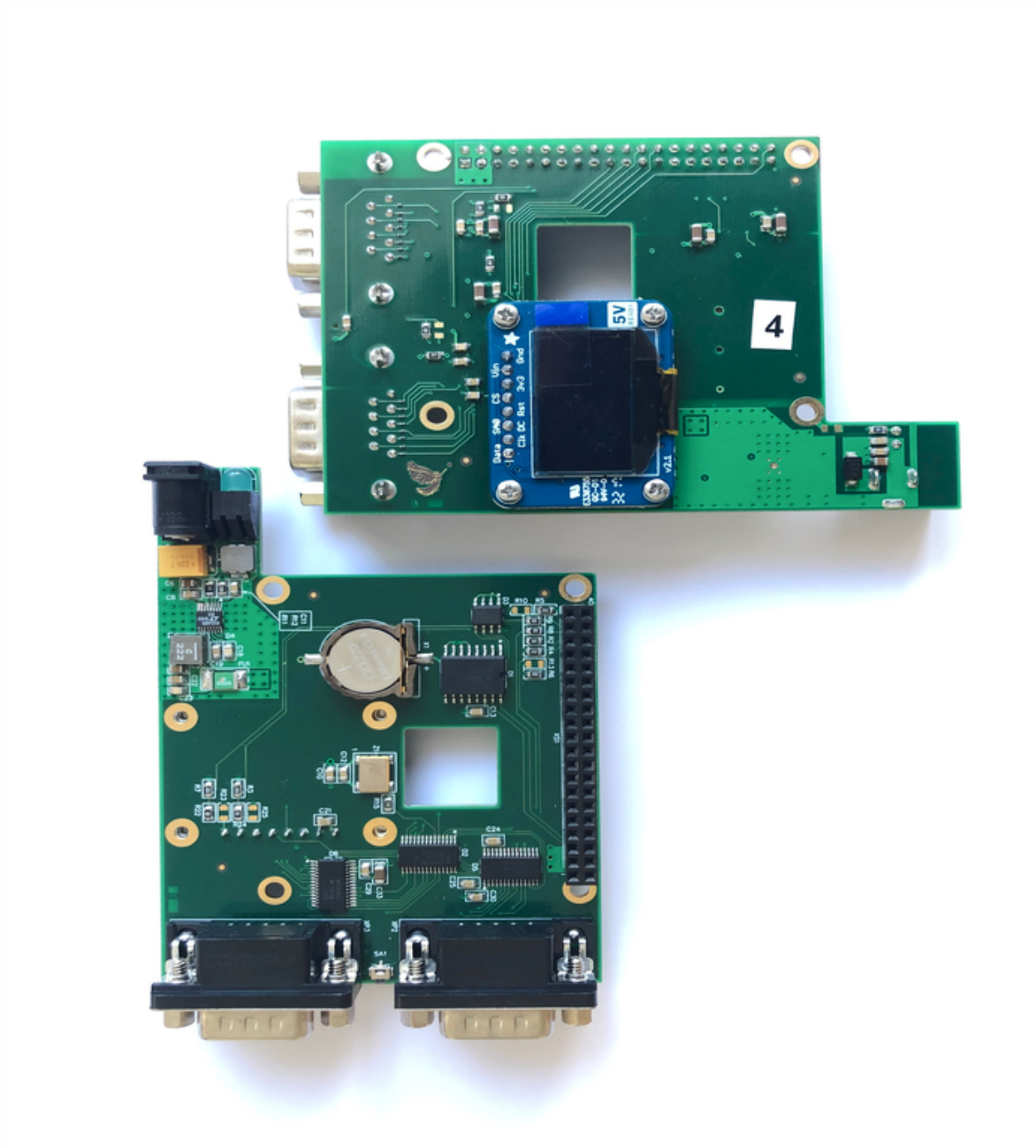


HARDWARE PLATFORM REPLACEMENT FOR THE ACCESS CONTROL DEVICE

Datasheet

Project objective

Replace the hardware platform for the access control device to enhance its functionality while still providing the same ports and inputs as the old platform and fitting into a case with the same X and Y footprint. At the same time, the Z height will most likely need to increase. The developed special extension serial hat board for the Raspberry Pi computer should replace the old platform based on a NetBurner Nano board, and include existing chip and interface drivers.



Result

Easily modified Raspberry Pi computers provided the client with the functionality desired at a minimum cost and without complicated software and hardware development changes. The boards got support for additional ports, memory slots, real-time clock, display, and switch.

5 tested prototypes of boards were delivered to the client ready to be utilized within the access control device. The updated device became much more flexible, allowing for seamless future improvements.

Scope of work

- ❖ Design for a board with additional support of two serial (RS-232) ports, a reset button, display, LED, power regulator, RTC, FRAM, and 1" pin header for unused GPIOs
- ❖ 3D and 2D drawings for an enclosure for the new hat with a Raspberry Pi 3 B+
- ❖ Building Raspberry Pi OS image to make the OS functional and test all hardware features
- ❖ Tuning of Raspberry Pi to have drivers for Serial Hat board ports, and provide additional features for RTC and FRAM storage
- ❖ Instructions on how to implement the software changes

Activities

- ❖ Specifications review
- ❖ Components selection
- ❖ Electrical design
- ❖ PCB layout design
- ❖ Mechanical design
- ❖ Firmware development
- ❖ Documentation creation
- ❖ Prototyping and Testing
- ❖ Design adjustments

About the project

Technologies

- ❖ Raspbian Stretch Lite OS
- ❖ C/C++
- ❖ Python
- ❖ Bash
- ❖ Nano
- ❖ Gcc
- ❖ Make
- ❖ TCP/IP
- ❖ Linux device tree
- ❖ ncurses libs
- ❖ Python Adafruit libs
- ❖ SolidWorks



Project size

- ❖ 1 person

Duration



August – February 2019

Platforms

- ❖ Embedded