



USER MANUAL



PL7100



RS2100



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REGULATORY COMPLIANCE

The device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

FCC WARNING STATEMENT

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

PARTS LIST - EXTERIOR

PL7100



RS2100



PARTS LIST - INTERIOR

PL7100

SETUP
BUTTON



RS2100

SETUP
BUTTON



1. Introduction

PL7100 and RS2100 are smart locks with Bluetooth LE, NFC, MiFARE RFID, and Touchpad capabilities.



2. Compatible cards and phones

2.1 RFID Cards / Key Fobs

- Support MIFARE Classic, MiFARE Ultralight, MiFARE DesFire, or ISO/IEC 14443 type A with fixed UID.

2.2 Phones

- iPhone 4S or above with iOS 8.0 or above
- Android 4.3 or above with Bluetooth Low Energy capability. NFC capability is required for using the NFC feature.

3. Phone App

Download K3 Connect on App Store or Google Play, and register an account. For Android users, if NFC is available, use K3 Connect+ instead of K3 Connect. Always update the App to the latest version.



4. Management

4.1 By Phone

A compatible phone with K3 app installed can be used as the Admin of Locks. Management tasks can be performed in the App. An Admin can manage multiple Locks, but a Lock can only have one Admin at a time. A phone can be an Admin of a lock(s) and client of other lock(s) at the same time.

4.2 By Touchpad

If Admin phone is not available, the Touchpad can also be used for selected management tasks. See later section for the full specification.

5. Phone Operations

5.1 Pairing to Become the Admin

- a. In the K3 Connect app, press the “+” on the top-right corner of the Locks page.
- b. Fill-in the DIN (pl7100 or rs2100 respectively) and your selected Lock name, then confirm and put the phone close to the Lock (within 1 meter).
- c. Push the setup button.
- d. Follow the UI (you may be prompted to setup Wi-Fi SSID/password to connect this Lock to your Wi-Fi and Internet; ignore it for now if Gateway is not available). This is an optional device that allows a phone to unlock the Lock using the Bluetooth Gateway option via Wi-Fi remotely.
- e. After successfully Pairing, the phone is now the Admin of the Lock.

5.2 Unlocking

An Admin or Client can unlock in different ways:

a. Bluetooth Manual Unlocking

- Open the K3 Connect app.
- In the Locks page, click on the tab of your Lock name to trigger it.

b. Bluetooth Auto Unlocking

To set up the Auto Unlocking feature, open the K3 Connect app. In the Locks page, Select which Lock you wish to set up and slide left on the tab. Press “Info” and navigate to the menu to enable the Auto Unlocking features. There are 2 kinds of Auto Unlocking: trigger by touch, or trigger by location. See the App UI for more description.

c. NFC Unlocking

With the K3 Connect+ App installed, Admin and Client phones can unlock with NFC by waking up the phone and tapping it on the sensor/touchpad of the lock.

5.3 Admin phone options

The App can do the following management tasks (as Admin):

- Set Names of Locks
- Lock parameters setting (such as Passage Mode or Mute)
- Add/Delete Clients (including other phones, cards, or CODEs)
- Set Client access rights (such as limited duration or only one-time access or temporarily suspended)
- Set Client Nick-names
- Generate VARICODE
- View Audit Trail
- Check Lock Battery status
- Update Lock Firmware

6. Touchpad Operations

6.1 Wake up

Before any touchpad operations, touch the Lock sensor to wake it up.

6.2 Setting the Master Code (MC)

THE FACTORY DEFAULT MASTER CODE IS 12341234

MC length is between 6 to 12 digits. Follow these steps to change the Master Code:

1. Press the Setup Button
2. Wake up touchpad
3. Enter the new MC followed by #
4. Enter the new MC again and followed by #

6.3 Programming Codes using the Touchpad

1. **Add Code** (new CODE length is between 6 to 12 digits)

MC + **#** + **1** + **1** + **NEW CODE** + **#** + **NEW CODE** + **#**

2. **Add RFID Card / Key Fob**

MC + **#** + **1** + **2** + **TAP CARD OR KEY FOB**

3. Delete CODE

MC + **#** + **2** + **1** + **CODE** + **#** + **CODE** + **#**

4. Delete RFID Card / Key Fob

MC + **#** + **2** + **2** + **TAP CARD
OR KEY FOB**

5. Delete All Codes (exclude Master Code)

MC + **#** + **3** + **1**

6. Delete All RFID Cards / Key Fobs

MC + **#** + **3** + **2**

7. Delete All Phones including Admin

MC + **#** + **3** + **3**

8. Delete All Codes/Cards/Key Fobs/Phones
including Admin

MC + **#** + **3** + **4**

6.4 CODE Unlocking

Wake-up touchpad, enter CODE followed by #

6.5 VARICODE Unlocking

- VARICODE is a time-specific temporary code that can be generated in the App. VARICODE can be generated in the App anywhere; no need to be in front of the Lock.
- VARICODE can be obtained in the App:
In the Clients page, press the “+” on the top-right corner, and select Type as VARICODE to see the UI. Once generated, send the VARICODE to the users.
- For VARICODE Unlocking:
Wake-up keypad, enter #, enter VARICODE

7. Unlocking by RFID Card / Key Fob

Tap the card/key fob in front of the sensor/touchpad, and wait until the LED flashes and you hear a sequence of beeps.

8. Low Battery Warning

There are two indicators when the batteries are running low:

- When successfully unlocked, you will hear 3 beeps then 5 beeps for low battery warning.
- If the batteries are too low, it will not unlock even after successful authentication using a registered RFID/Key Fob/Phone or correct CODE, and you will hear 3 beeps then 10 beeps as warning.

**Both indicators will only stop once the batteries are replaced with new ones.

9. Lock-out






After 3 consecutive unsuccessful unlocking attempts, the Lock will be non-responsive for 1 minute.
























10. Reset to Factory Default

To reset to factory default, follow these steps:

1. Remove battery cover and take one battery out.
2. Press and hold setup button and replace the battery.
3. Wait until you hear 4 beeps and then release the setup button.
All previous created users and Admin will be deleted.
4. Replace the battery cover.

11. Events, Beeps and LED

Events	Beeps	LED
Setup Button Pressed	2 short beeps	 Green flash 1x
Exit Setup Mode	2 short and 1 long beeps	 Green flash 1x
During Setup Mode	-	 Red light ON
Pairing Success	4 beeps ascending tone	 Green flash 1x
Pairing Fail	1 long and 4 short beeps, the long beep tone is higher	 Red flash 1x

Events	Beeps	LED
Successful Unlocking	3 beeps ascending tone	 Green flash 1x
Access Denied	1 long and 4 short beeps, the long beep tone is higher	 Red flash 1x
Low Battery Successful Unlocking	3 ascending tone beep followed by 5 short beeps	     Green flash 1x Red short flashes 5x
Successful Authentication but does not unlock due to extreme low battery	3 ascending tone beep followed by 10 short beeps	         Green flash 1x Red short flashes 10x
Successful Menu Operation	4 beeps, ascending tone	 Green flash 1x
Failed Menu Operation	1 long and 4 short beeps, the long beep tone is higher	 Red flash 1x
Lock-out	1 long and 4 short beeps, followed by another long beep	 Red long flash 1x
During lock-out period	-	  Red flash 2x every 5 seconds (for 1 minute)
After successful unlocking, before relocking	-	 Green flash once per second
Relocking	-	 Red flash 1x

12. Technical Specifications

- User Counts: maximum 1 Admin + 49 Client Phones, 50 Codes, and 50 Cards
- Powered by 4x AA Batteries
- Operation Temperature: -20°C to 70°C
- Radio Frequency: NFC/MiFARE: 13.56MHz, Bluetooth: 2.4GHz

13. Troubleshooting

PROBLEM	SOLUTION
Administrator phone becomes an invalid user	The Admin may lose the administration rights when any of the following happens: <ol style="list-style-type: none">1. Another Phone has been setup as a new Admin2. Operation of “Deleted All Phones” or “Delete All Codes/Cards/Phones including Admin” are performed on keypad3. Phone is reset-to-factory-default
Lock is working but no audible sound	Check if parameter setting is on Mute mode

PROBLEM	SOLUTION
Not relocking after being unlocked	Check if parameter setting is on Passage mode
Lock not responding	Change battery and try again
NFC unlocking is not working but other functions of the Lock is still working	<ol style="list-style-type: none"> 1. Close the app and restart, then try again 2. If it's still not working, turn NFC off and back on again, then try unlocking the Lock 3. If it's still not working, reboot the phone and try again
Bluetooth communication with the Lock not working (For Bluetooth Pairing, Unlocking, or Sync) but other functions of the Lock are still working	<ol style="list-style-type: none"> 1. For the App to close, then launch the App and try again 2. If still not working, turn-off Bluetooth function on the phone and turn-on again, then try again 3. If it's still not working, reboot the phone and try again

DISCLAIMER: *Cal-Royal Products does not claim that this lock can provide complete security by itself. This lock may be defeated by forcible or technical means, or evaded by entry elsewhere on the property like any other locks. No lock can substitute for vigilance, awareness of your environment, and common sense. Builder's hardware is available in multiple performance grades to suit the application. In order to enhance security and reduce risk, you should consult a qualified locksmith or other security professional.*

Notice of Open Source Licenses

[FreeRTOS]

This product uses FreeRTOS v7.3.0. The source code of FreeRTOS used can be downloaded here:
<http://sourceforge.net/projects/freertos/files/>

[OpenSSL]

This product uses OpenSSL, and the OpenSSL license can be downloaded here:
<http://www.openssl.org/source/license.html>

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit.
(<http://www.openssl.org/>)

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).



6605 Flotilla St., Commerce, CA 90040

Tel. (323) 888-6601

Fax. (323) 888-6699

Website: www.cal-royal.com

E-mail: sales@cal-royal.com