# ＂Safe＂－style code lock 



## K8082

Novelty code lock．

Features:
$\square$ codelock with rotary encoder and 7-segment display
$\square$ 4-digit code
V several operating modes

- adjustable pulse duration
$\square$ application examples: open a door, gate, fence...
- arm / disarm your alarm system
$\square$ prevent unauthorized use (mode 3) of car, entertainment systems, computers, machinery...


## Specifications:

- relay output NO/NC: 3A / 24VDC max.
- power supply: 12VDC / 100mA max.
- Dimensions:
- front: $85 \times 85 \mathrm{~mm} / 3,35 \times 3,35{ }^{\prime \prime}$
- mounting depht: $45 \mathrm{~mm} / 1,77^{\prime \prime}$


## 1. Assembly (Skipping this can lead to troubles!)

Ok, so we have your attention. These hints will help you to make this project successful. Read them carefully.

### 1.1 Make sure you have the right tools:

- A good quality soldering iron ( $25-40 \mathrm{~W}$ ) with a small tip.

- Wipe it often on a wet sponge or cloth, to keep it clean; then apply solder to the tip, to give it a wet look. This is called 'thinning' and will protect the tip, and enables you to make good connections. When solder rolls off the tip, it needs cleaning.
- Thin raisin-core solder. Do not use any flux or grease.
- A diagonal cutter to trim excess wires. To avoid injury when cutting excess leads, hold the lead so they cannot fly towards the eyes.
- Needle nose pliers, for bending leads, or to hold components in place.
- Small blade and Phillips screwdrivers. A basic range is fine.

For some projects, a basic multi-meter is required, or might be handy

### 1.2 Assembly Hints :


$\Rightarrow$ Make sure the skill level matches your experience, to avoid disappointments.
$\Rightarrow$ Follow the instructions carefully. Read and understand the entire step before you perform each operation.
$\Rightarrow$ Perform the assembly in the correct order as stated in this manual
$\Rightarrow$ Position all parts on the PCB (Printed Circuit Board) as shown on the drawings.
$\Rightarrow$ Values on the circuit diagram are subject to changes.
$\Rightarrow$ Values in this assembly guide are correct*
$\Rightarrow$ Use the check-boxes to mark your progress.
$\Rightarrow$ Please read the included information on safety and customer service

* Typographical inaccuracies excluded. Always look for possible last minute manual updates, indicated as 'NOTE' on a separate leaflet.


### 1.3 Soldering Hints :

1- Mount the component against the PCB surface and carefully solder the leads

2- Make sure the solder joints are cone-shaped and shiny

3- Trim excess leads as close as possible to the solder joint


REMOVE THEM FROM THE TAPE ONE AT A TIME!

## AXIAL COMPONENTS ARE TAPED IN THE CORRECT MOUNTING SEQUENCE!



Break the PCB into two pieces.



Display PCB


Main PCB

## (1) Main PCB

Mount at first the components on the main PCB


## 3. IC socket, Watch the position of the notch!

-IC1: 14P



9. Electrolytic Capacitors.
Watch the polarity !


ㅁ C6: $10 \mu \mathrm{~F} / 50 \mathrm{~V}$

- C7: $470 \mu \mathrm{~F} / 25 \mathrm{~V}$

10. Relay




- RY1 :VR15M121C

11. IC, watch the position of the notch!

(programmed PIC16F630-I/P)

## (2) DISPLAY

Mount the components on the display PCB


1. Resistors

| $\underbrace{\infty}_{\infty}$ | $\stackrel{\text { R. }}{\sim}$ | $x^{5}$ |
| :---: | :---: | :---: |
|  |  | (5-6-1-B) |
| R7 | 560 | (5-6-1 |
| - R8 | 560 | (5-6-1-B) |
| - R9 | 560 | (5-6-1-B |
| R10 | 560 | (5-6-1-B) |
| R11 | 560 | (5-6-1-B) |
| - R12 | 560 | (5-6-1-B) |
| - R13 | 560 | (5-6-1-B) |

## 2. Display



Pay attention to the position of the decimal point.
3. Digital potentiometer


## (3) ASSEMBLY

- Mount the jump wires onto the main PCB according to figure 1.0.


Fig. 1.0


- Mount 4 print tabs onto the display print (see figure 2.0).
- Assemble the unit together (fig. 3.0)


d. Make sure to connect all jumper wires with the display print and solder them (see figure 4.0).

Fig. 4.0

- Mount the red display filter onto the front panel (backside)
- Fix the red display filter using a piece of transparent adhesive tape (four sides) (fig. 5.0)


Fig. 5.0

- Place the unit onto the front panel (fig. 6.0)

- Fasten the potentiometer
- Slide the black plastic knob on the axe and fasten the unit (fig 7.0)

- Carefully solder the 4 PCB pins to the front panel.

Watch the position of the display!


Fig. 8.0

## (4) CONNECTION DIAGRAM \& EXAMPLE



## (5) ENTER YOUR CODE

At first turn-on, the unit responds to factory code (1-0-1-0) only.
To compose the code:

1) turn clockwise to 1
2) turn counter clockwise to 0
3) turn clockwise to 1
4) turn counter clockwise to 0
5) turn clockwise
e. if you make a mistake, restart from 1

The relay turns on and the 'lock open'-symbol is displayed.
To turn off the relay, turn knob in any direction
e Remark: When the unit remains idle for a while and the relay is off, then the display will show an animation.
e. The status of the relay is always shown by the decimal point (dp ON = relay ON)

## (6) MENU OPTIONS

Remark: you can only access the menu when the output relay is off

- Hold the button to enter the setup menu
- The display shows '-'. If button is released at this time, no settings will be altered.
- The decimal dot will flash 3 times, to confirm you left the menu.
- If the unit was set to 'timer mode', the display will flash the current set time.

Turn knob in any direction to select a menu item, while still holding the button.
' t ' timer mode : The output relay generates a timed pulse between 0.5 and 9 s
To set timer mode:
$\checkmark$ Release button.
$\checkmark$ Set required time ( $0 . .9 \mathrm{~s}, 0=0.5 \mathrm{~s}$ )
$\checkmark$ Hold button
$\checkmark$ Select ' t '
$\checkmark$ Release button
$\checkmark$ Display will flash selected time to confirm selection.
' $c$ ' continuous mode: The output relay remains activated until the knob is turned.
To set continuous mode:
$\checkmark$ Release button
$\checkmark$ Decimal point will flash 3 times to confirm selection
's' Set mode : Allows you to compose a 4-digit code of your choice.
To select 'set' mode:
$\checkmark$ Release the menu button
$\checkmark$ Compose your custom 4-digit code (change direction after each digit and last digit).
$\checkmark$ The decimal point will flash 3 times to indicate that your code has been stored.
\& Remark: If the unit remains idle for a while, the unit will return to normal operation and the code will not be changed
'd' default. Return to the factory code (1010)
To set 'default' mode:
$\checkmark$ Release the menu button
$\checkmark$ Decimal point will flash 3 times to confirm selection
'T $\vee$ Relay turns on at power up
You have 1 min to enter your code (Display shows an animation)
$\checkmark$ Compose your code
If the correct code is not entered within one minute, the relay will turn off and 'A' (alarm) will flash.
$\checkmark$ Release the menu button to select this mode
$\checkmark$ Decimal point will flash 3 times to confirm selection
'o' $\checkmark$ Relay is off at power up.
You have 1 min to enter your code. (Display shows an animation)
$\checkmark$ Compose your code
If the correct code is not entered within one minute, the relay will turn on and
'A' (alarm) will flash.
$\checkmark$ Release the menu button to select this mode.
$\checkmark$ Decimal point will flash 3 times to confirm selection
e. Remark: The modes 'l' and 'o' can only be changed during the first minute after power up. Otherwise, the unit will go into alarm-mode and access to the menu will be prohibited. In that case, briefly interrupt the power supply to restart the unit.

## (6) Schematic diagram.


(7) MAIN PCB


## DISPLAY PCB




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