Pseudocode

States

When turned on it starts off in standby state

standby

* Waits for start signal
* possible errors
  + CAP\_DISC,FC\_DISC,H2OK\_LOW
  + FCURR\_HIGH,CAPVOLT\_HIGH,FCVOLT\_HIGH
  + PRES\_HIGH,TEMP\_HIGH/LOW
  + result:
    - alarm/shutdown
* If everything is good when start signal is received goes to startup\_fans state

startup\_fans

* sets fans to low speed
* reads fan tachometer to ensure they are spinning
* possible errors
  + same as standby
* once fans are spinning goes to startup\_h2 state

startup\_h2

* open h2 valve
* once FCVOLT reaches 30V go to startup\_purge state
* possible errors:
  + RES\_DISC,CAP\_DISC,FC\_DISC,H2OK\_LOW
  + FCURR\_HIGH,CAPVOLT\_HIGH,FCVOLT\_HIGH
  + PRES\_HIGH,TEMP\_HIGH/LOW

startup\_purge

* Close startup relay to draw current
* open purge valve for 3 seconds
* close purge valve
* open startup relay
* go to startup\_charge
* possible errors:
  + RES\_DISC,CAP\_DISC,FC\_DISC,H2OK\_LOW
  + FCURR\_HIGH,CAPVOLT\_HIGH,FCVOLT\_HIGH
  + PRES\_HIGH,TEMP\_HIGH/LOW
  + PRES\_LOW, FC\_CURR\_LOW,

startup\_charge

* start integrating current wrt time between purges
* close resistor relay
* charge capacitors to 40V through resistor
* once capacitors reach 40V:
  + open resistor relay
  + close motor relay
  + go to run state
* possible errors:
  + CAP\_DISC,RES\_DISC,FC\_DISC,H2OK\_LOW

run\_state

Error Codes