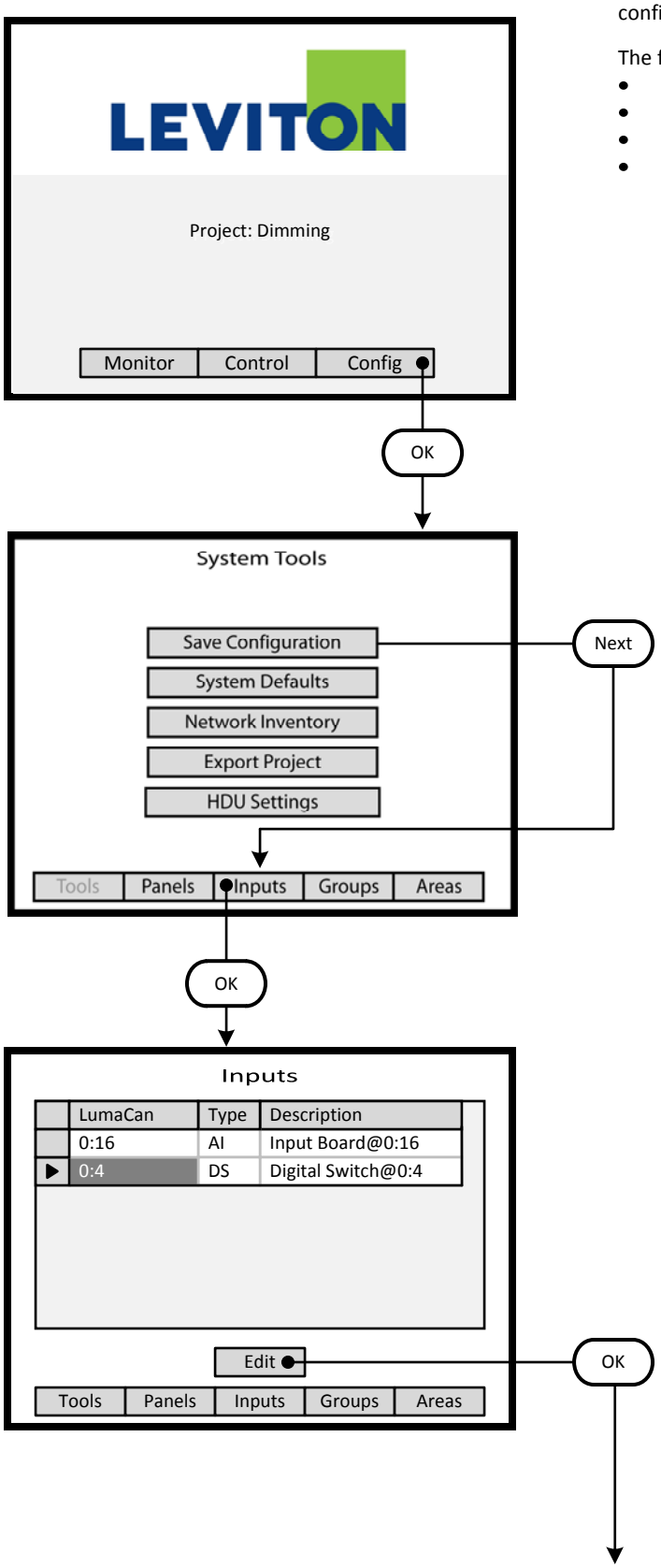
To navigate to the Home screen press the HOME button.

Other Options
To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <***Edit***> *and press OK, to initiate the modification of the selected Schedule.*

To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <***Delete***> *and press OK, to erase the selected Schedule.*

To adjust the system clock, navigate to <***Clock***> *and press OK.*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2: Configure Devices

The GreenMAX can be configured to handle a wide variety of input devices. These devices operate at +24vdc and are wired to an input terminal on the Low Voltage (AI) board. Each terminal port must be configured to match the device and its expected functionality.

The following Low Voltage input devices can be connected to the system:

- Occupancy sensors.
- Photocells.
- Switches.
- Contact closures.

Step 2.1

The configuration steps of the Low Voltage Input Card is performed in the <**Config>** section of the HDU software.

Understanding the Screen

There are three sections of the HDU software. The other two sections under the buttons are:
*<**Monitor**> - Used to check the system time, relay status*
*<**Control**> - Access Scheduling*

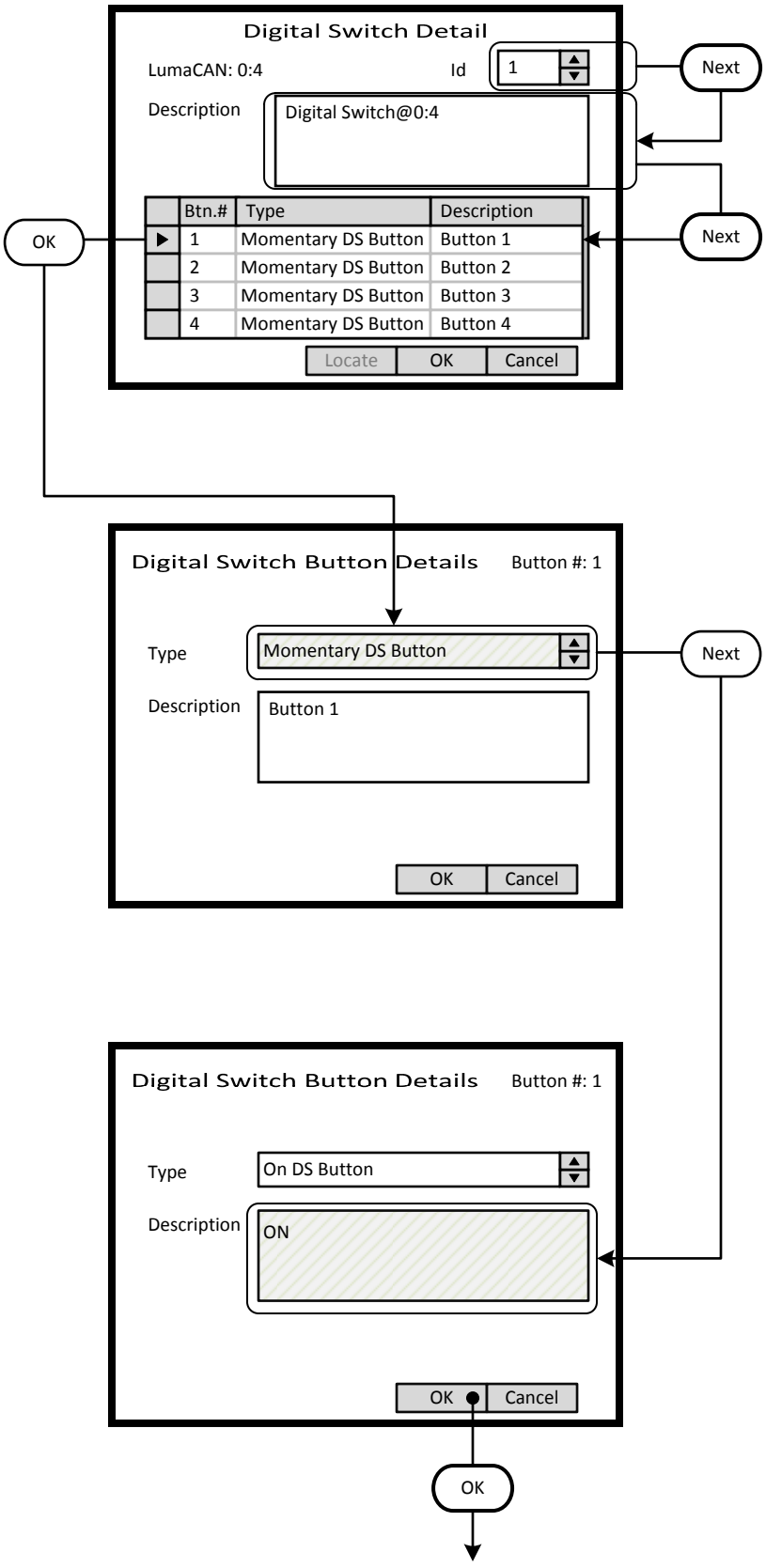
Step 2.2

Use a combination of the UP and DOWN arrows as well as the NEXT button to navigate to the <**Inputs**> onscreen button. Press OK to select.

Step 2.3

The **Inputs** listing shows a Digital Switch at LumaCan ID 4. This is a 4 button Digital Switch to be used for Dimming control. Highlight the device and move the indicator to the appropriate device line. Use the UP and DOWN arrows to move about the list. Use NEXT to navigate to the <**Edit**> button.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.4

The **Digital Switch Detail** screen provides an ID setting for informational purposes. This can match the switch number on the building floor plan. For this exercise this will be set to 12.

A switch -**Description**- field is provided that can be filled with a maximum of 25 characters of information.

Button function must be configured. Highlight the Button number and press OK to enter the editing screen.
These fields fill the list on the previous screen.

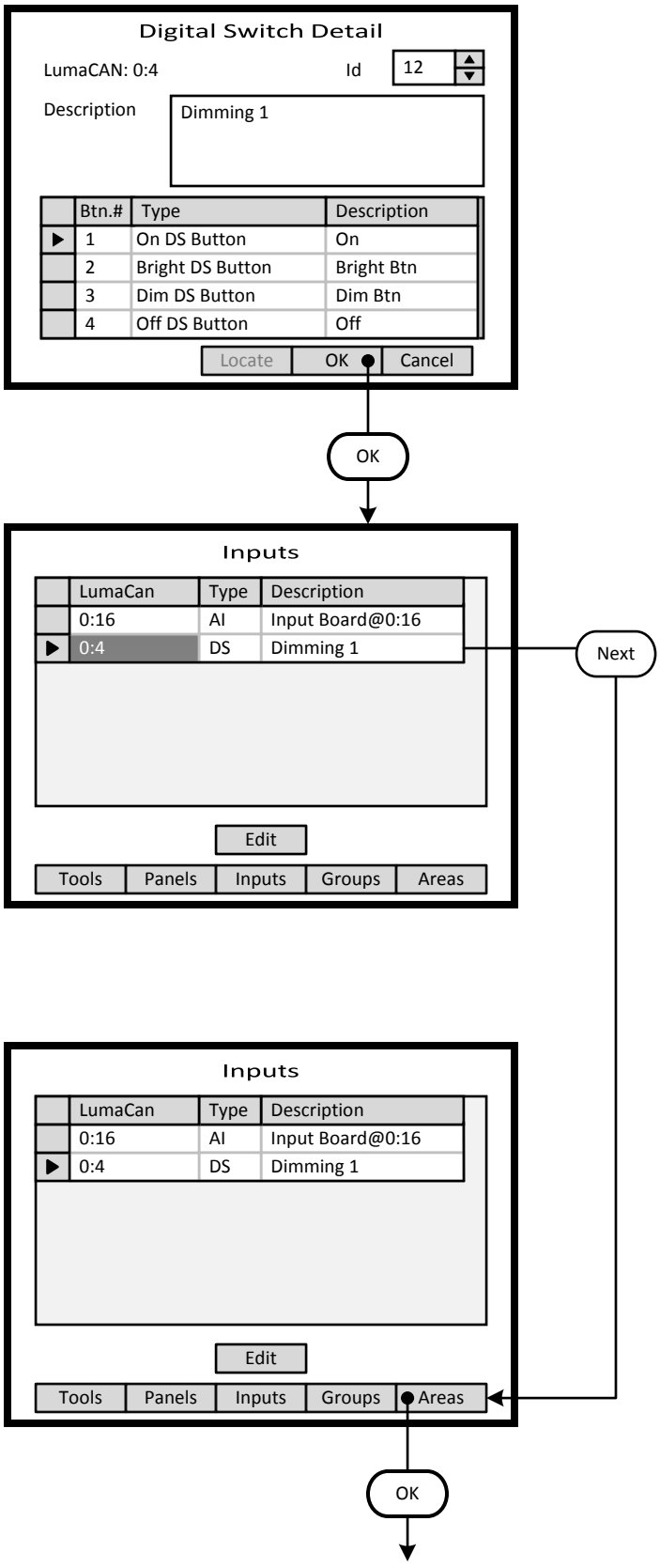
Use the UP or DOWN arrows on the keypad to navigate up or down the list.

Step 2.5

The Digital Switch Button Details screen is used to configure the individual button function and to name the button. Use the UP and DOWN arrows on the keypad to display the desired button function.
The Description field should be used to document the function of the individual buttons. This field is for user reference only.

Understanding the Screen
The type options are:
- *Momentary DS Button*
- *On DS Button*
- *Bright DS Button*
- *Dim DS Button*
- *Off DS Button*

Key
<Add> On screen button.
-Name- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.6
This illustration shows the recommended configuration for a Digital Switch used for dimming control application. The button Type fields should match those shown. Each field should be adjusted individually. Button descriptions are entered on the Button Detail Screen shown previous.

Use the UP or DOWN arrows on the keypad to navigate up or down the list.

Use NEXT and BACK to navigate between sections on the screen.

Understanding the Screen
The ID number are for information purposes and can be used to match assigned project switch numbers.

Step 2.7
The Inputs list has a Digital Switch at ID 4 and is described as Dimming 1.

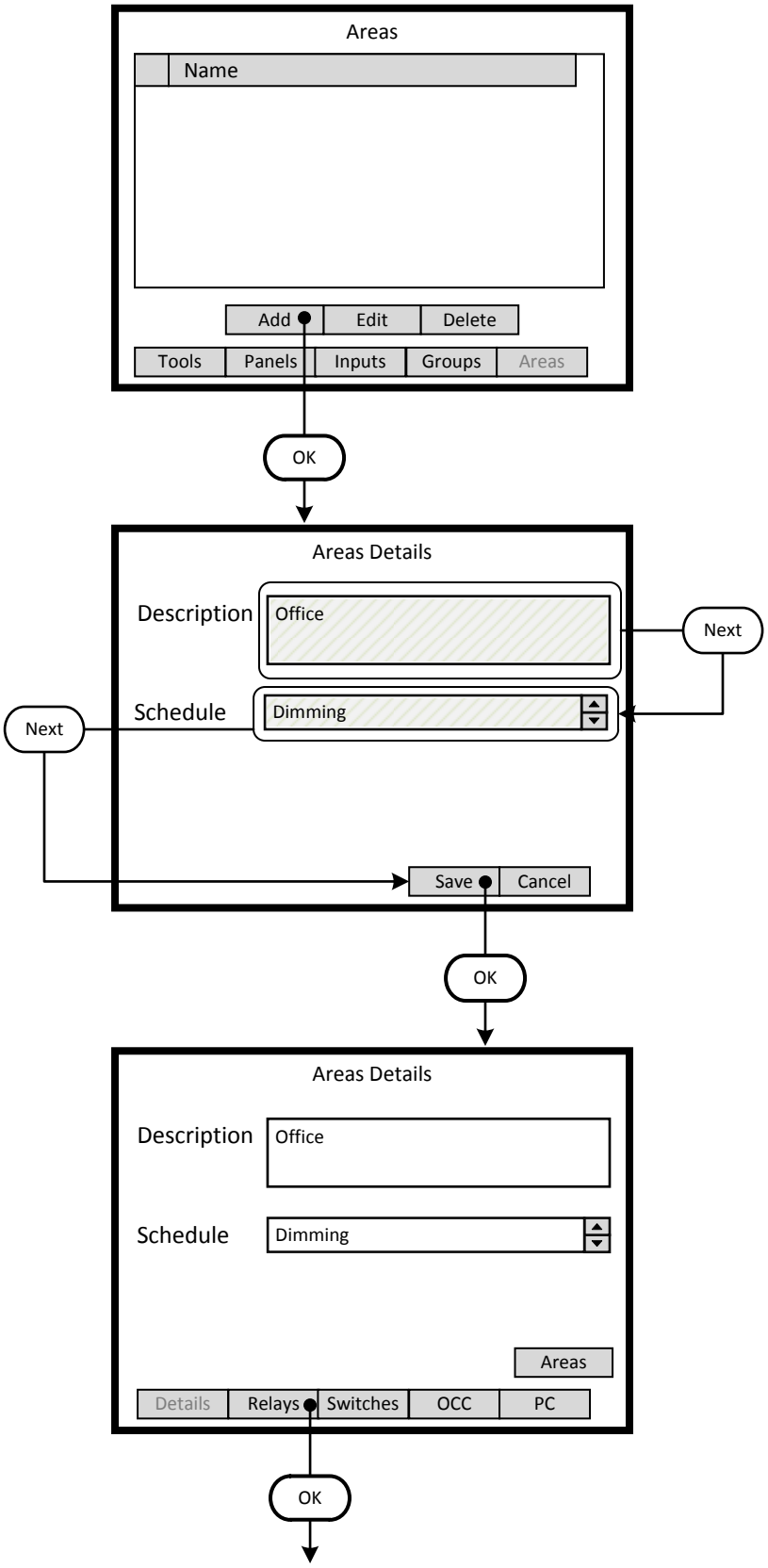
Use the UP and DOWN arrows to move about the list. Use NEXT to navigate to the <**Areas**> button.

Step 2.8
The Inputs list has an Low Voltage Input Board (AI) at LumaCan ID 16 and a Digital Switch (DS) at LumaCan ID 4 that is described as Dimming 1.

Use NEXT to navigate to the <**Areas**> button. Press OK to advance to the Areas maintenance screen.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

Step 3: Create an Area



Step 3.1

The **Areas** screen lists all the current Areas available in the system. At this step there are no existing Areas. To create a new Area navigate to the <**Add**> onscreen button and press OK.

Understanding the Screen
There are no Areas in this system.
Description of the onscreen buttons:
<***Edit***> *selecting this onscreen button will allow editing of the highlighted Area in the list.*
<***Delete***> *selecting this onscreen button will permanently remove the highlighted Area from the list.*
<***Tools***> *use to navigate to the System Tools screen.*
<***Panels***> *use to navigate to the Relay Panel Detail Screen*
<***Groups***> *use to navigate to the Group building screen*
<***Areas***> *use to navigate to the Areas configuration screen*

Step 3.2

Enter the desired Area name and detail in the **-Description-** field. Enter as much information as practical.
The Area must be assigned to a Schedule. An area can only be assigned to one schedule at a time. All of the available system Schedules will appear in the **-Schedule-** list box.

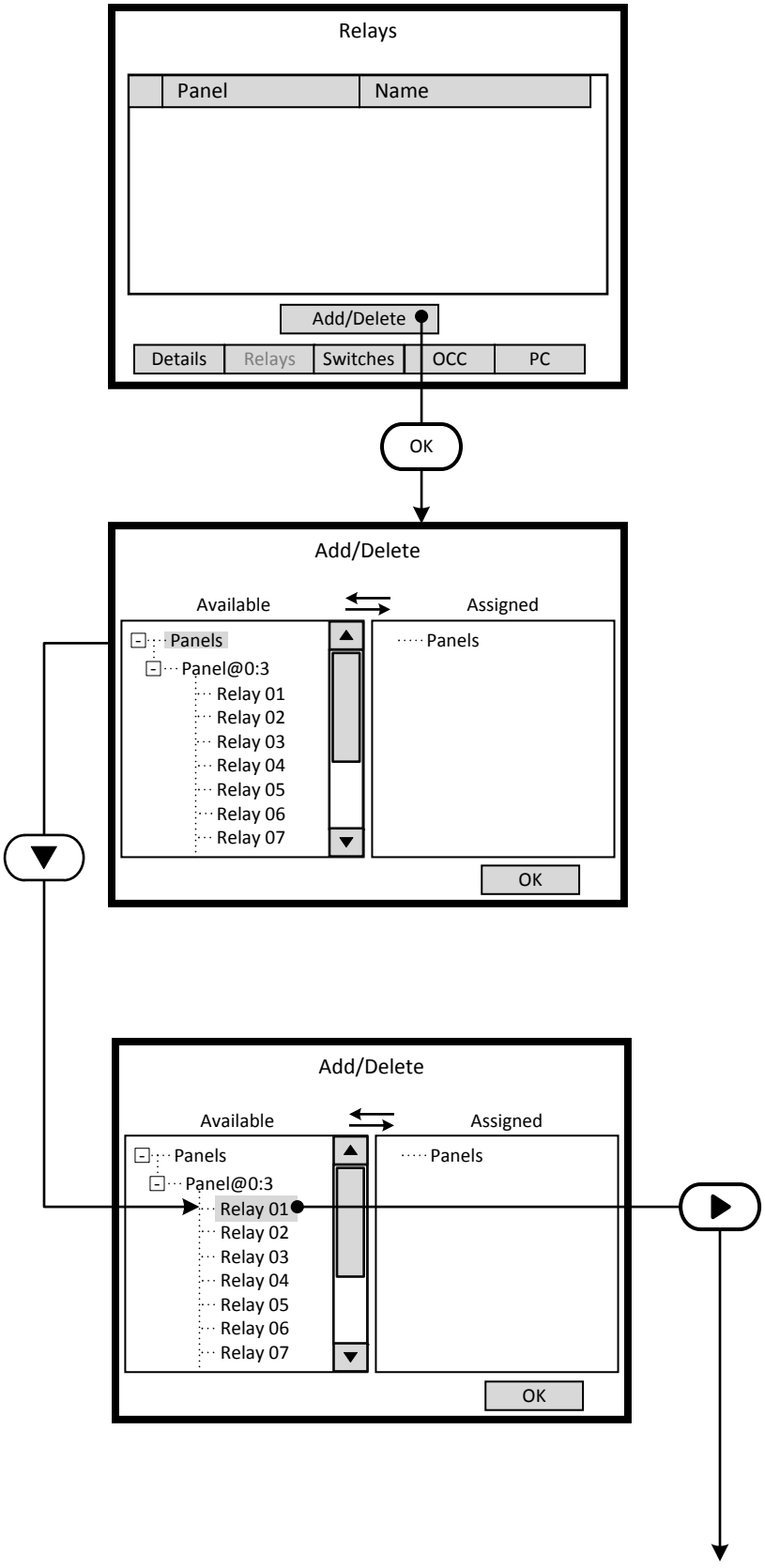
Understanding the Screen
*To appear in the **-Schedule-** list box, Schedules must be created prior to entering this screen. See the "Create a Schedule" section.*
Description of the onscreen buttons:
<***Save***> *selecting this onscreen button will create the Area, save it, and add advance to the next screen*
<***Cancel***> *used to discard entries*

Step 3.3

The newly created Area will contain relays and associated control devices. Additional navigation buttons are available to navigate to screens that populate or edit the contents of the Area. To add relays to the Area, navigate to the <**Relay**> onscreen button and press OK.

Understanding the Screen
Description of the onscreen buttons:
<***Areas***> *use to navigate to the Areas list screen*
<***Relays***> *selecting this onscreen button will allow the addition/editing of assigned relays*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***OCC***> *selecting this onscreen button to add/edit assigned Occupancy Sensors*
<***PC***> *selecting this onscreen button to add/edit assigned Photocells*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 3.4

The **Relays** screen lists all the current relays assigned to the Area. To add a new relay to the Area navigate to the <**Add/Delete**> onscreen button and press OK.

Understanding the Screen
There are currently no relays assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the **Area Details** screen*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***OCC***> *selecting this onscreen button to add/edit assigned Occupancy Sensors*
<***PC***> *selecting this onscreen button to add/edit assigned Photocells*

Step 3.5

The left side of the screen under the heading -**Available**- lists all of the relays that have not been assigned to an Area. If the desired relay is not on this list it has been assigned to another Area. Relays are displayed according to the panel they are installed in. All unassigned relays in the system can be seen on this list.

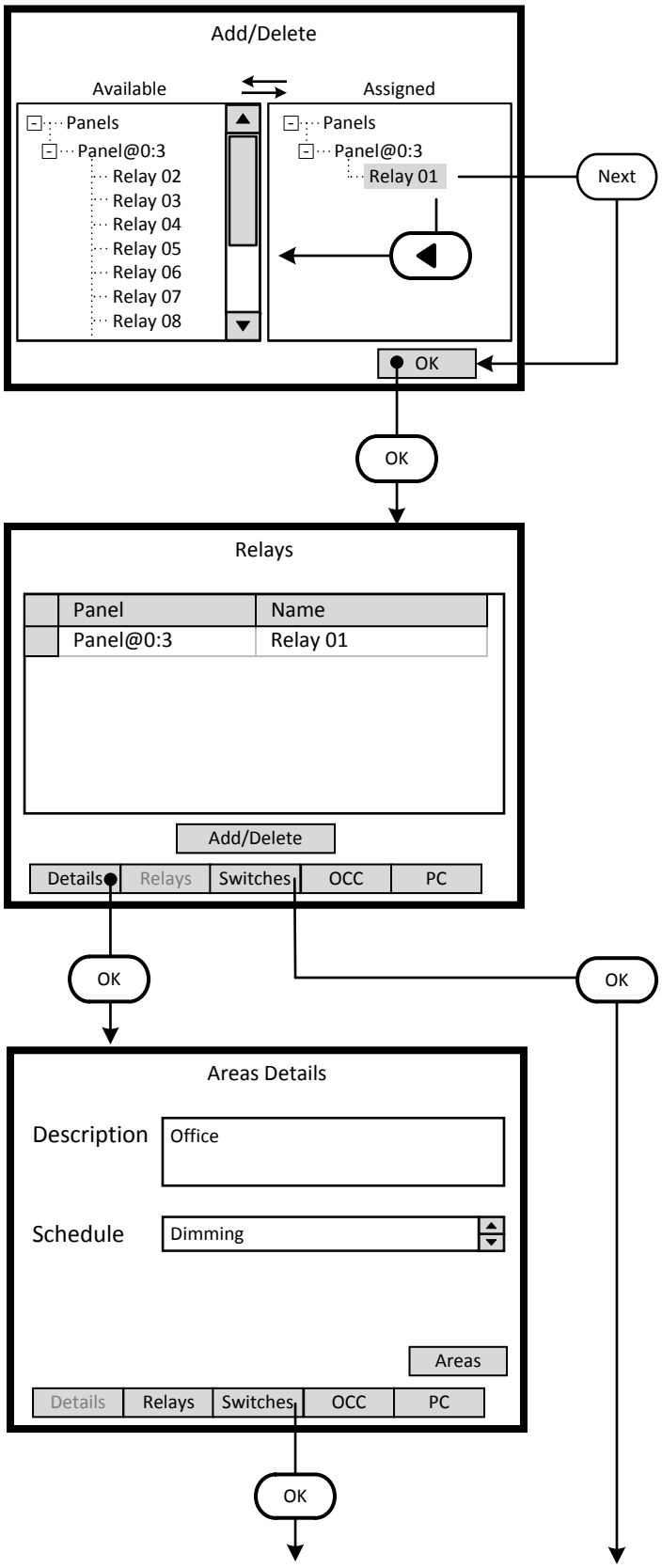
Understanding the Screen
Complete panels may be collapsed by highlighting name on the list pressing OK.
Description of the onscreen button:
<***OK***> *selecting this onscreen button will save the selections made and return to the **Relays** list screen.*

Step 3.6

Relays are added to the Area by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this Area.
Relays 01 through 07 are available for assignment.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the Area.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 3.7

Relays are deleted from the Area by moving them from the -**Assigned**- list to the -**Available**- list. This is accomplished by highlighting the desired relay on the right side of the screen and using the left arrow to move it to the right side of the screen. To accept the assignment, navigate to the -**OK**- onscreen button and press OK or Enter.

Understanding the Screen
Currently Relay 01 of Panel 3 has been assignment to the Area.
Relays 02 through 07 are available for assignment.

Step 3.8

The -Relays- screen lists the relays assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next common step is to add switch buttons to the Area.

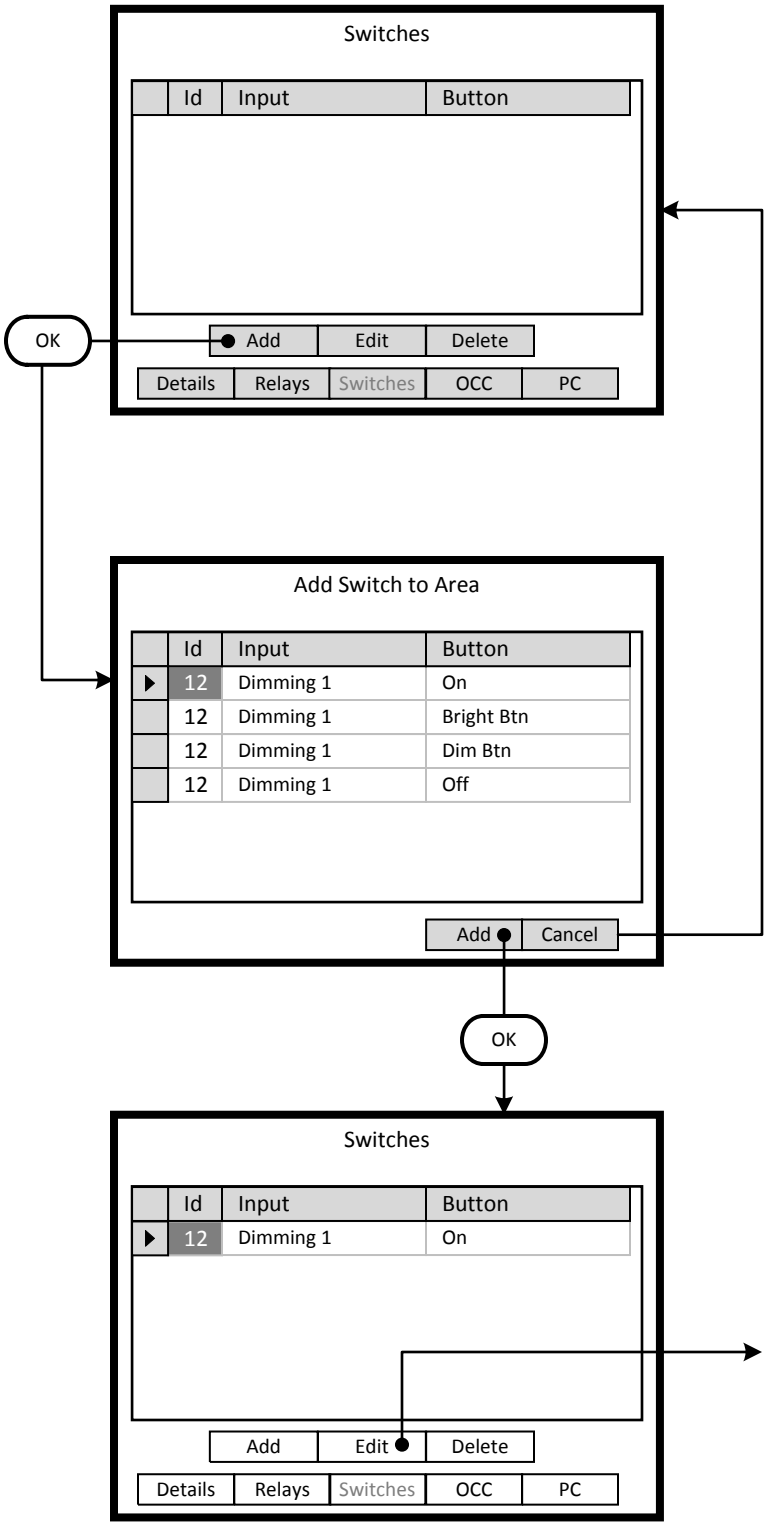
Understanding the Screen
Currently only Relay 01 of Panel 3 has been assignment to the Area.
*There are two navigating paths to the next screen. Using the <**Switches**> onscreen button skips a screen and goes directly to the -**Switches**- screen.*

Description of the onscreen buttons:

*<**Details**>*	*use to navigate to the -**Area Details**- screen*
*<**Switches**>*	*use to navigate to the -**Switches**- screen*
*<**OCC**>*	*use to navigate to the -**Occupancy Sensors**- screen*
*<**PC**>*	*use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

Step 4: Switch Buttons



Step 4.1

The -**Switches**- screen lists the switch buttons assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next common step is to add switch buttons to the Area.

Understanding the Screen
Currently there are no switch buttons assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.2

The -**Add Switch to Area**- screen lists the available and unassigned switch buttons for the system. As a switch button is assigned to an Area, it is removed from this list.

Understanding the Screen
*The highlighted button, button 1 of the switch at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

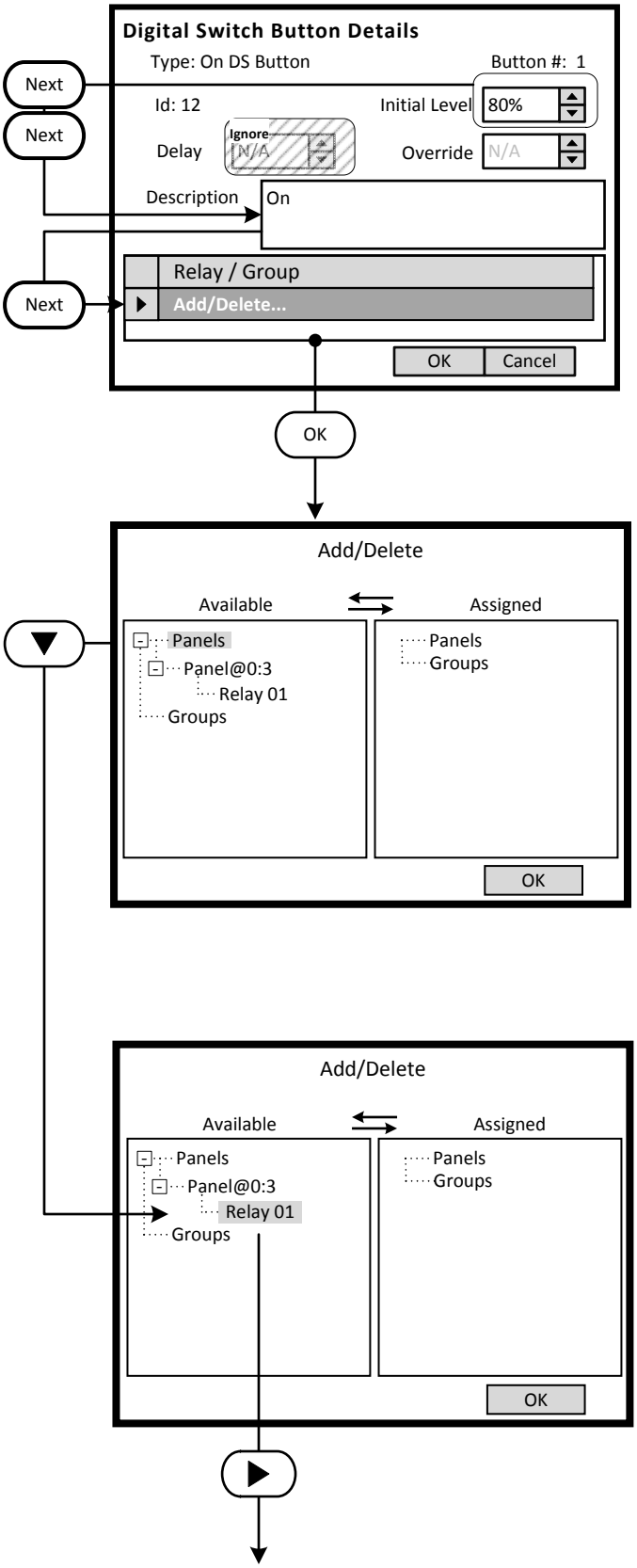
Step 4.3

The -**Switches**- screen lists the switch buttons assigned to the Area. This list will be displayed each time this section of the Area information is entered.

Understanding the Screen
Currently button 1 of the switch at LumaCan address 4 is assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.4

This screen configures the characteristics of the switch button. Enter the value for On in the -**Initial Level**- field, this exercise requires 80%. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*The -**Description**- field can be edited on this screen.*
*Information from the **Digital Switch Detail** screen will be displayed here.*
*Ignore the settings of -**Delay**- and -**Override**-.*

Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

Step 4.5

The left side of the screen under the heading -**Available**- lists all of the relays that have been assigned to an Area. If the desired relay is not on this list it has not been assigned to this Area. Relays are displayed according to the panel they are installed in. Use the navigation keypad to highlight the desired relay.

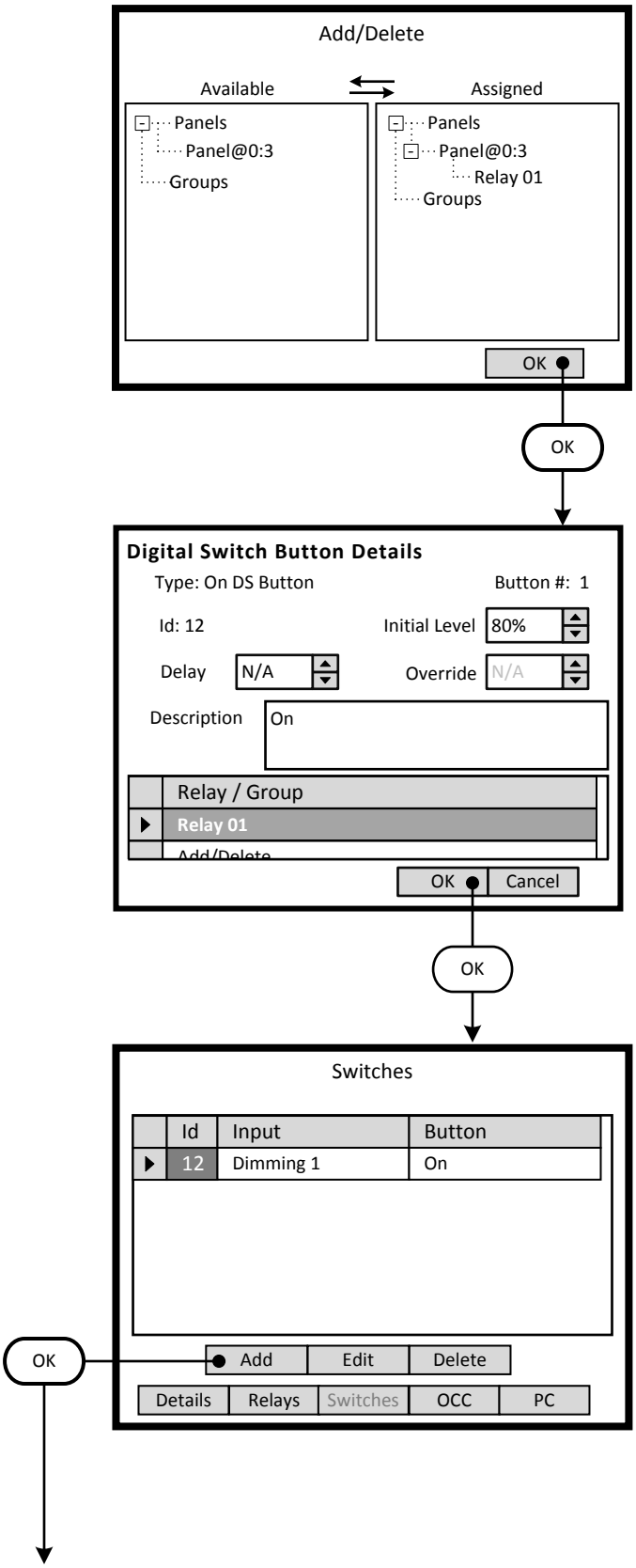
Understanding the Screen
Complete panels may be collapsed by highlighting name on the list pressing OK.
Description of the onscreen button:
<***OK***> *selecting this onscreen button will save the selections made and return to the **Relays** list screen.*

Step 4.6

Relays are assigned to the Switch button by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this Switch Button.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the Switch Button.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.7

Relay 01 is assigned to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned-** list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -**Digital Switch Button Details**- screen*

Step 4.8

Relay 01 is assigned to the control of the Switch Button 1.
To remove it, highlight the relay in the -**Assigned-** list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
Relay 01 of Panel 3 will start daylight harvesting when button 1 of switch ID: 12 is pressed.
*The settings of -**Initial Level**-, -**Delay**- and -**Override**- do not apply.*

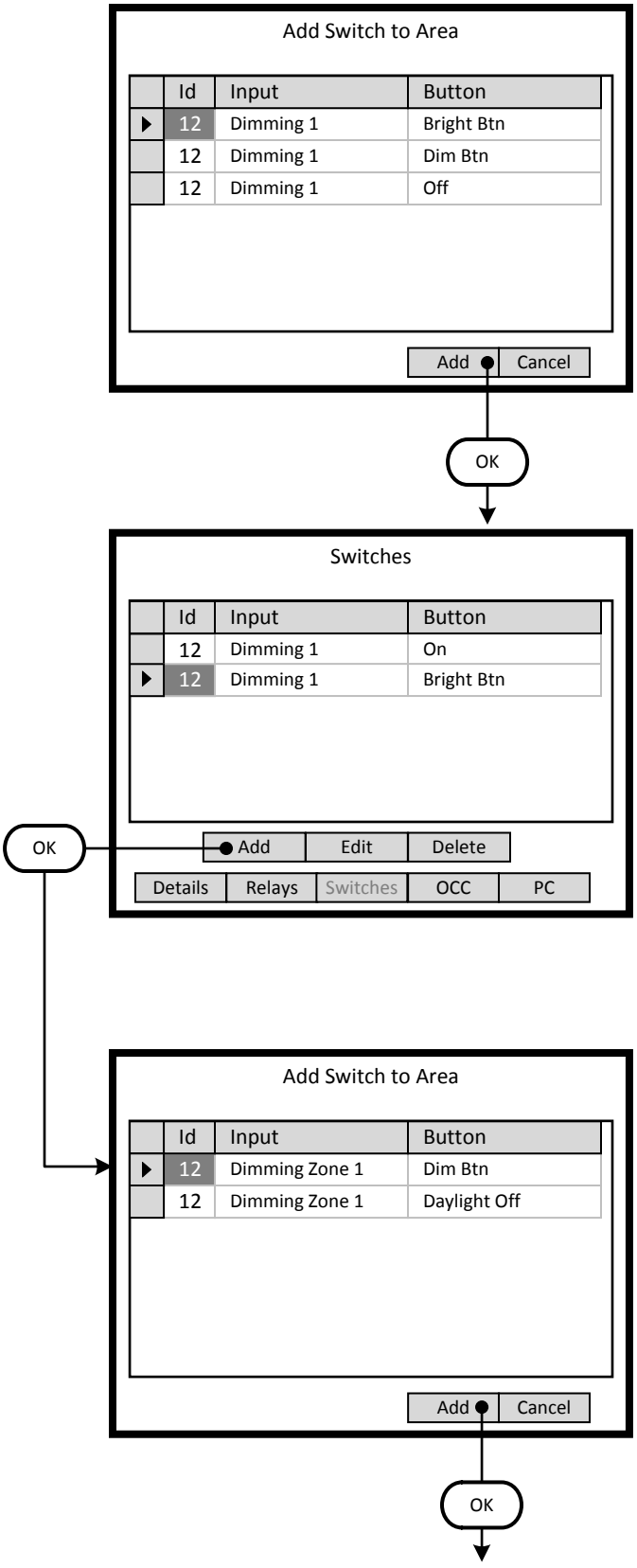
Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -**Switches**- screen*
<***Cancel***> *use to abandon entries and navigate to the -**Switches**- screen*

Step 4.9

All four of the Buttons for the Switch must be assigned to the Area. This summary list will be displayed each time this section of the Area information is entered. Navigate to the <**Add**> button and press **OK** button on the keypad.

Understanding the Screen
Currently there is one switch button assigned to the Area.
Description of the onscreen buttons:
<***Edit***> *use to navigate to the -**Digital Switch Button Details**- screen to make modifications to settings of the highlighted button*
<***Delete***> *use to delete the highlighted button from the Area*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.10

The -**Add Switch to Area**- screen lists the available and unassigned switch buttons for the system. As a switch button is assigned to an Area, it is removed from this list.

Understanding the Screen

*The highlighted button, Bright Btn button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:

<***Cancel***> *use to navigate to the -**Area Details**- screen*

Step 4.11

The -**Switches**- screen lists the switch buttons assigned to the Area. This summary list will be increase as each button is added.

Understanding the Screen

Currently 2 buttons are assigned; On, Bright Btn of switch ID 12 at LumaCan address 4.

Description of the onscreen buttons:

<***Add***> *use to navigate to the -**Add Switch to Area**- screen*

<***Delete***> *use to delete the highlighted button*

<***Details***> *use to navigate to the -**Area Details**- screen*

<***Relays***> *use to navigate to the -**Relays**- screen*

<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*

<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.12

Continue to add all of the relevant buttons to the Area.

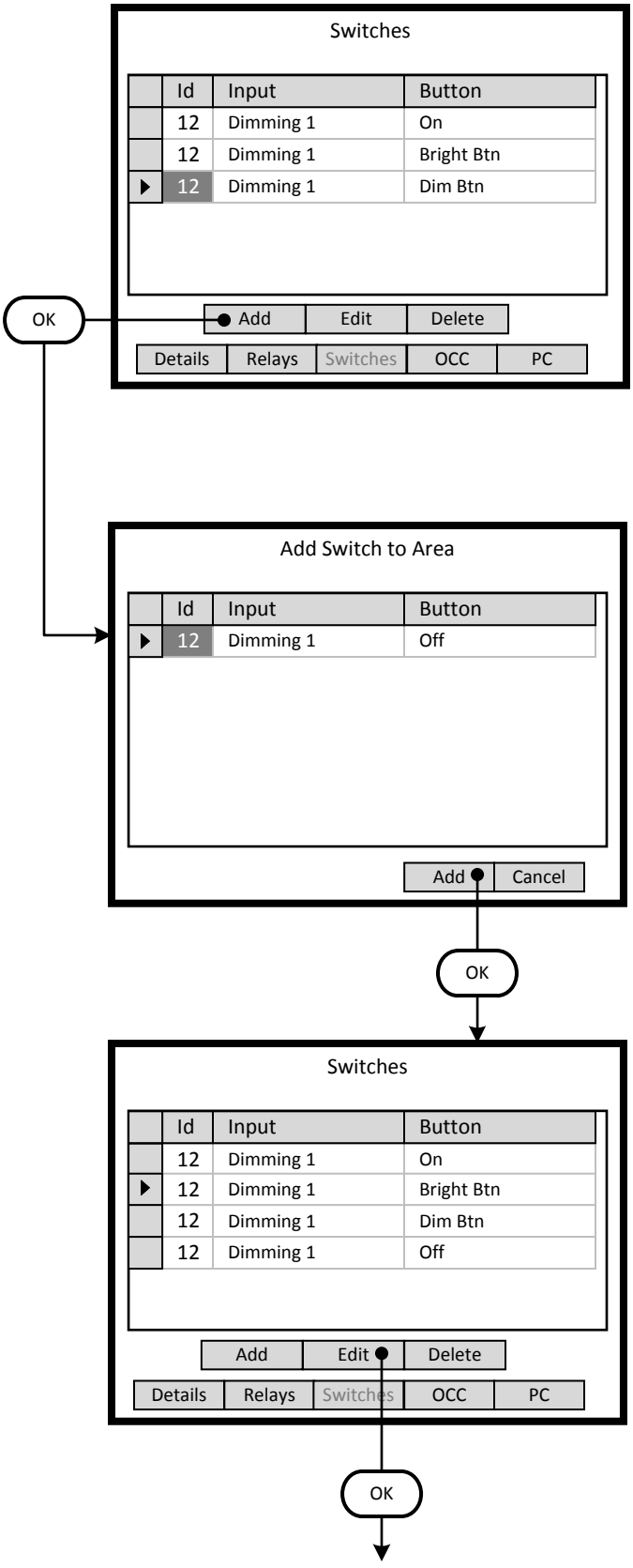
Understanding the Screen

*The highlighted button, Dim Btn button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:

<***Cancel***> *use to navigate to the -**Area Details**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.13
The -**Switches**- screen lists the switch buttons assigned to the Area. This summary list will be increase as each button is added.

Understanding the Screen
Currently 3 buttons are assigned; On, Bright Btn, Dim Btn of switch ID 12 at LumaCan address 4.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.14
Continue to add all of the relevant buttons to the Area.

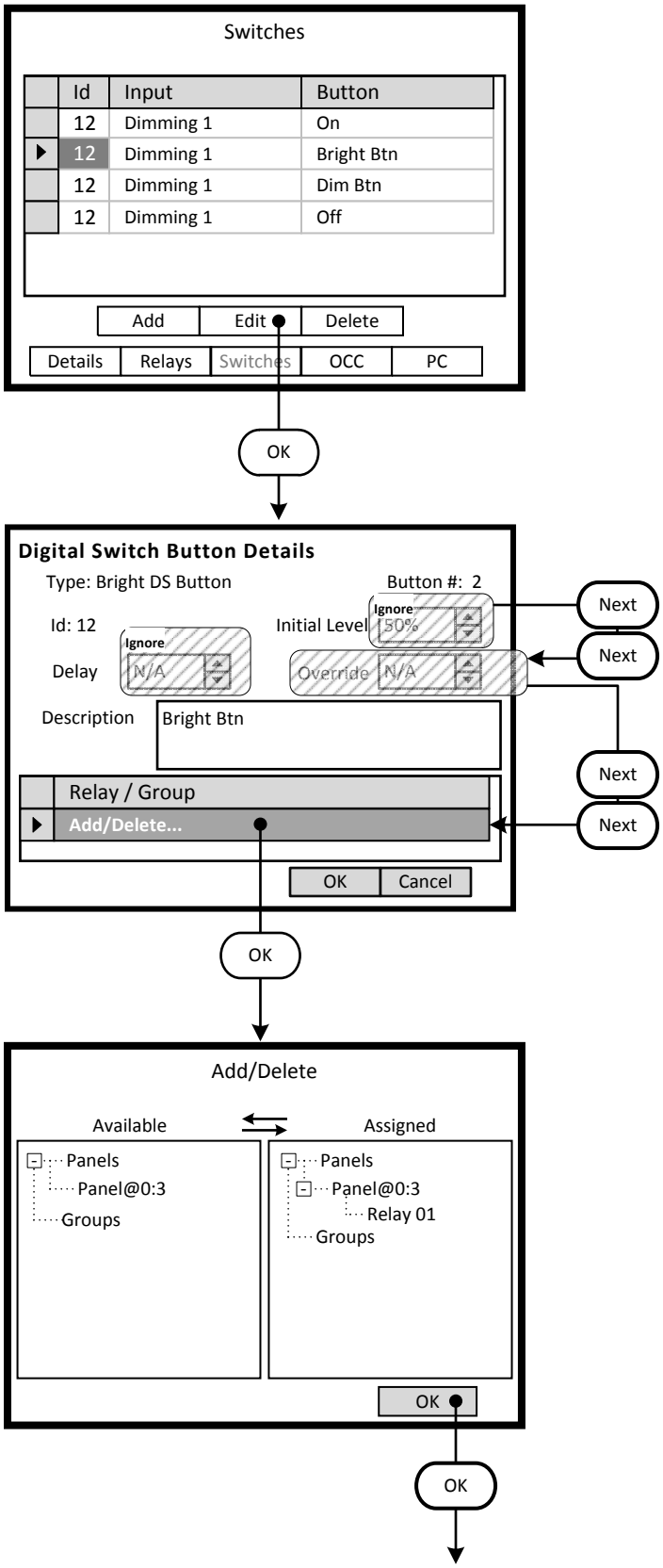
Understanding the Screen
*The highlighted button, Off button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

Step 4.15
All four of the buttons for the switch have been added to the Area. Each of the buttons must be assigned to the relay to be controlled. The On button was previously configured in Step 4.4. Navigate to the <**Edit**> button and press **OK** button on the keypad to configure each button of the remaining three buttons.

Understanding the Screen
Currently there is one switch button assigned to the Area.
Description of the onscreen buttons:
<***Delete***> *use to delete the highlighted button from the Area*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.16

The three new buttons listed on the -**Switches**- screen require configuration. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.17

The Bright DS button will temporarily increase the light level from the Target Level of the photocell. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Initial Level**-, -**Delay**-, and -**Override**-.*
Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

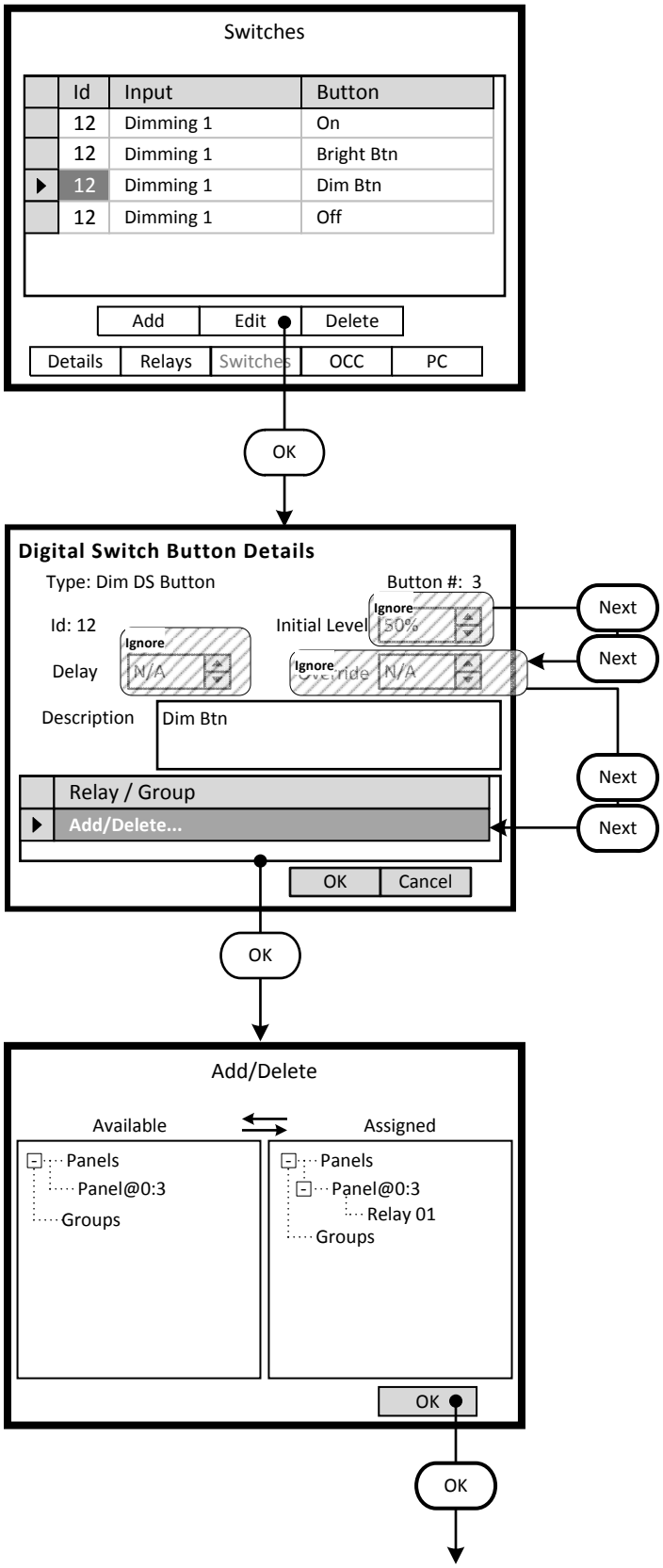
Step 4.18

Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.19

Configure the next button listed on the -**Switches**- screen. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.20

The Bright DS button will temporarily decrease the light level from the Target Level of the photocell. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Initial Level**-, -**Delay**-, and -**Override**-.*
Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

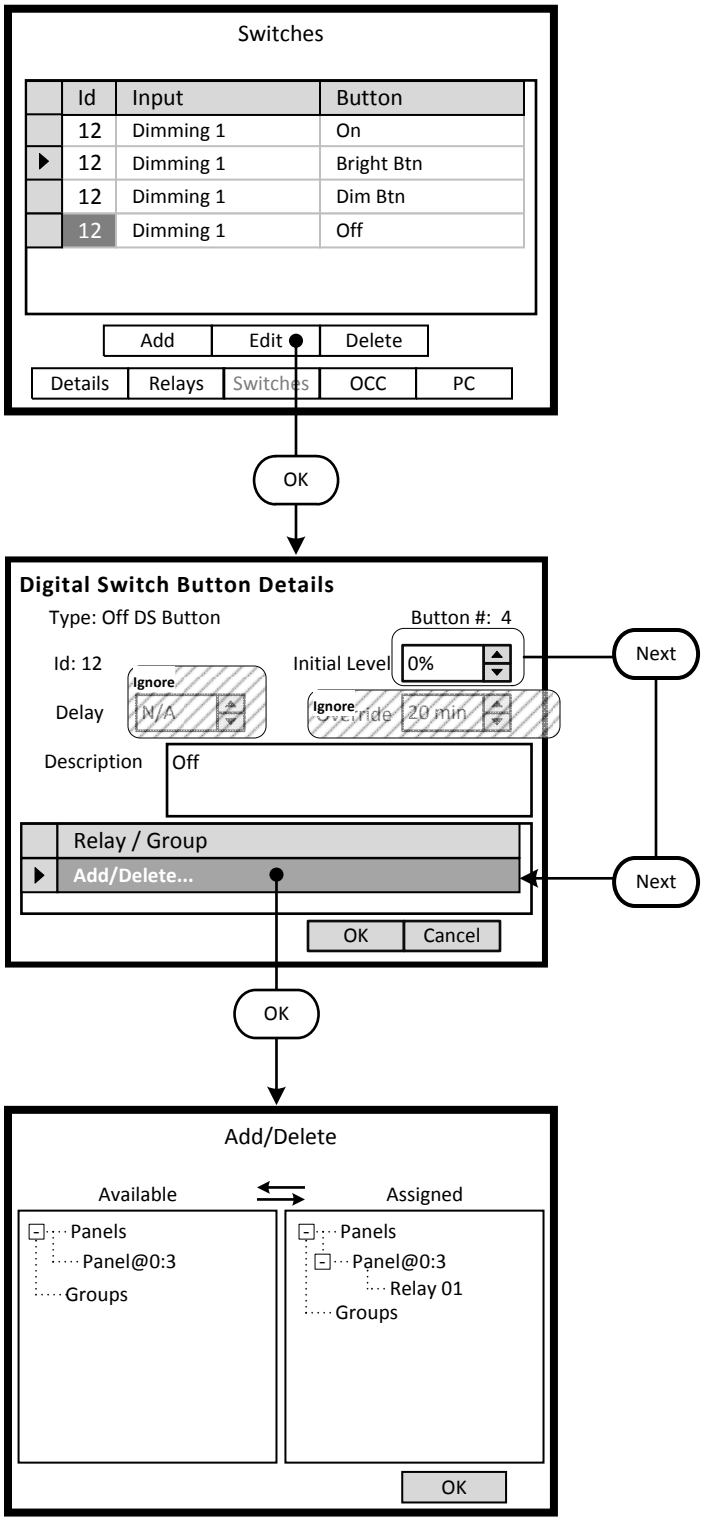
Step 4.21

Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.22

The three new buttons listed on the -**Switches**- screen require configuration. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.23

The Off DS button will turn Off the zone. The light level will dim to zero output and turn off the relay. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Delay**- and -**Override**-.*

Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

Step 4.24

Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

B10 Daylight Harvesting - Programming Overview

This section will present the typical steps required to program a GreenMAX system to provide Dimming functionality.

The fundamental components required for Dimming control are:

- GreenMAX Dimming and Switching Relay Modules – RELAY-1DS
- Low Voltage Photocell – 24VDC with analogue 0 to 10VDC output range - mandatory
- Low Voltage Occupancy Sensor – 24VDC with On/Off signal output – optional
- 4 Button Switch - either Low Voltage or Digital

Office Dimming Schedule

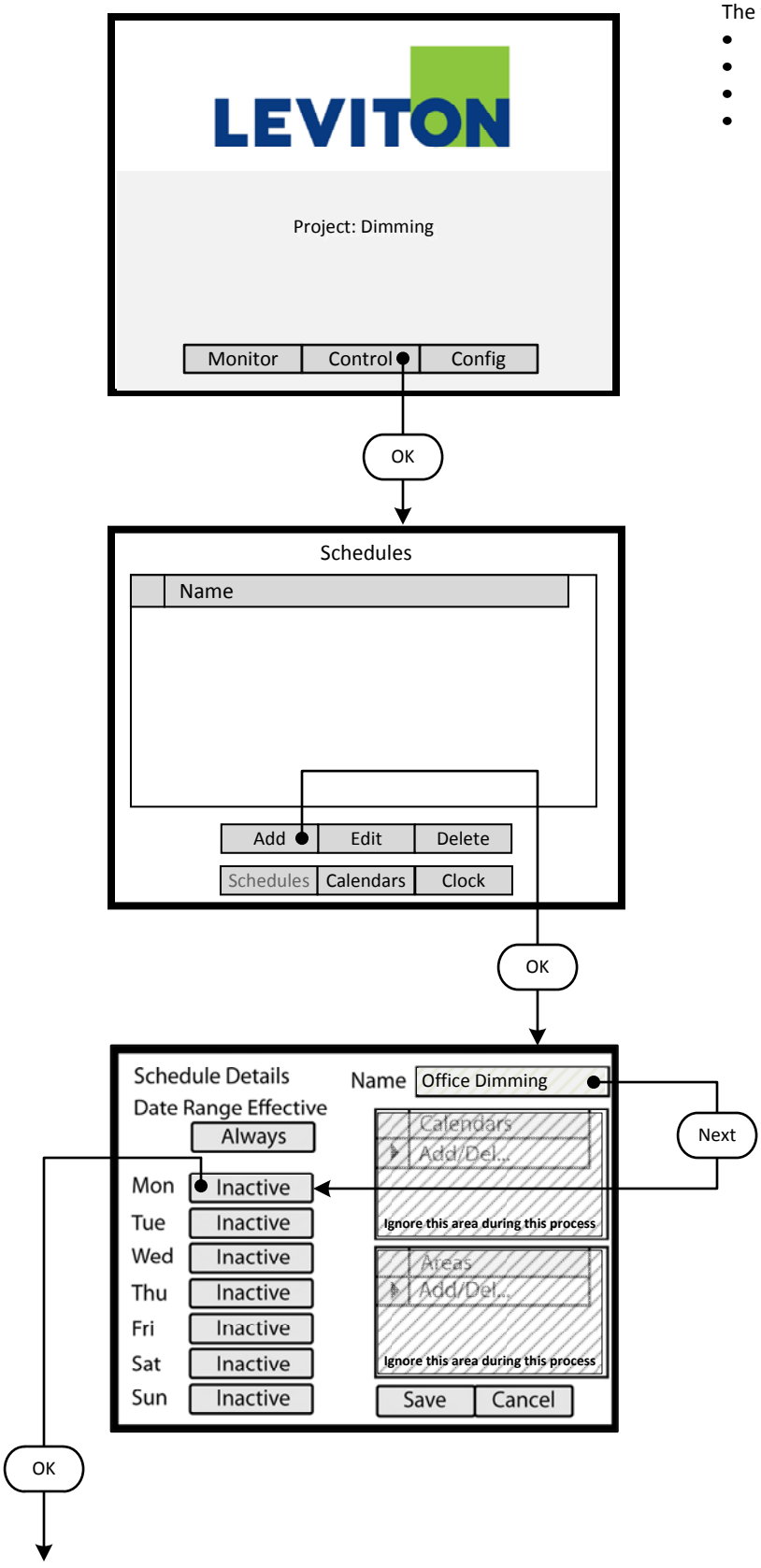
Monday to Sunday

8:00am	Office Dimming	B10 Lights will be controlled by their respective devices: Occupancy Sensors – 10 minute delay Photocells – 35 foot-candle initial target value – 10 minute delay Switch Buttons (4): On Button – starts Daylight Harvesting Bright Button – with Over- ride time Dim Button – with Over-ride time Off Button – fades lights to OFF
5:00pm	OFF sweep	B7 Lights will be turned OFF

Programming Checklist

- ❑ Create a schedule.
- ❑ Configure Low Voltage inputs as required.
  (occupancy sensors, photocells, low voltage switches)
- ❑ Configure switch buttons. (On/Bright/Dim/Off)
- ❑ Create an Area.
- ❑ Assign a schedule to an Area.
- ❑ Add relays to Area.
- ❑ Add switch buttons to area.
- ❑ Assign relays to switch buttons
- ❑ Add occupancy sensor to Area.
- ❑ Assign relays to occupancy sensor.
- ❑ Add photocell to area.
- ❑ Assign relays to the photocell.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1: Create a Schedule

Programming operation of the GreenMAX is based on running Schedules. A Schedule can be considered a default seven (7) day pattern of operation.

The following rules apply:

- An Area requires a Schedule to operate.
- Only one Schedule can be assigned to an Area.
- A Schedule can be assigned to multiple Areas.
- Schedules reside in the GreenMAX system and can be accessed through the Handheld Display Unit (HDU).

Step 1.1

To create a Schedule, enter the <**Control**> section of the Handheld Display Unit (HDU) software.

Understanding the Screen
There are three sections of the HDU software. The sections under the buttons are:
<**Monitor**> - *Used to check the system time/date, relay status*
<**Control**> - *Access Scheduling*
<**Config**> - *Configuration of system including set-up of Areas*

Step 1.2

The first <**Control**> HDU screen lists the existing Schedules available in your GreenMAX System. The screen shown indicates that there are no Schedules available or created.

By navigating to <**Add**> and pressing OK, this will initiate the creation of a Schedule.

Other Options
To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Edit**> *and press OK, to initiate the modification of the selected Schedule.*

To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <**Delete**> *and press OK, to erase the selected Schedule.*

Step 1.3

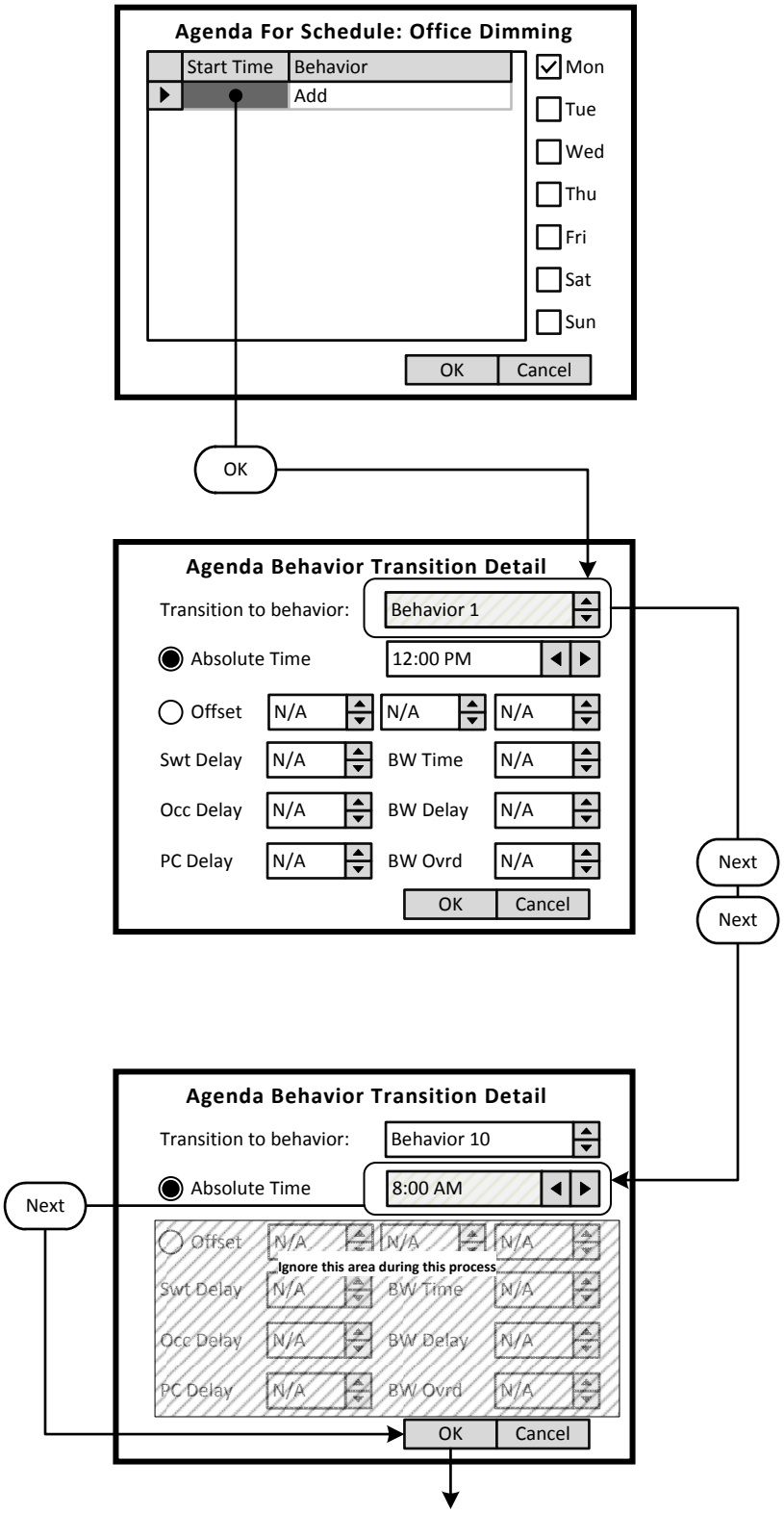
The screen is entered with the -**Name**- field highlighted. Enter the desired name of your Schedule using the alpha numeric keypad of the HDU. When complete, press the NEXT button on the navigation keypad. The cursor will advance to the <**Monday**> button.

Understanding the Screen
The label value of "Inactive" shown on the <**Monday**> *button indicates that there is currently no Behavior transitions programmed for this day. The same is true for all days, Monday through Sunday, of this schedule.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.4

The screen is entered at the first line of the Agenda. There are a total of 24 Behavior Transition times available per day. Clicking OK will advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
*<**OK**> - Will save the settings or changes*
*<**Cancel**> - Will discard the changes*

Step 1.5

The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 10.

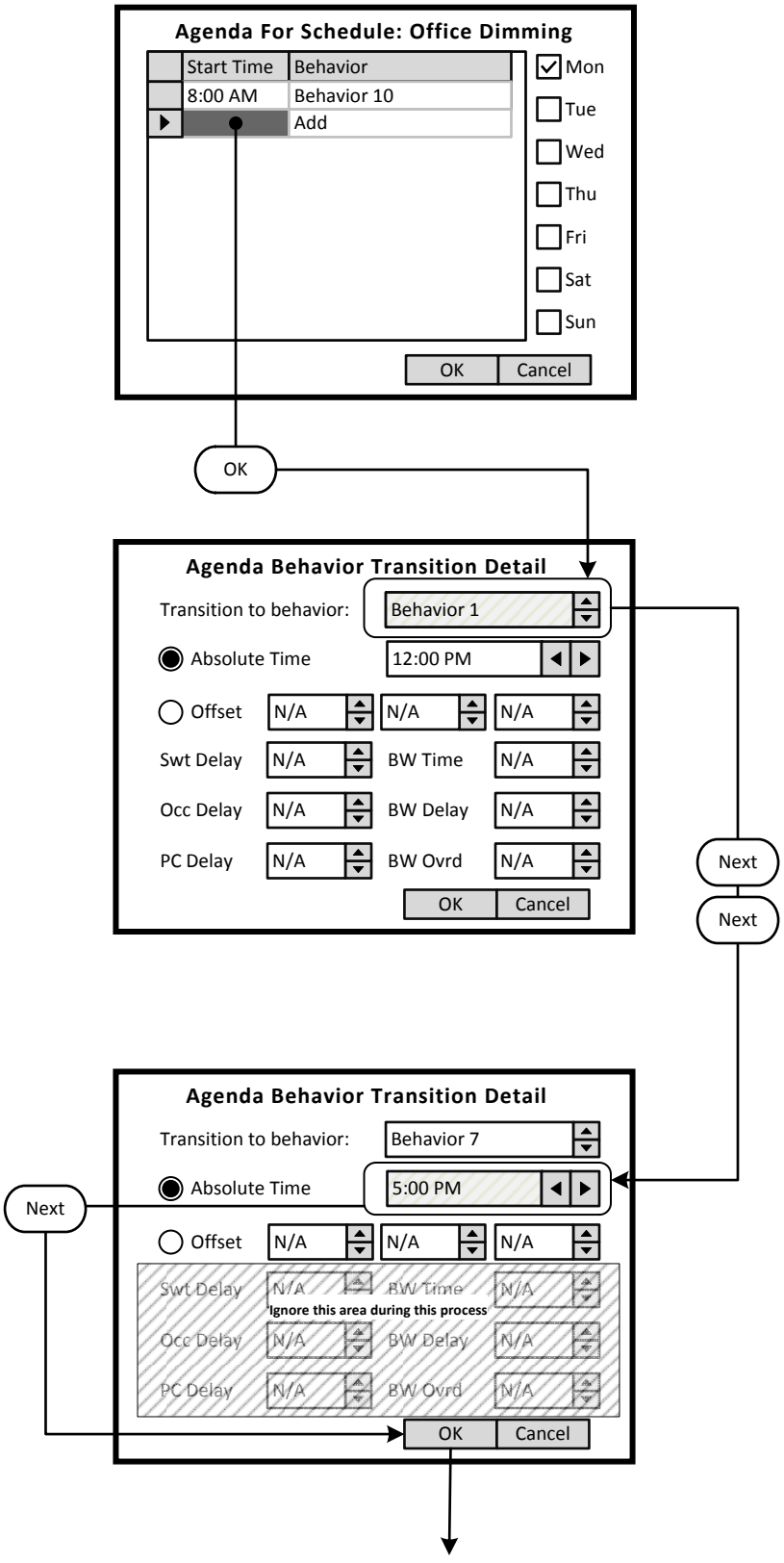
Understanding the Screen
<**Offset**> *provides access to Sunrise and Sunset settings for Astronomical clock times.*
-**BW Time**-, -**BW Delay**-, -**BW Ovrd**- - *These are the Blinkwarn settings that apply to this Behavior Transition only. They will override the Global Blinkwarn Settings set in the System Settings section.*

Step 1.6

Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 8:00 AM.

Understanding the Screen
*-**Swt Delay**- is used if the switch in the associated Area is to function as a Timed Off switch. This is the amount of time the lights will stay On after a button press, and before they will turn Off.*
*-**Occ Delay**- This is the amount of time the lights will stay On after the occupancy sensor does not detect occupancy and before they will turn Off.*
*-**PC Delay**- This is the amount of time the lights will stay On after the photocell trigger point is exceeded and before they will turn Off.*

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



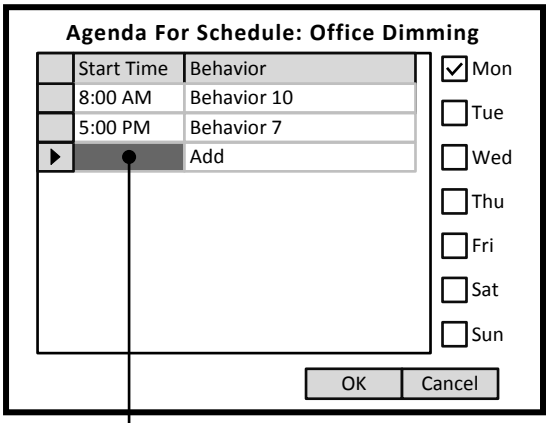
Step 1.7
Navigate to the Add line of the list, in this case the second line. Click OK to advance to the Behavior Transition Detail screen.

Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 10 will occur Monday at 8:00 AM.

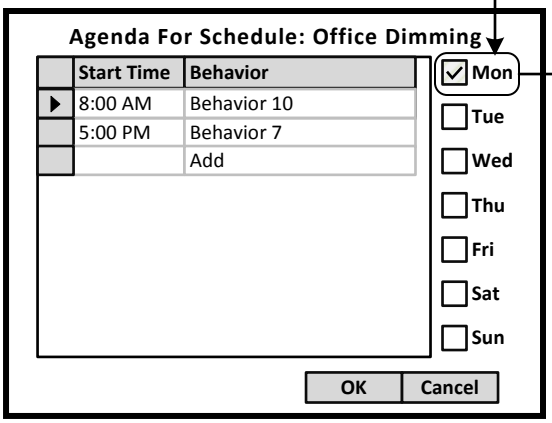
Step 1.8
The Behavior Transition Detail screen is entered at the Behavior selection box. Use the UP or DOWN arrows to choose the desired Behavior. Consulate the Behavior chart in the Manual for descriptions. For this example change to Behavior 7 (OFF).

Step 1.9
Use a combination of the UP and DOWN arrows as well as the NEXT button to change the time to 5:00 PM. When complete, use the NEXT button to navigate to the **<OK>** on screen button.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



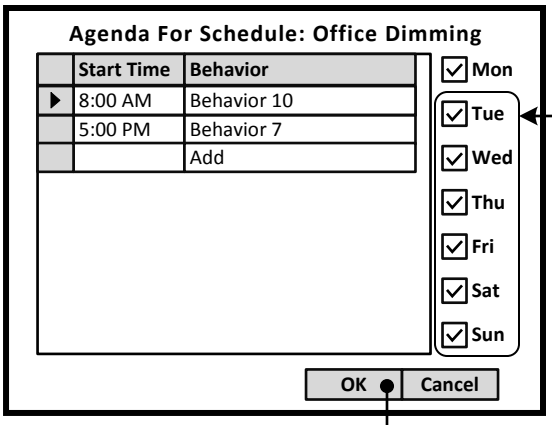
Next



Repeat this button press combination to fill all check boxes (Mon thru Sun)

Next

OK



Step 1.10
To apply this Agenda or pattern of Behavior to each day of the week press Next to advance to the Day column.

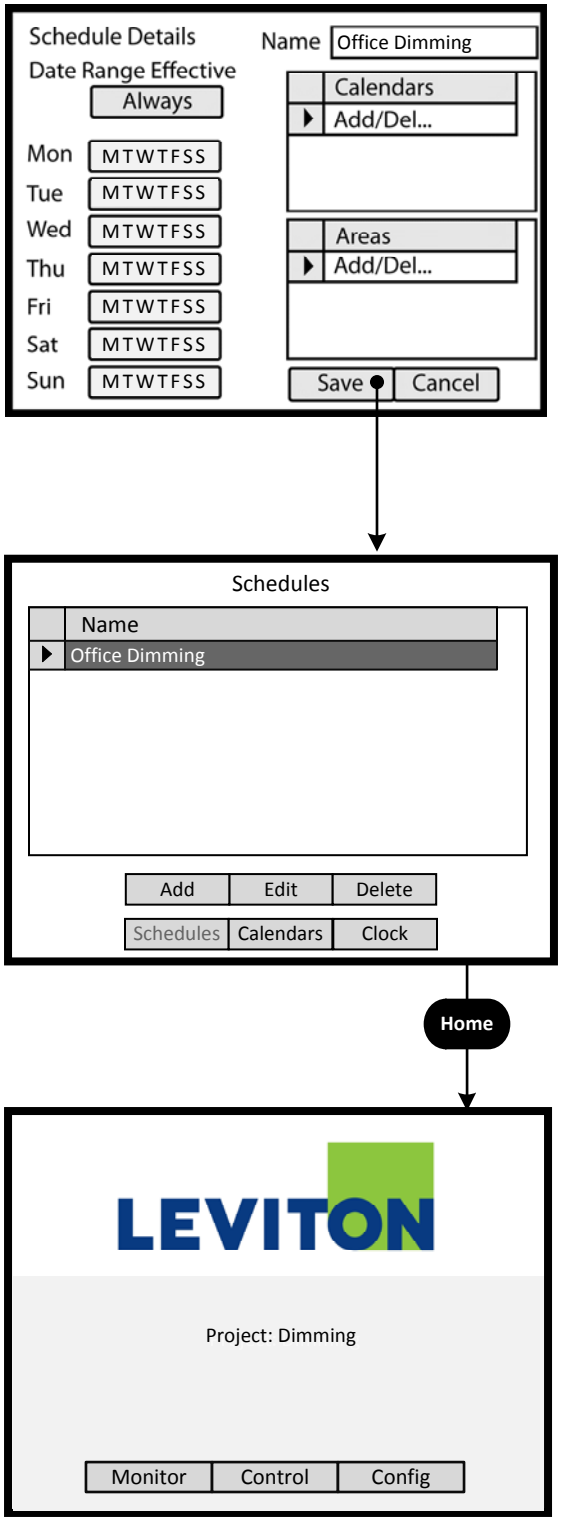
Understanding the Screen
This Agenda only applies to Monday, as shown here.
A transition to Behavior 10 will occur Monday at 8:00 AM.
A transition to Behavior 7 will occur Monday at 5:00 PM.

Step 1.11
Press Next to the -**Tuesday**- check box.
Press -**OK**- to check the box, this will add Tuesday to the active list.

Step 1.12
Use a combination of the NEXT and OK to fill in the Tuesday through Sunday check boxes.

Understanding the Screen
This Agenda only applies to Monday through Sunday.
A transition to Behavior 10 will occur each day at 8:00 AM.
A transition to Behavior 7 will occur each day at 5:00 PM.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 1.13
To save the Schedule, press the NEXT button on the navigation keypad to advance to the <**Save**> button.

Understanding the Screen
The label value of "MTWTFSS -" on the <**Monday>** *through* <**Sunday**> *indicates that the same Agenda applies to each of these days.*

There are no Exception Calendars associated with this Schedule.

This Schedule has not been assigned to any Areas.

Step 1.14
There is only one Schedule available in the system for the dimming pattern of behavior.

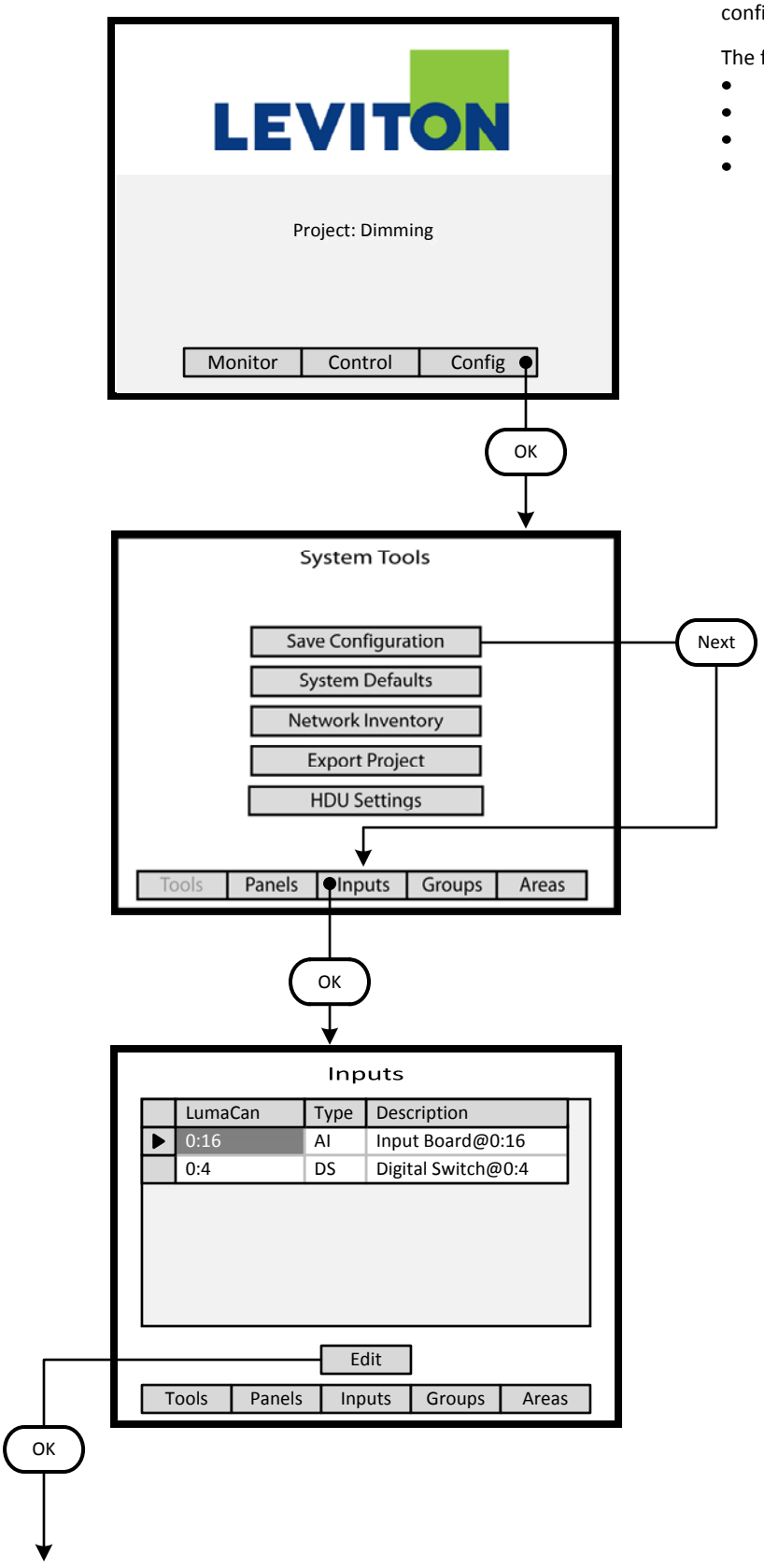
To navigate to the Home screen press the HOME button.

Other Options
To modify an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <***Edit***> *and press OK, to initiate the modification of the selected Schedule.*

To delete an existing Schedule, highlight the appropriate Schedule on the list. Navigate to <***Delete***> *and press OK, to erase the selected Schedule.*

To adjust the system clock, navigate to <***Clock***> *and press OK.*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2: Configure Devices

The GreenMAX can be configured to handle a wide variety of input devices. These devices operate at +24vdc and are wired to an input terminal on the Low Voltage (AI) board. Each terminal port must be configured to match the device and its expected functionality.

The following Low Voltage input devices can be connected to the system:

- Occupancy sensors.
- Photocells.
- Switches.
- Contact closures.

Step 2.1

The configuration steps of the Low Voltage Input Card is performed in the <**Config>** section of the HDU software.

Understanding the Screen

There are three sections of the HDU software. The other two sections under the buttons are:
*<**Monitor**> - Used to check the system time, relay status*
*<**Control**> - Access Scheduling*

Step 2.2

Use a combination of the UP and DOWN arrows as well as the NEXT button to navigate to the <**Inputs**> onscreen button. Press OK to select.

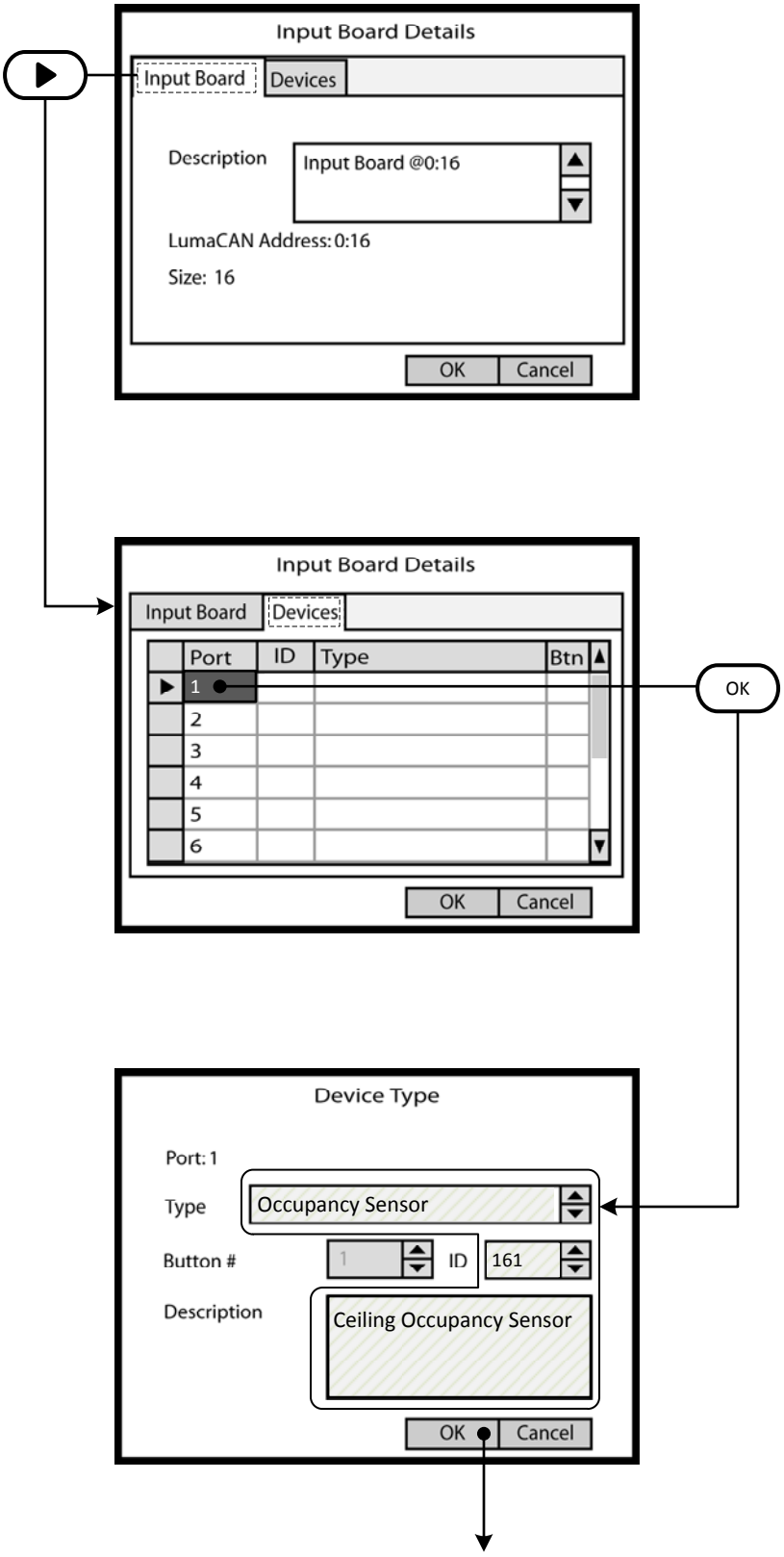
Step 2.3

The Network Inventory will provide a listing of all system Input devices. This includes both Low Voltage Input Boards (AI) and Digital switches.

Understanding the Screen
There are two Input Devices in this system.
There is a 16 input AI board at address ID 16.
There is a 4 button Digital Switch at address ID 4.

Description of the onscreen buttons:
*<**Edit**> selecting this onscreen button will allow editing of the highlighted device in the list.*
*<**Tools**> use to navigate to the **System Tools** screen.*
*<**Panels**> use to navigate to the **Relay Panel Detail Screen***
*<**Groups**> use to navigate to the **Group** building screen*
*<**Areas**> use to navigate to the **Areas** configuration screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.4

The **Input Board Details** screen displays the number of inputs, the LumaCan address ID and the -**Description**- field. Enter job specific description in this field.
Once the correct information is entered, use the RIGHT arrow to move to the -**Devices**- tab at the top of the screen.

Understanding the Screen
The other onscreen buttons are:
*<**OK**> - Used to accept the entries*
*<**Cancel**> - Used to discard entries*

Step 2.5

The -**Devices**- tab reveals a list of the Input Ports on the AI Board being configured. Ports are numbered sequentially in quantities of 8 or 16. No data entry can be made on this screen. Highlight the Input Port number and press OK to enter the editing screen.

Use the UP or DOWN arrows on the keypad to navigate up or down the list. The scroll bar to the right indicates position on the list.

If the wrong device type appears on the list, highlight the Input Port number and press CLEAR on the keypad.

Understanding the Screen
No devices have been configured for this AI board.
The onscreen buttons are:
*<**OK**> - Used to accept the entries*
*<**Cancel**> - Used to discard entries*

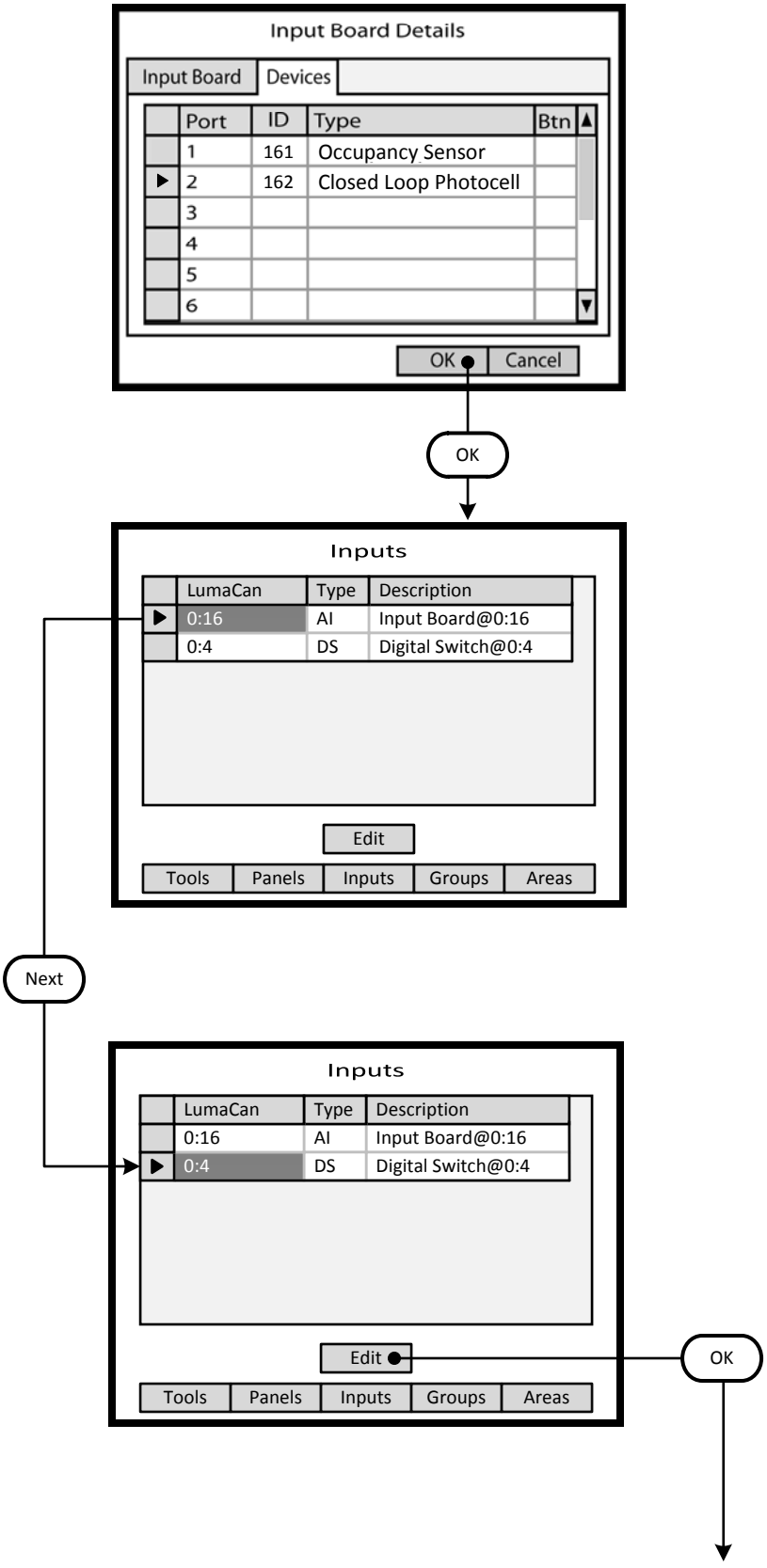
Step 2.6

The Device Type screen is used to select the type of device that is wired to the input port. Use the UP and DOWN arrows on the keypad to display the desired device.
The Description field should be used to document the location of the device.

Understanding the Screen
The -Button #- is available for display purposes only and does not have any configuration value.
The description is limited to 25 characters.

The -ID- is available for display purposes only and does not have any configuration value. It can be used to match the numbering on project drawings. Maximum value is 1000.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



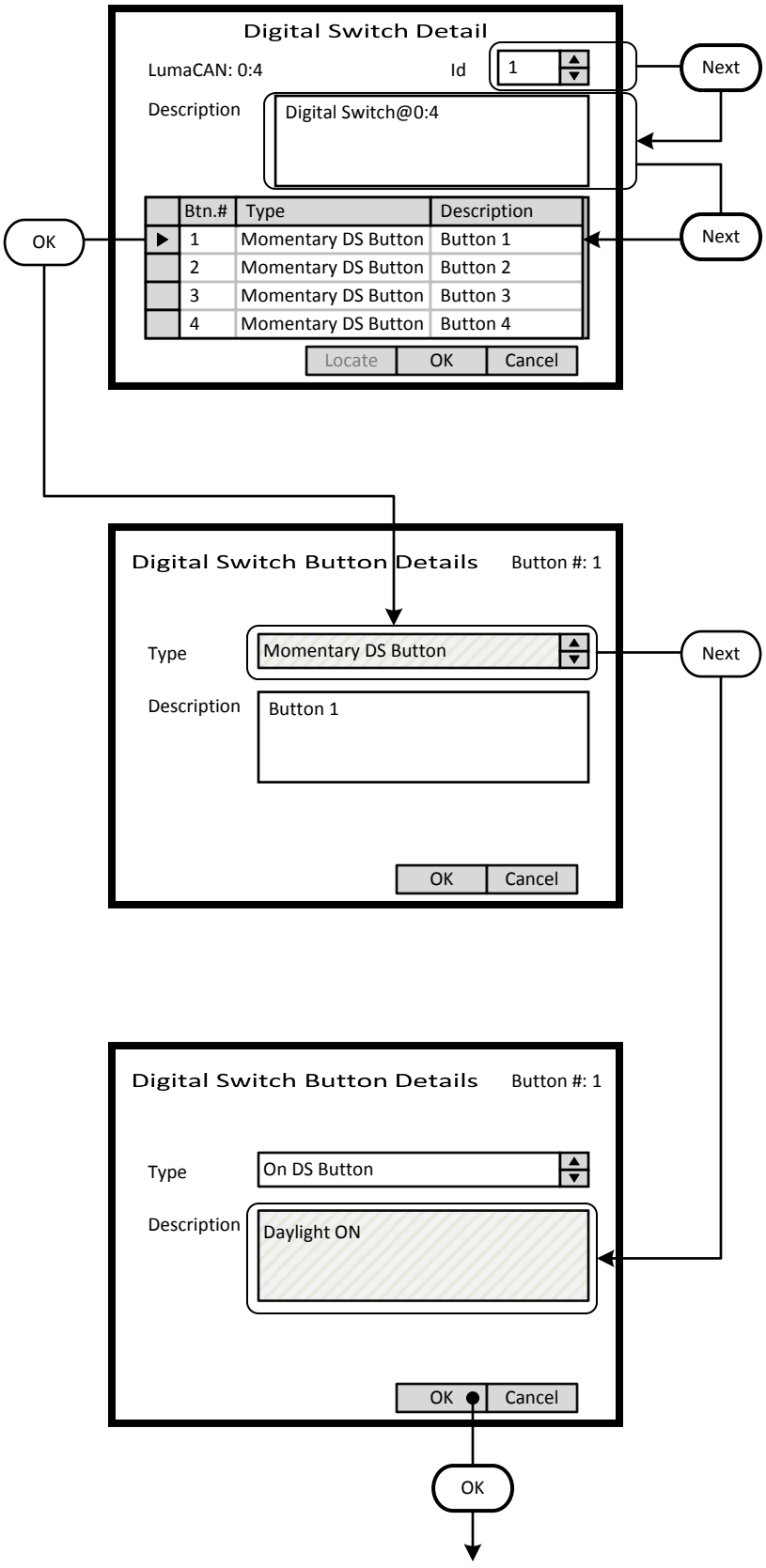
Step 2.8
A populated **Input Board Details** screen will look as shown here. The Input Ports can be configured in any order as necessary.

Understanding the Screen
Only Ports 1 & 2 are populated.
The ID numbers are for information purposes. They can be any number that makes sense to the user. The system only stores these numbers and does not use them for any function other than identification.
The 'Btn" column will be populated with switch button numbers if Low Voltage Switches are configured at the Port location.

. *The other onscreen buttons are:*
*<**OK**> - Used to accept the entries*
*<**Cancel**> - Used to discard entries*

Step 2.9
The **Inputs** listing shows a Digital Switch at LumaCan ID 4. This is a 4 button Digital Switch to be used for Dimming control. Highlight the device and move the indicator to the appropriate device line. Use the UP and DOWN arrows to move about the list. Use NEXT to navigate to the <**Edit**> button.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.10

The **Digital Switch Detail** screen provides an ID setting for informational purposes. This can match the switch number on the building floor plan. For this exercise this will be set to 12.

A switch -**Description**- field is provided that can be filled with a maximum of 25 characters of information.

Button function must be configured. Highlight the Button number and press OK to enter the editing screen.
These fields fill the list on the previous screen.

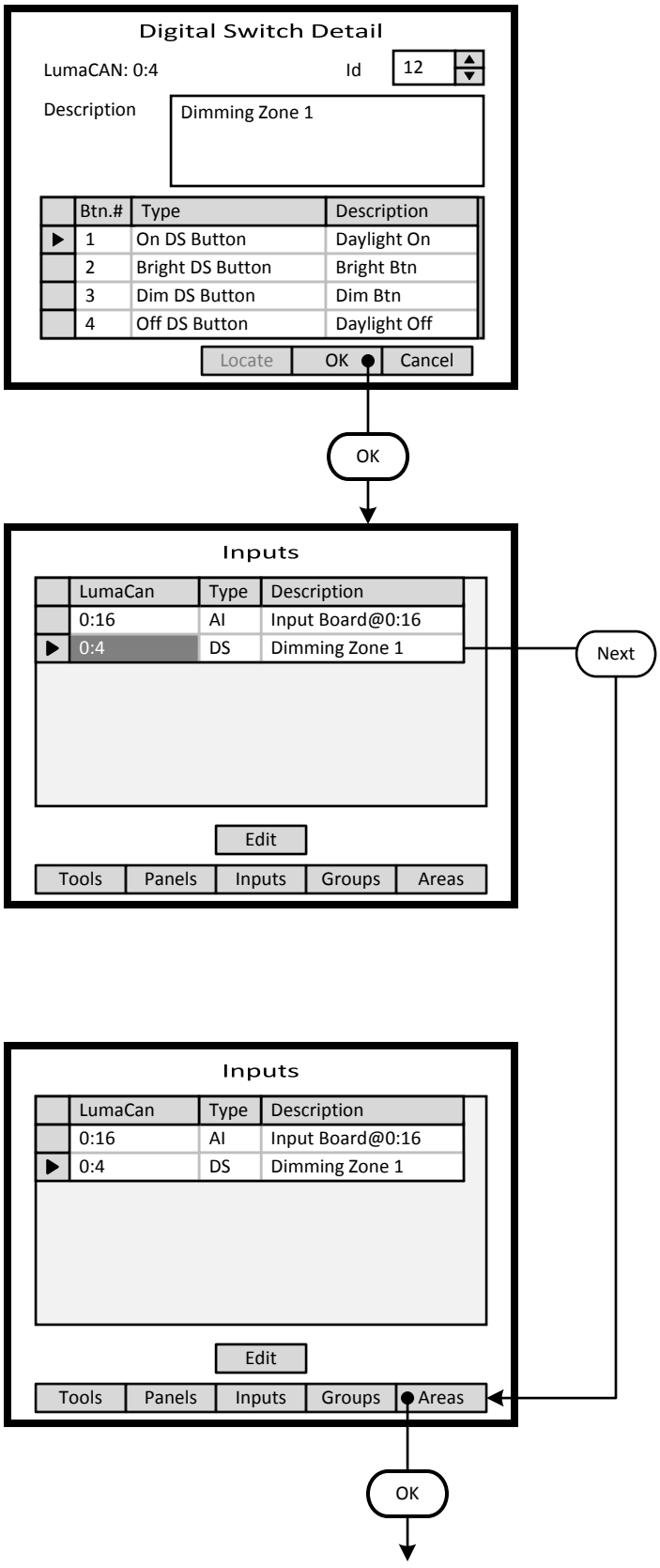
Use the UP or DOWN arrows on the keypad to navigate up or down the list.

Step 2.11

The Digital Switch Button Details screen is used to configure the individual button function and to name the button. Use the UP and DOWN arrows on the keypad to display the desired button function.
The Description field should be used to document the function of the individual buttons. This field is for user reference only.

Understanding the Screen
The type options are:
- *Momentary DS Button*
- *On DS Button*
- *Bright DS Button*
- *Dim DS Button*
- *Off DS Button*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 2.12
This illustration shows the recommended configuration for a Digital Switch used for dimming control application. The button Type fields should match those shown. Each field should be adjusted individually. Button descriptions are entered on the Button Detail Screen shown previous.

Use the UP or DOWN arrows on the keypad to navigate up or down the list.

Use NEXT and BACK to navigate between sections on the screen.

Understanding the Screen
The ID number are for information purposes and can be used to match assigned project switch numbers.

Step 2.13
The Inputs list has a Digital Switch at ID 4 and is described as Dimming Zone 1.

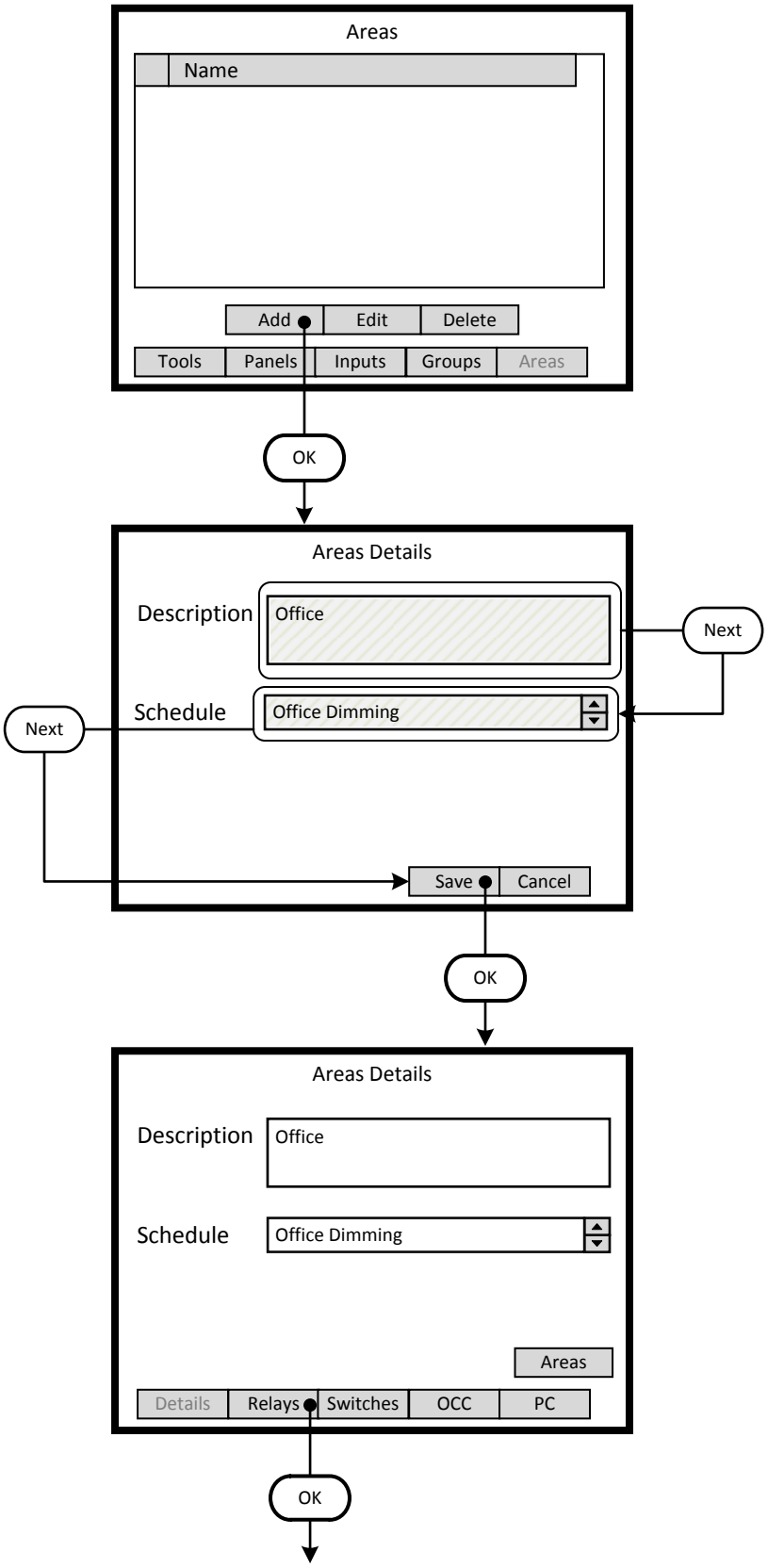
Use the UP and DOWN arrows to move about the list. Use NEXT to navigate to the <**Areas**> button.

Step 2.14
The Inputs list has an Low Voltage Input Board (AI) at LumaCan ID 16 and a Digital Switch (DS) at LumaCan ID 4 that is described as Dimming Zone 1.

Use NEXT to navigate to the <**Areas**> button. Press OK to advance to the Areas maintenance screen.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

Step 3: Create an Area



Step 3.1

The **Areas** screen lists all the current Areas available in the system. At this step there are no existing Areas. To create a new Area navigate to the <**Add**> onscreen button and press OK.

Understanding the Screen
There are no Areas in this system.
Description of the onscreen buttons:
<***Edit***> *selecting this onscreen button will allow editing of the highlighted Area in the list.*
<***Delete***> *selecting this onscreen button will permanently remove the highlighted Area from the list.*
<***Tools***> *use to navigate to the System Tools screen.*
<***Panels***> *use to navigate to the Relay Panel Detail Screen*
<***Groups***> *use to navigate to the Group building screen*
<***Areas***> *use to navigate to the Areas configuration screen*

Step 3.2

Enter the desired Area name and detail in the **-Description-** field. Enter as much information as practical.
The Area must be assigned to a Schedule. An area can only be assigned to one schedule at a time. All of the available system Schedules will appear in the **-Schedule-** list box.

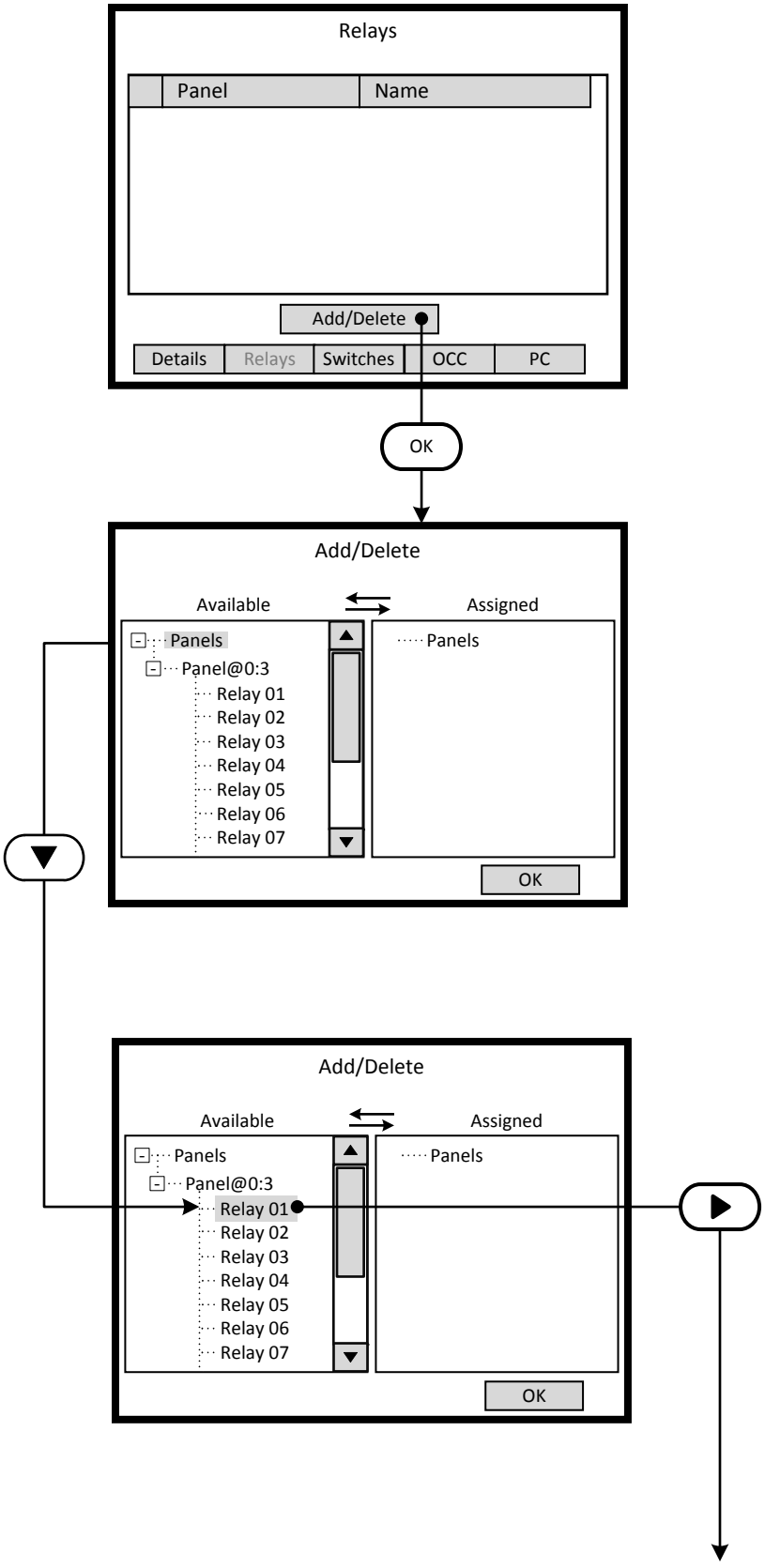
Understanding the Screen
*To appear in the **-Schedule-** list box, Schedules must be created prior to entering this screen. See the "Create a Schedule" section.*
Description of the onscreen buttons:
<***Save***> *selecting this onscreen button will create the Area, save it, and add advance to the next screen*
<***Cancel***> *used to discard entries*

Step 3.3

The newly created Area will contain relays and associated control devices. Additional navigation buttons are available to navigate to screens that populate or edit the contents of the Area. To add relays to the Area, navigate to the <**Relay**> onscreen button and press OK.

Understanding the Screen
Description of the onscreen buttons:
<***Areas***> *use to navigate to the Areas list screen*
<***Relays***> *selecting this onscreen button will allow the addition/editing of assigned relays*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***OCC***> *selecting this onscreen button to add/edit assigned Occupancy Sensors*
<***PC***> *selecting this onscreen button to add/edit assigned Photocells*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 3.4

The **Relays** screen lists all the current relays assigned to the Area. To add a new relay to the Area navigate to the <**Add/Delete**> onscreen button and press OK.

Understanding the Screen
There are currently no relays assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the **Area Details** screen*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***OCC***> *selecting this onscreen button to add/edit assigned Occupancy Sensors*
<***PC***> *selecting this onscreen button to add/edit assigned Photocells*

Step 3.5

The left side of the screen under the heading -**Available**- lists all of the relays that have not been assigned to an Area. If the desired relay is not on this list it has been assigned to another Area. Relays are displayed according to the panel they are installed in. All unassigned relays in the system can be seen on this list.

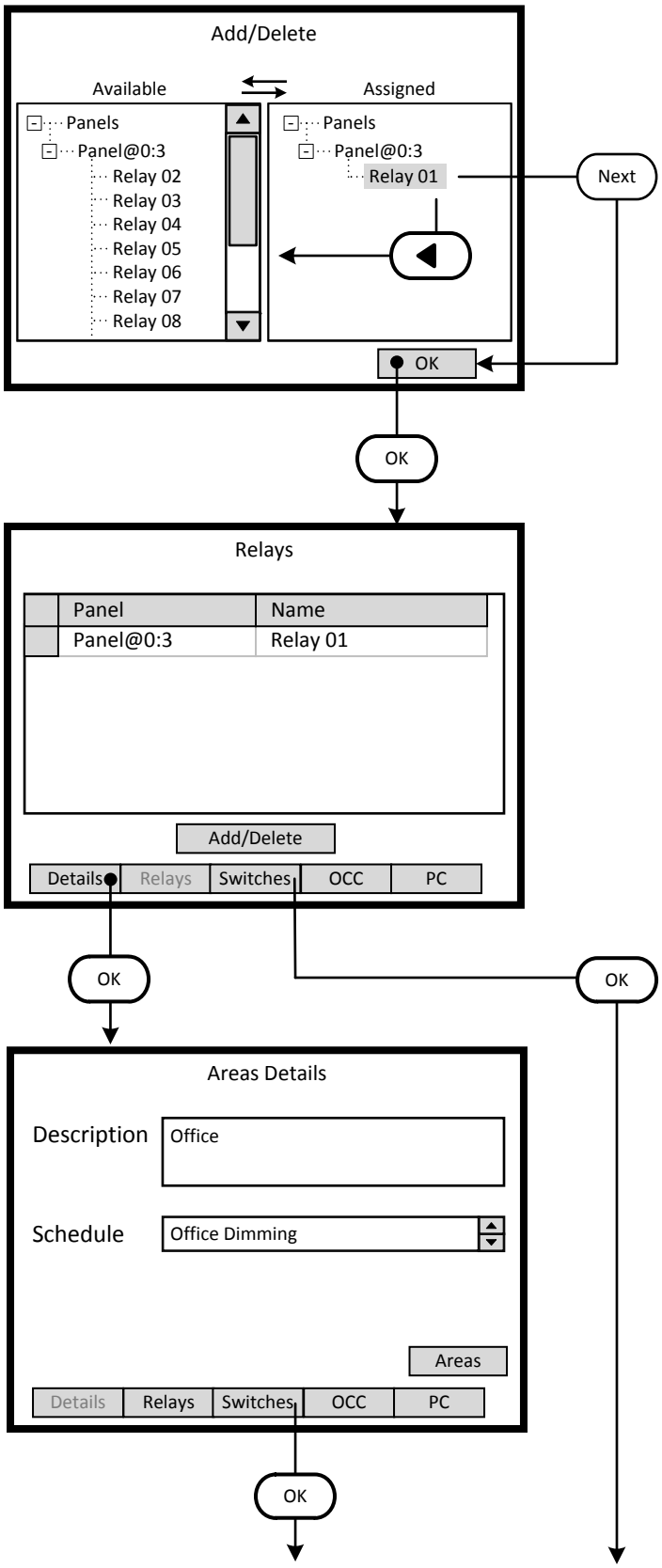
Understanding the Screen
Complete panels may be collapsed by highlighting name on the list pressing OK.
Description of the onscreen button:
<***OK***> *selecting this onscreen button will save the selections made and return to the **Relays** list screen.*

Step 3.6

Relays are added to the Area by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this Area.
Relays 01 through 07 are available for assignment.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the Area.

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 3.7

Relays are deleted from the Area by moving them from the -**Assigned**- list to the -**Available**- list. This is accomplished by highlighting the desired relay on the right side of the screen and using the left arrow to move it to the right side of the screen. To accept the assignment, navigate to the -**OK**- onscreen button and press OK or Enter.

Understanding the Screen
Currently Relay 01 of Panel 3 has been assignment to the Area.
Relays 02 through 07 are available for assignment.

Step 3.8

The -Relays- screen lists the relays assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next common step is to add switch buttons to the Area.

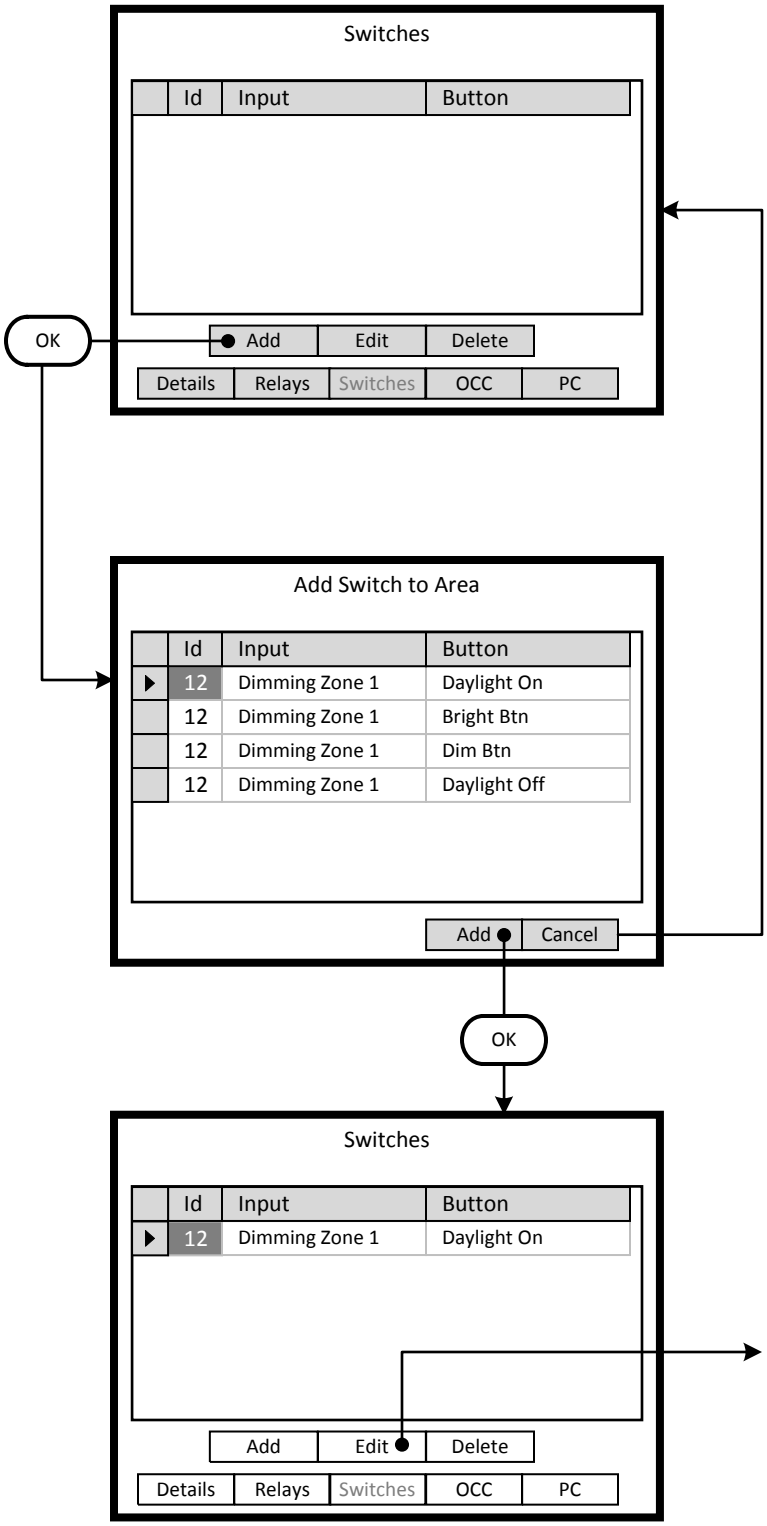
Understanding the Screen
Currently only Relay 01 of Panel 3 has been assignment to the Area.
*There are two navigating paths to the next screen. Using the <**Switches**> onscreen button skips a screen and goes directly to the -**Switches**- screen.*

Description of the onscreen buttons:

*<**Details**>*	*use to navigate to the -**Area Details**- screen*
*<**Switches**>*	*use to navigate to the -**Switches**- screen*
*<**OCC**>*	*use to navigate to the -**Occupancy Sensors**- screen*
*<**PC**>*	*use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name

Step 4: Switch Buttons



Step 4.1

The -**Switches**- screen lists the switch buttons assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next common step is to add switch buttons to the Area.

Understanding the Screen
Currently there are no switch buttons assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.2

The -**Add Switch to Area**- screen lists the available and unassigned switch buttons for the system. As a switch button is assigned to an Area, it is removed from this list.

Understanding the Screen
*The highlighted button, button 1 of the switch at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

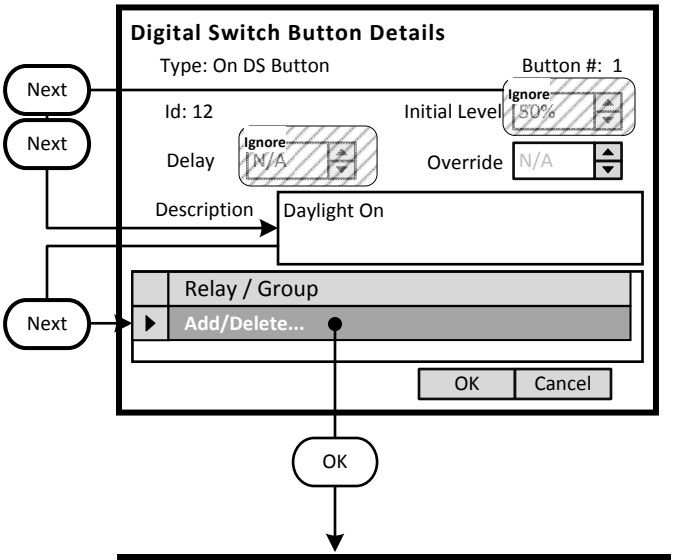
Step 4.3

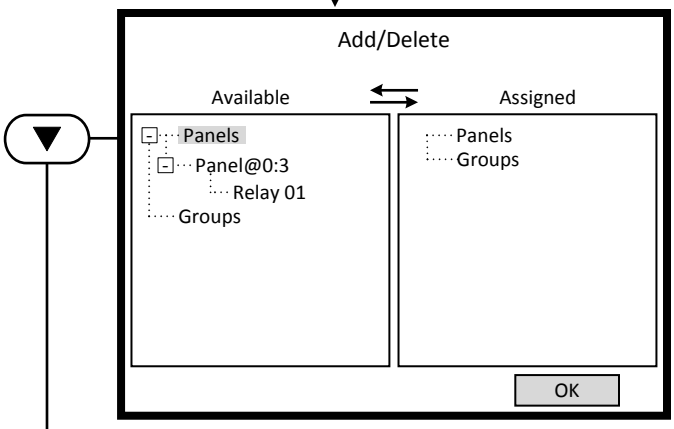
The -**Switches**- screen lists the switch buttons assigned to the Area. This list will be displayed each time this section of the Area information is entered.

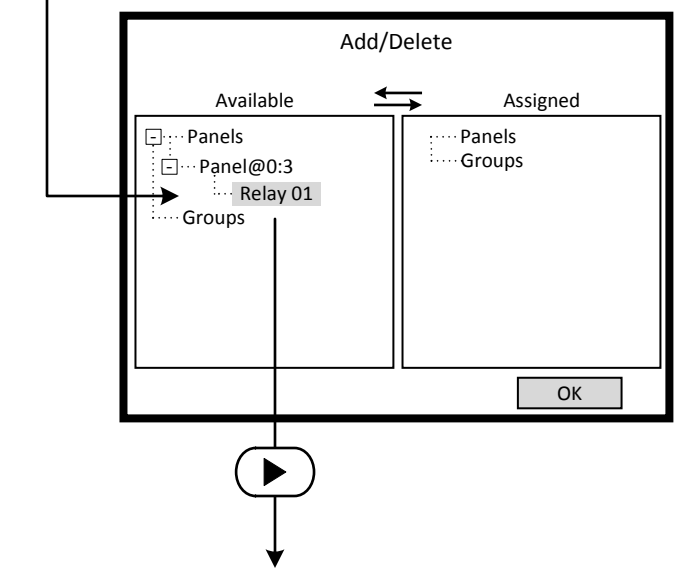
Understanding the Screen
Currently button 1 of the switch at LumaCan address 4 is assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name







Step 4.4

This screen configures the characteristics of the switch button. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*The -**Description**- field can be edited on this screen.*
*Information from the **Digital Switch Detail** screen will be displayed here.*
*Ignore the settings of -**Initial Level**-, -**Delay**- and -**Override**-.*

Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

Step 4.5

The left side of the screen under the heading -**Available**- lists all of the relays that have been assigned to an Area. If the desired relay is not on this list it has not been assigned to this Area. Relays are displayed according to the panel they are installed in. Use the navigation keypad to highlight the desired relay.

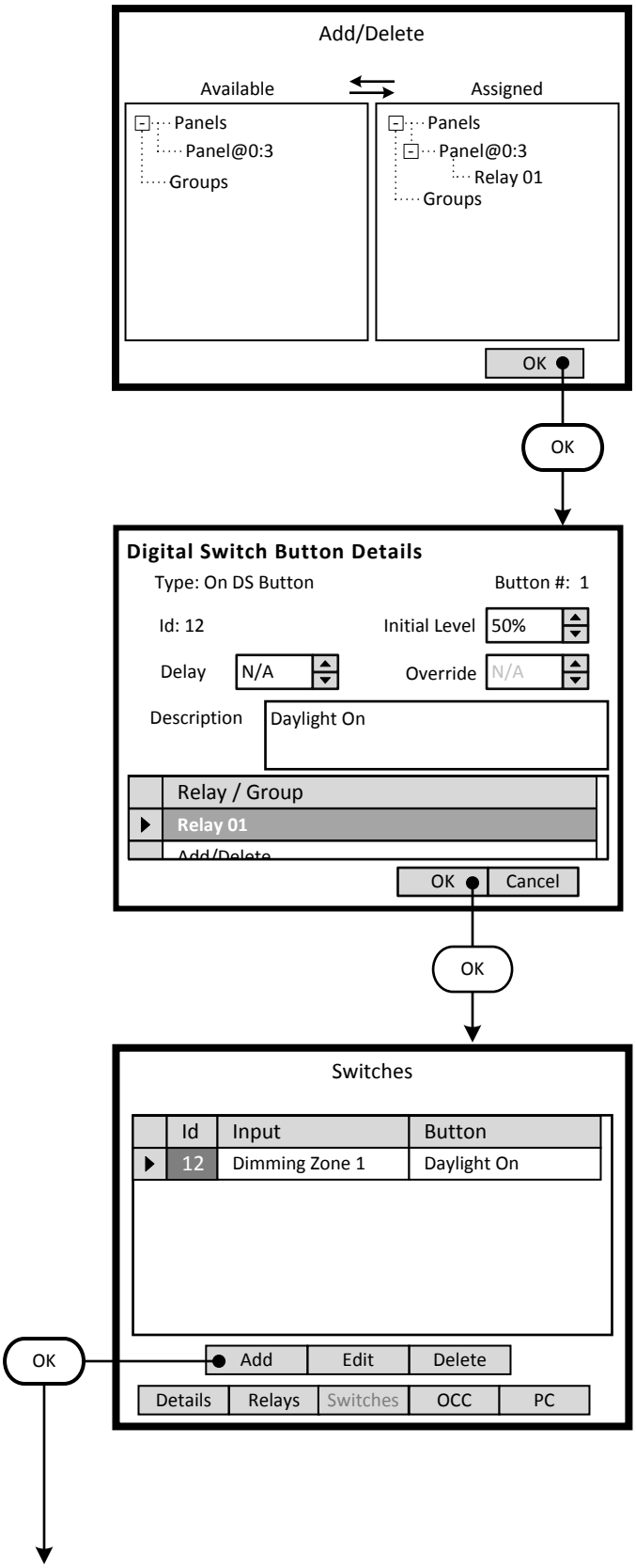
Understanding the Screen
Complete panels may be collapsed by highlighting name on the list pressing OK.
Description of the onscreen button:
<***OK***> *selecting this onscreen button will save the selections made and return to the **Relays** list screen.*

Step 4.6

Relays are assigned to the Switch button by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this Switch Button.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the Switch Button.

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.7

Relay 01 is assigned to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned-** list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -**Digital Switch Button Details**- screen*

Step 4.8

Relay 01 is assigned to the control of the Switch Button 1.
To remove it, highlight the relay in the -**Assigned-** list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
Relay 01 of Panel 3 will start daylight harvesting when button 1 of switch ID: 12 is pressed.
*The settings of -**Initial Level**-, -**Delay**- and -**Override**- do not apply.*

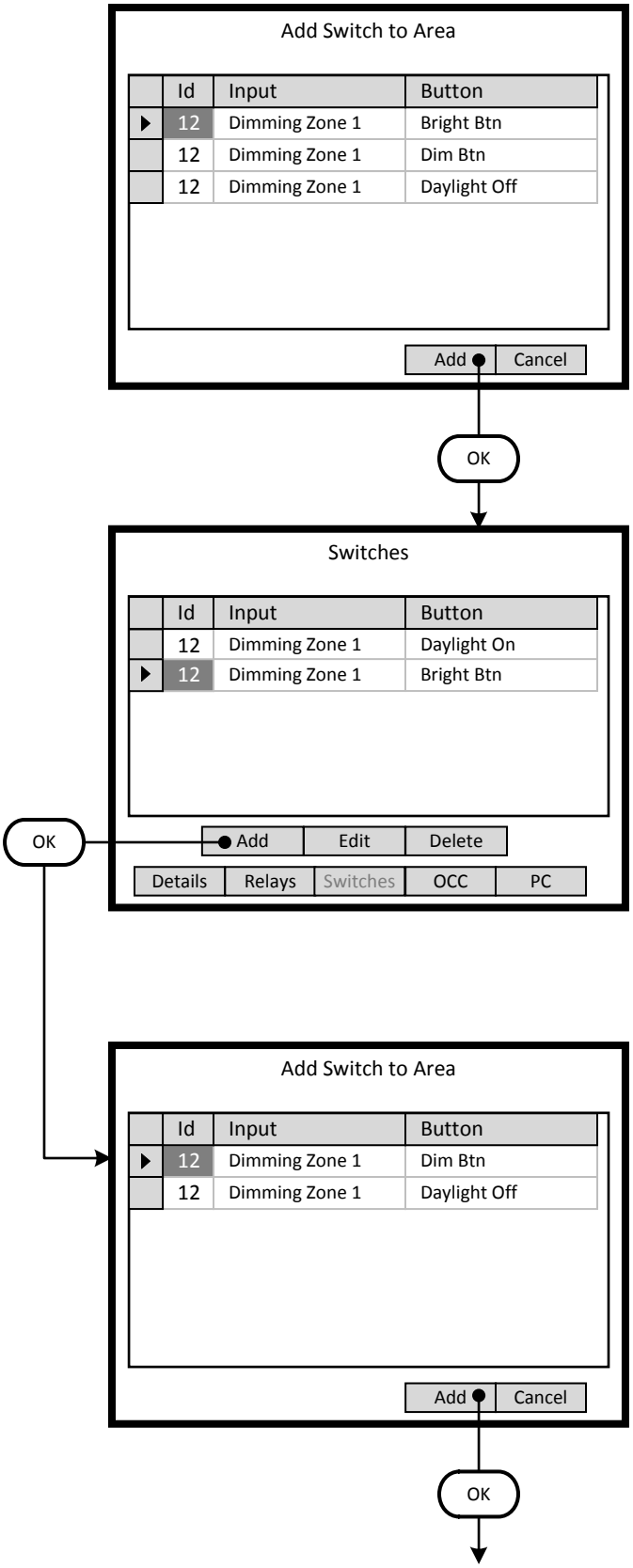
Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -**Switches**- screen*
<***Cancel***> *use to abandon entries and navigate to the -**Switches**- screen*

Step 4.9

All four of the Buttons for the Switch must be assigned to the Area. This summary list will be displayed each time this section of the Area information is entered. Navigate to the <**Add**> button and press **OK** button on the keypad.

Understanding the Screen
Currently there is one switch button assigned to the Area.
Description of the onscreen buttons:
<***Edit***> *use to navigate to the -**Digital Switch Button Details**- screen to make modifications to settings of the highlighted button*
<***Delete***> *use to delete the highlighted button from the Area*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.10

The -**Add Switch to Area**- screen lists the available and unassigned switch buttons for the system. As a switch button is assigned to an Area, it is removed from this list.

Understanding the Screen
*The highlighted button, Bright Btn button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
*<**Cancel**> use to navigate to the -**Area Details**- screen*

Step 4.11

The -**Switches**- screen lists the switch buttons assigned to the Area. This summary list will be increase as each button is added.

Understanding the Screen
Currently 2 buttons are assigned; Daylight On, Bright Btn of switch ID 12 at LumaCan address 4.

Description of the onscreen buttons:
*<**Add**> use to navigate to the -**Add Switch to Area**- screen*
*<**Delete**> use to delete the highlighted button*
*<**Details**> use to navigate to the -**Area Details**- screen*
*<**Relays**> use to navigate to the -**Relays**- screen*
*<**OCC**> use to navigate to the -**Occupancy Sensors**- screen*
*<**PC**> use to navigate to the -**Photocells**- screen*

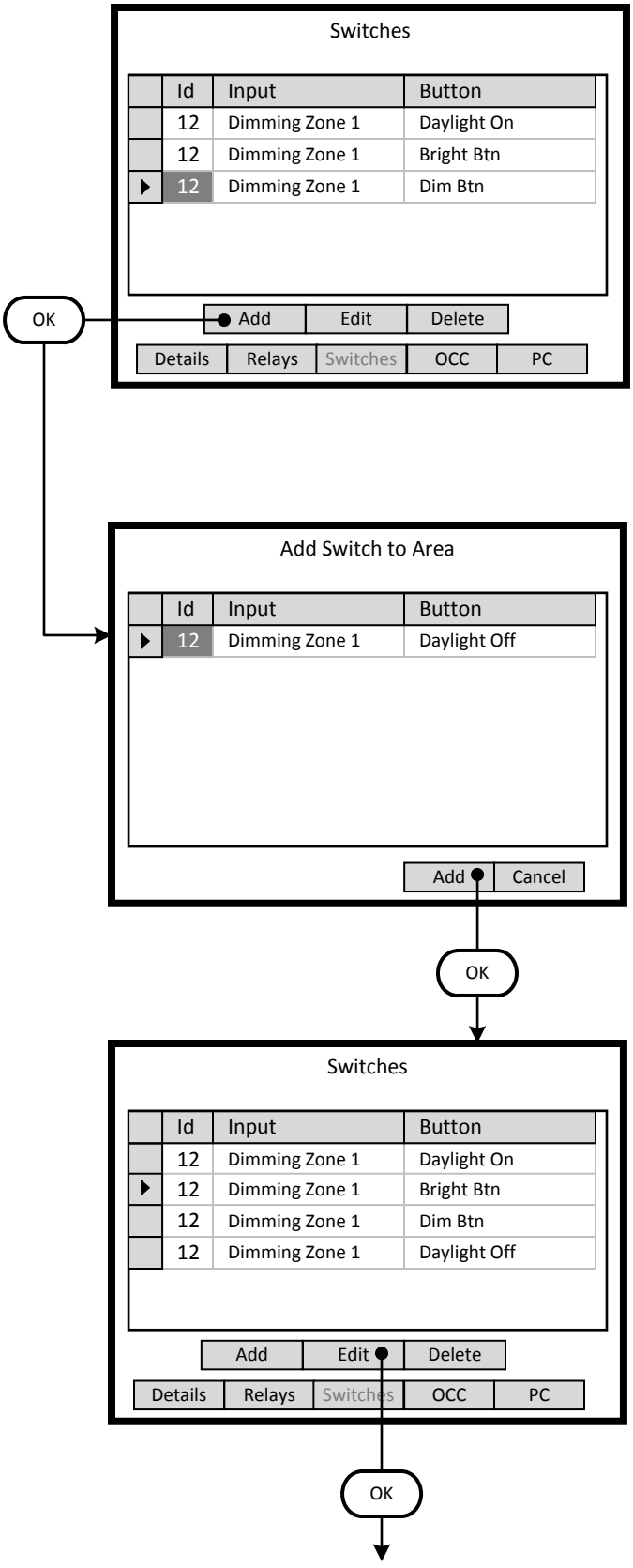
Step 4.12

Continue to add all of the relevant buttons to the Area.

Understanding the Screen
*The highlighted button, Dim Btn button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
*<**Cancel**> use to navigate to the -**Area Details**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.13

The -**Switches**- screen lists the switch buttons assigned to the Area. This summary list will be increase as each button is added.

Understanding the Screen
Currently 3 buttons are assigned; Daylight On, Bright Btn, Dim Btn of switch ID 12 at LumaCan address 4.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.14

Continue to add all of the relevant buttons to the Area.

Understanding the Screen
*The highlighted button, Daylight Off button of the switch ID 12 at LumaCan address 4 can be added to the Area by selecting the <**Add**> onscreen button.*

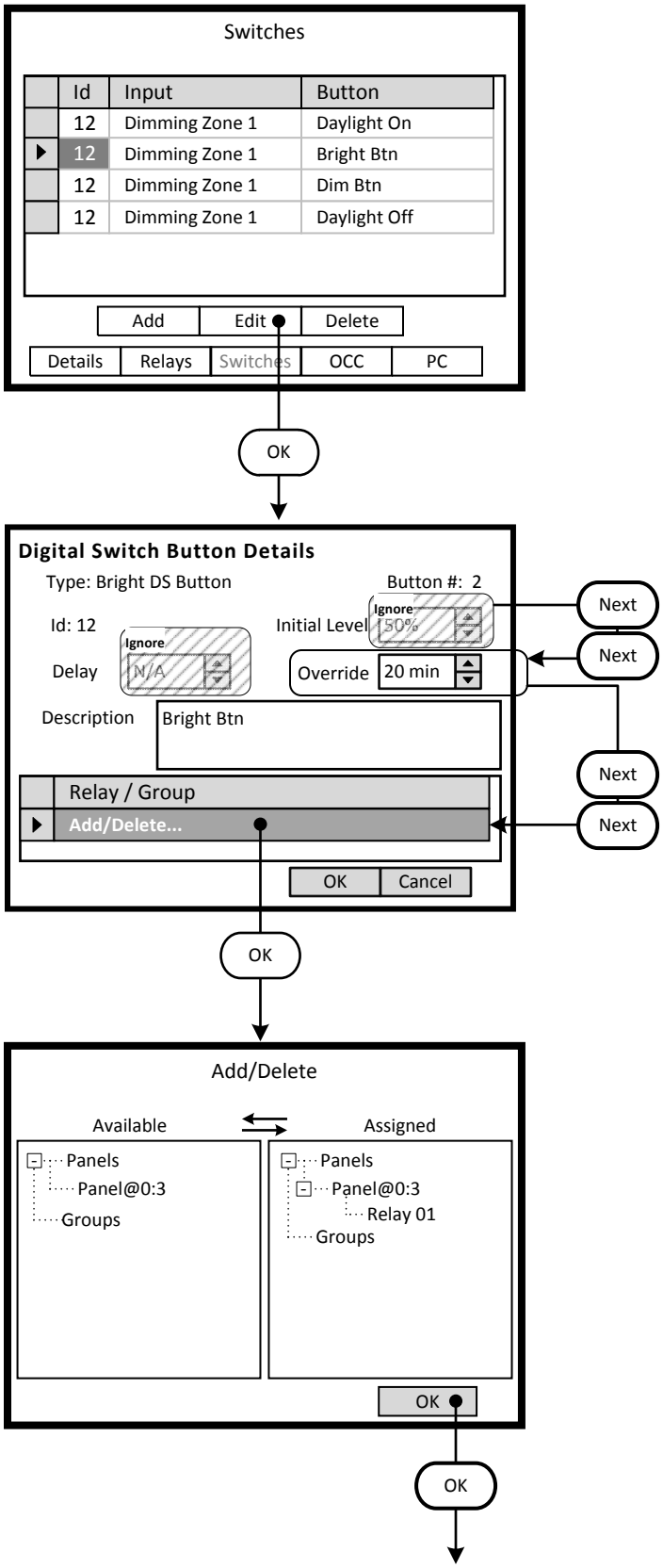
Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

Step 4.15

All four of the buttons for the switch have been added to the Area. Each of the buttons must be assigned to the relay to be controlled. The Daylight On button was previously configured in Step 4.4. Navigate to the <**Edit**> button and press **OK** button on the keypad to configure each button of the remaining three buttons.

Understanding the Screen
Currently there is one switch button assigned to the Area.
Description of the onscreen buttons:
<***Delete***> *use to delete the highlighted button from the Area*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.16

The three new buttons listed on the -**Switches**- screen require configuration. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.17

The Bright DS button will temporarily increase the light level from the Target Level of the photocell. The -**Override**- field is set for the duration that the Bright manual override is active. At the conclusion of this interval, the zone will return to the photocell Target Level. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Initial Level**- and -**Delay**-.*
Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

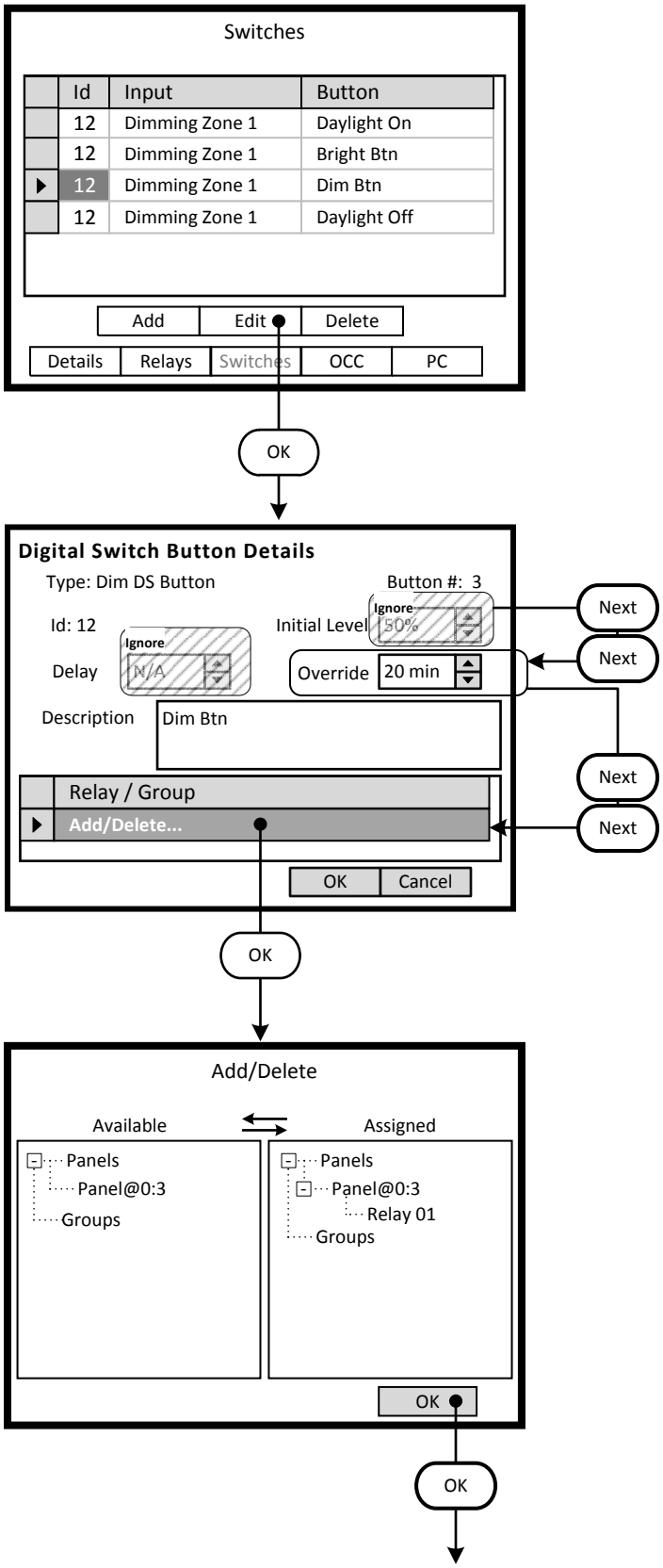
Step 4.18

Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.19

Configure the next button listed on the -**Switches**- screen. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.20

The Bright DS button will temporarily decrease the light level from the Target Level of the photocell. The -**Override**- field is set for the duration that the Dim manual override is active. At the conclusion of this interval, the zone will return to the photocell Target Level. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Initial Level**- and -**Delay**-.*
Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

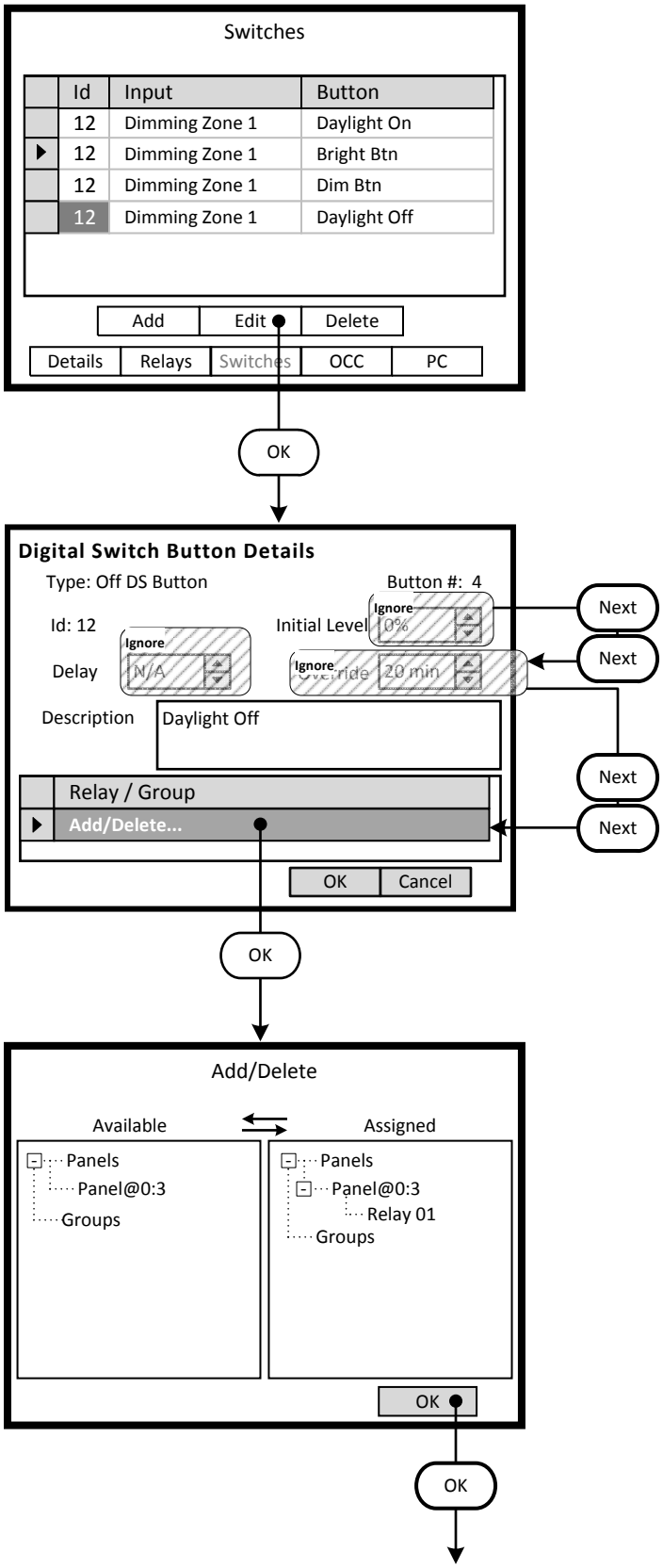
Step 4.21

Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 4.22

The three new buttons listed on the -**Switches**- screen require configuration. Highlight the desired button and navigate to the <**Edit**> onscreen button.

Understanding the Screen
Currently all buttons of the switch at LumaCan address 4 are assigned to the Area.

Description of the onscreen buttons:
<***Add***> *use to navigate to the -**Add Switch to Area**- screen*
<***Delete***> *use to delete the highlighted button*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

Step 4.23

The Off DS button will turn Off the zone. The light level will dim to zero output and turn off the relay. The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

Understanding the Screen
*Ignore the settings of -**Initial Level**-, -**Delay**- and -**Override**-.*

Description of the onscreen buttons:
<***OK***> *save the selections made and return to the **Switches** list screen.*
<***Cancel***> *use to discard entries and return to previous screen*

Step 4.24

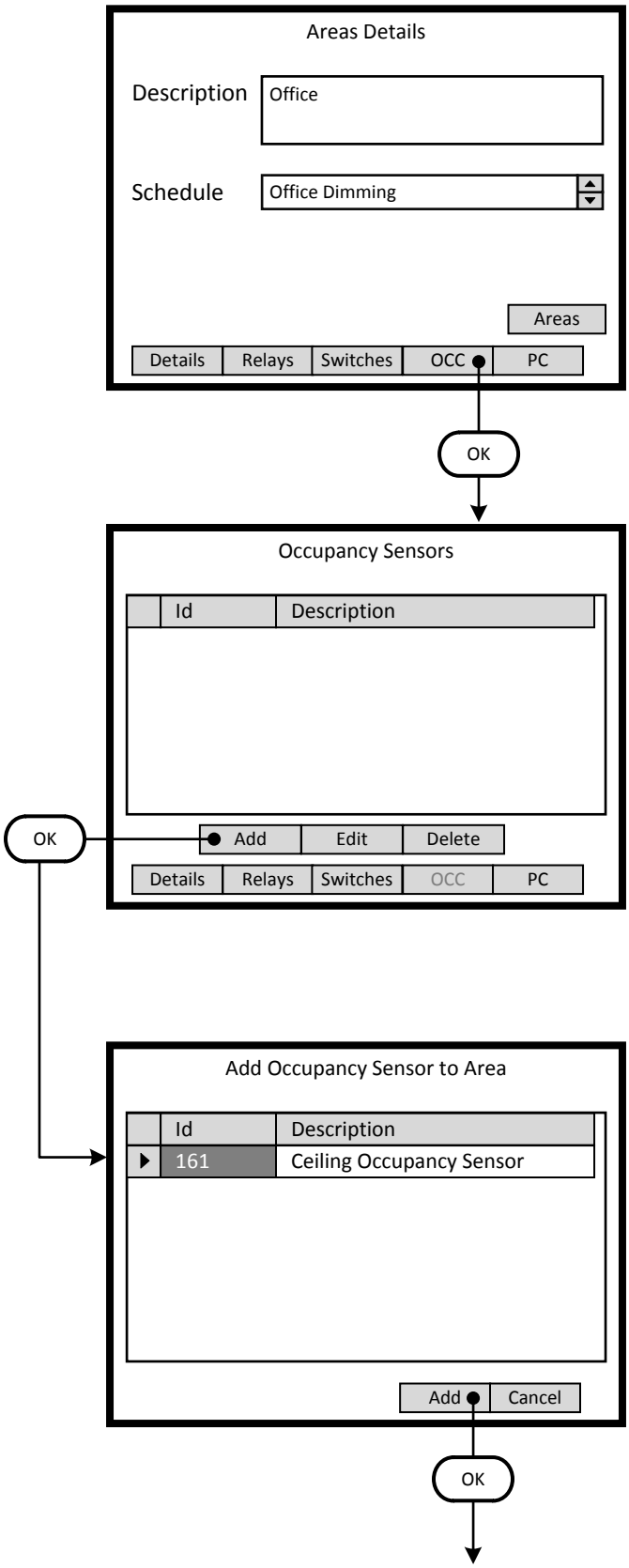
Use the instructions outlined in Steps 4.5 through 4.7 to assign Relay 01 to the control of the Switch Button.
To remove it, highlight the relay in the -**Assigned**- list and press the Left arrow button of the navigation keypad. The relay will move back to the -**Available**- list on the left side of the screen.

Understanding the Screen
Relay 01 of Panel 3 has is assigned to the Switch Button.
No other relays are currently available in the Area.

Description of the onscreen buttons:
<***OK***> *use to accept entries and navigate to the -Digital Switch Button Details- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on screenen entry field
NEXT Button on keypad
Details Screen Name

Step 4: Occupancy Sensor



Step 5.1

The Office Dimming Area requires occupancy sensors assigned to control of the relay. To add occupancy sensors to the Area, navigate to the <**OCC**> onscreen button and press OK.

Understanding the Screen
Description of the onscreen buttons:
<***Areas***> *use to navigate to the -**Areas**- list screen*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *selecting this onscreen button will allow the addition/editing of assigned relays*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***PC***> *selecting this onscreen button to add/edit assigned Photocells*

Step 5.2

The -**Occupancy Sensors**- screen lists the sensors assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next step is to add these devices to the Area.

Understanding the Screen
Currently there are no occupancy sensors assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***Switches***> *use to navigate to the -**Switches**- screen*
<***PC***> *use to navigate to the -**Photocells**- screen*

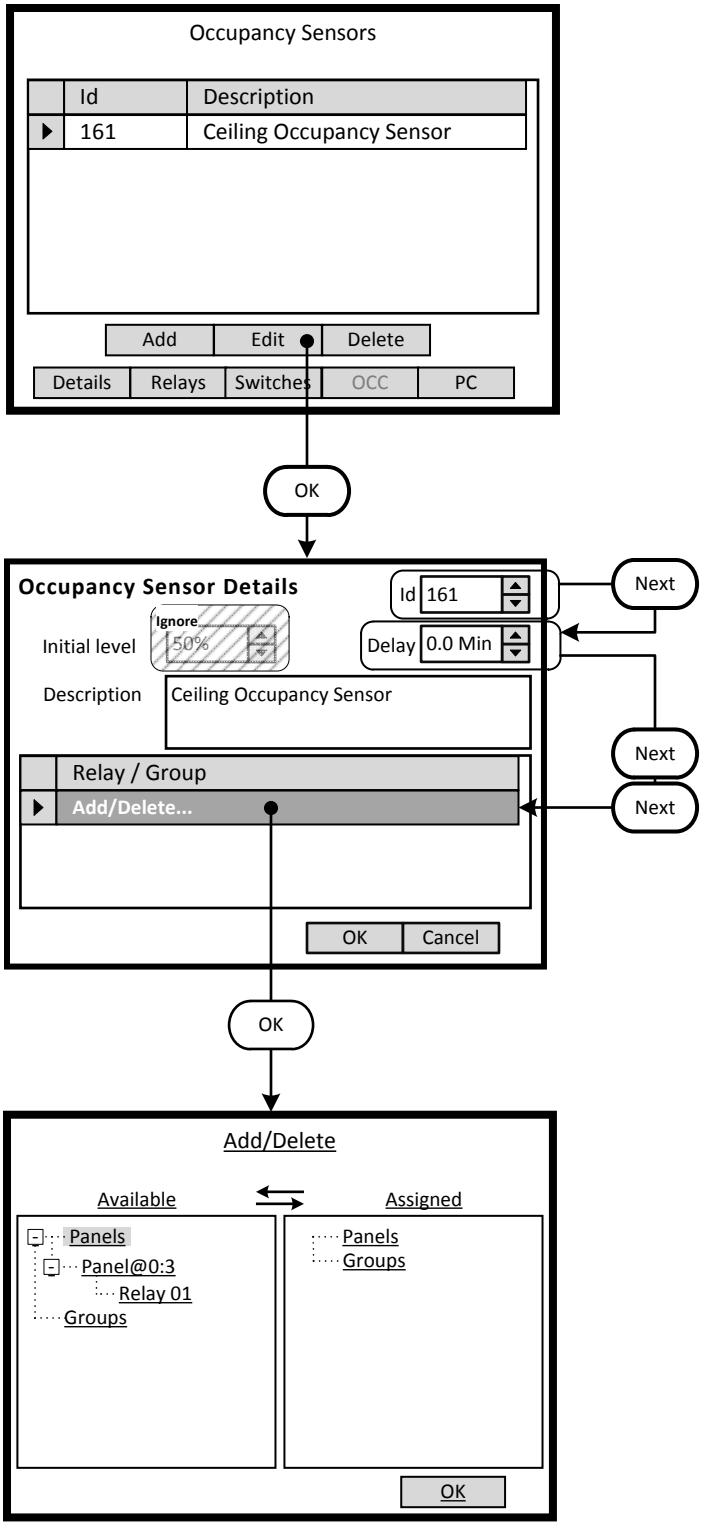
Step 5.3

The -**Add Occupancy Sensor to Area**- screen lists the available and yet unassigned occupancy sensors for the system. As an occupancy sensor is assigned to an Area, it is removed from this list.

Understanding the Screen
*The highlighted occupancy sensor can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 5.4

The -**Occupancy Sensors**- screen lists the sensors assigned to the Area. This device must be configured and have one or more relays assigned to it. Highlight the desired occupancy sensor and navigate to the <**Edit**> button.

Understanding the Screen
Currently there is only one occupancy sensor assigned to the Area.

Description of the onscreen buttons:
*<**Details**>* *use to navigate to the -**Area Details**- screen*
*<**Relays**>* *use to navigate to the -**Relays**- screen*
*<**Switches**>* *use to navigate to the -**Switches**- screen*
*<**PC**>* *use to navigate to the -**Photocells**- screen*

Step 5.5

This screen configures the characteristics of the occupancy sensor.
The -**Delay**- setting is adjusted to provide a time delay after vacancy is determined by the sensor. The Off signal from the sensor will be received at the end of this delay period.
The -**Relay / Group**- list will be populated with the corresponding controlled relays or groups.

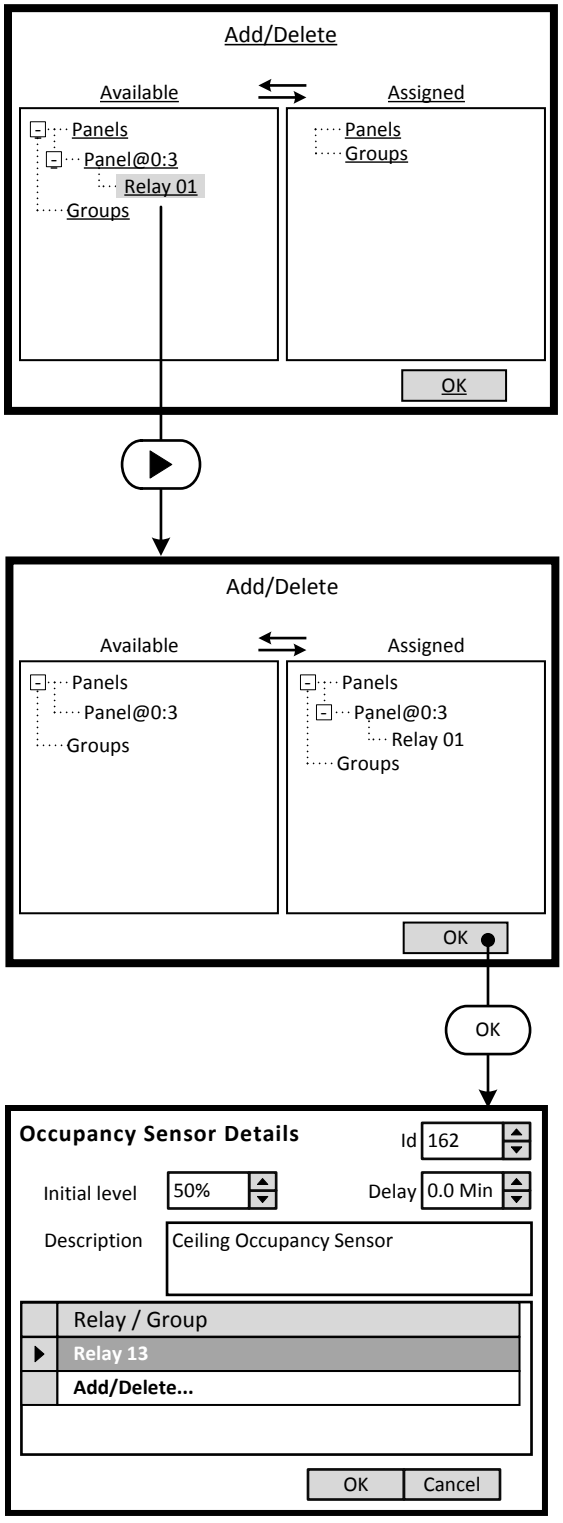
Understanding the Screen
*The -**Description**- field can be edited on this screen.*
*The -**Id**- can be changed .*
*Ignore the settings of -**Delay**- and -**Initial Level**-.*

Step 5.5

The left side of the screen under the heading -**Available**- lists all of the relays that have been assigned to an Area. If the desired relay is not on this list it has not been assigned to this Area. Relays are displayed according to the panel they are installed in. Use the navigation keypad to highlight the desired relay.

Understanding the Screen
Complete panels may be collapsed by highlighting name on the list pressing OK.
Description of the onscreen button:
*<**OK**>* *selecting this onscreen button will save the selections made and return to the **Relays** list screen.*

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



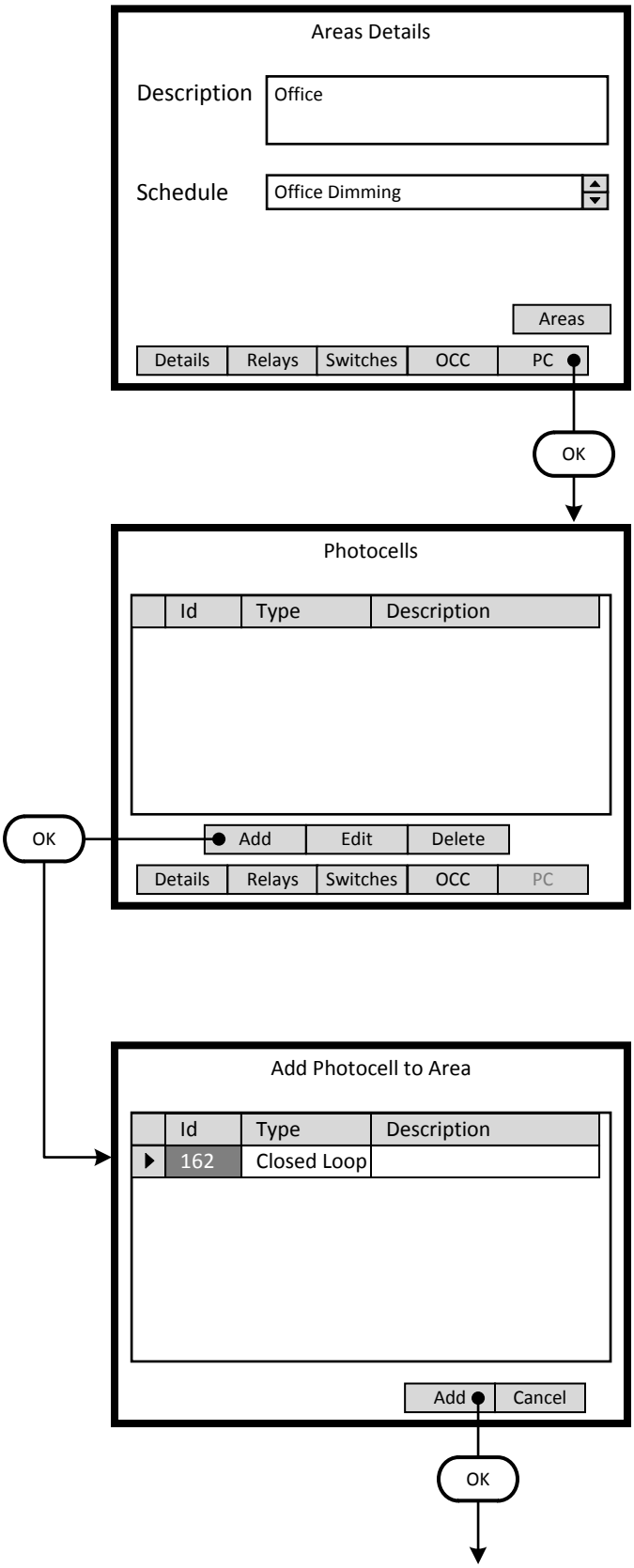
Step 5.6

Relays are assigned to the occupancy sensor by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this occupancy sensor.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the occupancy sensor.

Key
<**Add**> On screen button.
-**Name**- Label of on screenen entry field
NEXT Button on keypad
Details Screen Name

Step 4: Photocell



Step 6.1

The Office Dimming Area requires a photocell assigned to control of the relay. The photocell is mandatory for Behaviors that involve a photocell in their control scheme. To add a photocell to the Area, navigate to the <**PC**> onscreen button and press OK.

Understanding the Screen
Description of the onscreen buttons:
<***Areas***> *use to navigate to the -**Areas**- list screen*
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *selecting this onscreen button will allow the addition/editing of assigned relays*
<***Switches***> *selecting this onscreen button to add/edit assigned switches*
<***OCC***> *selecting this onscreen button to add/edit assigned occupancy sensors*

Step 6.2

The -**Photocell**- screen lists the photocells assigned to the Area. This list will be displayed each time this section of the Area information is entered. The next step is to add these devices to the Area.

Understanding the Screen
Currently there are no Photocell assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***Switches***> *use to navigate to the -**Switches**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensors**- screen*

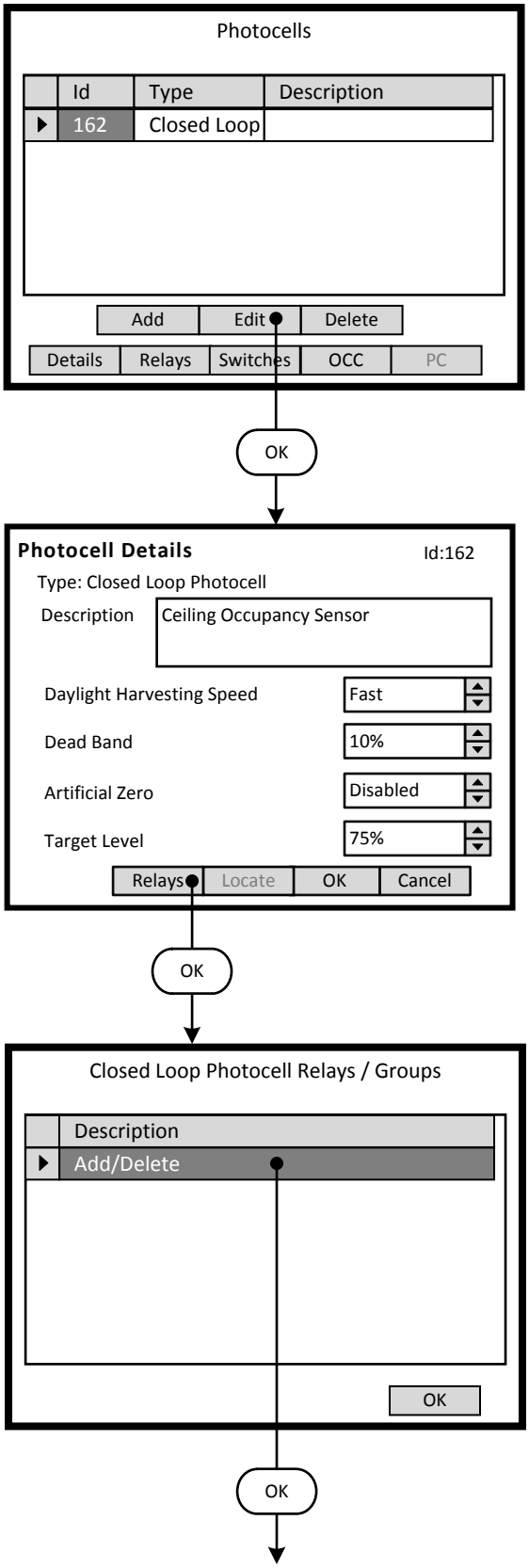
Step 6.3

The -**Add Photocell to Area**- screen lists the available and yet unassigned photocells for the system. As an photocell is assigned to an Area, it is removed from this list.

Understanding the Screen
*The highlighted photocell can be added to the Area by selecting the <**Add**> onscreen button.*

Description of the onscreen buttons:
<***Cancel***> *use to navigate to the -**Area Details**- screen*

Key
<**Add**> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 6.4

The -**Photocells**- screen lists the photocell assigned to the Area. This device must be configured and have one or more relays assigned to it. Highlight the desired photocell and navigate to the <**Edit**> button.

Understanding the Screen
Currently there is only one photocell assigned to the Area.

Description of the onscreen buttons:
<***Details***> *use to navigate to the -**Area Details**- screen*
<***Relays***> *use to navigate to the -**Relays**- screen*
<***Switches***> *use to navigate to the -**Switches**- screen*
<***OCC***> *use to navigate to the -**Occupancy Sensor**- screen*

Step 6.5

This screen configures the characteristics of the Closed Loop Photocell.
The -**Daylight Harvesting Speed**- setting is the speed of response to measured changes in light level.
The -**Dead Band**- setting is applied to the target level to reduce sensitivity of the system relative to the target level.
The -**Artificial Zero**- can be used to change the percentage of output of the relay that represents the off value .
The -**Target Level**- is the desired light level in the space. This is the percentage of measured signal at the input terminals.

Understanding the Screen
*The -**Description**- field can be edited on this screen.*

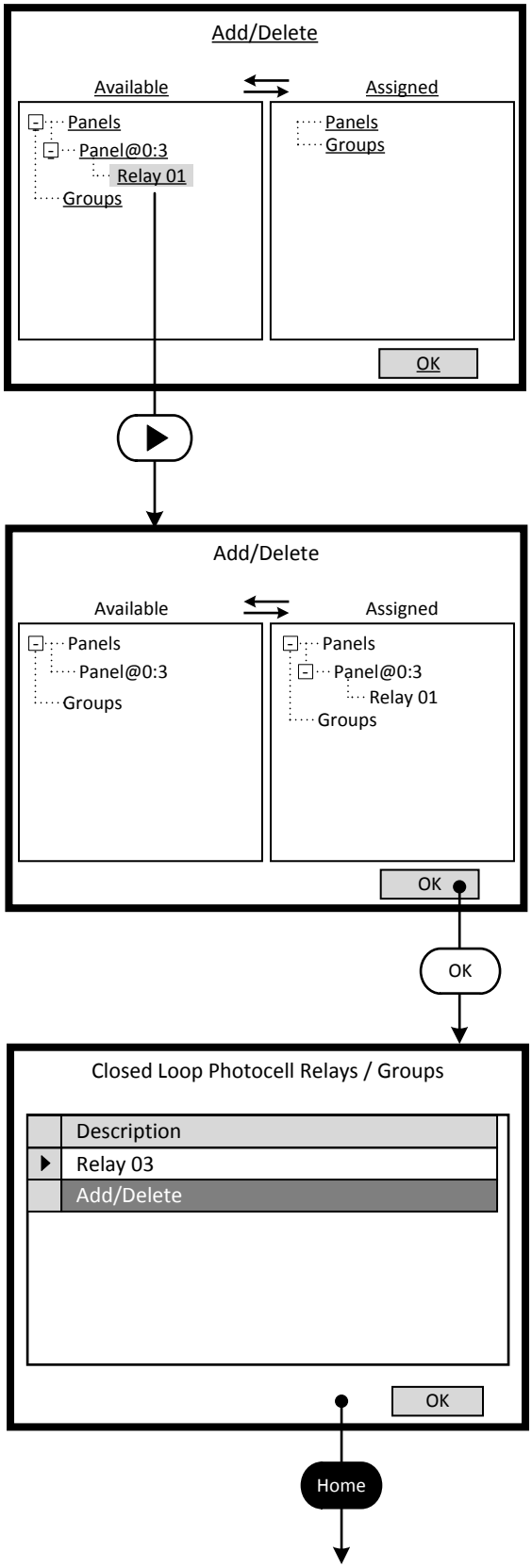
Step 6.6

This is a list of the assigned Relays or Groups in the Area.
Use the navigation keypad to highlight the desired relay or option. Pressing the OK button with the highlight as shown, will advance to the **Add/Delete** screen

Understanding the Screen
No Relays or Groups are assigned to the photocell .

Description of the onscreen button:
<***OK***> *selecting this onscreen button will save the selections made and return to the **Photocell Details** screen.*

Key
<Add> On screen button.
-**Name**- Label of on onscreen entry field
NEXT Button on keypad
Details Screen Name



Step 6.7
Relays are assigned to the Photocell by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently there are no relays assigned to this occupancy sensor.
Relay 01 of Panel 3 has been selected as a candidate for assignment to the occupancy sensor.

Step 6.8
Relays are assigned to the Photocell by moving them from the -**Available**- list to the -**Assigned**- list. This is accomplished by highlighting the desired relay on the left side of the screen and using the right arrow to move it to the right side of the screen.

Understanding the Screen
Currently relay 01 of Panel 3 has been assigned to the photocell.

Step 6.9
This is a list of the assigned Relays or Groups in the Area.
Use the navigation keypad to highlight the desired relay or option. Pressing the OK button with the highlight as shown, will advance to the **Add/Delete** screen
This completes the set-up. Press HOME or follow the string of OK buttons back to the **Area** list.

Understanding the Screen
Only one Relay is assigned to the photocell .

Description of the onscreen button:
*<**OK**>* *selecting this onscreen button will save the selections made and return to the **Photocell Details** screen.*

Section 3
Support Information

Definitions

Agenda	A pattern of Behaviors or list of Behavior Transitions that cover a 24 hour period. Each Agenda provides a maximum of 24 transitions for that period. Time between Transitions can be as short as one minute apart.
Behavior	A predefined control scheme that, when applied to an Area, establishes the interactive priorities among the input devices in that Area. Certain behaviors can change device settings at the time of Transition. The system will stay in the last Behavior until the next Transition is triggered.
Behavior Transition	A point in time that an Agenda triggers an operational change to new Behavior. The transition will only occur in an Area that is assigned to the schedule.
Exceptions Calendar	This is a list of dates that requires specific Agenda that is a departure from the scheduled default Agenda. For example, a list of Holidays that require a unique Agenda.
Schedule	This is a series of seven Agendas corresponding with the days of the week. It is the fundamental or default week that will routinely function. Agendas for dates listed on the Exceptions Calendar will override the default Agenda for that day.
Low Voltage Inputs	Devices that interface with the controlled environment to detect the presence or absence of conditions or people. Devices include occupancy sensors, photocells, low voltage switches, and contact closures. These devices connect to a port on the Low Voltage input card and operate at +24vdc. The input signals from the devices are measured at 0 to +10vdc and can be analog or binary.
Analog Input	This is a signal from a device that will vary in voltage directly proportional to devices' measured detection value. For example, a photocell is used to measure the light level in a space. Full range or maximum light level at the photocell will measure +10vdc and conversely no light level will be 0vdc.
Binary Input	This is a signal from a device that will only have two state or measured voltage levels. Typically these values will be +10vdc (full On signal) or 0vdc (Off signal). An occupancy sensor provides this type of signal, On when occupant is present or Off when no occupant is sensed.
Astronomical Clock	This timing feature tracks the Sunset and Sunrise in the Northern hemisphere as it seasonally changes. The times change or update on a weekly basis. This allows Behavior Transitions based on Sunset and Sunrise times. Offsets from these times are also programmable.
Time/Date Clock	This is the main system clock used to coordinate all Behavior Transitions.

Definitions

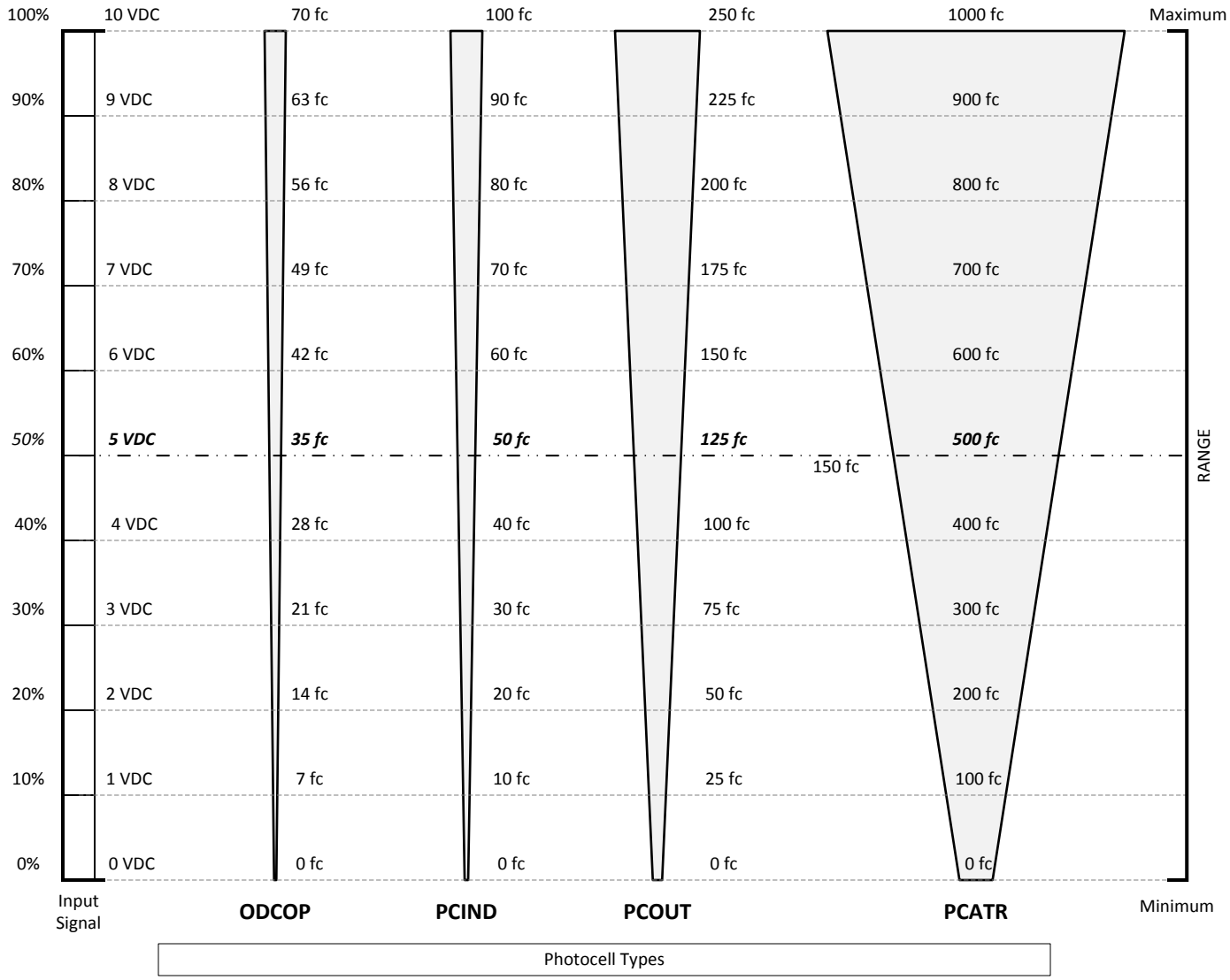
Digital Switch	A manual control switch station that connects to the system via the LumaCan network. They are available in one, two, and four button configurations. Each button on the Digital Switch is programmable for a variety of functions and features.
LumaCan	This is the communication network platform that interconnects all components in the system.
Low Voltage Input Board	This board provides the connection of Low Voltage devices to the system. This board is available in two sizes, 8 and 16 independent inputs.
Closed Loop Photocell	This device measures the light in a specific space or area and provides a proportional signal to the input port. This device will typically measure the light on a surface. It is used to drive the system response for daylight harvesting functions. The light level measured will be the sum of natural and artificial light on the surface. A Target Level is the percentage of measured range that the measured light should maintain. The Closed Loop Photocell controls a single zone.
Open Loop Photocell	This device measures the light level of a source of natural light that is intended to illuminate an area. It should be mounted facing toward the light source as a glass Atrium or sky light. It will be used to vary the artificial light output proportionally to the intensity of the natural light. The Open Loop Photocell can be used to control up to 8 zones with varying degrees of dimming percentage.

Photocell Signals and Calibration

There are several types of photocells available for connection to the GreenMAX system. All photocells must operate at +24VDC and provide an input signal proportional to the foot-candle value being measured. This input signal must range between 0 and +10VDC. The selected photocell must match the application range of measurement.

The chart on this page illustrates the relationship between foot-candles and percentage of scale. Notice the following items:

- The maximum of the range is 100%, minimum is 0%.
- Each type of photocell has a unique maximum range value.
- The proportional values through the signal range while maintaining the relationship between percentage, voltage, and foot-candles.



Low Voltage Connection Diagrams

Diagram 1 - Typical Occupancy Sensor Wiring

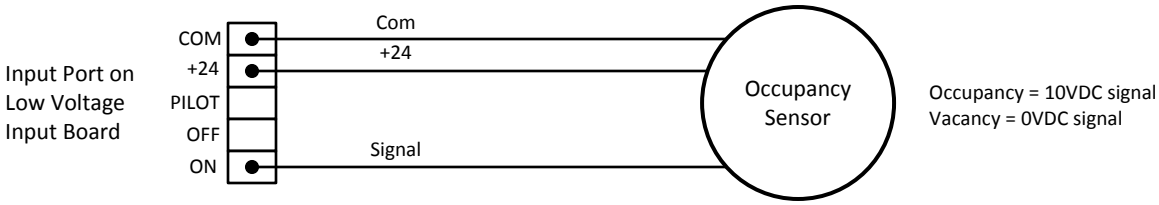
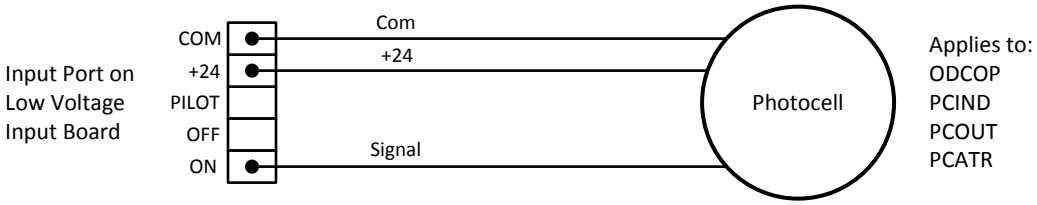
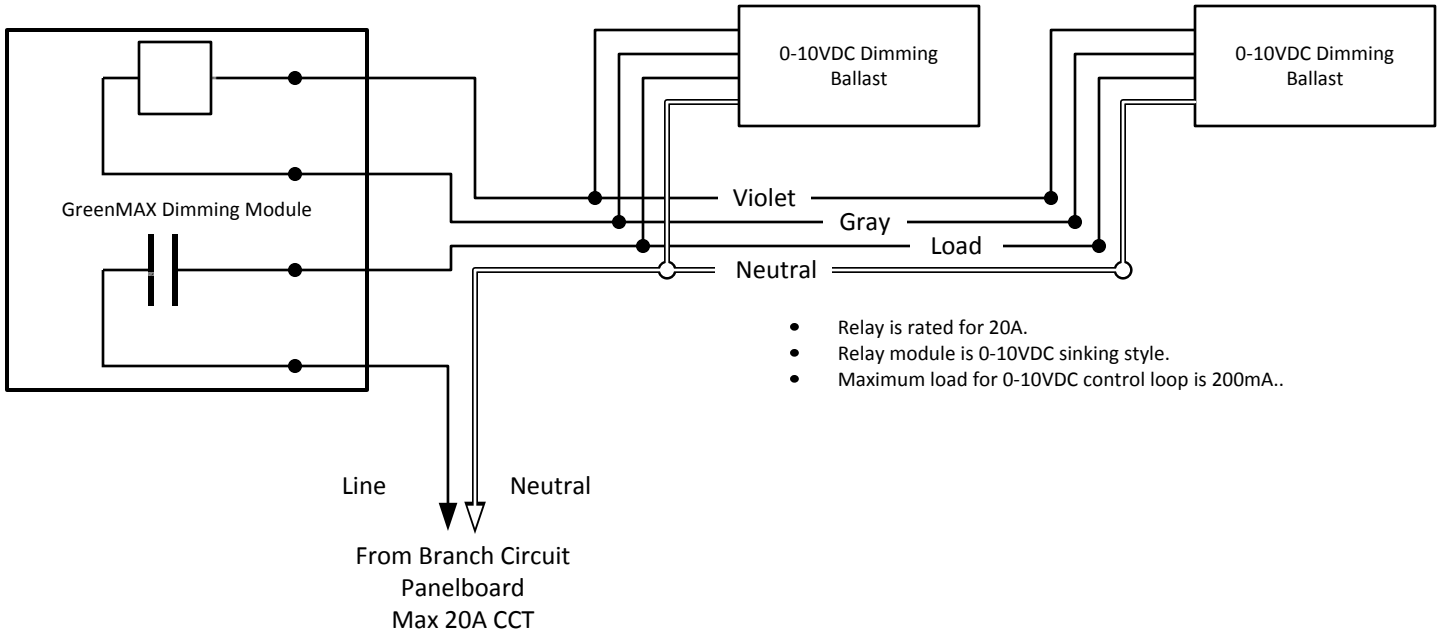


Diagram 2 - Typical Photocell Wiring



- Signal is proportional to measured value in the 0 to 10VDC range.
- Maximum foot-candle reading varies by model.

Diagram 3 - Typical Dimming Module Wiring



- Relay is rated for 20A.
- Relay module is 0-10VDC sinking style.
- Maximum load for 0-10VDC control loop is 200mA..