One-Time Password (OTP) Electronic Lock User Guide

Product Overview

Thank you for choosing this product, a secure digital lock system based on One-Time Passwords (OTP) and customizable encryption algorithms. This device ensures high-level security and is suitable for:

- Home door locks
- Smart cabinets and lockers
- Office access control
- Secure containers and safes

The system uses a smart algorithm to generate and validate passwords dynamically.

Button Functions

Button	Function
Enter0	Enter digit "0"
Enter1	Enter digit "1"
Clear	Clear all current input
Confirm	Confirm input or selection
Mode	Enter encryption algorithm selection mode

LED display

Status	LED Behavior
Normal mode	Displays current 6-bit OTP
Correct password	All 6 LEDs light up
Wrong password	LEDs flash on/off every second
Algorithm selection	Displays 3-bit algorithm index
Locked	Alternating pattern (101010)

How to Unlock

Step-by-Step:

1. View the OTP
    - When powered on, the LEDs display the current One-Time Password (6-bit value).
    - This is the base password for unlocking.
2. Enter Your Password
    - Use Enter0 / Enter1 to input a 12-bit binary password.
    - If you make a mistake, press Clear to restart input.
3. Validate Password
    - Press Confirm to validate.
    - If the password is correct, all 6 LEDs will turn on (unlocked!).
4. Incorrect Password
    - LEDs flash to indicate a wrong attempt.
    - You can retry, but errors can trigger lockout.

Lockout Mechanism

Failed Attempts	Lock Time
1	15s
2	30s
3 or more	60s

During a lockout, the system ignores all input. LEDs flash in pattern:101010

Algorithm Switching

This system supports 8 encryption algorithms. You can switch the algorithm used to calculate the password.

How to Change:

1. Press Mode to enter algorithm selection mode.
2. Enter the current correct password
3. Use Enter0 / Enter1 to input a 3-bit number (0–7).
4. Press Confirm to apply the selected algorithm.
5. A new OTP will be generated and displayed.

Available Algorithms:

ID	
0	OTP * 2 + 1
1	(OTP << 2) ^ 12'hA3
2	(OTP * 3) + (OTP >> 1)
3	~(OTP * 5) & 12'hFFF
4	(OTP * OTP) % 4096
5	((OTP << 3) - OTP) ^ 12'h3C3
6	{OTP[2:0], OTP[5:3]} + 12'h55A
7	(OTP * 9) & 12'hFFF

The password algorithm is only visible to the customer and every product has only its own algorithms. Since the algorithm is difficult to calculate, the password.py is provided to develop a mobile phone APP or website calculator. In the program, user can select the algorithm mode and input the OTP, and the program can get the password back.

Factory Reset

- Algorithm to ID 0
- OTP to default value
- Clears error history
- Turns off all LEDs