

nocLock Requirements

T02

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Marketing Requirements

1. Device must lock and unlock.
2. Device must differentiate between many distinct knock sequences.
3. Device must be reliable. (i.e. stay locked/unlocked when expected)
4. Device should be user friendly and intuitive.
5. Device must be safe to operate.
6. Device must be affordable.
7. Device must be durable.

Engineering Requirements

Functionality

Must be able to read and store a knock sequence.

Must be able to lock and unlock when the correct knock sequence is entered.

Should have intuitive user interface that conveys to the user where they are at in the program.

Performance

Must be able to store up to 100 knocks in a single sequence.

Must be able to differentiate between different knock sequences.

Should be able to store a knock sequence after being powered down.

Economic

Must not exceed \$40 in production costs.

Energy

Should have an average power consumption of less than 1 Watt.

Should have peak current consumption of less than 1 Amp.

May have an emergency back-up power supply.

Health & Safety

Must have the circuit board enclosed to hide it from the user.

Must have approved power tolerances on all components.

Must be safe to leave on for long periods of time.

Must be made from non-toxic materials.

Environmental

Must be made with non-toxic/hazardous chemicals that would require proper disposal.

Maintainability

Must have minimal to no user maintenance over entire life cycle.

Manufacturability

Must use a two layer PCB that is between 1 and 16 square inches, with no side of the board being less than one inches or more than twelve inches.

Operational

Must be large enough to store practical objects.

Must be easily movable by user.

Reliability & Availability

Must be reliable for complete life cycle.

Usability

Must be easy for the user to learn how to operate device.

Must work the same every time the user uses the device.

Documentation

Must have some form of instructions for the user.

Should have instructions on device or method of finding instructions on device.

May have website that provides instructions for the device.

Validation

Marketing Requirements	Engineering Requirements	Justification
1,2,3	Must be able to read and store a knock sequence. Must be able to lock and unlock if user enters stored knock sequence.	These requirements establish the basic functionality of the device.
2	Must be able to store up to 100 knocks in a sequence. Must be able to differentiate between different knock sequences.	These performance requirements establish a maximum number of knocks that can be recorded in a knock sequence.
3	Should be able to restore a knock sequence after losing power.	This ensures that the product will be dependable and has safeguards against failures.
7	Should not exceed \$40 production costs.	This is the maximum production cost that will ensure that the product is affordable.
3,7	Must have average power consumption less than 1 Watt.	This is the minimum amount of power for device to perform properly without consuming excess amounts of power.
5	Must have packaged circuitry protected from user.	This protects user from exposed circuitry that could potentially burn or cut them.
5	Must be safe to leave on for long periods of time.	This device must be left on for long periods of time and still meet safety requirements.
5	Must be made from non-toxic materials.	This device must be made with materials that are safe for users to operate.
5,7	Must be made with non toxic/hazardous chemicals that would require proper disposal.	Disposing of hazardous/toxic materials during fabrication would raise production costs.
3,7,8	Must have minimal user maintenance over entire life cycle.	This device must be designed to be dependable and durable throughout its life cycle. Servicing or repairs would drive the cost too high.

3,8,9	Must be reliable for complete life cycle.	Servicing is not an option so the device must be designed to be reliable for over its entire life cycle.
4,9	Must be easy for user to learn how to operate device.	If the device is overly complex and hard for the user to operate no one will want to use the device.
3,4,9	Must work the same every time user uses device.	The device must work the way it is expected to work every time it is used. If the device acts erratically it will be rendered useless and not dependable.
4,9	Must have some form of instructions for the user.	The user needs a way to learn how to operate the device.

Marketing Requirements

1. Device must lock and unlock.
2. Device must differentiate between many distinct knock sequences
3. Device must be dependable.
4. Device should be user friendly.
5. Device must be safe.
6. Device should have a desirable professional look.
7. Device must be affordable.
8. Device must be durable.
9. Device cannot require service.