PaleoMag – Python

Software Design Specifications

Version 0.01

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# Initialization

Booting sequence during initialization

* Vacuum reset, valve connect off, motor power off
* SQUID reset
* Motors: Homed to Center
* If EnableIRM, discharge IRM. Waiting for AO to reach zero volts.

# Running

## Start Changer

### User Interface

* In Sample Index Registry, load SAM file
* In Sample Index Registry, uncheck “Down” and “Measure susceptibility”
* In Sample Index Registry, click on “Add to Registry”.
* In Magnetometer Control, click on “Modify”.
* In Sample Settings, click on “Add to list”.
* In Sample Settings, click on “Send list to command queue”.
* In pop up message box, click on “OK”.
* In Magnetometer Control, click on “Start changer”

### Running Sequence

* The rod moves to the top.
* The rod moves to Hole location
* The rod moves to center
* The rod lower down to measure location
* The rod turns 90, 180, 270 degree and make measurements at each location
* The rod moves back to top.

# Functions

## Measure\_ReadSample

### Motors Control

* TurningMotorRotate 0 degree
* UpDownMove Int(ZeroPos + specimen.SampleHeight/2) Top
* UpDownMove SampleCenterPosition Measure Pos
* UpDownMove SampleCenterPosition Measure Pos
* TurningMotorRotate 0 degree
* TurningMotorRotate 90 degree
* MotorTurn 90
* TurningMotorRotate 180 degree
* TurningMotorRotate 270 degree
* UpDownMove Int(ZeroPos + specimen.SampleHeight/2) Top
* UpDownMove Int(ZeroPos + specimen.SampleHeight/2) Top

## UpDownMove

* Move up/down to absolute position.

## MoveMotor

* Move motor to absolute position.
* Check for motor, when it reaches the position, it should freeze for at least 5 reading to exit.
* If the motor gets stuck, its position will not change as well. In this case, it might display an error that it hits the position but the limit switch does not get hit.

# Forms

## Sample Index Registry

* On selecting the SAM file, go through each item in the directory. Skip “.” And “..”. Add directories to “Sample Code” list.
* The SAM file should have the matching directory name.
* If there is a SAM file in the directory with the same name, check for directories one level up.

## Magnetic Susceptibility

* Magnetic susceptibility is a measure of how much a material becomes magnetized when placed in an external magnetic field, quantified as the ratio of magnetization to the applied magnetic field intensity.
* Use either MS2 or MS3.
* MS3 might have compatibility issue. Before running MS3, the RS232 settings should be selected by Barsoft -> Meters -> Multi- susceptibility USB meter -> RS232 Settings. Select option B: Baud rate of 1200 bps, 8 bits data word, 1 Start bit, 2 Stop bits, and No Parity. After that it should be the same as MS2.

## frmADWIN\_AF

### Clean Coils

* Check temperature from TempBoard (cbAIn).