



ENSC 305W/440W

Test Plan

April 07, 2015

Behnaz Edalat	301127510
Brendan Keane	301167176
Martin Palibroda	301179246
Justin Raine	301041695
Calvin Scott	301169228

Testing Overview

This test plan overviews a high level test plan for the Hermes motion controller. It consists of two phases - the first is a general test, which takes approximately 5 minutes and goes over the functionality of all modes of operation while not verifying the absolute correctness of each feature. The second was the process used to test subsystems more in depth.

Phase 1 Testing

Phase one testing is a simple step-by-step test, which demonstrates functionality of the product.

1. Plug in the Hermes motion controller
2. Open the Hermes app
3. While in range (~30m) the app should auto connect
 1. If not in range the app will display an error message saying no device found
4. Select live mode operation
 1. Set speed to 100%
 2. Tap and hold move right - observe the slider moving right
 3. Tap and hold move left - observe the slider moving left
 4. Set speed to 50%
 5. Tap and hold move right - observe the slider moving right at a slower speed
5. Exit live mode and go to time lapse mode
 1. Enter duration as 1 minute
 2. Tap start position
 3. Move slider 10 cm to the left
 4. Tap set
 5. Tap end position
 6. Move slider 20 cm to the right
 7. Tap set
 8. Set repeat to yes
 9. Tap start
 10. Observe slider as it moves back to the start position then moves across in 1 minute
 11. After it is done repeating, press Stop bottom
 12. Set repeat bottom to no
 13. Tap start
6. Exit time lapse mode and enter stop-motion mode
 1. Enter duration as 2 hours
 2. Enter playback duration as 4 seconds
 3. Tap start position
 4. Move slider 10 cm to the left
 5. Tap set
 6. Tap end position

7. Move slider 20 cm to the right
8. Tap set
9. Tap start
10. Observe camera and slider alternating between moving and taking pictures

Phase 2 Testing - Subsystem testing

Testing of the subsystems will proceed as following.

2.1 Stepper Motor

Speed functionality - in live mode, set speed to min and max speeds, respectively. Observe the camera moving at extremely fast and slow respectively.

Directional Functionality - Press left and right buttons and observe camera moving in the proper directions.

2.2 Bluetooth Hardware Test Plan

In order to test the Bluetooth chip, and Bluetooth test app was used in order to send basic commands from the cell phone iOS to the microcontroller as required by [Req3.2.3.1 - PC]. These commands include sending of basic text, as well as some basic real time motor control. This is tested by plugging in the device and then opening the app, having Bluetooth connect automatically. Other test cases include restarting the controller while the phone is connected and having the phone tell the user that it disconnected as well as trying to reconnect with the device, once it has restarted.

2.3 Mobile App Test Plan

The primary function of the Hermes Controller mobile app can be broken down into two general categories: Bluetooth connection and UI.

2.3.1 Bluetooth Software

The Bluetooth software test plan requires the application to be able to successfully accomplish the following:

- Discover nearby peripherals advertising the custom UART service
- Connect to a specified peripheral device
- Transmit command packets to the peripheral device
- Receive status packets from the peripheral device

This can be tested through the normal functioning of the app. Using live mode ensures proper transmission of the packets while time lapse mode ensures that packets are being returned.

2.3.2 UI

Testing of the Hermes Controller app involves ensuring the following can be accomplished without noticeable bugs or crashing:

- Set all Live Mode parameters with on screen feedback and correctly respond to all button interactions
- Set all Time Lapse Mode parameters with on screen feedback and correctly respond to all button interactions
- Set all Stop Motion Mode parameters with on screen feedback and correctly respond to all button interactions
- Provide Help view with relevant information

2.4 Motor Control Test Plan

The motor control is tested by ensuring the three following sections function as expected.

2.4.1 Stop Motion

For stop motion a distance and time will be inputted into the device. Then, the device will be filmed to ensure it moves over the proper period of time and then the distance will be measured to ensure correctness.

In phase two of this testing, once functional LANC protocol has been implemented a camera will be placed on the slider and it will be checked to see whether the LANC connection is synced properly by looking at the recorded stills. If there are blurry frames, this indicates a malfunction of the timing.

2.4.2 Time-lapse

Time-lapse is identical to stop motion testing, except phase two is not necessary because the controller does not affect the functioning of the camera; real-time video is taken instead of pictures every interval.

2.4.3 Real Time

Real time motion is tested by inputting various maximum speeds and damping parameters and checking whether they are obtained by measuring the distance and time taken in rough calculations.