



Blue Box Classic Operation, Programming and Maintenance Manual

Project Name:
Project Location:
Acuity Agency:
Order #:
PO #:
Project ID:
Date:

Controls Tech Support:

1-800-535-2465 - option 1: nLight; option 2: SSI; option 3: Fresco; option 4: Synergy; option 5: LC&D/Bluebox; option 6 ROAM
To preschedule a call with tech support (providing a 4 hour business lead time) go to the following
link: <http://www.acuitybrands.com/resources/schedule-support-request>

Additional Technical Literature:

<https://www.acuitybrands.com/products/controls/blue-box>

Table of Contents

<u>Blue Box Classic O&M</u>	3
<u>Chelsea Digital Switch Programming Guide</u>	55
<u>Additional Resources (Product specific user guides, Programming documents, etc)</u>	75



**BLUE BOX
OPERATION &
MAINTENANCE
MANUAL**

TABLE OF CONTENTS

CONTENTS	
MAINTENANCE	2
Changing a Relay:	2
Adding a Relay:	2
Recovering from a Surge or Short.....	2
Adding Additional Devices	2
Setting and Using a Keyboard Lock Code.....	2
Daylight Saving Time.....	3
TROUBLESHOOTING	4
BASIC PROGRAMMING	7
DTC Clock Navigation Basics.....	7
Manual Control of Relays	8
Navigate to any Digital Switch or Photocell Card	8
Adding or Deleting Loads (switches, photocell cards, and groups)	9
Time Schedules.....	9
ADVANCED PROGRAMMING	12
Programming Photocells Connected to a Photocell Card .	12
Enabling/Disabling Photocells:	13
Setting the “Startup Trigger”	14
Programming a BLUE BOX Photocell	15
Control Types	16
Last Input Override	16
Group Types	16
Programming Groups	17
Additional Programming for Maintain + Timer Groups	18
Additional Programming for Maintain + Blink Groups.....	18
Programming BLUE BOX Inputs	18
To Add a Holiday List to a Schedule	19
To Edit a Holiday List.....	20
Groups FAQs.....	20
TIME SCHEDULE & GROUP PROGRAMMING PROGRAMMING	23
DTC REFERENCE GUIDE	26
Manual Override Screen.....	28
Review Schedule Screen	28
Group Loads Screen	28
Program Switch Screen.....	29
Panel Switch Types Screen.....	29
Relay Properties Screen.....	29
Relay Parameters Screen	30
More Relay Parameters Screen	30
Board Settings Screen.....	31
Owner Settings Screen.....	31
Auto Addressing Screen	31
Read Address Screen.....	32
Bus Scan Display	32
Error Statistics Screen.....	32
More Diagnostics Screen	33
Dial-Up Host Screen.....	33
Remote Password	33
Local Network Dial.....	33
Erase By Address Button Screen	33
Default Names Screen	34
Erase Relay Boards Screen	34
Erase Clock Memory	34
Set Time and Date Screen	34
Edit Holidays Screen	34
Keyboard Lock Code Screen.....	35
Selection Location Screen.....	35
Display Options Screen	35
Daylight Setup Screen.....	36
Group Names Screen.....	36
Schedule-Names Screens.....	36
Panel-Load Names Screen	37
Switch-Button Names Screens.....	37
Scheduled Events Screens	37
What Controls Groups Screen.....	37
What Controls Relays and Screens.....	38
SYSTEM INSTALLATION STEPS	38
Cable Planning	38
Eliminate Low Voltage Interference	39
Planning Your Cabling Route.....	39
Don't Cause Voltage Drop!.....	40
RJ45 Connectors Cat. 5 installation instructions	40
ACTIVATION CHECKLIST	41
Continuity Test & Results.....	41
Results for Measuring Gnd-A and B-12v	42
Results for Measuring A to B	42
1st Terminator Test & Results	42
Results for Measuring A to B	43
Results for Measuring Gnd to A and B to 12v.....	43
2nd Terminator Test & Results.....	43
Bus Splitting Technique	44
Bus Scan/Error Statistics Tests and Trouble Shooting	44
SYSTEM SOFTWARE START-UP	46
Bus Scan	47
Set Date & Time:	47
Set Location:.....	48
ADDRESS PLANNER PAGE	49

MAINTENANCE

Changing a Relay:

If you need to replace a relay that is not working properly, follow these steps in sequence:

1. Ensure that all breakers that are feeding the lines to the relays in the panel are OFF.
2. Unscrew and open the hinged low-voltage plate to expose the high-voltage section of the panel.
3. Loosen the butterfly nuts that hold the barrier on top of the relays and lift the barrier up a little to free up the relay.
4. Unscrew the LINE and LOAD connection points on the relay and disconnect the wires.
5. Pull off the low voltage jumper that connects the relay to the smacker strip.
6. Pull the relay out of the plastic track and discard it.
7. Push the new replacement relay into the track until it “snaps” securely in place.
8. Reconnect the low voltage jumper between the smacker strip and the newly replaced relay.
9. Reconnect the low voltage jumper between the smacker strip and the newly replaced relay.
10. Push down on the barrier and tighten the wing nuts to hold it in place.
11. Close and screw down the hinged low-voltage plate.
12. Turn the breakers powering the relays back ON.

Adding a Relay:

If you need to add relays, the steps are the same as above, except steps 4 through 6, which should be substituted with the one below:

- 6a) Break out the “knock-outs” needed on the barrier for the new relay or relays.

Recovering from a Surge or Short

If the Assign button LED on the control card is flashing, it means that one or more of the relay drivers have gone into protect mode. This can be caused by a short on the driver or a power spike.

Press the Assign button on the control card and the LED should clear. If it does not, unplug the ribbon cables that connect the smacker strips (both of them) to the control

card. Now reset the card again by pushing the Assign button. Push the ribbon cable for each smacker strip back in, one at a time, while watching the Assign light. If the Assign light starts flashing again after you plug in one or the other of the smacker strips, there is a bad relay on that strip which will need to be replaced.

Disconnect the relays on that smacker strip one at a time, pressing the Assign button after each one is removed. When the Assign light clears, you have located the bad relay. Unplug the relay and transfer the load to a spare.

In some cases when the board has been damaged, it is not possible to clear the problem and the board must be replaced.

Adding Additional Devices

You may wish to add additional switches, photocells or other devices during the lifetime of your system. Here are some key considerations to keep in mind:

- New devices are usually added onto one end of the bus or the other. The first or last device will have one used RJ45 connector and one empty one. Adding a new device is as simple as plugging it into one of these empty connectors using Cat 5. See the System Start-Up Guide for more details on making Cat. 5 connections.
- When the new device is added to the end of the bus, it will now be either the first or last device. This means that the terminator that was previously placed at that end of the bus will need to be moved onto this new device, as it now represents the end of the bus.
- For the new device to work, it must be addressed and defined using the procedures outlined in the System Software Start-Up section in the back of this manual. **WARNING:** Be very certain that you do not assign an address that is already used by an existing device. Duplicate addresses will cause unexpected results and prevent equipment from functioning properly.

Setting and Using a Keyboard Lock Code

If you are responsible for maintaining and programming the lighting control system, you may wish to prevent others from making changes in the clock interface. To do this, you can set a keyboard lock code that is required to make any changes to schedules, groups, switch programming, etc.

To set up the keyboard lock code, navigate the following menus:

SETUP MENU > SYSTEM SETUP MENU > SYSTEM OPTIONS > KEYBOARD LOCK CODE

You will be prompted to create a 4-digit keyboard lockout code. Use SCROLL UP and SCROLL DOWN to change values and TAB UP and TAB DOWN to move between digits. When you have created the number you want, press the EXIT button to save the code and return to the previous menu.

Any user attempting to access the programming interface will now be required to enter the code you set in order to view or change settings.

To remove the Keyboard Lock Code, simply navigate back to the screen where you set the code originally

(SETUP MENU > SYSTEM SETUP MENU > SYSTEM OPTIONS > KEYBOARD LOCK CODE) and set the 4-digit number to 0000 and press EXIT.

Daylight Saving Time

The relay control panel will automatically adjust its time setting forward and backward an hour to account for Daylight Saving Time.

If you are in an area that does not observe Daylight Saving Time, you can disable this feature by doing the following:

Navigate the following menus: SETUP > SYSTEM SETUP > SYSTEM OPTIONS > DISPLAY OPTIONS

On the DISPLAY OPTION screen, locate the DAYLIGHT SAVINGS option. If the screen shows DAYLIGHT SAVINGS: YES, then press TAB DOWN until the part that says YES is highlighted. Press SCROLL UP to change the option to NO.

Then TAB DOWN until the words HIT ENTER at the bottom of the screen are highlighted and press the ENTER button.

Daylight Saving Time will now be disabled.

TROUBLESHOOTING

Some Typical Problems and their Remedies

SYMPTOM	REMEDY
The clock screen is blank/Can't see anything on the screen	<ul style="list-style-type: none"> • Ensure that the relay panel is plugged in and the control card is getting power. If the card is powered, the "online" LED will blink on about once per second. • Check the contrast dial, located on the top edge of the control card. Turn it all the way clockwise and counter-clockwise while watching to see if the display appears. • Ensure that there is a terminator on the first device and the last device on the bus, and nowhere else. • Disconnect all Cat. 5 cable from the connectors on the control card and watch the display. If the display appears when the cables are disconnected, but disappears again when the bus is connected to the card, this indicates a problem with the Cat. 5 wiring (such as a short or faulty crimp). • Ensure that all jumpers and ribbon cables are securely connected as shown in the Installation Manual.
The clock screen is scrambled/ Display is corrupted	<ul style="list-style-type: none"> • There is probably a ground fault in your low voltage cabling. Review the procedure in the System Setup Guide to test your bus, locate and correct any wiring issues. • Disconnect all Cat. 5 cable from the connectors on the control card and watch the display. If the display appears when the cables are disconnected, but disappears again when the bus is connected to the card, this indicates a problem with the Cat. 5 wiring (such as a short or faulty crimp).
Lights won't turn off	<ul style="list-style-type: none"> • Ensure that the relay panel is plugged in and the control card is getting power. When the control card loses power, all the relays are set to turn ON and will stay on. • Locate the HAND/AUTO switch in the top right corner of the control card. Verify that it is set to AUTO. • Make sure that the jumpers connecting the relays to the smacker strip are securely in place and that the ribbon cables connecting the smacker strips to the control card are also firmly attached. • Press the toggle buttons on the control card itself and see if the lights turn on and off. If they turn off when operated directly by the buttons on the control panel, then there is most likely a problem with the programming that was set for schedules, groups or switches, which is causing the lights to stay on. • If only one or two specific relays are stuck ON, and you have checked all the above steps, they may need to be replaced. This is confirmed if they will not respond to their corresponding buttons on the control card, even after you have verified that the card is in AUTO (not HAND) mode and the relays are securely connected to the smacker strip.

SYMPTOM	REMEDY
Lights won't turn on	<ul style="list-style-type: none"> • Since the relays default to the ON position when they fail or lose power, lights not turning on is almost always a problem at the breaker or with the light fixtures and wiring. • Flip the HAND/AUTO switch to HAND. If the lights turn on in HAND mode, then whatever problem you are having turning them on with a schedule or a switch traces back to the Cat 5 cabling or the programming in the clock. Review the low voltage wiring using the procedure in the System Setup Guide and carefully review your programming using the basic programming guide. • If the lights don't come on in HAND mode, check to make sure the breakers feeding the relays are ON. • Check the voltage coming into the Line terminal on the relays to ensure they are actually getting power. • Disconnect the power to the panel so it turns off completely. Check the voltage coming into the Line terminal on the relays again. If the breakers are supplying power and you can read voltage coming into the Line terminals on the relays, then measure the voltage coming out of the Load terminals on the relays. If there is no voltage coming out even though the control card is completely de-powered, the relay needs to be replaced. • However, if there is voltage coming out of the Load side, then there is a problem with the wiring or fixtures which is causing the lights to stay off.
Lights turn on and off randomly	<ul style="list-style-type: none"> • Disconnect the power to the relay panel – all relays should reset to on and stay on. If the relays are not clicking, but the lights continue to turn off and on randomly, it is most likely an issue with the ballast or fixture. • If the lights stayed on when you disconnected the power, re-power the card and observe the lights again. If they resume turning on and off randomly, the next step is to check programming. Go to the RELAY PROPERTIES screen (see DTC Reference section) and select the first relay that is turning off randomly. Check to see if there is a Timer set on the relay and if there is, disable it by selecting the word TIMER and pressing SCROLL UP to set it to NO TIMER. Repeat for each relay. • If relays “chatter” on and off rapidly, check to make sure that the power being supplied to the Control Card is a stable 24v.
Relays respond erratically or slowly to schedules or switches	<ul style="list-style-type: none"> • Ensure that there is a terminator on the first device and the last device of the bus, and nowhere else. • Follow the procedure in the System Startup Guide to review the Bus Scan Display. Make sure that you can individually account for each switch and panel on the bus with a corresponding non-overlapping number (or numbers) on the bus scan display. Any duplicate or overlapping addresses can cause a panel or switch to perform erratically. • Check the low voltage cabling using the Final Activation procedure in the System Startup Guide. Bad crimps or loose connections can create a number of issues.

SYMPTOM	REMEDY
Relays in a panel don't respond to switch(es)	<ul style="list-style-type: none"> • Ensure that there is a terminator on the first device and the last device of the bus, and nowhere else. • Follow the procedure in the System Startup Guide to review the Bus Scan Display. Can you see the panel on the bus as well as the switches you want to have operating it? If not, you will need to review your wiring using the Final Activation steps of the System Startup Guide. • Follow the procedure in the System Setup Guide to read the address of the non-responding panel. Then navigate to the Panel/Switch Types screen and note the LCP (Lighting Control Panel) number assigned to that address. Make sure that no other panels are assigned the same LCP number. • Use the Program Switch menu to verify that your switch or switches are programmed to operate relays on the correct LCP and relay (or group).
A schedule is turning lights off at the wrong time (too early/too late)	<ul style="list-style-type: none"> • Check the time and date on the main screen of the clock display: are they correct? If not, navigate from USER MENU > SETUP > SYSTEM SETUP MENU > SET TIME AND DATE and adjust them to the correct local time and date: Highlight HIT ENTER and then hit ENTER again. • Check to see if there are additional schedules that were set at different times than the main schedule you want. Don't forget that there are 6 pages of schedules (32 schedules total) that may be in use. • Check to see if there are any other items controlling these loads that may have been operated by hand or by a photocell. Ensure that the cause is not due to human intervention or programming. To find out what controls a particular relay, navigate to SETUP MENU> SYSTEM SETUP MENU> SYSTEM OPTIONS> WHAT & WHEN> WHAT CONTROLS RELAYS? • There may be a timer on the relay or relays that are not operating according to schedule. Go to the RELAY PROPERTIES screen (see the DTC Reference section) and select the first relay that is turning off at the wrong time. Check to see if there is a Timer set on the relay and if there is, disable it by selecting the word TIMER and pressing SCROLL UP to set it to NO TIMER. Repeat for each relay that is turning off at the wrong time. • Check the scheduled OFF time.
Lights are not turning on at the scheduled time	<ul style="list-style-type: none"> • Go to the REVIEW SCHEDULES screen. TAB DOWN to the group being controlled by the schedule you are having a problem with and press ENTER. If the group type in the top right corner of the screen says MAINTAIN + TIMER or MAINTAIN + BLINK, highlight it and press ENTER. Make sure that the screen you are now looking at says AUTOMATIC ON. If it says NO AUTOMATIC ON, highlight the setting and press SCROLL UP. • Go through the troubleshooting steps for "Lights won't turn on" earlier in this section.
Some of the lights in a group are not coming on/ turning off with the rest of the lights	<ul style="list-style-type: none"> • Cycle the entire group off and then on by going to the GROUP LOADS screen, highlighting the specific group and then pressing SCROLL DOWN, and then SCROLL UP. This will re-sync all the lights in the group. • Check for any breakers or ballasts that are not passing current to the lights which are not coming on.

End of Troubleshooting Section

BASIC PROGRAMMING

DTC Clock Navigation Basics

Most devices in the digital lighting control system are digital, meaning they are part of a peer-to-peer network and can be programmed.

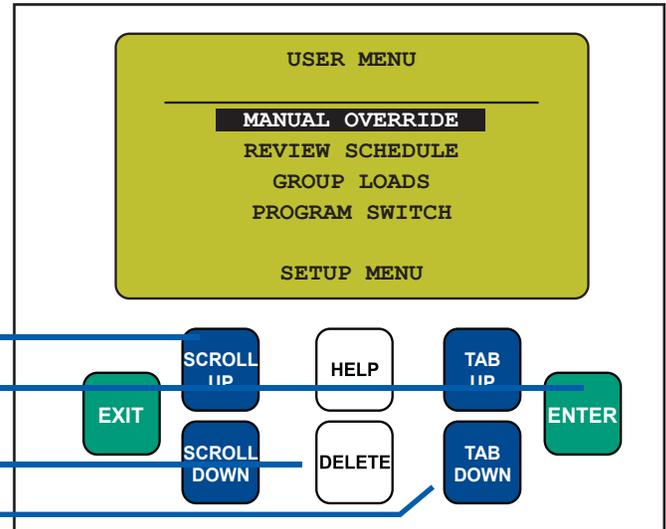
Programming is done from the DTC Clock/Programmer located in the master Lighting Control Panel (LCP).

SCROLL through choices in one field

ENTER to select an item or sub-menu

DELETE information or programming about an item. Use caution.

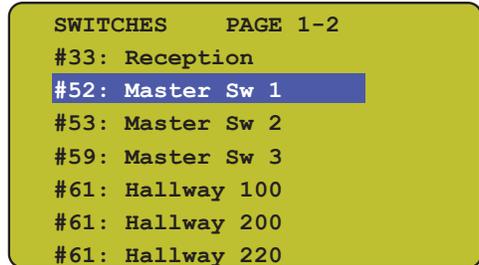
TAB to position the cursor



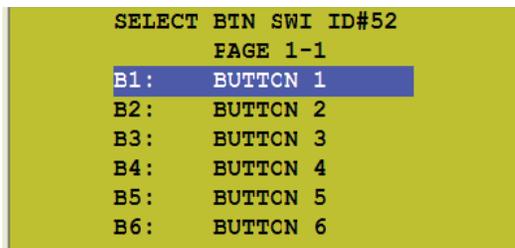
Tabbing

TAB UP or **TAB DOWN** to position the cursor **ENTER** to select or drop into sub-menu

Tab to select a switch. Press ENTER



Tab to select a Button

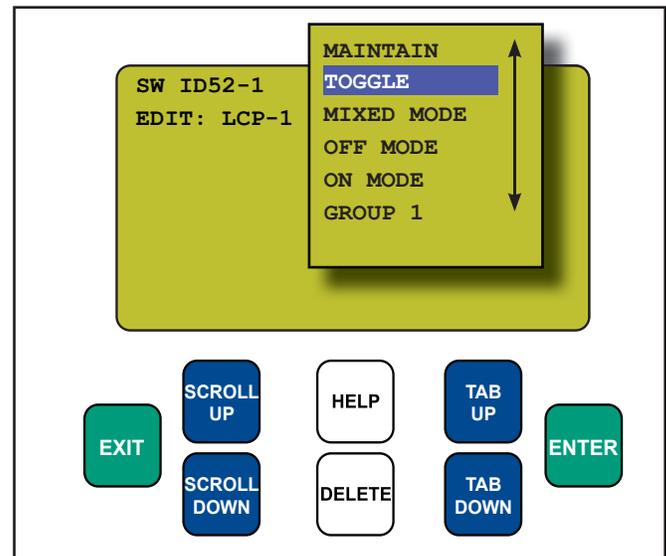


Scrolling

SCROLL UP or **SCROLL DOWN** to choose one item from a "field"*

TAB UP or **TAB DOWN** to exit the field (by moving the cursor to a different selection).

* A "field" is a display in which one of many items can be selected. In other words a value can be changed by selecting a new one.



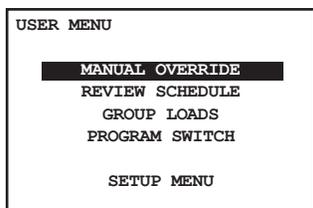
Manual control of relays

The manual override screen allows for manual control and to visually check the (on/off) status of any relays(s) in any panel(s).

The Auto/Hand indicator (see bottom figure) indicates if the panel is in Auto or Hand mode. The letters “AU” indicate the LCP is in Auto mode. The letters “MN” indicate Hand mode.

To Start:

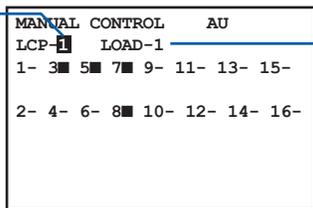
1. TAB once or twice to get started.
2. TAB to MANUAL OVERRIDE
3. ENTER to select.



To Navigate to a LOAD (Relay):

1. If needed, TAB to LCP-1
2. SCROLL to select the correct LCP (Lighting Control Panel)
3. TAB to LOAD-1
4. SCROLL up or down to select the relay you wish to control.

Use the SCROLL button to select the correct LCP (systems with multiple LCPs)

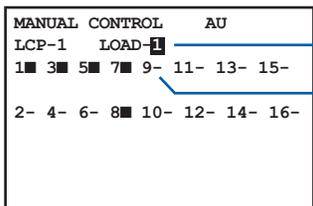


TAB to LOAD-1 and SCROLL UP or DOWN to select the relay to manually control. ENTER to change the status of the relay (load).

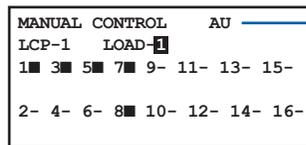
To Control a LOAD (Relay):

1. Press ENTER to toggle the status of the LOAD “off” or “on”.

- indicates the Relay (or LOAD) is off
 ■ indicates the Relay (or LOAD) is on
 Refer to Groups FAQ for a complete description of relay status.



LOAD 1 is on. Press ENTER to turn it off.
 LOAD 9 is off. SCROLL to “9” and ENTER to turn it on.



AU indicates this panel is in AUTOMATIC mode.
 “MN” indicates this panel is in HAND mode

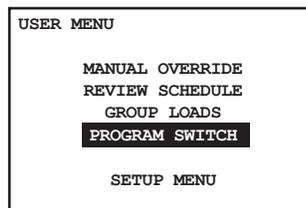
2. Press EXIT several times to get back to the main screen.

Navigate to any Digital Switch or Photocell Card

Digital switches, photocell cards, and contact-closure interfaces are all located under the PROGRAM SWITCH section.

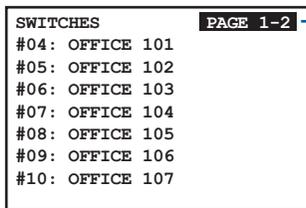
To Start:

1. TAB to start.
2. TAB to PROGRAM SWITCH
3. ENTER to select.



For Multiple Pages (more than 7 switches):

1. SCROLL to the correct Page

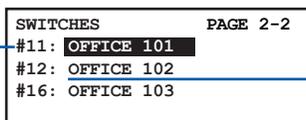


This indicates Page 1 of 2
 If cursor starts here, you have multiple pages with switches on each page. You may need to navigate to the correct page.

To Select Switch:

1. TAB to the correct Switch
2. ENTER to select

This is the digital address of the switch device.



Addresses which are not used or which are not for switches, will not be displayed on this list.

MON-FRI, SAT, SUN

The schedule will be on and off the same times from Monday to Friday. Saturday and Sunday have separate schedules. Holiday list may be excluded.

SCROLL to select Mon-Fri, Sat, Sun Schedule

SCH 1	EXCEPT NONE
MONDAY - FRIDAY	
ON TIME:	09:00 AM
OFF TIME:	05:00 PM
SAT ON TIME:	09:00 AM
OFF TIME:	05:00 PM
SUN ON TIME:	09:00 AM
OFF TIME:	05:00 PM

BY DAY (unique for each day)

This is the most sophisticated schedule type.

Each day may have a separate on and off time which can be edited to the nearest second.

This schedule can start and end on specific dates.

Up to two Holiday lists may be excluded or may have their own schedules.

SCROLL to select BY DAY Schedule

SCH 1	BY DAY		H1	H2
MO TU WE TH FR SA SU				
ON TIME:	09:00:00A			
OFF TIME:	05:00:00P			
FROM JAN 1 TO DEC 31				

Monday Schedule Summary
Start and stop date for this schedule

Trigger Events

ON TIME or OFF TIME are also called Time of Day (TOD) events. To edit an ON or OFF TIME:

1. TAB to the Hours Minutes, and am/pm settings after ON TIME and SCROLL to adjust

ON TIME:	09:00 AM
OFF TIME:	05:00 PM

“DAWN (or DUSK) + or -” means minutes before or after dawn or dusk.

1. TAB to “+ 0 mins”
2. SCROLL up or down to select.

ON DUSK	-30MINS
OFF DAWN	+30MINS

ON NONE	
OFF NONE	

NONE is usually used for disabling a specific day or set of days (i.e. Sunday).

1. SCROLL to select NONE.

ON DUSK	-10MINS
OFF TIME:	10:00 PM

Trigger Events can have mixed “on” and “off” events including: ON TIME, OFF TIME, DUSK, DAWN, or even NONE.

SCH 1	EXCEPT NONE
MONDAY - FRIDAY	
ON TIME:	DUSK -30MINS
OFF TIME:	10:00 PM
SAT ON TIME:	DUSK -30MINS
OFF TIME:	08:00 PM
SUN ON TIME:	NONE
OFF TIME:	NONE

SCH 2	EXCEPT NONE
MONDAY - FRIDAY	
ON TIME:	09:00 AM
OFF TIME:	NONE
SAT ON TIME:	NONE
OFF TIME:	05:00 PM
SUN ON TIME:	NONE
OFF TIME:	NONE

MIXED EVENT TRIGGERS event triggers can be mixed with ON TIME, OFF TIME, DUSK, DAWN, or even NONE to create a variety of schedules.

PCEL ON/PCEL OFF are used when a photocell is connected to the Photocell Input of the BLUE BOX panel. The times shown after PCELL are the times the Photocell is enabled (on) and disabled (off).

PCEL schedules require both ON and OFF times to be programmed.

1. TAB to the Hours, Minutes, and am/pm settings after ON PCEL and SCROLL to adjust.
2. TAB to the Hour,s Minutes, and am/pm settings after OFF PCEL and SCROLL to adjust.

ON PCEL:	09:00AM
OFF PCEL:	05:00PM

PCEL needs both ON and OFF times

To program the Photocell Trigger Levels, go to “Adjusting Photocell Trigger Levels” section.

Editing Time Schedules

To Start:

1. TAB to start
2. TAB to REVIEW SCHEDULE and ENTER to select.

USER MENU
MANUAL OVERRIDE
REVIEW SCHEDULE
GROUP LOADS
PROGRAM SWITCH
SETUP MENU

- 3. If needed SCROLL to the correct Page
- 4. TAB to a new or existing SCHEDULE and ENTER to select

SCHEDULES		PAGE 1-6
NAME:	SCHEDULE 1	
SCH 1	UNUSED	
SCH 2	UNUSED	
SCH 3	UNUSED	
SCH 4	==> NO LOADS	
SCH 5	UNUSED	
SCH 6	UNUSED	

Page 1 of 6. SCROLL up to view more pages

This indicates schedule 1 is not programmed

This indicates schedule 4 is programmed but with no loads added.

- 5. TAB to EVERY DAY and SCROLL to select the schedule type you want.

For EVERY DAY SCHEDULE:

- 1. TAB to ON TIME and OFF TIME and SCROLL to change the Trigger Event (see previous section) and adjust as needed.

SCH 1	EXCEPT NONE
EVERY DAY	
ON TIME:	03:00PM
OFF PCEL:	10:00PM

SCROLL to change Schedule Type

To Add Holiday List see Add a Holiday List Section

MON-FRI, SAT, SUN SCHEDULE

- 1. TAB to ON TIME and OFF TIME for each day or group of days.
- 2. SCROLL to change the Trigger Event and adjust as needed.

SCH 1	EXCEPT NONE
MONDAY - FRIDAY	
ON TIME:	09:00 AM
OFF TIME:	05:00 PM
SAT ON TIME:	11:00 AM
OFF TIME:	03:00 PM
SUN ON TIME:	11:00 AM
OFF TIME:	03:00 PM

TAB to each Trigger Event and adjust per Trigger Events Section

SAMPLE SCHEDULE #1:

SCH 1	EXCEPT NONE
MONDAY - FRIDAY	
ON DUSK -30MINS	
OFF TIME:	11:00 PM
SAT NONE	
NONE	
SUN NONE	
NONE	

The lights will be off through the weekend

SAMPLE SCHEDULE #2:

SCH 1	EXCEPT NONE
MONDAY - FRIDAY	
ON TIME:	09:00 AM
NONE	
SAT NONE	
OFF TIME:	02:00 PM
SUN NONE	
NONE	

This schedule will turn on Monday morning and will be reiterated at 9AM Tuesday to Friday, and will stay on until Saturday afternoon.

For BY DAY SCHEDULE:

- 1. Tab to any day and ENTER to edit that day.

TAB to Monday and view the Trigger Event. ENTER to edit.

SCH 1		
BY DAY	H1 H2	
MO	TU WE TH FR SA SU	
ON TIME:	09:00:00A	
OFF TIME:	05:00:00P	
FROM JAN 1 TO DEC 31		

This is the summary of the Monday Schedule

- 2. TAB to ON TIME or OFF TIME and SCROLL to adjust Trigger Events.

Adjust per Trigger Events Sections.

ON TIME:	9:00:00 AM
OFF TIME:	5:00:00 PM
ADJUST THESE DAYS:	
MON	
EVERY DAY	

To Add These Settings to Other Days

- 1. TAB to Every Day (bottom screen)
- 2. SCROLL to the desired day or group of days and ENTER to select each. The days that are selected will appear on the screen.

ON TIME:	11:30:00 AM
OFF TIME:	02:00:00 PM
ADJUST THESE DAYS:	
MON, TUE, WED	
THU	

SCROLL and ENTER to copy these settings to other day(s)

This is a list of all the days these settings are going to be copied to.

- 1. EXIT and edit any schedules for other days.

To select start-date and end-date

- 1. TAB to JAN and SCROLL to adjust.
- 2. TAB to 1 and Scroll to adjust
- 3. Repeat as above to edit the end-date
- 4. EXIT when complete

SCH 1		
BY DAY	H1 H2	
MO TU WE TH FR SA SU		
ON TIME:	09:00:00A	
OFF TIME:	05:00:00P	
FROM SEP 1 TO JUN 15		

Edit Schedule start date and end date here.

ADVANCED PROGRAMMING

Programming Photocells Connected to a Photocell Card

For applications that require more than one photocell, a photocell card (such as the PCC3 CARD) can be used.

You can connect up to 3 photocells to the photocell card, and individually enable and disable them based on time of day, or when a user presses a switch.

Note: By default, photocells are active all the time once programmed. In order to set up the disable/enable feature, you will need a spare relay or an empty relay position on any panel on the bus for each photocell you are disabling.

The programming for a photocell connected through a photocell card is very similar to programming a switch. To set up basic photocell programming (turn lights on below a certain light level, turn them off above a certain light level), use the following steps:

Basic Photocell Programming

1. Navigate to: USER MENU>PROGRAM SWITCH
2. Select the photocell card from the PROGRAM SWITCH menu and press ENTER to select it.

```
SSWITCHES          PAGE 2-3
#31: SWITCH 31
#32: ANALOG/DIGI. 32
#33: LOBBY SW 1
#34: LOCCY SW 2
#35: SWITCH 35
#41: SWITCH 41
#45: CONCESSION SW 1
```

3. Press TAB DOWN to select a Trigger and press ENTER to select it.

```
SELECT BTN SWI ID#32
          PAGE: 2-3
T1: TRIGGER 1
T2: TRIGGER 2
T3: TRIGGER 3
T4: TRIGGER 4
T5: TRIGGER 5
T6: TRIGGER 6
```

TAB to any unused Trigger. Enter to select.

4. Press SCROLL UP or SCROLL DOWN to set the mode to MAINTAIN

```
SW ID#32-4      MAINTAIN
EDIT: LCP-1     LOAD-1
```

5. Add the desired loads (relays or zones).

```
SW ID#32-4      MAINTAIN
EDIT: LCP-1     LOAD-5
LCP1:1-3,5
```

Add the desired loads (relays or zones).

6. TAB DOWN until you have highlighted the MAINTAIN setting in the top right corner. Now press ENTER to access the trigger levels screen. SCROLL UP to select which photocell you are going to use for this trigger. Analog1 refers to the photocell plugged into the first input on the photocell card. Analog2 refers to the photocell plugged into the second input, etc. The number immediately to the right of the input name is the current light level reading for that input.

```
SW ID#32-4      MAINTAIN
EDIT: LCP-1     LOAD-5
LCP1:1-3,5
```

TAB to MAINTAIN and ENTER to edit trigger levels. To control more than 8 relays, use a Maintain Group.

```
SENSOR ID#32-4
ANALOG1: 32
TIME DELAY: 01 MIN
ON WHEN LEVEL
FALLS BELOW: 20
OFF WHEN LEVEL
RAISES ABOVE: 30
```

SCROLL to select Photosensor Card Input ANALOG 1 (for input 1) ANALOG 2 (for input 2) ANALOG 3 (for input 3)

7. TAB DOWN to time delay and SCROLL UP and SCROLL DOWN to set the time value. We recommend a delay of 10 minutes.

```
SENSOR ID#32-4
ANALOG1: 32
TIME DELAY: 10 MIN
ON WHEN LEVEL
FALLS BELOW: 20
OFF WHEN LEVEL
RAISES ABOVE: 30
```

The default setting for the “on” level (falls below) is 20. The default setting for the “off” level (rises above) is 30. Try these setting first. If they need to be adjusted do the following:

- TAB DOWN to “on” trigger (falls below) and SCROLL to adjust.

```
SENSOR ID#32-4
ANALOG1: 32
TIME DELAY: 10 MIN
ON WHEN LEVEL
FALLS BELOW: 40
OFF WHEN LEVEL
RAISES ABOVE: 41
```

- TAB to “off” trigger (rises above) and SCROLL to adjust.

```
SENSOR ID#32-4
ANALOG1: 32
TIME DELAY: 10 MIN
ON WHEN LEVEL
FALLS BELOW: 40
OFF WHEN LEVEL
RAISES ABOVE: 55
```

! A good way to determine the best light level settings is to do the above steps at a time when the brightness about matches when you want the lights to go on or off. For example, set the Off (raises above) trigger in the morning when the sun is just coming up. Check the light level reading on the clock when the area is bright enough for the lights to shut off and use this reading as the "Off" value. Similarly, set the On (falls below) trigger in the evening when it is just getting dark enough so that the lights should come on. Check the light level reading at that time and use it as your "On" value.

- The programming for this trigger on the photocell card is now set. Press EXIT several times to return to the main menu.

Enabling/Disabling Photocells:

There are applications where you may need to have a photocell on the photocell card operate only during certain times of the day, or you may want to be able to override and ignore the photocell by pressing a switch.

To enable or disable a photocell, you set a special trigger that "watches" a relay. When the relay is ON, the photocell will be enabled, when it is OFF, the photocell will be disabled. You can then assign that relay to a schedule or a switch to control when the photocell is disabled and enabled.

You will need one relay for each photocell that you want to enable and disable separately (all 3 photocells enabled/disabled at the same time could use one relay). You would select an empty relay position or a spare relay since you don't want unrelated lights to turn on and off just because you are making a photocell active or inactive.

Follow these steps to set up the enable/disable feature on a photocell:

Setting Photocell Enable/Disable

- Navigate to: USER MENU>PROGRAM SWITCH
- Select the photocell card from the PROGRAM SWITCH menu and press ENTER. The photocell card will display as ANALOG/DIGI unless renamed.

```
SSWITCHES          PAGE 2-3
#31: SWITCH 31
#32: ANALOG/DIGI. 32
#33: LOBBY SW 1
#34: LOCCY SW 2
#35: SWITCH 35
#41: SWITCH 41
#45: CONCESSION SW 1
```

The Pcc-3 will display as "Analog/Digi" followed by the digital address unless renamed (see the Naming Menu)

- SCROLL to page 2 and TAB DOWN to select Trigger 11, 12, or 13. These triggers are specially reserved and can only be used for enabling/disabling photocells. They are assigned as follows:

- Trigger 11 ----- Enables / Disables Photocell Input 1
- Trigger 12 ----- Enables / Disables Photocell Input 2
- Trigger 13 ----- Enables / Disables Photocell Input 3

! Do not use triggers 11-13 for normal photocell programming! They will only function as enable/disable triggers.

For this example, we will set up enabling and disabling on photocell input 1 -- so select Trigger 11 and press ENTER to select it.

```
SELECT BTN SWI ID#32
      PAGE: 2-3
T7:   TRIGGER 7
T8:   TRIGGER 8
T9:   TRIGGER 9
T10:  TRIGGER 10
T11:  TRIGGER 11
T12:  TRIGGER 12
```

Trigger 11 will enable and disable Input 1 on the Pcc-3

- Press SCROLL UP or SCROLL DOWN to set the mode to OFF MODE.

```
SW ID#32-11      OFF MODE
EDIT: LCP-1      LOAD-1
```

SCROLL to select OFF MODE

- Add any spare or empty relay position as the load (for example LCP1: 16). Refer to Adding or Deleting Loads section earlier in this manual for specific instructions on how to add a relay to a switch or photocell.

```
SW ID#32-11 OFF MODE
EDIT: LCP-1 LOAD-16
LC1:16
```

Select an unused relay

- TAB UP to OFF MODE and press ENTER to go to the trigger levels screen. Use SCROLL UP to change the input to DIGITAL 1.

```
SW ID#32-11      OFF MODE
EDIT: LCP-1      LOAD-1

SENSOR ID#32-11
DIGITAL 1
```

TAB To OFF MODE and ENTER to go to the trigger screen.

SCROLL to select DIGITAL 1

- You have finished setting up the enable/disable feature. Press EXIT several times to return to the main menu.

When the selected relay or relay position is on, the photocell connected to photocell input 1 will be enabled and when off will be disabled.

Now any digital device and/or time schedule can be programmed to enable and disable this photocell input, simply by turning on or off the relay assigned to the enable trigger.

If you have additional photocells connected to inputs 2 and 3, you can set them up to be enabled/disabled using the same steps above, but with Trigger 12 for input 2 and Trigger 13 for input 3.

Special Note on Enabling Photocells During the Day:

When a photocell is disabled, its light level reading rapidly rises to maximum level (1020) and stays there until it is enabled again. When enabled, the light level reading descends from 1020 to the current light level.

This means that any trigger which is set to “Turn off when light level rises above _____” will not be activated since the light level is coming DOWN through the setpoints and is not rising ABOVE any specific light level.

Consider the following scenario:

- A photocell is set to turn off lights when the light level rises above “100.” The current light level is actually 200.
- The photocell is disabled, causing it to read “1020.”

When the photocell is re-enabled, you might expect it to turn the lights off since it is supposed to turn lights off when the light level rises above 100 and the current light level is 200. However, because re-enabling the photocell causes the light reading to come DOWN from 1020 to 200, the photocell never “RISES ABOVE” 100 and thus will not turn off the lights.

The solution is to set an additional trigger that will specifically turn off the lights if the photocell is enabled when it is already bright outside.

This “Startup Trigger” controls the same loads as you already assigned to the photocell earlier. Your earlier programming will affect how the photocell operates when it is active; this “Startup Trigger” is only used to specifically turn lights off when the photocell is just enabled and it is already bright outside.

YOU ONLY NEED TO DO THIS PROGRAMMING STEP IF YOU HAVE A DISABLED PHOTOCELL THAT YOU ENABLE AT SOME POINT DURING THE DAY WHEN IT IS LIGHT OUTSIDE, AND IT IS NOT PROPERLY SHUTTING LIGHTS OFF.

Setting the “Startup Trigger”

1. Navigate to: USER MENU>PROGRAM SWITCH
2. Select the photocell card from the PROGRAM SWITCH menu and press ENTER to select it.

```
SSWITCHES                PAGE 2-3
#31: SWITCH 31
#32: ANALOG/DIGI. 32
#33: LOBBY SW 1
#34: LOCCY SW 2
#35: SWITCH 35
#41: SWITCH 41
#45: CONCESSION SW 1
```

The photocell card will display as “Analog/Digi” followed by the digital address unless renamed (see the Naming Menu)

3. TAB DOWN to any unused trigger and press ENTER to select

```
SELECT BTN SWI ID#32
PAGE: 2-3
T1: TRIGGER 1
T2: TRIGGER 2
T3: TRIGGER 3
T4: TRIGGER 4
T5: TRIGGER 5
T6: TRIGGER 6
```

TAB to any unused Trigger and ENTER to select

4. SCROLL UP or SCROLL DOWN to set the mode to OFF MODE

```
SW ID#32-5    OFF MODE
EDIT: LCP-1    LOAD-1
```

SCROLL to OFF MODE

5. Add the same loads that you previously set in the earlier trigger for this photocell. Then TAB DOWN to OFF MODE and press ENTER to access the trigger levels screen.

```
SW ID#32-5    OFF MODE
EDIT: LCP-1    LOAD-5
LCPL:1-3,5
```

Add the same loads as the basic trigger.

6. TAB DOWN to time delay and SCROLL UP or SCROLL DOWN to set the time delay to 1 minute.

```
SENSOR ID#32-5
ANALOG01: 32
TIME DELAY: 01 MIN
ON WHEN LIGHT LEVEL
FALLS BELOW: 20
```

Set the Time Delay to 1 Minute

7. TAB DOWN to RISES ABOVE and SCROLL DOWN to change it to FALLS BELOW.

```

SENSOR ID#32-5
ANALOG01: 32
TIME DELAY:01 MIN
ON WHEN LIGHT LEVEL
FALLS BELOW: 20
    
```

SCROLL to select "Falls Below"

8. TAB DOWN to the trigger level and SCROLL UP to 1000.

```

SENSOR ID#32-5
READING: 32
TIME DELAY:01 MIN
ON WHEN LIGHT LEVEL
FALLS BELOW: 1000
    
```

SCROLL to select 1000

9. You're done setting the "Startup Trigger." Press EXIT several times to return to the main menu.

Programming a BLUE BOX Photocell

When an outdoor photocell is plugged directly into the BLUE BOX master panel, the photocell is programmed as part of a time schedule (available for schedules 1-8 only).

1. Navigate to: USER MENU>REVIEW SCHEDULE
2. Use the SCROLL and TAB keys to navigate to the desired schedule. ENTER to select.
3. SCROLL to select schedule type (EVERYDAY, BY DAY, M-F S S).

```

SCH 1
EVERY DAY
ON TIME:09:00AM
OFF TIME:05:00PM
    
```

SCROLL to select schedule type

4. TAB to "on time" for each day or group of days and SCROLL to select PCEL.

```

SCH 1
EVERY DAY
ON PCEL:09:00AM
OFF PCEL:05:00PM
    
```

SCROLL to select PCEL

5. TAB to the time settings after ON PCEL and SCROLL to select an "on" time. This is the time that the photocell will be "enabled." When enabled, the group is switched on only if the light levels are below the ON trigger, otherwise they will remain OFF until the light levels drop below the ON trigger.

```

SCH 1
EVERY DAY
ON PCEL: 03:00PM
OFF PCEL: 05:00PM
    
```

TAB to hours and minutes and SCROLL to select "on" time

6. TAB to the time settings after OFF PCEL and SCROLL to select an "off" time. This is the time that the photocell will be "disabled" (not allowed to operate). When the photocell is disabled, the group is also switched off.

```

SCH 1
EVERY DAY
ON PCEL: 03:00PM
OFF PCEL: 10:00PM
    
```

TAB to hours and minutes and SCROLL to select "off" time

For outdoor lighting, we recommend an "on" time of about 3:00 PM and an "off" time that coincides with the scheduled "off" time. For indoor (daylight harvesting) we recommend a start time and end time which coincides with the hours the space is occupied.

7. With the cursor on PCEL, ENTER to go to the trigger settings. SCROLL to select "off" Time Delay (10 minutes is usually recommended).

```

SCH 1
EVERY DAY
ON PCEL: 03:00PM
OFF PCEL 10:00PM
    
```

TAB to either PCEL and ENTER to go to trigger settings

```

ON BOARD PHOTO CELL
ANALOG1: 32
TIME DELAY: 10 MIN
ON WHEN LEVEL
FALLS BELOW: 20
OFF WHEN LEVEL
REISES ABOVE: 30
    
```

In trigger settings you can edit the "on" delay and the "off" delay and the on and off triggers

8. The default setting for the "on" level (falls below) is 20. The default setting for the "off" level (raises above) is 30. Try these setting first. If they need to be adjusted do the following: TAB DOWN to "off" trigger (raises above) and SCROLL to adjust.

```

ON BOARD PHOTO CELL
READING: 32
DELAY TO OFF: 5MINS
OFF WHEN LEVEL
RAISES ABOVE: 40
DELAY TO ON: 5MINS
ON WHEN LEVEL
FALLS BELOW: 41
    
```

TAB DOWN to "off" trigger (raises above) and SCROLL to adjust.

TAB to "on" trigger (falls below) and SCROLL to adjust.

```

ON BOARD PHOTO CELL
READING: 32
DELAY TO OFF: 5MINS
OFF WHEN LEVEL
RAISES ABOVE: 40
DELAY TO ON: 5MINS
ON WHEN LEVEL
FALLS BELOW: 41

```

! A good way to determine the best light level settings is to do the above steps at a time when the brightness about matches when you want the lights to go on or off. For example, set the Off (raises above) trigger in the morning when the sun is just coming up. Check the light level reading on the clock when the area is bright enough for the lights to shut off and use this reading as the “Off” value. Similarly, set the On (falls below) trigger in the evening when it is just getting dark enough so that the lights should come on. Check the light level reading at that time and use it as your “On” value.

9. EXIT and SAVE.

10. To add loads(relays) to this schedule:

- If this is a new schedule, TAB DOWN once to NO LOADS and ENTER to add Loads (relays). You will be creating a GROUP, so refer to the section on Adding Groups. If this is an existing schedule, TAB DOWN once to the existing GROUP and ENTER to add or delete Loads (relays) to this Group. Refer to the section on Adding Groups.

! The group controlled by the photocell is, in almost all cases, going to be set as MAINTAIN. MAINTAIN in this case will allow the photocell to turn the lights on and off, and with the built in on and off times is also time sensitive.

```

GROUP 1  MAINTAIN
EDIT: LCP-1 LOAD-5
LCp1:1,2,5

```

Use a MAINTAIN group for most photosensor settings.

Control Types

“Control Types” describes how loads are controlled. When controlling more than 8 relays or for any time schedule, “Groups” must be used and the Toggle feature is not available.

TOGGLE	A momentary contact will toggle up to 8 loads on or off.
ON MODE	A momentary contact will issue an “on” command to as many as 8 loads.
OFF MODE	A momentary contact will issue an “off” command to as many as 8 loads.
MIXED MODE	Also known as an “interlock.” A momentary contact will switch one set of loads “on” and another set of loads “off.”
MAINTAIN	Loads are ON for the duration of a closure and OFF when the closure is opened. Similar to the way a wall switch makes and then breaks a circuit to turn lights on or off. Photosensor Card Triggers are usually programmed as maintain, as is any maintained contact closure device such as a wall switch or a relay closure from (for instance) a security system.
GROUPS (1-32)	To control more than 8 loads, or when programming a time schedule, always use GROUPS.

Last Input Override

Your digital lighting controls use a logic structure called “last input override” and as such other inputs can affect the loads too. For example: If a load is toggled on, from one location, and then switched off by a time schedule; If activated, the toggle switch will turn the loads back on - last input override.

Group Types

A group describes two things: which relays are controlled together, and how they are controlled. Groups **MUST BE USED** when controlling more than 8 relays and with all time schedules.

Up to 32 groups are available and each group can range in size from a single relay to all relay(s) in all panel(s).

There are two types of Groups:

Maintain Style Groups

Just like the maintain control, starting a maintain contact (or a time schedule) will turn a maintain style group on, and when the contact is open or the schedule is off, the group is turned off.

When a Maintain style group is first switched on, the relays within that group are switched on too, with one exception. (See NO AUTOMATIC ON option under Programming Groups)

While the Group is “on” the relays within that group will respond normally when switched on and off by a digital wall switch.

When the group is switched off, so are the relays, with one exception (see MAINTAIN + BLINK below).

When “Maintain+Timer” or “Maintain+Off Sweep” Groups are off the relays are in “timer mode”: which means if the relays are turned on when the Group is off, they will remain on for a (programmable) timed period.

Maintained Groups are used in the following circumstances:

1. Time schedules usually use a Maintain style group.
2. When a photocell is connected to a photocell card (not directly to the BLUE BOX panel) and turns more than 8 relays both on and off,
3. When relays need to be in “timer mode” after hours.

(BASIC) MAINTAIN GROUP	Used by time schedules or for any maintained device (eg. photosensor card triggers) controlling more than 8 loads. When the GROUP is ON the loads are ON, and when the GROUP is OFF, the loads are OFF.
MAINTAIN + TIMER GROUP	Usually used only with Time Schedules. When the GROUP is ON, the loads are ON. When the GROUP is OFF and relays in that GROUP are in Timer Mode, timer duration is programmable.
MAINTAIN + BLINK GROUP	All the features of the MAINTAIN + TIMER and adds a “blink” or “flick” warning prior to shutting loads off.

Momentary Style Groups

Any momentary pulse or rising edge will trigger a momentary group. Momentary groups are not turned on or off.

Momentary style Groups are used in the following circumstances to turn relays on or off:

1. When a digital switch, a contact closure or a photocell trigger switches more than 8 relays either “on” or “off”

2. When a time schedule only switches relays either “on” or “off,” but not both

MOMENTARY ON	“On Mode” more than 8 loads
MOMENTARY OFF	“Off Mode” more than 8 loads
MOMENTARY MIXED	“Mixed Mode” more than 8 loads

For more information on groups, please refer to the Groups FAQ.

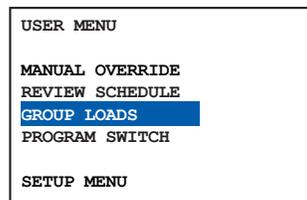
Programming Groups

To Access a Group

Within the DTC, there are two paths you can use to access a group for programming purposes:

From USER MENU:

1. Navigate to: USER MENU>GROUP LOADS and ENTER to select



2. SCROLL to the correct page. (1 through 6) and TAB to the desired GROUP. ENTER to edit or create the GROUP.

TAB to a group and SCROLL up or down to change the status. Enter to edit the group

GROUPS	PAGE 1-6		
GROUP 1	UNUSED	OFF	This group does not have any loads
GROUP 2	UNUSED	OFF	
GROUP 3	USED	MOM	Momentary Group
GROUP 4	USED	ON	This Group has loads and is on
GROUP 5	USED	ON	
GROUP 6	UNUSED	OFF	

From the SCHEDULE MENU:

1. EXIT schedule when complete with programming and TAB DOWN once to NO LOADS, or GROUP (X). ENTER to edit or create the GROUP

Schedule 1 is programmed and has no loads

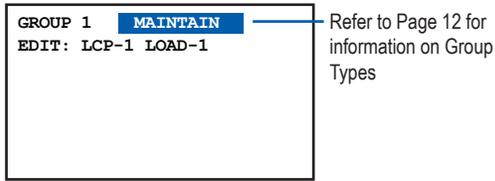
Schedule 3 is not programmed

Schedule 4 is programmed and controls GROUP 4

Schedule 6 is programmed, but is disabled

To Edit a Group

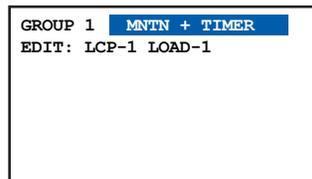
1. SCROLL to select the desired Group Type



2. Add or delete loads
3. EXIT when complete.

Additional Programming for Maintain + Timer Groups

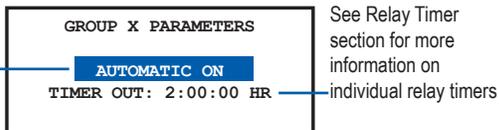
1. With the Cursor positioned on MNTN + TIMER, ENTER to edit the duration of the timer mode for the relays in that GROUP.
This will determine how long relays are allowed to be "on" when the GROUP is OFF.



2. SCROLL to select AUTOMATIC ON or NO AUTOMATIC ON.

AUTOMATIC ON is the default.

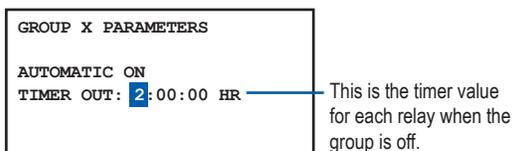
SCROLL to select:
AUTOMATIC ON
or
NO AUTOMATIC ON



AUTOMATIC ON means that the schedule will turn the lights on, and the relays are taken out of Timer Mode. AUTOMATIC ON is preferred for large area controls such as a retail sales floor, or egress areas.

NO AUTOMATIC ON means that the schedule will NOT turn the relays on (instead the relays are switched on with a digital wall switch usually by the first person to enter the space) and the relays are taken out of Timer Mode. NO AUTOMATIC ON is preferred when lights can be switched on and off locally with a digital wall switch.

3. TAB to TIMER OUT and SCROLL to adjust hours, minutes and seconds. Four hours is the maximum timer allowed.

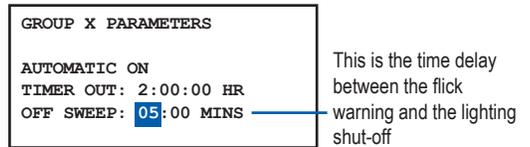


Additional Programming for Maintain + Blink Groups

1. With the Cursor positioned on MNTN + BLINK, ENTER to adjust the timer mode, the time delay between the flick warning and the lights being shut off, and to set AUTOMATIC ON.



2. SCROLL to select AUTOMATIC ON or NO AUTOMATIC ON. (see above for more information)
3. TAB to TIMER OUT. and SCROLL to adjust hours, minutes and seconds.
4. TAB to OFF SWEEP and SCROLL to adjust the time delay.

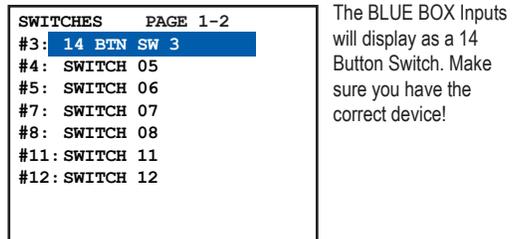


For more information on Groups, please refer to the Groups FAQ.

Programming BLUE BOX Inputs

A contact closure device when plugged into the inputs of the BLUE BOX can be programmed to control any relay(s) in any panel(s). 14 contact closure inputs are available on each BLUE BOX panel . This section details how to program these inputs. For hook-up details, refer to the BLUE BOX panel Installation Guide.

1. Navigate to: USER MENU>PROGRAM SWITCH
2. Use the SCROLL and TAB keys to navigate to the BLUE BOX panel Inputs. ENTER to select.



3. SCROLL and TAB to the input (BUTTON) you wish to edit and ENTER to select
4. SCROLL to select Control Type.

```
SWI ID63-1 MAINTAIN
EDIT: LCP-1 LOAD-1
```

5. TAB DOWN to LCP 1

For all Control Types (except Mixed Mode):

1. SCROLL to Select LCP (1,2,3 etc)
2. TAB to LOAD 1
3. SCROLL to the LOAD you want to Add or Delete, and hit ENTER to select

```
SWI ID63-1 TOGGLE
EDIT: LCP-1 LOAD-1
LCP1: 1
```

ENTER to select

Load Summary

4. (ENTER again to delete LOAD).
5. Repeat to add or delete more LOADs

```
SWI ID63-1 TOGGLE
EDIT: LCP-1 LOAD-12
LCP1: 2-5,12
LCP2: 1,4
```

ENTER to select

Load Summary

6. EXIT up to Main Menu.

For Mixed Mode:

1. SCROLL to Select LCP
2. TAB to LOAD 1 and SCROLL to the LOAD you want to Add or Delete
3. ENTER once to select LOAD ON.
4. ENTER twice to select LOAD OFF
5. ENTER three times to delete LOAD from the Load Summary

```
SWI ID63-1 TOGGLE
EDIT: LCP-2 LOAD-3
ON LCP1: 1-3
OFF LCP2: 1-3
```

ENTER once for ON
ENTER twice for OFF

Load Summary shows ON and OFF loads

6. Repeat to add or delete more LOADs
7. EXIT up to Main Menu

To Delete a Load

(from the Load Summary):

1. SCROLL to the LOAD. Make sure you have selected the correct LCP!
2. ENTER until the LOAD is deleted (no longer in the Load Summary). Add loads per the Adding/Deleting Loads Section.

```
SWI ID63-1 TOGGLE
EDIT: LCP-1 LOAD-12
LCP1: 2-5,12
```

ENTER once to add
ENTER twice to delete

Load Summary

(MIXED MODE ONLY)

```
SWI ID63-1 MIXED MODE
EDIT: LCP-2 LOAD-3
ON LCP1: 1-3
OFF LCP2: 1-3
```

ENTER once for ON
ENTER twice for OFF
ENTER thrice to delete

Load Summary shows ON and OFF loads

3. EXIT and SAVE.

To Add a Holiday List to a Schedule

The system offers up to 2 separate editable Holiday Lists. This portion of the menu allows you to select from pre-existing Holiday Lists. See Edit Create Holiday List for instructions on how create or edit a new Holiday List.

EVERY DAY & MON-FRI, SAT, SUN SCHEDULE

These two schedules only allow the Holiday Lists to be exempted from the schedule.

1. Follow this path: USER MENU › REVIEW SCHEDULE
2. SCROLL to the correct page and then TAB to the SCHEDULE you wish to add a Holiday List to
3. TAB to EXCEPT NONE

```
SCH 1
EVERY DAY
ON TIME: 09:00 AM
OFF TIME: 05:00 PM
```

EXCEPT NONE

SCROLL to select which Holiday List is exempt.

4. SCROLL to the desired Holiday Exception setting
5. TAB to the EVERY DAY to continue editing

BY DAY SCHEDULE

This schedule allows one or both of the Holiday Lists to be exempted, or even a new schedule created just for the days included in the Holiday List.

1. Follow this path: USER MENU › REVIEW SCHEDULE
2. SCROLL to the correct page and then TAB to the SCHEDULE you wish to add a Holiday List
3. TAB to either H1 or H2. - the two Holiday Lists. Both can be selected, but only individually.
4. Press ENTER to go to the Holiday options menu.

SCH 1
BY DAY H1 H2
MO TU WE TH FR SA SU
ON TIME: 09:00:00A
OFF TIME: 05:00:00P
FROM JAN 1 TO DEC 31

ENTER to go to the Holiday Options Menu

5. SCROLL to select the desired Holiday option. There are three choices:

- Do Not Omit (default) - the days on this holiday list will be included in this schedule.
- Omit - the days on this holiday list will not be included in this schedule.
- ON-OFF schedule - the days on this holiday list will have unique schedules.

6. To create a special sub-schedule for this Holiday List, do the following:

- TAB to ON TIME
- Scroll to select Schedule Type (see Schedule Types Section).

7. Select and edit Event Triggers (see Editing Event Triggers Section).

ON-OFF SCHEDULE
ON TIME: 9:00:00 AM
OFF TIME: 5:00:00 PM

8. EXIT to move back to main schedule page.

To Edit a Holiday List

The Holiday lists contain no Holidays until they are edited. Two separate holiday lists may be created and edited.

1. Follow this path: USER MENU › SETUP MENU › SYSTEM SETUP MENU › EDIT HOLIDAYS

SYSTEM SETUP MENU
SET TIME AND DATE
EDIT HOLIDAYS
SYSTEM OPTIONS
WHAT AND WHEN?
ADDRESSING-BUS SCAN

2. SCROLL to select page
3. TAB to the Holiday

HOLIDAY LIST 1 - PAGE 2
DATE: DEC 25
LABOUR: NO
COLUMBUS: NO
VETERANS: NO
THANKS GIV.: NO
CHRISTMAS: NO
BOXING: NO

4. SCROLL to YES to select
5. To add new Holidays to a Holiday List, SCROLL to page 3 and TAB to the first unused date.

HOLIDAY LIST 1 - PAGE 3
DATE: MAR 13
MAY 5 2007: YES
JAN 1 2007: NO

6. TAB to month, day and year and SCROLL to adjust.
7. EXIT when complete.

Group FAQs

Q: What is the difference between “momentary” type groups and “maintain” type groups?

A: - A maintain group can be turned ON and OFF. Once it is turned ON, it stays on until turned OFF by a schedule or other switch. When it is turned OFF, it stays OFF until turned ON by a schedule or switch.

- A momentary group does not turn on and off. It only sends a single signal to the relays in the group at the moment it is activated. A MOMENTARY ON group can only turn its relays ON, never OFF. A MOMENTARY OFF group will always turns its relays OFF.

Q: Which type of group is most commonly used for schedules and why?

A: Usually schedules operate “maintain” type groups. This is because schedules are used to turn lights on and have them stay on for a period of time, and then turn them off. Only maintain groups can be turned on and off.

Q: When would you use a “momentary” type group with a schedule?

A: In those rare instances when a schedule needs to just turn lights on (without a corresponding off command) or off (without a corresponding on command). For example, if you wanted the lights turned off by a schedule at 8pm every day, but didn’t want any on time, you would create a schedule that activates a Momentary OFF group.

Q: What does a momentary mix group do?

A: It turns some relays ON and some relays OFF.

Q: What does a maintain group do?

A: When the maintain group is turned ON, it turns its relays ON. When it is turned OFF, it turns its relays OFF.

Q: What does a MAINTAIN + TIMER group do?

A: When it is turned ON, it turns its relays ON. When it is turned OFF, it turns off its relays AND enables a timer on each relay. If any of the relays in timer mode are flipped on with a switch, etc., they will automatically turn back off again after a certain amount of time.

Q: How do you tell if a relay has a timer and what timer value is?

A: If you check the relay properties screen for that relay, it will say TIMER: followed by a number, e.g. TIMER 00:20:00 h/m/s

Q: How do you tell if a relay timer is active?

A: If the relay is on, the manual override screen will show the normal ON square symbol with an additional little “leg” on the bottom left corner, like this:

Relay on with no timer: 

Relay on in timer mode: 

Q: What does a MAINTAIN + BLINK group do?

A: It is identical to a MAINTAIN + TIMER group, with the only addition being that when you turn a MAINTAIN + BLINK group OFF, the lights will blink or flick, and then wait for a specified amount of time before the relay turns off. This time period is called the “Blink time out.” This time period is set in the MAINTAIN + BLINK group under “blink warning”.

Q: How do you take a relay out of timer mode?

A: Find out what MAINTAIN + TIMER or MAINTAIN + BLINK group that relay is in, and turn that group ON.

Q: How can you tell if a relay has a “Blink Timer”?

A: If you check the relay properties screen for that relay, it will say BLINK WARNING: followed by a number, e.g. BLINK WARNING 20:00 m/s

Q: How can you tell if a relay is on a blink warning time-out?

A: The manual override screen will show the relay as being on with TWO little legs on the bottom corners, as shown here:

Relay on with no off-sweep or timer: 

Relay in final Blink Warning Timer: 

Q: What is the purpose of the “Blink time OUT.”

A: It gives the occupants of the area a warning that the lights are about to turn off. They can extend the time that they have light by pushing any button with a rapidly blinking LED. This is the indication that the lights are in Blink Time OUT

Q: Where are relay timer properties physically stored?

A: Within the relays properties.

Q: Where are the two locations on the DTC that a relay timer can be viewed or programmed?

A: USER MENU>GROUP LOADS>TAB to GROUP>ENTER to select>TAB to MAINTAIN+TIMER or MAINTAIN+BLINK>ENTER to select>

A: USER MENU>SETUP>SYSTEM SETUP>RESTRICTED>RELAY PROPERTIES>select BOARD>

Q: You create a new MAINTAIN group or add new relays to an existing MAINTAIN Group and EXIT. Upon re-entering the group, you notice it has changed itself into MAINTAIN+TIMER. Why?

A: One or more of the relays in the group are also in another MAINTAIN+TIMER or MAINTAIN+BLINK group which has assigned it or them a timer value. Since the timer value is written into the relay properties, it is carried over into the new MAINTAIN group.

Q: What does MAINTAIN mean in reference to a wall switch?

A: It means that the switch concerned is a contact closure switch like an ordinary wall switch. When one flips the switch UP the contacts close and stay closed and the lights come ON. (They are MAINTAINED that way.) When one flips the switch down the contacts open and the lights go off. Note that both making the circuit and breaking the circuit (from the switch to the contact input) causes the relay(s) to react .

Q: What does MOMENTARY mean in reference to a switch?

A: It means that a momentary pulse or a maintained closure from any switch will cause the relays to react but unlike a MAINTAINED input opening the contact will not cause the relay(s) to react.

- Q: How do you find out which group(s) a relay is in?
- A: Go to the following screen in the clock: SETUP > SYSTEM SETUP > WHAT AND WHEN? > WHAT CONTROLS RELAYS. Select the relay and press ENTER. Any groups that the relay is in will be displayed.
- Q: How do you find out what is turning a group off or on?
- A: Go to the following screen in the clock: SETUP > SYSTEM SETUP > WHAT AND WHEN? > WHAT CONTROLS GROUPS. Select the group and press ENTER. Any schedules, photocells or switches that control that group will be displayed.
- Q: How do you manually turn on a group using the clock interface?
- A: Go to the “group loads” screen, highlight the group:
1. For a MOMENTARY ON group SCROLL UP to turn the relays in that group on,
 2. For a MOMENTARY OFF group SCROLL UP to turn the relays in that group off,
 3. For a MOMENTARY MIXED group SCROLL UP to control the relays per the ON and OFF schedule within that group,
 4. For any MAINTAIN group, SCROLL UP to turn the group on and SCROLL DOWN to turn the group off.
- Q: What do you do to synch up the relays in a group, when some of them are on and some are off?
- A: Go to the “group loads” screen and turn on the group again using the SCROLL UP button.
- Q: How do you get rid of a group you don't want to use anymore?
- A: Go to the “GROUP LOADS” screen, highlight the group and press the DELETE button.
- Q: What should you suspect is happening when you delete a group but the relays still have a timer?
- A: Those relays are in another MAINTAIN+TIMER or MAINTAIN+BLINK group which is forcing a timer onto them.
- Q: What should you be careful never to do with MAINTAIN + TIMER or MAINTAIN + BLINK groups?
- A: Never have the same relay in more than one MAINTAIN + TIMER or MAINTAIN + BLINK group.
- Q: What does the “NO AUTOMATIC ON” setting in a MAINTAIN+TIMER or MAINTAIN+BLINK do?
- A: It makes it so that when you turn ON the group, the relays don't come on – only the group status changes to ON and the relay timers are disabled.
- Q: Why would someone want to use “NO AUTOMATIC ON”?
- A: So they can take disable relay-timers without actually turning the relays on. For example, if the customer wants to turn lights on with a switch early in the morning, and not have them automatically shut off after an hour (timer mode), they would need to turn the MAINTAIN + TIMER group on with a schedule. However, if they don't want the actual lights to turn on until they use a switch, they would set the group to “No Auto On”. This would take the relays out of Timer mode, but not flip them on with the schedule until they actually hit the switch.
- Q: When must a switch button be programmed to operate a group instead of just operating the relays directly?
- A: When you want the switch to operate more than 8 relays, the system will require you to make them into a group.
- Q: How do you toggle a group on and off using a single switch button?
- A: You can't. Groups cannot be toggled. If you want to turn more than 8 relays on and off with a switch, you need to use two buttons and two groups: one MOMENTARY On and one MOMENTARY OFF.
- Q: What kind of group would you normally NOT assign to a momentary switch?
- A: You normally do NOT assign any of the maintain-type groups (MAINTAIN, MAINTAIN+TIMER, MAINTAIN+BLINK) to a switch. The reason for this is that switch buttons turn maintain groups ON when the button is held down and OFF when the button is released. Having to hold the button down to keep lights on is not generally useful for a customer!
- Q: If you are having a photocell control more than 8 relays, what type of group would you assign to the photocell?
- A: You would normally use a maintain-type group. Remember that only maintain-type groups can be turned on AND off. If you want the photocell to turn lights ON when it is dark and OFF when it is bright, the easiest way is to use a maintain group.
- Q: When would you use a momentary-type group with a photocell?
- A: When you only want the photocell to turn the relays OFF, or only want it to turn relays ON. For example, if you have a customer who wants a lot of relays to turn on when it's dark, but only to get shut off by a schedule or a switch (not by the photocell), you could assign a MOMENTARY ON group to the photocell.

TIME SCHEDULE AND GROUP PROGRAMMING EXAMPLES

Exercise #1- Contact Closure Device Controlling 4 Relays

The client wants to have a Security System turn on LCP1: 1-4 for the duration of an "Alarm Mode" event. The Security System will issue a maintained closure for the duration of the event through Input 1 of a contact-closure interface. What do you do?

Solution:

Program Input 1 of the contact-closure interface to control LCP 1: 1-4 with a MAINTAIN type of control group.

SWITCHES	PAGE 1-2	
#5:	14 BTN SW 5	Address 5 is a 14 Btn Input. Its either the Blue Box contact inputs or a DigiLink
#6:	SWITCH 06	
#7:	SWITCH 07	
#8:	SWITCH 08	

SWI ID05-1	MAINTAIN	
EDIT:	LCP-1 LOAD-	4
LCP1:1-4		Add LCP 1: 1-4

Exercise #2 - Contact Closure Device Controlling 10 Relays

The same requirements as Exercise #1 but the customer wants the security system to control 10 relays (LCP1 1-10) instead of four.

1. Create a MAINTAIN group to control LCP1: 1-10

GROUPS	PAGE 1-6	
NAME:	GROUP 1	
GROUP 1	UNUSED	OFF
GROUP 2	UNUSED	OFF
GROUP 3	USED	MOM
GROUP 4	USED	ON
GROUP 5	USED	OFF
GROUP 6	UNUSED	OFF

GROUP 2	MAINTAIN	
EDIT:	LCP-1 LOAD-	10
LCP1:1-10		Add LCP 1: 1-4

2. Program an Input of the contact-closure interface to control the group you just created.

SWITCHES	PAGE 1-2	
#5:	14 BTN SW 5	Address 5 is a 14 Btn Input. Its either the Blue Box inputs or a DigiLink
#6:	SWITCH 06	
#7:	SWITCH 07	
#8:	SWITCH 08	

SWI ID05-1	GROUP 2	
EDIT:	LCP-1 LOAD-	1

Exercise #3 - Time schedules with override switches

The client wants a time schedule for indoor lights starting at 7:00 am and off at 5:30 pm. After hours the digital switches can turn the lights on but only for two hours. Also, the clients want to warn occupants five minutes prior shut-off. What do you do?

Solution:

1. Set up a schedule: ON: 7:00 AM & OFF: 5:30 PM.

SCH 4	EXCEPT NONE	
EVERY DAY		
ON TIME:	07:00 AM	
OFF TIME:	05:30 PM	

2. The schedule will control a MAINTAIN+GROUP group with a 2 hour timer, and 5 minute flick warning. Select the relays for this group as needed.

To prevent the lights from all coming on at 7:00 am, select NO AUTOMATIC ON, and then the local digital switches will turn the lights on and the schedule will turn the lights off. This is optimal for energy savings when local digital switches are used.

SCHEDULES	PAGE 1-6	
NAME:	SCHEDULE 1	
SCH 1	==>	GROUP 1
SCH 2		UNUSED
SCH 3		UNUSED
SCH 4	==>	NO LOADS
SCH 5		UNUSED
SCH 6		DISABLED

TAB to NO LOADS and Enter to edit. This will create a new Group (refer to Groups Section)

GROUP 4	MNTN+BLINK	
EDIT:	LCP-1 LOAD-	1
LCP1:1-12		

GROUP 4 PARAMETERS	
AUTOMATIC ON	
TIMER OUT:	1:00:00 HR
OFF SWEEP:	05:00 MINS

Select AUTOMATIC ON One Hr. Timer Five Min. Flick Warning

3. Program each switch button with a Toggle or On Mode control type (refer to Control Types) and set it to control the relays as needed.

```
SWITCHES PAGE 1-2
#5: 14 BTN SW 5
#6: OPEN OFFICE SW1
#7: OPEN OFFICE SW2
#8: RECEPTION
```

Address 6 has been named the OPEN OFFICE SW1. (Refer to Naming Switches).

```
SELECT BTN SW ID#06
PAGE 1-1
B1: BUTTON 1
B2: BUTTON 2
B3: BUTTON 3
B4: BUTTON 4
B5: BUTTON 5
B6: BUTTON 6
```

```
SWI ID06-2 ON MODE
EDIT: LCP-1 LOAD-3
LCP1:1,3
```

Select TOGGLE or ON MODE (refer to Control Types)
Add any relays in the group

```
SCHEDULES PAGE 1-6
NAME: SCHEDULE 1
SCH 1 ==> GROUP 1
SCH 2 ==> UNUSED
SCH 3 ==> UNUSED
SCH 4 ==> NO LOADS
SCH 5 ==> UNUSED
SCH 6 ==> DISABLED
```

TAB to NO LOADS and Enter to edit. This will create a new Group (refer to Groups Section)

```
GROUP 4 MNTN+BLINK
EDIT: LCP-1 LOAD-1
LCP1:1-12
```

```
GROUP 4 PARAMETERS
NO AUTOMATIC ON
TIMER OUT: 1:00:00 HR
OFF SWEEP: 05:00 MINS
```

Select:
NO AUTOMATIC ON
One Hr. Timer
Five Min. Flick Warning

If cursor starts here, you have multiple pages with switches on each page. You may need to navigate to the correct page.

Exercise #4

A retail store has employees entering an outlet as early as 5:00 AM. The employees can manually turn on LCP1: 1-8. The requirement is to allow the employees to turn on LCP1:1-8 indefinitely after 5:00 AM, and to schedule LCP1:1-24 on at 8:45 AM and off at 10:20 PM with a 5 minute Flick Warning and a 1:00:00 timer after hours. What do you do?

Solution:

1. Set up a Schedule: ON: 5:00 AM & OFF: 10:20 PM.

```
SCH 4 EXCEPT NONE
EVERY DAY
ON TIME: 05:00 AM
OFF TIME: 10:20 PM
```

2. The Schedule will control a MAINTAIN+BLINK group with NO AUTO ON, 1 hour timer, and 5 minute flick warning. This group controls LCP1:1-12.

This allows the employees to come in any time after 5:00 AM and turn the lights on manually. The relays will not be in timer mode because the Group was switched on at 5:00 AM with NO AUTO ON.

3. Set up another schedule: ON: 8:45 AM & OFF: (any time). The new schedule will control a MOMENTARY ON group. This group also controls LCP1:1-24

This schedule will sweep all lights on at 8:45 am.

```
SCH 4 EXCEPT NONE
EVERY DAY
ON TIME: 08:45 AM
OFF TIME: 08:46 AM
```

```
SCHEDULES PAGE 1-6
NAME: SCHEDULE 1
SCH 1 ==> GROUP 1
SCH 2 ==> USED
SCH 3 ==> UNUSED
SCH 4 ==> GROUP 4
SCH 5 ==> NO LOADS
SCH 6 ==> DISABLED
```

TAB to NO LOADS and Enter to edit. This will create a new Group (refer to Groups Section)

```
GROUP 2 MOMENTARY ON
EDIT: LCP-1 LOAD-24
LCP1:1-24
```

Select Momentary On (refer to Group Types)
Add LCP 1: 1-24

4. For the employees to turn on the “entry” lights, program a switch button with a Toggle or On Mode control type (refer to Control Types) and set it to control LCP 1:1-8

```
SWITCHES PAGE 1-2
#5: 14 BTN SW 5
#6: ENTRY SWITCH
#7: SWITCH 07
#8: SWITCH 08
```

Address 6 has been named the Entry Switch. (Refer to Naming Switches).

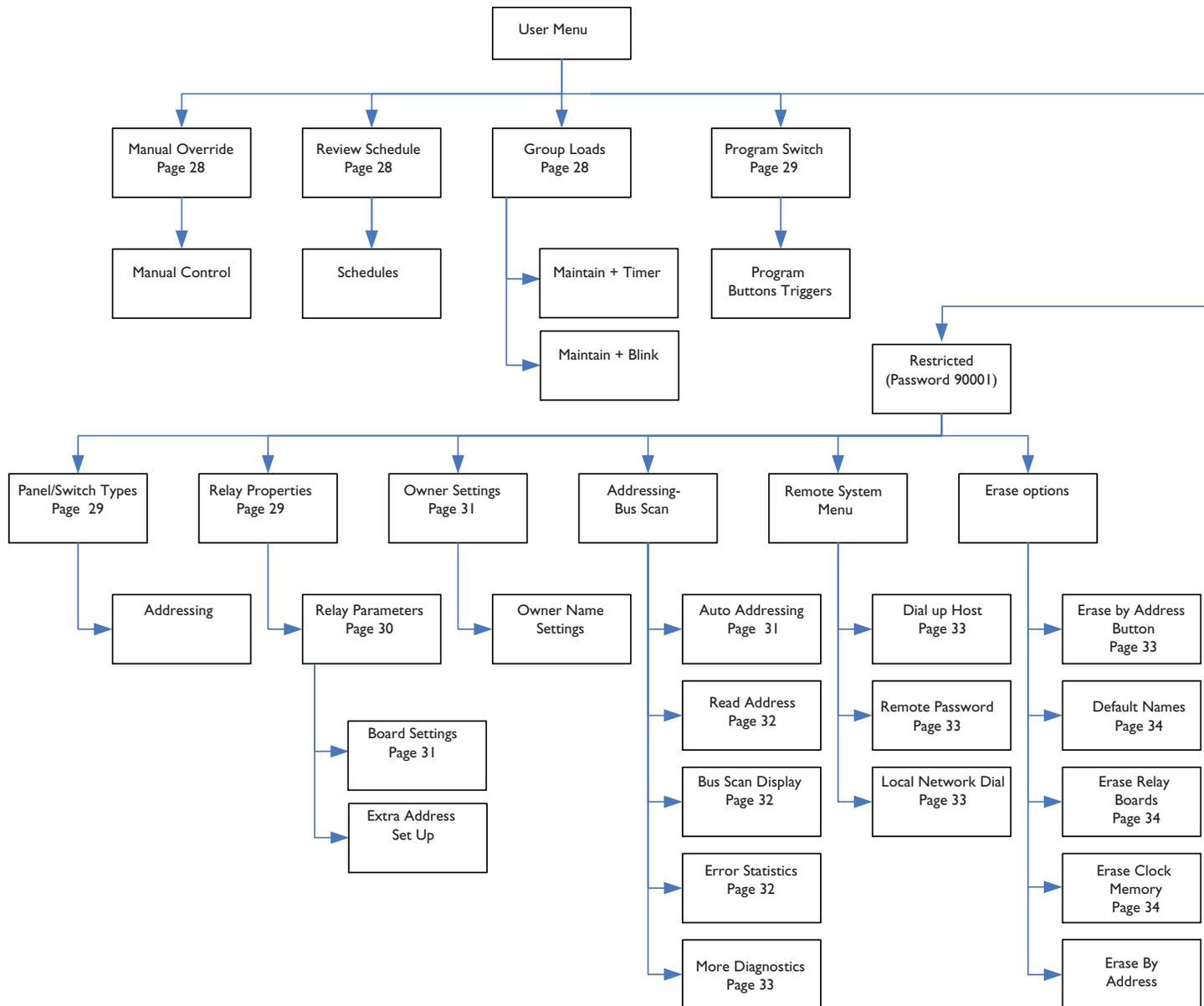
```
SWI ID06-2 ON MODE
EDIT: LCP-1 LOAD-8
LCP1:1-8
```

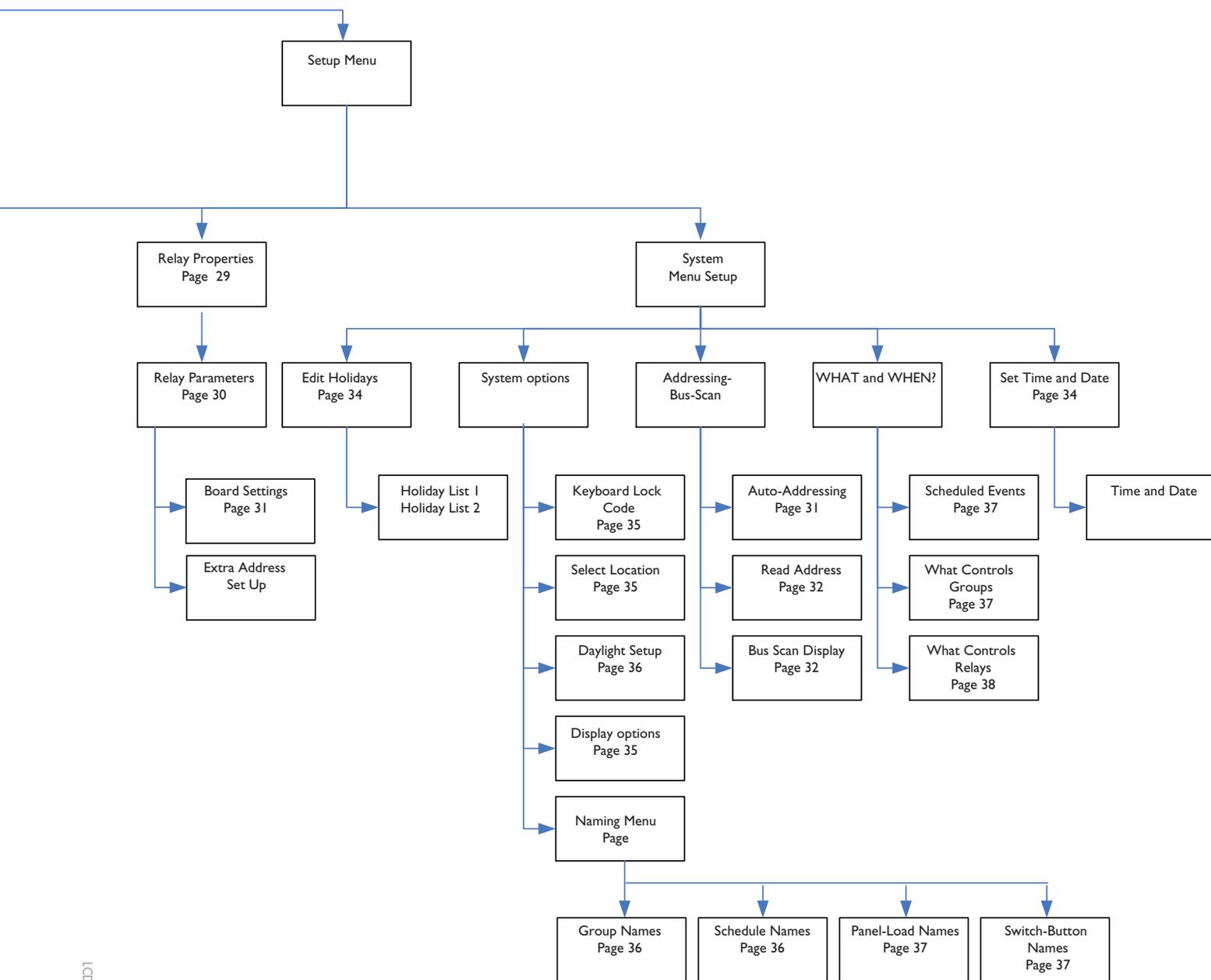
Select ON MODE (refer to Control Types)
Add LCP 1: 1-8

DTC REFERENCE GUIDE

Your digital lighting control system offers many sophisticated features, including editable sequencing, and timer values for each relay. Use this Flow Chart to navigate to any of the screens shown below.

Some clock screens are used for navigation and some for editing schedules, switches, photocells, relays and more. For more information about any of the screens, go to the page on the box.

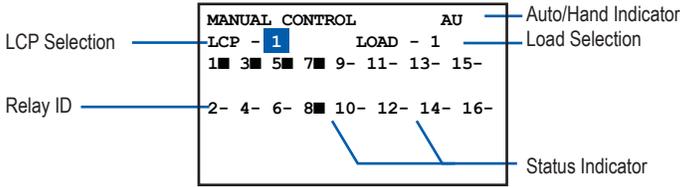




LCD880&M0M04M0r08

Manual Override Screen

The manual override screen allows for manual control and visual indication of the status (on/off) of any relays in any panel.



To view different panels on the system:

TAB to LCP Selection. SCROLL to cycle through all the relay panels that are connected to the system and view the status of their relays or zones.

To turn a specific relay or zone off and on:

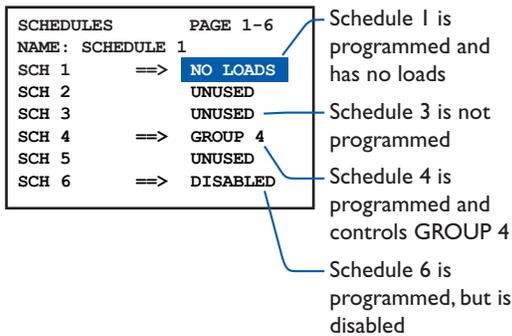
Once you have selected the relay panel, TAB to highlight the Load Selection. SCROLL up or down to select the relay you wish to control. Press ENTER to toggle the LOAD (relay or zone) “off” or “on.” When the relay is “off,” a hyphen will be displayed next to the Relay ID. When the relay is “on,” a solid rectangle will be displayed.

Checking to see if a panel is in Hand mode:

The Auto/Hand indicator (see diagram above) indicates if the panel is in Auto or Hand mode. “AU” indicates the LCP is in Auto mode. “MN” indicates Hand mode.

Review Schedule Screen

Set and edit the time schedules.



NOTE: There are 6 pages of schedules – 32 schedules total. To switch between pages, TAB UP or TAB DOWN to the Page Selection field and SCROLL UP or SCROLL DOWN to switch between pages.

To create or review a schedule:

TAB DOWN until the correct Schedule Name is selected and press Enter. See section on Time Schedules for complete instructions on how to choose the correct kind of schedule and set it up.

To disable a schedule:

TAB UP or TAB DOWN until the correct Schedule Name is highlighted, and then press SCROLL DOWN to disable the schedule (the Group Selection will change to say DISABLED). Press SCROLL UP to re-enable it.

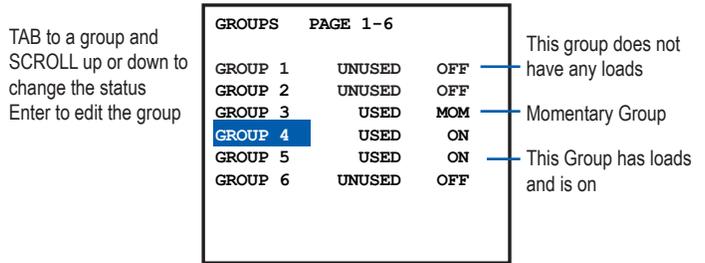
To assign or change the group schedule controls:

TAB UP or TAB DOWN to the Group Selection for the desired schedule. Press SCROLL UP or SCROLL DOWN to change which group is selected.

Group Loads Screen

The Group Loads screen is used to designate groups of relays, change how they are controlled and directly turn groups on and off.

NOTE: There are 6 pages of groups – 32 groups total. To switch between pages, TAB UP or TAB DOWN to the Page Selection Field and press SCROLL UP or SCROLL DOWN to switch between pages.



To create or edit a group:

TAB DOWN to the Group Name you want to create or edit and press ENTER. Note that the Group Usage field directly to the right of the name indicates if the Group has already been defined (USED) or has not yet been defined (UNUSED). For more detailed information, see the section on programming groups.

To change how the relays in a group are controlled:

TAB UP or TAB DOWN to the Group Name and press ENTER. Use SCROLL UP and SCROLL DOWN to change the type of group. See the section on programming groups for more information. Press EXIT to save your change and return to the Group Loads screen. Notice that the Group Status will now reflect the change that you made.

To turn a group on or off directly:

TAB DOWN to the Group Name you want to control. If it is a MAINTAIN-type group, the Group Status will indicate that the group is either ON or OFF. With the Group Name selected, press SCROLL UP to turn the group ON, and press SCROLL DOWN to turn the group OFF.

If the selected group is a MOMENTARY-type group (MOMENTARY ON, MOMENTARY OFF, MOMENTARY MIX,) the Group Status will display as MOM. With the

Group Name selected, press SCROLL UP to activate the group. If it is a MOMENTARY ON group, the relays will turn ON. If it is a MOMENTARY OFF group, the relays will turn OFF when you press SCROLL UP. In a MOMENTARY MIX group, the relays will turn ON or OFF depending on the group settings when you press SCROLL UP.

Program Switch Screen

The Program Switch screen allows you to set and review programming for switches, dry contact inputs and photocells.

NOTE: There can be several pages of switches available for programming. To switch between pages, TAB UP or TAB DOWN to the Page Selection Field and press SCROLL UP or SCROLL DOWN to switch between pages.

Only IDs that are assigned to Switches will display on this screen.

SWITCHES	PAGE 1-2
#3:	14 BTN SW 3
#4:	SWITCH 05
#5:	SWITCH 06
#7:	SWITCH 07
#8:	SWITCH 08
#11:	SWITCH 11
#12:	SWITCH 12

Blue Box Contact Switch Inputs will display as a 14 Button Switch. Switches and Switch Inputs can be named (see naming section)

Setting or reviewing programming for a switch:

TAB DOWN to the switch, photocell or dry contact input you want to program. They are listed by address. Press ENTER to access the programming screen for the device. See the Basic Programming section of this manual for complete instructions on programming different devices.

Panel Switch Types Screen

The PANEL/SWITCH TYPES screen is used to define what type of device is at each address. Devices are either Panels, Switches, or Analog/Digital inputs.

It is very important that the correct device type is specified for each address on this screen. Otherwise, the system will not know the location of programmable switches, controllable relay panels, etc.

Selecting a Device Type

TAB to the Device ID as displayed on the left side of the screen. Once selected, use the SCROLL UP and SCROLL DOWN buttons to change the Device Type selection.

NOTE: There are 19 pages of addresses you can specify devices for – 127 addresses total. To switch between pages, TAB to the Page Selection Field and SCROLL to switch between pages.

More Information

The PANEL/SWITCH TYPES screen is used in conjunction with the BUS SCAN DISPLAY screen. For each address that is shown as being occupied on the BUS

SCAN DISPLAY, a corresponding device specification must be set on the PANEL/SWITCH TYPES screen.

ADDRESSING	PAGE 1-19
ID1 :	2408 AS LCP1
ID2 :	2408 AS LCP1
ID3 :	14 BTN SW
ID4 :	2 BTN SWITCH
ID5 :	2 BTN SWITCH
ID6 :	ANALOG/DIGI 6
ID7 :	4 BTN SWITCH

The BUS SCAN and the PANEL SWITCH TYPES screens must match each other. If a device is on the Bus Scan it must also be defined in PANEL/SWITCH TYPES screen. Conversely if a device is no longer on the BUS SCAN (displayed as “0”) it must also be deleted out of the PANEL SWITCH TYPES SCREEN. To delete a device from the PANEL/SWITCH TYPES, SCROLL to NOT USED.

If devices are assigned to certain addresses on the PANEL/SWITCH TYPES screen, and the system does not detect anything actually connected at those addresses (as shown on the BUS SCAN DISPLAY screen), errors will be generated by the system.

For complete instructions on setting up a bus using the PANEL/SWITCH TYPES screen and the BUS SCAN DISPLAY, see the System Startup Guide that came with your relay panel.

Relay Properties Screen

The RELAY PROPERTIES SCREEN and its sub-screens allow you to make changes to settings that affect individual relays.

Each relay panel uses two addresses. Boards 1 & 2 are one LCP occupying address IDs 1 & 2. Boards 5 & 6 are also one LCP.

RLY PARAMS	PAGE 1-1
BOARD 1	DLY: 1
BOARD 2	DLY: NA
BOARD 5	DLY: 60
BOARD 6	DLY: NA

1/60 second delay between relays during a sweep
Does not apply
1 second delay between relays during a sweep

The RELAY PROPERTIES screen itself displays one or more pages of Board Addresses. These are the addresses of the various relay control cards. Each control card will occupy 2 board addresses, one for every 8 relays.

Say, for example, you have a relay panel, LCP 2, installed at address #5. The control card will occupy addresses #5 and #6 on the BUS SCAN DISPLAY and PANEL/SWITCH types. On the RELAY PROPERTIES screen we are discussing here, you will see it appear as BOARD 5 and BOARD 6. The first eight relays on the panel would be controlled by BOARD 5, and relays 9-16 would be controlled by BOARD 6.

The RELAY PROPERTIES screen also shows the Delay Setting for each Board Address. The delay refers to how long a time interval will be inserted between one relay turn-

ing on and the next. This is used when turning on a group of relays at the same time – using a delay will “stagger” the relays turning on so that the first relay in the group turns on, then there is a delay, then the next relay in the group turns on, then there is a delay, then the next relay in the group turns on, etc. This is usually used for certain equipment that must be turned on in a specific order, such as an audio pre-amplifier being turned on before an amplifier.

This delay is measured in 60Hz cycles. The formula for calculating the delay in seconds is:

- Delay Setting divided by 60 = Number of seconds of delay between relays
- So if your Delay Setting is DLY: 90, there will be 1½ seconds delay between relays turning on in that panel (90 divided by 60 = 1½).

Changing the Delay Time

To change the Delay Setting for a specific control card, TAB DOWN to the first Board Address of the panel you want to change the setting for. With the Board Address highlighted, press SCROLL UP and SCROLL DOWN to change the Delay Setting for that control card. The second address will always show “NA.”

Accessing Relay Settings

To access additional relay setting in the RELAY SETTINGS sub-screen, TAB DOWN to the Board Address that contains the relays you want to modify and press ENTER.

Relay Parameters Screen

The RELAY SETTINGS screen allows you to change the normally closed / normally open setting for individual relays. It also lets you manually set whether a relay will give a “blink warning” (flash the lights off and on briefly a short time before going off at the end of the day, etc.) or not. Lastly, it lets you access individual relays to change further settings such as timers.

Each relay panel uses two addresses. Boards 1 & 2 are one LCP occupying address IDs 1 & 2. Boards 5 & 6 are also one LCP.

RLY PARAMS		PAGE 1-1
BOARD 1	DLY: 1	1/60 second delay between relays during a sweep
BOARD 2	DLY: NA	Does not apply
BOARD 5	DLY: 60	1 second delay between relays during a sweep
BOARD 6	DLY: NA	

Reading the Screen

Along the top of the screen are the numbers 1-8. Each of these represents the Relay Number. If you are working with a 16 relay panel at address #5, then BOARD 5 will control relays 1-8 and BOARD 6 will control relays 9-16. When you view the RELAY SETTINGS screen for BOARD 5, Relay Numbers 1-8 would correspond to relays 1-8 on the panel. When you view the RELAY SETTINGS screen for BOARD 6 however, Relay Numbers 1-8 will correspond

to relays 9-16, since those are the relays the board controls. In this case, Relay Number 1 would control settings for relay 9 on the panel, Relay Number 4 would control settings for relay 12 on the panel, etc.

Further down on the screen is the Normally Closed Setting for each relay. There are 8 spaces in this row, each lining up with and corresponding to the Relay Number above it. A dash (-) signifies that the relay is set to normally open. A “Y” signifies that the relay is set to normally closed. The default setting is “Y” – a normally closed relay.

The next row down is the No Blink Setting for each relay. Again, there are 8 spaces in this row, each lining up with and corresponding to the Relay Number above it. A dash (-) signifies that the relay will have a blink warning. A “Y” signifies that the relay will not have a blink warning if it is a MAINTAIN+BLINK group.

The next row down is the Sentry Switch Setting row. This feature is not used.

Changing Settings

To change the Normally Closed Setting or No Blink Setting for a specific relay, locate the Relay Number that corresponds with the relay you want to modify. Then TAB DOWN to the Normally Closed Setting or No Blink Setting that is lined up directly below the Relay Number. When the setting is highlighted, press SCROLL UP or SCROLL DOWN to change the setting between “-” and “Y”.

Additional Relay Settings

You can access additional relay settings for any relay by highlighting the Normally Closed Setting or No Blink Setting for that relay and pressing ENTER. This will bring up the MORE RELAY SETTINGS screen.

More Relay Parameters Screen

BOARD ID - 1	LOAD-8
INPUT TYPE:	MOMENTARY
TIMER IS DISABLED	

The MORE RELAY SETTINGS screen is where you can set the timer for a relay and the blink warning time. A “blink warning” is when the relays flash the lights off and on briefly a short time before going off at the end of the day, etc.

The first field on this screen is the Relay Input Type. This feature is not currently used and should not be changed.

The next field is the Timer Setting field. This will either display “TIMER DISABLED” or the word “TIMER” followed by a time setting, e.g. “TIMER 00:30:00”.

If the Timer Setting field is enabled, then an additional field will appear. This is the Blink Warning Setting. If the relay is in a MAINTAIN+BLINK group, turning off that group will cause the relay to flash the lights once, and then wait for the amount of time specified in the Blink Warning Setting before finally turning OFF.

To add a Timer to a relay:

The correct way to add a timer to a relay is to add the relay to a MAINTAIN+TIMER group or MAINTAIN+BLINK group and then adjust the timer in the group settings screen.

To change the Timer setting on a relay:

In the RELAY SETTINGS screen, press TAB DOWN until you have highlighted the numbers to the right of the word "TIMER." These show hours, minutes and seconds. Use SCROLL UP and SCROLL DOWN for each number to change the Timer amount to the value you want.

To remove a Timer from a relay:

Go to the RELAY SETTINGS screen and press TAB DOWN until you have highlighted the word "TIMER." Press SCROLL UP or SCROLL DOWN to change this to "TIMER DISABLED."

To Change the Blink Warning Setting:

TAB DOWN to the number to the right of the text that says "Blink Warning." Use SCROLL UP and SCROLL DOWN to change the value to the time you want.

Note on short timers: When using very short timers (less than 5 minutes), the "blink" warning timer must be set to be less than the timer, even in MAINTAIN+TIMER mode.

Board Settings Screen

Each relay panel uses two addresses. Boards 1 & 2 are one LCP occupying address IDs 1 & 2. Boards 5 & 6 are also one LCP.

RLY PARAMS	PAGE 1-1
BOARD 1 DLY: 1	1/60 second delay between relays during a sweep
BOARD 2 DLY: NA	Does not apply
BOARD 5 DLY: 60	1 second delay between relays during a sweep
BOARD 6 DLY: NA	

These settings align with relay 1

BOARD 1	1	2	3	4	5	6	7	8
NORMALLY CLOSED	Y	Y	Y	Y	Y	Y	Y	Y
NO BLINK	Y	-	-	-	-	-	-	-
SENTRY SWITCH	-	-	-	-	-	-	-	-

Highlight SETTINGS and ENTER for more properties

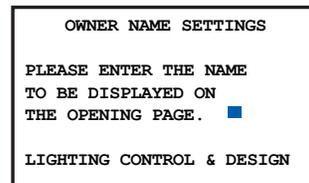
Highlight any of these and ENTER for more properties for Relay 8

Pressing ENTER on the word "SETTINGS" brings up a

screen that sets up a virtual relay panel, which can then be used to disable individual relay timers in the board you are editing.

This programming is only done by the factory and should not be changed by the installer or user.

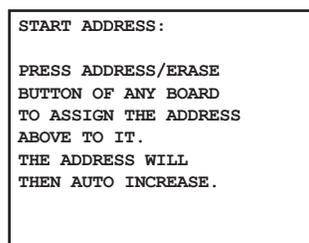
Owner Settings Screen



This is where you can change the name that appears on the first screen of the clock. TAB DOWN to the first space and use SCROLL UP and SCROLL DOWN to change the letter, number or symbol. Then TAB DOWN to the next space and repeat until the desired name is filled in.

Auto Addressing Screen

No two devices can share the same address. Ensure you select an unused address!



Remember to SCROLL to the address you want to start with. The screen will always open with Address 1 even if already taken.

The AUTO ADDRESSING screen is where you set the address for any device on the bus. It consists of only one field, the Address Selection.

Use the SCROLL UP or SCROLL DOWN keys to set the Address Selection to the address you wish to assign to a device. Then press the address button on the device itself.

This will do the following:

1. Erase the current address of that device and replace it with the number you set as the Address Selection.
2. Advance the Address Selection value up one or more addresses (depending on how many address spaces were just assigned to the device).

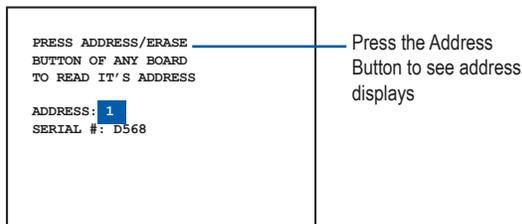
A 16 relay panel takes two addresses for the relays and one address for the contact inputs), so if you change the Address Selection to 40 and then press the Address button on the panel:

1. The panel is now assigned the addresses of 40 and 41, and
2. The Address Selection will advance TWO numbers up to 42, at which point you can continue addressing other devices on the bus.

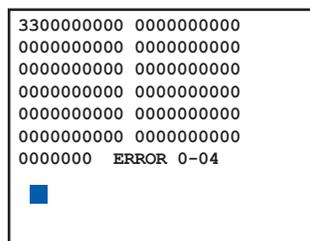
Cautions:

If multiple devices share an address, they won't work properly. For example, if a panel is assigned to addresses 10 and 11, and a switch on the same system is assigned to address 11, there will be malfunctions with the switch, the panel, or both.

Always check the BUS SCAN DISPLAY and make sure an address is empty (represented by a "0" on the display) before you assign that address to a device. Remember that a panel with 16 relays will require TWO consecutive addresses, so you would need to ensure that there are two empty addresses next to each other on the BUS SCAN DISPLAY before you assign them. The switch inputs on the panel may be assigned consecutively, or at another available location.

Read Address Screen

The READ ADDRESS SCREEN allows you to check the address of any device on the bus. There are no selectable fields on this screen. To read an address, simply press the Address Button located physically on any device. The screen will then display the address and serial number of that device.

Bus Scan Display

The BUS SCAN DISPLAY shows what addresses on the bus are being used by devices. It also indicates the general type of device at each address (such as a switch or a relay panel).

There are 127 Address Slots shown, each of which can be occupied by the number 0, 1, 2, or 3. These slots are read left to right, top to bottom like a book. So the first row covers addresses 1-20, the second row covers addresses 21-40, etc. To make it easier to count, each row is separated into two groups of ten Address Slots.

What do the numbers mean?

The number 0 in an Address Slot indicates that there is no device using that address. The number 1 indicates a

switch or a photocell. The number 2 indicates an interface card to a computer network. The number 3 indicates a relay panel at that address.

How to use:

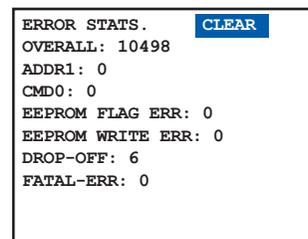
Use the BUS SCAN DISPLAY to

1. Verify that specific devices can be seen on the bus. For example, if you add a switch with an address of 15, you should see a number "1" appear in Address Slot 15. If you don't there is either a cabling problem, the switch isn't actually set to address 15, or there is a problem with the switch itself.
2. Locate empty addresses to use for adding new devices. If your new device is a relay panel, you will need to find TWO empty Address Slots (empty = displaying the number "0") next to each other. For a switch or other device, you only need to find a single "0" Address Slot. Count through the slots to find the address of the empty one. Use this address number on the AUTO ADDRESSING screen to assign it to a new device.

For more information and procedure on addressing devices using the BUS SCAN DISPLAY, see the System Startup Guide that came with your panel.

What is the Error display on the bottom-right of the BUS SCAN DISPLAY?

The Error Display is used by technicians to gather information for correcting a malfunctioning system. You will not need to use this field.

Error Statistics Screen

The ERROR STATISTICS SCREEN is used by technicians for advanced troubleshooting of a system. The primary cause of errors is flaws in the Cat. 5 cabling connecting devices together, which creates problems for the different equipment in sending and receiving signals.

The Clear Button is a field in the top right of the screen that says "CLEAR." To clear the errors that have been recorded, TAB UP or TAB DOWN to this field and then press the ENTER key.

Once errors have been cleared, there should not be more than a few errors accumulating per hour. For more information, see the System Startup Guide.

More Diagnostics Screen

This screen is used by technicians for advanced troubleshooting of the system. You may need to use the last item "Scan by Factory ID" to verify there are no dual addresses on the bus.

Scan by Factory ID

This screen is to verify that there are no items on the bus at the same address. Items at the same address will sometimes work and sometimes not. They cause a bus to be slow and unresponsive, and may make the clock reset because it waits too long for a valid answer due to the conflicts caused by two items answering at the same time.

```

FACTORY ID-SCANNING

Hit ENTER to scan
for all times on
the bus, or EXIT to
quit.
  
```

Follow the instructions on the screen to verify and correct any conflicts.

Dial-Up Host Screen

```

DIALING UP HOST

ENTER THE COMPLETE
PHONE NUMBER OF THE
HOST AND HIT ENTER.

1323226100
  
```

The DIAL-UP HOST SCREEN is used to connect the system to a remote computer using the optional modem.

This option is rarely used, but can also provide a means to test modem connectivity as detailed in the SYSTEM HOOKUP GUIDE.

Remote Password

```

DIAL IN PASSWORD

IN HOST MODE THIS
IS THE REQUIRED

PASSWORD: 00190
  
```

Optional software exists which can be used to dial up and access this lighting control system. The REMOTE PASSWORD SCREEN is where you set the password that must be used by a computer dialing in to access the system.

The default is 001900. It is strongly recommended that you do not change the default setting.

Local Network Dial

```

LOCAL NETWORK DIAL

REMOTE ADDRESS: 01
  
```

There is an optional accessory (LAN-LINK card) that allows multiple lighting control systems (for example, systems in two separate buildings) to be connected together so they can both be controlled by the DTC on either system.

If this accessory is installed, the LOCAL NETWORK DIAL SCREEN is where you can choose to link into another connected system and control that from your location.

You will most likely never use this screen.

Erase By Address Button Screen

```

WARNING !!!
WHILE ON THIS SCREEN.

PRESSING THE
ADDRESS/ERASE BUTTON
OF ANY BOARD WILL
ERASE BOARD MEMORY.
  
```

The ERASE BY ADDRESS BUTTON SCREEN allows you to completely clear out the existing programming from a switch, photocell, or relay control card. There are no selectable fields on this screen.

To erase a device on the bus:

Navigate to the ERASE BY ADDRESS BUTTON SCREEN. Physically go to the device you wish to erase all existing programming for and firmly press the address button on that device.

This will erase all button programming for switches, trigger programming for photocells, and groups/relay properties programming for a relay control card. The device will still retain its address.

The address of the device you just erased will appear on the screen to indicate that the operation completed successfully.

Hard erasing devices:

You can also "hard erase" any device on the bus by holding its address button down for 20 seconds, regardless of what screen is displayed on the DTC. However, be cautioned that unlike using the ERASE BY ADDRESS BUTTON SCREEN, the hard erase will also erase the address of the device. In order to use that device again in the future, it will need to be readdressed. See the section in the System Startup Guide on addressing devices.

Default Names Screen

```

WARNING ! BEFORE YOU
SELECT 'YES' PUT ALL
PANELS TO OVERRIDE
TO PREVENT LIGHTS
FROM TURNING OFF!

NO / YES
  
```

This screen has a single option. Select YES and press ENTER to set all button, switch and group names back to their defaults (e.g. "Switch#23", "Group 1", etc.).

If you do not wish to do this, select NO and press ENTER, or simply press EXIT. This operation cannot be undone.

Erase Relay Boards Screen

```

ERASE ALL RELAY
BOARD MEMORY.

NO / YES
  
```

This screen has a single option. Select YES and press ENTER to erase all memory from all the relay control cards on the system. This will remove all group programming and any changes to relay properties that have been made.

If you do not wish to do this, select NO and press ENTER, or simply press EXIT. This operation cannot be undone.

Erase Clock Memory

```

ERASE ALL RELAY
BOARD MEMORY.

NO / YES
  
```

This screen has a single option. Select YES and press ENTER to erase everything in the clock memory. This will delete all schedules and all the settings in the PANEL/SWITCH TYPES screen.

If you do not wish to do this, select NO and press ENTER, or simply press EXIT. This operation cannot be undone.

Set Time and Date Screen

```

SET NEW TIME/DATE

12 00:00 PM
1 JUN 2010 MON

TIME STARTS WHEN
YOU... HIT ENTER
ASSEMBLED: 1 JAN 2005
  
```

This screen allows you to set the current time and date. Use the TAB UP and TAB DOWN keys to highlight the Hours, Minutes and Seconds as well as the Day, Month, and Year. Use the SCROLL UP and SCROLL DOWN keys to adjust the values as needed.

When you are done making adjustments, TAB DOWN to the Confirmation Field (which is labeled "HIT ENTER") so it is highlighted, and then press the ENTER key. To cancel without saving your changes, press the EXIT key at any time.

Edit Holidays Screen

This screen is used to set certain days as holidays. These holidays can then have special schedules applied to them or can be omitted completely from normally scheduled ON and OFF times.

There are two holiday lists. Any single schedule in the system can have one alternate ON / OFF time for the days in HOLIDAY LIST 1, and one for the days in HOLIDAY LIST 2. For more instructions on setting up holiday schedules, please refer to the programming section of this manual.

```

SELECT HOLIDAY LIST
TO EDIT

HOLIDAY LIST 1
HOLIDAY LIST 2
  
```

The first screen prompts you to select HOLIDAY LIST 1 or HOLIDAY LIST 2. Select the holiday list you want to edit and press ENTER.

```

HOLIDAY LIST 1 - PAGE 1

NEW YEARS: NO
M. L. KING: NO
PRESIDENTS: NO
EASTER: NO
MEMORIAL: NO
INDEPENDENCE: NO
  
```

You will now see a list of holidays. TAB DOWN to each one and use SCROLL UP or SCROLL DOWN to change their setting to YES or NO. Holidays marked YES will be included in the holiday list. Any special exception schedule assigned to that holiday list will be applied to only the holidays within that list which are marked "YES."

There are four total pages of holidays. Pages 1 and 2 consist of preset holidays such as Thanksgiving and Easter. Pages 3 and 4 have custom holidays that you can set for any date. Use TAB UP and TAB DOWN to select the Day, Month and Year, and use the SCROLL buttons to set their values.

Keyboard Lock Code Screen

```

KEYBOARD LOCK CODE
IS: 0000
SET CODE '0000' TO
DISABLE OR ANY OTHER
CODE TO ENABLE KEY LOCK
PERMANENTLY
HIT EXIT IF NOT SURE
AND SEE USERS MANUAL.

```

This screen allows you to assign a password to the DTC. Any user will need to enter this password in order to access the menus and settings in the DTC and make changes.

Setting the Code:

When you navigate to the KEYBOARD LOCK CODE SCREEN, you will be prompted to create a 4-digit keyboard lockout code. Use SCROLL UP and SCROLL DOWN to change values and TAB UP and TAB DOWN to move between digits. When you have created the number you want, press the EXIT button to save the code and return to the previous menu screen.

Any user attempting to access the programming interface will now be required to enter the code you set in order to view or change settings. Note: Exiting out to the first screen locks the DTC.

Removing the Keyboard Lock Code:

To remove the Keyboard Lock Code, simply navigate back to KEYBOARD LOCK CODE SCREEN, set the 4-digit number back to 0000 and press EXIT.

Selection Location Screen

The SELECT LOCATION SCREEN allows you to set your geographic location, which will then be used to calculate the correct sunrise and sunset times for your schedules.

The first screen you will see displayed gives you the option of defining your location using a major city in your region, or by providing specific latitude and longitude values.

```

SELECT LOCATION

LIST OF CITIES

LATITUDE-LONGITUDE

```

Setting by City:

If you select the LIST OF CITIES option, you will be presented with the following screen:

```

LOS ANGELES, CA

LATITUDE: 34°N
LONGITUDE: 118°W
TIME ZONE: GMT-8

TO ACCEPT THE ABOVE
SETTINGS... HIT ENTER

```

Use the SCROLL UP and SCROLL DOWN buttons to choose the nearest major city. When it has been selected, TAB DOWN to the field that says "HIT ENTER" and press the ENTER key to confirm.

If you do not want to apply your changes, press EXIT at any time.

Setting by Global Coordinates:

If you selected the LATITUDE-LONGITUDE option, you will be presented with the following screen:

```

LATITUDE: 34°N

LONGITUDE: 118°W

TIME ZONE: GMT-8

ACCEPT COORDINATES
BY ... HIT ENTER

```

TAB DOWN to each of the fields – LATITUDE, LONGITUDE, and TIME ZONE and use the SCROLL UP and SCROLL DOWN keys to set the correct values. The "GMT" in the TIME ZONE field refers to "Greenwich Mean Time". Greenwich is a town in England which happens to lie exactly on the 0 degree longitude line, and is therefore used as the value that other time zones are compared to. GMT + 3 is the time zone 3 hours later than England. GMT – 3 is the time zone 3 hours earlier than England.

Los Angeles is in the GMT – 8 time zone, 8 hours earlier than England. New York is GMT – 5, three hours later than Los Angeles, 5 hours earlier than England.

When you are done setting values, TAB DOWN to the field that says "HIT ENTER" and press the ENTER key to confirm.

If you do not want to apply your changes, press EXIT at any time.

Display Options Screen

```

MILITARY TIME: NO
SECONDS VISIBLE: YES
DAYLIGHT SAVINGS: YES
TEMPERATURE F/C: F
RS-232 K-BAUD: 57.6
MODEM MODE: 0
PHOTOCELL MODE: NEW
TO SAVE: HIT ENTER

```

This screen consists of various settings for the clock itself. TAB DOWN to each setting and use the SCROLL UP and SCROLL DOWN keys to change the value. An explanation

of each setting is below.

MILITARY TIME – Can be set to YES or NO. If set to NO, the clock will display the time in hours between 1 and 12 o'clock and use AM and PM to distinguish between day and night. If set to YES, it will use Military or 24 hour time and display hours between 0 and 23, with 12 being noon and 0 being midnight.

SECONDS VISIBLE – Can be set to YES or NO. Controls whether seconds are displayed on the main clock screen.

DAYLIGHT SAVING – Can be set to YES or NO. If YES, then the time will be set forward and backward one hour on the dates specified in the DAYLIGHT SETUP SCREEN. If NO, then the clock will not automatically adjust itself forward or backward an hour for Daylight Saving Time.

TEMPERATURE F/C – Can be set to either F (to display the temperature on any connected thermostats in degrees Fahrenheit) or C (to display the temperature on any connected thermostats in degrees Celsius).

RS-232 K-BAUD – Can be set to a variety of numbers between 2.4 and 115.2. This is the speed in Kbaud that the DTC will communicate with a modem or computer that is attached through the RS-232 connection. The default value is 57.6.

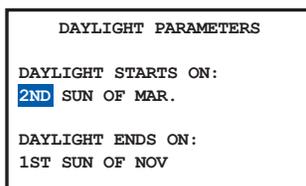
MODEM MODE – Can be set to either 0 or 1. This is a setting that is used by the factory for compatibility with certain cellular modems. It should always be set to 0.

PHOTOCELL MODE – Can be set to either NEW or OLD. This setting is used to adjust the way photocells are read by older pieces of hardware. It will be automatically set to the correct value, which will almost always be "NEW."

When you are done setting values, TAB DOWN to the field that says "HIT ENTER" and press the ENTER key to confirm.

If you do not want to apply your changes, press EXIT at any time.

Daylight Setup Screen



The DAYLIGHT SETUP SCREEN allows you to set the starting day and ending day for Daylight Saving Time. In 2007, the official Daylight Saving Time schedule changed, and there is a possibility that it will change in the future, which is why this screen exists in the DTC.

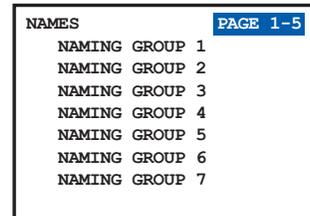
To change the settings:

TAB DOWN to select each field. SCROLL UP and

SCROLL DOWN to change the value. When you are done setting the start and end dates, press EXIT.

The DTC will use the new values to set the system time forward one hour on the starting day and backward one hour on the ending day.

Group Names Screen



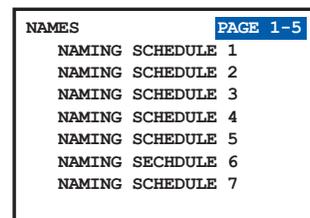
This screen allows you to assign your own names to the Groups on the system. By default, groups are named "Group 1," "Group 2," etc. You may want to create more informative names such as "Sales Floor Lights" or "Parking Lights."

To do this, TAB DOWN to the group you want to change the name for and press ENTER. A new screen will appear with the current (usually default) group name.

Use TAB UP and TAB DOWN to switch between spaces in the name and SCROLL UP and SCROLL DOWN to change the letter, number or symbol in each space. Use the delete button as needed.

When you are done, press EXIT to save the new name and return to the GROUP NAMES SCREEN.

Schedule-Names Screens



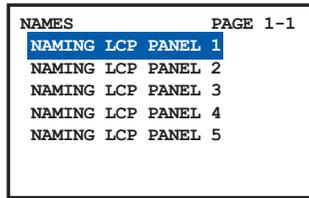
This screen allows you to assign your own names to the Schedules on the system. By default, schedules are named "Schedule 1," "Schedule 2," etc. You may want to create more informative names such as "Daily Staff Lighting" or "Weekend Schedule."

To do this TAB DOWN to the schedule you want to change the name for and press ENTER. A new screen will appear with the current (usually default) schedule name.

Use TAB UP and TAB DOWN to switch between spaces in the name and SCROLL UP and SCROLL DOWN to change the letter, number or symbol in each space.

When you are done, press EXIT to save the new name and return to the SCHEDULE NAMES SCREEN.

Panel-Load Names Screen



This screen allows you to assign your own names to the loads (relays) in the different panels on the system, as well as name the panels themselves. By default, loads are named "Load 1," "Load 2," etc. You may want to create more informative names such as "Front Entrance Light" or "Window Track Lights."

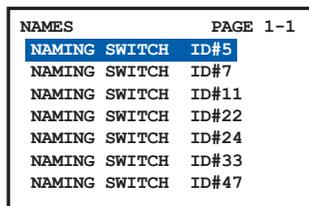
To do this, first TAB DOWN to the panel you want to rename, or which has loads you want to rename, and press ENTER. You will now see a list of the different loads on the panel, with the panel itself being the first item on the list.

If you want to change the name of the panel, TAB DOWN to highlight it on the list and press ENTER. Otherwise, TAB DOWN to the load you want to edit the name for and press ENTER. A new screen will appear with the current (usually default) panel or load name.

Use TAB UP and TAB DOWN to switch between spaces in the name and SCROLL UP and SCROLL DOWN to change the letter, number or symbol in each space.

When you are done, press EXIT to save the new name and return to the PANEL-LOAD NAMES SCREEN.

Switch-Button Names Screens



This screen allows you to assign your own names to the buttons on the different switches on the system, as well as name the switches themselves. By default, buttons are named "Button 1," "Button 2," etc. You may want to create more informative names such as "Sign Light Toggle" or "Front Office All Off."

To do this, first TAB DOWN to the switch you want to rename, or which has buttons you want to rename, and press ENTER. You will now see a list of the different buttons on the switch, with the switch itself being the first item on the list.

If you want to change the name of the switch, TAB DOWN to highlight it on the list and press ENTER.

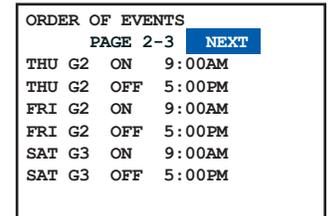
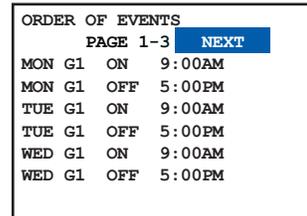
Otherwise, TAB DOWN to the button you want to edit the name for and press ENTER. A new screen will appear

with the current (usually default) switch or button name.

Use TAB UP and TAB DOWN to switch between spaces in the name and SCROLL UP and SCROLL DOWN to change the letter, number or symbol in each space.

When you are done, press EXIT to save the new name and return to the SWITCH-BUTTON NAMES SCREEN.

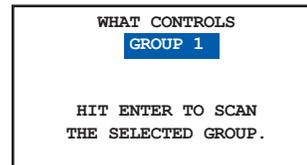
Scheduled Events Screens



The SCHEDULED EVENTS SCREEN is a listing of all the on and off times contained in every schedule in the DTC, sorted by day and time. It is useful for troubleshooting the system in the event of lights turning on and off unexpectedly, as it can identify an on or off time set in a schedule that may have been forgotten about. It is also helpful in following the exact sequence of lights turning on and off throughout the week as a result of all the different schedules.

There are no settings that can be modified on this screen, but there are usually several pages. Press SCROLL UP and SCROLL DOWN to cycle through the different pages and EXIT to leave the screen.

What Controls Groups Screen



This screen is used in troubleshooting or programming to determine what devices or schedules are turning specific groups on or off.

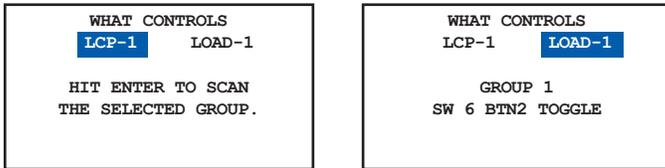
A group can be turned on or off by a schedule, a photo-cell, a switch, or by the dry contact inputs on a relay panel (which are also considered a form of switch).

To get a listing of items that turn on or off a specific group, TAB DOWN to the Group Selection and use the SCROLL UP and SCROLL DOWN keys to set it to the group you want and press ENTER.

The system will scan the bus and provide a list of items which control the group you selected.

Note: there may be more than one page of items that control that group. If this is the case, then you can highlight the page number using TAB DOWN and then view the other pages using SCROLL UP and SCROLL DOWN.

What Controls Relays Screen



This screen is used in troubleshooting or programming to determine what devices or groups are turning specific relays (or zones) on or off.

A relay (or zone) can be turned on or off by a group, a photocell, a switch, or by the dry contact inputs on a relay panel (which are also considered a form of switch).

To get a listing of items that turn on or off a specific relay (or zone), first TAB DOWN to the Panel Selection and use the SCROLL UP and SCROLL DOWN keys to set it to the panel which contains that relay. Then TAB DOWN to the Load Selection and use SCROLL UP and SCROLL DOWN to select the exact relay (or zone) and press ENTER.

The system will scan the bus and provide a list of items which control the relay or zone you selected.

Note: There may be more than one page of items that control that relay or zone. If this is the case, then you can highlight the page number using TAB DOWN and then view the other pages using SCROLL UP and SCROLL DOWN.

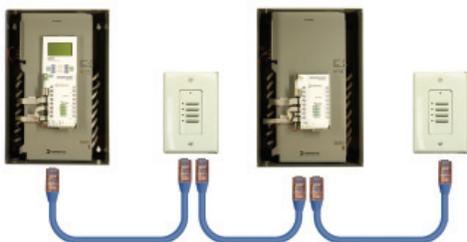
SYSTEM INSTALLATION STEPS

SYSTEM INSTALLER THESE 9 STEPS MUST BE COMPLETED:

This column gives an overview of all the steps necessary to install a complete lighting control system.

Line voltage cabling can be made up at any time, but the following should be done in sequence for the fastest installation.

1. Plan your cabling using the guidelines found in the section "Cable Planning" before pulling any conductors or making any connectors. This will save time and money.
2. Pull Cat. 5 in a daisy-chain to all digital devices. Crimp on RJ45 connectors.



Make crimps correctly (see Bus Connections section).

3. Test each cable with a LAN cable tester prior to plugging it into the bus.



Remote Cable Tester

4. Plug in the Cat. 5 once all cables are tested.
5. Test the system per the Activation Checklist section.
6. Make the remaining low voltage cabling connections for any contact closure devices or photocells.
7. Switch on the power supply for every active device (an "active device" has an onboard power supply) on the bus. Voltage output should be about 12vdc from these devices.
8. Check the LEDs on all devices to ensure that they are receiving power. If any devices are not powered up, see the "Bus Scan/Error Statistics Tests and Trouble Shooting" section of this manual.
9. Do the required initial programming per the System Software Start-Up section.

Cable Planning

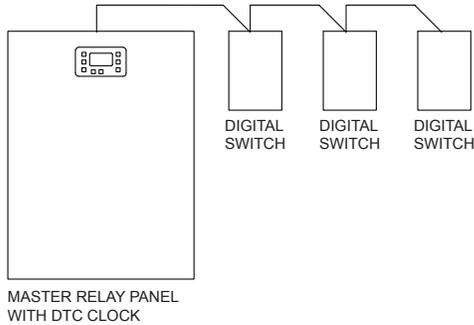
There are three types of cabling within this digital lighting control system.

- Digital devices are daisy-chained using Cat. 5 cable with RJ45 connectors. Use this Guide for Cat. 5 and network wiring.
- Some digital devices have low voltage inputs for contact closure devices or photocells. Refer to the individual Product Installation Guides for hook up details.
- Line voltage cabling is required to power electronics in some devices and for the relays controlling loads. Refer to the Product Installation Guides for details.

All digital devices have an RJ45 connector and are daisy-chained using Cat. 5 cable (with RJ45 connectors). Do not "home run" any of the digital devices on the bus back to a relay panel. When cabling digital devices, no spurs or T-Taps are allowed.

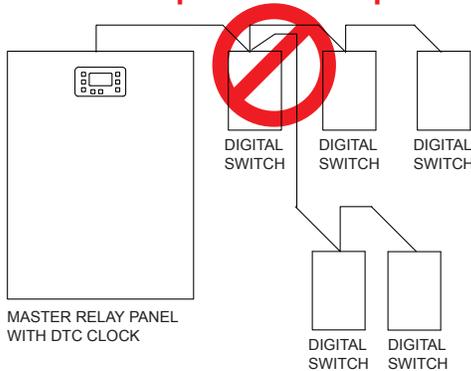


If the above illustration were converted to a single line drawing, it would look like this.



The saw-tooth pattern is a drawing standard which indicates a daisy-chain style network (RS-485).

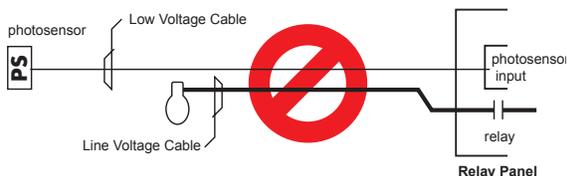
No Spurs No T-Taps



Eliminate Low Voltage Interference

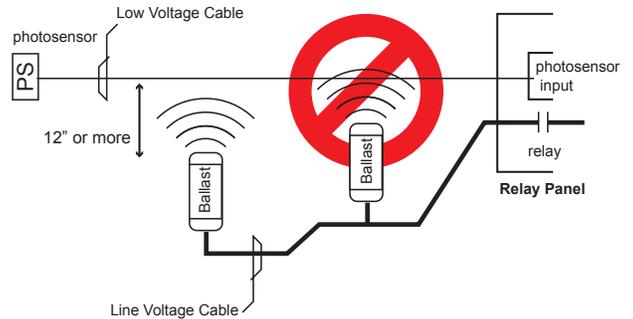
Cat. 5 cable must be at least 12" from all line voltage conductors, except to cross or make terminations. Cat. 5 cable must be kept away from all EMF devices such as ballasts or transformers.

Isolate Line Voltage Cable



Low voltage cabling must not be run in parallel with line voltage cable, and must not share the same conduit, whether digital cable (Cat. 5) or low voltage cable (3#18 from a photosensor).

Isolate Line Voltage Devices

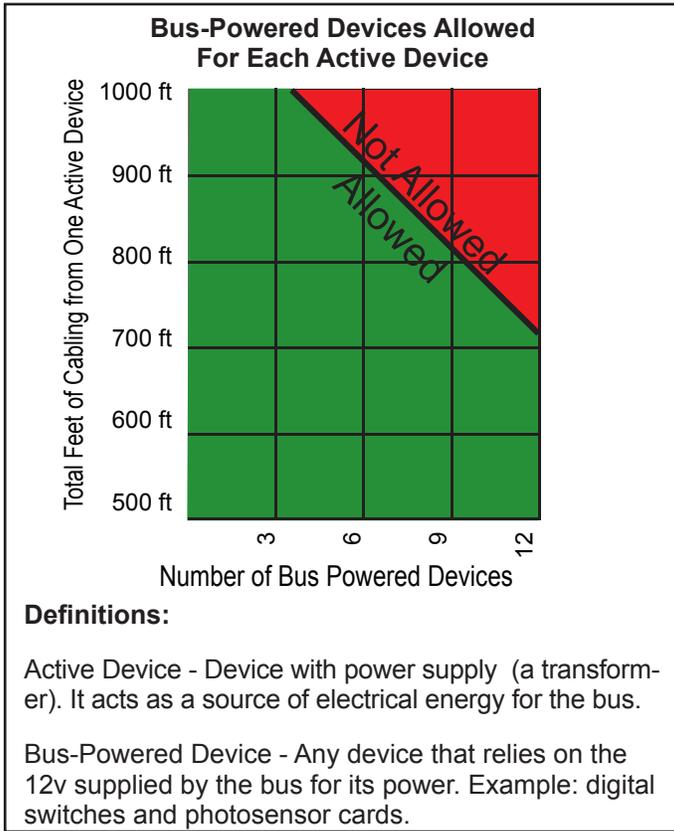


Low voltage cabling must avoid EMF or RF from ballasts or other "noisy" loads. EMF or RF interference can create an unstable bus and can eventually ruin digital devices.

Planning Your Cabling Route

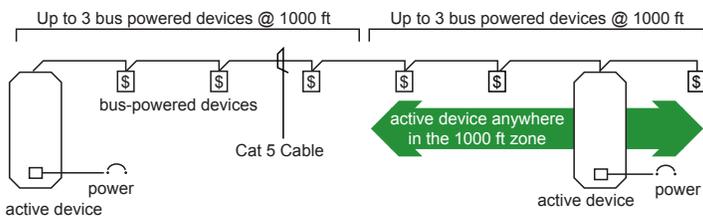
There is a limit to how many switches and photocell cards you can add in a row over long runs of Cat. 5 cabling. The more feet of Cat. 5 cable used, the fewer bus-powered devices you can daisy-chain together before needing to add another relay panel or active device. If too many bus-powered devices are added contiguously over long cabling lengths, they may not receive enough current to operate.

Use the Bus Powered Devices chart to help plan your cabling route by avoiding too many contiguous bus-powered devices.

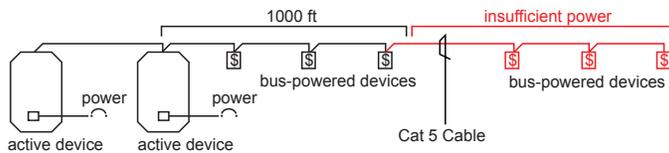


Don't Cause Voltage Drop!

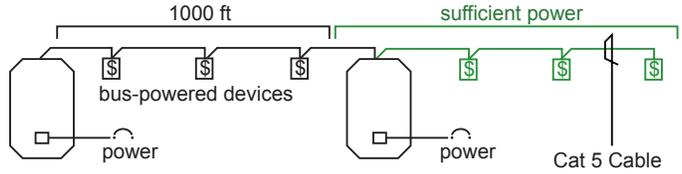
Per the Bus Powered Devices chart, up to 3 bus-powered devices may be powered across 1000 feet of Cat. 5 cable. The active device may be located anywhere within the 1000 foot region.



Multiple active devices in the same location will not increase the distance allowed.



For the above scenario, the correct solution would be to route the Cat. 5 properly so as to spread the active devices out. This is in the next diagram.

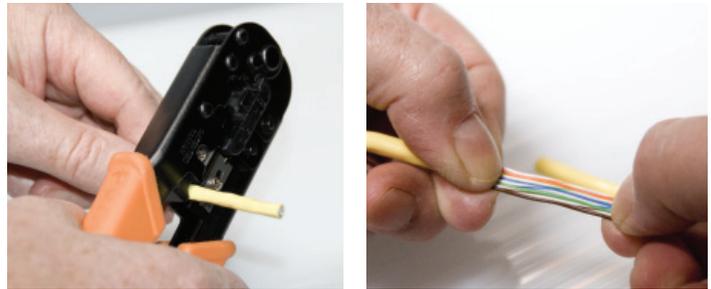


RJ45 Connectors

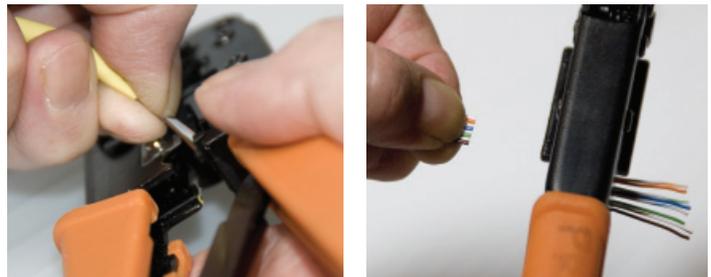
Cat. 5 installation instructions

Never make "hot" RJ45 crimps (crimping the other end of a cable that has been plugged into a powered device). This can damage equipment and can cause devices to re-address themselves.

1. Remove two inches of jacket, using a Cat. 5 Jacket Stripper. Carefully inspect the conductors for nicks.
2. Un-twist each pair, and straighten each conductor between the fingers. Do not untwist into the inside of the jacket.

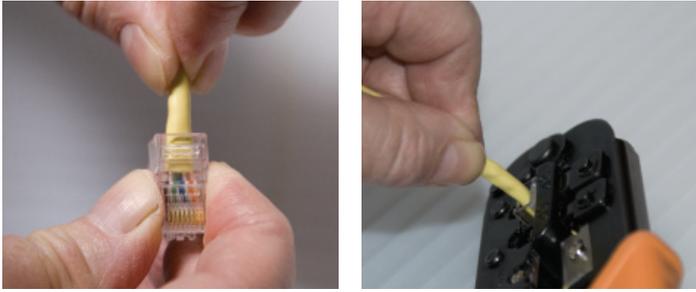


3. Reorganize the conductors into the order shown. Bring all of the conductors together, until they touch.
4. At this point, re-check the wiring sequence.
5. Cut all of the conductors at a perfect 90 degree angle from the cable at 1/2" from the end of the cable jacket. This is a very critical step. The conductors must be straight to guarantee contact.



6. Place an RJ45 plug on the end of the cable with the locking prong facing down.
7. Push moderately hard on the conductors so they connect to the back of the plug.
8. Visually inspect the conductors to ensure that they are still in the correct order and the end of the jacket is about 3/16" inside the plug.

- Using a ratcheting crimp tool, crimp the plug. Force the contacts through the insulation on the conductors. Crimp 2 or 3 times for the best possible connection.



- Visually inspect each connector for a proper connection. Contacts should be pushed into the insulation of each conductor.
- Repeat this process on the other end of the cable to create a straight-through cable.
- Test every cable for continuity with a LAN cable tester. While testing, wiggle and tug on each connector to ensure a solid crimp. The primary issues with any network-based product usually trace back to cabling. If the cables do not pass, re-crimp.

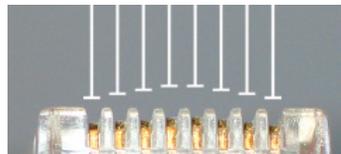
Notes Regarding Making Category 5 Patch Cable

Have the following tools on hand when making up Cat. 5 patch cables: Ratcheting crimp tool, Cat. 5 Jacket Stripper and a LAN cable tester that allows remote testing - the ends of the cable will be remote from each other. **A cheap tool that saves a few dollars now can cost thousands later.**

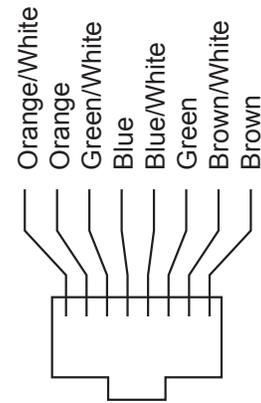
RJ45 plugs are manufactured for solid conductors or stranded conductors, or in some cases both. It is very important to be sure the plug matches the conductor, or that it is dual-purpose. Since they can be difficult to visually distinguish, categorize and store each type carefully. Using the wrong type has been found to cause intermittent connections after the system is started up.



Contacts seated properly.



Contacts not seated properly.



Color code conforms to Ethernet standard 568-B

ACTIVATION CHECKLIST

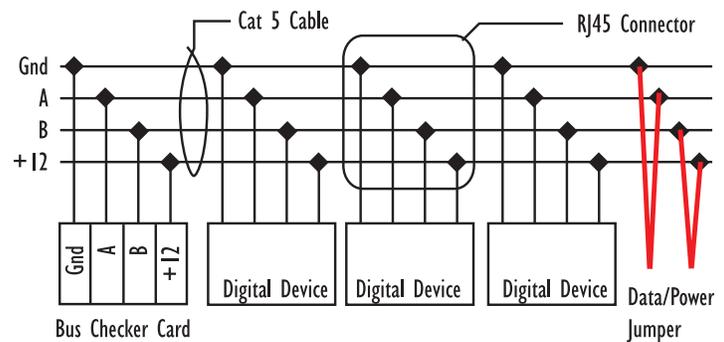
This copy of the System Start-Up Guide is included so that you may refer to it when adding new devices to an existing bus. Remember, this network should not exceed 16 digital devices.

This Section can be used as the most basic trouble-shooting method for your lighting controls. When all other trouble-shooting steps have failed to solve an existing system, repeat the steps of the Start-Up Guide. The following tests should be done before powering the system. Failing to do these tests can cause additional work.

The suggested handlings for each test assume each previous test is successfully completed. For that reason it is critical that each test is passed before moving on.

The most complex trouble-shooting issues almost always pull back to bad cabling or other issues which would have been handled in minutes had the the following tests been done and any anomalies handled.

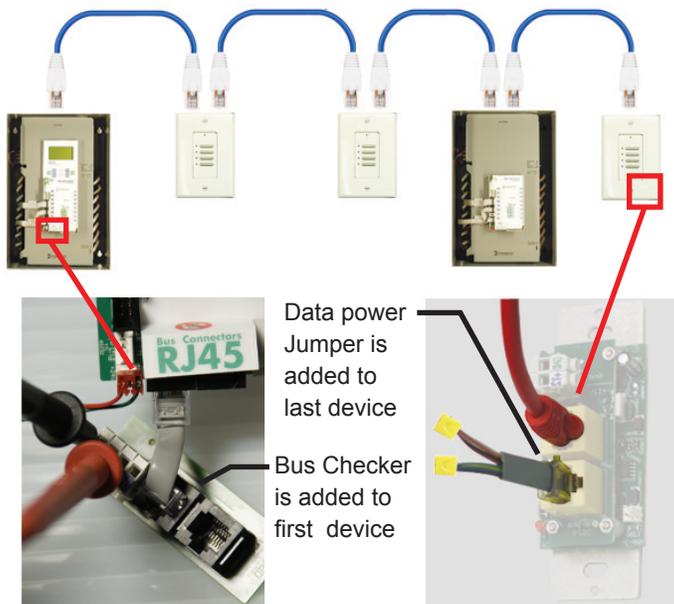
Continuity Test & Results



- De-power every item on the bus, check the voltage at both ends for 0 volts and remove any terminators. Active devices (with their own power supply) that do

not have a dedicated breaker can be de-powered by unplugging the secondary side of the transformer.

- At one end of the bus, short Gnd to A and B to +12 using the Data/Power Jumper which is included with the master panel.



Data power Jumper is added to last device
Bus Checker is added to first device

- At the other end of the bus plug in the Bus Checker Card to the first device on the bus.
- Check resistance from Gnd to A and B to 12v.
- Check resistance from A to B.

Results for Measuring Gnd-A and B-12v

Continuity Test Results (G to A and B to 12)			
Length/Resistance			
100 ft.....	3-4 ohms	2000 ft.....	68-80 ohms
500 ft.....	12-20 ohms	3000 ft.....	102-120 ohms
1000 ft.....	34-40 ohms	4000 ft.....	130-160 ohms

The Gnd to A and B to 12 resistance readings are used to calculate the length of the bus and both should be close to the same value (within 5%).

Their value will be 34 to 37 ohms per 1000 feet, and therefore should never exceed 160 ohms (4000 foot bus limitation). Calculate what the estimated bus length is from the resistance and compare it to the actual cable length. For example if the bus was estimated to be 1000 feet the resistance should be about 35 ohms.

If more than 5% different from each other or outside the expected range, several possibilities exist:

- Sometimes the B to 12 measurements become polarized. Flip the test probes and check B to 12 again. If the measurements match and are in range, the test is a

pass.

- Crimps may have become resistive when the Cat. 5 was pushed into the wall or the bus connectors. For larger buses, use the Bus Splitting Technique to locate this.
- Cat. 5 cable may have been nicked when stripped or torn when pulled through conduit. For larger buses, use the Bus Splitting Technique to locate this.
- Re-check your test results. Sometimes, your meter is not properly set and can show funny readings. For larger buses, use the Bus Splitting Technique to locate this.
- A bus connector may have become unseated from its circuit board (very rare) in a rough installation environment.

Results for Measuring A to B

Continuity Test Results (A and B only)			
Length/Resistance			
1.....	450 kOhms	8.....	56 kOhms
2.....	225 kOhms	10.....	45 kOhms
5.....	80 kOhms	16.....	28 kOhms

This measurement will indicate how many digital devices are on the bus. It is also used to discover any shorts between the A and B terminals.

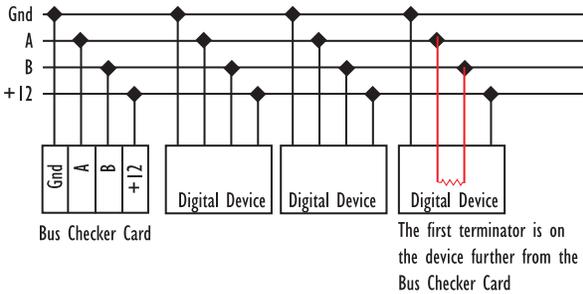
Each digital device has a resistance of about 450 kOhms across A&B terminals. Multiple devices will act like resistors in parallel. Only digital devices should be included in this calculation.

These values do not need to be exactly in line with the chart but do need to be within range. If your A-B measurements are completely out of range and the first portion of this test is within range:

- If the resistance is about 100 - 300 ohms, a terminator is present. Use the bus splitting technique to locate the terminator.
- If the resistance is less than 50 ohms, A and B are shorted together. For larger buses, use the Bus Splitting Technique to locate the short.

1st Terminator Test & Results

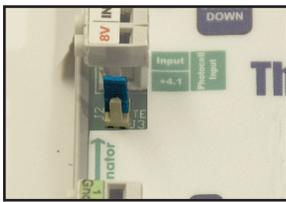
Terminators short an onboard 120 ohm resistor across the A & B terminals to prevent communications reflections. The terminator must be located only at each end of the bus.



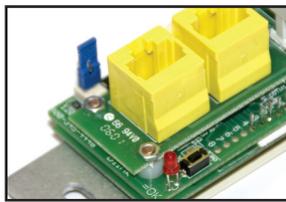
The manifestations of a terminator in the middle of the bus or a missing terminator from the ends of the bus are many: switches will not work, lights will not turn off after hours, the system will appear to work only sporadically.

If you see any of these manifestations, you can be certain that the bus is not terminated or the cabling has issues.

1. Remove the Data/Power Jumper and on the same device plug in a Terminator.



Terminator (in blue)



Terminator (in blue)

2. Go back to the beginning of the bus and measure resistance for the terminals (see below) on the bus checker card.
 - a. Measure across G to A and B to 12v
 - b. Measure across A to B

Results for Measuring A to B

The A to B results are the most critical for the First Terminator Test

First Terminator Test Results (A to B only)			
Length/Resistance			
100 ft.....	125	2000 ft.....	230
500 ft.....	150	3000 ft.....	285
1000 ft.....	175	4000 ft.....	340

The A to B measurement indicates the distance from the bus checker card (where you did the testing) to the terminator (which should be on the other end of the bus). Resistance will be about 50 - 55 ohms per 1000 feet, plus 120 ohms for the first terminator. This value should never exceed about 350 ohms (indicates a 4000 foot distance from the bus checker to the terminator).

Compare the calculated length from this test to the calcu-

lated cable length from the Continuity Test. They should indicate a similar cable length. If not:

The terminator is not seated properly. Remove it and carefully remount it on the dual pin connector.

If too low, there are two possibilities: a) there is a short somewhere on the bus or b) there is an additional terminator in the middle of the bus.

Results for Measuring Gnd to A and B to 12v

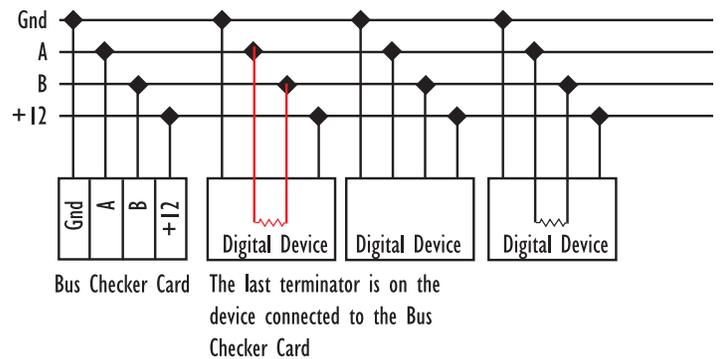
These two measurements should be of the same general value and should measure with a very high resistance - MegOhms or "open line" depending on your meter.

If these values are very different or are not in range:

1. The data jumper has not been removed.
2. Sometimes the B to 12 measurements become polarized. Flip the test probes and check B to 12 again. If the measurements match and are in range, the test is a pass.
3. Crimps may have become resistive when the Cat. 5 cable was pushed into the wall or into the bus connectors. Solve this using the bus splitting technique.

2nd Terminator Test & Results

1. Add the second terminator to the beginning of the bus
2. Measure: A to B (only).



Use the chart for reference:

Second Terminator Test Results (A to B only)			
Length/Resistance			
100 ft.....	62	2000 ft.....	78
500 ft.....	67	3000 ft.....	85
1000 ft.....	72	4000 ft.....	90

If your value is more than 10% out of range:

1. The second terminator is not seated properly. Remove it and carefully remount it on the dual pin connector.

2. An additional terminator or bad connection is shorting some portion of the A and B terminals of the bus. Solve this using the bus splitting technique.

Bus Splitting Technique

1. Remember to add, move or remove terminators or the data/power jumper to keep the measurements within range.
2. On the middle device of the bus, disconnect one Cat. 5 cable to effectively create two smaller busses.
3. Test each mini-bus to find the out-of-range side.
4. Repeat steps 1 & 2 until the cable, crimp or device which is creating out of range measurements is located. It is OK to check cables or devices by themselves if they are suspect.
5. Inspect the RJ45 connectors: a crimp that tests OK may become resistive or shorted when pushed into a bus connector or a junction box.
6. Re-check the cable with a LAN tester. A small nick on one conductor can become a break when the cable is manhandled into its final position.
7. If the crimps and the cable test OK, test the device and see if it is out-of-range without any cables attached. If it is, inspect it for extra terminators, wire fragments on the circuit board or for damage.

Bus Scan/Error Statistics Tests and Trouble Shooting

No programming, or other trouble shooting, should be attempted over an unstable bus (See a,b and c below).

The bus is the communication line between all the panels, switches and other devices in our system. When it is not stable, messages or commands can be missed, ignored, delayed, or corrupted, leading to completely unpredictable results.

Even if everything is programmed and otherwise functioning correctly, an unstable bus can cause the system not to work properly in “mysterious” ways.

Having completed the “Low Voltage Testing & System Power-Up” checklist there is little likelihood of having Bus Scan or Error Statistics issues.

Bus Scan

These are the three most important factors to consider when looking at the BUS SCAN.

1. The BUS SCAN and the PANEL/SWITCH TYPES menu must match exactly. Everything on the bus scan is correctly defined under PANEL SWITCH TYPES and every device listed under PANEL SWITCH TYPES is present on the BUS SCAN.

2. Items should be stably displayed and NEVER appear and disappear or worse: just not present on the BUS SCAN at all.

3. The Error Count should not increase more than once every three minutes.

To perform the BUS SCAN:

Follow this path:

1. USER MENU > SETUP MENU > SYSTEM SET UP MENU > RESTRICTED (Password: 90001) > ADDRESSING-BUS SCAN > BUS SCAN.
2. Verify that each device that is listed under the PANEL/SWITCH TYPES menu is present.
3. Watch the screen for any device drop offs. There should be no drop offs.
4. Trouble-shoot any errors per the Trouble Shooting Section.

Ignore the Error Counter on this screen. Go to the Error Statistics Screen to check for errors.

Error Statistics Test

With a high error count, the system may appear to work properly, but eventually the problem that is causing errors will get worse and the digital device may cease to function properly.

“Error count” measures the number of times the DTC tries to communicate to a digital device but does not get a proper response. If data is corrupted due to signal noise, the digital device will ignore it. The DTC may attempt to broadcast a command thirty or more times if it does not receive an acknowledgment. Each unsuccessful attempt is logged as an error. Almost any system logs some errors over time – usually a few errors per hour.

To check for Error Statistics

1. Follow this path:
From the ADDRESSING BUS SCAN MENU:
TAB to ERROR STATISTICS and ENTER to select
or
From the Main Menu:
USER MENU > SETUP MENU > SYSTEM SET UP MENU > RESTRICTED (Password: 90001) > ADDRESSING-BUS SCAN > ERROR STATISTICS.
2. TAB to CLEAR and ENTER to reset the error counter.
3. Watch the display for three or four minutes. This test is a pass if all the error counts remain at zero or climb no higher than one every three minutes.

Note: Sometimes the clock may automatically exit programming mode if left too long. If this happens, just

- If it still does not read, hard and soft erase the device several times and then try to readdress it using the AUTO ADDRESS screen.
- If it still does not read or will not address, it has probably failed.

Check Interference

- Check to ensure that the Cat. 5 cable does not run near line voltage conductors, any dimmers or electronic ballasts. EM or RF interference can cause signal degradation.
- Disconnect contact closure switches or occupant sensors or 0-10 voltage. The conductors to contact closure switches or analog voltage devices can act like an FM antenna and per the “Eliminate Low Voltage Interference Section” of the System & Software Start-Up Guide should never be run near power lines and if over 100 ft long should be shielded.

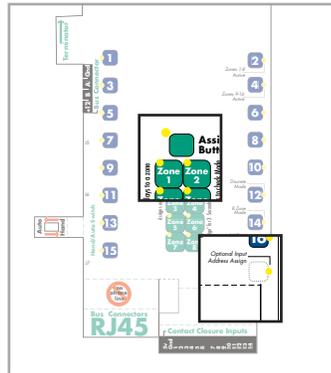
SYSTEM SOFTWARE START-UP

Addressing and Defining Each Device

There are two steps that must be done to make all the items on the bus work together. a) Assign an Address. b) Define the Item in the PANEL SWITCH TYPES Menu. Note that Master panels are pre-addressed and defined at the factory. Only slave relay panels, switches and photocell control cards require addresses and must be defined. Note that a relay panel takes up two addresses.

Use the address planner in the back of this guide to write in the addresses to be used. Sequential addresses are usually used but you may choose any address up to 120.

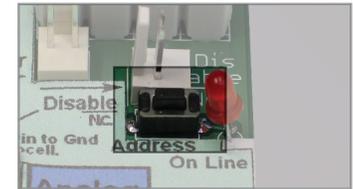
- In the clock display navigate to USER MENU > SETUP MENU > RESTRICTED (Password: 90001) > ADDRESSING-BUS SCAN > AUTO ADDRESS.
- Scroll the address to the first one on your Address Planner and press the assign button or address button on the relevant device. Note that the address number will increment when the address has been assigned. Also note that on slave relay panels you must first assign the relay panel by pressing the Assign Button and then the switch inputs which have a separate address button on the bottom right of the board.
- Write the assigned address on each device with a permanent marker.
- Now verify the address of each item by going to USER MENU > SETUP MENU > RESTRICTED (Password: 90001) > ADDRESSING-BUS SCAN > READ ADDRESS. Press the address button of each device and check that the correct address comes up in the window as per your address plan. Addresses can be written over if incorrect.



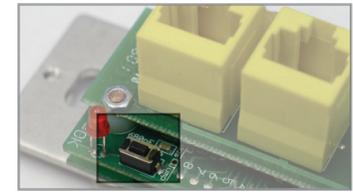
Lighting Control Panel



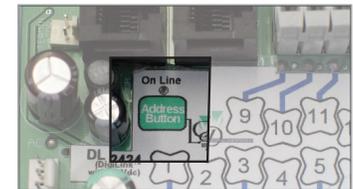
Record address of device



Photocell Input Card



Digital Switch



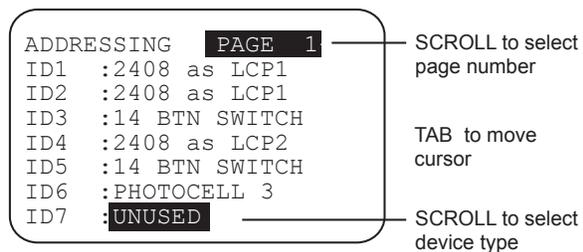
Contact Closure Card

Once a switch is mounted on the wall you may use button 1 to check or readdress the switch.

Defining Device Type

Once the device has been addressed, the system only knows that it is a panel or a switch (not that it is a 6-button switch, or an 8-relay panel) so the system must be told the specific type of device that occupies each address (ID).

- In the DTC Clock, navigate to PANEL/SWITCH TYPES From Main Menu: USER MENU>SETUP MENU>RESTRICTED (Password: 90001)>PANEL/SWITCH TYPES



Note: The master panel and its onboard inputs have been entered at the factory. Additional items must now be added.

- TAB to “ID4” and SCROLL to select the Device Type (see below for a complete list).
- TAB to next UNUSED ID and repeat until every device is defined.
- To select more pages, TAB to “PAGE 1-19” and SCROLL.

5. EXIT to Main Menu when complete.

Device Chart:

Red indicates a variable. Any device can occupy any address. Relay Panels must occupy three contiguous addresses. Any digital device, including LCPs, can use any start address.

All Relay Panels occupy three addresses. Each LCP should be separately numbered (LCP1, LCP2 LCP3, etc.)

Digital Switches occupy one address, but the number of buttons must be defined:

ID12: 1 BTN SWITCH
ID13: 6 BTN SWITCH

Three Input Photocell Card:

ID7: ANALOG/DIGITAL

ID1: 2408 as LCP1
ID2: 2408 as LCP1
ID3: 14 BTN SWITCH

Bus Scan

Now that digital devices have been addressed and defined, it is time to check the integrity of your digital bus.

The Bus Scan will help verify that all the previous steps have been done correctly, and that each device on the network is reporting properly.

- In the DTC Clock, navigate to: USER MENU > SETUP MENU > RESTRICTED (Password: 90001) > ADDRESSING BUS SCAN > BUS SCAN DISPLAY

ID#: 30 Type: Not Used/Not Present ID#: 12 Type: 1 (Digital Switch, etc.)

Device Address (ID#): 1
Device Type: 331 (8 or 16 relay panel)

ID# 1-20	3313310110	11000000000
ID# 21-40	00000000000	00000000000
ID# 41-60	00000000000	00000000000
ID# 61-80	00000000000	00000000000
ID# 81-100	00000000000	00000000000
ID# 101-120	00000000000	00000000000
ID# 121-128	00000001	Err: 0-0

ID#: 127 Type: 1 Error Counter

The Bus Scan Display shows the status of 127 device addresses (ID#) starting at top left with ID#1. The status of each ID# is represented by a numeral or series of numerals:

Item	Bus Scan
Not reporting/not used	0
BLUE BOX relay panel	331 8 relays
	331 16 relays
KnightsBridge (1-6) Digital Switch	1
PCCS Card	1

If a 16 relay panel has a start address of "1", 331 will be displayed, starting at the top left position (addresses 1,2,3). The above "scan" shows this configuration.

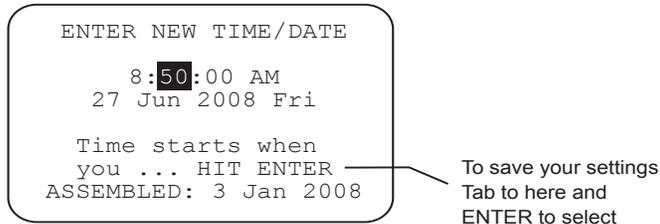
- Verify each address (device) is stably displayed on the Bus Scan. Error count should not exceed more than 0-2 per hour. There must be a device defined in PANEL / SWITCH TYPES for every address that is shown as used on the BUS SCAN DISPLAY. Addresses that are shown as unused ("0") on the BUS SCAN DISPLAY must also be set as "UNUSED" in PANEL / SWITCH TYPES.
- Press EXIT to return to the ADDRESSING/BUS SCAN MENU. Select the ERROR STATISTICS option and press ENTER. Clear the current error counter by selecting the field "CLEAR" and pressing ENTER. Watch the error counts for at least 3 minutes. There should be no errors of any kind accumulating within the 3 minute period. If there are, you will need to proceed to the bus correction steps in this manual.

Set Date & Time:

The DTC Clock in the relay panel is astronomical, and needs to know the date, time, and location.

- In the DTC Clock, navigate to: USER MENU > SETUP

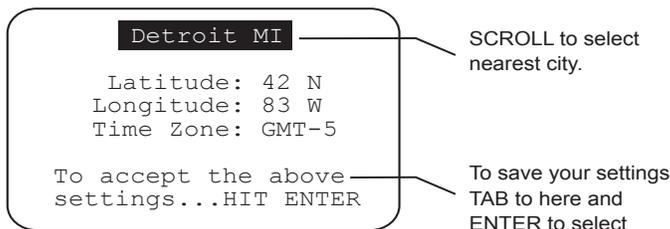
MENU > SYSTEM SET UP MENU > SET DATE AND TIME



2. TAB to the "hour" and SCROLL to select. Repeat this process for minutes, seconds, day, month and year.
3. Tab to "HIT ENTER" and ENTER to save settings.

Set Location:

1. In the DTC Clock navigate to: USER MENU > SETUP MENU > SYSTEM SET UP MENU > SYSTEM OPTIONS > SELECT LOCATION > LIST OF CITIES
2. SCROLL to select your city or the city nearest you.
3. Tab to "HIT ENTER" and ENTER to save settings



Optional: If you cannot find any cities within several hundred miles of your location, EXIT and go to LATITUDE - LONGITUDE. Use a dependable resource (internet, etc.) to locate your exact Latitude and Longitude.

The Time Zone is the number of hours negative or positive from Greenwich Mean Time (GMT). For example: the North American Eastern Time Zone is -5 GMT, Central Time is -6, Mountain Time is -7, Pacific Time is -8, and Hawaii is -11.

To Disable Daylight Savings Time (only for regions not participating in daylight savings time):

1. In the DTC Clock navigate to:
USER MENU > SETUP MENU > SYSTEM SET UP MENU > SYSTEM OPTIONS > DISPLAY OPTIONS
2. TAB to Daylight Savings and SCROLL to select NO
3. Tab to "HIT ENTER" and ENTER to save settings
4. Exit to Main Menu when complete.

Now that all parts of the bus are reporting and are on line each of the items must be programmed to do it's job. There are three main programs.

- Program a switch button
- Program a schedule
- Program a photocell

ADDRESS PLANNER PAGE

(Cross out items not used and write in address for items on your bus)

RELAY PANELS

<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">Master Panel</div> <p>Factory Set: ID #1&2 LCP 1 Factory Set: ID #3</p> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <p>Contact Inputs</p>	<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">Slave Panel</div> <p>ID # _____ & # _____</p> <p style="text-align: center;">LCP 2</p> <p>Contact Inputs</p> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <p>ID # _____</p>	<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">Slave Panel</div> <p>ID # _____ & # _____</p> <p style="text-align: center;">LCP 3</p> <p>Contact Inputs</p> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <p>ID # _____</p>	<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">Slave Panel</div> <p>ID # _____ & # _____</p> <p style="text-align: center;">LCP 4</p> <p>Contact Inputs</p> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <p>ID # _____</p>	<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">Slave Panel</div> <p>ID # _____ & # _____</p> <p style="text-align: center;">LCP 5</p> <p>Contact Inputs</p> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <p>ID # _____</p>
--	---	---	---	---

SWITCHES

<div style="border: 1px solid black; border-radius: 15px; width: 100%; height: 40px; margin-bottom: 5px;"></div> <p>Button Switch</p> <p>ID # _____</p>	<div style="border: 1px solid black; border-radius: 15px; width: 100%; height: 40px; margin-bottom: 5px;"></div> <p>Button Switch</p> <p>ID # _____</p>	<div style="border: 1px solid black; border-radius: 15px; width: 100%; height: 40px; margin-bottom: 5px;"></div> <p>Button Switch</p> <p>ID # _____</p>	<div style="border: 1px solid black; border-radius: 15px; width: 100%; height: 40px; margin-bottom: 5px;"></div> <p>Button Switch</p> <p>ID # _____</p>	<div style="border: 1px solid black; border-radius: 15px; width: 100%; height: 40px; margin-bottom: 5px;"></div> <p>Button Switch</p> <p>ID # _____</p>	<div style="border: 1px solid black; border-radius: 15px; width: 100%; height: 40px; margin-bottom: 5px;"></div> <p>Button Switch</p> <p>ID # _____</p>
---	---	---	---	---	---

PHOTOCELL INPUT CARD/CONTACT CLOSURE INPUTS

<div style="border: 1px solid black; width: 100%; height: 40px; margin-bottom: 5px;"></div> <p>3 Input Photocell Card</p> <p>ID # _____</p>	<div style="border: 1px solid black; width: 100%; height: 40px; margin-bottom: 5px;"></div> <p>14 Input Contact Closure</p> <p>ID # _____</p>	<div style="border: 1px solid black; width: 100%; height: 40px; margin-bottom: 5px;"></div> <p>14 Input Contact Closure</p> <p>ID # _____</p>	<div style="border: 1px solid black; width: 100%; height: 40px; margin-bottom: 5px;"></div> <p>14 Input Contact Closure</p> <p>ID # _____</p>
---	---	---	---

WARRANTY

Lighting Control & Design Inc. warrants each new unit for 36 months from date of shipment to be free of defects in material and workmanship under conditions of normal use and specified ambient temperature when installed and operated under LC&D's product specifications and in accordance with the National Electrical Code.

LC&D shall at its option, repair or replace any defective unit which in its opinion, has not been improperly installed, wired, insulated, used or maintained, provided however that LC&D shall not be required to remove, install or re-install any defective unit and provided that LC&D is properly notified of said defect within the aforementioned warranty period. This warranty in no way covers any labor required to effect changes.

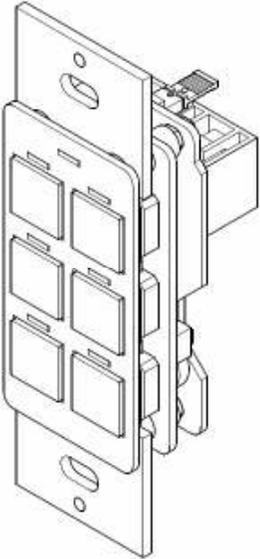
Additionally, LC&D shall also replace any relay that fails within the first 36 months under a "no questions asked" exchange policy.

The foregoing warranty and optional remedies are exclusive and, except for the foregoing warranties THERE ARE NO OTHER WARRANTIES OF MERCHANTABILITY OR OF ANY OTHER TYPE. In no event shall LC&D or any other seller be liable for consequential or special damages, nor for any repair work, undertaken without its prior written consent, nor shall LC&D's liability on any claim for damages arising out of or connected with the manufacture, sale, installation, delivery or use of said unit ever exceed the price paid therefore.



905 Allen Avenue, Glendale CA 91201
323.226.0000, 800.345.4448, fax 323.226.1000
www.lightingcontrols.com

CHELSEA DIGITAL SWITCH



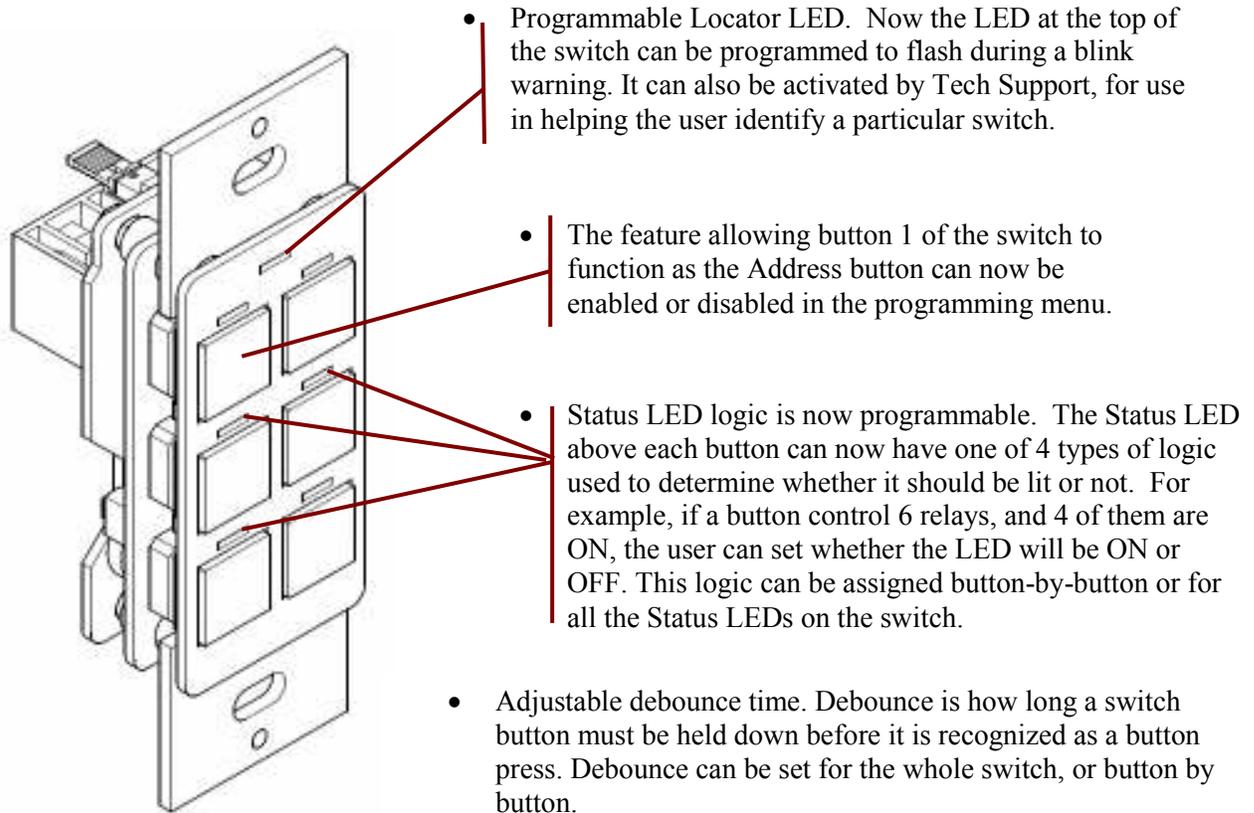
ADVANCED PROGRAMMING GUIDE

CONTENTS

1. Overview.....	Page 1
2. Important Programming Notes	Page 2
3. The Switch Setup Screen (First Screen)	Page 3
a. 7 On = _____	Page 4
b. 8 On = _____	Page 5
c. BTN Beep	Page 6
d. Button 1 Address	Page 6
e. 9-14 disable 1-6	Page 7
f. Debounce	Page 7
4. The Switch Setup Screen (Second Screen)	Page 9
a. ALL-OFF logic except groups	Page 9
b. LED logic for other buttons	Page 10
5. The Button Edit Screen	Page 11
a. LED mode	Page 11
b. Toggle mode	Page 12
c. Debounce	Page 12
6. Common Applications	Page 13
a. How do I disable a particular switch button?	Page 13
b. How do I set a button to give an audible “error” beep when someone presses a disabled button?	Page 14
c. How do I make a switch give an audible alert during a blink warning period?	Page 15
d. How do I set up a room with a partition, so that the switches change their function depending on whether the partition is open or closed?	Page 17

Overview

The Chelsea Digital Switch has been updated with several new programmable features. In summary, they are:



- Audible beep alert which can be used to notify users during a blink warning period before the lights shut off. The beep pattern is programmable and can also be used by Tech Support to help the customer locate a specific switch on the bus.
- Alternate button programming. Chelsea Digital Switches can now have two sets of programming for six buttons, or three sets of programming for three buttons. Each set of programming can be activated by a time schedule, override switch, etc. This feature is useful for setting buttons to function differently at different times of day, or in partitionable rooms where a switch functions differently depending on whether a partition is open or closed.
- Programmable Toggle logic. If a button controls multiple relays, it is important to synchronize them when toggling them all at once. If some of the relays are ON and some are OFF, it is now possible to specify whether the switch syncs them all ON or all OFF when toggling.
- Enabling and disabling individual switch buttons is still an available feature carried over from the previous version of the Chelsea. Enabling and disabling buttons can now be allowed or not allowed for a switch in the programming menu. Additionally, disabled buttons can be set to trigger a rapid series of beeps when pressed, so the user knows that the button has specifically been disabled by programming.

! Important Programming Notes !

To use the advanced features of the new Chelsea Digital Switch, please ensure the following:

- Always set a Chelsea Digital Switch as a “14 Button Switch” in the Panel/Switch Types screen. This is true even if the switch only has 1, 2 or 3 physical buttons. The reason for this is because advanced programming requires setting parameters for buttons 7-14, even though they are “virtual” buttons and not physically present on the switch.
- To access advanced programming functions of the Chelsea Switch, you must have DTC clock version 4.48 or later.
- To use advanced programming functions of the Chelsea Switch, you must be using switch firmware 1.12 or later. The version of firmware a switch has is displayed in the lower left corner of the SETUP screen for that switch.

The Switch Setup Screen (First Screen)

To access the screen, navigate to the switch you want to program, highlight the word **SETUP** and press **ENTER**.

USER MENU → PROGRAM SWITCH → SWITCH# → SETUP

Select "SETUP"
and press
ENTER

```
SELECT BTN SWI ID#7
SETUP      PAGE 1-3
B1:      BUTTON 1
B2:      BUTTON 2
B3:      BUTTON 3
B4:      BUTTON 4
B5:      BUTTON 5
B6:      BUTTON 6
```

The Switch Setup Screen has a number of parameters which can be set as shown below.

7 ON = _____
8 ON = _____
Btn Beep
Button 1 Address
9-14 Disables 1-6
Debounce

```
SWITCH ID#7 SETUP
7 ON= Beep
8 ON= Normal
Btn Beep: Off
Button 1 Address: Y
9-14 Disables 1-6: N
Debounce: By Button
Ver 1.12
```

More

Table 1.1

7 ON = _____	
<p>This field determines what happens when the LED status light associated with Button 7 is turned ON.</p> <p style="text-align: center;">Generally if the button is set to ON MODE and the relay it controls is ON, the LED will turn ON as well. This also applies to the opposite mode: if the button is set to OFF MODE and the relay it controls is OFF, the LED will also generally turn ON (the only exceptions are if the logic of the Status LEDs are changed as described later in this guide).</p> <p>Note that there is no physical Button 7 or physical Status LED for Button 7 on a Chelsea Digital Switch. So Buttons 7-14 are virtual buttons used for programming purposes only, and the associated Status LEDs are also just virtual placeholders that are turned on and off. Usually, virtual Buttons 7 and 8 will be set to operate a spare relay or an empty relay position rather than a relay with a connected load.</p>	
Possible Values	Result
Normal (default value)	None. Setting this value to “Normal” in a Chelsea Digital Switch means that nothing will happen when the virtual LED associated with Button 7 is turned ON.
BTS 1-6 < 9 - 14	When the virtual LED associated with Button 7 is ON, the programming for buttons 1-6 will be replaced with the programming for buttons 9-14. When the LED is OFF, buttons 1-6 will revert to their original programming.
BTS 1-3 < 9 - 11	When the virtual LED associated with Button 7 is ON, the programming for buttons 1-3 will be replaced with the programming for buttons 9-11. When the relay is OFF, buttons 1-3 will revert to their original programming.
BEEP	When the virtual LED associated with Button 7 is ON, the switch will make a beeping sound. Highlighting the word BEEP and pressing ENTER will allow you to set the beep pattern.
Locator	When the virtual LED associated with Button 7 is ON, the switch’s Locator LED will flash. Highlighting the word Locator and pressing ENTER will allow you to set the flash pattern.
Disable 1-6	When the virtual LED associated with Button 7 is ON, buttons 1-6 will be disabled.
Disable 1-14	For a Chelsea Switch, this has the same effect as “Disable 1-6”. However, when programming a Digilink, it allows all Digilink inputs (1-14) to be disabled.
Beep + Locator	When the virtual LED associated with Button 7 is ON, the switch will make a beeping sound and the Locator LED will flash. Highlighting the words Beep + Locator and pressing ENTER will allow you to set the beep and flash pattern.

Table 1.2

8 ON = _____	
<p>This field determines what happens when the LED status light associated with Button 8 is turned ON.</p> <p>The operation of this field is almost identical in operation to the “7 ON = ___”. The parameters are the same as those given in Table 1.1 above with a few exceptions noted below.</p> <p>In general, the BTS 1-6 < 9 – 14, BEEP, Locator, and Disable 1-6 functions assigned to “7 ON = ___” take priority over their “8 ON = ___” counterparts.</p> <p>For example: If a switch is set to “7 ON = BEEP” and “8 ON = BEEP” and both virtual LEDs are ON, the switch will have the BEEP pattern of “7 ON = BEEP” not the pattern of “8ON = BEEP”.</p> <p>If a switch is set to “7 ON = LOCATOR” and “8 ON = BEEP” and both virtual LEDs are ON, the switch will blink the Locator LED and also beep.</p>	
Possible Values	Result
Normal (default value)	None. Setting this value to “Normal” in a Chelsea Digital Switch means that nothing will happen when the virtual LED associated with Button 8 is turned ON.
BTS 1-6 < 9 – 14 BEEP Locator Disable 1-6	These settings operate in the same way as they are described in table 1.1
BTS 1-3 < 12-14	When the virtual LED associated with Button 8 is ON, the programming for buttons 1-3 will be replaced with the programming for buttons 12-14. When the relay is OFF, buttons 1-3 will revert to their original programming.
Disable 9-14	Used only in Digilinks to disable higher numbered inputs.

** “8 ON = ___” Does not have a “Beep + Locator” option.

Important Note On Using “7 ON = 1-3 ← 9-11” and “8 ON = 1-3 ← 12-14” in tandem:

If the switch has the settings “ 7 ON = 1-3 ← 9-11” and “ 8 ON= 1-3 ← 12-14”, and the relays operated by Button 7 and Button 8 are BOTH ON, then buttons 1-3 will execute both sets of programming (9-11 and 12-14) at the same time. Please ensure that there is no conflicting programming as the behavior of the loads controlled will become unpredictable. An example of conflicting programming is Button 9 turning ON a relay and Button 12 turning OFF a relay.

Table 1.3

BTN Beep	
This field determines when the switch's buttons will cause a beeping sound.	
Possible Values	Result
OFF	There will never be a beeping sound when a button is pressed. Note that any beep alerts set to take place using the "7 On = _____" or "8 On = _____" fields will still be executed. Setting "BTN Beep" to OFF only effects normal button presses, not special alerts.
PUSH only	The buttons on the switch will beep when pressed. (Note that operating the same load(s) from another location will not cause the beep) There will be no rapid series of beeps when a disabled button is pressed, it will simply cause the standard single beep.
Disable	Buttons will not normally beep when pressed; however, if the user presses a disabled button, the switch will give a rapid series of beeps to alert them that the button will not operate as expected because it has been disabled.
Push + Disa.	Buttons on the switch will give a standard single beep when pressed. If the user presses a button that has been disabled, the switch will alert them with a rapid series of beeps.

Table 1.4

Button 1 Address	
This field determines whether Button 1 on the switch will act as the Address Button (meaning that the user can set and read the address by pushing Button 1 instead of having to press the Address Button on the back of the switch). This is generally set to "Y" (Yes) except on Digilinks, which are always set to "N".	
Possible Values	Result
Y	Yes, Button 1 will function as the Address Button
N	No, Button 1 will not function as the Address Button

Table 1.5

9-14 disable 1-6	
<p>Determines whether “virtual” buttons 9-14 can be used to disable buttons 1-6 on the physical switch. For example, if virtual Button 9 is set to turn on relay X, then any time relay X is ON, the physical Button 1 will be disabled. If relay X is OFF, then Button 1 will function normally.</p> <p>The same correspondence exists between virtual Button 10 and physical Button 2, virtual Button 11 and physical Button 3, etc.</p>	
Possible Values	Result
Y	<p>Yes, virtual Buttons 9-14 will enable and disable physical Buttons 1-6. This is the normal, default setting. However, there are times when you should not use this functionality as described below.</p>
N	<p>No, virtual Buttons 9-14 will NOT enable and disable physical Buttons 1-6. You should use this option in the following circumstances:</p> <ul style="list-style-type: none"> • If you have set up alternate button programming sets (e.g. you have set “7 ON = BTS 1-6 < 9 – 14” as described earlier in this section). • If you are already using other button disable settings, such as “7 On = Disable 1-14” described earlier in this section. • If you are programming a Digilink, which uses any of the inputs between 9 and 14.

Table 1.6

Debounce	
<p>This field sets how long the user must hold down a switch button before the system recognizes the button press. If the button is released before the full duration of the debounce time, the press is ignored and no programming is executed.</p>	
Possible Values	Result
By Button	<p>This value means that the Debounce will be set individually for each individual Button in the Button’s “Edit” menu. There will be no overall setting for all the buttons on the switch.</p>

Selectable value between 0.05 sec and 5.00 sec.	These are global values that apply to all of the switch's buttons. Whatever value is selected will be how long the user must hold down the button before its programming is activated. For example, setting the value to 2.00 sec means that when the user first presses a button on the switch, nothing will happen. However, if the user continues holding down the button for at least 2 full seconds, the button will then operate the relays it was set to control. The default setting is 0.05 sec. Debounce affects button beeping the same way it affects programming.
---	--

Important Note on Debounce:

Use debounce carefully since a long debounce time can make it seem like a switch is not working. If a switch does not appear to function, always check for a debounce setting before assuming that the switch is bad.

MORE

To go to the second page of switch setup options, highlight the field "MORE" and press ENTER.

The Switch Setup Screen (Second Screen)

The Switch Setup Screen has additional parameters shown on a second page in the DTC screen. Along with the Debounce option on the first screen, these parameters are global in that they override any local LED logic set in the EDIT menu and apply to all buttons on a switch. These parameters can be set as shown below:

LED Logic for buttons in ALL-OFF mode, except buttons controlling MOMENTARY OFF groups.

LED logic for buttons in all other modes.

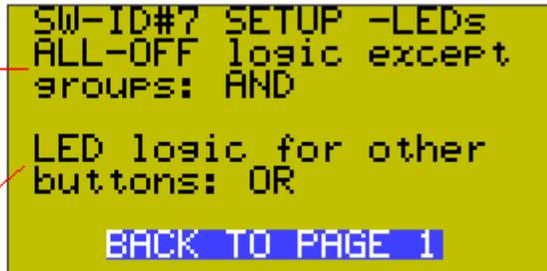


Table 2.1

ALL-OFF logic except groups	
Sets the logic which determines if the Status LED over each of the switch's buttons should be on or off. This field applies only to buttons programmed in OFF MODE. If a button only turns lights OFF, then it is customary to have the Status LED be lit when all of the controlled relays are in the OFF position. However, there are some applications when different logic is needed.	
Possible Values	Result
AND	The Status LED on a button set to OFF MODE will light up only if ALL the controlled relays are OFF. (This is also called "True" switch logic and is usually used for buttons in OFF MODE or MIX MODE).
OR	The Status LED on a button set to OFF MODE will light up if one OR more of the controlled relays are OFF.
OR-INVERT	The Status LED on a button set to OFF MODE will light up only if NONE the controlled relays are OFF (i.e. they are all ON)
AND-INVERT	The Status LED on a button set to OFF MODE will light up if ONE OR MORE of the controlled relays are ON. Therefore, if they are all OFF, the LED light will not be lit, but if at least one relay is ON, the LED will be lit.

Table 2.2

LED logic for other buttons	
Sets the logic which determines if the Status LED over each of the switch's buttons should be on or off. This field applies to buttons in TOGGLE MODE, ON MODE, MAINTAIN, MIX MODE (all other settings except OFF MODE).	
Possible Values	Result
AND	The Status LED on a button will light up only if ALL the controlled relays are ON. In MIX MODE the LED will be lit only if ALL the controlled relays are in the state (ON or OFF) the button was programmed to set them to. (This is also called "True" switch logic. It is usually used for MIX MODE or OFF MODE buttons.)
OR	The Status LED on a button will light up if ONE OR MORE of the controlled relays are ON. In MIX MODE the LED will be lit if ONE OR MORE of the controlled relays are in the state (ON or OFF) the button was programmed to set them to. (Usually this logic is used for buttons that are set to something other than MIX MODE or OFF MODE).
OR-INVERT	The Status LED on a button will light up only if NONE of the controlled relays are ON (i.e., they are all OFF). In MIX MODE the LED will be lit only if NONE of the controlled relays are in the state (ON or OFF) the button was programmed to set them to (they must all be in the opposite state from what the button was assigned to set them to).
AND-INVERT	The Status LED on a button will light up only if ONE OR MORE of the controlled relays are OFF. In MIX MODE the LED will be lit only if ONE OR MORE of the controlled relays are in the opposite state from what the button was programmed to set them to.

BACK TO PAGE 1
To go back to the first page of switch setup options, highlight the field "BACK TO PAGE 1" and press ENTER.

The Button Edit Screen

To access the Button EDIT screen, navigate to the switch button you want to program, highlight the word EDIT and press ENTER. These parameters are local, meaning that they apply to each individual button only, not the entire switch.

USER MENU → PROGRAM SWITCH → SWITCH# → BUTTON# → EDIT

Select "EDIT"
and press
ENTER



The Button Edit Screen has the parameters which can be set as shown below.

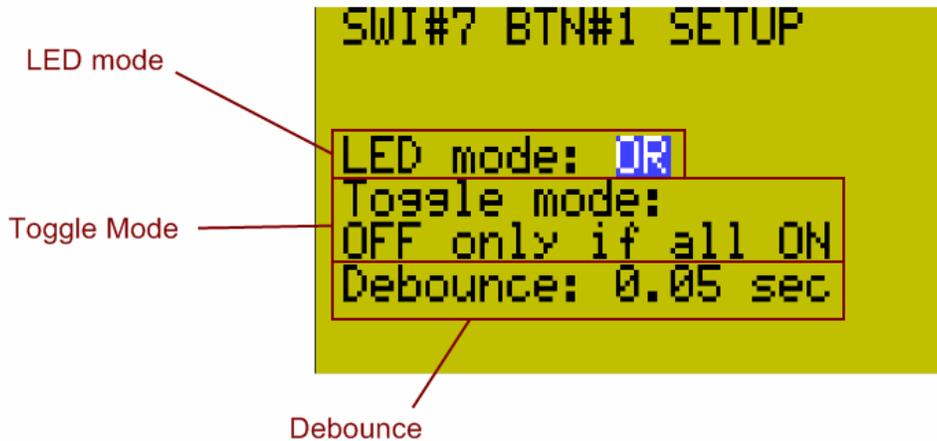


Table 3.1

LED mode
Sets the logic which determines if the Status LED over the button should be on or off.
The operation of this field is identical in operation to the SETUP second screen LED logic except these settings apply only to a single button because they are local settings. The parameters are the same as those given in Table 2.1, if OFF MODE is used, or Table 2.2 above for all other modes.

Table 3.2

Toggle mode	
<p>Sets how the button synchronizes multiple relays when toggling. For example, if a switch button is toggling relay X, relay Y and relay Z, the user can decide what happens when relay Y is ON and relays X and Z are OFF. The least desirable behavior is to have the relays just flip states so that no matter how the TOGGLE button is pressed either, relay Y is OFF and relays X and Z are ON, or relay Y is ON and relays X and Z are OFF. This would make it impossible to get all the lights ON or OFF at the same time. Therefore, one of the two types of logic below is used to sync the relays that are being toggled by a switch button.</p>	
Possible Values	Result
OFF if any load ON	If any ONE OR MORE of the relays controlled by the switch button are ON, then pressing the toggle button will turn ALL relays OFF.
OFF only if all ON	If the relays are out of sync, the toggle button will first bring them all ON. Then, once they are all ON, pressing the toggle button again will turn them all OFF.

Table 3.3

Debounce
<p>Works in the same manner as SETUP menu Debounce except it applies to individual buttons, has no “By Button” option, and only appears on screen if SETUP menu Debounce is set as “By Button”.</p>

Important Note on Debounce:
Use debounce carefully since a long debounce time can make it seem like a switch is not working. If a switch does not appear to function, always check for a debounce setting before assuming that the switch is bad.

Common Applications

Question:

How do I disable a particular switch button (for example, button 3)?

Answer:

1. Go to the Program Switch screen and select the switch you want to disable the button for. For physical Button 3, you would use the virtual Button 11 to enable and disable it. (See table 4.1 below)

Button Enable / Disable Relationships	
This virtual button:	Disables this physical button:
9	1
10	2
11	3
12	4
13	5
14	6

2. Select Button 11 on the Program Switch Screen. Assign a spare relay or empty relay position to this button and make sure it is set to ON MODE.
3. Back on the Program Switch screen, again select the switch you want to program and then go to the “SETUP” field and press ENTER.
4. Ensure that the option “**9-14 disable 1-6**” is set to “**Y**” (for Yes). See table 1.5 earlier in this guide for details.
5. Now, when you turn the relay you selected in step 2 above ON, Button 3 will be disabled and not function. When you turn the relay OFF, Button 3 will function again. Remember, you can turn this relay ON and OFF using schedules, groups, other switches, or even photocells that pass a certain light level!

Question:

How do I set a button to give an audible “error” beep when someone presses a disabled button?

Answer:

It can be very frustrating or confusing to a user when they press a button that usually turns certain lights on and off, only to find that nothing is happening. Sometimes, this happens when a switch button has been programmed to be disabled, but the user has no way of knowing. Therefore, it is helpful to set up the switch to make an “error” beep if the user presses a disabled button. To do this, follow the steps below:

1. Go to the Program Switch screen and select the switch you want to set up the error beep for.
2. Highlight the “SETUP” field and press ENTER
3. Set the option labeled “**BTN Beep**” to “**Disable**”. This causes the switch to emit a rapid series of beeps if a user presses a button that has been disabled. See Table 1.3 earlier in this guide for details.
4. If you want the switch to make a standard beep whenever an enabled button is pressed, and a rapid series of beeps when a disabled button is pressed, set the “**BTN Beep**” option to “**Push + Disa.**” See Table 1.3 earlier in this guide for more details.

Question:

How do I make a switch give an audible alert during a blink warning period?

Answer:

It is a fairly common request to have users notified a few minutes before the lights turn off, so they have an opportunity to override the off-sweep. Instead of having the lights flash, or a separate horn installed, the new switch can be set to generate a beeping alert pattern as a warning that the lights will be shutting off shortly. To do this:

1. First, create a Maintain+Blink Group containing the relays that are going to be turned on and off with the schedule. You can use any Timer and Blink Warning settings you wish; typical values are a 2 hour Timer and a 5 minute Blink Warning. Make sure that you include one spare relay or empty relay position in the group. This will be the “Horn Driver relay”
2. Once you have created the Maintain + Blink Group above, go to the Relay Properties Screen for the individual relay you set as the “Horn Driver relay”. Change the Horn Driver Mode parameter to “Y” (for Yes). Set the Horn One parameter to the length of time you want to audible alert to last. Then exit out of the screen.
3. (Optional) You will probably want to set the “No Blink” option to “Y” (for Yes) for all the relays in the Group to prevent them from flashing OFF and then ON again when the Blink Warning starts. Sometimes, the flash is desirable, but since there is going to be an audible alert, the lights blinking will most likely not be necessary.
4. Now create a new MOMENTARY ON Group that contains all the same relays as your group from step 1 above, including the Horn Driver Relay.
5. Assign the MOMENTARY ON Group to the switch and button that you want to behave as an override, to turn the lights on or keep them on at the end of the schedule / blink warning period.
6. For the same switch, go to the PROGRAM SWITCH screen, select the switch, highlight the “SETUP” field and press ENTER.
7. On the switch SETUP screen, set either the “7 ON =” or “8 ON =” field to the option “BEEP”. (See Tables 1.1 and 1.2 earlier in this guide for full details).
8. In the Program Switch Screen, set either Button 7 or Button 8 (depending on which you selecting in the previous step) to ON MODE, and have it associated with the relay you set earlier as the Horn Driver Relay.

9. That's it. Now, at the end of the schedule, the switch will start beeping to signal that the lights will be shutting off shortly. If the user presses the override button on the switch, the beep alert will stop, and the lights will stay on for an additional 2 hours (or whatever duration the Timer was set to in the Maintain+Blink Group). At the end of this 2 hour period, the switch will start beeping again to signify the lights will be shutting off, at which point the user can override the shutoff again and start the cycle over again, or simply let the lights go off.

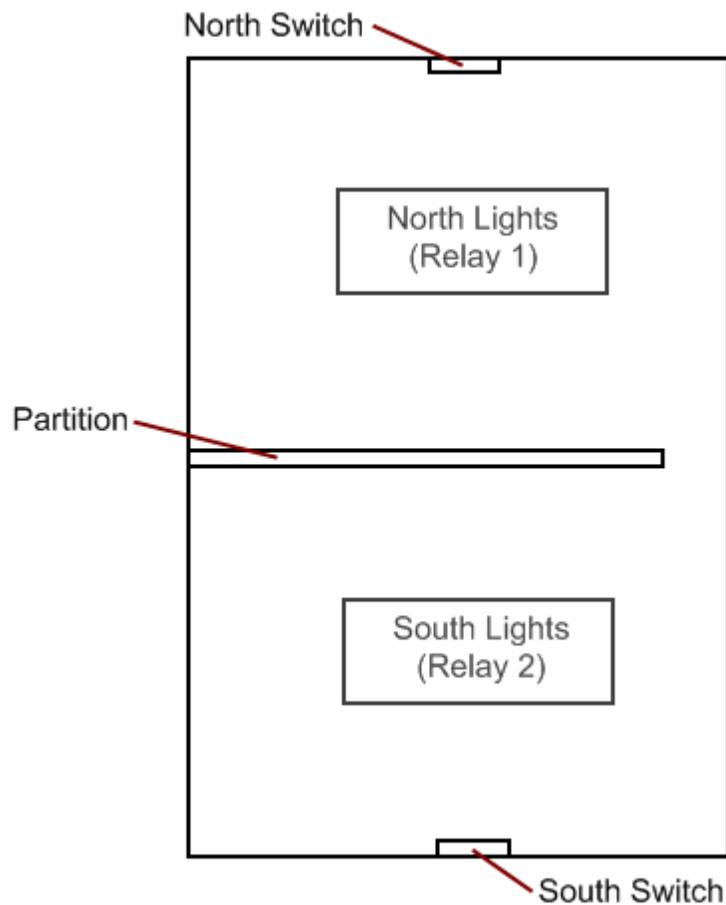
** The procedure just described can also be used to make the Locator LED blink. Just replace "BEEP" in step 7 with "Locator".

Question:

How do I set up a room with a partition, so that the switches change their function depending on whether the partition is open or closed?

Answer:

Let's take a scenario where a room has a switch on the north wall, a switch on the south wall, and a partition that can separate the room into a north half and a south half.



Each switch has an ON button and an OFF button. When the partition is open, the switches control both sets of lights in the room (North *and* South lights, i.e. Relay 1 *and* Relay 2). When the partition is closed, the South Switch turns on and off the South Lights (Relay 2) *only*, and the North Switch turns on and off the North Lights (Relay 1) *only*.

Here are the steps to accomplish this:

1. For the North Switch, program Button 1 to ON MODE for Relay 1 and Relay 2. Program Button 2 to OFF MODE for Relay 1 and Relay 2.
2. While still in the Program Switch screen for the North Switch, set Button 9 to ON MODE for Relay 1 *only*. Program Button 10 to OFF MODE for Relay 1 *only*.
3. Program Button 7 to ON MODE for a spare relay or empty relay position (Relay X).
4. Now go to the North Switch “SETUP” screen and set the parameter “7 ON =” to the option “BTS 1-6 < 9 – 14”. (See Table 1.1 for full details).
5. Now, for the South Switch, program Button 1 to ON MODE for Relay 1 and Relay 2. Program Button 2 to OFF MODE for Relay 1 and Relay 2.
6. While still in the Program Switch screen for the South Switch, set Button 9 to ON MODE for Relay 2 *only*. Program Button 10 to OFF MODE for Relay 2 *only*.
7. Program Button 7 to ON MODE for the same spare or empty relay position you used in step 3 above (Relay X).
8. Now go to the South Switch “SETUP” screen and set the parameter “7 ON =” to the option “BTS 1-6 < 9 – 14”. (See Table 1.1 for full details).
9. Set another switch button, or a Digilink with an input coming from a partition sensor, to turn ON Relay X when the partition is CLOSED and turn OFF Relay X when the partition is OPEN.
10. That’s it. When the partition is closed or separate switch button is pressed, each switch will only control the lights in their half of the room. When the partition is open, each switch controls ALL of the lights in the room.

ADDITIONAL BLUE BOX RESOURCES

(hyperlinks provided below)

Software Guides

[Unity GX2™ Customer Submission Guide](#)

[Unity 2.2 Software](#)

[Unity VClock Software](#)

[BACnet Configurator](#)