THE BLUE BOX™ LT
PROGRAMMING
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PROGRAMMING

DTC NAVIGATION BASICS
Most devices can be programmed from the DTC (Digital Time Clock) in the master LCP (Lighting Control Panel).

TAB moves the cursor through a screen

SCROLL to choose one item from a field.*

CALL OUT LEGEND:
1. SCROLL through choices in one field*
2. TAB to position the cursor
3. DELETE information or programming about an item. Use caution.
4. ENTER to select
5. EXIT to leave a screen.

* This "field" contains a list of possible selections, but only displays one item from that list at a time.
MANUAL CONTROL OF RELAYS
Manually control and visually check the (on/off) status of any relays(s) in any panel(s).

To Start
1. TAB once or twice to get started. The USER MENU will display.
2. TAB to MANUAL OVERRIDE.

To Navigate to a LOAD (Relay)

3. ENTER to select the MANUAL CONTROL screen.

4. TAB to LCP-1 (Lighting Control Panel 1).
5. SCROLL to select the correct LCP (for systems with multiple LCPS).
6. TAB to LOAD-1.
7. SCROLL up or down to select the LOAD (relay) to control.

To Control a LOAD (Relay):
8. ENTER to toggle the status of the LOAD “off” or “on”.

MANUAL CONTROL
LCP-1  LOAD-1
18 17 16  15  14  13  12  11  10  9  8  7  6  5  4  3  2  1

- indicates the LOAD is off
■ indicates the LOAD is on

There are other relays statuses. Refer to “Groups FAQ” for a more complete description of all of the different relay statuses.

MANUAL CONTROL
LCP-1  LOAD-1
18 17 16  15  14  13  12  11  10  9  8  7  6  5  4  3  2  1

AU indicates LCP 1 is in AUTOMATIC mode.
“MIN” indicates LCP 1 is in HAND mode.

9. Press EXIT several times to get back to the main screen.
PROGRAMMING SWITCHES OR DI INPUTS

To Navigate to Digital Switch or DI Card
1. TAB to start.
2. TAB to PROGRAM SWITCH and ENTER to select.

USER MENU

MANUAL OVERRIDE
REVIEW SCHEDULE
GROUP LOADS
PROGRAM SWITCH
SETUP MENU

3. If needed SCROLL to the correct Page.

SWITCHES PAGE 1-2
#04: switch 4
#05: switch 5
#06: switch 6
#07: switch 7
#08: switch 8
#09: switch 9
#10: switch 10

4. TAB to the correct Switch.
5. ENTER to select (Switch 11).

SWITCHES PAGE 2-2
#11: Switch 11
#12: switch 12
#13: switch 13

This is the name of the switch.
This is the address of the switch.

6. TAB to the correct Button/Input.
7. ENTER to select.

SELECT BTN SWI ID#11
SETUP PAGE 1-1

To Select Control Type
Before adding or deleting loads it is important to determine the Control Type (see the Control Types section of this manual).
Tip: Most common Control Types for switches are TOGGLE, ON, and OFF.
1. SCROLL to select Control Type.

SWI ID#11-6 TOGGLE
EDIT: LCP-1 LOAD-1

Indicates Control Type

Note: Switches may control any number of loads. If more than 8 loads are selected, the system will create a Group upon exiting. When prompted to create a new Group, select “YES” (See Groups Section for more information).

To Add or Delete Loads for all Control Types (except Mixed Mode)
1. TAB to LCP 1.
2. SCROLL to select LCP (1,2,3 etc.).
3. TAB to LOAD 1.

SWI ID#11-6 TOGGLE
EDIT: LCP-1 LOAD-1

“Toggle” Control Type has been selected
LCP1: 1

LCPI Relay 1 has been added to the Load Summary

4. SCROLL to the LOAD you want to add or delete.
5. ENTER once to select LOAD - it will be added to the Load Summary.
6. ENTER again to delete LOAD from the Load Summary.
7. Repeat to add or delete more LOADs.
8. EXIT up to main menu.
To Add or Delete Loads for 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.
4. ENTER once to add to ON Load Summary.

SWI ID13-1 MIXED MODE
EDIT: LCP-2 LOAD-1
ON LCP1: 1-3
OFF LCP2: 1-3

5. ENTER twice to add to OFF Load Summary.
6. ENTER third time to delete LOAD from Load Summary.
7. Repeat to add or delete more LOADs.
8. EXIT up to main menu.

To Delete a Load:
1. TAB and SCROLL to select LOAD.
2. ENTER until the LOAD is deleted from the Load Summary.

SWI ID13-1 TOGGLE
EDIT: LCP-2 LOAD-4
LCP1: 2-3, 12
LCP2: 1, 4

Delete LCP2-4 from Load Summary
1. TAB to LCP 1
2. SCROLL to LCP 2
3. TAB to LOAD 1
4. SCROLL to LOAD 4
5. ENTER to remove from Load Summary

Programming an Occupant Sensor
Once the occupant sensor has been connected to the low-voltage dry contact inputs in the DI card, the inputs must be programmed.

Occupant sensor contacts send a “Maintain” type closure to the inputs on the DI card and are therefore programmed as a “Maintain” Control Type (or Maintain Group for more than 8 relays).

To program a DI Input:
1. Navigate to the DI card inputs: USER MENU > PROGRAM SWITCH > SWITCH # > BUTTON #.
2. SCROLL to select MAIN or as the Control Type.

SWI ID13-1 MAINTAIN
EDIT: LCP-2 LOAD-2
LCPS: 4, 5

3. Add/delete LOADs (refer to Add or Delete Loads section).
   If more than 8 relays are added, accept the creation of a new Group upon EXITing.

To use an existing Group SCROLL to the Control Type and select the Group.

For more information on Control Types, Groups and Group types, refer to the relevant sections in the O&M.
TIME SCHEDULES

Introduction to Time Schedules
There are a few important things to note before programming a Time Schedule:

Time Schedules DO NOT control relays — they control Groups and have Scheduled Events (when things are on and off). Groups contain Loads (relays) and describe "behaviors" pertaining to the schedule. For more information about groups refer to Groups Section.

When creating or modifying a schedule:
1. Scheduled the Events.
2. Add a group which contains loads (relays) and their behaviors.

Example:

<table>
<thead>
<tr>
<th>Name</th>
<th>What it Controls</th>
<th>Its Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule 1</td>
<td>Group 1</td>
<td>On 9am</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off 5pm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mon-Fri</td>
</tr>
<tr>
<td>Group 1</td>
<td>LCP1; relays 1-5</td>
<td>When the group is &quot;off&quot;, relays can only be turned on for 2 hours (relay-timer)</td>
</tr>
<tr>
<td></td>
<td>LCP2; relays 3 &amp; 9</td>
<td>Prior to shutting lights off, relays issue a blink warning.</td>
</tr>
</tbody>
</table>

To Navigate to Any Schedule (up to 32):
1. TAB to start.
2. TAB to REVIEW SCHEDULE and ENTER to select.

For Every Day or Mon-Fri-Sat-Sun Schedules:
1. TAB to each ON TIME and OFF TIME.
2. SCROLL to adjust the Scheduled Event (refer to "Scheduled Events" Section for more information).

Every Day Schedule - same on & off times 7 days/wk:

<table>
<thead>
<tr>
<th>SCHEDULE</th>
<th>Page 1-6</th>
<th>SCROLL</th>
<th>&quot;UNUSED&quot; means sch unprogrammed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCH 1</td>
<td>UNUSED</td>
<td></td>
<td>&quot;NO LOADS&quot; means sch is programmed - no loads assigned</td>
</tr>
</tbody>
</table>

4. TAB to a new or existing SCHEDULE and ENTER to select.
5. TAB to EVERY DAY (default) and SCROLL to select one of three schedule types:
   1. Every Day.
   2. Mon-Fri, Sat-Sun.

For more information on the three schedule types refer to Scheduled Types Section.

SCROLL to adjust:
- EVERY DAY
- M, T, W, T, F
- BY DAY

To Add or to edit Holiday Lists refer to Holiday Section

SCROLL to adjust Scheduled Event

Every Day Schedule - same on & off times 7 days/wk:
For “By Day” Schedule

With different Scheduled Events for each day of the week, the “BY DAY” schedule offers the most comprehensive feature set of all schedule types.

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

1. TAB to any day and ENTER to edit that day.
2. TAB to ON TIME or OFF TIME and SCROLL to adjust Scheduled Events.

ON TIME: 11:30:00 am
OFF TIME: 02:00:00 pm

Adjust these days:
Mon Thu

Every day

To Add Scheduled Events from one day to multiple days (“By Day” schedules only)
3. TAB to Every Day (bottom of screen).
4. SCROLL and ENTER to select the desired day or group of days. Repeat until all desired days are selected. The list of selected days will be displayed (see below).
5. EXIT. Selected days will be updated.

ON TIME: 11:30:00 am
OFF TIME: 02:00:00 pm

Adjust these days:
Mon Thu

This is a list of more days the Scheduled Events for Monday will be copied to.

6. Repeat steps 1-5 to edit schedules for other days.

To Select a 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.

Sample Schedules:

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.

These lights will be switched on 30 mins prior to dusk Mon-Sat.
Off time on Saturday is earlier (11:00pm).
Lights are off Sunday.

SCH 1

Except None
Every Day
ON PCEL: 06:00am
OFF PCEL: 09:00am

These two schedules
when combined will control outdoor egress
and parking lighting before and after
hours for employees
but only when it is
dark out (during the
short daylight hours of winter).

SCH 2

Except None
Every Day
ON PCEL: 03:00pm
OFF PCEL: 07:00pm

These two schedules
control lighting at a school in tandem.

SCH 8

By Day H1 H2
Mo Tu We Th Fr Sa Su
ON TIME: 07:00:00a
OFF TIME: 07:00:00p
from Sep 1 to Jun 15

During the school year
(Sept 1 to Jun 15),
lights operate on one
schedule (SCH 8)

SCH 9

By Day H1 H2
Mo Tu We Th Fr Sa Su
ON TIME: 11:00:00a
OFF TIME: 02:00:00p
from Jun 16 to Aug 31

During summer break
(Jun 16 to Aug 31),
lights operate on a
much shorter schedule
(SCH 9)
To Add Loads to a Schedule
When you have completed programming a time schedule, the next step is to add the loads to be controlled.

1. To save the schedule press EXIT, TAB to “yes” and ENTER to save the schedule. The clock will take a second to save the changes and exit back to the SCHEDULE LIST menu.
2. TAB to “NO LOADS” and ENTER to add loads to the schedule.

3. TAB to MAINTAIN and SCROLL to choose the Group Type.

Quick Tip: Choose MAINTAIN for outdoor lighting and MNTN + BLINK for indoor lighting. For a more complete understanding of Group Types, refer to the Group Section later in this manual.

4. TAB to LOAD 1.
5. SCROLL to the desired Load (relay) and ENTER to add to the Load Summary.
6. Repeat the TAB and SCROLL sequence and add as many loads as required.

Additional steps for MAINTAIN + TIMER and MAINTAIN + BLINK Groups
These steps are considered best practice for indoor lighting and include after-hours relay timers.

7. With “MNTN + ” highlighted, ENTER to set advanced options.
8. TAB to AUTOMATIC ON, SCROLL to change to NO AUTOMATIC ON if desired. NO AUTOMATIC ON means lighting will not automatically be switched on in the morning by the clock but must be manually switched on by an occupant. This is considered an energy savings feature. AUTOMATIC ON will turn the lights on by the clock, whether occupants are present or not.

9. TAB to SET TIMER and ENTER to program the after-hours relay timers. This feature allows occupants to switch lights on after the scheduled time, but only for a timed duration. This is an energy savings feature and is required by most energy codes.
10. TAB to the Hours/Minutes/Seconds display and TAB/SCROLL to set the Hours/Minutes and Seconds of the after-hours timer; 2:00:00 is usually recommended.
 PROGRAMMING A BLUE BOX LT PHOTOCELL

When an outdoor photocell is plugged directly into The Blue Box LT 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-S).

4. TAB to ON TIME or OFF TIME for each day or group of days and 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.

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.

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 daylight harvesting use the PCC3 which offers settings more appropriate for daylight harvesting, (See GRZ400 system catalog).

8. SCROLL to adjust the "off" Time Delay (10 minutes is usually recommended).

9. The default setting for the "off" trigger (rises above) is 30. The default setting for the "on" trigger (falls
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 to create or edit a new Holiday List.

Every Day & Mon-Fri, Sat, Sun Schedule

These two schedules only allow the Holiday Lists to be exempt 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. In the Schedule, TAB to EXCEPTION NONE.
4. SCROLL to select the desired Holiday Exception.
5. Continue programming this schedule or Exit and Save.

Holiday List in "By Day" Schedule

This schedule allows one or both of the Holiday Lists to be exempt, 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. 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 times on this holiday list will have unique schedules.

6. Program a unique schedule for this Holiday list.

7. Continue programming this schedule or Exit & Save.

To Edit a Holiday List
The Holiday lists contain no Holidays until edited. Two separate holiday lists may be created and edited.

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

2. SCROLL to select page.

3. TAB to the Holiday.

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

<table>
<thead>
<tr>
<th>Date</th>
<th>2008</th>
<th>Holiday</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 1</td>
<td>Yes</td>
<td>New Years</td>
<td>No</td>
</tr>
<tr>
<td>Jan 1</td>
<td>No</td>
<td>ML King</td>
<td>No</td>
</tr>
<tr>
<td>Jan 1</td>
<td>No</td>
<td>Presidents</td>
<td>No</td>
</tr>
<tr>
<td>Jan 1</td>
<td>No</td>
<td>Easter</td>
<td>No</td>
</tr>
<tr>
<td>Jan 1</td>
<td>No</td>
<td>Memorial</td>
<td>No</td>
</tr>
<tr>
<td>Jan 1</td>
<td>No</td>
<td>Independence</td>
<td>No</td>
</tr>
</tbody>
</table>

6. TAB to month, day and year and SCROLL to adjust.

7. EXIT when complete.

MORE DATA ON SCHEDULED EVENTS
There are four types of scheduled events, which when combined, offer an almost limitless set of options and capabilities.

"On Time" & "Off Time" Scheduled Events
ONTIME or OFFTIME are also called Time of Day (TOD) events.

To edit an ON or OFF TIME:

1. TAB to the Hours Minutes, (Seconds for BY DAY schedules only) and am/pm settings after ON TIME or and SCROLL to adjust.

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

ASTRONOMICAL SCHEDULED EVENTS
The DTC offers true astronomical programming. When setting up the clock, the location is entered (by city or Lat/Long) and from that all dusk and dawn times are calculated.

The system even compensates for daylight savings (where applicable).

"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 +30 mins
OFF DUSK +30 mins
30 mins. before dusk
30 mins. after dusk

No (NONE) Scheduled Event
In some cases you may desire that nothing at all happen (e.g. no "off time"). In our schedule, this Scheduled Event is referred to as "NONE".
NONE is usually used to disable a specific day or set of days (i.e. Sunday).
1. SCROLL to select NONE.

ON NONE
OFF NONE

Photocell Scheduled Events
A photocell connected directly to the photocell input of the Master Blue Box LT, controls relays only through any of the first 8 time schedules. Each Schedule may have a unique trigger level, and may be applied to any relay(s) in any panel(s), creating a global photocell.
Refer to "Programming a Blue Box LT Photocell" for programming details.

Mixing Scheduled Events - Custom Schedules

<table>
<thead>
<tr>
<th>SCH 1</th>
<th>EXCEPT NONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONDAY - FRIDAY</td>
<td></td>
</tr>
<tr>
<td>ON TIME: DUSK +30 mins</td>
<td></td>
</tr>
<tr>
<td>OFF TIME: 10:00 PM</td>
<td></td>
</tr>
<tr>
<td>SAT ON TIME: DUSK +2 min</td>
<td></td>
</tr>
<tr>
<td>OFF TIME: 08:00 PM</td>
<td></td>
</tr>
<tr>
<td>SUN ON TIME: NONE</td>
<td></td>
</tr>
<tr>
<td>OFF TIME: NONE</td>
<td></td>
</tr>
</tbody>
</table>

Mix up "on" and "off" events to create a truly unique schedule.

Control Types
"Control Types" describes how loads are controlled by schedules, switches, photocells, or DI Cards (via contact closure switches). When controlling more than 8 relays or when any time schedule is used, "Groups" must be used and the Toggle feature is not available.

<table>
<thead>
<tr>
<th>TOGGLE</th>
<th>A momentary contact will toggle up to 8 loads on or off.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON MODE</td>
<td>A momentary contact will issue an &quot;on&quot; command to as many as 8 loads.</td>
</tr>
<tr>
<td>OFF MODE</td>
<td>A momentary contact will issue an &quot;off&quot; command to as many as 8 loads.</td>
</tr>
<tr>
<td>MIXED MODE</td>
<td>A momentary contact will switch one set of loads &quot;on&quot; and another set of loads &quot;off&quot; at the same time.</td>
</tr>
<tr>
<td>MAINTAIN</td>
<td>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.</td>
</tr>
<tr>
<td>GROUPS (1-32)</td>
<td>To control more than 8 loads, or when programming a time schedule, always use GROUPS.</td>
</tr>
</tbody>
</table>

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. Example: A load is toggled on from one location and then switched off by a time schedule. If activated again, 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. Any relay(s) in any panel(s) can be assigned to a GROUP.
There are two types of GROUPS:

Maintain Style Groups
Just like the maintain control, starting a maintain contact (or 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.
The relays are switched off when the GROUPS are switched off, 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 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. Outdoor time schedules usually use a Maintain style group.
2. Indoor time schedules usually use a Maintain+Timer or Maintain+Blink Group which allow relays to be in a “timer mode” when the group is off.
3. 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.

<table>
<thead>
<tr>
<th>BASIC MAINTAIN GROUP</th>
<th>Used by time schedules or for any maintained device (e.g., 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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAINTAIN + TIMER GROUP</td>
<td>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. When the GROUP is ON, the relays cannot be in TIMER MODE when the GROUP is OFF, you can place the relays in TIMER MODE.</td>
</tr>
<tr>
<td>MAINTAIN + BLINK GROUP</td>
<td>Works the same as MAINTAIN + TIMER except a “blink” or “flick” warning is issued prior to shutting loads off.</td>
</tr>
</tbody>
</table>

Momentary Style Groups
Any momentary pulse, or any single button press will trigger a momentary group once.
Momentary style groups are used in the following two circumstances to turn relays on or off:
1. When a digital switch, a contact closure, or photocell trigger switches more than 8 relays either “on” or “off” only or,
2. When a time schedule only switches relays either “on” or “off,” but not both. (See table below).

<table>
<thead>
<tr>
<th>MOMENTARY ON</th>
<th>“On Mode” - any number of loads</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOMENTARY OFF</td>
<td>“Off Mode” - any number of loads</td>
</tr>
<tr>
<td>MOMENTARY MIXED</td>
<td>“Mixed Mode” - any number of loads</td>
</tr>
</tbody>
</table>

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.

2. SCROLL to the correct page (1 through 6) and TAB to the desired GROUP. ENTER to begin editing or creating the desired GROUP.

GROUPS PAGE 1-6

GROUP 1 UNUSED OFF
GROUP 2 UNUSED OFF
GROUP 3 USED ON
GROUP 4 USED ON
GROUP 5 UNUSED OFF
GROUP 6 UNUSED OFF

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

From the SCHEDULE MENU:

SCHEDULES PAGE 1-6

Name: SCHEDULE 1
SCH 1 >> NO LOADS
SCH 2 >> UNUSED
SCH 3 >> UNUSED
SCH 4 >> GROUP 4
SCH 5 >> UNUSED
SCH 6 >> DISABLED

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.

GROUP1 MAINTAIN
EDIT: LCP-1 LOAD-1

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

After creating, exiting, and saving a schedule, TAB DOWN once to NO LOADS, or GROUP X (X represents a number 1-32). ENTER to edit or create the GROUP.
ADDITIONAL GROUPS PARAMETERS

To adjust Group Parameters such as Automatic On, Group Timer, and Blink Warning, navigate to the Group Parameters Screen:

1. USER MENU > GROUP LOADS
2. SCROLL to the correct page and TAB select a Group to be edited.
3. TAB to MNTN + TIMER or MNTN + BLINK and ENTER to Group Parameters Screen.
   or
   TAB to MAINTAIN and SCROLL to MNTN + TIMER
   or MNTN + BLINK and ENTER to Group Parameters Screen.

Automatic On/No Automatic On

AUTOMATIC ON (the default setting) means that the Group will switch its relays on when the Group is turned on. Example: Schedule 1 turns on Group 1 at 9:00AM. If AUTOMATIC ON is selected the relays in Group 1 will all be switched on. AUTOMATIC ON is recommended for large open areas, such as a sales floor or open area office.

NO AUTOMATIC ON means that the Group will not automatically switch relays on when the Group is turned on. Example: Schedule 1 turns on Group 1 at 9:00AM. If NO AUTOMATIC ON is selected, the relays in Group 1 will not be automatically switched on. Instead relays are turned on by a local digital control station. NO AUTOMATIC ON is recommended for smaller offices which have local digital control stations.

1. TAB to AUTOMATIC ON.
2. SCROLL to change to NO AUTOMATIC ON.

Relay/Group Timers

All relays in a Maintain + Timer or Maintained + Blink group have an “after-hours” timer value when the group is switched off (usually by a time schedule) the timer duration can be adjusted.

3. TAB to MNTN + TIMER and ENTER.

---

GROUP PARAMETERS

AUTOMATIC ON

SET TIMER

4. TAB to SET TIMER and ENTER to program the after-hours relay timers. This feature allows occupants to switch lights on if the Group is off, but only for the timer duration. This is an energy savings feature required by most energy codes.

5. TAB to the Hours/Minutes/Seconds display and TAB/SCROLL to set the Hours/Minutes and Seconds of the after-hours timer. 2:00:00 is usually recommended. This will determine how long relays are allowed to be “overridden” to the “on” state before the timer runs out.

---

TIMER SETTING

REGULAR TIMER MODE

<table>
<thead>
<tr>
<th>Mode</th>
<th>Time</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:59:59</td>
<td>N/M/S</td>
<td>BLINK ON: 05:00 N/S</td>
</tr>
<tr>
<td>BLINK</td>
<td>05:00</td>
<td>N/S</td>
</tr>
<tr>
<td>BLINK</td>
<td>05:00</td>
<td>N/S</td>
</tr>
</tbody>
</table>

“Blink Timer” is only displayed in a Maintain + Blink Group.

The default setting of 5 minutes gives occupants 5 minutes after a “blink” warning to activate an override (Momentary On, Toggle, or Momentary On) switch before lights are shut off.

If during that 5 minute period, an “on” button is pressed, all relays controlled by that button will be extended for the duration of the timer (02:00:00 for example), and will again blink at that end of that period. This process repeats itself every time the override switch is activated until the next scheduled On Time.

---

TIMER SETTING

REGULAR TIMER MODE

<table>
<thead>
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<td>N/S</td>
</tr>
<tr>
<td>BLINK</td>
<td>05:00</td>
<td>N/S</td>
</tr>
</tbody>
</table>

After Hours Timer is for all relays in this Group – relays will be in a Time Mode to conserve energy.

BLINK is only for MNTN+BLINK group.
6. TAB to 05:00 and TAB and SCROLL to change the Blink Timer to select a new countdown. If a double blink is desired, set the second timer.

Programming Tip: Blink timers work backwards from the off time. So if the first blink is 05:00, and the second blink is 04:55, then the first blink will be issued 5 minutes prior to shut off and the second blink will be issued 5 seconds later.

7. EXIT twice when complete to return to the Groups screen (Load Summary).

**GROUP FAQS**

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 programming within that group,
4. For any MAINTAIN group, SCROLL UP to turn the group on and SCROLL DOWN to turn the group off.

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

A: If you check the relay properties screen for that relay, it will say REGULAR TIMER MODE: 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 “SET TIMER”.

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 One or BLINK Two; followed by a number e.g. BLINK One: 2000 M/S.

Q: How can you tell if a relay is in 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 BLINK 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 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 >.
USER MENU > SETUP MENU > SYSTEM RESTRICTED (PASSCODE 900001) > 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 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 it is expecting a pulse as would be received from a push button. The command is executed on contact closure. The contact opening does nothing.

Q: How do you find out which group(s) a relay is in?
A: Look in the "What & When Menu": SETUP MENU > SYSTEM SETUP > MENU > 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: Look in the "What & When Menu": 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: What do you do to sync 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. If the group is already ON, scrolling up will re-iterate the "ON" command.

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 group 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 turn them on with the schedule. This saves energy until someone enters the room and switches the lights on.

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.

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.

Even when using a schedule to turn the lights off (for example at 11:00 pm), one would usually program the Photocell as “Maintain”. This ensures the lights turn off at dawn in the event that an override “ON” command switched the lights on during the night.
OTHER SYSTEM / SET UP PROGRAMMING

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

> enter new time/date
8:50:00 AM PAGE 1
27 June 2008 Fri

To save your settings
you... hit enter
assembled 3 Jan 2008

Time starts when—TAB to here and
ENTER to select

To Set Location
1. In the DTC, navigate to USER MENU > SETUP
   MENU > SYSTEM SET UP MENU > SET TIME AND
   DATE.
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.

To select city or nearest city.
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.

DAYLIGHT SAVING TIME

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

To disable Daylight Savings Time
1. Navigate to the Display Options screen: SETUP
   MENU > SYSTEM SETUP > 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 when complete.

Military Time: NO
Seconds Visible: YES
Daylight Savings: YES
Temperature F/C: F
Rd-323 K-BAND: 57.6
Modem mode: 0
Photocell mode: NEW
To save: HIT ENTER

Daylight Saving Time will now be disabled.
To Adjust Daylight Savings Change-Over dates:
1. Navigate to the Display Options screen: 

   SETUP MENU > SYSTEM SETUP > SYSTEM OPTIONS > 
   DAYLIGHT SET UP

   Daylight parameters

   Daylight starts on: 
   2nd Sun of Mar.

   Daylight ends on: 
   1st Sun of Nov

2. TAB to each setting and SCROLL to select the proper value. Note: A strict date-time system is not used.

   The DTC will set the time forward one hour on the start date and backward one hour on the end date.

3. EXIT when complete. All changes will be automatically saved.

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 lock code. SCROLL UP or DOWN to change values and TAB UP or DOWN to move between digits. When the desired value has been entered, EXIT to save the code and return to the previous menu.
TIME SCHEDULE 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:

Address 5 is a 14 Bit Input. It's either the Blue Box contacts inputs or a Digilink.

SWI ID05-1 MANU. SELECT MAINTAIN

EDIT: LCP-1 LOAD= 4

LCPI:1-4

1. Navigate to the DI card address (switch), and the input (button) you want to program (Refer to Navigating to a Switch).
2. TAB to MAINTAIN and SCROLL to select Control Type. Maintain is probably the best choice for a Security System (Refer to Control Types).
3. TAB to LOAD, SCROLL, and ENTER to select loads (Refer to Adding a Load).

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 lights want to warn occupants five minutes to 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
EVTY DAY
ON TIME: 07:00 AM
OFF TIME: 05:30 PM

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

GROUP 4 MAINTAIN+BLINK
EDIT: LCP-1 LOAD= 1

LCPI:1-12

No / Yes

The system automatically creates a Group more than 8 loads.

Your selection is more than 8 loads. Proceed to create a group?
Tips: If you wish 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. (see Additional Group Parameters) This is optimal for energy savings when local digital switches are used.

**GROUP 4 PARAMETERS**

- **NO AUTOMATIC ON**
- **TIMER OUT**: 1:00:00 Hrs
- **OFF SWEEP**: 05:00 mins

3. Program each switch button that will need to override lighting after-hours with a Toggle or On Mode control type (refer to Control Types) and add loads as appropriate.

   **SWITCHES**: PAGE 1-2
   - #5: 14 BIN SW 5
   - #6: OPEN OFFICE SWI
   - #7: OPEN OFFICE SW2
   - #8: RECEPTION

   **SELECT BIN 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 ID#06-2**
   - **ON MODE**
   - **EDIT**: LCP=1 LOAD=3
   - **LCP=1,3**

   Address 6 has been named the OPEN OFFICE SW1.

   Refer to Navigation Fee for the Naming Menus

   Select TOGGLE or ON MODE (refer to Control types)

   Add any relays in the group

2. After-hours, all lights (loads) should be on a 1-hour timer with a 5-minute blink warning.

3. Employees enter the store as early as 5:00 am and need to switch on enough lights to clean and stock the store (called the “entry level”) without the complications of a timer:

   Entry level lights are controlled by LCP=1-7. All remaining lights are controlled by LCP=8-24

**Programming Steps**

For step-by-step instruction on how to program these schedules, refer to the sections on adding a load, Control Types, Groups, and time schedules.

1. Set up a Schedule: ON: 5:00 AM & OFF: 10:20 PM. Employees coming in any time after 5:00 AM can switch on lights manually. The relays will not be in timer mode because the Group was switched on at 5:00 AM with NO AUTOMATIC ON.

<table>
<thead>
<tr>
<th>Name</th>
<th>Controls</th>
<th>Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule 4</td>
<td>Group 2</td>
<td>Entry Lights</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On 5am Off 10:20pm Every Day</td>
</tr>
<tr>
<td>Group 2</td>
<td>LCP1: Relays 1-7</td>
<td>Maintain + Blink</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NO Automatic On</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 Hour Timer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 Minute Blink Warn</td>
</tr>
</tbody>
</table>

2. Set up a second schedule: ON: 8:45am & OFF: 10:20pm to sweep-on the remaining loads 15 minutes before and 20 minutes after-hours.

<table>
<thead>
<tr>
<th>Name</th>
<th>Controls</th>
<th>Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule 5</td>
<td>Group 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>On 9:20am Off 10:20pm Every Day</td>
</tr>
<tr>
<td>Group 3</td>
<td>LCP:</td>
<td>Maintain + Blink</td>
</tr>
<tr>
<td></td>
<td>relays 8-24</td>
<td>(Yes) Automatic On</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 Hour Timer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 Minute Blink Warn</td>
</tr>
</tbody>
</table>

**EXERCISE #4 - RETAIL STORE**

Information and customer requirements

1. Store hours: 9:00 am to 10:00 pm every day. Lights should be swept-on 15 minutes before store opening and off 20 minutes after closing.
Set-up a third schedule to sweep-on the entry lights in case they were not manually switched on by a control station. Note that this schedule simulates a momentary push button and only turns the lights on.

<table>
<thead>
<tr>
<th>Name</th>
<th>Controls</th>
<th>Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule 6</td>
<td>Group 4</td>
<td>On 8:45am Off 8:46Am Every Day</td>
</tr>
<tr>
<td>Group 3</td>
<td>LCPI; relays 1-7</td>
<td>Momentary On</td>
</tr>
</tbody>
</table>

3. Provide a button on a control station that switches on the “entry” lights on the morning (On Mode).

4. Program another button on the same station to allow the last person out to switch off all lights.

SWITCHES PAGE 1-2

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

Select ON MODE (refer to Control Types).

Add LCPI 1-7

A second control station in the managers office can extend other lighting zones for after hours activities, such as a photo-shoot, or extended store hours.

Tip: Check out our set-back Thermostats. They can be locally and remotely programmed through the Blue Box and can generate a very high Return On Investment.