Card-reader lock

# 1. General requirements

Req 1-1 The system must use card-reader for authorisation.

Req 1-2 LEDs must indicate a status of the lock.

Req 1-3 Servomotor must be used to open a lock.

Req 1-4 Supplier must document the process and system behavior in narrative manner.

Req 1-5 The lock should be opened not less than T.

Req 1-6 T is equal to 5 seconds.

Req 1-7 The lock should automatically close when T is elapsed.

Req 1-8 The swipe of the card should activate the authentication process.

Req 1-9 The system is always on. Sleep mode is not allowed.

# 2. Safety requirements

## Req 2-1 The supplier must ensure no data corruption if interrupts are used.

Req 2-2 Dynamic memory allocation is not allowed.

# 3. Diagnostic requirements

Req 3-1 The system must use UART interface to read and write diagnostic information.

Req 3-2 The baud rate must be fixed to 9600 bps.

Req 3-3 The following commands and responses must be supported.

|  |  |  |
| --- | --- | --- |
| Command | Action | Response |
| DEVICE | Send a device name | *Device name1* |
| SUPPLIER | Send supplier names | *Supplier names1* |
| LAST | Send raw value of last code read. | *Last code read1* |
| UNLOCK xxxx3 | Unlock the write command | *OK/FAIL2* |
| WRITE device\_name4 | Write a device name | OK/FAIL2 |
| LOCK | Lock the write command | OK |

1 – The text in italic is a description of what shall be sent.

2 – The response depends on the result of security check

3 – Four-digit pin

4 – New device name to be written

Req 3-4 The device name must be always set to default value during startup.

Req 3-5 The default device name is “Card-reader Lock” (without parenthesis)

Req 3-6 Every command must end with carriage return code

# Internal requirements

INTREQ 1-1 The system must use a scheduler.

INTREQ 1-2 The system to be interrupted by timer only.

INTREQ 1-3 Every function must be documented using Doxygen tags.

INTREQ 1-4 State machines must be documented by graphs.

INTREQ 1-5 The system must have a hierarchical design.