

Knightronix, Inc. 2212 Silver Lake Rd NW. New Brighton, MN 55112 USA. Phone (651) 636-1008

## Knightronix Battery-Powered Gas Light Igniter

Please read these instructions and contact Knightronix or Vulcan Lighting with any questions. Improper installation will damage the igniter module and void the warranty.

A trained gas technician should be hired to remove or install a gas light igniter module.

Before removing or installing an igniter module, close the gas valve supplying gas to the lamp, and disconnect the battery pack from the igniter module.

**CAUTION:** Verify there are no gas leaks prior to powering the gas light igniter. High temperature PTFE thread paste suitable for gas connections should be used to seal fittings except flare fittings.

### Battery Voltage

**WARNING:** Input voltage to the igniter module should never exceed 6.8 VDC. Higher voltage will damage the igniter module and void the warranty. Use the original battery holder or battery pack which came with the igniter module from Knightronix. Contact Knightronix / Vulcan Lighting for replacement battery packs or holders.

### Typical Gas Consumption for a Gas Lamp

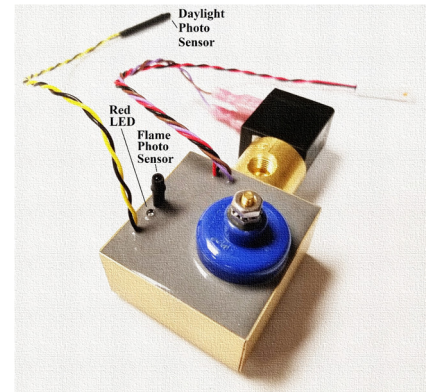
Approximate gas consumption for a single open flame burner (flame size: up to 2" to 4" high, 1.5" wide):  
Natural gas: 1600 to 3800 BTU / Hour on 7" water column pressure, depending on the burner type and orifice.  
Propane: 1600 to 1900 BTU / Hour on 11" water column pressure, depending on the burner type and orifice.  
A manual valve may be used to reduce the flame size and gas consumption.

If the gas line is too small, or too many gas lamps or other appliances are installed on the same gas line, the gas lamps may not ignite and burn properly. One lamp typically works well on 1/4" copper tubing. Multiple lamps or long gas line runs may require larger gas lines. A certified gas technician can determine the appropriate gas line size based on the number of lamps and appliances, lengths of the gas lines, and gas consumption for each lamp and appliance.

When a lamp is installed, it may be necessary to bleed the air out of the gas line before the flames will ignite and burn properly. Water may get into gas lines if they're not used for months or years. If this is the case, the lines may need to be blown out and pressure tested by a certified gas fitter. Do not exceed the pressure rating on the manual gas valves. Manual gas valves are often limited to 1/2 P.S.I. maximum pressure. Use a sealed cap or plug instead of the manual valve to hold the pressure during a pressure test.

### LED Power / Status Indicator

**Check the Red LED Power / Status Indicator.** If an igniter does not spark within about 15 seconds after power is applied and both photo sensors are dark, check the status of the red LED. The LED is a power and status indicator. The LED should blink three short blinks when the battery is plugged into the igniter module. In bright daylight, the LED may have to be shaded to verify if it is lit or not.



---

Knightronix, Inc. 2212 Silver Lake Rd NW. New Brighton, MN 55112 USA. Phone (651) 636-1008

**If the LED does not blink when the battery is first connected, this may indicate the battery voltage is low.** The DC scale on a digital volt meter can be used to measure the battery voltage. Some small pins may be required to probe the contacts in the battery connector.

If the LED does not light when power is applied, check the battery wires to verify they are not damaged or shorted to each other or to the lamp. The battery and wires should be kept in the bottom of the lamp. If the wires are located in the upper part of the lamp, the wire insulation may be damaged from the excess heat from the flame. If the wire insulation melts, the wires can short out, damaging the battery and igniter module.

If the voltage is correct, and the LED is not lit, and there is no sparking or clicking when the power is turned on and the photo sensors are covered, it is possible the igniter module may need to be repaired or replaced. Before removing the igniter module from the lamp, verify the spark gap is set up properly, and the photo flame sensor and daylight photo sensor are covered with black electrical tape or black heat shrink tubing.

### Flame Photo Sensor and Daylight Photo Sensor Operation

There is a flame photo sensor on top of the igniter module, next to the red LED. During normal operation, the flame photo sensor should not be covered with black heat shrink tubing or black electrical tape. The igniter is programmed not to spark if the photo flame sensor is seeing daylight or light from another nearby electric or gas lamp. To test during the day, the photo flame sensor must be temporarily covered with black electrical tape. If the photo flame sensor is detecting light from other nearby lamps, it may require a black open-ended sheath to block light from other sources. The length and position of the sheath can be adjusted as necessary to block out more or less light. The photo flame sensor and tube should be directed toward the yellow part of the flame.

The battery-powered igniter has a daylight photo sensor, installed on an 8"-12" long yellow and black wire attached to the top of the igniter module. The daylight photo sensor allows the gas lamp to run automatically dusk till dawn. The daylight sensor should be positioned so it can see outside the lamp, pointed away from any nearby lighting. If the daylight sensor is kept inside the lamp, it may not stay off during the day, or it may see reflections of the flame off the glass, which could cause the lamp to cycle on and off at night.



**Note: if either the flame photo sensor or optional daylight photo sensor is seeing light, the igniter will not start its spark sequence. To test the igniter during the day, both photo sensors must be covered with black electrical tape or black heat shrink tubing.** *The sun may shine through fingers, hands, duct tape, and other colors of electrical tape, and prevent the igniter from sparking during the day.*

### Spark Electrode Setup

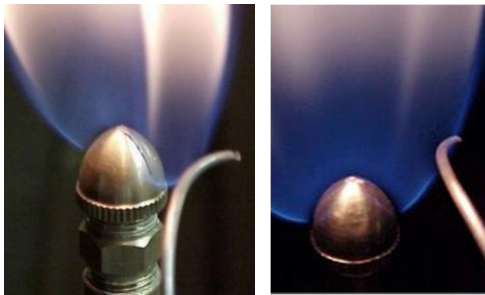
If the igniters spark when power is turned on, and the flames do not ignite consistently (ideally on the first burst of sparks), check the position of the spark electrode (spark probe). The spark gap should be about 1/4" to 5/16" between the spark probe and the burner tip. The sparks should hit at or very near the burner slit where the gas is coming out.

Knightronix, Inc. 2212 Silver Lake Rd NW. New Brighton, MN 55112 USA. Phone (651) 636-1008

Disconnect the battery to turn off the power to the gas light igniter, and let the burner and spark electrode cool before making any adjustments. To prevent stress on the spark transformer, hold the base of the spark electrode while adjusting the spark probe position and spark gap. Do not apply more than 5 inch pounds of torque to the top nut holding the spark electrode on the spark transformer. 5 inch pounds is just about finger tight. Do not rotate the bottom nut.

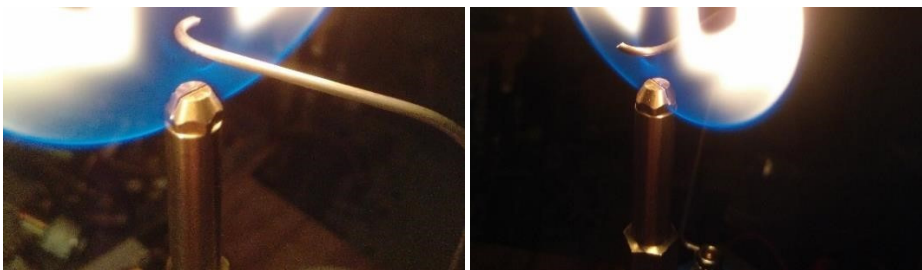
After making any adjustments, verify the flame is igniting consistently. Ideally the flame should ignite on the first burst of sparks. Test the ignition 10-12 times, with the glass doors closed to verify consistent ignition.

Once the flame is lit, verify the igniter stops sparking within a couple seconds. If the photo flame sensor cannot detect the flame after 5-10 ignition cycles, the solenoid valve may close, and the igniter will stay off until power is cycled off and on again.



The photos to the left show our recommended spark probe position for the round top burner tip and **Direct Wire Spark Electrode**. In the edge of the flame, there is a good air and gas mixture for proper ignition. If the spark gap is too close, there will not be enough air for consistent ignition. A spark gap of about 5/16" should work well with Knightronix gas light igniters manufactured with a blue spark transformer (used since about 2008). A shorter spark gap of about 3/16" may work better for igniters using the older black spark transformer.

The photos below show our recommended spark probe position for the 3-pointed and 4-pointed flames.



### Dual Probe Spark Electrode

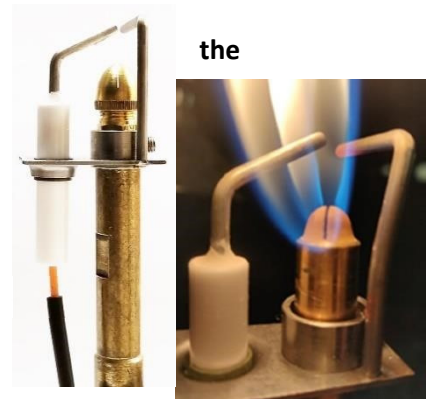
**Caution: To avoid damage, do not bend or straighten electrodes on the Dual Probe Spark Electrode.**

A dual probe spark electrode (similar to the one shown to the right) may be used with some gas lamps.

A set screw in the collar secures the bracket to the burner stem, and allows the electrode assembly to be rotated and adjusted up and down. A 3/32" hex key is required to loosen and tighten the set screw. Do not lose the set screw when making adjustments.



*Note the angle of the electrodes*





---

Knightronix, Inc. 2212 Silver Lake Rd NW. New Brighton, MN 55112 USA. Phone (651) 636-1008

## Ion Flame Sensor

The battery-powered gas light igniter does not include an ion flame sensor. Only the photo flame sensor described above is used for flame detection.

## Burner Tip and Spark Electrode Maintenance

Soot and residue can build up on the burner tip, burner slit, and spark electrode. This can prevent the flame from igniting consistently. Steel wool, fine emery cloth, a fingernail buffer, or green scouring pad can be used to remove the soot and polish the burner tips and spark electrode. After polishing the electrode and burner tip, a 0.010" feeler gauge or fine 600 grit sandpaper should be used to clean out the burner slit.

The burner tip, burner, manual valve, and electrode will be very hot after the flame burns. Disconnect the battery to turn off the power to the gas light igniters, and let the burner tip and electrode cool before cleaning or making any adjustments. To prevent stress on the spark transformer, hold the base of the spark electrode while adjusting the spark probe position and spark gap. To prevent damage to the ion flame sensor, do not apply more than 5 inch pounds of torque to the top nut holding the spark electrode on the spark transformer. Do not rotate the bottom nut.

## Photo Flame Sensor and Sheath

The igniter will not start sparking if the photo flame sensor is detecting daylight or other nearby lighting. If the lamp has a solid top, instead of glass panels in the top, a short black tube (about 3/4" length x 3/16" I.D.) can be placed over the exposed photo flame sensor. Black heat shrink tubing works well for a sheath. The tube (black inside and out) can be used to block out the sunlight and other nearby lighting, allowing the igniter to start its spark sequence during the day or night.

## Optional Timer Mode Version R27 (available on some igniter modules as an option).

When an igniter has the optional timer mode feature, the igniter is designed to turn on at dusk and turn off a preset number of hours later. Cutoff times are approximate and will vary between igniters. The timer mode is set up when the battery is first connected to the igniter module.

Mode 1: The igniter turns on at dusk and turns off approximately 6 hours later.

Mode 2: The igniter turns on at dusk and turns off approximately 8 hours later.

Mode 3: The igniter turns on at dusk and turns off approximately 16 hours later.

## Timer setup:

## Basic Igniter Operation

1. Verify there are no gas leaks prior to connecting the battery to the igniter module. The solenoid valve should be automatically closed when the battery is disconnected. If you smell gas, and the solenoid valve is closed, do not connect the battery; keep the power off until a trained gas technician checks the installation for leaks and repairs all leaks.
2. If testing during the day, use black electrical tape or black heat shrink tubing to temporarily cover the flame photo sensor and daylight photo sensor. Even a pinhole of light on the sensors may prevent the igniter from sparking.

3. After verifying there are no gas leaks, and the daylight photo sensor and spark electrode are positioned properly, plug the battery connector into the igniter module connector.
4. **Timer setup.** When the battery is initially plugged into the igniter module, the red LED should blink on and off three short blinks.
  - 4.1 After three short blinks, the LED will blink 1 to 3 long blinks, indicating the current timer mode. (1 long blink = Timer Mode 1.).
  - 4.2 During the short timer mode setup period, the timer mode can be advanced by disconnecting the battery before the third short blink. The mode can be advanced from Mode 1 to Mode 2, Mode 2 to Mode 3, or Mode 3 to Mode 1. After the third short blink the new timer mode will be saved.
5. If the daylight photo sensor is dark, and the flame photo sensor is dark (or covered with black electrical tape or black heat shrink tubing), the igniter should start sparking, the solenoid valve should open, and the flame should ignite.
  - 5.1 If the igniter sparks, the solenoid valve opens, and the flame does not ignite, turn off power, let the burner and electrode cool, and check the spark electrode position. See **Spark Electrode Setup** section above.
  - 5.2 If the spark electrode position is OK, and the flame does not ignite, check the burner slit, burner tip, and electrode for oxidation or soot. If they require cleaning, turn off power, let the burner tip and electrode cool, and clean the burner tip, burner slit, and spark electrode; see **Ion Flame Sensor Maintenance** section above.
  - 5.3 During sparking, the flame can be lit manually with a butane lighter. This is helpful to determine if the burner tip is clogged and requires cleaning. If the tip is partially clogged, the flame may be distorted or smaller than normal. This may affect the ignition consistency and ion flame sensing.
  - 5.4 The flame may not ignite or stay lit in windy conditions, or if the spark electrode and burner tip are not set up properly.
6. Flame check:
  - 6.1 If a flame is detected by photo flame sensor, the sparking should stop within a couple seconds, the solenoid valve should remain open, and the flame should continue burning.
  - 6.2 If a flame is not detected after 5 bursts of sparks (about 40 seconds), the solenoid valve will close for 30 seconds to allow the gas to dissipate.
7. After the 30 second purge time, another spark cycle will start.
8. If the flame is not detected after 5 spark cycles (depending on the igniter model), the solenoid valve will close. The solenoid valve should remain closed until one of the following occurs.
  - 6.1 If power is cycled off and on again, the igniter will check the flame and daylight sensors and start a new spark cycle, depending on the sensor states.
  - 6.2 When both the daylight photo sensor and flame photo sensor detect darkness each evening, the igniter will start a new spark cycle.
  - 6.3 If the flame photo sensor detects light (from daylight or another light source), and then detects darkness, the igniter will check the flame and daylight sensors and start a new spark cycle, depending on the sensor states.

Below is a link to additional gas light igniter documentation:

[https://www.vulcanlighting.com/catalog/igniter\\_install\\_help\\_files.php](https://www.vulcanlighting.com/catalog/igniter_install_help_files.php)

Sometimes it's helpful to see close-up photos or video of the lamp, igniter module, burner, and electrode with the flame burning. You may email photos to [info@vulcanlighting.com](mailto:info@vulcanlighting.com).



[info@vulcanlighting.com](mailto:info@vulcanlighting.com)  
[www.knightronix.com](http://www.knightronix.com)  
[www.vulcanlighting.com](http://www.vulcanlighting.com)

---

Knightronix, Inc. 2212 Silver Lake Rd NW. New Brighton, MN 55112 USA. Phone (651) 636-1008

Please contact Knightronix / Vulcan Lighting with any questions regarding the igniters. If you call 651-636-1008 from the lamp we can help determine what is required to resolve the gas lamp igniter issues.

If an igniter / burner assembly does not function, it is usually repairable. Please contact Knightronix for an RMA number before sending an igniter module / burner assembly back to Knightronix for an estimate to evaluate and repair the igniter.

Thank you,

Knightronix, Inc. & Vulcan Lighting