

# Timer Manual

## Introduction

Timer is a versatile, rugged, and easy to use indoor / outdoor appliance timer. It can be used with lights and other household appliances that require regular on-off cycles and has two main modes: Timed and Night. In Timed mode the unit is on for a set number of hours in each 24-hour period. In Night mode the unit turns on when dark and remains on for a set number of hours (or all night). Timer is unique in that there are no displays, buttons, or dials to set or break. Instead, setting up Timer is done by simply waving your hand over its light sensor.

Timer is rated for 15 amps, 120 VAC RMS and has automatically resetting over-current & thermal protection. For maximum safety it should be connected to a ground fault protected circuit when used outdoors.

## Features

- ✓ Time mode: output on from 1-12 hours (adjustable) every 24 hours. Timing cycle starts when unit is plugged in.
- ✓ Night mode: output on at nightfall for a fixed timing cycle of 1-12 hours (adjustable) every 24 hours or, on all night (dark override).
- ✓ Invert night mode: uses night mode settings but output is on during daylight
- ✓ Reset mode: output on for all but five minutes in a 24h cycle. Use to reset an appliance like a cable modem.
- ✓ Appliance override: turns output on for one hour outside of timing cycle. Activate by turning the appliance's power switch off and back on.
- ✓ Adjustable dark threshold: adjusts light level used to detect nighttime.
- ✓ Remembers settings: changes to settings become the defaults used.
- ✓ Restore defaults: restore factory defaults.

## Quick Start

Timer's default mode is Timed with an on value of five hours. Simply plug the unit in when you want the lights (or other appliance) to turn on. The unit will start timing and turn off in five hours. Timer will run the same cycle every day at the same time. To change the start time unplug the unit and plug back in at the new start time.

*Note: when first plugged in Timer starts in menu mode with its output off. After brief period of no menu activity it begins normal operation.*

# Timer Manual

## Detailed Instructions

Timer uses hand gestures that eliminates the need buttons, switches, dials, and displays. Changing settings is done by waving your hand over the light sensor. The unit communicates information back to you by blinking its status light.

### Status Light

The status light is used to check & set options. Refer to *Menu Navigation and Setting Options* on the following page. The status light also indicates Timer's operating status.

- Off: no power or internal failure
- On: internal failure
- Repeating long/short sequence: MCU failure
- Blinking intermittent (1x per 5 seconds): idle
- Blinking slow (1x per 2 seconds): running
- Blinking medium (1x per second): appliance override active
- Blinking fast (2x per second): overload detected, output disabled

### Appliance Override

This feature is useful if there's a need to operate the equipment attached to Timer's output outside of the configured timing cycle. An example would be turning on a desk lamp early because of an unusually cloudy day.

It works by constantly monitoring the switch setting of the equipment. Normally it's left in the on position. When switched off, the unit starts a 3-second timer and looks for it to be switched back on. Timer then turns the output on for a fixed 1-hour cycle. The feature works in both timed & night modes and, if the normally configured cycle begins before override has finished it will take over.

### Gesture Commands

Navigating Timer's menu and changing settings is done with hand gestures. Timer interprets a gesture as a transition in the light intensity it sees: light-dark-light or dark-light-dark. To make a gesture wave your hand, palm down facing the sensor, across the unit at a speed a bit slower than waving goodbye. If you are configuring Timer in the dark you could use a flashlight in similar fashion.

Timer will acknowledge each gesture you make by blinking the status light on & off. Don't make another gesture until acknowledged.

# Timer Manual

Menu & options	
1: Set mode 1=Timed (default) 2=Night 3=Reset	5: Invert night mode 1=disabled (default) 2=enabled (ignored in Timed mode)
2: Dark override 1=disabled (default) 2=enabled (ignored in Timed mode)	6: Check dark threshold
3: Set on-time 1-12 hours Default is 5 hours	7: Set dark threshold
4: Appliance override 1=disabled (default) 2=enabled	8: Restore defaults 1=No 2=Yes
	9: Firmware version

## Menu Navigation and Setting Options

When Timer is first plugged in the status light will turn on, blink off, then turn back on for approximately two seconds. This means its passed diagnostics. The status light will then blink three times and then turn off. This is the start of menu mode. If there's no activity for five seconds it will start the configured timing cycle; otherwise the unit will remain in menu mode as long as you are setting options.

To set options for menu items 1-5:

- Gesture to select option. For example, to select on-time (#3) you'd gesture three times.
- The status light will blink to indicate the current option set.
- To leave the option as-is do nothing.
- To change an option gesture the value of the new setting. Continuing the example, you'd gesture seven times to change the on-time to seven hours.
- The unit remains in option / menu mode as long as a gesture is detected once every five seconds.

Option six checks the light level that Timer uses as its dark threshold:

- Status light will blink three times.
- Move your hand over Timer's light sensor or adjust the ambient light: status light turns off when the light level falls below dark threshold.
- You have ten seconds to perform the check. The status light will then blink three times, then once slow and return to the main menu.

Option seven sets the light level that Timer uses as its dark threshold:

- Status light will blink three times.
- Adjust the ambient light level to that desired for dark threshold: you'll have five seconds to do so.
- If the light level you set was valid the status light blinks three times.
- The status light then blinks slow and returns to the main menu.

## Timer Manual

Option eight restores factory defaults:

- Status light will blink three times.
- Gesture twice to restore.
- Status light blinks three times to confirm.
- The status light then blinks slow and returns to the main menu.

Option nine displays the firmware version:

- Number of short blinks is major #
- Long blink marks end of major #
- Number of short blinks is minor #
- The status light then blinks slow and returns to the main menu.

# Timer Manual

## Troubleshooting

Timer is designed to be rugged and to recover from common faults without requiring intervention or repair. But like all machines it's not infallible. Here's a list of common problems and what to do.

- No power from timer and status light is off.
  - Make sure timer is plugged in to a working outlet.
  - Unit is in menu mode when first plugged in: wait for Timer to begin normal operation.
  - Internal failure.
- No power from timer and status light is on (not blinking).
  - Internal failure.
- Status light blinks a repeating code sequence when plugged in.
  - MCU failure.
- Doesn't remember settings.
  - Settings aren't stored until Timer exits the menu. Let it run for a minute after exiting the menu before unplugging.
- No power from timer and status light is blinking fast.
  - Over current / temperature protection has tripped or a fault was encountered when attempting to turn the output on. Check the connected equipment for problems and make sure it's within Timer's power rating. An excessively hot ambient environment combined with a load that's close to Timer's rated power may also cause it to trip.
  - You can attempt to clear the fault by gesturing three times (the status light will not acknowledge) and the unit will attempt to resume operation if the problem that caused the fault is no longer present.
  - Alternatively, the unit can be power cycled.
  - If you do nothing Timer will attempt to reset the fault at the start of the next timing cycle.
  - If the fault continues to occur the unit should not be used.
- No power from timer and status light is blinking intermittent.
  - Check mode: if Timed the unit may have completed its timing cycle for the day. If Night mode the output will be off during daytime or at any time the light level by the sensor is above the dark threshold. If you're using the timer in Night mode and it's located in an area with ample light pollution you may need to set a higher dark threshold (or reposition).
  - Alternatively, the Dark Threshold could be set too high and Timer is completing cycle early.
  - In Night mode the timer won't turn on for six minutes after the ambient light level drops below the dark threshold to prevent false triggers.
  - In Night mode (without Dark Override) the unit will only run one timing cycle in a 24-hour period. This prevents false triggers that would otherwise occur due to a cloudy day or some other transient condition.
    - It's best to plug timer in close to the desired start to avoid this; or ensure that lighting remains stable.
    - If the desired behavior is to have timer always follow the lighting conditions then enable Dark Override.
  - If in night mode with invert enabled the output will be on during the day.

## Timer Manual

- No power from timer and status light is blinking slow or medium.
  - Make sure that connected equipment is turned on.
  - Internal failure.
- Appliance override does not work.
  - Make sure option is enabled.
  - Timer's output circuit must be opened and closed to detect the override command. Move the appliance' switch to the off position and then back on. Alternatively unplug & plug the appliance back in to the timer. Leave a few seconds between each switch change (but not more than three).
  - This feature only turns the output on for one hour.
  - This feature is only intended to turn the appliance on; not off. Appliance override cannot be used to disconnect power.
  - Appliance not compatible with feature. Appliance override works by detecting a change in the continuity of the unit's output. It's design allows it to be used with everything from incandescent lights to modern LED lighting, motors, computers, etc. It's possible that the appliance' design is incompatible with this feature. At the time of this writing only neon lights are known to not work.
  - Appliance uses a 'soft' on/off switch: this means that the power is not truly disconnected when switched off. Timer cannot detect the switch change. To test, unplug / plug the appliance back in.
- Doesn't respond to gestures.
  - Timer is only in menu mode when first plugged in. Cycle power.
  - Ambient light level is too high or low for Timer to detect a change.
- Output is on outside of timing cycle and status light is blinking medium.
  - Appliance override is active: completes within one hour of activation.
- Output is always on (regardless of status light) and / or attached appliance doesn't seem to be getting full power.
  - Internal failure - unplug immediately.