API Unit Test Cases

This covers the Unit/System tests for the API.

Encoders unit tests

Name: ENC-1 (Within Acceptable Range)
Preconditions:
Steps:

1. Use the Protocol Mock to simulate the encoders
2. The Protocol Mock will send in "Encoder" Values for all possible $2^8$ values

Expected Results:

- All of the Encoder value sent in from the Protocol Mock to match the expected values

Motor unit tests

Name: MOT-1 (Verify Correct ID)
Name: MOT-2 (Verify Speed From Protocol)
Name: MOT-3 (Verify Cannot Set Invalid Speed)

Motor Bay unit tests

Name: MOB-1 (Add Valid Motor to Bay)
Name: MOB-2 (Add Null Motor to Bay)
Name: MOB-3 (Add Too Many Motor to Bay)
Name: MOB-4 (Add Duplicate Motor to Bay)
Name: MOB-5 (Add Motor to Multiple Same Type Bay)
Name: MOB-6 (Add Motor to Multiple Same Type Bay and Set Speed on All Bays)

Robot unit tests

Name: ROB-1 (Initialize the Protocol)
Name: ROB-2 (Re-Initialize the Protocol)
Name: ROB-3 (Initialize the Protocol/Robot With Invalid Protocol)
Name: ROB-4 (Initialize the Protocol/Robot With NullProtocol?)
Name: ROB-5 (Set Invalid Motor Bays)
Name: ROB-6 (Set Valid Motor Bays)
Name: ROB-7 (Set Valid Motor Bays)
Name: ROB-8 (Enable and Disable Drive Randomly)
Name: ROB-9 (Enable and Disable Heartbeat Randomly)
Name: ROB-10 (Execute the Initialize Function with Malformed Information)
Name: ROB-11a (Add a Valid Motor)
Name: ROB-11b (Add a Valid Motor to Invalid Channel)
Name: ROB-12 (Add an Invalid Motor)
Name: ROB-13 (Add Duplicated Motor)
Name: ROB-14 (Set Channel Power to Valid Settings)
Name: ROB-15 (Set Channel Power to Invalid Settings)
Name: ROB-16 (Get Valid Analog Input)
Name: ROB-17 (Get Invalid Analog Input)
Name: ROB-18 (Set Valid External Output)
Name: ROB-19 (Set Invalid External Output)
Name: ROB-20 (Set Valid External Input)
Name: ROB-21 (Set Invalid External Input)
Name: ROB-22 (Get Valid Encoder Channel)
Name: ROB-23 (Get Invalid Encoder Channel)
Name: ROB-24 (Randomly Spam the Emergency Stop)

RP10 unit tests

Name: RP10-1 (Add Valid Motor to Bay)
Name: RP10-2 (Add Invalid Motor to Bay)
Name: RP10-3 (Set Valid Channel Power)
Name: RP10-4 (Set Invalid Channel Power)
Name: RP10-5 (Set Valid Motor Power)
Name: RP10-6 (Set Invalid Motor Power)
Name: RP10-7 (Set Valid Rotation Motor Power)
Name: RP10-8 (Set Invalid Rotation Motor Power)