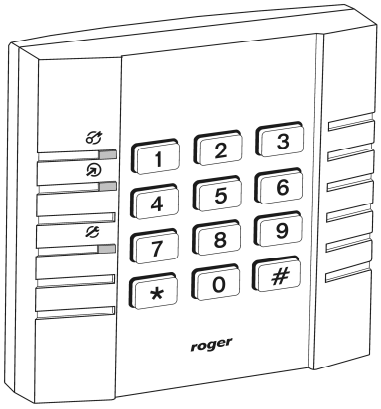
Electronic Code Lock

SL1000B v1.2

CE



General

The microprocessor-based code lock SL1000B is generally intended to be used as a standalone unit controlling a door locking device. Along with this function it can be used to control other system or device requiring the on/off type of control (e.g. arming/disarming of an alarm system, switching light, heating etc.).

The SL1000B is equipped with three physical outputs: two transistor type outputs and one relay output and offers four codes which allow to control its outputs. All the configuration parameters and codes are stored in a non-volatile EEPROM memory.

Functional Description

RELAY Output

The RELAY output offers one isolated NO/NC contact. The actual state of RELAY output is presented on green LED OPEN (relay on) and red LED CLOSED (relay off). Depending of jumper setting (PZ4 and PZ6) the RELAY output can be configured as Momentary or Latch output.

The AUX Output

This is an open collector transistor type output, normally it remains in high resistance, when triggered it shorts to supply minus (max. current sink is 50mA, max. voltage is 15 V DC). Depending of jumper setting (PZ7 and PZ8) the AUX output can be configured as Momentary or Latch output.

The PREAL. Output

This is an open collector transistor type output, normally it remains in high resistance, when triggered it shorts to supply minus (max. current sink is 50mA, max. voltage is 15 V DC). Depending of C3 parameter it can signal compose alarm (PREALARM + DURESS) or door bell (DOOR BELL function).

The Momentary Output

Once triggered this output switches to on state for time defined by the C4C5 parameters. After this time Momentary Output automatically switches back to off state. If during the on state the next control command have been used again the on state will be extended and will be counted anew from the moment, when the last command was issued.

The Latch Output

With every control command this output switches to opposite condition for unlimited time - till moment when next command will switch it back.

LED SYSTEM

The LED SYSTEM has no predefined function and is normally off. It can be used by installer for any arbitrary selected purpose. The LED SYSTEM is activated by applying supply minus to connection terminal marked as LED.

Alarms

The SL1000B can detect and indicate two alarm events:

- PREALARM
- DURESS

Those alarms can be signaled on PREAL. Transistor type output providing it was configured for this function (C3=0).

Note: The PREAL. output can be optionally configured to DOOR BELL function, in this case alarms are not indicated on this output line.

PREALARM

This type of alarm is triggered after three, consecutive, attempts to enter wrong code. This alarm lasts for three minutes and during this time the SL1000 suspends its operation (keypad is disabled and a short beep is periodically generated by the internal buzzer).

DURESS

This type of alarm indicates that someone was forced to entered a code. The DURESS alarm can be triggered by adding any extra digit when entering the Master Code:

- [Master Code][N][#] or
- [Master Code][N][*][#]

where [N] represents any digit (0-9). During DURESS alarm, the keypad of the lock is not blocked.

DOOR BELL Function

The purpose of this function is to indicate a door bell. In order to trigger door bell press [#] and keep it pressed as long as required. For the entire time when [#] key is pressed the SL1000 generates acoustic signal and optionally may trigger PREAL. output if it is configured to DOOR BELL function (program C3=1).

Anti-tamper protection

In the normal state the tamper contacts are closed. Removing the device cover or moving SL1000 out of the surface causes the tamper contacts to open.

Codes

Master Code [MC]

This code may have from 2 to 6 digits and can be used to control both Momentary and Latch output.

Vault Code [VC]

This code have always 4 digits. The Vault Code can be enabled or disabled during configuration (see the C2 setting). In case the Vault Code is enabled it is required to switch the Latch Output to on state, switching Latch Output back to off state doesn't require Vault Code. The Vault Code must be entered together with Master Code (see **Command 8**).

Door Code [DC]

This code have always 4 digits and is used to trigger Momentary Output only.

Close Code [CC]

The code have always 4 digits and can be used solely to switch the Latch Output to off state. The Close Code is a one time use code, every single use of this code must be individually allowed by special permission (see **Command 4**). Once the Close Code is used it is blocked till next permission.

Lock Commands

The lock generates a different acoustic signals for the three stages of entering a command:

- one short signal (*) indicates that a key has been pressed
- two series of two beeps (** **) indicates that a part of a command has been entered properly and the device waits for the remaining part
- a series of three beeps indicates that a command has been entered properly
- one long beep (-) which lasts for approx. 2 sec indicates that an error occurred

Commands
Command 1: [MC] [#] Switches the Latch Output to the opposite state it was when command was issued. The Latch Output remains in on state till next **Command 1** which switch it back to off state again.
Command 2: [MC][N][#] The same as **Command 1** but in addition it activates DURESS alarm which can be signaled on PREAL. Output.
Command 3: [MC] [*] [#] Triggers the Momentary Output for time defined by C4C5 parameters. This command creates the same action as **Command 6**.
Command 4: [MC] [*] [*] [#] Allows for a single use of the Close Code.
Command 5: [MC] [*] [*] [*] [#] [H] [M] [M] [#] This commands switches the Latch Output to opposite state but not immediately as in **Command 1** but after delay indicated by **H:MM** digits (where H=0-9 indicates hours and MM=00-59 indicates minutes). If the **Command 5** is issued again during the count down of the H:MM delay, the old H:MM values will be replaced with the new ones and count down will be started anew (with new H:MM values). When **Command 1** is issued during the count down of a H:MM delay the **Command 5** will be cancelled and the Latch Output will immediately change its state. During count down of H:MM delay the SL1000 generates short beep every single minute. If there is less than 15 minutes to the end of H:MM delay, the SL1000 starts to generate an acoustic signal every two seconds. Note: If the Vault Code has been enabled, the **Command 5** can be used to switch the Latch Output to off state only, it can not be used to switch the Latch Output to on state.
Command 6: [DC] [#] This command switches the Momentary Output to on state for time defined by C4C5 parameters, after this time Momentary Output returns automatically to off state.
Command 7: [CC] [#] This command switches the Latch Output to off state, it can not switch it back to on state. Every use of this code requires individual permission given by the **Command 4**.
Command 8: [MC] [#] [VC] [#] This command switches the Latch Output to on state when the Vault Code is enabled (C2=1). Switching Latch output back to off state doesn't require Vault Code. The Vault Code needs to be entered no later than 30 seconds after Master Code.
Command 9: [#] (long press) Normally pressing this key is used to mark the end of a code but if the [#] key is pressed separately it triggers a door bell signaling. The door bell is signaled by acoustic sound generated by the internal buzzer and optionally by PREAL. output if it is configured to DOOR BELL function. The door bell signaling disappears after 2 seconds from the moment when [#] key is released.

Lock Configuration and Memory Reset

In order to configure SL1000 you need to carry out the **Memory Reset** procedure and then to enter five digits C1, C2, C3, C4 and C5 which will configure device for specific installation scenario.

Memory Reset:

- disconnect power supply
- move jumper from PZ5 to PZ3 contacts
- using PZ4, PZ6, PZ7 and PZ8 jumpers configure RELAY and AUX output lines
- connect power supply, the SL1000 will periodically generate short beep, this means that the lock's memory has been erased and the default codes are restored
- move jumper back form PZ3 to PZ5 contacts
- wait for two series of two beeps (** **)
- enter sequentially five digits C1-C5
- once accomplished wait till SL1000 will generate a series of three acoustic signals (***) which will indicted that Memory Rest was accomplished successfully and new configuration settings has been saved in memory.

Default Codes (after Memory Reset)

Master Code [1234]

Door Code [1111]

Close Code [2222]

Vault Code [9999]

When during the Memory Reset procedure an error occur (e.g. due to improper C value entered) lock will generate an error sound and then it will return to the beginning of the Memory Reset procedure. In such case you should enter the C1-C5 settings again.

C1-C5 lock configuration parameters		
C1	The C1 allows or disables multiple reprogramming of the lock's codes	
	0	Lock allows only one attempt to program codes
	1	Lock's codes can be reprogrammed whenever required
	Note: If the code programming is allowed only one time (C1=0) you have only one attempt to change lock's codes. Once you program the new codes you will be not allowed to do it again unless you perform the Memory Reset.	
C2	The C2 enables/disables the Vault Code	
	0	The Vault Code is disabled
	1	The Vault Code is enabled
C3	The C3 configures the function of PREAL. Output	
	0	The PREAL. output signals PREALARM and DURESS alarms
	1	The PREAL. output signals the DOOR BELL function
C4C5	Determines the time for which the Momentary Output is triggered (C4C5=01..99 seconds)	

Example: The installer has carried out the Memory Reset procedure and entered following digits: [1][0][1][2][5].

It means that:

- *Codes can be reprogrammed whenever required (C1=1)*
- *The use of Vault Code is disabled (C2=0)*
- *The PREAL. output is configured to signal a DOOR BELL (C3= 1)*
- *The Momentary Output triggering time is set to 25 seconds (C4C5=25)*

Code Programming

Depending on the configuration settings, code programming can be performed once (C1=0) or can be programmed whenever required (C1=1).

Reprogramming the Master Code, Door Code and Close Code:

[*][Old MC][#][New MC][#][New MC][#][NEW DC][#][NEW CC][#]

The programming procedure presented above is called *full programming procedure* and can be optionally reduced to the programming sequences a) and b):

a) Reprogramming the Master Code and Door Code

[*][Old MC][#][New MC][#][New MC][#][New DC][#][#]

In this case programming of the Close Code was skipped.

b) Reprogramming the Master Code only

[*][Old MC][#][New MC][#][New MC][#][#]

In this case programming of the Door Code and Close Code were skipped.

Reprogramming the Vault Code:

[*][Old VC][#][New VC][#][New VC][#]

Note: The programming of the Vault Code is allowed only if the use of this code is enabled (C2=1).

Installation

The code lock should be mounted near the controlled door on a vertical piece of structure. The door releasing device (a door strike or magnetic lock) should be connected directly to the power supply using a separate pair of wires. The general purpose semiconductor diode (e.g. 1N4007) should be connected in parallel to the lock contacts. This diode should be connected as close as possible to the door lock. The SL1000B has not been designed to work in an outdoor conditions and should be installed in indoor locations only.

Note: It is forbidden to supply the door release device directly from the supply input terminals of the SL1000 code lock.

Technical specification

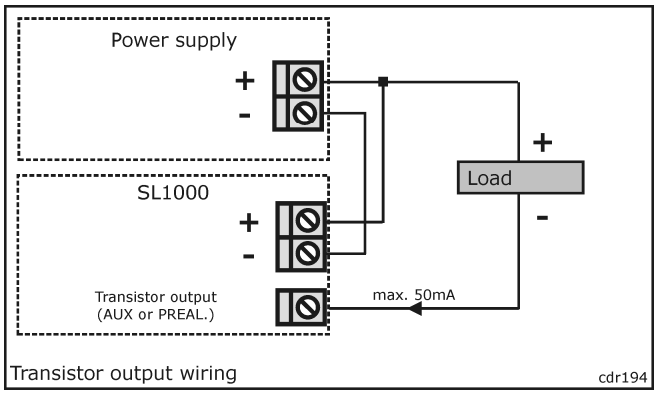
Input voltage	10..15V DC
Current consumption	15mA@12V
Current consumption with relay output active	60mA@12V
Relay contacts	1.5A/24V DC/AC
Transistor outputs	50mA/15V DC
Anti-tamper contacts	NC contact, 50mA/24V
Operating temperature	+5°..+40°
Relative humidity	10-95% (non-condensing)
IP Code	IP30
Dimensions	105 x 105 x 31
Weight	Approx. 140g
Certificates	CE

AUX Output Configuration	
PZ7 PZ8	Operates as Momentary Output
PZ7 PZ8	Operates as Latch Output

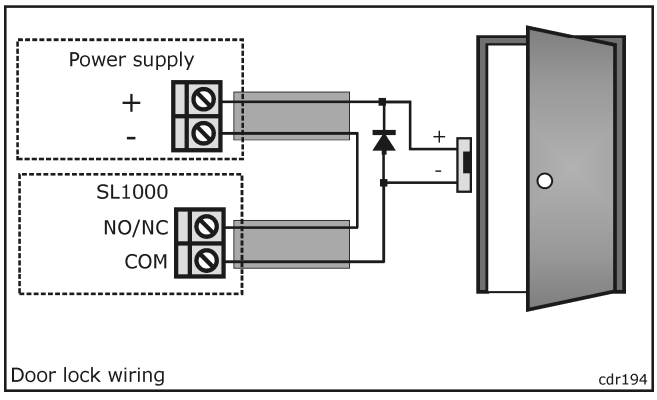
RELAY Output Configuration	
PZ4 PZ6	Operates as Momentary Output
PZ4 PZ6	Operates as Latch Output

Memory Reset	
PZ3 PZ5	Memory Reset
PZ3 PZ5	Normal (without reset)

cdr194



Transistor output wiring cdr194



Door lock wiring cdr194

SL 1000B code lock configuration example

It is assumed that the lock will perform the following functions:

1) The RELAY output will operate as Momentary line
2) The AUX output will operate in Latch line
3) Code programming will be allowed any number of times
4) The PREAL. output will be used to signal alarms
5) The Vault Code will be enabled
6) The Momentary Output triggering time will be 25s

and will have following codes:

Master Code	[654321]
Door Code	[1212]
Close Code	[2323]
Vault Code	[4545]

In order to prepare the SL1000B for such task the Memory Reset procedure should be carried out according to the following scheme:

- disconnect power supply
- move jumper from PZ5 to PZ3 contacts
- locate jumpers on PZ4 and PZ8
- connect power supply, the SL1000 will generate periodically short beep, this means that the lock's memory has been erased and default codes were restored
- move jumper back form PZ3 to PZ5 contacts
- wait till two series of two beeps (** **)
- enter sequentially five digits:[1][1][0][2][5]
- once accomplished wait till SL1000 will generate a series of three acoustic signals (***) which will indicted that the Memory Rest procedure was accomplished successfully, now you can program new codes.

Now program a new Master Code, new Door Code and new Close Code, programming sequence:

[*][1234][#][654321][#][654321][#][1212][#][2323][#]

And a new Vault Code:

[*][9999][#][4545][#][4545][#]