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Silverwing Aeronautics

WaTT testing procedure (power supply, motors, load cells)

Point of contact:

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This document specifies the steps to control the Raspberry Pi that interfaces with the power supply, motors and load cells.

Requirements:

- Delta programmable power supply (with ethernet interface)
- Load cells with signal conditioners
- Raspberry Pi with ADC
- T-motor alpha esc's with RPM feedback
- Python script for interfacing between temperature sensor and power supply
- A local network (with internet connection) for the raspberry Pi
  - Phone hotspots the Pi has acces to:
    - Olivier
    - Quint (not yet)
    - Timothy (not yet)
    - Ralph
- Acces to the GitHub at olivierwitteman/Silverwing (Timothy, Ralph & Olivier atm)

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General procedure

1. Make sure all connections are made reliably between
    1. Pi and mains outlet (Delta usb port does not provide enough power for Pi)
    2. Pi and Delta [ethernet]
    3. Pi and Esc's [custom signal wiring]
    4. Pi and load cell conditioners (green devices) [custom signal wiring]
    5. Delta and Esc's [thick custom wiring with XT60 connectors]
2. Connect the interfacing computer to the same network as the Pi is on.
3. ssh pi@SilverPi.local
    1. Password: Silverwing01
4. Change directories to Silverwing/WaTT ('cd Silverwing/WaTT') **(update the test matrices by following 'Updating the test matrix on the Pi' below)**
5. Execute the main control script with 'sudo python WaTT.py'
    1. Ignore the messages that appear
    2. Type the test date (8-11) and hit return
    3. Follow the instructions on screen (return for first/next line or type linenumber and return to jump to a specific line). Every time a new setting is selected the script waits 3 seconds to get a stable sample of the rpm and load cells (it will take an average of the last second)
    4. Press 'Ctr+C' at any point to exit the script, stop the motors and disable the power supply. To start the script again return to step 4.x.
6. Upload test data from Pi
    1. 'sudo git pull origin master'
    2. 'sudo git add -A'
    3. 'sudo git commit -m 'Uploading test data'
    4. 'sudo git push'

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Updating the test matrix on the Pi

1. Make sure you have access to the GitHub (see requirements)
2. On your computer
    1. Find ‘Silverwing/WaTT/WaTT\ test\ matrix’ directory on your computer and replace the daily csv files with the updated csv files. Make sure the names match and the old files are overwritten.
    2. ‘git pull origin master’
    3. ‘git add -A’
    4. ‘git commit -m ‘Test matrix update’
    5. ‘git push’
3. On the Raspberry Pi **(follow the login instructions from general procedure)**
    1. ‘sudo git pull origin master’