Applied Physics Laboratories PO Box 2544 Fort Myers, FL 33902

GPS LightLock Installation Instructions

24 Hour Tech Support toll-free (833) GPS-TIME (833 477-8463)

Congratulations on your purchase of the most advanced and simplest to use timer on the market today. Please read this document in full prior to installation to obtain the best experience for yourself and your customer.

Socket Location & Orientation:
GPS LightLock must be installed where it can receive GPS signals. A complete view of the horizon is preferred but not required. In fact, it does not even need to be exposed to daylight. You can paint it and it can even be installed inside a plastic NEMA enclosure or inside the attic of a building with a plywood roof deck and asphalt shingles, but should not be installed inside a masonry building with a steel, concrete or clay tile roof.
GPS signals will penetrate: Glass, plywood, roofing shingles, plastic, fiberglass, and many other natural and man made materials.
GPS signals will not penetrate masonry, thick metals, concrete or clay tile.

If you would like to pretest a proposed indoor installation location for suitability, there are several ways you can do so:
• By using a smart phone. Simply download and run any of the free GPS apps. We use an Android app called "GPS Test". You are in a good location if you can track four or more satellites with good signal reception. (Signal-to-noise ratio of 40+)
• By using a low cost handheld GPS unit to see if you are tracking four or more satellites with good signal reception.
• By making up a test jig using the controller and a light during the daytime.

If installed without a full view of the horizon, look through the lens and identify the tan colored rectangle on the top of the printed circuit board; this is the antenna. Best performance will result when the antenna is oriented towards open horizon and away from a building or other obstruction.

Physical & Electrical Connections:
Popular installations use Surface Mount Boxes, Conduit Bodies (type LB, LL, etc.) or Box Extensions.
The thread on our wire-in socket is industry standard 1/2" NPT and mates with the industry standard 1/2" female terminal adapter.
Some installers also prefer to add a Bypass switch to make servicing the lights easy.
Wire connections are:

Black	→	Line (hot)
White	→	Neutral (or other hot if no neutral is present)
Red	→	Load (light, lighting circuit or contactor)

For step dimming or local time control, if required, connect GPS LightLock control leg (red wire) to the load circuit input of the local time clock or occupancy sensor. For Bypass On simply install a switch between black & red.

Specifications:
Rated 120-277VAC, 50-60Hz,
-40 to + 80C (-40 to 176F) ambient operating environment,
382 Joules MOV Lightning Arrestor,
10,000Amps Surge Protected
Listings:
Listed UL916, ANSI C136.10, FCC Part 15,
CSA 22.2 No. 205, CE, RoHS.
Energy code compliant in all 50 states.

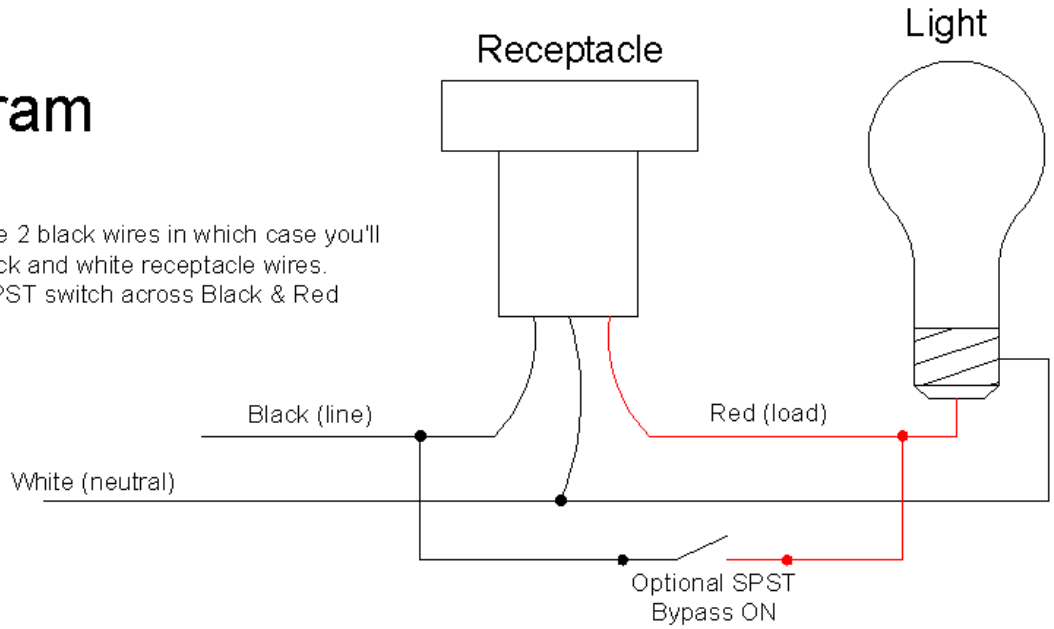
Energy Code Compliance Declarations:
• GPS LightLock is an astronomical time switch designated for dusk-to-dawn operation.
• GPS LightLock is a time switch capable of retaining programming and the time setting during loss of power indefinitely.
• For step dimming or local time control, if required, connect GPS LightLock control leg to the control circuit of the local time clock or occupancy sensor.

Time to First Fix (IMPORTANT):
In the GPS industry there is a phrase Time To First Fix (TTFF) and this is the period of time between power-up and the unit taking control of the light or lighting circuit. The design TTFF is 38 seconds. In practice your TTFF will vary and this is normal. Sometimes in an optimal location TTFF will occur in under 20 seconds. Even a TTFF up to 20 minutes is still considered a good location. In testing we have had success in locations where TTFF was several hours inside a solid concrete building with a corrugated steel roof deck, although we don't recommend you install the unit inside such a building, because your TTFF will be repeated following an extended power outage and we would not want your lights on if that happens during daytime hours. The lower your TTFF, the better the performance. If power outages are only anticipated 1-2 times per year at the installation location, a TTFF of 30 minutes or more is fine.

Made in USA

Wiring Diagram

Notes:
1. Some 240V circuits will have 2 black wires in which case you'll connect one black each to black and white receptacle wires.
2. For Bypass ON, connect SPST switch across Black & Red receptacle wires.



Additional Resources

Custom builds, configurations and programming are available by calling toll-free **(833) GPS-TIME** (833 477-8463). Please call us if you need something not available through our catalog.

View our online catalog: http://www.gpslightlock.com/images/GPS_LightLock_Product_Catalog.pdf
Installation Sheet: http://www.gpslightlock.com/images/Installation_Sheet.pdf
Spec Sheets: http://www.gpslightlock.com/images/GPS_LightLock_Astronomical_Timer_Specifications.zip

Troubleshooting

Control cycles on/ off/ on at time of installation.

This is caused by improper connection of line and load wires coupled with the fact we use a normally closed (fail safe) relay. If the line and load wires are reversed, power backfeeds the electronics circuit until the GPS system gets a fix, then opens the relay thereby removing power from the electronics circuit which causes the relay to reclose, which again powers the electronics circuit causing the cycling.

The solution is to verify that line (black) is connected to power source and load (red) is connected to the light (or contactor or other load being controlled).

It is noteworthy that many photocontrols are not polarity sensitive which explains why an improperly wired photocontrol may have worked fine but an electronics dependent control such as GPS LightLock requires proper connection.

Fifteen (15) Year Warranty & Terms of Use Proviso:

In consideration of retail purchase price paid, Applied Physics Laboratories LLC (APL) warrants to the original retail purchaser, GPS LightLock (the product) against defects in materials & manufacturing and switching performance except photocell switching performance when the line of sight from photocell to light source is obstructed, when properly installed and maintained, worldwide, for a period of fifteen (15) years from date of purchase. APL will repair or replace the product or refund the purchase price paid, at the option of APL, if a unit is found to be defective. Customer is responsible for shipping & handling charges, if applicable. Returns require a Return Merchandise Authorization which can be obtained by calling (239) 848-6675. Installer assumes all risk with respect to installation of the product. Owner is responsible for maintaining the product in safe working order at all times. No claims may rise for damages to property or persons. Limits of liability will not exceed the purchase price paid for the product. All characteristics of the product are the proprietary, intellectual property of APL. No hardware, software, firmware, algorithms, circuits, trade secrets, manufacturing processes, theories of operation or means and methods of accomplishing the objective may be copied, reproduced, recorded, photographed, logged, analyzed, replicated or reverse engineered. Purchase, possession, installation and/ or use of the product is subject to agreement with this Warranty & Terms of Use Proviso. If you do not agree to the foregoing, immediately stop using the product and return the product to Applied Physics Laboratories LLC at 3905 Dr M L King Blvd #26 Fort Myers, FL 33916. GPS LightLock is manufactured under US Patent 8,816,842.

Free 24/7 Tech Support available by calling toll-free (833) GPS-TIME (833 477-8463)