

New SIG – Swiss Army Interlock

We've had an ongoing problem with lack of good Tool controls. This is often discussed, and there is plenty of willing volunteers and expertise available, we just need to actually do it.

This SIG will tackle the problem and deliver a real solution.

Goals:

- Group Project
 - SIG Style - weekly meeting at DMS & Discord
 - Communication will be critical
 - Documentation is important
 - Technology used needs to be approachable
- Open Source
 - It's part of the DMS mission
- Multi-Function
 - Avoid Kitchen Sink project / All-in-one
 - Provide Flexibility / Variants / Modular Elements
- MVP Order (up for discussion)
 - RFID Power Interlock
 - Tool Usage & Status Logger
 - Tool Usage Cam
 - RFID Cabinet Door Lock

SIG Proposal

- Sponsored by Jay under Infra. Coordinated by Jack
- Ideally find consensus

Product Structure Proposal (open for discussion)

- Split the effort into 4 modules (flexible, tbd)
- Provide defined interface between modules
- Allows flexibility to change a module (e.g. uC/CPU)
- Allows Variants of the system (e.g. 110v 1ph vs 480 3ph)
- Allows volunteers to pick a focus (more parallelism in dev)
- Name each module (hydra, dragon, phoenix, unicorn, etc)

User Interface H/W

- Display (2 line vs SPI touch vs none)
- Indicators (LEDs, beeper, etc)
- RFID reader
- Camera Interface (?)
- Stop/Start buttons

CPU / uController

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|---|---|
| <ul style="list-style-type: none">• AD Integration• Logging• REST api (?)• Camera Interface (usb?)• Console (uart?)• WIFI & Ethernet / PoE (?)• Provides DIO, and AIO | <ul style="list-style-type: none">• Supportable and Portable Code• OTA Updates• Testable (CI/CD?) |
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Analog Controls

- Voltage support 110/240/480 (variants)
- Power On/Of control
- Power Always On mode
- Current Measurements
- Voltage Measurements
- Isolation & Safety
- Relay/Contactor/Solenoids/Door Locks

Website / Logging Integration

- Receive Logs, Provide Analytics (e.g. ELK, Splunk, Grafana, etc. TBD)
- Usage Counts / Users / Durations
- Exceptions / Faults / Issues
- Ticket System Integration (e.g. Post to Talk, Jira, etc)

OS & Programming Language Choices

- CPU OS: Linux vs FreeRTOS / SafeRTOS?
- uC OS: MicroPython vs SafeRTOS vs Qt for Devices?

- Programming Language? C++ vs Python/MicroPython vs ??

CPU / uC Hardware

- Dev Hardware shouldn't matter
- Code needs to be portable... so dev with a espif or a rpi or a STM, all should work

- Prod h/w still TBD, likely more than 1 version. (e.g. Camera support might need more horsepower than simple power interlock)