



DESCRIPTION

The RPCON is the control/calibration module for a GE daylighting controller. A complete assembly would consist of the control module and one of the following remotely mounted GE photodiode daylight sensors:

*Indoor Sensor (RPSEN-IN)
Outdoor Sensor (RPSEN-OUT)
Atrium Sensor (RPSEN-ATR)
Skylight Sensor (RPSEN-SKY)*

For normal installations, the sensor is wired to the control module with #20/4 ROSWIRE-4.

FEATURES

- Control module/sensor combinations designed for the specific daylighting application.
- For each combination, calibration setpoints read out directly in footcandles.
- Adjustable footcandle setpoints for both high- and low-trip to create a dead band.
- Switch-enabled time-delay of 3 minutes.
- Lockout switch for disabling the sensor.
- Three separate output channels, each capable of driving up to three GE RR7 relays, or triggering the input to an electronic switch (such as the RMSx Master Sequencer).
- Master override of each channel.
- Master control of all three channels.

Before starting, read the Installation Instructions inside. If you have questions call:

1-877-LTG-CNTL (584-2685)

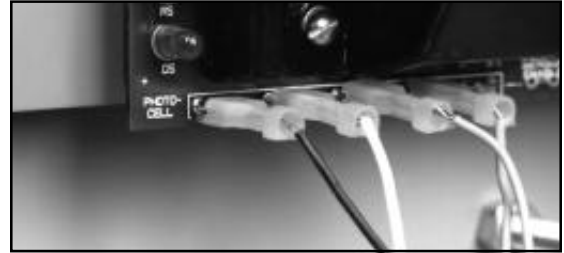
CAUTION: Power should always be off when wiring the panel. Before powering up to test the unit, care should be taken to protect yourself from contact with wiring in the line voltage section of the panel.

INSTALLATION

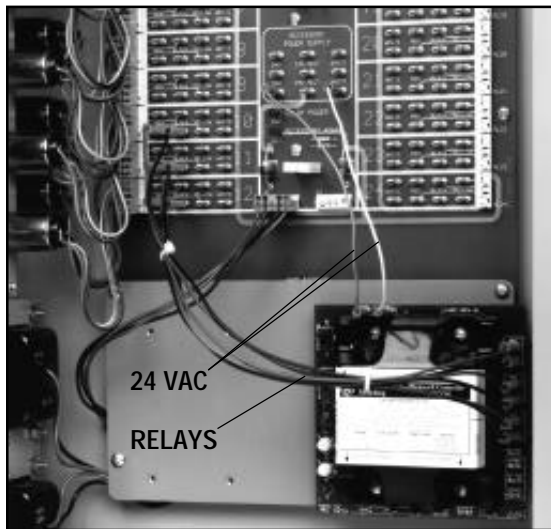
Mount RPCON. The RPCON mounts in the low-voltage section of a standard RBxx panel or on the mount bracket within an RINTERxxxxRC.



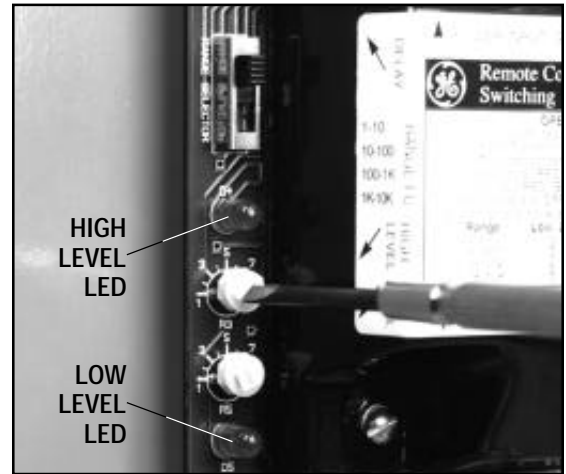
Connect Photosensor. Connect the Red/Black/Blue/White wires from the sensor to the corresponding RPCON photocell terminations.



Connect Low-Voltage Wiring. Wire to the 24 VAC power supply and connect Red (ON) and Black (OFF) outputs to the corresponding inputs on the relays to be controlled.

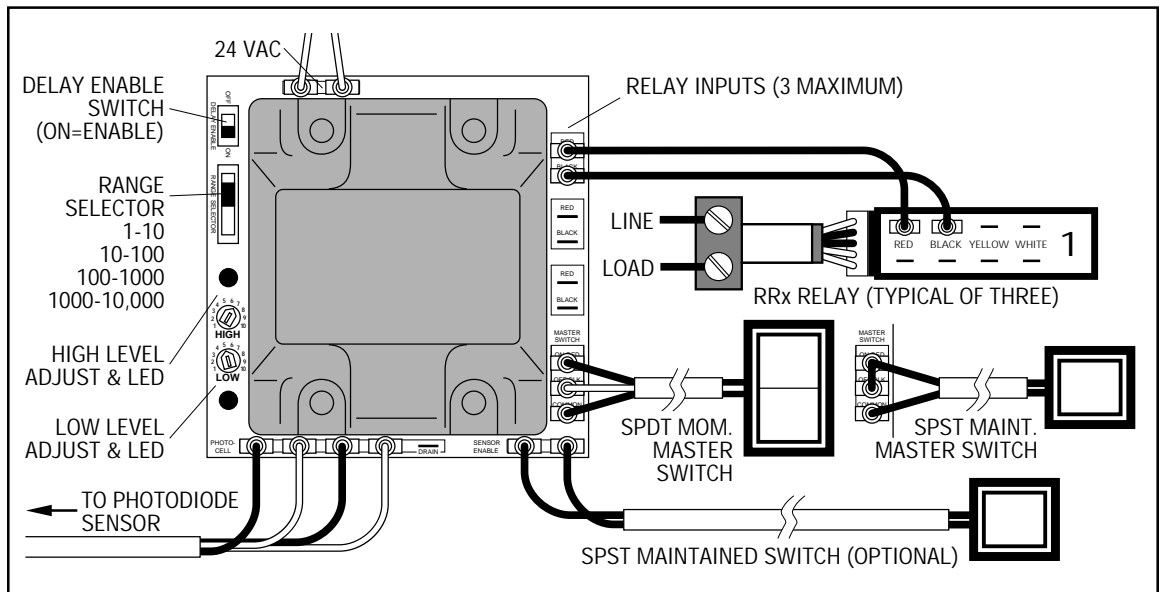


Power up and calibrate. (See next page)



Connect Optional Overrides, if used. (See diagram below) Connect 3-wire momentary switch to Master Switch inputs. Connect 2-wire, single pole, isolated contact switch to Photocell Enable inputs.

Typical Wiring



CALIBRATION

Step 1 — Move the DELAY ENABLE slide switch to the OFF position. This will cause the control module to respond immediately to changes in setting levels or to changes in the lighting level as seen by the sensor.

Step 2 — Set the RANGE SELECTOR switch in the upper left corner to the appropriate range according to the table at the bottom of this page.

Step 3 — Set the HIGH and LOW setpoints. If you know the target light level at the sensor, use Method A; if not, use Method B.

Method A: Desired sensor light level known.
 RPSEN-OUT, RPSEN-ATR and RPSEN-SKY: If you know the target light level for the sensor listed above, set the HIGH level at 1 tick higher than the target and the LOW level at 1 tick less than the target. For example, if you wanted to set an atrium sensor at 400 footcandles, the RANGE would be 100-1000, the HIGH setting = 5, the LOW setting = 3. This would turn the lights ON at 300 fc and OFF at 500 fc.

RPSEN-IN: When switching lighting in an office or classroom, you should err on the side of providing too much light. There are three factors to consider in calculating the minimum setting:

1. Target footcandle level... the minimum lighting level when the shed lights are OFF. Example: 60 fc at the task in an office or classroom.
2. Fraction of lighting shed... the fraction of the lamps or fixtures turned off by the RPCON. Example: Half of the lamps within the daylight zone (controlled zone).

3. Reflectance of task surface... the fraction of light which will be seen by the ceiling mounted sensor compared to that measured at the workplane. (This is typically between 20% for dark furnishing and 50% for light furnishings.) Example: Classroom with 40% floor cavity reflectance.

Use this formula to calculate the minimum setting: (target footcandles) x (1 + fraction of lamps to be shed) x (reflectance). Example: 60 footcandles x 1.5 x 0.4 = 36 footcandles. Using the 10-100 RANGE on the RPCON, we would then set the LOW level scale at "4" and the HIGH level at "6". (The HIGH level is normally set at least two ticks higher than the LOW level). The adjustment can be optimized upon installation.

Method B: Desired sensor light level not known.
 This method can be used for all sensors, but it is typical for RPSEN-ATR and RPSEN-SKY sensors. This approach requires that you wait until the time of day when you want the lights to turn ON:

1. Start with the lights OFF, and the LOW setpoint at 0, the HIGH at 10.
2. Raise the LOW setpoint until its LED turns ON.
3. Turn ON the lights (use the Master Switch input to turn OFF the relays).
4. Decrease the HIGH setpoint until the HIGH LED comes ON, then raise it to the next tick — now the HIGH LED turns OFF. There should always be at least 2 ticks between the HIGH and LOW setpoints.

Step 4 — Move the DELAY ENABLE switch to the ON position.

SENSOR TYPE	USE	SELECTION RANGE
RPSEN-IN	Indoor office or classroom	Range: 10-100 Scale setting of: 1 = 10 fc 10 = 100 fc (each tick = 10 fc)
RPSEN-OUT	Parking lot and security lighting Alternate: Canopy lights and signage	Range: 1-10 Scale setting of: 1 = 1 fc 10 = 10 fc (each tick = 1 fc) Alternate range: 100-1000 Scale setting of: 1 = 25 fc 10 = 250 fc (each tick = 25 fc)
RPSEN-ATR	Indoor, atrium	Range: 100-1000 Scale setting of: 1 = 100 fc 10 = 1000 fc (each tick = 100 fc)
RPSEN-SKY	Indoor, skylight	Range: 1000-10,000 Scale setting of: 1 = 1000 fc 10 = 10,000 fc (each tick = 1000 fc)

OPERATION

Automatic Daylighting Response. The RPCON automatically pulses up to three lighting circuits in response to changes in natural daylight. The pulse is a 0.5 second dry contact closure compatible with GE "RR" latching style relays or intelligent inputs.

The RPCON has two setpoints... a high level and a low level. These dictate the ON/OFF operation of the relay outputs in response to changing light levels. The region between the high and low setting is referred to as a "dead band" because no relay actions will take place when the light level is in this region. (The dead band eliminates the possibility of the controller going into an oscillating mode: the sensor sheds the lamps based on adequate lighting, whereupon the new light level is so low that the sensor activates the lamps ON again.) With the light level below the dead band, both LEDs will be ON and the relays will be ON. As the light levels increase and you enter the dead band, the low level LED will go off; however, the relays will not change state until you leave the dead band on the high side. At that point, both LEDs will go OFF and the relays will be turned OFF. Coming back down the curve at the end of the day, the high level LED will come ON as we enter the dead band, but no relay actions occur. Only when we leave the dead band on the low side will both LEDs come ON and the relays be turned ON. To summarize the RPCON output actions:

- Both LEDs ON... RPCON turns ON relays
- Both LEDs OFF... RPCON turns OFF relays
- One LED ON... no action (light level is in dead band)

Automatic Response... Delay Enabled. This is the normal operating mode for a RPCON. The actions are the same as outlined above except that when the delay is enabled, the unit will wait 3 minutes after both LEDs come ON (or go OFF) to change the state of the relay. This reduces the possibility of short duration fluctuations in light level (such as a cars headlights hitting an outdoor parking lot sensor) causing nuisance switching of the lighting circuits.

Manual Override... Individual Output. Each of the three output channels is isolated allowing you to directly override the associated relay with a local low voltage switch (see the instructions provided with your relay panel). Note, however, that this override is not permanent. For example, if an individual uses his local switch to turn a light back ON which the daylight sensor has turned OFF, the next time the sensor turns OFF its output channels in response to increasing light levels, it will also turn that relay OFF.

Manual Override... All Outputs. The Master Switch turns all three channels ON and OFF. As with the individual output override, this override is not permanent.

Automatic Response Disabled. Closing the "Photo-cell Enable" contacts "disconnects" the sensor from the RPCON and the unit will no longer respond to changes in the sensed light level. The Manual Override functions will still operate. This function is normally used to keep the unit from controlling the lights during unoccupied periods.

