



## IRC USER'S GUIDE

This manual applies to the following part numbers:

MODEL NUMBER	DESCRIPTION	0-10VDC Zones	Relay Outputs
MZD20-102	Dimming Version, Single Room, 120/277VAC	2	2
MZD30-101	Dimming Version, Single Room, 120/277VAC	3	1
MZD20-C02	Dimming Version, Single Room, 347VAC	2	2
MZD30-C01	Dimming Version, Single Room, 347VAC	3	1

Features vary between models. Not all information in this manual applies to all models.

NOTES

**DEFAULT FEATURES**

The IRC is shipped from the Factory with the following features and functions enabled:

- The system will respond to an Emergency Input signal and turn ON all Zones
- The system will respond to a Force OFF signal and turn OFF all Zones
- The system will function in the MANUAL ON mode
- Auto Cal is off
- Photocell is set to Fast response mode
- Burn In feature is off
- The Switch input is configured as a 4 Button Dimming Entry Station
- Blink Warn is disabled
- The Photocell maximum foot-candles range is set to 70 foot- candles
- The Partial ON target is set to 50%
- The Partial OFF target is set to 50%
- The Partial ON function is enabled

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## INSTALLATION

### **MOUNTING FEATURES**

The IRC is suitable for plenum use, indoor only, 0 - 40°C, 5 - 95% humidity non-condensing.

The supply circuit and load circuits of the IRC are pre-wired to the control board. Color coded lead wires are provided for quick connections in a junction box. One 3/4" threaded nipple is provided on the top of the IRC for this purpose.

There are three concentric knockouts provided in the Low Voltage Compartment of the IRC. They are combination 1/2" and 3/4" knockouts. There is one knockout available on each of the three sides of the Low Voltage compartment.

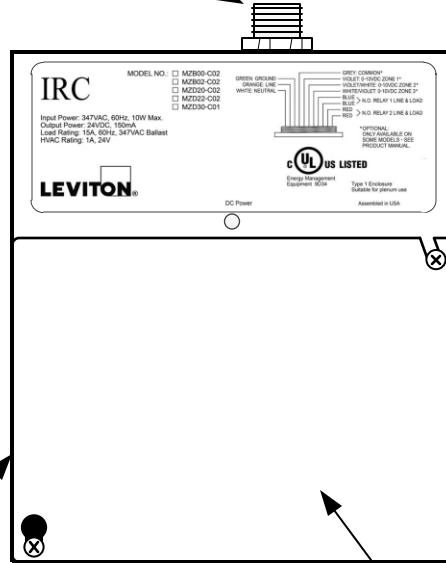
### **ENCLOSURE FEATURES**

The enclosure of the IRC is divided into two compartments. The Low Voltage Compartment is accessible through the cover-plate. The High Voltage Compartment has no serviceable components and is factory sealed to prevent access.

INSTALLATION

**Threaded Nipple**  
The fitting on the top of the IRC attaches directly to a junction box or enclosure. Two 0.2" mounting holes through the back of the IRC low voltage compartment, provide secure fastening to any flat surface.

**High Voltage Compartment**  
This area cannot be accessed in the field. Lead wires exit the compartment through the top of the enclosure. There are leads supplied for field connections to circuits that energize the IRC and feed the fluorescent fixture circuits.

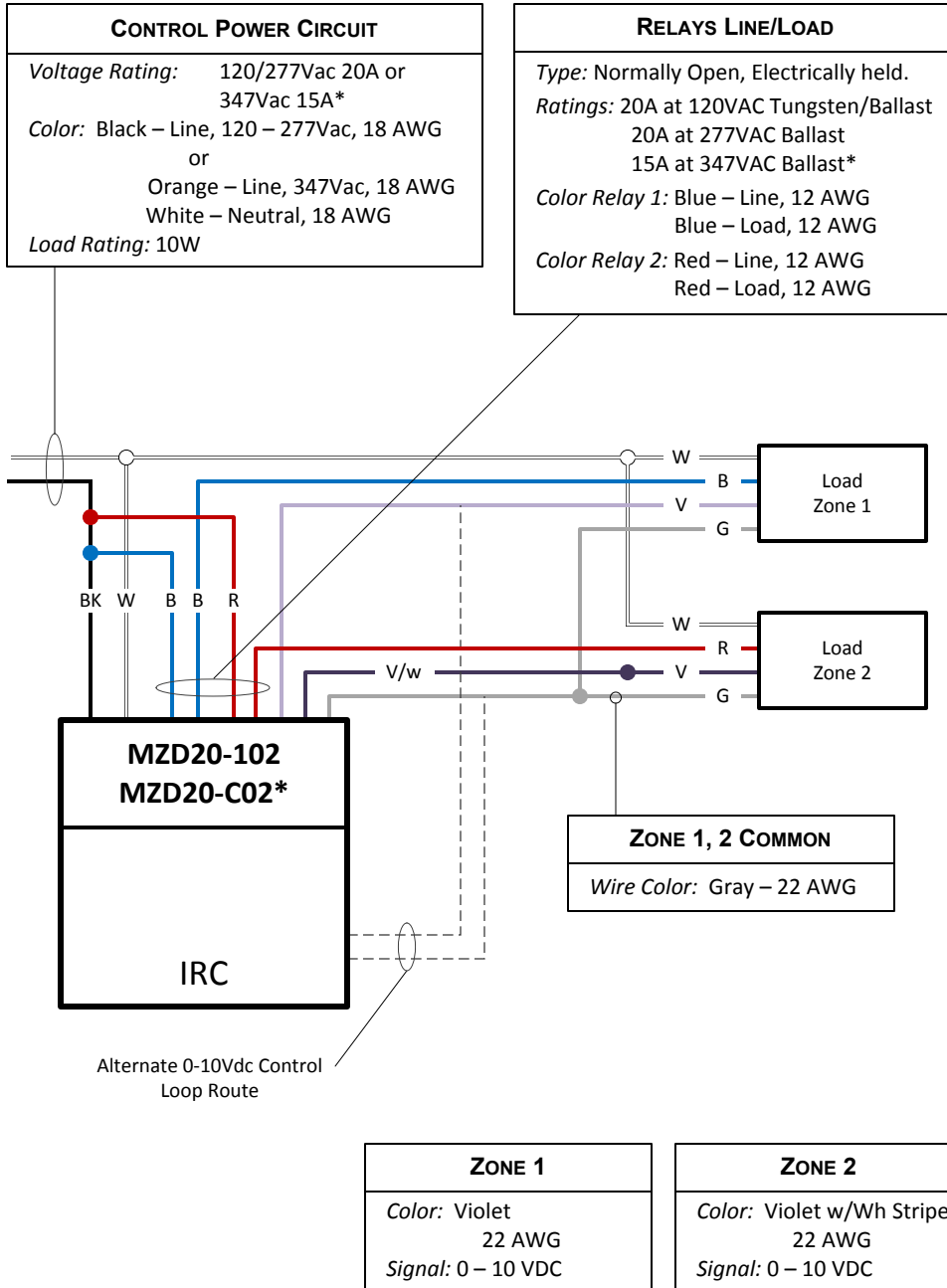


**Knockouts**  
There are three concentric knockouts provided in the Low Voltage Compartment of the IRC. They are combination 1/2" and 3/4" knockouts. There is one on each of the three external sides of the area.

**Low Voltage Compartment**  
This area contains all of the low voltage terminations required in the field. All of the configuration settings are made in this area as well. Class 2 wiring only.

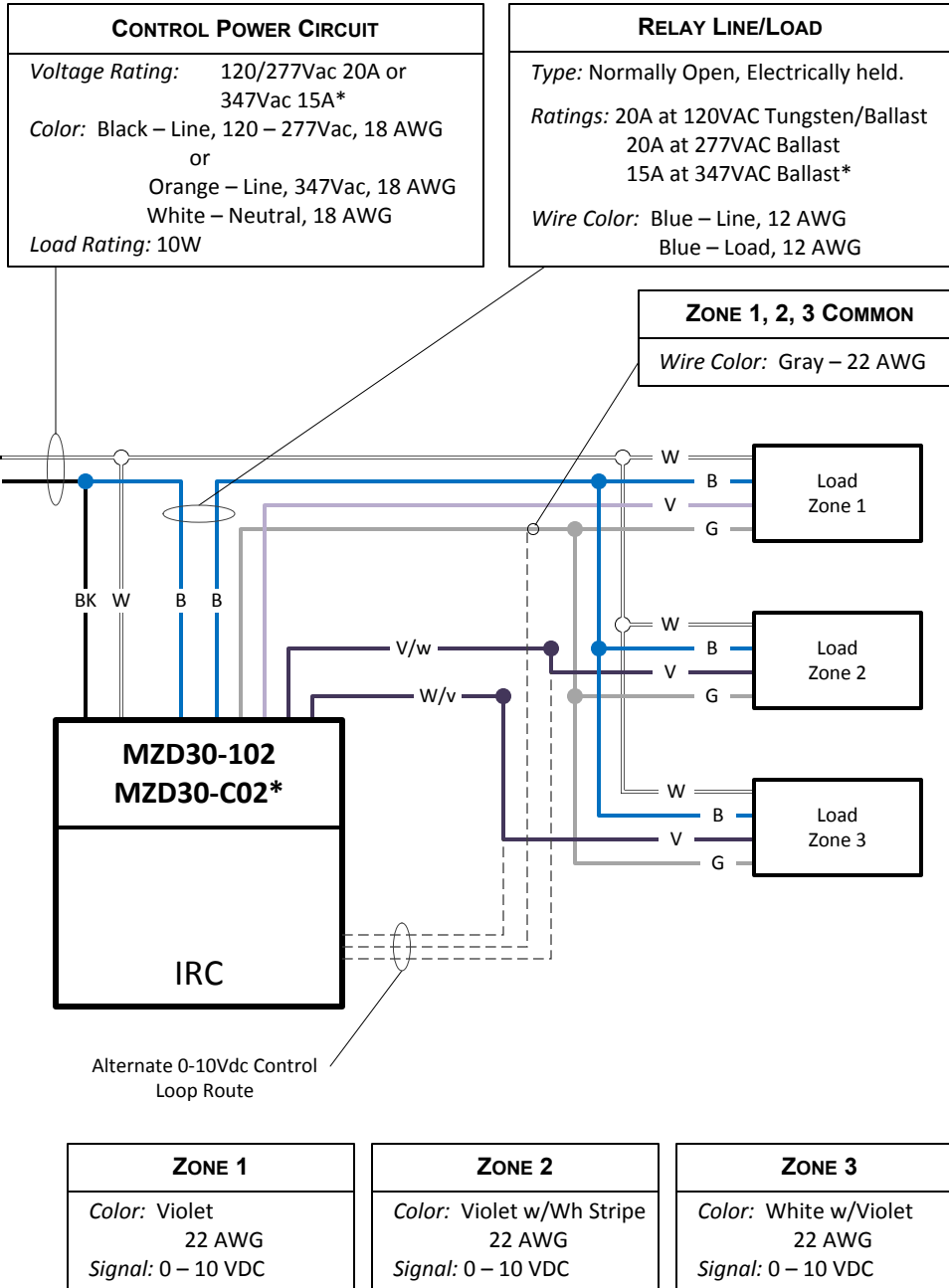
CONNECT LINE & LOAD VOLTAGE

### LINE VOLTAGE WIRING – 2 ZONE MODEL



CONNECT LINE & LOAD VOLTAGE

**LINE VOLTAGE WIRING – 2 ZONE MODEL**



CONNECT LOW VOLTAGE

**TB A.1**

**OCCUPANCY SENSOR DISABLE / EMERGENCY INPUT**

*Label:* OCC DISABLE / EMERGENCY

*Set by DIP Switch:* Block 3 No. 1

This is a +24V input signal. Function can be set to either mode exclusively.

**Occupancy Sensor Disable Mode**

When the input goes high (+24V) the IRC will disable the Occupancy Sensor input and there will be no change in the current state. When the input signal is removed, the Occupancy Sensor will return to the normal mode.

**Emergency Mode**

Emergency mode is triggered when the Emergency input is connected to the common. The common can be sourced from the unused Occupancy Sensor terminal block. When the signal is received, the IRC will turn ON all zones by turning ON all relays and raising any 0 – 10Vdc outputs to 10Vdc. The IRC zones will remain fully illuminated until the Emergency signal is removed.

**TB A.2**

**PHOTOCELL DISABLE / FORCE OFF**

*Label:* PC DISABLE / Force OFF

*Set by DIP Switch:* Block 3 No. 2

This is a +24V input signal. Function can be set to either mode exclusively.

**Photocell Disable Mode**

When the input goes high (+24V) the IRC will disable the Photocell input and there will be no change in the current level. When the input signal is removed, the Photocell input will return to the normal mode.

**Force OFF Mode**

The outputs of the IRC are Forced OFF when the Force OFF input is connected to +24Vdc. When the signal is received, the IRC will turn OFF all zones by opening all relays and lowering any 0 – 10Vdc outputs to 0 Vdc. The system will not respond to Entry Station button presses or Occupancy Sensor signals. The IRC zones will remain OFF until the Force OFF signal is removed.

**TB A.3**

**CLOCK INPUT – SWEEP OR PARTIAL OFF MODIFIER**

*Label:* CLOCK

This signal would originate from a timing system and is a +24V input signal. If Partial Off is active and the input goes high (+24V), the IRC will allow the Occupancy Sensor to turn OFF the zones .

When the signal is removed, the Occupancy Sensor will only reduce the light level to the preset minimal light level determined by Partial OFF functionality. If Partial OFF functionality is not active, the Clock signal will act as a Sweep and turn the lights OFF.

CONNECT LOW VOLTAGE

**TB A.4**

**LOAD SHED - DEMAND RESPONSE**

*Label: SHED*

This signal would originate from an energy management system and is a +24V input signal. When the input goes high (+24V) the IRC will reduce the output load levels based upon the position of the Shed trim pot dial. In the event that you are in daylighting mode and less artificial light is required to meet the target than is required by load shed, the lights will remain at the lower lighting level – meeting the target.

**TB A.5, A.6, A.7**

**OCCUPANCY SENSOR INPUT**

*Label: OCC*

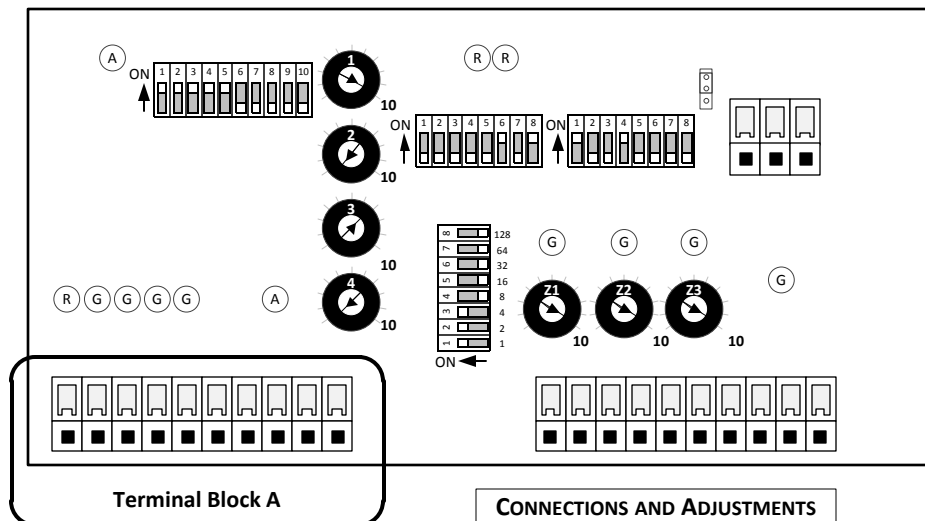
This three position terminal block is dedicated to the connection of the Occupancy Sensor. The Occupancy Sensor signal wire connects to the OCC Sensor Signal terminal. Power for the Occupancy Sensor is provided from the +24Vdc and Common terminals.

**TB A.8, A.9, A.10**

**PHOTOCELL INPUT**

*Label: PC*

This three position terminal block is dedicated to the connection of the Photocell. The Photocell signal wire connects to the Photocell Signal terminal. Power for the Photocell Sensor is provided from the +24Vdc and Common terminals.



CONNECT LOW VOLTAGE

**TB B.1, B.2**

**ZONE 1, 0-10Vdc**

*Label:* GRAY – COMMON

Violet – positive conductor

These terminals provide an alternate location for connecting to the dimming ballast or LED driver control circuit. The dimming circuit provides the analog output to control up to 20 dimming ballasts.

**TB B.3, B.4**

**ZONE 2, 0-10Vdc**

*Label:* GRAY – COMMON

Violet – positive conductor

These terminals provide an alternate location for connecting to the dimming ballast or LED driver control circuit. The dimming circuit provides the analog output to control up to 20 dimming ballasts.

**TB B.5, B.6**

**ZONE 3, 0-10Vdc (IF APPLICABLE)**

*Label:* GRAY – COMMON

Violet – positive conductor

These terminals provide an alternate location for connecting to the dimming ballast or LED driver control circuit. The dimming circuit provides the analog output to control up to 20 dimming ballasts.



CONNECTIONS AND ADJUSTMENTS

**TB B – 7,8,9,10****TB B – 11,12,13,14****LOW VOLTAGE SWITCH INPUT(S)**

<i>Label:</i>	<i>Switch 1</i>	<i>Switch 2 (if equipped)</i>
	TB B - 7 ON - ON Button Input	TB B - 11 ON - ON Button Input
	TB B - 8 OFF - OFF Button Input	TB B - 12 OFF - OFF Button Input
	TB B - 9 +24V - +24Vdc Power	TB B - 13 +24V - +24Vdc Power
	TB B - 10 Pilot - Pilot LED on Switch	TB B - 14 Pilot - Pilot LED on Switch

**Switch Types**

*Set by DIP Switch:* Block 2 Number 3

There are two general types of switch inputs; analog and switched.

**Analog**

In analog mode, the input is expecting to see a 0 - 24Vdc or a 0 - 10Vdc signal which is used to dim the light levels proportionately to the level of the analog input.

**Switched**

In the switched mode, the input is expecting to see a +24Vdc level to indicate that a switch is closed.

**Switch Button Action**

*Set by DIP Switch:* Block 2 Number 2

**Momentary**

The switch connected to these terminal blocks uses a pulse signal to communicate a manual change in state request.

**Maintained**

The switch connected to these terminal blocks holds a signal to communicate the desired state.

**Button Quantity**

*Set by DIP Switch:* Block 2 Number 1

**One Button Mode**

The switch connected to these terminal blocks uses the same button to turn on and turn off the lights. Push the button once to turn on, push the button a second time to turn off. The button signal wire should be connected to the On terminal. No wire is required at the Off terminal.

**Two Button Mode**

The switch connected to these terminal blocks uses two different buttons to turn on and turn off the lights. Push one button to turn on, push a different button to turn off. The signal wires from each of the buttons should be connected to their associated terminals.

CONNECT LOW VOLTAGE

**TB B – 7,8,9,10**  
**TB B – 11,12,13,14**

**LOW VOLTAGE SWITCH INPUT(s) CONTINUED**

<i>Label: Switch 1</i>	<i>Switch 2 (if equipped)</i>
TB B- 7 ON - ON Button Input	TB B - 11 ON - ON Button Input
TB B - 8 OFF - OFF Button Input	TB B - 12 OFF - OFF Button Input
TB B - 9 +24V - +24Vdc Power	TB B - 13 +24V - +24Vdc Power
TB B - 10 Pilot - Pilot LED on Switch	TB B- 14 Pilot - Pilot LED on Switch

**Supply**

The +24V source terminal supplies the power required to energize the Low Voltage switch circuit. This source is shared with all circuits supplied from the +24V power supply to a maximum of 120 mA.

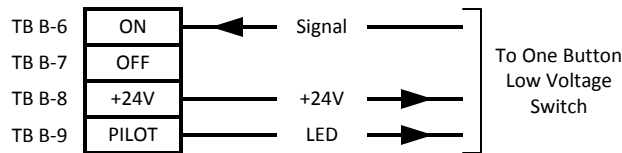
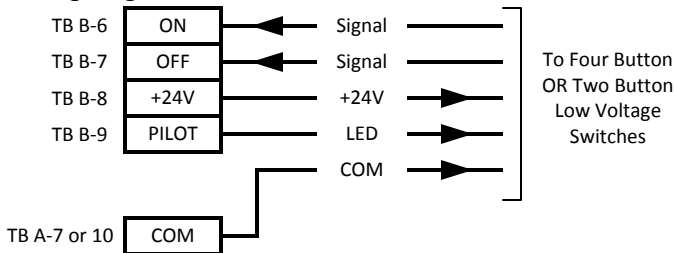
**Switch Connections**

For a complete description of switch behaviors refer to the Settings section. Wiring of the Low Voltage switch must match the manufacturer recommendations.

**Pilot**

This is the Pilot light output. To illuminate the button on the Low Voltage switch, connect the appropriate wire from the switch to the Pilot terminal. If the button does not require illumination no wire will be present. The Pilot output connects to common to turn on the pilot light in your control device.

**Wiring Diagrams**



CONNECT LOW VOLTAGE

**TB C – 1,2,3**

**EMERGENCY / HVAC RELAY**

*Label:* RLY COM – COMMON  
RLY NC – Normally Closed  
RLY NO – Normally Open Contacts

There is one Low Voltage relay output rated for 1A @ 24V which can be switched between HVAC and Emergency output functionality. This terminal block is connected to the Emergency Output / HVAC relay.

**Jumper Settings**

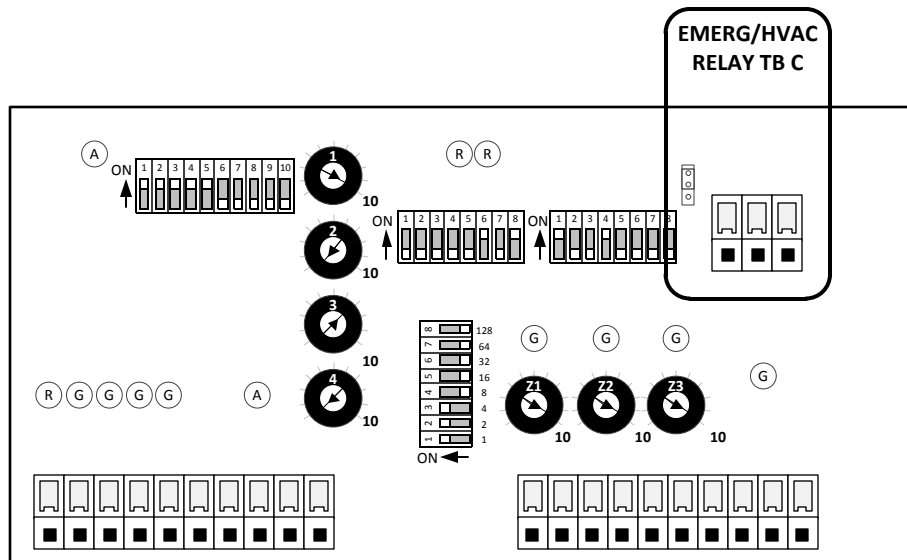
A three (3) position pin header is located adjacent to the terminal block. The jumper configuration of this header determines the functionality of the relay.

**HVAC**

A jumper between pins 1 and 2 will result in HVAC functionality. In this mode the relay will change state when the room is occupied. In occupied state NO (normally open) contact is closed.

**Emergency**

A jumper between pin 2 and 3 will result in Emergency output functionality. In this mode the relay will change state when an Emergency Input signal is detected. In normal, non-emergency state the NO (normally open) contact is closed.



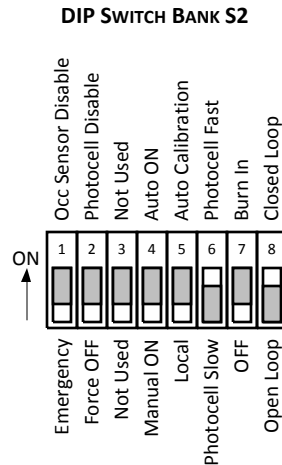
CONNECTIONS

CONFIGURE DIP SWITCH SETTINGS

**EMERGENCY / OCCUPANCY SENSOR DISABLE**

*DIP Switch:* Block 2 Switch 1  
*Label:* Emerg / Occ Disable

This configures the response to a signal (common) at the OCC Disable/Emergency input terminal. If the switch is in the off position (EMERG), the response to a signal will be to turn all relays on and raise all 0 – 10V outputs to ten volts. During this condition no other control will have any effect over the outputs. If this switch is set to on (OCC DISABLE), the Occupancy Sensor input will be disabled and no change in the current zone state will occur when +24Vdc is received by the input. When the signal is removed, the IRC will return to normal operation.



**FORCE OFF / PHOTOCCELL DISABLE**

*DIP Switch:* Block 2 Switch 2  
*Label:* ForceOFF / PC Disable

This configures the response to a signal (+24V) at the Force OFF/Photocell Disable input terminal (TB1-2). If the switch is in the off position (Force OFF), the response to a signal will be to turn all relays OFF and lower all 0 – 10V outputs to zero volts. During this condition no other control will have any effect over the outputs. If this switch is set to ON (Photocell DISABLE), the photocell will be disabled. When the signal is removed, the IRC will return to normal operation.

**NOT USED**

*DIP Switch:* Block 2 Switch 3  
*Label:* Local / Net Enabled

**MANUAL ON / AUTO ON**

*DIP Switch:* Block 2 Switch 4  
*Label:* Man ON / Auto ON

This switch determines the method for turning zones ON in a dark room. In the OFF position (MANUAL ON) the IRC will turn on all zones only with an Entry Station button press. In this state the Occupancy Sensor will turn all of the zones OFF. In the ON position (AUTO ON), the IRC will turn ON and OFF zones in response to signals from the Occupancy Sensor. Occupancy will turn ON all zones and vacancy will turn OFF all the zones. Entry Station button press will also change the state of the lighting zones.

**LOCAL / AUTO CALBRATION**

*DIP Switch:* Block 2 Switch 5

*Label:* Local / Auto Cal

The setting activates the Auto Calibration cycle that sets the target level for the photocell and Daylight Harvesting functions. For more information, see the discussion on the Auto Calibration feature later in this guide.

**PHOTOCELL SLOW RESPONSE / PHOTOCELL FAST RESPONSE**

*DIP Switch:* Block 2 Switch 6

*Label:* PC Slow / PC Fast

This setting determines the speed at which the system will respond to changes in light levels detected by the Photocell. In the off position (PC Slow), the response time will be 30 minutes. In the on position (PC Fast), the response time will be 30 seconds.

**BURN IN OFF / BURN IN ACTIVATE**

*DIP Switch:* Block 2 Switch 7

*Label:* Off / Burn In

This setting activates the 100 Hour Burn In feature when in the ON position. It is necessary for fluorescent lamps to be conditioned prior to continuous service. This will ensure smooth dimming from the light fixture. This is not required for LED fixtures.

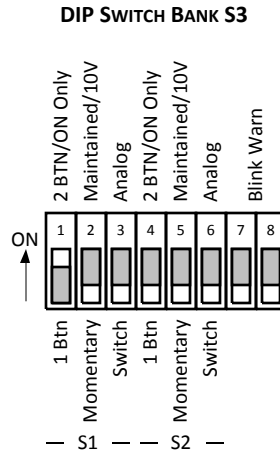
**OPEN LOOP / CLOSED LOOP**

*DIP Switch:* Block 2 Switch 8

*Label:* Open Loop / Closed Loop

The switch determines whether the IRC should operate in open loop or closed loop daylight harvesting mode. In closed loop mode, the photocell should be sensing the amount of ambient or task light in the room. In open loop mode, the photocell should be sensing the amount of light coming in through the skylight or windows. For details on the two methods of operation, please see the discussion later in this guide.

CONFIGURE DIP SWITCH SETTINGS



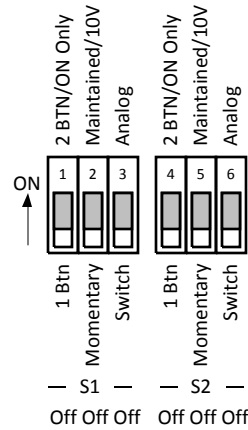
**1 BUTTON ENTRY STATION CONFIGURATION  
( RLVSW-1Lx )**

*DIP Switch:* Block 3 Switch 1, 2, 3 or 4, 5, 6

Activating the ON signal input with a +24Vdc level shall cause the associated room to fade the lights to the daylighting target level over three (3) seconds. If daylighting is not active in the space, this function will fade the lights to the level of the maximum trim pot. If the zone is already ON, then the lights will fade to OFF over one (1) second.

Units that have Non- Partial Level dimming activated shall dim the room on and off. Pressing the button shall fade the room ON in three (3) seconds. Pressing the button again shall fade the room down to OFF in one (1) second. If the button is held, dimming shall continue until either FULL ON or OFF is established or the button is released. When holding the button, both up and down fade shall be three (3) seconds.

If the zone is OFF, tapping the button shall turn it ON. If Partial Level is active and the zones are OFF, the first press will turn ON zones to the Partial On Target level. The second press will take the zones to full or the maximum level. A third press will fade the zones to OFF.



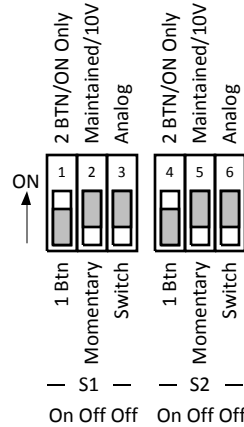
**2 BUTTON ENTRY STATION CONFIGURATION  
( RLVSW-2Lx )**

*DIP Switch:* Block 3 Switch 1, 2, 3 or 4, 5, 6

Activating the ON signal input with a +24VDC level shall cause the associated room to fade the lights to the daylighting target level over three (3) seconds. If daylighting is not active in the space, this function will fade the lights to the level of the maximum trim pot. If the zone is already ON, then the lights will fade to OFF over one (1) second.

Units that have Non- Partial Level dimming activated shall dim the room on and off. Pressing the button shall fade the room to ON in three (3) seconds. Pressing the button again shall fade the room down to OFF in one (1) second. If the button is held, dimming shall continue until either FULL ON or OFF is established or the button is released. When holding the button, both up and down fade shall be three seconds.

If the zone is OFF, pressing the ON button shall turn the zone ON. If Partial Level is active and the zones are OFF, the first press will turn ON zones to the Partial On Target level. The second press will take the zones to full or the maximum level. A press of the OFF button will turn the zones OFF.

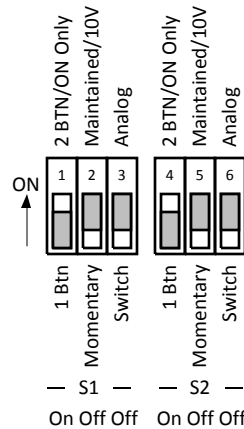


**4 BUTTON ENTRY STATION CONFIGURATION  
( RLVSW-4Lx )**

*DIP Switch:* Block 3 Switch 1, 2, 3 or 4, 5, 6

Activating the ON signal input with a +24Vdc level shall cause the associated room to fade the lights to the daylighting target level over three (3) seconds. If daylighting is not active in the space, this function will fade the lights to the level of the maximum trim pot. If the zone is already ON, then the lights will fade to OFF over one (1) second.

Units that have Non- Partial Level dimming activated shall dim the room on and off. Pressing the ON button shall fade the room to ON in three (3) seconds. Pressing the OFF button shall fade the room down to OFF in one (1) second. If the button is held, dimming shall continue until either FULL ON or OFF is established or the button is released. When holding the button, both up and down fade shall be three (3)seconds. Pressing the Bright (▲) button will temporarily increase the light level above the Daylight Harvesting target level. Pressing the Dim (▼) button will temporarily decrease the light level below the Daylight Harvesting target level. If the zone is OFF, pressing the ON button shall turn the zone ON. If Partial Level is active and the zones are OFF, the first press will turn ON zones to the Partial On Target level. The second press will take the zones to full or the maximum level. A press of the OFF button will turn the zones OFF.



CONFIGURE DIP SWITCH SETTINGS

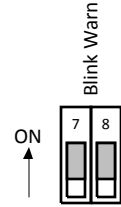
**BLINK WARN OVERRIDE TIME**

*DIP Switch:* Block 3 Switch 7  
Block 3 Switch 8

*Label:* Blink Warn

This setting determines the length of time the zones will remain on once the blink warn feature is activated and a request for the override has been received. This request can be made by pressing the On button at the low voltage switch. Pilot output will flash on and off to indicate blink warn is active. Overriding blink warn by tapping the On button will stop the flashing.

If no button is pressed after the Blink, the zones will turn OFF in 5 minutes.



OFF + OFF = OFF  
OFF + ON = 30 min  
ON + OFF = 1 hr.  
ON + ON = 2 hrs.

## ADJUSTMENTS - DIALS

1

### MAXIMUM TRIM LEVEL DIAL

#### TASK TUNING

Adjust this trim pot to set the upper limit for the 0 – 10VDC Ballast outputs. The full range of the pot adjusts the upper limit in a range from 6 volts to 10 volts.

#### Default

The default position is full on (counterclockwise).

2

### MINIMUM TRIM LEVEL DIAL

#### TASK TUNING

Adjust this trim pot to set the minimum level the 0 – 10Vdc outputs will dim to during daylight harvesting mode operation. The full range of the pot adjusts the lower limit in a range from 0 volts to 4 volts.

#### Default

The default position is full off (clockwise).

3

### LOAD SHED DIAL – DEMAND RESPONSE

Adjust this trim pot to determine the action taken when the DEMAND RESPONSE (SHED) input is active.

#### Application

All 0 – 10Vdc outputs will go to the level determined by the position of the Load Shed pot if the output level of the zone is currently higher than that Shed level setting. If the Load Shed pot is adjusted above the Max pot, no change shall occur.

4

DAYLIGHT HARVESTING TARGET LEVEL OR LLF DIAL

**Open Loop**

In this mode, the Offset dial is used to enter the desired footcandle value from 0 – 100 footcandles as measured at the photocell. A dial setting of zero (0) equals zero (0) foot-candles, a dial setting of 10 equals 100 foot-candles.

**Closed Loop**

In this mode, the Offset Dial is used to set the photocell target value. The dial scale of 0-10 represents a proportional 0-10 volt signal from the photocell. However, if you are using AutoCal (DIP switch S2.5 is in the ON position), the Offset dial defines the Light Loss Factor (LLF) applied to the target level. The LLF is 20% when the dial is set to the zero (0) position and 0% when the dial is in the 10 position. The assumption is that the AutoCal occurs when lamps are new, the fixtures are clean, and the room is performing to the initial lumen output not the maintained lumen output.

Z1, Z2, Z3

DAYLIGHT HARVESTING TARGET LEVEL OFFSET DIAL

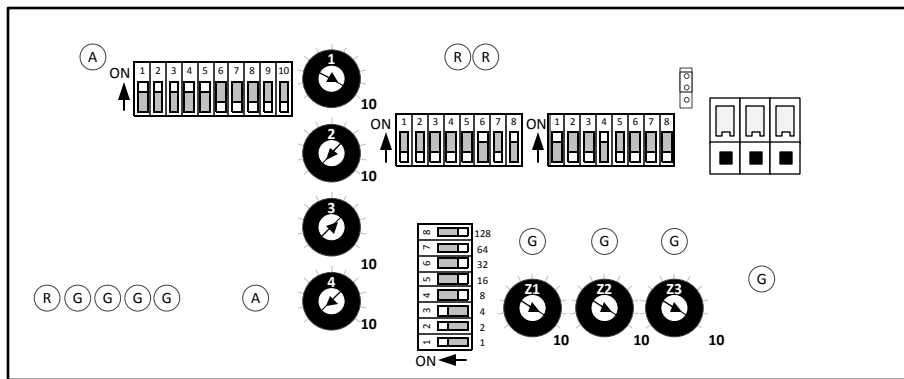
These dials are used to determine the amount of daylight control that is applied to each zone. The full range of rotation represents 5-100% of the photocell’s footcandle range. The procedure for adjusting these dials is different depending upon whether the IRC has been configured for Closed Loop or Open Loop control.

**Open Loop:** if daylight harvesting is not desired, turning the dials to full (clockwise) shall disable the dimming function for the corresponding zone. When at full range, the lights of the zone will stay On at the Max output level.

**Closed Loop:** a zone can be excluded from Daylight Harvesting by setting the dial to <5%.

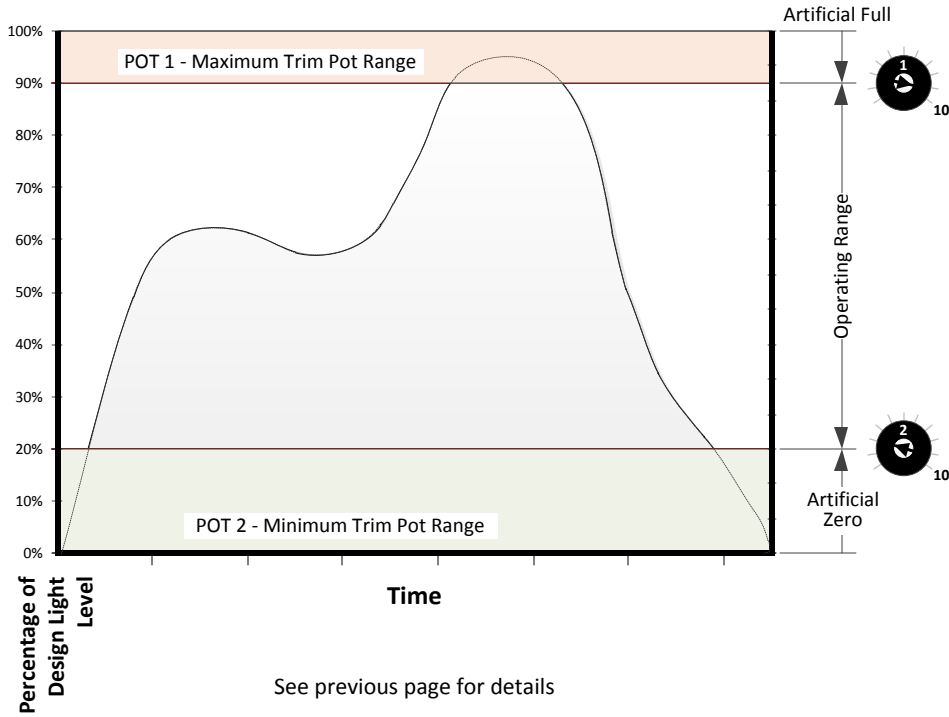
**Default**

The default position is full on (clockwise).



ADJUSTMENTS DIALS

### Performance Curve – Task Tuning Illustrating Maximum and Minimum Trim Pot Ranges



**BURN-IN FEATURE**

*Set by DIP Switch: Block 3 Number 7 – ON position*

The **Burn IN** feature of the IRC provides an automatic initializing cycle for new fluorescent lamps. The Burn In feature will maintain the fluorescent fixtures at full illumination levels for 100 hours. At the conclusion of the **Burn IN** cycle the IRC will exit the **Burn IN** routine and enter normal operation.

**When to use it**

Some manufacturers of fluorescent lamps require the lamp to be run at the full illumination level for a 'burn in' period prior to any dimming activity. This feature provides an easy method to satisfy that requirement.

**Start**

To initialize this function, move the DIP switch labeled Burn In to the 'ON' position.  
*Observe:* The LED above the DIP switch will glow red and will remain in that state until the cycle is complete. The fluorescent fixtures will also be illuminated at their full level when turned ON until all Zones have been on for 100 hours.

**Stop**

The cycle can be stopped at any time by turning off the DIP switch.  
*Observe:* The red LED above the DIP switch will turn off. When cycle is complete, the LED will turn off even with the DIP switch in the On position.

**Restart**

To restart this function, move the DIP switch labeled Burn In to the 'ON' position.  
*Observe:* The observations will be the same as the Start step.

## **AUTO CALIBRATION (AUTO CAL)**

*(Closed Loop Operation Only)*

*Set by DIP Switch: Block 3 Number 5 – ON position*

The **Auto Calibration** feature of the IRC Power Pack provides an automatic daylight harvesting calibration. During the 24 hour calibration period all fluorescent fixtures will remain at full illumination levels and cannot be turned off. The IRC will monitor the Photocell readings to determine the lowest level during the calibration period. This reading typically occurs at night. At the conclusion of the **Auto Calibration** period the IRC will enter normal operation.

*Note: Auto Calibration is only applicable to closed loop photocell operation. When the device is configured in open loop mode, auto calibration can be activated but the results of such will have no effect on the configuration or output of the IRC.*

### **Start**

To initialize this function, move the DIP switch labeled Auto Cal to the 'ON' position.  
*Observe:* The LED above the DIP switch will begin to flash on and off in a steady pattern until the calibration period is complete. The fluorescent fixtures will also be illuminated at their full level for the duration of the cycle.

### **Stop**

The cycle can be stopped at any time by turning off the DIP switch.  
*Observe:* The red LED above the DIP switch will turn off.

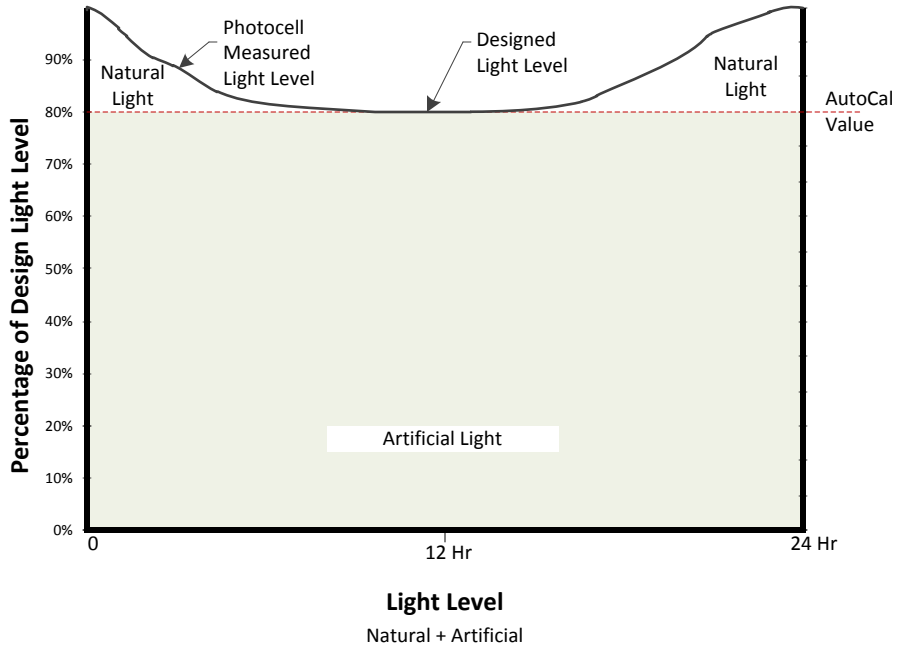
### **Restart**

To restart this function, move the DIP switch labeled Auto Cal to the 'OFF' position and then back to the 'ON' position.

### **End of Cycle**

*Observe:* The LED will be on steady at the end of the calibration period and the IRC will automatically enter normal operation.

### Performance Curve Illustrating AutoCal Feature



## DAYLIGHT HARVESTING MODES

### Open-Loop Operation

Typical open-loop systems employ a photocell positioned towards the daylight source (window, skylight, etc).

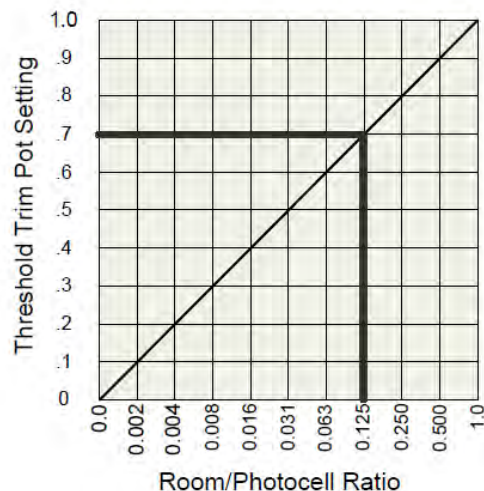
Important! For best results, the photocell should receive as little electric light as possible.

To determine the setting of each of the PC Level trim pots, light meter readings must be taken during the day with the electric lights off and during consistent daylight (i.e. if a cloud covers the sun during meter recording, start over or wait for the cloud to pass). Position the light meter at the photocell, pointing it in the same direction as the photocell. Record the value. Next position the light meter at the work surface in each room pointing it towards the ceiling. Record the value in each room.

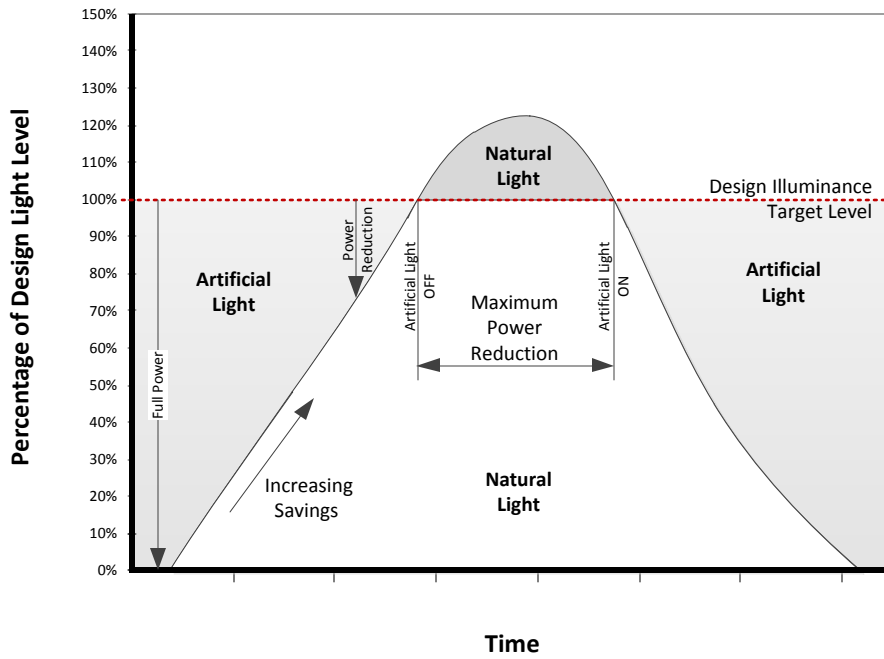
Now calculate the ratio of the zone value to the photocell value for each room. Use the chart below to determine the PC Level setting. For example, if the photocell reading is 400 foot candles and zone 1's reading is 50 foot candles, the ratio is  $50/400 = 0.125$ . Find 0.125 on the chart's x-axis (Room/Photocell Ratio) and follow a straight line up until it intersects the diagonal. Then from that point, follow a straight line horizontally to the left on the chart to obtain the trim pot setting noted on the y-axis. In this case the setting would be 7.

### Closed-Loop Operation

Closed-loop systems position the photocell so that it measures the amount of light in the room being controlled. It is important to correctly position the photocell so that it receives either the average amount of ambient light or if sensing task lighting that it is directed at a surface which will reflect an appropriate representation of the amount of task lighting in the room.



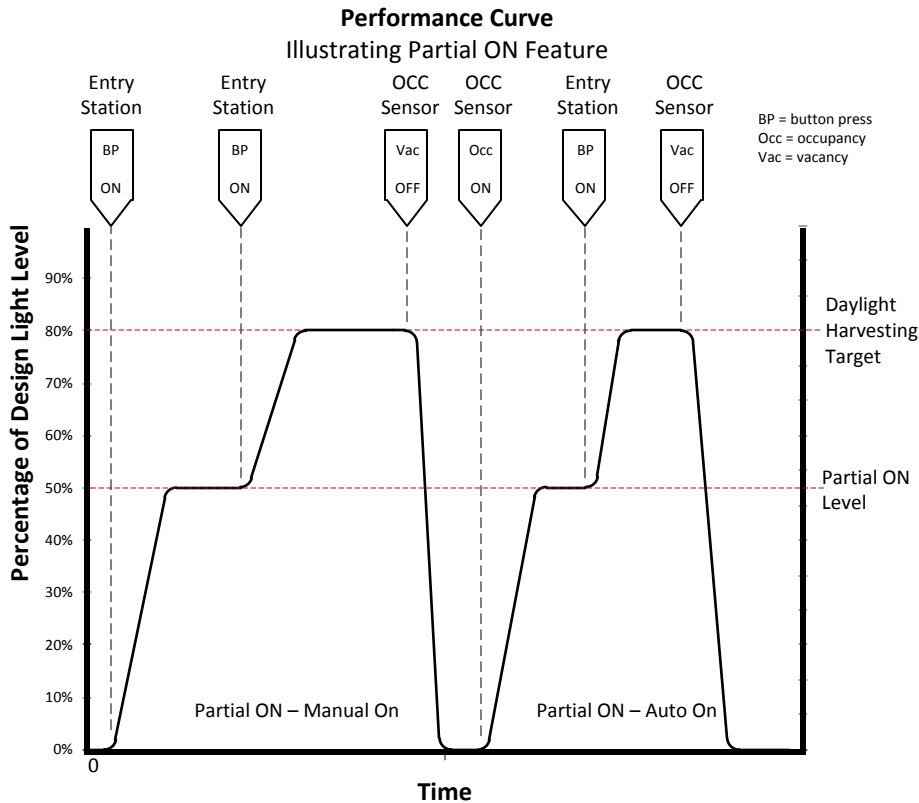
DAYLIGHT HARVESTING BASICS



Blend of Light Sources

Artificial and Natural Light

FEATURE: PARTIAL ON



**PARTIAL ON – MANUAL ON**

Set by DIP Switch: Block 2 No. 4

Set to: Manual ON

Switch: Block 1 No. 9, 10

Set to: Partial ON

When activated, this provides Title 24 2013 functionality for Manual ON to a preset level other than 100% full ON. When entering a dark room, the zones will be illuminated to a preset (50% shown) with a button press of the ON button of the Entry Station. A second press of the same button will cause the zones to go to the Daylight Harvesting target level. The Occupancy Sensor or the Switch will turn OFF the zones.

**PARTIAL ON - AUTO ON**

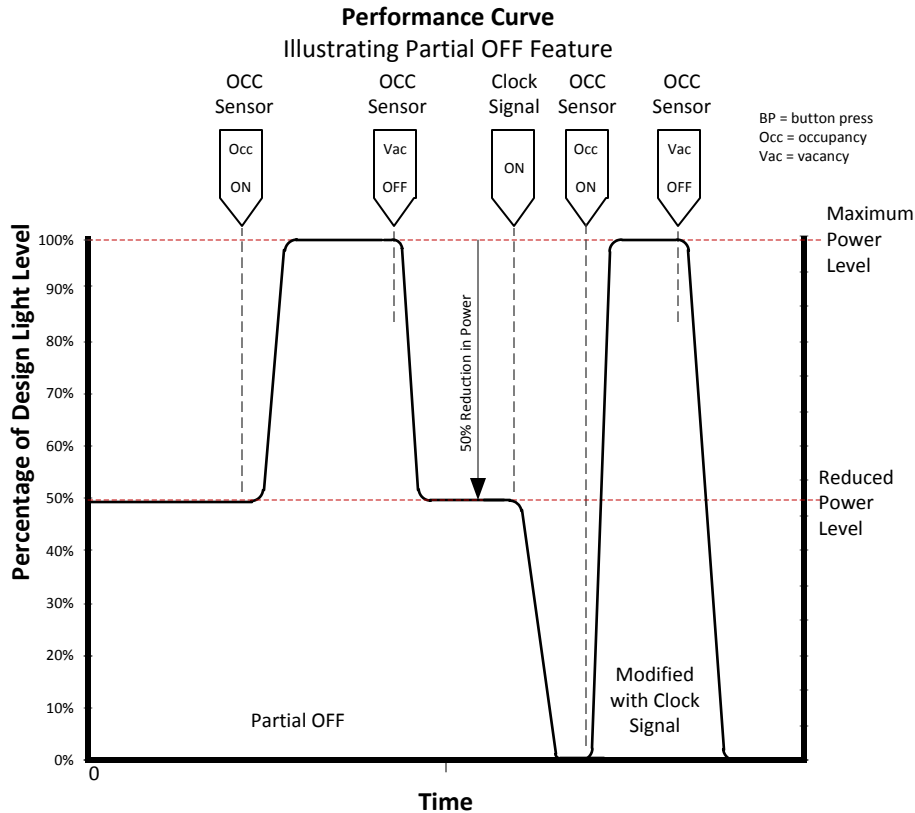
Set by DIP Switch: Block 2 No. 4

Set to: Auto ON

Switch: Block 1 No. 9, 10

Set to: Partial ON

When activated, this provides functionality for Auto ON to a preset level other than 100% full ON. When entering a dark room, the zones will be illuminated to a preset (50% shown) with detection by the Occupancy Sensor. A second press of the ON button will cause the zones to go to the Daylight Harvesting target level. The Occupancy Sensor or the switch will turn OFF the zones.



**PARTIAL OFF**

Set by DIP Switch: Block 2 No. 4

Set to: Auto ON

Switch: Block 1 No. 9, 10

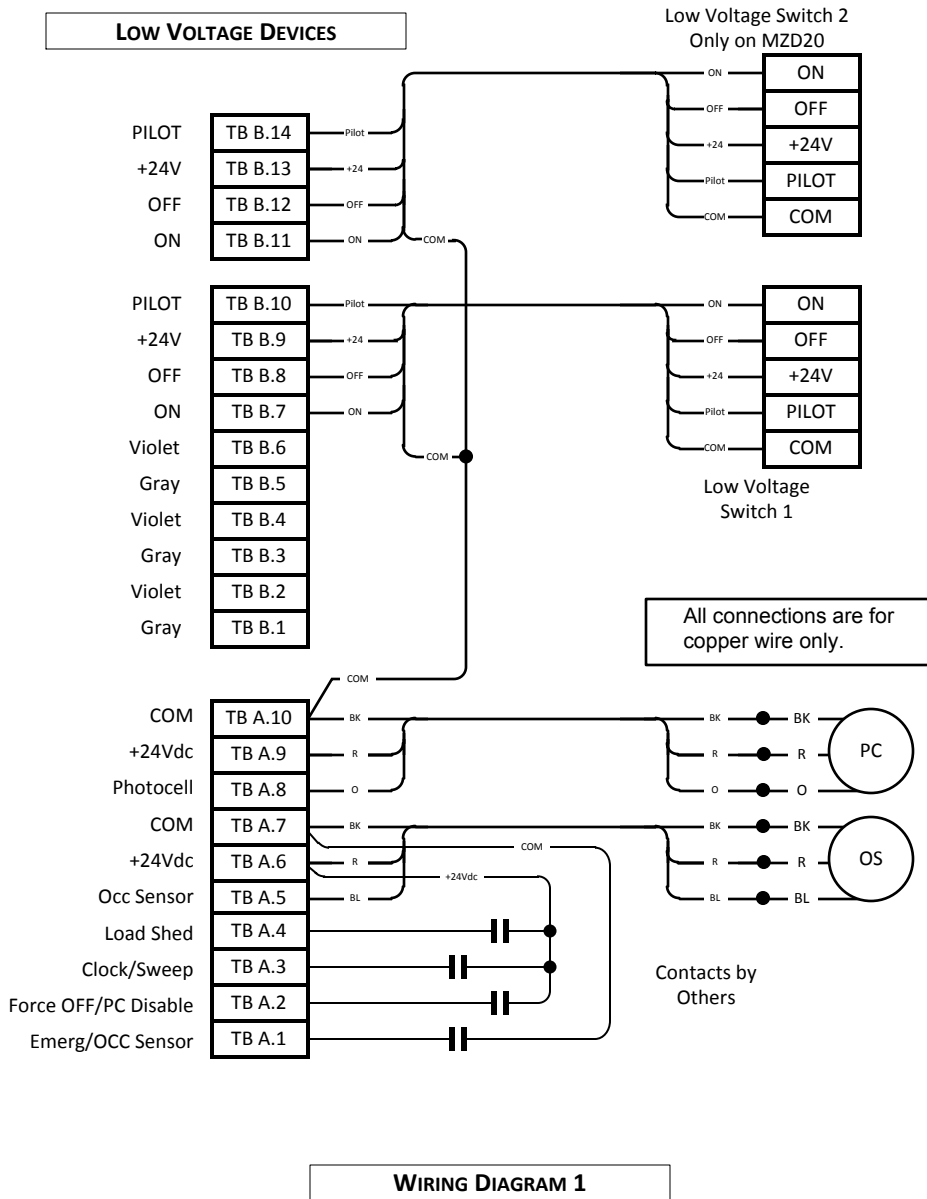
Set to: Partial OFF

When activated, this provides Title 24 2013 functionality for maintaining a minimum zone output. The function will initiate with a power cycle. The zones will be illuminated to a predetermined minimum level (50% shown). When occupancy is detected, the Occupancy sensor will set the zones to Full ON or the setting of the Maximum Trim Pot. Upon vacancy, the zones will return to the predetermined minimum level and remain there.

**PARTIAL OFF + CLOCK SIGNAL**

The predetermined minimum level will be ignored if a signal is received and held at the Clock Input (TB1-3). This will allow the Occupancy Sensor to turn the zones completely OFF when vacancy is detected. The Occupancy Sensor will turn ON the zones when occupancy is detected.

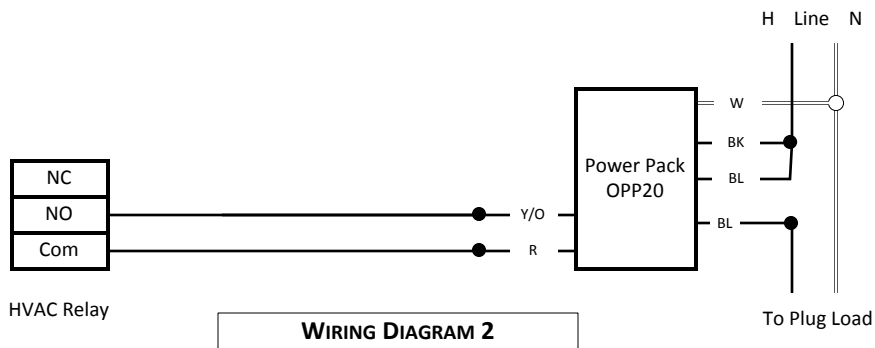
LOW VOLTAGE WIRING DIAGRAMS



### PLUG LOAD CONTROL WITH OPP20

When the occupancy sensor detects occupants in the space, the HVAC relay will change state. In this case the Normally Open contacts are used thus enabling power at the receptacle.

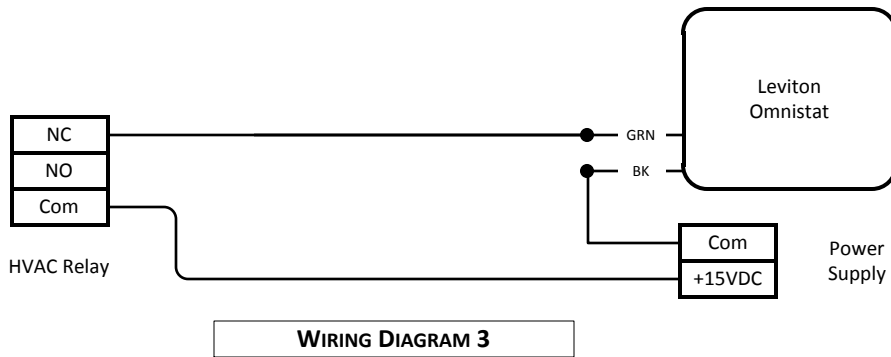
When the occupancy sensor no longer detects occupants, the HVAC relay contacts will open to cause the Power Pack to disable power at the receptacle.



### OMNISTAT REMOTE SETBACK SWITCH

When the occupancy sensor detects occupants in the space, the HVAC relay will change state. In this case the Normally Closed contacts are used, this allows normal operation of the thermostat. When the occupancy sensor no longer detects occupants, the HVAC relay contacts will close to enable the thermostat set back level.

This requires a +5-15VDC power supply.



CONFIGURATION SETTINGS

DIP Switch Bank S1 Occupancy Sensor Behavior	Switch Number	Value When Set to ON	Default Position	<p>This is the Partial ON or OFF target value associated with the Occupancy Sensor</p> <p>Value Shown 10 + 10 + 10 + 10 + 10 = 50%</p> <p>Any switch in the ON position adds a value of 10% to the total</p>
	1	10%	ON*	
	2	10%	ON*	
	3	10%	ON*	
	4	10%	ON*	
	5	10%	ON*	
	6	10%	OFF*	
	7	Spare	OFF*	
	8	Spare	OFF*	
DIP Switch Combinations Enables or Disables These Functions	9	OFF	No Partial ON or Partial OFF control	
	10	OFF		
	9	ON*	Partial ON Is Active	
	10	OFF*		
	9	OFF	Partial OFF Is Active	
	10	ON		

DIP Switch Bank S4 Photocell Maximum FC	Switch Number	Value When Set to ON	Default Position	<p>Value Shown 1 + 2 + 4 = 7</p> <p>7 x 10FC = 70FC</p> <p>The photocell is configured for maximum range of 70FC</p>
	1	1	ON*	
	2	2	ON*	
	3	4	ON*	
	4	8	OFF*	
	5	16	OFF*	
	6	32	OFF*	
	7	64	OFF*	
	8	128	OFF*	

\*denotes Factory Default settings

CONFIGURATION SETTINGS

Switch Number	Function	
	OFF Position	ON Position
1	<b>Emergency*</b>	Occ Sensor Disable
2	<b>Force OFF*</b>	Photocell Disable
3	<b>Not Used*</b>	Not Used
4	<b>Manual ON*</b>	Auto ON
5	<b>Burn In Local*</b>	Auto Calibration
6	Photocell Slow	<b>Photocell Fast*</b>
7	<b>Burn In OFF*</b>	Burn In Activate
8	Open Loop	<b>Closed Loop*</b>

Switch Number	Function		
	OFF Position	ON Position	
1	Switch 1 – 1 Button	<b>Switch 1 – 2 Button ON Only*</b>	
2	<b>Switch 1 – Momentary</b>	Switch 1 – Maintained	
3	Switch 1 – <b>Switch Button*</b>	Switch 1 – Analog*	
4	Switch 2 – 1 Button	Not Used On 3 Zone Model	
5	Switch 2 – Momentary		Switch 2 – 2 Button ON Only
6	Switch 2 – Switch Button		Switch 2 - Maintained
7	<b>OFF*</b>	Blink-Warn OFF	<b>DIP Switch Combinations Enables or Disables the Blink- Warn Function</b>
8	<b>OFF*</b>		
7	OFF	Blink-Warn Delay 30 minutes	
8	ON		
7	ON	Blink-Warn Delay 2 Hours	
8	ON		

\*denotes Factory Default settings

#### Limited 2 Year Warranty

Leviton LES Division of Leviton Manufacturing Co. Inc warrants its Dimmer Systems and Controls to be free of material and workmanship defects for a period of two years after system acceptance or 26 months after shipment, whichever comes first. All equipment shipped back to Leviton must be carefully and properly packed to avoid shipping damage. Replacements or repaired equipment will be returned to sender freight prepaid, F.O.B. factory. Leviton is not responsible for removing or replacing equipment on the job site, and will not honor charges for such work. Leviton will not be responsible for any loss of use time or subsequent damages should any of the equipment fail during the warranty period, but agrees only to repair or replace defective equipment returned to its plant in Tualatin, Oregon. This Warranty is void on any product that has been improperly installed, overloaded, short circuited, abused, or altered in any manner. Neither the Seller nor Leviton shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or inability to use the equipment. This Warranty does not cover lamps, ballasts, and other equipment which is supplied or warranted directly to the user by their manufacturer. Leviton makes no warranty as to the Fitness to Purpose or other implied Warranties.

**WARNING:** TO AVOID FIRE, SHOCK, OR DEATH, TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND TEST THAT POWER IS OFF BEFORE SERVICING OR WIRING!

**WARNING:** TO BE INSTALLED AND/OR USED IN ACCORDANCE WITH APPROPRIATE ELECTRICAL CODES AND REGULATIONS.

**CAUTION:** IF YOU ARE UNSURE ABOUT ANY OF THESE INSTRUCTIONS, CONSULT AN ELECTRICIAN.

**CAUTION:** USE THIS DEVICE ONLY WITH COPPER OR COPPER CLAD WIRE.