CamDo Solutions Programmable Scheduler User Manual

This manual is for the CamDo **PS-004** and P-003 Programmable Scheduler sold after March 15, 2013 for the HD HERO, HERO2, HERO3 Black and White, HERO3+ and HERO4 cameras. If you have an older version of the scheduler, please consult an earlier version of the manual as many functions have changed. *(PS-003 does not work with the HERO4 camera)*

Compatibility

Camera	Compatibility (Y / N)
HERO4 Black	✔*
HERO4 Silver	✔*
HERO (2014)	✘
HERO3+ Black	✔
HERO3+ Silver	✔
HERO3 Black	✔
HERO3 Silver	✘
HERO3 White	✔
HERO2	✔
HERO	✔

* NOTE: HERO4 compatibility can only be achieved through a custom firmware modification to the camera. The firmware modification is explained in detail here.

The GoPro Programmable Scheduler controller is used to schedule filming or time lapse photography using a programmable clock timer with up to 17 on and off times.

No batteries are required for the CamDo 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.

Before using the scheduler it is necessary to set the camera type as the operation of the HERO3 Black (or HERO3+/HERO4) camera is different from previous models. Before using the scheduler it is necessary to set the camera type as the operation of the HERO3 Black camera is different from previous models. All references to HERO2 in this document also refer to the HERO3 White Edition camera. Likewise, all references to HERO3 Black in this document also refer to HERO3+ and HERO4 cameras.

Quick Start

It will be easier to follow the instructions in this manual if you understand the basic concept of how the functions are divided. There are three groups of settings to be concerned with. The LCD Scheduler sets the schedule for the intervalometer. The intervalometer controls when the camera is on. The camera settings or scripts determine what happens when the camera is on.

Set up the operation in reverse order. Program the camera, then the intervalometer, and finally the scheduler.

First, the camera must be set to the required mode for photos or video. For HERO2 cameras, it is necessary to use One Button Mode on the camera to take a photo when the camera is turned on. For HERO3 Black cameras, it is necessary to install a script on the SD card which will tell the camera what actions to perform when it is turned on.

Set up the actions you require (One Button Mode or script install) and **test the camera without plugging in the scheduler** to make sure

it will do what you expect it to do. Use the MODE/POWER button on the camera to turn it on and watch what it does.

Second, the intervalometer needs to be set up. Start by [setting the camera type]() for HERO2, or HERO3 Black.

Set up the intervalometer to operate the camera. You can choose to have the camera turn on and stay on, or you can set up a time lapse sequence. The default time lapse sequence is one shot a minute.

If the dip switches are set to **1111**, the intervalometer will operate the camera in time lapse mode without checking the scheduler. In other words, the intervalometer will work as if the LCD scheduler is always on.

Test that the intervalometer operates the camera as you expect. Start with the default interval of one shot a minute, and watch it work for a few minutes.

The intervalometer settings are stored in flash memory. They will be retained until you change them or perform the reset operation.

Finally, the LCD Scheduler can be used to turn the intervalometer on and off according a programmed schedule.

First, **test the operation using the MANUAL button** to turn the scheduler on and off. Set the dip switches to **0110**. When the LCD scheduler is on, the camera will be on. When the LCD scheduler is off, the camera will be off. Press the MANUAL button to cycle through the ON - AUTO - OFF - AUTO - ON sequence, watching the LCD display and observing that the camera goes on and off.

Now you are ready to [program the scheduler]() to turn the camera on and off at the desired times. Set the intervalometer up for time lapse under scheduler control **1110**. In this setting, the time lapse will only operate when the scheduler is on. Manually, or during the scheduled times. Remember to set the LCD scheduler to AUTO for it to have control.

The LCD scheduler requires power to retain its settings. It will retain them for 30 seconds if you need to change the dip switch settings or change the battery in the camera. If the LCD scheduler loses its

settings, it will need to be reprogrammed. It will not be necessary to reprogram the intervalometer settings (time lapse interval) as these are retained in memory.

Setting the Camera Type

The HERO3 Black camera operates differently from the previous versions of GoPro cameras and requires a change in the way the scheduler operates. If the scheduler is set to operate a HERO3 Black camera, it will turn on the HERO2 or other cameras, but won't turn it off.

By default, the scheduler is configured for the HERO3 Black. To change camera types, set the dipswitches to**1011** and plug the scheduler into the back of the camera. The red LED on the scheduler will flash twice to indicate that it is now configured to operate a HERO2 camera. Unplug the scheduler and reset the dipswitches to the desired operating mode.

To change the configuration to HERO3 Black, set the switches to **1011** and plug the scheduler into the back of the camera. The LED will flash 3 times to indicate it is now configured to operate the HERO3 Black camera.

Each time the scheduler is plugged in with the dipswitches set to **1011** the configuration will toggle between HERO2 and HERO3 modes of operation. Note that the **HERO3 White camera works like a HERO2** camera. Select mode **2** for the HERO3 White Edition.

The Programmable Scheduler turns the camera on according to the timer schedule. It does not operate the shutter of the camera. The camera shutter and modes are changed in the camera settings. The HERO3 Black operation is controlled by a programmed script on the SD card which can tell the camera to take a photo, shoot a video, turn on WiFi, and turn the camera off again. These scripts are available for download on the **[Super One Button Mode Page](#)**.

For the HERO2 and HERO3 White cameras, the operation of the camera when it is turned on is controlled by the GoPro One Button Mode settings.

Setting GoPro One Button Mode

The CamDo 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.

HERO1. 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.

HERO2. To use One Button Mode on the **GoPro HERO2**, 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.
HERO3 White. To use One Button Mode on the **GoPro HERO3 White**, the WiFi must be disabled. WiFi and One Button Mode cannot be used at the same time. The menu settings are the same as the HERO2, above.

HERO3 Black/HERO3+. One Button Mode should be turned off and the camera is operated by the **Super One Button Mode** scripts which control the camera actions and the time the camera is turned off. The script can turn WiFi on, if needed.

HERO4. One Button Mode should be turned off and the camera is operated by the CSI HERO4 Scripts which control the camera actions and the time the camera is turned off. The script can turn WiFi on, if needed.

There are numerous videos on YouTube showing how to setup and use One Button Mode for each camera.

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. Use the camera menu and SOBM scripts to program what the camera does when it is on.

After the timer stops, the HERO2 camera will remain on for the **shoot time** as programmed using the instruction in the [programming section](#). The default shoot time is 5 seconds, which compensates for the start up delay when the camera turns on. The HERO3 Black camera will remain on according the Super One Button Mode script. If the script turns the camera off while the timer is enabled, the camera will be turned on again and the script will be repeated.
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 17 different events over the course of a week.

If the camera itself 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 originally created as a custom project to meet these needs for one of our clients.

1110 Enable mode will execute the time lapse program only during the times the timer is ON.
First, program the desired time lapse interval, as described below, to set the repeat cycle and shoot time. After programming the time lapse

cycle, set the dip switches to **1110** (on-on-on-off) and plug the controller 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.

The default mode after a reset is one photo (camera on for 5 seconds) every minute. This can also be used with the timer to capture a single photo at a set of scheduled times and maximize battery life.

Time Lapse Mode

Time Lapse Mode with the **1111** dip switch setting ignores the programmable scheduler and uses the controller to turn the camera on and off.
1111. When you receive the controller it will be preprogrammed for one photo every minute.

1. **HERO2**: Use the menus to set up **One Button Mode** P5 (Time Lapse 5 seconds) on the camera.
   HERO3 Black: Install the SOBM script on an SD card and insert it in the camera.
2. Turn the camera **OFF**.
3. Set the dip switches on the controller to **1111** - all 4 switches ON.
4. Insert the controller in the HERO Port on the back of the camera. If the camera comes on when you insert the controller, do not turn the HERO2 off manually. Allow the controller to take control and turn off the camera. If your HERO3 Black script is long, turn off the camera manually.

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.

During the wait period of the cycle, the LED will flash briefly once every 15 seconds to indicate the timer is working. When the camera is on, the LED will flash once per second.

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

Changing the Time Lapse Shoot Time and Repeat Cycle Time.

Product Update: *If your controller was shipped before November 6, 2012, you will use the PWR/MODE button on the camera to program the time lapse interval.* Please refer to the User Manual for PS-001.

To change the time lapse shoot and cycle times, **set the dip switches** to **0000** (0100 or 0101 for longer times),**turn the camera on**, (set automatic turn off to NEVER), then plug the controller into the camera.

The LED on the scheduler will flash rapidly to indicate that commands can be entered using the MANUAL button on the timer. If you do nothing, the controller program will be unchanged and the camera will turn off after a minute.

If you press the **MANUAL** button, the controller will take commands depending on the settings of the 4 dip switches on the back of the controller. Do not hold the MANUAL button in. Press it briefly but firmly. Watch the red LED on the timer, ignore the camera LEDs and camera LCD display while programming the controller. Every step requires **TWO** short presses of the MANUAL button.

Unlike the scheduler, the time lapse programming will be retained by the controller without power. To reset the programming, use the 1010 Reset method to erase all user programming of the time lapse controller.
0000. Program a new time lapse cycle.

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. First, plug the timer into the camera for a minute to charge the timer until the LCD display is clearly readable. **Press the MANUAL button until the OFF icon is showing** on the LCD. Unplug the timer.
2. Set the dipswitches to **0000** - all OFF.
3. Turn on the camera.
4. Plug the controller into the back of the turned on camera. The LED on the scheduler will blink rapidly. Watch the red LED on the timer. Ignore the LEDs and LCD on the camera.
5. ***Shoot Time***: For the HERO3 Black, the shoot time is determined by the SOBM script. Skip to the next step.
6. For the HERO2 cameras, press the MANUAL button **twice** (icons show AUTO, then ON) to begin programming the ***shoot time***, the length of time the camera is on for photos or video clip shooting. The LED will flash long flashes once per second. Wait for the length of time you want the camera to be on (count the flashes or watch the timer to determine the time). The minimum shoot time is 5 seconds. There is no maximum.
7. ***Cycle Time***: Press the MANUAL button **twice** to indicate the recording of a new ***cycle time***. The LED will flash off once per second representing the length of the repeat cycle. When you have waited the desired time…
8. Press the MANUAL button **twice** to end the cycle. After a brief pause, the LED will come on continuously for 7 seconds to indicate the program has been saved to non-volatile memory.
9. Unplug the controller and **reset the dip switches to 1111** to run the time lapse cycle using the new settings. Use **1110** if you want to run time

lapse at times determined by the LCD timer. DO NOT FORGET TO DO RESET THE DIP SWITCHES

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 cycle time is changed.

0100. Use this setting instead of 0000 to record a cycle 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 cycle 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 6 second shoot time (HERO3 White) using the **0101** mode to program the 15 minute wait cycle time in 15 seconds.

1010. Reset the time lapse **factory defaults**. Normally, the factory default for time lapse is one 5 second photo every minute.
Set the switches to 1010.

Turn on the camera.

Plug the timer into the camera.

The LED will be solid on for seven seconds to indicate that all settings have been cleared.

Unplug the card from the camera and reset the switches to 0110 or 1111 for normal operation.

The factory reset does not change the [camera type](#) setting.

Programming the Scheduler

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. The time is in 24 hour format.

Program Schedule. The timer has 17 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 17.

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 17. 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 controller 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.

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 scheduler 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 other GoPro camera models it doesn't matter if the camera is on or off.

DIP	Function
0110	Camera is on when timer is on.

1110	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.
0010	Test Mode - lights LED only.
1010	Factory Reset - all custom user settings erased.
1011	Switch camera type between HERO2 and HERO3 Black.