Bantam User Interface Manual

Version 3.0

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**Introduction**

The Bantam is a simple, low-cost programmable lighting control panel that competes nicely with traditional panels that use time clocks, twist timers and contactors. The Bantam is an inexpensive, easy to use, quick to install, single package which doesn’t require any contractor assembly. The Bantam provides automated control of high-voltage lighting circuits based on panel switches, photo sensors and time schedules.

Pre-programmed control strategies allow the user to quickly program the panel to control their space. Eight switch inputs, four analog photo sensors, 16 digital stations, an astronomical clock (sunset/sunrise) and a seven day time schedule clock (with three holiday lists) are easily integrated into these control strategies to give robust building control.

**Applications**

Bantam panels save energy by turning lights off when not needed. The panel is ideal for small buildings with up to eight lighting zones, with both interior (offices, retail space and lobbies) and exterior (parking lots, courtyards, etc) circuits.

Interior lighting can incorporate after-hours overrides with timed sweeps, Sentry Switches or AS-100 line voltage switches. Exterior lighting can use an astronomical clock (sunup and sundown), dry contact photocontroller or analog photo sensor.

**Manual Overview**

The following sections of this manual introduce the basic features and concepts of the Bantam lighting control system. This manual also includes a comprehensive set of example programming scenarios and programming hints for the more advanced user.

The Bantam is a small lighting control system with a big punch. It allows building owners and operator’s great flexibility and ease in controlling their buildings. We hope you find this manual helpful in programming and operating your Bantam lighting controller.
**Hardware Overview**

- **Graphic Display**
- **Auto/Manual Switch**
- **Relay**
- **8 relays**
- **8 terminal blocks**
- **4 Photo Sensor inputs**
- **4-20ma jumpers**
- **System Power Led**
- **8 Low voltage switch inputs and lighted switch drivers**
- **24VAC input**
- **USB port**
- **MicroSD Port**
- **Transformer**
- **Breaker**
- **Digital Switch port**
- **CAN bus**
- **Terminator**

**Hardware components**

*Enclosure* – The enclosure is rated NEMA 1. It is divided into a line voltage section and a low voltage section. The line voltage section contains the high voltage side of the transformer, the lighting relays and the lighting load terminal blocks. The low voltage section contains the transformer secondary and electronic components.

*Transformer* – A 50VA multi-tap control transformer provides 24VAC input to power the Bantam motherboard. The transformer has a resettable breaker that is accessible thru the knockout plug in the low voltage section of the enclosure.
8 Relay outputs – Each Bantam has up to 8 relays that can be controlled by programs entered through the on-board keypad or through a USB interface program (e.g. HyperTerminal). Lighting loads are wired from the electrical service panel into the relays in the Bantam enclosure and then out to the lighting fixtures. Automated control of the relays is accomplished by setting up groups of relays and controlling them with switches, photo sensors and time schedules.

Creating groups of relays and then defining how a group is to be controlled is a key concept in the Bantam. Grouping not only eases programming, but provides a critical step in the proper control of your building.

Groups can be turned on and off by time schedules, astronomical clock schedules, low-voltage switches, digital switches and override commands from the keypad.

You can define individual relays in a group to operate as Normal, Inverted, Sentry, AS100, HID and Beacon types. More on how these relay types operate will be explained in the Relay Setup section of this manual.

The Group Status display allows you to see the current ON/OFF state of a group and the time and date of the last command. You can also review previously logged events in the Bantam.

Relay Overrides – Each relay has a green “hardware” override on top of each relay. WARNING – these overrides bypass Bantam logic board control and have no feedback to the logic board. Hardware overrides should only be used if the logic board fails to operate. The Bantam logic board has individual “software” overrides (RY1-RY8) which can be used to control the relay state when the Bantam is operating normally.

AUTO/MANUAL switch

When in AUTO mode the panel will execute programs as entered by the user.

When in MANUAL mode the panel will no longer execute programs but “freeze” the relays in the state they were in when the panel was switched from AUTO to MANUAL. This switch essentially overrides panel control.

4 Photo sensor inputs

The 4 photo sensor inputs supply +24VDC to devices (typically photo sensors) and then receive a 0-10V analog (variable) signal in return. Each photo sensor input includes the option to convert a 4-20ma signal to 1-10V signal by using the associated 4-20ma jumper.

For ON/OFF control, the analog signal is compared to upper and lower thresholds to generate commands based on how the signal is changing. Transitions above and below the user programmed thresholds control groups of relays in the Bantam.

Thresholds have delays associated with them, these delays require the changing signal to transition beyond the desired threshold a minimum time before any command is initiated. These delays stop fleeting light conditions from turning the lights off.

4-20ma jumpers

If a 4-20ma sensor is used (like a PLC Multipoint MAS sensor) then the jumper for the analog channel being used must be installed on the 4-20ma jumper block. This jumper allows the current source from the 4-20ma sensor to be converted to a voltage level so that the Bantam can read the sensor.

8 Low voltage switch inputs and lighted switch drivers

Each low-voltage switch input can accept either 2 or 3 wire momentary or 2 wire maintained dry contact inputs.
The low-voltage switch supplies +24VDC to an external device (switch, motion sensor, dry contact, etc) and then receives a returned switched signal(s). Typically, a low-voltage switch will return 24VDC (switch is closed) or 0 VDC (switch is open). When the switch goes from off to on (or on to off) the Bantam generates a command, typically an ON or OFF, to groups in the panel. The Bantam supports 2 wire momentary, 3 wire momentary, 2 wire maintained, 2 wire motion sensor and 2 and 3 wire cleaning override switches. Each low-voltage switch input also has a lighted switch output (LSO) for driving incandescent/led lighted switches. The 24VDC supplied to the switch can be connected to an incandescent bulb or led. The return lead of the light is connected to the LSO. The LSO will sink current from the bulb/led such that it is lit. The Bantam will automatically turn on and off the light in the switch to match the state of the groups of relay controlled by the switch.

**USB port**

The Bantam has a USB port which allows a personal computer to talk to and program the Bantam. The USB port acts as an interface to the keypad and display of the Bantam. This allows a user to use a USB program like HyperTerminal to program the unit. The USB port can be used to make and restore backups of the user programming. The USB port can be used to update the Bantam “firmware”, the internal program which operates the Bantam. Bantam backup files are stored in CSV format (comma separated values).

**MicroSD drive**

The MicroSD port can be used to make and restore backups of the user programming. The MicroSD port can be used to update the Bantam “firmware”, the internal program which operates the Bantam.

**CAN bus digital switch port**

The CAN bus port allows the user to connect to Leviton Centura switches. The Leviton CN225 gives the user 5 buttons which can control any of the groups defined in the Bantam controller. The CAN bus must be wired in a daisy-chain. This means wiring goes from panel to panel with no spurs or stars.

**CAN bus terminator**

The CAN bus must be wired in a daisy-chain. This means wiring goes from panel to panel with not spurs or stars. The panels at the two ends of the network must have their terminator across the two pins on the bus terminator. This is required in order to have a proper CAN bus network. All other panels should have the terminator removed or only on one pin (as shipped).
Overview
In this section you will learn how to program the Bantam.

Keypad/Display Screen
The Bantam interface provides you with the ability to program and view the controller setup. It consists of an LCD backlit screen and tactile keypad.

<table>
<thead>
<tr>
<th>Keypad/Display Screen</th>
<th>Bantam key</th>
<th>Computer key</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 line, 16 character Display Screen</td>
<td>UP, DOWN, LEFT, RIGHT</td>
<td>Used to move the active field (highlighted area) around the screen.</td>
</tr>
<tr>
<td>STATUS</td>
<td>SELECT</td>
<td>selects current highlighted item.</td>
</tr>
<tr>
<td>PROGRAM</td>
<td>RAISE, LOWER</td>
<td>Used to scroll thru entries in a highlighted field or move to the next entry in list.</td>
</tr>
<tr>
<td>EXIT</td>
<td>SAVE</td>
<td>Save the data on the current screen.</td>
</tr>
<tr>
<td>RY1 – RY8</td>
<td>SPACE</td>
<td>used to input numeric, alphanumeric and day of week (Mon-Sun) entries.</td>
</tr>
<tr>
<td></td>
<td>EXIT</td>
<td>used to add blank space in a name or used to scroll thru entries in a toggle field (the same as RAISE).</td>
</tr>
<tr>
<td></td>
<td>EXIT</td>
<td>used to leave current screen.</td>
</tr>
<tr>
<td></td>
<td>RY1 – RY8</td>
<td>Used to change relay states.</td>
</tr>
<tr>
<td></td>
<td>RESET</td>
<td>reset Bantam.</td>
</tr>
</tbody>
</table>

NOTE: If you are using a terminal interface (like HyperTerminal) to access the Bantam then the following computer keys are used to simulate the onboard Bantam keys.

<table>
<thead>
<tr>
<th>Bantam key</th>
<th>Computer key</th>
</tr>
</thead>
<tbody>
<tr>
<td>SELECT</td>
<td>ENTER</td>
</tr>
<tr>
<td>UP, DOWN, LEFT, RIGHT</td>
<td>UP, DOWN, LEFT, RIGHT</td>
</tr>
<tr>
<td>RAISE</td>
<td>CTRL-R</td>
</tr>
<tr>
<td>LOWER</td>
<td>CTRL-L</td>
</tr>
<tr>
<td>SAVE</td>
<td>CTRL-S</td>
</tr>
<tr>
<td>SPACE</td>
<td>SPACE</td>
</tr>
<tr>
<td>EXIT</td>
<td>ESC</td>
</tr>
<tr>
<td>0-9 (numeric)</td>
<td>0-9</td>
</tr>
<tr>
<td>0-9 (alpha-numeric)</td>
<td>A-Z, a-z, 1-9, 0</td>
</tr>
<tr>
<td>RY1-RY8</td>
<td>NO KEYS</td>
</tr>
</tbody>
</table>
Concepts and definitions

Display

The display shows 4 lines of text with up to 16 characters per line.

- Some menus/screens may contain more lines/characters or may display graphical information.

Typically an area of the screen will be “highlighted”. The highlighted area indicates the current ‘active’ menu/screen item. For example, if the user pushes the “SELECT” key when a line is highlighted on a menu screen, then the option for the line will be executed.

Example: Main menu screen

```
1 RELAYS
2 SWITCHES
3 PHOTOCONTROL
4 SYSTEM SETUP
```

Highlighted line can be executed with “SELECT”.

Quick key option: User can also enter the number on the line to choose option.

The user can ‘navigate’ between display fields using UP, DOWN, LEFT and RIGHT. The highlighted area will move between lines and fields as the user pushes these keys.

There may be a flashing cursor on the display. This represents a numeric/alphanumeric entry field on the screen.

Typical Screen

Let’s look at a Group setup screen to discuss some typical fields and keypad keystrokes.

```
01 GROUP01
1,--,4,5,--,--
SCHEDULE ON/OFF
EDIT SCHEDULES
```

Index field – The Bantam has eight groups defined in a panel. The index field indicates which of the entries is currently displayed. When the index field is highlighted on a screen the RAISE, LOWER or SPACE can be used to scroll thru the entries. Many screens have an index number, usually in top left corner. As a “quick enter”, you can enter the index number desired, followed by the SELECT key, and the desired entry will be loaded. While in “quick enter” mode you can push EXIT to stop input and restore the previous entry. Quick enter values are displayed in italics on Bantam display only (not on a remote terminal display).

Name field – If SELECT (or RIGHT ARROW) is pressed when a name is highlighted, the keypad is enabled so the user can enter an alpha-numeric name. Enter alphabetic characters by pushing corresponding numeric key multiple times. For example, pushing the 2 key will cycle from A to B to C then 2. Pausing 2 seconds between keystrokes or changing keys will cause the cursor to advance to next character position. A flashing cursor shows the current position in the name. SELECT ends input. SAVE ends input and saves the new name. While entering the new name you can push EXIT to stop input and restore the previous entry. While entering a new name, the entry will be shown in italics.

Relay List – The entries in this list can be changed by simply pushing the numbers 1-8. Every push of a number (1-8) will “toggle” the corresponding relay entry on the screen between “-“ and the number pressed.
**Toggle field** – When highlighted the RAISE, LOWER or SPACE can be used to cycle thru all valid options. On the Group setup screen seen previously, the toggle field would cycle thru the defined profiles that can be assigned to this Group. The toggle field will display in *italics*, if a change is made from the previously stored value. Press SAVE to update the toggle field and return the display to normal font from *italics*.

**More Options** – When highlighted, pressing SELECT will navigate to another option/sub-option for this screen.

**Modified entries**
When the value on a screen has been modified by the user but not saved, the field will show up in *italics*. For example, on the screen below, the user modified the group name to HALLWAY. After the name was modified, the user navigated off the name field to the group relay list. The name will appear *italicized* until the screen is saved (via SAVE). If you EXIT the screen the changed fields are not saved.

<table>
<thead>
<tr>
<th>01</th>
<th>HALLWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,</td>
<td>y,</td>
</tr>
<tr>
<td>SCHEDULE ON/OFF</td>
<td>EDIT SCHEDULE</td>
</tr>
</tbody>
</table>

*Italicized* name (indicating change from original value)

**Other field types**

**ON/OFF toggle entry**
On the group status screen below, the highlighted field shows the last command issued to the displayed group. The user can also “toggle” this field and press SELECT to change the group state. RAISE, LOWER or SPACE will change thru the ON/OFF options for the state. Pressing SELECT or SAVE will change the group to the new state.

<table>
<thead>
<tr>
<th>01 GROUP01</th>
<th>OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:03:00 10/27</td>
<td>BY SCHEDULE</td>
</tr>
<tr>
<td>NO SWEEP</td>
<td></td>
</tr>
</tbody>
</table>

Current Group state

**Last time & Date / Log entry**
On the group status screen below, the highlighted field shows the last time and date the group was commanded. The user can also use the LOWER key to scroll thru previous time/date group events. The Bantam can store up to 1000 “log” entries (for all relays, system entries, etc). When on a time and date field on most status screens you can scroll through the logs for the entry being displayed. RAISE and LOWER keys will scroll forward and backward thru the entries stored. When you wish to leave the “log review” mode, press EXIT and the status will resume to the current group status.

<table>
<thead>
<tr>
<th>01 GROUP01</th>
<th>OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:03:00 10/27</td>
<td>BY SCHEDULE</td>
</tr>
<tr>
<td>NO SWEEP</td>
<td></td>
</tr>
</tbody>
</table>

Time and Date of GROUP01 OFF command
**Time Type**
The screen below creates a schedule to control GROUP01. The field for the ON time is currently highlighted. This field can contain a user entered time (HH:MM) or the label OPEN, CLOSE, SUNUP or SUNDN. When the field contains OPEN, CLOSE, SUNUP or SUNDN the on time is automatically associated with the building open, close, sunrise or sunset times. To change between these choices the RAISE, LOWER or SPACE keys. When the highlighted field shows a time, then the numeric keypad can be used to enter the desired ON time. When entering the time a flashing cursor will show the current position in the time to be entered. Pressing EXIT will leave the enter time mode without saving the input. Pressing SAVE will save the time and leave time mode.

Using RAISE, LOWER or SPACE

<table>
<thead>
<tr>
<th>Group</th>
<th>ON Time</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP01</td>
<td>06:00</td>
<td>MTWFSS-</td>
</tr>
<tr>
<td>GROUP01</td>
<td>OPEN+000</td>
<td></td>
</tr>
<tr>
<td>GROUP01</td>
<td>CLOSE+000</td>
<td></td>
</tr>
<tr>
<td>GROUP01</td>
<td>SUNUP+000</td>
<td></td>
</tr>
<tr>
<td>GROUP01</td>
<td>SUNDN+000</td>
<td></td>
</tr>
</tbody>
</table>

**Days of Week**

On the schedule programming screen below, the DAYS field is highlighted. This field represents the days of the week that this schedule is active. The DAYS field has entries M,T,W,T,F,S,A,B and C. The M-S, S represent the days of the week Monday thru Saturday and Sunday. A, B and C represent the three holiday lists. Holiday list A is for perpetual holidays, B is for single day holidays and C is for range holidays. To enable or disable a day of week or holiday list, used the 1-9 and 0 keys. For example pressing the “1” key will change the M (for Monday) from “M” to “-“. Correspondingly, 1-7 represent M-S, 8 is Holiday list A, 9 is holiday list B and 0 is holiday list C. Press SAVE to save any changes before leaving the screen.

<table>
<thead>
<tr>
<th>Group</th>
<th>ON Time</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP01</td>
<td>06:00</td>
<td>MTWFSSABC</td>
</tr>
<tr>
<td>GROUP01</td>
<td>06:00</td>
<td>TWTFSSABC</td>
</tr>
</tbody>
</table>

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**Opening Screen**

Use LEFT/RIGHT to highlight STATUS or PROGRAM. Use UP/DOWN to highlight ALARM. Push SELECT to open menu.

Selecting STATUS allows the user to view live status of groups, switches and other panel parameters.

Selecting PROGRAM allows the user to setup how the panel operates.

Selecting ALARM allows the user to view any current ALARM warnings (errors that have occurred in the system) and view system logs (events like power ups, etc).

**Program Opening menu**

*How to get here: from open screen press PROGRAM*

Use UP/DOWN to highlight desired entry. Push SELECT to move to next menu. Quick key: Push desired number (1-4) for entry.

**Status Opening menu**

*How to get here: from open screen press STATUS*

Use UP/DOWN to highlight desired entry. Push SELECT to move to next menu. Quick key: Push desired number (1-4) for entry.
Groups: Setup

Groups are a collection of relays that work together. Setting up groups and assigning control strategies to those groups is a key concept in the Bantam. The Bantam supports up to eight groups in a panel. This allows the users to assign a single relay per group or to have only a few groups with multiple relays.

Typically it is recommended that a relay only be assigned to one group; this avoids multiple groups having possibly conflicting control strategies for the same relay. Relays can be assigned to multiple groups if you desire, just be careful how you program these groups.

Each group in the Bantam is assigned a “control strategy” or profile, this strategy tells the group how to respond when a time schedule, switch or photocontrol tries to control it. Here is an overview of the default profiles in the Bantam.

1. **Manual ON/OFF** – the group has no time schedule (programmed on and off time) associated with it. This group is controlled by low-voltage switches, digital switch buttons and/or photocontrols. In a typical operation the group has a “last in wins” control – the last device to command a group will turn it on or off. However, when a photo sensor turns OFF a group, it has precedence, and the group cannot go back on until the photo sensor releases the group.

   ![Manual on/off - photocontrol diagram](image)

   The timing diagram below shows the control for a group controlled by photo control only.

   ![Manual on/off - Switch diagram](image)

   The timing diagram below shows the control for a group controlled by switch only. The switch, in this case, is a two wire momentary.

2. **Manual ON/Schedule OFF** – the group is turned on in the morning by switch, and turned off in the evening by schedule. A key part to this control is that the user must set up the building open and close times. Open and close times let the Bantam know when to enable switches to be monitored. For Manual ON/Schedule OFF, you might set the open time to be 6:00 a.m. so that the Bantam knows any switch hit after 6:00 a.m. can turn on or off the group. The group will automatically go off at the schedule off time – typically close time. At close time the switches are disabled from turning on the lights.

   ![Open/Close Switch diagram](image)
3. **Manual ON/Sweep OFF** – the group is turned on in the morning by switch, and turned off in the evening by schedule. At the evening off time the group is “warned” – the lights flash to warn the occupant to press a switch to keep the lights on. This switch will give two more hours of light. If no switch is hit the group goes off in 10 minutes.

![Timing diagram for Manual ON/Sweep OFF](image)

4. **Schedule ON/OFF** – the group is turned on in the morning by the time clock and off later in the day.

![Timing diagram for Schedule ON/OFF](image)

5. **Schedule ON/Sweep OFF** - the group is turned on in the morning by schedule, and turned off in the evening by schedule. At the evening off time the group is “warned” – the lights flash to warn the occupant to press a switch to keep the lights on. This switch will give two more hours of light. If no switch is hit the group goes off in 10 minutes.

![Timing diagram for Schedule ON/Sweep OFF](image)

6. **Astronomical OFF/ON** – The group is turned off at Sunrise (morning) and on at Sunset (evening). The unique feature of an OFF/ON schedule is that the OFF schedule will occur on the next day according to the days of week listed. For example if the DAYS are set for Mon thru Friday, the OFF schedule will occur on Tuesday thru Saturday. This can be handy for schedules which span midnight – like parking lot lights.

![Timing diagram for Astronomical OFF/ON](image)

7. **Schedule OFF/ON** – The group is turned off in the morning and on in the evening. The unique feature of OFF/ON schedule is that the OFF schedule will occur on the next day according to the days of week listed. For example if the DAYS are set for Mon thru Friday, the OFF schedule will occur on Tuesday thru Saturday. This can be handy for schedules which span midnight – like parking lot lights.

Timing diagram is same as Astronomical OFF/ON, except times are user assigned.
Groups: Status/Override

PLCBuildings
13:42 07/01/10
ALARM
STATUS PROGRAM

Use LEFT/RIGHT to highlight STATUS. Push SELECT.

1 RELAYS
2 SWITCHES
3 PHOTOCONTROL
4 SYSTEM SETUP

Use UP/DOWN to highlight RELAYS. Push SELECT.
Quick key: Push 1.

1 GROUPS
2 RELAYS
3 PATTERNS

Use UP/DOWN to highlight GROUPS. Push SELECT.
Quick key: Push 1.

Group Status Review

How to get here: STATUS ➔ RELAYS ➔ GROUPS

Use RAISE, LOWER or SPACE to scroll to desired entry. Quick key: group number followed by SELECT. Push RIGHT to move to group override field. Push DOWN to move to group log review.

Group Override

How to get here: STATUS ➔ RELAYS ➔ GROUPS ➔ RIGHT

Use RAISE, LOWER or SPACE to change ON/OFF/WRN state. Push SAVE or SELECT to save new group state. Relays in group will go to desired state.
Push LEFT to move to group number field
Push DOWN to move to group log review.

Group Log Review

How to get here: STATUS ➔ RELAYS ➔ GROUPS ➔ DOWN

Use RAISE and LOWER to scroll thru log entries for this group. Push UP to move to group number field or state field. Push EXIT to leave log review mode. Current time/date will be restored.
Groups: Programming

Use LEFT/RIGHT to highlight PROGRAM. Push SELECT.

Use UP/DOWN to highlight RELAYS. Push SELECT.
Quick key: Push 1.

Use UP/DOWN to highlight GROUPS. Push SELECT.
Quick key: Push 1.

Reviewing group setups

How to get here: PROGRAM ➔ RELAYS ➔ GROUPS

Use RAISE, LOWER or SPACE to scroll to desired entry. Quick key: group number followed by SELECT.
Push RIGHT to move to name field or push DOWN to move to relay grouping.

Naming a group

How to get here: PROGRAM ➔ RELAYS ➔ GROUPS ➔ RIGHT

Push SELECT or RIGHT. A cursor will begin blinking on the first letter of the current name. Enter alphabetic characters by pushing corresponding numeric key multiple times. For example pushing the 2 key will cycle from A to B to C then 2. Pausing 2 seconds between keystrokes or changing keys will cause cursor to advance to next character position.
Use LEFT/RIGHT to skip over characters.
Use SPACE to clear a character.
Push SELECT to update group name.
Push SAVE to save changes before leaving.
Setting Relays in a group
How to get here: PROGRAM → RELAYS → GROUPS → DOWN

Use 1-8 to toggle which relays are currently in this group.
Push SAVE to save changes prior to exit

Setting Group Control Profile
How to get here: PROGRAM → RELAYS → GROUPS → DOWN(x2)

Use RAISE, LOWER or SPACE to scroll thru the control profiles for this group. Valid Profile options are: Manual ON/Sweep OFF, Manual ON/Schedule OFF, Schedule ON/Sweep OFF, Schedule ON/OFF, Astro OFF/ON, Sched OFF/ON.
Push SAVE to save changes before exiting screen. Push DOWN to edit schedules for group.

Editing Group Schedules
How to get here: PROGRAM → RELAYS → GROUPS → DOWN(x3)

Push SELECT to begin editing the time schedules associated with this relay group.

When editing schedules for the first time the schedule may come up “undefined” – the ON and OFF times will be NONE (actual schedule fields will be based on Control profile).
Push DOWN to move to the first time field.

Creating new Group schedule
How to get here: PROGRAM → RELAYS → GROUPS → EDIT SCHEDULES

When using RAISE to review existing schedules, you will come to the “undefined” schedule entry after the last valid schedule.
You can define a new schedules here.

Push DOWN to begin editing new schedule.
Reviewing Group Schedules

How to get here: PROGRAM → RELAYS → GROUPS → EDIT SCHEDULES → SCHEDULE list

Use RAISE, LOWER or SPACE to scroll through existing schedules.
Quick key: Enter schedule number followed by SELECT. Push DOWN to move to ON time.

Editing Schedule Time

How to get here: PROGRAM → RELAYS → GROUPS → EDIT SCHEDULES → SCHEDULE list → DOWN

Use RAISE, LOWER or SPACE to scroll through time options. Options are NONE, NORMAL (HH:MM), SUNUP, SUNDN, OPEN and CLOSE.

Editing schedules for Group with specific control profile

How to get here: PROGRAM → RELAYS → GROUPS → EDIT SCHEDULES → SCHEDULE list → DOWN

Manual ON/Sweep OFF, Manual/Sched OFF – Normal schedule
Normal schedule
Push SELECT or RIGHT to edit the OFF time associated with this group schedule
Use 0-9 to enter new time (00:00–23:59). Push SELECT to finish time input. Push SAVE to save changes.

Manual ON/Sweep OFF, Manual/Sched OFF – Open/Close schedules
If OPEN and CLOSE times have been defined (via SYSTEM SETUP) you can use these schedule types when creating a new schedule. Push RIGHT to move to the offset for OPEN. Use RAISE, LOWER or SPACE to change schedule type.
Use 0-9 to enter offset. Push RAISE for positive (+) offset and LOWER for negative (-) offset.
Manual ON/Sweep OFF, Manual/Sched OFF – Sunup/Sundn schedules

If Sunrise or Sunset times are desired you can use these schedule types when creating a new schedule. Push RIGHT to move to the offset for Sunup. Use RAISE, LOWER or SPACE to change schedule type.

Use 0-9 to enter offset. Push RAISE for positive (+) offset and LOWER for negative (-) offset.

Sched ON/Sweep OFF, Sched ON/Sched OFF – Normal Schedule

Push SELECT or RIGHT to edit the ON time associated with this group schedule. Use 0-9 to enter new time (00:00–23:59). Push SELECT to finish time input.

Push SELECT or RIGHT to edit the OFF time associated with this group schedule. Use 0-9 to enter new time (00:00–23:59). Push SELECT to finish time input.

Sched ON/Sweep OFF, Sched ON/Sched OFF – Open/Close

If OPEN and CLOSE times have been defined (via SYSTEM SETUP) you can use these schedule types when creating a new schedule. Push RIGHT to move to the offset for OPEN. Use RAISE, LOWER or SPACE to change schedule type. Push DOWN to move to CLOSE field

Use 0-9 to enter offset. Push RAISE for positive (+) offset and LOWER for negative (-) offset. Push DOWN to move to CLOSE offset.

Use RAISE, LOWER or SPACE to change schedule type. Push RIGHT to move to the offset for CLOSE. Push UP to move to OPEN field

Use 0-9 to enter offset. Push RAISE for positive (+) offset and LOWER for negative (-) offset. Push UP to move to OPEN offset.
**Sched ON/Sweep OFF, Sched ON/Sched OFF – Sunup/Sundn**

If Sunrise or Sunset times are desired you can use these schedule types when creating a new schedule. Push RIGHT to move to the offset for SUNUP. Use RAISE, LOWER or SPACE to change schedule type. Push DOWN to move to OFF field.

Use 0-9 to enter offset. Push RAISE for positive (+) offset and LOWER for negative (-) offset. Push DOWN to move to OFF offset.

Use RAISE, LOWER or SPACE to change schedule type. Push RIGHT to move to the offset for CLOSE. Push UP to move to OPEN field.

Use 0-9 to enter offset. Push RAISE for positive (+) offset and LOWER for negative (-) offset. Push UP to move to OPEN offset.

**Defining a schedule which spans midnight.**

There are schedule types where the OFF time is before the ON time. The OFF actually occurs on the NEXT day of the day of week. For example if Friday is enabled in the days of week, the OFF command actually occurs on the Saturday. Using these OFF before ON schedule types simplifies programming that crosses midnight.

**Spanning Midnight - SUNUP OFF/SUNDN ON schedule**

Use 0-9 to enter offset. Push RAISE for positive (+) offset and LOWER for negative (-) offset. Push DOWN to move to SUNDN offset.

Use 0-9 to enter offset. Push RAISE for positive (+) offset and LOWER for negative (-) offset. Push UP to move to SUNUP offset.
Spanning Midnight - Schedule OFF/Schedule ON

A cursor will initially blink on the Hours field. Use 0-9 to enter new time (00:00–23:59). Push SELECT to finish time input.

Edit active days of week for NORMAL and ASTRO schedule types

How to get here: PROGRAM → RELAYS → GROUPS → EDIT SCHEDULES → SCHEDULE list → DOWN(x3)

Use 1–7 to toggle Monday thru Sunday for active days of the week. Use 8, 9 and 0 to toggle Holiday A, B and C lists.

NOTE: The Days of Week for spanning midnight schedules are for THE ON SCHEDULE ONLY. The OFF schedule will occur on the next day according to the days of week in the ON schedule. For example if the DAYS are set for Mon thru Friday, the OFF schedule will occur on Tuesday thru Saturday. This can be handy for schedules which span midnight – like parking lot lights.
Relays: Setup

Each Bantam has up to 8 relays that can be controlled by programs entered through the on-board keypad or through a USB interface program (e.g. HyperTerminal). Lighting loads are wired from the electrical service panel into the relays in the Bantam enclosure and then out to the lighting fixtures. Automated control of the relays is accomplished by setting up groups of relays and controlling them with switches, photo sensors and time schedules.

Relay types - Individual relays can be defined so that they operate as Normal, Inverted, Sentry, AS100, HID and Beacon types.

1. **Normal (default)** – Relays of this type follow the on, off and warn commands given them by the Bantam programming. When a relay is commanded “on”, the Bantam will close its contacts, when commanded “off” it opens its contacts.
2. **Inverted** – Relays of this type invert the on, off and warn commands given them by the Bantam programming. When a relay is commanded “on”, the Bantam will open its contacts, when commanded “off” it closes its contacts. A relay is usually defined as inverting if it is controlling a normally-closed contactor.
3. **Sentry** – A “Sentry” switch (from Sentry LLC) controls the power feeding the lighting fixtures, like a normal wall switch. The power fed to the Sentry switch is controlled by the Bantam. When you want the Sentry switch to turn off its downstream loads, the Bantam will issue a special flash cycle (off then on). A Sentry flash is 5 seconds long. After the flash the Bantam leaves the power to the Sentry switch on. When the Sentry switch sees the 5 second flash cycle it turns off all downstream loads. The user can press the Sentry switch to turn the loads back on.
4. **AS100** – The AS100 switch, from WattStopper, controls the power feeding the lighting fixtures, like a normal wall switch. The power fed to the AS100 switch is controlled by the Bantam. If the Bantam wants the AS100 switch to control its downstream loads, the Bantam will issue a special flash cycle (off then on), based on the command from the Bantam.
   
   1-2 sec – Delay OFF. AS100 initiates a 5 minute delay before shutting load off. Locator light blinks and audible beep sounds (if enabled). Pushing the button cancels shut off from occurring.  
   
   3 sec – Turn on. Turns load on if automatic on feature is enabled  
   
   5 sec – Turn off. Turns load off.
5. **HID** - Relays of this type follow the on and off commands given them by the Bantam programming. HID relays will not warn, and they have a minimum on time of 15 minutes. The Bantam will not allow a HID relay to have an on time of less than 15 minutes.
6. **Beacon** – Beacon type relays are intended for alarm applications, or to control a secondary relay which will flash a light to warn that a HID relay is about to go off. When a warn command is issued to a Beacon relay, it will turn on and off five times in a 1 second cycle. When an on or off command is issued to a Beacon relay it will go off.

Relay Power-up State

The Bantam allows the user to define how each relay output will react when the controller is powered up. The default is NO ACTION.

1. **No Action** – The relay holds its existing state when power is applied. No change in state occurs at power-up (unless a schedule was missed or other programmed action occurred).
2. **Turn ON** – The relay goes ON when power is applied to controller
3. **Turn OFF** – The relay goes OFF when power is applied to controller
4. **System ON** – The relay goes ON when power is applied to the controller and the system input is active. The system input can be configured to be any switch and can be active low or high.
5. **System OFF** – The relay goes OFF when power is applied to the controller and the system input is active. The system input can be configured to be any switch and can be active low or high.
Status: Relay Status

Use LEFT/RIGHT to highlight STATUS. Push SELECT.

Use UP/DOWN to highlight RELAYS. Push SELECT.
Quick key: Push 1.

Use UP/DOWN to highlight RELAYS. Push SELECT.
Quick key: Push 2.

Relay status Review
How to get here: STATUS → RELAYS → RELAYS

Use RAISE, LOWER or SPACE to scroll to desired entry. Quick key: relay number followed by SELECT.
Push RIGHT to move to override field. Push DOWN to move to relay logs.

Review Override
How to get here: STATUS → RELAYS → RELAYS → RIGHT

Use RAISE, LOWER or SPACE to scroll to desired state. Push SAVE or SELECT to change relay state. Relay will go to desired state.

Relay Logs
How to get here: STATUS → RELAYS → RELAYS → DOWN

Use RAISE and LOWER to scroll thru relay logs. Push UP to move to relay number or state field. When in review log mode, a cursor will appear to the right of the date. Push EXIT to end review log mode.
Program: Relay

Use LEFT/RIGHT to highlight PROGRAM. Push SELECT.

1 RELAYS
2 SWITCHES
3 PHOTOCONTROL
4 SYSTEM SETUP

Use UP/DOWN to highlight RELAYS. Push SELECT. Quick key: Push 1.

Use UP/DOWN to highlight RELAYS. Push SELECT. Quick key: Push 2.

Reviewing relay setups
How to get here: PROGRAM → RELAYS → RELAYS

Use RAISE, LOWER or SPACE to scroll to desired entry. Quick key: relay number followed by SELECT. Push RIGHT to move to name or DOWN to move to TYPE.

Naming a relay
How to get here: PROGRAM → RELAYS → RELAYS → RIGHT

Push SELECT or RIGHT. A cursor will begin blinking on the first letter of the current name. Enter alphabetic characters by pushing a corresponding numeric key multiple times. For example, pushing the 2 key will cycle from A to B to C then 2. Pausing 2 seconds between keystrokes or changing keys will cause cursor to advance to next character position. Use LEFT/RIGHT to skip over characters. Use SPACE to clear a character. Push SELECT to update relay name. Push SAVE to save changes prior to exit.
### Relay types

**How to get here:** PROGRAM ➔ RELAYS ➔ RELAYS ➔ DOWN

Use RAISE, LOWER or SPACE to scroll through relay type choices. Valid choices are Normal, Inverted, Sentry, AS100, HID and Beacon.

### Relay Power-up Action

**How to get here:** PROGRAM ➔ RELAYS ➔ RELAYS ➔ DOWN(x2)

Use RAISE, LOWER or SPACE to scroll through relay power-up choices. Valid choices are No Action, ON, OFF, System ON, System OFF.

### Clearing Runtimes

**How to get here:** PROGRAM ➔ RELAYS ➔ RELAYS ➔ DOWN(x3) RUNTIME

Use 0-9 to enter new runtime value for this relay entry. Push SELECT or SAVE to change entry.

Push RAISE, LOWER or SPACE to toggle YES/NO.

Push SAVE or SELECT to confirm.
Patterns: Setup

Patterns are a collection of relays that work together. Patterns are similar to groups, however, where as a group of relays turn on and off together, in a pattern some of the relays may go on and some may go off. Setting up patterns and assigning control strategies to patterns is similar to how groups are set up. The Bantam supports up to eight patterns in a panel.

A significant difference between groups and patterns is that a pattern is made “activate” and “inactive”. When a schedule, switch or photo sensor goes “on” it can activate a pattern. This causes the pattern to turn relays on and off, as defined in the pattern. When the schedule, switch or analog goes off, the pattern will release control of the relays and become “inactive”. When made inactive the relays in a pattern will stay in their last state until a new input commands them. The priority of the pattern “activation” is dependent on the priority of the schedule, switch or analog that activated it; therefore it is possible to activate a pattern, but still have other switches control the relays in the pattern.

Each pattern in the Bantam is assigned a “control strategy” or profile, this strategy tells the pattern how to respond when a time schedule, switch or photo sensor tries to control it. Here is an overview of the default pattern profiles in the Bantam.

1. **Manual ON/OFF** – the pattern has no time schedule (programmed active and inactive time) associated with it. This pattern is controlled by low-voltage switches, digital switch buttons and/or photo sensors. In a typical operation the pattern has a “last in wins” control – the last device to command a pattern will activate/deactivate it. The timing diagram below shows the control for a pattern controlled by switch only. The switch, in this case, is a two wire momentary.

   ![Manual ON/OFF Diagram]

2. **Manual ON/Schedule OFF** – the pattern is activated in the morning by switch, and made inactive in the evening by schedule. A key part to this control is that the user must set up the building open and close times. Open and close times let the Bantam know when to enable switches to be monitored. For Manual ON/Schedule OFF, you might set the open time to be 6:00 a.m. so that the Bantam knows any switch hit after 6:00 a.m. can turn activate/deactivate the pattern. The pattern will automatically be deactivated at the schedule off time – typically close time. At close time the switches are disabled from activating the pattern.

   ![Manual ON/Schedule OFF Diagram]

3. **Schedule ON/OFF** – the pattern is activated in the morning by the time clock and made inactive later in the day.

   ![Schedule ON/OFF Diagram]
**Status: Pattern Review**

- **PLCBuildings**
  - 13:42 07/01/10
  - ALARM
  - **STATUS**
  - PROGRAM

- **1 RELAYS**
  - 2 SWITCHES
  - 3 PHOTOCONTROL
  - 4 SYSTEM SETUP

- **1 GROUPS**
  - 2 RELAYS
  - 3 PATTERNS

**Use LEFT/RIGHT to highlight STATUS. Push SELECT.**

**Use UP/DOWN to highlight RELAYS. Push SELECT.**

Quick key: Push 1.

**Use UP/DOWN to highlight PATTERNS. Push SELECT.**

Quick key: Push 3.

---

**Pattern Status Review**

**How to get here:** STATUS → RELAYS → PATTERNS

- **01 PATTERN01**
  - INACTIVE
  - 10:03:00 10/27
  - BY SCHEDULE

Use RAISE, LOWER or SPACE to scroll to desired entry.

Quick key: pattern number followed by SELECT.

Push DOWN to move to ACTIVE field.

---

**Activate Pattern**

**How to get here:** STATUS → RELAYS → PATTERNS → DOWN

- **01 PATTERN01**
  - ACTIVE
  - 10:03:00 10/27
  - BY SCHEDULE

Use RAISE, LOWER or SPACE to scroll to desired state.

Push SELECT or SAVE to execute command.

---

**Pattern Logs**

**How to get here:** STATUS → RELAYS → PATTERNS → DOWN(x2)

- **01 PATTERN01**
  - ACTIVE
  - 10:03:00 10/27
  - BY SCHEDULE

Use RAISE and LOWER to scroll through PATTERN logs. Push UP to move to active/inactive field. When in review log mode, a cursor will appear to the right of the date. Push EXIT to end review log mode.
Program: Pattern

Reviewing Patterns
How to get here: PROGRAM ➔ RELAYS ➔ PATTERNS

Naming a Pattern
How to get here: PROGRAM ➔ RELAYS ➔ PATTERNS ➔ RIGHT
**Editing a Pattern**

*How to get here: PROGRAM → RELAYS → PATTERNS → DOWN*

- 01 PATTERN01
  - EDIT PATTERN
  - MAN ON/SCHED OFF
  - EDIT SCHEDULES
  - SELECT

Push SELECT to edit this Pattern.

- 01 PATTERN01
  - CAPTURE PATTERN
  - EDIT PATTERN
  - RAISE
  - LOWER

Use RAISE, LOWER or SPACE to scroll to desired entry.
Quick key: pattern number followed by SELECT.

**Capturing a Pattern**

*How to get here: PROGRAM → RELAYS → PATTERNS → EDIT PATTERN → DOWN*

- 01 PATTERN01
  - CAPTURE PATTERN
  - EDIT PATTERN
  - SELECT

Push SELECT to capture the current relay states into this Pattern.

- PUSH OVERRIDE BUTTONS TO SET RELAY STATES, THEN PUSH SELECT

Push relay override buttons to put relays in desired states. Push SELECT to continue.

- PUSH OVERRIDE BUTTONS TO PICK RELAYS USED, THEN PUSH SELECT

The user should push the override buttons corresponding to the relay outputs that should be part of this pattern. The LED next to the override button will flash.
Push SELECT when finished done.

**Edit Pattern List**

*How to get here: PROGRAM → RELAYS → PATTERNS → EDIT PATTERN → DOWN(x2)*

- 01 PATTERN01
  - CAPTURE PATTERN
  - EDIT PATTERN
  - SELECT

Push SELECT to edit the relay list.

- 01 RELAY01 ON
  - 02 RELAY02 OFF
  - 03 RELAY03 N/A
  - 04 RELAY04 N/A
  - UP
  - RAISE
  - DOWN
  - LOWER
  - SAVE

Push UP/DOWN to move through the list of relays.
Push RAISE, LOWER or SPACE to change state of relay for pattern.
Valid patterns: ON, OFF, N/A
Push SAVE to save pattern list.
Setting Pattern Control Profile
How to get here: PROGRAM ➔ RELAYS ➔ PATTERNS ➔ DOWN(x2)

Use RAISE, LOWER or SPACE to scroll thru the control profiles for this group. Valid Profile options are: Manual ON/Schedule OFF, Schedule ON/OFF. Push SAVE to save changes before exiting screen. Push DOWN to edit schedules for group.

Editing Pattern Schedules
How to get here: PROGRAM ➔ RELAYS ➔ PATTERNS ➔ EDIT SCHEDULES

Push SELECT to begin editing the time schedules associated with this relay pattern.

When editing schedules for the first time the schedule will come up “NONE” – the schedule number will show as 1 of 6. Push DOWN to move to the ACTIVATE time field. Push SAVE to save changes to new schedule.

Creating new Patterns Schedule
How to get here: PROGRAM ➔ RELAYS ➔ PATTERNS ➔ EDIT SCHEDULES

When using RAISE to review existing schedules, you will also come to the “NONE” schedule entry after the last valid schedule entry. You can define a new schedule here.

Push DOWN to begin editing new schedule. Push SAVE to save changes to new schedule.

Reviewing Pattern Schedules
How to get here: PROGRAM ➔ RELAYS ➔ PATTERNS ➔ EDIT SCHEDULES ➔ SCHEDULE list

Use RAISE, LOWER or SPACE to scroll through existing schedules. Quick key: Enter schedule number followed by SELECT. Push DOWN to move to ACTIVE time.
**Editing Pattern Schedule Time**

*How to get here: PROGRAM → RELAYS → PATTERNS → EDIT SCHEDULES → SCHEDULE list → DOWN*

Use RAISE, LOWER or SPACE to scroll through time options. Options are NORMAL (HH:MM), NONE, SUNUP, SUNDN, OPEN and CLOSE. Use 0-9 to change Normal time schedule.

**Activating Preset at OPEN/CLOSE time**

*How to get here: PROGRAM → RELAYS → PATTERNS → EDIT SCHEDULES → SCHEDULE list → DOWN*

Use RAISE, LOWER or SPACE to change schedule type. Push RIGHT to move to the offset for OPEN/CLOSE.

Use 0-9 to enter offset. Push RAISE for positive (+) offset and LOWER for negative (-) offset.

**Activating Preset at SUNUP/SUNDN**

*How to get here: PROGRAM → RELAYS → PATTERNS → EDIT SCHEDULES → SCHEDULE list → DOWN*

Use RAISE, LOWER or SPACE to change schedule type. Push RIGHT to move to the offset for SUNUP.

Use 0-9 to enter offset. Push RAISE for positive (+) offset and LOWER for negative (-) offset.

**Edit active days of week for NORMAL and ASTRO schedule types**

*How to get here: PROGRAM → RELAYS → PATTERNS → EDIT SCHEDULES → SCHEDULE list → SELECT → DOWN(x3)*

Use 1 – 7 to toggle Monday thru Sunday for active days of the week. Use 8, 9 and 0 to toggle Holiday A, B and C lists.
Switch Setup

Each Bantam has a total of eight low voltage switch inputs. The eight low voltage inputs are located along the left side of the Bantam main board. Each low-voltage switch input consists of an ON terminal, +24VDC, OFF terminal and LSO.

Low voltage Switch types

There are three main ways to wire a low-voltage/dry contact switch in the Bantam

2-wire momentary. This switch type is usually a single push-button. The user presses and releases the button. This action signals the Bantam to change the state of any groups of relays connected to this switch. This type of switch is wired between the ON input and +24V.

Single Button

Press/Release

3-wire momentary. The switch is usually two push-buttons or a center-return momentary switch. The user presses and releases the button connected to the ON terminal to turn a group ON. The user presses and releases the button connected to the OFF terminal to turn a group OFF. This type of switch has the ON button wired between +24V and the ON terminal, and the OFF button wired between +24V and the OFF terminal.

Two Button

Press/Release

2-wire maintained. This is usually a single switch (or motion sensor). When the switch goes from open to close the switch issues an ON command. When the switch goes from close to open the switch issues an OFF command. This type of switch is wired between the ON terminal and +24V.

Switch

Switch Open/Close
Each low-voltage switch input also has a lighted switch output (LSO) for driving incandescent/led lighted switches. The 24VDC supplied to the switch can be connected to an incandescent bulb or led. The return lead of the light is connected to the LSO. The LSO will sink current from the bulb/led such that it is lit. The LSO, by default, is programmed to track the state of the group that is controlled by the switch. When the group goes ON the LSO will turn ON the switch light, when the group goes OFF the LSO will turn OFF the switch light.

Switches with lighted option (either bulb or LED) should be rated for 24VDC

Example: Two Button switch
### Status: Switch Status

Use LEFT/RIGHT to highlight STATUS. Push SELECT.

### Switch Status Review

**How to get here:** STATUS → SWITCHES → LOCAL

Use RAISE, LOWER or SPACE to scroll to desired entry. Quick key: switch number followed by SELECT.

### Switch Override

**How to get here:** STATUS → SWITCHES → LOCAL → RIGHT

Use RAISE, LOWER or SPACE to scroll to desired state. Push SAVE or SELECT to force switch to new state and control relays/groups attached to the switch.

### Switch Logs

**How to get here:** STATUS → SWITCHES → LOCAL → DOWN

Use RAISE and LOWER to scroll through switch logs. Push UP to move to switch number. When in review log mode a cursor will appear to the right of the date. Push EXIT to end review log mode.
Program: Switches

Use LEFT/RIGHT to highlight PROGRAM. Push SELECT.

Use UP/DOWN to highlight SWITCHES. Push SELECT.
Quick key: Push 2.

Use UP/DOWN to highlight LOCAL. Push SELECT.
Quick key: Push 1

Use RAISE, LOWER or SPACE to scroll to desired entry.
Quick key: switch number followed by SELECT.
Push RIGHT to move to name field. Push DOWN to move to switch type.

Naming a Switch

How to get here: PROGRAM ➔ SWITCHES ➔ LOCAL ➔ RIGHT

Push SELECT or RIGHT. A cursor will begin blinking on the first letter of the current name. Enter alphabetic characters by pushing corresponding numeric key multiple times. For example, pushing the 2 key will cycle from A to B to C then 2. Pausing 2 seconds between keystrokes or changing keys will cause cursor to advance to next character position.
Use LEFT/RIGHT to skip over characters.
Use SPACE to clear a character.
Push SELECT to update group name.
Push SAVE to save changes prior to exit.
**Setting Switch Type**

*How to get here: PROGRAM ➔ SWITCHES ➔ LOCAL ➔ DOWN*

Use RAISE, LOWER or SPACE to scroll thru options. Valid options are:
- 2-WIRE ALT ACT, 3-WIRE MOMENTARY, 2-WIRE MAINTAIN, 2-WIRE MOTION, 2-WR ALT MASTER, 2-WR MSTR ON/REL, 2-WR MSTR ON/REL, 3-WR MSTR ON/OFF, 2-WR MSTR ON/OFF, 3-WR REL/MST OFF, 2-WR REL/MST OFF, 3-WR ON/MST OFF, 2-WR ON/MST OFF, 3-WR MSTR OFF/On, 2-WR MSTR OFF/ON, 3-WIRE MOTION.

**Setting Switch Timer**

*How to get here: PROGRAM ➔ SWITCHES ➔ LOCAL ➔ DOWN (x2)*

Use 0-9 to enter desired value. Push SAVE to save.

**Setting Switch group/relay/patterns**

*How to get here: PROGRAM ➔ SWITCHES ➔ LOCAL ➔ EDIT RELAY LIST (DOWN x3)*

Push SELECT to edit outputs connected to this switch.

**Setting Switch Groups**

*How to get here: PROGRAM ➔ SWITCHES ➔ LOCAL ➔ Switch Review ➔ EDIT RELAY LIST ➔ GROUPS*
Setting Switch Relays

*How to get here:* PROGRAM → SWITCHES → LOCAL →
   Switch Review → EDIT RELAY LIST → RELAYS

Push UP/DOWN to move through the list of groups. Quick key: group number followed by SELECT. Push RAISE, LOWER or SPACE to change whether this group will be controlled by this switch. Push SAVE to save new control list.

```
01 GROUP01  YES
02 GROUP02  NO
03 GROUP03  NO
04 GROUP04  NO
```

Setting Switch Patterns

*How to get here:* PROGRAM → SWITCHES → LOCAL →
   Switch Review → EDIT RELAY LIST → PATTERNS

Push UP/DOWN to move through the list of groups. Quick key: group number followed by SELECT. Push RAISE, LOWER or SPACE to change whether this group will be controlled by this switch. Push SAVE to save new control list.

```
01 PATTERN01  NO
02 PATTERN02  YES
03 PATTERN03  NO
04 PATTERN04  NO
```
**Digital Switch Setup**

Each Bantam supports a total of sixteen Leviton CN225 digital switch stations. The sixteen stations can each have five buttons, for a total of up to eighty buttons. The Bantam uses the CAN bus to send switch commands from the remote Leviton switches to the Bantam. The CN225 sends a message on the CAN bus to the Bantam which then gets translated to an on or off command. The digital switch (CAN bus) port is located on the bottom edge of the Bantam logic board. The CAN bus port has GND, CANL, CANH and 24V input pins.

**Digital network wiring**

The Leviton CN225 switches are low-voltage wiring devices. Make sure to keep all digital switch wiring separate from high voltage wiring. The digital switch wiring should be run using a single Cat 5 twisted pair cable with the digital stations connected directly to this cable or with short “tap” connections. The entire digital switch network should not exceed 1600 feet. The longest individual “tap” off the main Cat 5 cable should not exceed 28 feet.

When wiring into the CN225 terminal blocks, firmly insert leads into the appropriate terminal location and tighten clamping screw. If using stranded wire, twist strands of each lead tightly, making sure that there are no stray strands protruding from the terminal block.

Since there are only 4 conductors used in the Bantam digital switch network, it is recommended that extra wired (in the Cat5 bundle) be used to “beef up” the +24V and GND wires of the network. Double up the +24V and GND lines by inserting the extra conductors into the CN225 terminal block.
**BE CAREFUL TO MATCH COLORS AT EVERY STATION!**

Recommended wiring combinations:

<table>
<thead>
<tr>
<th>Signal</th>
<th>Cat 5 wire</th>
<th>Extra Cat 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUND</td>
<td>Green</td>
<td>Orange &amp; Orange/White</td>
</tr>
<tr>
<td>CANH</td>
<td>Blue/White</td>
<td></td>
</tr>
<tr>
<td>CANL</td>
<td>Blue</td>
<td></td>
</tr>
<tr>
<td>+24V</td>
<td>Green/White</td>
<td>Brown &amp; Brown/White</td>
</tr>
</tbody>
</table>

**Terminating the Can Bus**

A properly wired CAN bus network requires “terminating” resistors at the beginning and end of the network. Termination puts a known resistance between the CANL and CANH lines to dampen noise and communications reflections. Proper termination will prevent disruption and interference of communications signals. The Bantam has a network terminator onboard, available via the Can Bus Terminator. Placing the supplied jumper across the two pins of the Terminator will place a terminating resistor on the network. **The Bantam Can Bus Terminator should only be in place if the panel is at the beginning or end of the network.** A special terminator blocks is available for other end of the Can Bus, call PLC Multipoint for availability.

**Addressing the Station**

The Leviton CN225 has two rotary address switches on the back of the switch for setting the station’s CAN bus hardware address. The rotary settings are 1-9, A-F. When you set the station address in the Bantam, the letters A thru F are entered as follows: A=10, B=11, C=12, D=13, E=14, F=15. You must enter this hardware address in the setup for the Digital switch station.
**Status: Digital Switches**

1 RELAYS
2 SWITCHES
3 PHOTOCONTROL
4 SYSTEM SETUP

1 LOCAL
2 DIGITAL

**Station Status Review**

*How to get here:* STATUS → SWITCHES → DIGITAL

- Use RAISE, LOWER or SPACE to scroll to desired entry.
- Quick key: switch station number followed by SELECT. Push DOWN to view button status.
- Push SELECT to view individual relay button status.

**Button Status Review**

*How to get here:* STATUS → SWITCHES → DIGITAL → VIEW BUTTONS

- Use RAISE, LOWER or SPACE to scroll to desired entry.
- Quick key: switch button number followed by SELECT.

**Button Override**

*How to get here:* STATUS → SWITCHES → LOCAL → VIEW BUTTONS → RIGHT

- Use RAISE, LOWER or SPACE to toggle ON/OFF.
- Push SAVE or SELECT to make switch state change.
**Button Logs**

*How to get here: STATUS → SWITCHES → DIGITAL → VIEW BUTTONS → DOWN (x2)*

<table>
<thead>
<tr>
<th>01 STATION01</th>
<th>RAISE</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 BUTTON1 ON</td>
<td>LOWER</td>
<td></td>
</tr>
<tr>
<td>10:32:04 10/29</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Use RAISE and LOWER to scroll through digital switch logs. Press UP to move to button number. When in review log mode, a cursor will appear to the right of the date. Push EXIT to end review log mode.

---

**Program: Digital Switches**

- **PLCBuildings**
  - 13:42 07/01/10
  - ALARM
  - STATUS PROGRAM

- **1 RELAYS
  - 2 SWITCHES
  - 3 PHOTOCONTROL
  - 4 SYSTEM SETUP**

Use LEFT/RIGHT to highlight PROGRAM. Push SELECT.

- **1 LOCAL
  - 2 DIGITAL**

Use UP/DOWN to highlight SWITCHES. Push SELECT.
Quick key: Push 2.

- **01 STATION01
  STATION SETUP
  BUTTON SETUP**

Use RAISE, LOWER or SPACE to scroll to desired entry. Quick key: switch number followed by SELECT.
Push RIGHT to move to station name. Push DOWN to move to station setup.

---

**Edit Digital Station name**

*How to get here: PROGRAM → SWITCHES → DIGITAL SWITCH → RIGHT*

<table>
<thead>
<tr>
<th>01 STATION01</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATION SETUP</td>
<td>LEFT</td>
</tr>
<tr>
<td>BUTTON SETUP</td>
<td>RIGHT</td>
</tr>
</tbody>
</table>

Push SELECT or RIGHT. A cursor will begin blinking on the first letter of the current name. Enter alphabetic characters by pushing corresponding numeric key multiple times. For example, pushing the 2 key will cycle from A to B to C then 2. Pausing 2 seconds between keystrokes or changing keys will cause cursor to advance to next character position.
Use LEFT/RIGHT to skip over characters.
Use SPACE to clear a character.
Push SELECT to update group name.
Push SAVE to save changes prior to exit.
**Edit Digital Station type**

*How to get here: PROGRAM ➔ SWITCHES ➔ DIGITAL*

- **01 STATION01**
  - **BUTTON SETUP**

Push UP/DOWN to highlight STATION SETUP. Push SELECT.

- **01 STATION01**
  - **TYPE: 5 BUTTON**
  - **SW1:** 0
  - **SW2:** 0

Use RAISE, LOWER and SPACE to scroll thru switch station type options. Valid options are 1 button, 2 button, 3 button, 4 button and 5 button. Push DOWN to go to SW1 address.

Use 0-9 to enter address of SW1 on digital station. Station SW1 switch goes 0-9, A-F. Enter the number as 0-15. Where 10 is A, 11 is B, 12 is C, 13 is D, 14 is E, 15 is F. Push SELECT to end input. Push down to move to SW2.

Use 0-9 to enter address of SW2 on digital station. Station SW2 switch goes 0-9, A-F. Enter the number as 0-15. Where 10 is A, 11 is B, 12 is C, 13 is D, 14 is E, 15 is F. Push SELECT to end input.

---

**Edit Digital Station buttons**

*How to get here: PROGRAM ➔ SWITCHES ➔ DIGITAL*

- **01 DIGITAL01**
  - **BUTTON SETUP**

Use UP and DOWN to highlight BUTTON SETUP. Use SELECT to edit button options.

- **0 of 5 BUTTON1**
  - **ALTERNATE ACTION**
  - **TIMER: 000 MIN**
  - **EDIT RELAY LIST**

Use RAISE, LOWER and SPACE to scroll to desired button. Push RIGHT to move to button name. Push DOWN to move to button type.
**Naming Digital Station buttons**

**How to get here:** PROGRAM → SWITCHES → DIGITAL → BUTTON SETUP → RIGHT

Enter alphabetic characters by pushing corresponding numeric key multiple times. For example pushing the 2 key will cycle from A to B to C then 2. Pausing 2 seconds between keystrokes or changing keys will cause cursor to advance to next character position.

Use LEFT/RIGHT to skip over characters.

Use SPACE to clear a character. Push SELECT to update group name. Push SAVE to save changes prior to exit.

Use RAISE, LOWER or SPACE to scroll thru button type options.

**Setting Switch Timer**

**How to get here:** PROGRAM → SWITCHES → LOCAL → DOWN (x2)

Use 0-9 to enter desired value

Push SAVE to save.

**Setting Button group/relay/patterns**

**How to get here:** PROGRAM → SWITCHES → DIGITAL → BUTTON SETUP

Use UP/DOWN to highlight desired entry.

Push SELECT

Use UP/DOWN to highlight desired entry.

Push SELECT.

Push UP/DOWN to move through the list of groups. Quick key: group number followed by SELECT. Push RAISE, LOWER or SPACE to change whether this group will be controlled by this button.

Push SAVE to save new control list.
**Setting Button relay**

*How to get here: PROGRAM ➔ SWITCHES ➔ DIGITAL ➔ SETUP BUTTON ➔ EDIT RELAY LIST ➔ RELAYS*

Push UP/DOWN to move through the list of groups. Quick key: group number followed by SELECT. Push RAISE, LOWER or SPACE to change whether this group will be controlled by this button.
Push SAVE to save new control list.

<table>
<thead>
<tr>
<th></th>
<th>RELAY01</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RELAY02</td>
<td>YES</td>
</tr>
<tr>
<td>2</td>
<td>RELAY03</td>
<td>NO</td>
</tr>
<tr>
<td>3</td>
<td>RELAY04</td>
<td>NO</td>
</tr>
</tbody>
</table>

**Setting Button pattern**

*How to get here: PROGRAM ➔ SWITCHES ➔ DIGITAL ➔ SETUP BUTTON ➔ EDIT RELAY LIST ➔ PATTERNS*

Push UP/DOWN to move through the list of groups. Quick key: group number followed by SELECT. Push RAISE, LOWER or SPACE to change whether this group will be controlled by this button.
Push SAVE to save new control list.

<table>
<thead>
<tr>
<th></th>
<th>PATTERN01</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PATTERN02</td>
<td>YES</td>
</tr>
<tr>
<td>2</td>
<td>PATTERN03</td>
<td>NO</td>
</tr>
<tr>
<td>3</td>
<td>PATTERN04</td>
<td>NO</td>
</tr>
</tbody>
</table>
**Photocontrol Setup**

Each Bantam supports a total of four photo sensor inputs. Photo sensor inputs supply +24VDC to photo sensors and then receive a 0-10V analog (variable) signal in return. Each input includes the option to convert a 4-20ma signal to 1-10V signal.

For ON/OFF control, the photo sensor signal is compared to upper and lower set points to generate commands based on how the signal is changing. For ON/OFF control when the photo sensor level goes above the upper set point it will generate an OFF command and when the signal goes below the lower set point it will generate an ON command. Photo sensor commands have threshold delays associated with them. These delays require the changing signal to transition beyond the desired set point a minimum time before the command is initiated (default is 5 minutes).

The terminal block for wiring photo sensor inputs is across the top of the Bantam logic board.

The six terminals are labeled 24V, GND, AN1, AN2, AN3 and AN4. Below the photo sensor terminal block is a block of jumper pins (with jumpers) that are used to change the input from 0-10V to 4-20ma. If the jumper is across the two pins (vertically), the corresponding channel is jumpered for a 4-20ma sensor (e.g. PLC Multipoint MAS).

Example jumper blocks:

<table>
<thead>
<tr>
<th>AJ1</th>
<th>AJ2</th>
<th>AJ3</th>
<th>AJ4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jumper one pin only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All channels 0-10 mode</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AJ1</th>
<th>AJ2</th>
<th>AJ3</th>
<th>AJ4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jumper across both pins</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All channels 4-20ma mode</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AJ1</th>
<th>AJ2</th>
<th>AJ3</th>
<th>AJ4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channels 1,2 in 0-10V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channels 3,4 in 4-20ma</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Photocontrol wiring

RED (+24V)
BLACK (GND)
The Bantam is pre-programmed to support PLC Multipoint photo sensors. The table below lists all the sensors supported by the Bantam. Note that MAS sensors are 4-20ma types and require the corresponding 4-20ma jumper to be in place.

<table>
<thead>
<tr>
<th>PLC Multipoint Photocontrol</th>
<th>Voltage range</th>
<th>Sensor Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CES I_xx_1_10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>CES O_xx_1_10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>CES A_xx_1_10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>CES S_xx_1_10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>CES L_xx_1_10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>CES 1_xx_0_10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>CES A_xx_0_10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>CES S_xx_0_10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>CES L_xx_0_10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>CES 1_xx_0_5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>CES O_xx_0_5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>CES A_xx_0_5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>CES S_xx_0_5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>CES L_xx_0_5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>CES I_xx_0_5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>CES O_xx_0_5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>CES A_xx_0_5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>CES S_xx_0_5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>CES L_xx_0_5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>MAS I_X2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS I_1X</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS I_2X</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS O_X2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS O_1X</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS O_2X</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS A_X2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS A_1X</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS A_2X</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS S_X2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS S_1X</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>MAS S_2X</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>
Status: Photocontrols Review

Use LEFT/RIGHT to highlight STATUS.

Use UP/DOWN to highlight PHOTOCONTROL. Push SELECT. Quick key: Push 3.

Use RAISE, LOWER or SPACE to scroll to desired entry. Quick key: photocontrol number followed by SELECT. Push DOWN to view thresholds.

Push SELECT to view thresholds and current ON/OFF states.

Photocontrol Threshold Status Review
How to get here: STATUS ➔ PHOTOCONTROL ➔ VIEW THRESHOLD

Use RAISE, LOWER or SPACE to scroll to desired entry. Quick key: photocontrol threshold followed by SELECT. Push DOWN to move to threshold logs.

Photocontrol Threshold Logs
How to get here: STATUS ➔ PHOTOCONTROL ➔ VIEW THRESHOLD ➔ DOWN

Use RAISE and LOWER to scroll thru threshold logs. Push UP to move to threshold number. When in review log mode a cursor will appear to the right of the date. Push EXIT to end review log mode.
**Program: Photocontrols**

Use LEFT/RIGHT to highlight PROGRAM. Push SELECT.

Use UP/DOWN to highlight PHOTOCONTROL. Push SELECT.

Quick key: Push 3.

Use RAISE, LOWER or SPACE to scroll to desired entry.

Quick key: photocontrol number followed by SELECT. Push RIGHT to move to name field. Push DOWN to move to edit thresholds.

### Naming Photocontrol inputs

*How to get here: PROGRAM → PHOTOCONTROL → RIGHT*

Push SELECT or RIGHT. A cursor will begin blinking on the first letter of the current name. Enter alphabetic characters by pushing corresponding numeric key multiple times. For example, pushing the 2 key will cycle from A to B to C then 2. Pausing 2 seconds between keystrokes or changing keys will cause cursor to advance to next character position.

Use LEFT/RIGHT to skip over characters.

Use SPACE to clear a character.

Push SELECT to update group name.

Push SAVE to save changes prior to exit.

### Setting Photocontrol sensor

*How to get here: PROGRAM → PHOTOCONTROL → DOWN*

Use RAISE, LOWER or SPACE to scroll to desired entry. Push SELECT to bring up list of sensor types. Push SAVE to save any changes prior to exit.

Use UP/DOWN to highlight sensor types on this page. Push LEFT to move to page number. To see another page of sensors highlight page number and use RAISE, LOWER or SPACE. Push SELECT to pick highlighted sensor.
Use RAISE, LOWER or SPACE to scroll to thru pages of sensor types. Push RIGHT to move to list.

Use UP/DOWN to scroll to desired entry. Push SELECT to choose photocontrol sensor type.

**Edit Photocontrol thresholds**

*How to get here: PROGRAM ➔ PHOTOCONTROL ➔ EDIT THRESHOLDS*

Push SELECT to edit thresholds.

**Setting Photocontrol type**

*How to get here: PROGRAM ➔ PHOTOCONTROL ➔ EDIT THRESHOLDS ➔ DOWN*

Use RAISE, LOWER or SPACE to scroll to desired entry.

Valid photocontrol types are Daylight Harvest and Night time control. See PROFILES in advance setup to change parameters for type.

**Setting Photocontrol Threshold set points**

*How to get here: PROGRAM ➔ PHOTOCONTROL ➔ EDIT THRESHOLDS ➔ SET LIMITS*

Use UP/DOWN to highlight SET LIMITS. Press SELECT to edit limits for this threshold.

Use 0-9 to enter new upper threshold. Push SELECT to finish input. Push DOWN to move to Lower Threshold.
**Edit Photocontrol relays list**

*How to get here: PROGRAM ➔ PHOTOCONTROL ➔ EDIT THRESHOLDS ➔ EDIT RELAY LIST*

Push SELECT to edit relays controlled by this Photocontrol.

**Setting Photocontrol group**

*How to get here: PROGRAM ➔ PHOTOCONTROL ➔ EDIT THRESHOLDS ➔ EDIT RELAY LIST ➔ GROUPS*

Use UP/DOWN to highlight GROUPS. Push SELECT.

Push UP/DOWN to move through the list of groups. Quick key: group number followed by SELECT. Push RAISE, LOWER or SPACE to link the group to this threshold. Push SAVE to save changes prior to exit.

**Setting Photocontrol relays**

*How to get here: PROGRAM ➔ PHOTOCONTROL ➔ EDIT THRESHOLDS ➔ EDIT RELAY LIST ➔ RELAYS*

Use UP/DOWN to highlight RELAYS. Push SELECT.

Push UP/DOWN to move through the list of groups. Quick key: group number followed by SELECT. Push RAISE, LOWER or SPACE to change whether this group will be controlled by this photocontrol threshold. Push SAVE to save new control list.
**Setting Photocontrol pattern**

*How to get here: PROGRAM ➔ PHOTOCONTROL ➔ EDIT THRESHOLDS ➔ EDIT RELAY LIST ➔ PATTERNS*

1. Use UP/DOWN to highlight RELAYS.  
   Push SELECT.

2. Push UP/DOWN to move through the list of groups. Quick key: group number followed by SELECT. Push RAISE, LOWER or SPACE to change whether this group will be controlled by this photocontrol threshold.  
   Push SAVE to save new control list.

**Status: System status**

1. Use LEFT/RIGHT to highlight STATUS. Push SELECT.

2. Use UP/DOWN to highlight SYSTEM SETUP. Push SELECT.  
   Quick key: Push 4.

**OPEN/CLOSE times for current day**

*How to get here: STATUS ➔ SYSTEM SETUP*

1. Use UP/DOWN to highlight OPEN/CLOSE.  
   Push SELECT.  
   Quick key: Push 1.

2. Display shows Open and Close times for current date. Push EXIT to leave screen.
Time/Date

How to get here: STATUS → SYSTEM SETUP

1 OPEN/CLOSE
2 TIME & DATE
3 DAYLIGHT SAV
4 SUNRISE/SET

Use UP/DOWN to highlight TIME & DATE. Push SELECT. Quick key: Push 2.

TIME: 08:54:03
DATE: 10/29/09
THURSDAY
VIEW DST DATES

Push EXIT to leave screen. Push SELECT to view daylight savings dates

DAYLIGHT SAVINGS 2009
BEGIN: 03/08/09
END: 11/01/09

Push EXIT to leave screen. Push RAISE or LOWER to see Daylight savings dates for different years.

Sunrise and Sunset times

How to get here: STATUS → SYSTEM SETUP

1 OPEN/CLOSE
2 TIME & DATE
3 SUNRISE/SET
4 HOLIDAYS

Use UP/DOWN to highlight SUNRISE/SET. Push SELECT. Quick key: Push 4.

Everett WA
47N 122W 09/03
SUNRISE: 06:28
SUNSET: 19:47

Push EXIT to leave screen. Push RAISE or LOWER to view sunrise and sunset times for different dates.

Reviewing Holiday

How to get here: STATUS → SYSTEM SETUP

1 OPEN/CLOSE
2 TIME & DATE
3 SUNRISE/SET
4 HOLIDAYS

Use UP/DOWN to highlight HOLIDAYS. Push SELECT. Quick key: Push 5

New Year 01/01
ML King 01/18
HOLIDAY 1 01/21
Presidents 02/15

Use UP/DOWN to scroll thru upcoming holiday dates.
Program: System Setup

Use LEFT/RIGHT to highlight PROGRAM. Push SELECT.

Use UP/DOWN to highlight SYSTEM SETUP. Push SELECT.
Quick key: Push 4.

Open and Close settings

How to get here: PROGRAM ➔ SYSTEM SETUP

1 OPEN/CLOSE
2 TIME & DATE
3 LOCATION
4 HOLIDAYS

Use UP/DOWN to highlight OPEN/CLOSE. Push SELECT.
Quick key: Push 1

Use RAISE, LOWER or SPACE to scroll to desired entry.
Quick key: Enter schedule number followed by SELECT.
Push DOWN to move to OPEN time

Use RAISE, LOWER or SPACE to change schedule type. For time type, use 0-9 to enter new time (00:00–23:59). Push SELECT to accept new time. Push DOWN to move to close time. Push SAVE to save changes prior to exit.

Use 0-9 to enter new time (00:00–23:59). Push SELECT to accept new time. Push DOWN to move to active days of week. Push SAVE to save changes prior to exit.

Use 1 – 7 to toggle Monday thru Sunday for active days of the week. Use 8, 9 and 0 to activate Holiday A, B and C lists. Push SAVE to save changes prior to exit.
Setting Time & Date

How to get here: PROGRAM → SYSTEM SETUP

1 OPEN/CLOSE
2 TIME & DATE
3 LOCATION
4 HOLIDAYS

Use UP/DOWN to highlight TIME & DATE. Push SELECT.

Quick key: Push 2.

Push SELECT or RIGHT and a flashing cursor will appear on the hour field. Enter new time (hour and minutes). Press SELECT to end input. Push SAVE to set new time. Push DOWN to move to date field.

Push SELECT or RIGHT and a flashing cursor will appear on the month field. Enter new date (month, day and year). Press SELECT to end input. Push SAVE to set new date. Push UP to move to time field. Push DOWN to enable/disable Daylight savings.

Use RAISE, LOWER or SPACE to enable and disable daylight savings. Push SAVE to save changes.

Push DOWN to move to fields which determine daylight savings.

To edit date algorithm for calculating daylight savings push SELECT.

The Begin/End algorithm for calculating daylight savings should ONLY be modified if the government changes the rules! (very rare) Use RAISE or LOWER to scroll thru various fields to change the week, day of week and month used. Push SAVE to save changes.
## Setting panel location

**How to get here:** PROGRAM → SYSTEM SETUP

<table>
<thead>
<tr>
<th>1 OPEN/CLOSE</th>
<th>2 TIME &amp; DATE</th>
<th>3 LOCATION</th>
<th>4 HOLIDAYS</th>
</tr>
</thead>
</table>

Use UP/DOWN to highlight LOCATION. Push SELECT.
Quick key: Push 3.

Use RAISE and LOWER to scroll thru valid cities for this state. Push SAVE or SELECT to save city. Push DOWN to move to time zone.

### Editing Location

**Everett, WA**
TM ZONE: PST (-8)
Latitude: 47 N
Longitude: 122 W

Use RAISE, LOWER or SPACE to scroll thru states. Quick key: use 2-9 to enter first letter of state name. Use 0 if no state is desired and latitude and longitude are entered manually. Push SAVE to set new state.

Use RAISE, LOWER or SPACE to scroll thru cities. Quick key: use 2-9 to enter first letter of city name. Use 0 if no city is desired and latitude and longitude are entered manually. Push SAVE to set new city.

### Setting panel Time Zone

**How to get here:** PROGRAM → SYSTEM SETUP → LOCATION → DOWN

Use RAISE, LOWER or SPACE to scroll thru time zones. Push SAVE to save changes.

### Entering Latitude and Longitude when NONE location entered.

**How to get here:** PROGRAM → SYSTEM SETUP → LOCATION

To manually enter Latitude and longitude the state must be entered as “- -”. Enter ‘0’ for the state to make it “- -”. Push DOWN twice to move to the Latitude field.

Push SELECT or RIGHT and a flashing cursor will appear on the latitude field. Enter latitude. Press SELECT to end input. Push RIGHT to move to N/S latitude field. Push DOWN to move to longitude. Push SAVE to set new latitude.
Setting Holidays

How to get here: PROGRAM → SYSTEM SETUP

1 OPEN/CLOSE
2 TIME & DATE
3 LOCATION
4 HOLIDAYS

Use UP/DOWN to highlight HOLIDAYS. Push SELECT.
Quick key: Push 5

Use UP/DOWN to highlight desired holiday list.
Push SELECT.

Setting Holiday list A - Perpetual holidays

How to get here: PROGRAM → SYSTEM SETUP → HOLIDAYS

1 PERPETUALS A
2 SINGLE DAY B
3 RANGE C

Use UP/DOWN to highlight PERPETUALS - LIST A. Push SELECT.
Quick key: Push 1

New Years YES
ML King YES
Presidents YES
Memorial YES

Use UP/DOWN to scroll thru holidays. Use RAISE, LOWER or SPACE to change YES/NO field. Push SAVE to save changes prior to exit.
**Setting Holiday list B – One day holidays**

*How to get here: PROGRAM ➔ SYSTEM SETUP ➔ HOLIDAYS ➔ SINGLE DAY*

1. PERPETUALS  
2. SINGLE DAY  
3. RANGE

Use UP/DOWN to highlight HOLIDAY LIST

B. Push SELECT.

Quick key: Push 2.

**Setting Holiday list C – Range holidays**

*How to get here: PROGRAM ➔ SYSTEM SETUP ➔ HOLIDAYS ➔ RANGE*

1. PERPETUALS  
2. SINGLE DAY  
3. RANGE

Use UP/DOWN to highlight HOLIDAY LIST

A. Push SELECT.

Quick key: Push 1

Use UP/DOWN to scroll thru holidays. Use 0-9 to enter new holiday date. End date input with SELECT. Push SAVE to save changes prior to exit. Enter 00/00 to clear any holiday entry.
Program: Advanced Setup

1 RELAYS
2 SWITCHES
3 PHOTOCOCTRL
4 SYSTEM SETUP

1 OPEN/CLOSE
2 TIME & DATE
3 LOCATION
4 HOLIDAYS

Modifying group profiles

How to get here: PROGRAM ➔ SYSTEM SETUP ➔ ADVANCED SETUP (5-8)

1 GROUPS
2 LOCAL SWITCH
3 PHOTOCOCTRL
4 BUTTON

01 SCHEDULE ON/OFF
02 MAN ON/SCH OF
03 SCH ON/SWEEP
04 SCH ON/OFF

SCHEDULE ON/OFF
GRACE: 010 MIN
Sweep: 120 MIN
OCCUPY TIMERS: N

TYPE: ON/OFF
SCH ON PRIOR: 0
SCH OFF PRIOR: 0

Use LEFT/RIGHT to highlight PROGRAM. Push SELECT.

Use UP/DOWN to highlight SYSTEM SETUP. Push SELECT.
Quick key: Push 4.

Push DOWN 5 times to get to Advanced entries 5-8.

Use UP/DOWN to highlight PROFILES. Push SELECT.
Quick key: Push 5.

Use UP/DOWN to highlight GROUPS. Push SELECT.
Quick key: Push 1.

Use UP/DOWN to highlight group profile to edit. Push SELECT.
Modifying local switch profiles

How to get here: PROGRAM → SYSTEM SETUP → ADVANCED SETUP (5-8)

5 PROFILES
6 WARN/SWEEP
7 CLEAR MEMORY
8 POWERUP INPUT

Use UP/DOWN to highlight PROFILES. Push SELECT.
Quick key: Push 5.

1 GROUPS
2 LOCAL SWITCH
3 PHOTOCONTROL
4 BUTTON

Use UP/DOWN to highlight LOCAL SWITCH. Push SELECT.
Quick key: Push 1.

01 2 WIRE – ALT
02 3 WIRE MOMENT
03 2 WIRE MAINTA
04 2 WIRE – MOTI

Use UP/DOWN to highlight switch profile to edit. Push SELECT.
Modifying button profiles

How to get here: PROGRAM → SYSTEM SETUP → ADVANCED SETUP (5-8)

Use UP/DOWN to highlight PROFILES. Push SELECT.
Quick key: Push 5.

Use UP/DOWN to highlight BUTTON. Push SELECT.
Quick key: Push 1.

Use UP/DOWN to highlight button profile to edit. Push SELECT.
Modifying Photocontrol profiles

How to get here: PROGRAM ➔ SYSTEM SETUP ➔ ADVANCED SETUP (5-8)

5 PROFILES
6 WARN/SWEEP
7 CLEAR MEMORY
8 POWERUP MEMORY

Use UP/DOWN to highlight PROFILES. Push SELECT.
Quick key: Push 5.

1 GROUPS
2 LOCAL SWITCH
3 BUTTON
4 PHOTOCONTROL

Use UP/DOWN to highlight BUTTON. Push SELECT.
Quick key: Push 1.

01 DAYLIGHT HARM
02 NIGHTTIME CON
03 NOT USED
04 NOT USED

Use UP/DOWN to highlight photocontrol profile to edit. Push SELECT.

DAYLIGHT HARVEST:
RISE DELAY 05MIN
FALL DELAY 05MIN
HOLD ON 030MIN

ABOVE UPPER ACTN
COMMAND: OFF
PRIORITY: 0

BELOW LOWER ACTN
COMMAND: ON
PRIORITY: 1

BELOW UPPER ACTN
COMMAND: NONE
PRIORITY: 0

BELOW LOWER ACTN
COMMAND: NONE
PRIORITY: 0
Backup and Restore

How to get here: PROGRAM → SYSTEM SETUP

**Backup**

- **9 BACKUP/RESTORE**
  - Use UP/DOWN to highlight BACKUP/RESTORE. Push SELECT.
  - Quick key: Push 9.

- **1 BACKUP**
  - Use UP/DOWN to highlight BACKUP. Push SELECT
  - Quick key: Push 1

- **1 TO USB**
  - Use UP/DOWN to highlight BACKUP. Push SELECT
  - Quick key: Push 1

- **2 TO MICROSD**
  - Use UP/DOWN to highlight BACKUP. Push SELECT
  - Quick key: Push 1

**Restore**

- **1 BACKUP**
  - Use UP/DOWN to highlight RESTORE. Push SELECT
  - Quick key: Push 2

- **1 FROM USB**
  - Use UP/DOWN to highlight BACKUP. Push SELECT
  - Quick key: Push 1
Status: Panel Version

Use LEFT/RIGHT to highlight STATUS. Push SELECT.

Push UP RELAYS is highlighted or DOWN when SYSTEM SETUP is highlighted.

Push UP/DOWN to exit Version screen and return to STATUS menu. Push EXIT to leave Version screen and go to Opening menu.

Bantam programming sequences

Create a Group. Creating a group in the Bantam is the first step towards controlling your building. Follow the screens below to navigate to the group setup screen. Choose which relays belong in GROUP1. Press SAVE.

Edit Building Open/Close times. A key part to controlling your building is to set up the building open and close times. For example open and close times let the Bantam know when to enable switches to be monitored. Open and close times are a key part of the group control profiles, and can be used to create building schedules.
#1-PC - Photo Control Only

Manual on/off - photocontrol

PhotoCtrl

Group

Photo off set point
Photo on set point

5 min delay (and up to 30 min delay for ON commands)

Bantam programming

A. Create Group of relays. See *Create a Group.*
B. Change Group profile to MANUAL ON/OFF

**PROGRAM > RELAYS > GROUPS**

<table>
<thead>
<tr>
<th>PLCBuildings 13:42 07/01/10</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALARMS</td>
</tr>
<tr>
<td>STATUS</td>
</tr>
<tr>
<td>PROGRAM</td>
</tr>
</tbody>
</table>

1 RELAYS
2 SWITCHES
3 PHOTOCONTROL
4 SYSTEM SETUP

<table>
<thead>
<tr>
<th>1 GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 RELAYS</td>
</tr>
<tr>
<td>3 PATTERNS</td>
</tr>
</tbody>
</table>

**Change Profile**

<table>
<thead>
<tr>
<th>01 GROUP01</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 5, 4, 5, 5, 5, -</td>
</tr>
<tr>
<td>MANUAL ON/OFF</td>
</tr>
<tr>
<td>EDIT SCHEDULES</td>
</tr>
</tbody>
</table>

C. Set Photocontrol #1 sensor type to PLC Multipoint Photocontrol type. Set threshold #1 trip limits.

**PROGRAM > PHOTOCONTROL**

<table>
<thead>
<tr>
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<tr>
<td>PROGRAM</td>
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</tbody>
</table>

1 RELAYS
2 SWITCHES
3 PHOTOCONTROL
4 SYSTEM SETUP

**Set Sensor Type**

<table>
<thead>
<tr>
<th>01 PHOTO-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>SENSOR:CES1XX110</td>
</tr>
<tr>
<td>EDIT THRESHOLDS</td>
</tr>
</tbody>
</table>

**PROGRAM > PHOTOCONTROL > EDIT THRESHOLDS > SET LIMITS**

<table>
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<tbody>
<tr>
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</tr>
<tr>
<td>STATUS</td>
</tr>
<tr>
<td>PROGRAM</td>
</tr>
</tbody>
</table>

1 RELAYS
2 SWITCHES
3 PHOTOCONTROL
4 SYSTEM SETUP

**Set Trip limits**

<table>
<thead>
<tr>
<th>01 PHOTO-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>SENSOR:CES1XX110</td>
</tr>
<tr>
<td>EDIT THRESHOLDS</td>
</tr>
<tr>
<td>EDIT RELAY LIST</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1of8 PHOTO-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up Limit: 00020</td>
</tr>
<tr>
<td>Lo Limit: 00010</td>
</tr>
</tbody>
</table>

D. Link Photocontrol #1/Threshold #1 to Group #1

**PROGRAM > PHOTOCONTROL > EDIT THRESHOLDS > EDIT RELAY LIST**

<table>
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<tr>
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<tbody>
<tr>
<td>ALARMS</td>
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<tr>
<td>STATUS</td>
</tr>
<tr>
<td>PROGRAM</td>
</tr>
</tbody>
</table>

1 RELAYS
2 SWITCHES
3 PHOTOCONTROL
4 SYSTEM SETUP

**Edit Relay List**

<table>
<thead>
<tr>
<th>01 PHOTO-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>SENSOR:CES1XX110</td>
</tr>
<tr>
<td>EDIT THRESHOLDS</td>
</tr>
</tbody>
</table>

**Choose Groups**

<table>
<thead>
<tr>
<th>1 GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 RELAYS</td>
</tr>
<tr>
<td>3 PATTERNS</td>
</tr>
<tr>
<td>EDIT RELAY LIST</td>
</tr>
</tbody>
</table>

**Select Group #1**

<table>
<thead>
<tr>
<th>01 GROUP01</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
</tr>
<tr>
<td>02 GROUP02</td>
</tr>
<tr>
<td>NO</td>
</tr>
<tr>
<td>03 GROUP03</td>
</tr>
<tr>
<td>NO</td>
</tr>
<tr>
<td>04 GROUP04</td>
</tr>
<tr>
<td>NO</td>
</tr>
</tbody>
</table>

E. To test the Photocontrol without the input and minimum ON delays, go to the Photocontrol Status and change the Input Delays field to NO. Overriding input delays will last 30 minutes before ending.

**STATUS > PHOTOCONTROL**

<table>
<thead>
<tr>
<th>PLCBuildings 13:42 07/01/10</th>
</tr>
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<tbody>
<tr>
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</tr>
<tr>
<td>STATUS</td>
</tr>
<tr>
<td>PROGRAM</td>
</tr>
</tbody>
</table>

1 RELAYS
2 SWITCHES
3 PHOTOCONTROL
4 SYSTEM SETUP

<table>
<thead>
<tr>
<th>01 PHOTO-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIEW THRESHOLDS</td>
</tr>
<tr>
<td>INPUT DELAYS: NO</td>
</tr>
<tr>
<td>READING 00020 FC</td>
</tr>
</tbody>
</table>
**#2-TC - Time Clock Only**

Schedule on/off

Schedule

Group

**Bantam programming**

A. Create Group of relays. See *Create a group.*

B. Make sure Group profile is SCHEDULE ON/OFF (default)

**PROGRAM > RELAYS > GROUPS**

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>13:42 07/01/10</th>
<th>ALARMS</th>
<th>STATUS</th>
<th>PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 RELAYS</td>
<td>2 SWITCHES</td>
<td>3 PHOTOCONTROL</td>
<td>4 SYSTEM SETUP</td>
<td></td>
</tr>
<tr>
<td>1 GROUPS</td>
<td>2 RELAYS</td>
<td>3 PATTERNS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Change Profile**

| 01 GROUP01 | 1,-,-,4,5,-,-,- |
| SCHEDULE ON/OFF |
| EDIT SCHEDULES |

C. Schedule Alternate #1. – Use Building OPEN/CLOSE times.

Edit Building OPEN/CLOSE times. See *Edit Building OPEN/CLOSE time.*

D. Confirm Group Schedules are OPEN/CLOSE (default)

**PROGRAM > RELAYS > GROUPS > EDIT SCHEDULES**

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>13:42 07/01/10</th>
<th>ALARMS</th>
<th>STATUS</th>
<th>PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 RELAYS</td>
<td>2 SWITCHES</td>
<td>3 PHOTOCONTROL</td>
<td>4 SYSTEM SETUP</td>
<td></td>
</tr>
<tr>
<td>1 GROUPS</td>
<td>2 RELAYS</td>
<td>3 PATTERNS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Edit Schedules**

| 01 GROUP01 | 1,-,-,4,5,-,-,- |
| SCHEDULE ON/OFF |
| EDIT SCHEDULES |

<table>
<thead>
<tr>
<th>1of6 GROUP01</th>
<th>ON: OPEN+000</th>
<th>OFF: CLOSE+000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1of6 GROUP01</td>
<td>ON: OPEN+000</td>
<td>OFF: CLOSE+000</td>
</tr>
</tbody>
</table>

E. Schedule Alternative #2 - Program Group Schedules

**PROGRAM > RELAYS > GROUPS > EDIT SCHEDULES**

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>13:42 07/01/10</th>
<th>ALARMS</th>
<th>STATUS</th>
<th>PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 RELAYS</td>
<td>2 SWITCHES</td>
<td>3 PHOTOCONTROL</td>
<td>4 SYSTEM SETUP</td>
<td></td>
</tr>
<tr>
<td>1 GROUPS</td>
<td>2 RELAYS</td>
<td>3 PATTERNS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Edit Schedules**

| 01 GROUP01 | 1,-,-,4,5,-,-,- |
| SCHEDULE ON/OFF |
| EDIT SCHEDULES |

<table>
<thead>
<tr>
<th>1of6 GROUP01</th>
<th>ON: 06:00</th>
<th>OFF: 18:00</th>
<th>DAYS: MTWTFSS---</th>
</tr>
</thead>
<tbody>
<tr>
<td>1of6 GROUP01</td>
<td>ON: 06:00</td>
<td>OFF: 18:00</td>
<td>DAYS: MTWTFSS---</td>
</tr>
<tr>
<td>1of6 GROUP01</td>
<td>ON: 06:00</td>
<td>OFF: 18:00</td>
<td>DAYS: MTWTFSS---</td>
</tr>
</tbody>
</table>
#3-PC+TC - Photo Control and Time Clock

Bantam programming
A. Create Group of relays. See Create a group.
B. Make sure Group profile is SCHEDULE ON/OFF (default)

PROGRAM > RELAYS > GROUPS

Change Profile

(convert to PLC Multipoint Photocontrol type. Set threshold #1 trip limits.)

Edit Schedules

GO TO NEXT PAGE FOR LAST STEP!
F. Connect Photocontrol #1, Threshold #1 to Group #1

**PROGRAM > PHOTOCONTROL > EDIT THRESHOLDS > EDIT RELAY LIST**

**PLCBuildings**
13:42 07/01/10
ALARMS
STATUS PROGRAM

01 PHOTO-01
SENSOR:CES1XX110
EDIT THRESHOLDS

**Edit Relay List**
1 of 8 PHOTO-01
DAYLIGHT HARVEST
SET LIMITS
EDIT RELAY LIST

**Choose Groups**
1 GROUPS
2 RELAYS
3 PATTERNS

**Select Group #1**
01 GROUP01 YES
02 GROUP02 NO
03 GROUP03 NO
04 GROUP04 NO

**Select Group #1**
#6-TC+RSW- Time Clock and Switch

Open/Close

Switch

Group

Bantam programming

A. Create Group of relays. See Create a group.
B. Change Group profile to MANUAL ON/SCHEDULE OFF

C. Edit Building Open/Close times. See Edit Building OPEN/CLOSE time.
D. Confirm Group OFF schedule time is CLOSE (default).

E. Set Switch #1 switch type.

F. Connect Switch #1 to Group #1 (default)
#7-PC+TC+RSW - Photo Control, Time Clock and Switch

Bantam programming

A. Create Group of relays. See Create a group.
B. Change Group profile to MANUAL ON/SCHED OFF

C. Edit Building Open/Close times. See Edit Building OPEN/CLOSE time.
D. Confirm Group OFF schedule time is CLOSE.

E. Set Photocontrol #1 sensor type. Set Photocontrol #1, threshold #1 trip limits.

F. Connect Photocontrol #1, Threshold #1 to Group #1
G. Set Switch #1 switch type.

**PROGRAM > SWITCH > LOCAL**

**Set Switch type**

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>13:42 07/01/10</th>
<th>1 LOCAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 LOCAL</td>
<td>2 DIGITAL</td>
<td>01 SWITCH01</td>
</tr>
<tr>
<td>2 WIRE - ALT ACT</td>
<td>TIMER: 000 MIN</td>
<td>EDIT RELAY LIST</td>
</tr>
</tbody>
</table>

H. Connect Switch #1 to Group #1

**PROGRAM > SWITCH > LOCAL > GROUP**

**Edit Relay List**

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>13:42 07/01/10</th>
<th>1 LOCAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 LOCAL</td>
<td>2 DIGITAL</td>
<td>01 SWITCH01</td>
</tr>
<tr>
<td>2 WIRE - ALT ACT</td>
<td>TIMER: 000 MIN</td>
<td>EDIT RELAY LIST</td>
</tr>
</tbody>
</table>

**Edit Group Setup**

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>13:42 07/01/10</th>
<th>1 GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 GROUP</td>
<td>2 RELAYS</td>
<td>01 GROUP01</td>
</tr>
<tr>
<td>3 PATTERNS</td>
<td>02 GROUP02</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>03 GROUP03</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>04 GROUP04</td>
<td>NO</td>
</tr>
</tbody>
</table>
#9 – PC+RSW+OVR - Photo Control, Time Clock and Switch

**Bantam programming**

A. Create Group of relays. See *Create a group*.
B. Change Group profile to MANUAL ON/OFF

**PROGRAM > RELAYS > GROUPS**

- **PLCBuildings**
- **13:42 07/01/10**
- **STRAUS **PROGRAM

**Change Profile**

- 01 GROUP01
- l, r, r, 4, 5, r, r, r,
- MANUAL ON/OFF
- EDIT SCHEDULES

**PROGRAM > PHOTOCONTROL**

- **Sensor Type**
  - **PLCBuildings**
  - **13:42 07/01/10**
  - **STRAUS **PROGRAM

**C.** Set Photocontrol #1 sensor type. Set Photocontrol #1, threshold #1 trip limits.

**PROGRAM > PHOTOCONTROL > EDIT THRESHOLDS**

- **Edit Threshold #1**
  - **PLCBuildings**
  - **13:42 07/01/10**
  - **STRAUS **PROGRAM

D. Connect Photocontrol #1, Threshold #1 to Group #1

**PROGRAM > SWITCH > LOCAL**

- **Set Switch type**
  - **PLCBuildings**
  - **13:42 07/01/10**
  - **STRAUS **PROGRAM

E. Set Switch #1 switch type to 2 WIRE CLEANING
F. Set Switch #1 switch timer to 30 minutes

PROGRAM > SWITCH > LOCAL

Set Switch timer

G. Connect Switch #1 to Group #1

PROGRAM > SWITCH > LOCAL > GROUP

Edit Relay List

Edit Group Setup

Select Group
#14 – TC+RSW+SWP -Time OFF, Switch and Sweep

Open/Close

Switch

Group

Bantam programming

A. Create Group of relays. See Create a group.
B. Change Group profile to MAN ON/SWEEP OFF

PROGRAM > RELAYS > GROUPS

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>RELAYS</th>
<th>GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:42 07/01/10</td>
<td>2 SWITCHES</td>
<td>2 RELAYS</td>
</tr>
<tr>
<td>ALARMS</td>
<td>3 PHOTOCONTROL</td>
<td>3 PATTERNS</td>
</tr>
<tr>
<td>STATUS</td>
<td>4 SYSTEM SETUP</td>
<td></td>
</tr>
</tbody>
</table>

Change Profile

<table>
<thead>
<tr>
<th>01 GROUP01</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - r - r - 4,5 - - - -</td>
</tr>
<tr>
<td>MAN ON/SWEEP OFF</td>
</tr>
<tr>
<td>EDIT SCHEDULES</td>
</tr>
</tbody>
</table>

C. Edit Building Open/Close times. See Edit Building OPEN/CLOSE time.
D. Confirm Group OFF schedule time is CLOSE.

PROGRAM > RELAYS > GROUPS > EDIT SCHEDULES

<table>
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<th>GROUPS</th>
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<tr>
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<td>4 SYSTEM SETUP</td>
<td></td>
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Edit Schedules

<table>
<thead>
<tr>
<th>01 GROUP01</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - r - r - 4,5 - - - -</td>
</tr>
<tr>
<td>MAN ON/SWEEP OFF</td>
</tr>
<tr>
<td>EDIT SCHEDULES</td>
</tr>
</tbody>
</table>

E. Set Switch #1 switch type.

PROGRAM > SWITCH > LOCAL

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>RELAYS</th>
<th>LOCAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:42 07/01/10</td>
<td>2 SWITCHES</td>
<td>2 DIGITAL</td>
</tr>
<tr>
<td>ALARMS</td>
<td>3 PHOTOCONTROL</td>
<td></td>
</tr>
<tr>
<td>STATUS</td>
<td>4 SYSTEM SETUP</td>
<td></td>
</tr>
</tbody>
</table>

Set Switch type

<table>
<thead>
<tr>
<th>01 SWITCH01</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 WIRE - ALT ACT</td>
</tr>
<tr>
<td>TIMER: 000 MIN</td>
</tr>
<tr>
<td>EDIT RELAY LIST</td>
</tr>
</tbody>
</table>

F. Connect Switch #1 to Group #1

PROGRAM > SWITCH > LOCAL > GROUP

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>RELAYS</th>
<th>LOCAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:42 07/01/10</td>
<td>2 SWITCHES</td>
<td>2 DIGITAL</td>
</tr>
<tr>
<td>ALARMS</td>
<td>3 PHOTOCONTROL</td>
<td></td>
</tr>
<tr>
<td>STATUS</td>
<td>4 SYSTEM SETUP</td>
<td></td>
</tr>
</tbody>
</table>

Edit Relay List

<table>
<thead>
<tr>
<th>01 SWITCH01</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 WIRE - ALT ACT</td>
</tr>
<tr>
<td>TIMER: 000 MIN</td>
</tr>
<tr>
<td>EDIT RELAY LIST</td>
</tr>
</tbody>
</table>

Edit Group Setup

| 01 GROUP01 | YES | 02 GROUP02 | NO | 03 GROUP03 | NO | 04 GROUP04 | NO |
#15 – PC+TC+RSW+SWP - Time OFF, Photocontrol, Switch and Sweep

Bantam programming

A. Create Group of relays. See Create a group.
B. Change Group profile to MAN ON/SWEEP OFF

PROGRAM > RELAYS > GROUPS

C. Edit Building Open/Close times. See Edit Building OPEN/CLOSE time.
D. Confirm Group OFF schedule time is CLOSE.

PROGRAM > RELAYS > GROUPS > EDIT SCHEDULES

E. Set Switch #1 switch type.

PROGRAM > SWITCH > LOCAL

F. Connect Switch #1 to Group #1
G. Set Photocontrol #1 sensor type and Photocontrol #1, threshold #1 trip limits.

H. Connect Photocontrol #1, Threshold #1 to Group #1
Astronomical Clock Mode #1 – Astronomical clock only

Bantam programming
A. Create Group of relays. See Create a group.
B. Change Group profile to ASTRO OFF/ON (NOTE spanning midnight OFF/ON type!)

C. Edit Group Schedules.

NOTE: The Days of Week for spanning midnight schedules (OFF/ON) are for THE ON SCHEDULE ONLY. The OFF schedule will occur on the next day according to the days of week in the ON part of the schedule. For example if the DAYS are set for Mon thru Friday, the OFF schedule will occur on Tuesday thru Saturday. This can be handy for schedules which span midnight – like parking lot lights.
**Astronomical Clock Mode #3 – Astronomical clock and Time**

<table>
<thead>
<tr>
<th>12</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astro off/on</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Astro schedule</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open/Close</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Time event ON  Sunrise  Sunset  Time event OFF

**Bantam programming**

A. Create Group of relays. See *Create a group*.

B. Change Group profile to SCHEDULE ON/OFF.

**PROGRAM > RELAYS > GROUPS**

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>13:42 07/01/10</th>
<th>ALARMS</th>
<th>STATUS PROGRAM</th>
</tr>
</thead>
</table>

1 GROUPS

<table>
<thead>
<tr>
<th>01 GROUP01</th>
<th>1, - , 4, 5, - , - , -</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCHEDULE ON/OFF</td>
<td>EDIT SCHEDULES</td>
</tr>
</tbody>
</table>

**Edit Schedules**

C. Edit Building Open/Close times. Make OPEN time 6:00 and CLOSE be 20:00.

See *Edit Building OPEN/CLOSE time*.

D. Confirm Group ON and OFF schedule times are OPEN and CLOSE.

**PROGRAM > RELAYS > GROUPS > EDIT SCHEDULES**

**Edit Schedule #2 – Enter Astronomical schedules**

**Edit OFF time – SUNUP**

<table>
<thead>
<tr>
<th>20f6 GROUP01</th>
<th>ON: SUNUP+000</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF: NONE</td>
<td>DAYS: MTWFSS---</td>
</tr>
</tbody>
</table>

**Edit ON time – SUNDN**

<table>
<thead>
<tr>
<th>20f6 GROUP01</th>
<th>ON: SUNDN+000</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF: SUNUP+000</td>
<td>DAYS: MTWFSS---</td>
</tr>
</tbody>
</table>

---

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Astronomical Clock Mode #5 – Astronomical clock, Time clock and Switch

<table>
<thead>
<tr>
<th>12</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Astro off/on
- Astro schedule
- Open/Close
- Switch
- Group

Time event ON Sunrise Sunset Time event OFF

Bantam programming
A. Create Group of relays. See Create a group.
B. Change Group profile to SCHEDULE ON/OFF.

**PROGRAM > RELAYS > GROUPS**

**Change Profile**

| 01 GROUP01 |
| 1,-,-,4,5,-,-,- |
| SCHEDULE ON/OFF |
| EDIT SCHEDULES |

C. Edit Building Open/Close times. Make OPEN be 6:00 and CLOSE be 20:00.
   See Edit Building OPEN/CLOSE time.
D. Confirm Group ON and OFF schedule times are OPEN and CLOSE.

**PROGRAM > RELAYS > GROUPS > EDIT SCHEDULES**

**Edit Schedules**

| 01 GROUP01 |
| 1,-,-,4,5,-,-,- |
| SCHEDULE ON/OFF |
| EDIT SCHEDULES |

E. Edit Group Schedule #2 – Enter Astronomical schedules

**PROGRAM > RELAYS > GROUPS > EDIT SCHEDULES**

**Edit Schedules**

| 01 GROUP01 |
| 1,-,-,4,5,-,-,- |
| SCHEDULE ON/OFF |
| EDIT SCHEDULES |

**Edit days of week**

| 2of6 GROUP01 |
| ON: SUNUP+000 |
| OFF: NONE |
| DAYS: MTWTFSS--- |

| 2of6 GROUP01 |
| ON: SUNDN+000 |
| OFF: NONE |
| DAYS: MTWTFSS--- |

| 2of6 GROUP01 |
| ON: SUNDN+000 |
| OFF: NONE |
| DAYS: MTWTFSS--- |

| 2of6 GROUP01 |
| ON: SUNDN+000 |
| OFF: NONE |
| DAYS: MTWTFSS--- |

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F. Set Switch #1 switch type.

**PROGRAM > SWITCH > LOCAL**

```
1 RELAYS
2 SWITCHES
3 PHOTOCONTROL
4 SYSTEM SETUP
```

**1 LOCAL**

```
01 SWITCH01
2 WIRE - ALT ACT
TIMER: 000 MIN
EDIT RELAY LIST
```

G. Connect Switch #1 to Group #1

**PROGRAM > SWITCH > LOCAL > GROUP**

```
1 RELAYS
2 SWITCHES
3 PHOTOCOCTRL
4 SYSTEM SETUP
```

**1 LOCAL**

```
01 SWITCH01
2 WIRE - ALT ACT
TIMER: 000 MIN
EDIT RELAY LIST
```

**Select Group**

```
1 GROUP
2 RELAYS
3 PATTERNS
```

**EDIT RELAY LIST**

```
01 GROUP01 YES
02 GROUP02 NO
03 GROUP03 NO
04 GROUP04 NO
```
**Astronomical Morning/Evening – Event Mode #6**

<table>
<thead>
<tr>
<th>12</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Astro off/on**

**Astro schedule**

**Group**

<table>
<thead>
<tr>
<th>Pre-On</th>
<th>Post-On</th>
<th>Pre-Off</th>
<th>Post-Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunrise</td>
<td></td>
<td>Sunset</td>
<td></td>
</tr>
</tbody>
</table>

**Bantam programming**

A. Create Group of relays. See *Create a group.*

B. Change Group profile to SCHEDULE ON/OFF.

**PROGRAM > RELAYS > GROUPS**

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>13:42 07/01/10</th>
<th>ALARMS</th>
<th>STATUS</th>
<th>PROGRAM</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>RELAYS</th>
<th>GROUPS</th>
<th>Change Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SWITCHES</td>
<td>1 GROUPS</td>
<td>01 GROUP01</td>
</tr>
<tr>
<td>2 RELAYS</td>
<td>1, 2, 3, 4, 5, 6, 7, 8</td>
<td>SCHEDULE ON/OFF</td>
</tr>
<tr>
<td>3 PHOTOCONTROL</td>
<td>3 PATTERNS</td>
<td>EDIT SCHEDULES</td>
</tr>
<tr>
<td>4 SYSTEM SETUP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**C. Edit Group Schedule #1 – Sunrise with Pre-On and Post-On Offsets**

**PROGRAM > RELAYS > GROUPS > EDIT SCHEDULES**

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>13:42 07/01/10</th>
<th>ALARMS</th>
<th>STATUS</th>
<th>PROGRAM</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>RELAYS</th>
<th>GROUPS</th>
<th>Edit Schedules</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SWITCHES</td>
<td>1 GROUPS</td>
<td>01 GROUP01</td>
</tr>
<tr>
<td>2 RELAYS</td>
<td>1, 2, 3, 4, 5, 6, 7, 8</td>
<td>SCHEDULE ON/OFF</td>
</tr>
<tr>
<td>3 PHOTOCONTROL</td>
<td>3 PATTERNS</td>
<td>EDIT SCHEDULES</td>
</tr>
<tr>
<td>4 SYSTEM SETUP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Edit ON time to SUNUP**

1of6 GROUP01
ON: SUNUP-000
OFF: CLOSE+000

**Edit SUNUP offset**

1of6 GROUP01
ON: SUNUP-180
OFF: CLOSE+000

**Edit OFF time to SUNUP**

1of6 GROUP01
ON: SUNUP-000
OFF: SUNUP+180

**Edit days of week**

1of6 GROUP01
ON: SUNUP-180
OFF: SUNUP+180

**D. Edit Group Schedule #2 – Sunset with Pre-On and Post-On Offset**

**PROGRAM > RELAYS > GROUPS > EDIT SCHEDULES**

<table>
<thead>
<tr>
<th>PLCBuildings</th>
<th>13:42 07/01/10</th>
<th>ALARMS</th>
<th>STATUS</th>
<th>PROGRAM</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>RELAYS</th>
<th>GROUPS</th>
<th>Edit Schedules</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SWITCHES</td>
<td>1 GROUPS</td>
<td>01 GROUP01</td>
</tr>
<tr>
<td>2 RELAYS</td>
<td>1, 2, 3, 4, 5, 6, 7, 8</td>
<td>SCHEDULE ON/OFF</td>
</tr>
<tr>
<td>3 PHOTOCONTROL</td>
<td>3 PATTERNS</td>
<td>EDIT SCHEDULES</td>
</tr>
<tr>
<td>4 SYSTEM SETUP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Edit ON time to SUNUP**

2of6 GROUP01
ON: SUNUP-000
OFF: NONE
DAYS: MTWTFSS---

**Edit SUNUP offset**

2of6 GROUP01
ON: SUNUP-180
OFF: NONE
DAYS: MTWTFSS---

**Edit OFF time to SUNUP**

2of6 GROUP01
ON: SUNUP-180
OFF: SUNUP+000
DAYS: MTWTFSS---

**Edit days of week**

2of6 GROUP01
ON: NONE
OFF: NONE
DAYS: MTWTFSS---
**Program: Weekday & Weekend Setup (Two Schedules)**

Setup for a Weekday (Monday-Friday) OPEN and CLOSE time.

1. **PROGRAM > SYSTEM SETUP > OPEN/CLOSE**
   - PLCBuildings: 13:42 07/01/10
   - Status: Program
   - 1 RELAYS
   - 2 SWITCHES
   - 3 PHOTOCONTROL
   - 4 SYSTEM SETUP

2. **Choose OPEN/CLOSE**
   - 1 OPEN/CLOSE
   - 2 TIME & DATE
   - 3 LOCATION
   - 4 HOLIDAYS
   - Days of Week

3. **Edit OPEN time**
   - OPEN: 06:00
   - CLOSE: NONE
   - DAYS: MTWTFSS---

4. **Edit CLOSE time**
   - Days of Week
   - OPEN: 18:00
   - CLOSE: 06:00
   - DAYS: MTWTFSS---

Setup relays 1, 4, & 5 for Weekday operation using the above Weekday OPEN & CLOSE time.

1. **PROGRAM > RELAYS > GROUPS**
   - Create Relay List

2. **01 GROUP01**
   - SCHEDULE ON/OFF
   - EDIT SCHEDULES

Setup relays 2 & 3 for Weekend (only) operation using separate ON & OFF times.

1. **PROGRAM > RELAYS > GROUPS**
   - Create Relay List

2. **02 GROUP02**
   - SCHEDULE ON/OFF
   - EDIT SCHEDULES

**Weekend Days**

1. **01 GROUP01**
   - ON: 08:00
   - OFF: 17:00
   - DAYS: MTWTFSS---

2. **02 GROUP02**
   - ON: 08:00
   - OFF: 17:00
   - DAYS: MTWTFSS---
**APPENDIX   Bantam Switch Description**

When a relay/group (outputs) are placed in a MASTER ON or MASTER OFF mode this means that a regular ON or OFF command cannot change the output state. An output will stay in the MASTER ON or MASTER OFF state until the switch that initiates the command either “releases it” (allows lower priority inputs to take over) or the initiating switch turns the output ON or OFF with an non MASTER command.

<table>
<thead>
<tr>
<th>Profile Name</th>
<th>ON (how it happens)</th>
<th>OFF (how it happens)</th>
<th>Alternate action command (how it happens)</th>
<th>ON action</th>
<th>OFF action</th>
<th>ALT action</th>
</tr>
</thead>
<tbody>
<tr>
<td>“2 WIRE ALT ACT” (alternate action) Code: 0</td>
<td>n/a</td>
<td>n/a</td>
<td>Switch shorts ON terminal to 24VDC</td>
<td>n/a</td>
<td>n/a</td>
<td>Outputs that are ON will go OFF. Outputs that are OFF will go ON (if no MASTER overrides)</td>
</tr>
<tr>
<td>“3 WIRE MOMENTARY” Code: 1</td>
<td>Switch shorts ON terminal to 24VDC</td>
<td>Switch shorts OFF terminal to 24VDC</td>
<td>n/a</td>
<td>ON will turn outputs ON if no output is MASTER overridden</td>
<td>OFF will turn outputs OFF if no output is MASTER overridden</td>
<td>n/a</td>
</tr>
<tr>
<td>“2 WIRE MAINTAINED” Code: 2</td>
<td>Switch shorts ON terminal to 24VDC (and stays shorted)</td>
<td>Switch releases ON terminal from 24VDC (and stays released)</td>
<td>n/a</td>
<td>ON will turn outputs ON if no output is MASTER overridden</td>
<td>OFF will turn outputs OFF if no output is MASTER overridden</td>
<td>n/a</td>
</tr>
<tr>
<td>“2 WIRE MOTION” Code: 3</td>
<td>Switch shorts ON terminal to 24VDC (and stays shorted)</td>
<td>Switch releases ON terminal from 24VDC (and stays released)</td>
<td>n/a</td>
<td>ON will turn outputs ON if no output is MASTER overridden AND IF ALL OTHER SWITCHES THAT ARE 2 WIRE MOTION ARE ALSO OFF</td>
<td>OFF will turn outputs OFF if no output is MASTER overridden</td>
<td>n/a</td>
</tr>
</tbody>
</table>
## Bantam Switch Description

<table>
<thead>
<tr>
<th>Master Switch</th>
<th>Code</th>
<th>Outputs ON terminal to 24VDC</th>
<th>Outputs OFF terminal to 24VDC</th>
<th>Outputs will alternate between MASTER ON and NORMAL release</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MASTER</strong></td>
<td>4</td>
<td>n/a</td>
<td>n/a</td>
<td>Switch shorts ON terminal to 24VDC</td>
</tr>
<tr>
<td><strong>3 WR MSTR ON/REL</strong></td>
<td>5</td>
<td>Switch shorts ON terminal to 24VDC</td>
<td>Switch shorts OFF terminal to 24VDC</td>
<td>ON will turn outputs ON and put them at MASTER priority</td>
</tr>
<tr>
<td>(Previously “3 WIRE MASTER”)</td>
<td></td>
<td></td>
<td></td>
<td>OFF will RELEASE outputs to lower priority inputs. If none are found outputs go OFF</td>
</tr>
<tr>
<td><strong>2 WR MSTR ON/REL</strong></td>
<td>6</td>
<td>Switch shorts ON terminal to 24VDC (and stays shorted)</td>
<td>Switch releases ON terminal from 24VDC</td>
<td>ON will turn outputs ON and put them at MASTER priority</td>
</tr>
<tr>
<td>(Previously “2 WIRE MASTER”)</td>
<td></td>
<td></td>
<td></td>
<td>OFF will RELEASE outputs to lower priority inputs. If none are found outputs go OFF</td>
</tr>
<tr>
<td><strong>3 WR MSTR ON/OFF</strong></td>
<td>7</td>
<td>Switch shorts ON terminal to 24VDC</td>
<td>Switch shorts OFF terminal to 24VDC</td>
<td>ON will turn outputs ON and put them at MASTER priority</td>
</tr>
<tr>
<td><strong>2 WR MSTR ON/OFF</strong></td>
<td>8</td>
<td>Switch shorts ON terminal to 24VDC (and stays shorted)</td>
<td>Switch releases ON terminal from 24VDC</td>
<td>ON will turn outputs ON and put them at MASTER priority</td>
</tr>
<tr>
<td><strong>3 WR MSTR REL/MST OFF</strong></td>
<td>9</td>
<td>Switch shorts ON terminal to 24VDC</td>
<td>Switch shorts OFF terminal to 24VDC</td>
<td>ON will RELEASE outputs to lower priority inputs. If none are found outputs go OFF</td>
</tr>
<tr>
<td><strong>2 WR MSTR REL/MST OFF</strong></td>
<td>10</td>
<td>Switch shorts ON terminal to 24VDC (and stays shorted)</td>
<td>Switch releases ON terminal from 24VDC</td>
<td>ON will RELEASE outputs to lower priority inputs. If none are found outputs go OFF</td>
</tr>
<tr>
<td><strong>3 WR ON/MSTR OFF</strong></td>
<td>11</td>
<td>Switch shorts ON terminal to 24VDC</td>
<td>Switch shorts OFF terminal to 24VDC</td>
<td>ON will turn outputs OFF and put them at MASTER priority</td>
</tr>
</tbody>
</table>

---

**PLCBuildings Lighting control systems**

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### Bantam Switch Description

<table>
<thead>
<tr>
<th>Code</th>
<th>Switch Action</th>
<th>Interface Action</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Switch shorts ON terminal to 24VDC (and stays shorted)</td>
<td>Switch releases ON terminal from 24VDC</td>
<td>n/a</td>
</tr>
<tr>
<td>13</td>
<td>Switch shorts ON terminal to 24VDC</td>
<td>Switch shorts OFF terminal to 24VDC</td>
<td>n/a</td>
</tr>
<tr>
<td>14</td>
<td>Switch shorts ON terminal to 24VDC</td>
<td>Switch releases ON terminal from 24VDC</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Switch shorts OFF terminal to 24VDC</td>
<td></td>
<td>n/a</td>
</tr>
</tbody>
</table>

- **“2 WR ON/MSTR OFF”**
- **“3 WR MSTR OFF/ON”**
- **“2 WR MSTR OFF/ON”**
- **“3 WIRE MOTION”**