

GoPro Programmable Scheduler

The [GoPro Programmable Scheduler](#) controller is used to schedule filming or time lapse photography using a programmable clock timer with up to 18 on and off times.

No batteries are required for the controller board or the timer. The timer is designed for very low power operation, stealing a tiny amount of power from the GoPro battery. When first plugged into the camera, the timer will require 30 seconds or so to charge up its internal capacitor. Wait for the LCD to become dark and easily readable before proceeding. The clock will retain its time and programs for up to a minute when unplugged from the camera.

The Programmable Scheduler is fully compatible with the HD Hero and the Hero 2 cameras from GoPro. The new Hero 3 camera introduced changes which affect the use of the timer. [See below for details](#)



Setting the time. While holding down the clock button, press the D+, H+ and M+ buttons to set the day of the week, hour and minute.

Program Schedule. The timer has 18 separate programs which can be accessed by pressing the **P** button. The first press will clear the display and show program 1. The ON time is programmed first. Press **P** again to program the OFF time for each program numbered 1 through 18.

Press **D+** to set the desired days for the program to operate. One press selects all the days of the week, followed by Monday - Saturday, Monday - Friday, Saturday - Sunday, Monday - Wednesday - Friday, Tuesday - Thursday - Saturday, Monday - Tuesday - Wednesday, Thursday - Friday - Saturday, and then the individual days. Stop pressing the D+ button when you see the selection you want to use.

Press the **H+** and **M+** buttons as many times as necessary to set the desired hour and minute to start the camera. The time is in 24 hour format.

Press the **P** button again and set the turn off time for program 1 in the same way.

If you only need one program, press the **Clock** icon button to return to the clock display.

If you wish to create a more complicated program, continue pressing the **P** button to access program 2 through 18. You can review and edit the programs individually at any time.

When done, press the **MANUAL** button and watch the icons at the bottom of the LCD display. The ON icon is in the middle and the OFF icon is at the bottom right. Be sure to leave the timer set to **AUTO** or the program will not be executed. Double check that the timer is set to **AUTO** as this is easy to forget. The writer speaks from experience.

If you need to unplug the control board from the camera, the internal capacitor will retain the programs and the correct time for about a minute.

Tip: You do not need to set the time if you only want to start the camera after a simple delay, say 3 hours. Just let the timer start from 00:00 and program a start time, such as 03:00.

Setting GoPro One Button Mode

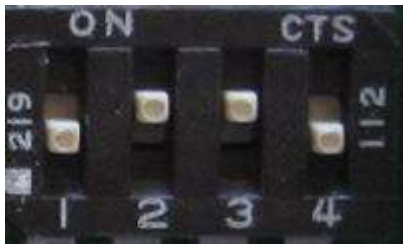
The Cam-Do controller can only turn the camera on and off. It has no control over the shutter. To use the controller, the GoPro camera must be set to operate in **One Button Mode**. In One Button Mode, turning the camera on causes the camera to immediately begin taking photos or recording video without pressing the shutter.

To use One Button Mode on the **HD Hero**, scroll through the settings and change **OnF** (the default) to **OnO**. Next, choose the default operating mode at power up, choose **F** for video (film), **P** for single shot, **3** for triple shot, or **PES** for sequential shots every few seconds. Skip several settings and choose from P1, P2, P5, P30 or P60 for one photo every 1,2,5,30 or 60 seconds while the camera is on.

To use One Button Mode on the **HD Hero 2**, scroll through the settings and change **One Button Mode** to **On** and press the shutter button to confirm. Next,

choose the default operating mode at power up, choose **Video** for video, **Photo** for single shot, **Burst** for triple shot, or **Time Lapse** for sequential shots every few seconds. Skip several settings and choose from the **Time Lapse Modes** for 0.5, 1,2,5,30 or 60 seconds while the camera is on.

Scheduled Shoot



0110. Set the switches on the back of the controller card to off-on-on-off to operate the controller in external trigger mode.

When the timer is ON, the camera will be on. When the timer is OFF, the camera will be OFF.

After the timer stops, the camera will remain on for the **shoot time** as programmed using the instruction in the [programming section](#). The default shoot time is about 3 seconds.

Scheduled shoot can be used with any of the video modes on the GoPro camera to record a video once at specific time and day up to a week from the programming time, or at a certain time every day, or the timer can be programmed for up to 18 different events over the course of a week.

If the camera is set in time lapse mode, it will take shots every 1,2,5,10,30 or 60 seconds during the time it is on. If you want to take time lapse photos with a longer interval or to conserve battery life in the 30 or 60 second modes, use the *Enable Schedule* method with a time lapse setting to turn the camera on and off after each photo.

Enable Time Lapse on a Schedule

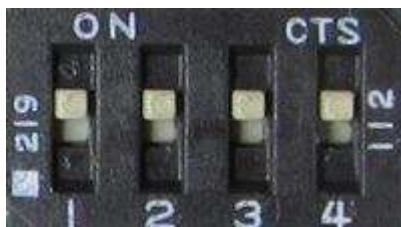
A popular request has been for a time lapse capture which only occurs during certain hours on certain days, such as 9 to 5 on weekdays. Another request has been to begin a time lapse sequence at a certain time and day (Saturday afternoon, for example) using a camera mounted several days before an event. The Programmable Scheduler was designed to meet these needs for our clients.

0111 Enable mode will execute the time lapse program only during the times the timer is ON.

First, program the control board using the camera MODE button, as described below, to set the repeat cycle and shoot time. After programming the time lapse cycle, set the dip switches to **0111** (off-on-on-on) and plug the board into the back of the camera. The timer can now be programmed to implement the time lapse sequence at a given time, or for certain times of the day. Remember to program a start and stop time for each step and to leave the timer in the AUTO mode.

Time Lapse Mode

Time Lapse Mode with the **1111** dip switch setting ignores the programmable timer and uses the controller board to control the camera.



1111. When you receive the controller it will be preprogrammed for one photo every 60 seconds.

1. Use the menus to set up **One Button Mode** P2 (Time Lapse 2 seconds) on the camera.
2. Turn the camera **OFF**.
3. Set the dip switches on the controller board to **1111** - all 4 switches ON.
4. Insert the board in the socket on the back of the camera. If the camera comes on when you insert the board, do not turn it off manually. Allow the controller board to take control and turn off the camera.

The default cycle is 60 seconds. The camera will come on, take a picture and turn off again. A minute later, it will repeat this process. When you are done, simply remove the controller from the camera.

The timing cycle can be custom programmed by following the instructions below:

Changing the Shoot Time and Repeat Cycle Time.

These instructions are for the HD Hero and Hero 2 cameras. The new Hero 3 camera introduced changes which affect the use of the timer. [See below for details](#)

To set up the way the controller will work, **set the dip switches to 0000** (0100 or 0101 for longer times), **turn the camera on**, (turn off One Button Mode if it is on), and then plug the controller into the camera. The LED on the controller board will flash rapidly for 5 seconds to indicate that commands can be entered using the PWR/MODE button on the camera. If you do nothing, the controller program will be unchanged and the camera will turn off and resume taking photos on schedule. If you press the **PWR/MODE** button, the controller will take commands depending on the settings of the 4 dip switches on the back of the controller board. Do not hold the PWR/MODE button in, that will turn off the camera. Press it briefly but firmly (a quarter to a half second). Watch the LED on the timer, ignore the camera LEDs and LCD display while programming the controller board.



A cycle consists of a **shoot time** and a **wait time**. During the shoot time, the camera is on. During the wait time, the camera is off.

1. Set the dipswitches to **0000** - all OFF.
2. Turn on the camera.
3. Plug the controller into the back of the camera. The LED on the controller will blink rapidly. You have 5 seconds to start programming. If you take too long, the camera will turn off and you will have to unplug the board from the camera and start over. Watch the LED. Ignore the LCD on the camera.
4. **Shoot Time**: Press the PWR/MODE button on the camera once to begin programming the **shoot time**, the length of time the camera is on for photos or video clip shooting. The LED will flash on once per second. Wait for the length of time you want the camera to be on (count the flashes or use a stopwatch to determine the time). The minimum shoot time is 3 seconds. There is no maximum.
5. **Wait Time**: Press the PWR/Mode button again to indicate the end of the shooting period and the beginning of the **wait time**. The LED will flash off once per second. When you have waited the desired time...
6. Press the PWR/Mode button one last time to end the cycle. The LED will come on continuously and the camera will turn itself off.
7. Unplug the controller and **reset the dip switches to 1111** to run the time lapse cycle using the new timer settings.

The time lapse programming will be retained without power until a [1010 factory reset](#) is used to erase the user values or a new program is entered.

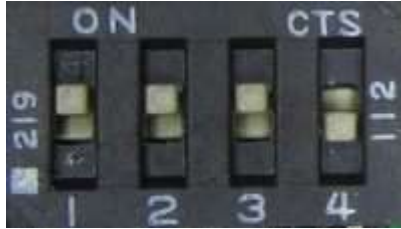
To program longer wait times, there is a short cut:

0101. Use this setting instead of 0000 to record a cycle time multiplied by **60**. When the camera is running, the wait time between shots will be 60 times the setting recorded using the method above. For each LED flash, the delay will be 60 seconds. The *shoot time* is not changed, but recorded as above. Only the wait time is changed.

0100. Use this setting instead of 0000 to record a wait time multiplied by **600**. When the camera is running, the delay time between shots will be 600 times the setting recorded using the method above. For each second, the delay will be 10 minutes. If you set up a cycle of 3 seconds on, repeated every 6 seconds, the controller will play this back as 3 seconds on, once an hour.

This can be a little difficult to understand at first. The video below shows how to program a 15 minute cycle with a 5 second shoot time using the **0101** mode to program the 15 minute wait time in 15 seconds.

Light Sensitive Options



1110. Inhibit night photos. If you set the dip switches to 1110 instead of 1111 when you plug the controller into the camera, the controller will not take photos if there is not enough light falling on the *sensor at the back of the camera*.

This setting is useful for taking long time lapse series over several days without wasting battery power and filling the SD card with black images from the night time. Remember that it is the light hitting the back of the camera that matters.

If a light comes on during the night, triggered by a motion sensor or manually turned on, the camera will begin taking photos immediately on the programmed cycle.

The light trigger could also be used with the camera in a closet or dark room to capture images when the door is opened or the light turned on. It could even be used to incriminate the person who is opening the refrigerator door in the middle of the night.

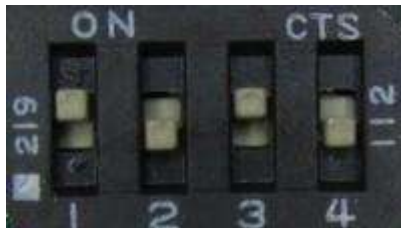
The actual operation of the light sensitive threshold is dependent on ambient temperature and the camera battery level. Before making use of this option, you should test it carefully in your application. While some users have reported great success using it, others have found it to be unreliable, particularly when the temperature varies. Because of the possibility of missing shots, we do not recommend use of this option in circumstances where a missed shot would be important.

Setting the Light Sensitive Threshold

The correct setting for the light detector cannot be set in advance because there is a huge difference in low light sensitivity between the Hero 2 and the original HD Hero. In addition, the camera's light sensitivity will vary with temperature, battery level, and camera settings.

It is necessary to calibrate the sensor for your situation, depending on what you want to do.

In the minimum amount of light you want the camera to come on, set the dip switches to 1110. Turn on the camera. Plug the controller into the camera. Press the PWR/MODE button on the camera while the green controller LED is still flashing (within 5 seconds). The LED will slow down and flash once per second. Press the PWR/MODE button again to confirm and save the setting to memory. The LED will glow and the camera will turn off. Remove the board and plug it in again. Do not touch the PWR/Mode button while the LED is flashing.



1010. Reset the **factory defaults**. Set the switches to 1010. Turn on the camera. Then plug in the controller card. The LED will flash four times and then go solid on while the camera turns off. Unplug the card from the camera and reset the switches to 1111 for normal operation.

Any setting other than 1111 will cause the LED to flash for 5 seconds after the camera is turned on. Do not press the PWR/MODE button during this period or you may inadvertently change one of the program settings. If you should happen to do this, or if you programmed custom time intervals last time you used the card, use the 1010 setting to reset everything to the factory defaults.

Testing the Timer Control

0010 If the switches are set to off-off-on-off, the controller will enter a test mode. The LED on the controller card will come on when the timer is on. Pressing the MANUAL button on the timer cycles through the sequence ON - AUTO - OFF - AUTO - ON. Note that it always takes 2 presses of the MANUAL button to turn the timer on or off manually.

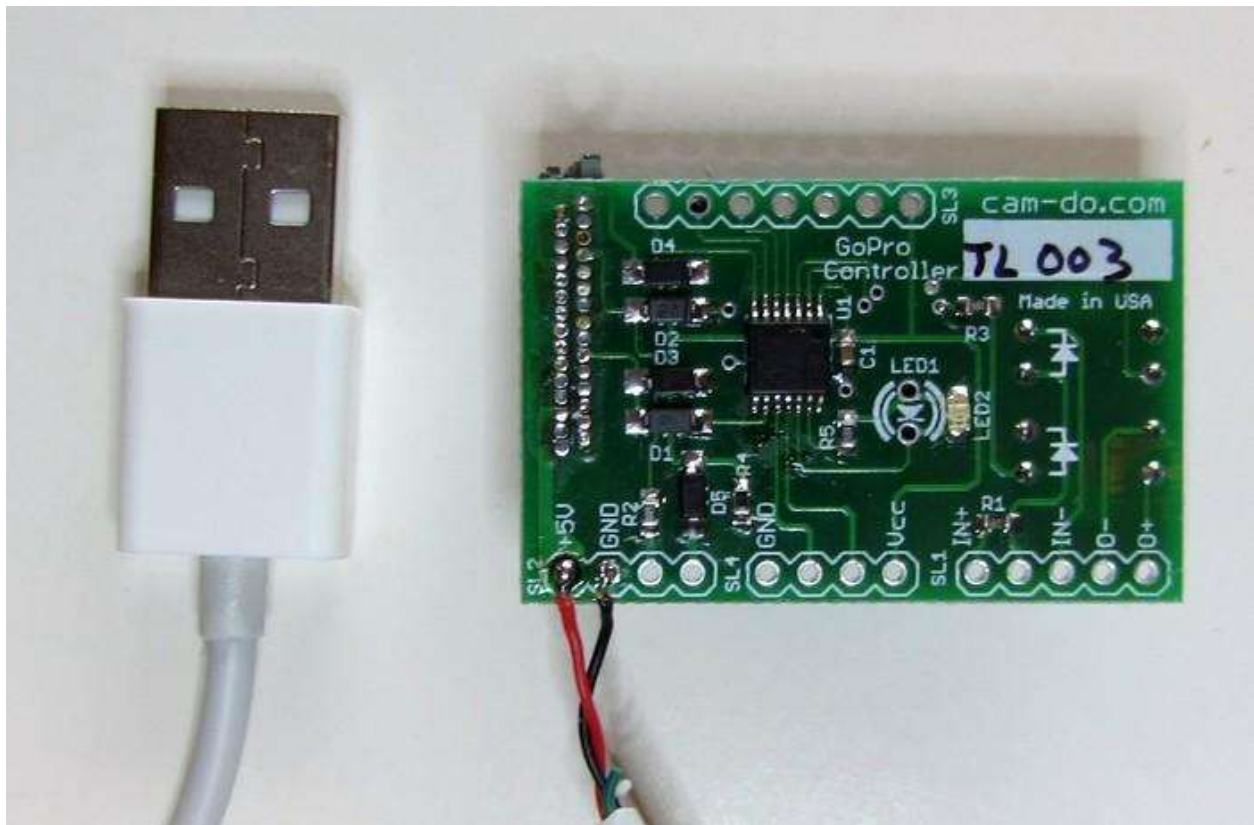
The HD Hero must be ON to use this test. With the Hero 2 it doesn't matter if the camera is on or off.

Optional External Power for Prolonged Operation

For time lapse photography extending over several months, or when recording long video clips on each shoot interval you may wish to power the camera from a USB charger for longer battery life.

You can use the normal mini-USB charging jack on the side of the camera or power can be applied to the +5 and GND connections on the PC board, which allows you to run the cable from the back of the camera.

The power supply must never exceed 5.5 volts. The power supply should be rated at a minimum of 1 amp (1000 mA).



Power is not required for the controller board. This connection is identical to connecting a USB charger to the mini-USB jack on the side of the camera.

We can pre-wire the USB cable for you [on request](#).

Notes

Timing is approximate because the camera startup time varies from shot to shot. In addition, the controller clock timing will vary slightly with camera battery voltage and the ambient temperature.

The new **Hero 3 camera** introduced changes which affect the use of the timer. The timer can be used with Hero 3 cameras, but it is not possible to program changes in the time lapse cycle settings. Programming the scheduler for dates and times is possible. If you have an older model camera, you can use it to program a new shoot time and cycle time.

If you have a Hero 3 camera, you need to use the new [PS-002 Programmable Scheduler](#).

Please suggest new features and tell us about anything you find difficult to follow in the instructions so we can improve the manual for future users.

DIP	Function
0110	Camera is on when timer is on.
0111	Time lapse when timer is on.
1111	Time lapse - timer ignored.

0000	Program the shoot time and cycle time.
0101	Program the shoot time and cycle time x60.
0100	Program the shoot time and cycle time x600.
1110	Enable dark inhibit (insert with camera off).
1110	Program light threshold (insert with camera on).
0010	Test Mode - lights LED only.
1010	Factory Reset - all user settings removed.

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WARRANTY: For a period of up to 90 days from the date of purchase Cam-Do agrees to replace the product in the event of failure due to defects in materials or workmanship. This warranty does not cover malfunctions caused by misuse or force majeure.

LIMITATION ON LIABILITY. THE REPLACEMENT WARRANTY IS THE WHOLE AND SOLE LIABILITY FOR THE PRODUCT. THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED. YOUR USE OF THIS PRODUCT CONFIRMS AGREEMENT THAT CAM-DO AND

ITS DISTRIBUTORS WILL NOT BE LIABLE FOR ANY DAMAGES ARISING FROM OR RELATING TO CAM-DO PRODUCTS.