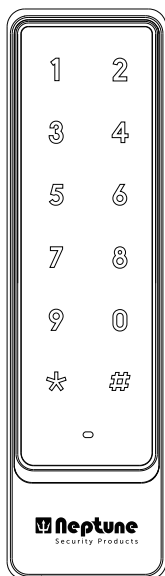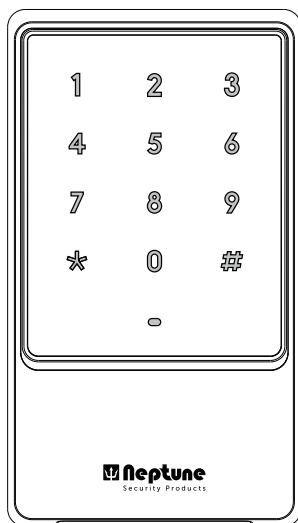# Neptune
Security Products

NEKPWST2S / NEKPWST2W

INSTRUCTION MANUAL

NEKPWST2S

NEKPWST2W

1. Introduction, Features and Specifications:

1.1 Introduction:

Control one door, and can be connected with an external card reader to utilise the special functions such as anti-passback through the wiegand wire. It can control an electric lock, alarm, doorbell, external exit button and magnetic door switch. It can read different kinds of contactless cards such as EM, HID, Mifare and CPU at the same time. 2000 user capacity, each user have a card and a password. In addition, the product can also set 1 administrator password, 1 adding card, 1 delete card, 1 anti-stress card and 1 anti-stress password, and is an easy operation for users.

1.2 Features:

Zinc alloy structure, waterproof design, fully potted, confirm to IP65.
High strength wear-resistant glass panel, capacitive touch keypad.
125Khz built-in EM&HID card reader.
13.56Mhz built-in Mifare & CPU card reader(ISO14443A).
The back light can be set to Normal ON, Normal OFF or Automatic mode.
Multi-function, including card reader, standalone access control, anti-passback and other working modes, suitable for various applications

1.3 Specification:

Input Voltage:	DC12～24V
Quiescent Current:	≤45mA
Reading distance of EM&HID card:	5cm
Reading distance of Mifare&CPU card:	2cm
Reading card Antenna Frequency:	125KHz & 13.56MHz
Card number transmit format:	Wiegand 26-37（HID card output wiegand 26-37 bit automatically）
Keypad output format:	Input a 4-6 digits password, card number output, Single Key a 4 bits output, Single Key a 8 bits output.
Dimension(Height x Wide x Depth):	Wide:145x83x26mm,Slim:160x45x26mm
Working Environment Temperature:	-20～60° C
Working Environment Humidity:	0～95% (non-condensing)

2. Installation and Wiring Instruction

2.1 Package List

Item	Product Name	Model/Description	QTY	Remark
1	Colour box	NEKPWST2W NEKPWST2S	1	
2	Access controller	NEKPWST2W NEKPWST2S	1	
3	Instruction Manual	NEKPWST2W NEKPWST2S	1	
4	Installation Sticker Template	NEKPWST2W NEKPWST2S	1	
5	Screw Hole Cover	NEKPWST2W NEKPWST2S	1	
6	Wall Plugs	Φ6mm×30 mm	4	white
7	Self Tapping Screw	ΦKA3mm×25 mm	4	Zinc plating

2.2 Installation Steps
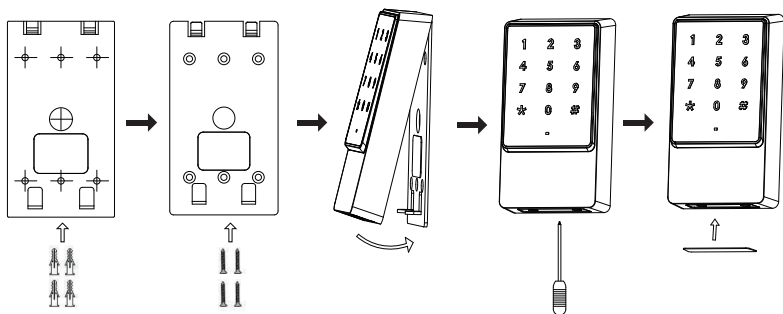
① Stick the installation template sticker on the wall, drill Φ14mm hole for outlet and 4 Φ6mm installation holes with expansion, then insert the 4 wall plugs into the installation holes;

② With a screwdriver, remove the anti-drop screws from the product's side, remove the bottom shell, compare the opening position of the bottom shell, and secure the bottom shell to the wall with four self-tapping screws.

③ According to the selected wiring diagram, cut the lead wire to the appropriate length, and cut off the excess wire ends. Connect the system wire through the wall or in the embedded box according to the wiring diagram one by one, taking care not to connect incorrectly or short circuit, otherwise the keypad may be damaged. After double-checking that the keypad is properly wired, turn it on for a few seconds to see if the indicator is working and the buzzer is beeping; if not, turn it off immediately and double-check the wiring. Install the product lid on the rear shell on the wall, and secure it with anti-drop screws after making sure everything is in order. Stick the screw hole cover on the anti-drop screw position.

2.3 Wiring Diagram

Wiring Diagram
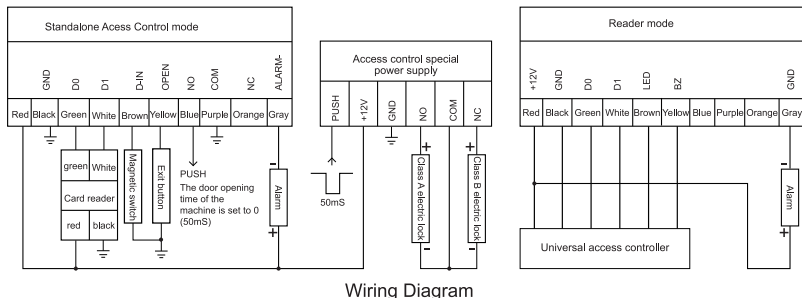
Note: Class A Electric lock refers to the unlocking when power is on, such as electric control lock, electric lock. Class B Electric lock refers to the unlocking when power is off, such as magnetic lock, electric bolt lock.

3. Administrator Card Operation - not included with Keypads

3.1 Add User Card - refer to Advanced Operation
Read Adding card once, read several user cards continuously, finally read adding card once.

3.2 Delete User card - Refer to Advanced Operation
Read delete card once, read several user cards continuously, finally read delete card once.

4. User Operation

4.1 Use Card to Open Door
Read valid user card once, the lock opened.

4.2 Use Card and Password to Open Door
Read valid user card once, then enter 4-6 digits user's password, press "#", the lock opened.

4.3 Use Card or Password to Open Door
Read a valid user card or input a valid user password, the lock will open.
Or enter 4-6 digits user's password, press "#", the lock opened.

4.4 Multi-Card to Open Door: the door opening mode is required to be card mode, the number of multi-card door opening is set to 2-10
Read 2-10 times different valid user cards (the interval should not exceed 5 seconds), the lock will open.

4.5 Electric Lock Switch Mode
In normal mode, the electric lock will be closed for a period of time after being opened, which is equal to a delay switch

In switch mode, switch the state of electric lock once for each valid unlock operation, and keep the state of lock all the time.

4.6 Modify User Password
Press "*", read user card once, enter 4-6 digit old password #, enter 4-6 digit new password #, repeat enter 4-6 digit new password#.
Or press "#", enter 1-2000(ID) #, enter 4-6 digits old password #, enter 4-6 new password #, repeat enter 4-6 digits new password #.
Note: password users must get their ID number and initial password from the administrator. For cardholders, the first time they change their password, they must do so in card mode.

5. Alarm Function

5.1 Anti-tamper Alarm
When anti-tamper Alarm function is turned on, if the device is disassembled illegally, the built-in buzzer and external alarm will both alarm.

5.2 Door Status Alarm
When connecting the door status switch, if the door is opened illegally, the built-in buzzer and external alarm will both alarm.

5.3 Anti-stress Alarm
When the door is opened under duress:
When the door is opened after reading the anti-stress card or entering the anti-stress password #, the external alarm will sound, but the built-in buzzer will not.

5.4 Cancel the Alarm
To cancel the anti-tamper and door status alarm, read a valid user card or input the administrator password; if no operation is performed, the alarm will be cancelled automatically once the set alarm time has passed.

6. Anti-crack Function

To prevent malicious card and password cracking, try entering an invalid administrator password, user password, anti-stress password, or read invalid card 10 times and then start performing the required action. There are three levels: unlimited number of errors, 10 errors locked for 10 minutes, and 10 errors alarm for 1-3 minutes.

7. Reset to Factory Default

When the power is turned on for 1 second, the indicator light turns orange. Press "*" within 1 second, release it when you hear two shoot beeps, then a long beep, and you're back in regular operation mode. The factory default settings have been restored, but personal data has not been deleted.

8. Voice and Light Indication

Operation Status	Indicator Light Colour	Buzzer
Standby	Red	
Keypad		Short Beep
Read Card	Green	Long Beep
Unlock	Green	Long Beep
Operation Successful	Green	Long Beep
Operation Failed		3 short beep
Entering a Password	Slow Red Flash	
Read card and password	Slow Red Flash	
Read Multi-card to open door	Slow Red Flash	
1st menu	Slow Red Flash	
2nd menu	Slow Orange Flash	
During Setting	Orange	
Manage card Enter	Orange	Two short beep
Manage Card Exit	Red	Long beep
Alarm	Fast Red Flash	Alarm Voice

9. Administrator Keypad Operation:

Enter Administrator Operation			
Red	Red Flash	Remark	Function
*	6-8 digits administrator password, #	Default: 888888	Enter administrator Operation Status

When administrator password is not entered correctly, and the effective operation interval is more than 5 seconds, the current operation will exit to the normal standby state. When administrator enters the correct password, and the effective operation interval is more than 30 seconds, the current operation will exit to the normal standby state. During operation programming, pressing "#" means confirm input number. In adding or delete cards operation, it means end the loop of operation and return to the previous operation; Press "*" key every time to exit the first-level operation state, and observe the indicator colour to know which operation state you are in. The following operations are valid only after entering the administrator operation status.

9.1 Basic Operation:

Basic Operation			
Red Flash	Orange	Function	Remark
0	6-8 digits new password, #, repeat 6-8 digits new password, #	Modify administrator password	
1	Read card	Adding 1 card[2]	Rotate Operation[3]
	1-2000 (ID), #, read card		
	8 or 10 digits card number[1], #		
	1-2000 (ID), #, 8 or 10 digits card number, #		
	1-2000 (ID), #, 4-6 digits user password, #	Adding 1 user password	
2	Read card	Delete 1 card	Rotate Operation
	8 or 10 digits card number, #		
	1-2000 (ID), #	Delete 1 user	
2	0000, #	Delete all cards and password	
3	0, #	Card to open door	Default 2
	1, #	Card and password to open door	
	2, #	Card or password to open door	
4	0, #	Open time 50mS	Default 5
	1-99, #	Open time 1-99S	

Note:

①8 digits card number, such as 118, 3 2319, some card omit the front number 118, written in 32319, it must read card to add the card correctly; 10-digit card number, such as 0007765567, some cards omit the front number 000, written in 7765567, and add 0 in front to input 0007765567.

②Adding a user password 1234 with the card at the same time, this password is limited to modify the user password, it can not open the door.

③After adding 1 card, it can add another 1 card or another 1 user password continuously without having to re-enter menu 1.

9.2 Advanced Operation:

Advanced Application				
Red Flash	Orange Flash	Orange	Function	Remark
6	1	Read card	Setting adding card	
	2	Read card	Setting delete card	
	3	Read card	Setting anti-stress card	
	4	8-digit anti-stress password #	Setting anti-stress password	
	5	0, #	Normal Unlocking	Default 0
		1, #	Setting switch mode[1]	
	6	1-10, #	Number of multi-card door opening[2]	Default 1
	7	1-2000 (ID number), #, 8 or 10 digits card number, #, 1-2000 card quantities, #	Adding serial number cards in batch[3]	
	9	1	Administrator unlock	Exit automatically[4]
System Setting				
7	0	0-15, #	Facility address	Default 0
	1	0, #	Reader mode	Default 1
		1, #	Standalone access control for single door	
		5, #	Anti-passback mode	
	2	26-37, #	Card number output format	Default 26

		0, #	4-6 digits key +facility code virtual card number output	
	3	1, #	Single Key a 4bit output	Default 1
		2, #	Single Key a 8bit output	
	4	0, #	Turn off Alarm[5]	Default 1
		1-3, #	Turn on Alarm for 1-3 minutes	
User Options Setting				
8	1	0, #	Indicator Light Normally OFF[6]	Default 1
		1, #	Indicator Light Normally ON	
	2	0, #	Buzzer OFF[7]	Default 1
		1, #	Buzzer ON	
	3	0, #	Keypad Light Normally OFF	Default 1
		1, #	Keypad Light Normally ON	
		2, #	Keypad Light Automatic mode[8]	
	4	0, #	Turn Off anti-tamper alarm	Default 0
		1, #	Turn On anti-tamper alarm	
	5	0, #	Unlimited Error number	Default 0
		1, #	10 times errors[9] locked for 10 minutes	
		2, #	10 times errors alarm for 1-3 minute	

Note:

· For each effective unlocking operation, change the switch state once, and keep locking the state all the time.

· Only valid under the card opening mode, open the door after reading 2-10pcs cards continuously.

· The device will take ID number and card number as the initial data, add 1 card, then automatically increase ID number and card number, continue to increase the next card, until the specified number of cards have been added, but the increasing ID number can not exceed 2000, and the input ID number + card quantities-1<=2000.

· After unlocking, it will enter the normal working state.

· When the alarm is turned off, it is invalid for the anti-tamper, anti-stress and door status alarm.

· Refers to static state, operation in accordance with the normal instructions.

· After entering administrator password, the buzzer will sound normally.

· Pressing a key or reading a card once, the keypad light will be turned off after 30s delay. However, when the keypad light is off, it means the keypad will turn after the first key press, without any other function.

· Start the corresponding operation after 10 errors continuously, including: try to enter invalid administrator password, user password, anti-stress password or read invalid card.

10. Various Working Modes Application

There are 3 working modes in the device, reader mode, standalone access control mode, anti-passback mode. The default working mode is standalone access control.

The device can be connected to the external reader through Wiegand and realise various functions. The information such as card number and password are stored inside the device. The external reader is only an input device for reading card or password. The external reader can be connected to multiple devices in parallel, but the functions are the same. The operation on the local device and external readers are different, depending on the mode setting.

10.1 Reader Mode

As a card reader, the device has the following functions:

Enter Administrator Operation			
Red	Red Flash	Function	Remark
*	6-8digits administrator password #	Enter administrator operation mode	Default 888888

Reader Settings				
Red Flash	Orange Flash	Orange	Function	Remark
0		6-8digits new passwords #, repeat 6-8 digits new passwords #	Modify Administrator Password	
7	0	0-15, #	Facility code	Default 0
	1	0, #	Reader mode	Default 1
		1, #	Standalone mode	
		5, #	Anti-pass back mode	
	2	26-37, #	Card number output format	Default 26
	3	0, #	4-6 digits +facility code virtual card number output	Default 1
		1, #	Single Key a 4bit output	
		2, #	Single Key a 8bit output	
	4	0, #	Turn off Alarm	Default 1
		1-3, #	Turn on Alarm for 1-3 minutes	
8	1	0, #	Indicator Light Normally OFF	Default 1
		1, #	Indicator Light Normally ON	
	2	0, #	Buzzer OFF	Default 1
		1, #	Buzzer ON	
	3	0, #	Keypad Light Normally OFF	Default 1
		1, #	Keypad Light Normally ON	
		2, #	Keypad Light Automatic mode	
	4	0, #	Turn off anti-tamper alarm	Default 0
		1, #	Turn on anti-tamper alarm	

When LED level is low, indicator light will turn to Green. When LED level rises, indicator light will turn to normal. When BZ level is low, the Buzzer will beep. When BZ level rises or after 30 seconds, the Buzzer will turn to normal. When used as a card reader, card number and keypad output is in wiegand format. The output data is shown by the low level of D0 & D1 cable, as shown below:

D0: low level means 0, green cable.

D1: low level means 1, white cable.

The pulse width for low voltage is 40 us, and the time internal is 2 ms.

EM, Mifare card output format is wiegand 26-37, HID card does not need to be set, and automatically wiegand 26-37 output according to card format. The output format should match the connected controller, and the default is wiegand 26.

There are 3 Keypad output formats set as below:

Format 0: 4-6 digits facility code virtual card number output, enter 4-6 digits password, press "#", wiegand 26-37 output, 10-bit decimal card number. Card number as follows, the 1-4 bit is the facility code, the range is 0 to 15, add "0" in the front if less than 4 digits, the 5-10 bit is 4-6 digits password, add "0" in the front if less than 6 digits. For example, facility code is 15, the password is 999999, then output card number is 0015999999, the maximum output card number is 0015999999, that is 0xF423FF, wiegand 26 card number format output are available, it can be seen 0015999999 shown on the device of 10-bit decimal card number, it is easy to the management of entering password.

Format 1: Single Keypad 4bit output, this means when you press a key on the Keypad, outputs 4Bit data, the corresponding relationship is listed below:

1 (0001) , 2 (0010) , 3 (0011)

4 (0100) , 5 (0101) , 6 (0110)

7 (0111) , 8 (1000) , 9 (1001)

* (1010) , 0 (0000) , # (1011)

Format 2: Single Keypad 8bit output, it means when press a key on the Keypad, outputs 8bit data, the first 4 digits are the opposite of the back 4 digits, the corresponding relationship is listed as below:

1 (11100001) , 2 (11010010) , 3 (11000011)

4 (10110100) , 5 (10100101) , 6 (10010110)

7 (10000111) , 8 (01111000) , 9 (01101001)

* (01011010) , 0 (11110000) , # (01001011)

10.2 Standalone Access Control Mode

Under this mode:

The electric lock can be opened by reading a user card or inputting a user password on the device or external card reader.

Read anti-stress card or input anti-stress password on the device or external card reader to open the electric lock, and the external alarm will sound at the same time.

10.3 Anti-passback Mode

The anti-passback means that it needs to read a card to enter and exit a room through the same door, it cannot read card twice continuously to enter or exit the room. This prevents two people from entering and exiting with one card at the same time, under this mode:

Read anti-stress card or input anti-stress password on the device or external card reader to open the electric lock, and the anti-passback mode will not affect the device, and the external alarm will sound at the same time.

Read user card on the device or external card reader, user must read card on the device at the first time if want to enter room, user must read card on the card reader at the second time if want to exit room, the user must read card repeatedly between the device and external card reader, then can enter room or exit room.

In anti-passback mode, the user password is invalid.

11 Simple Troubleshooting

Trouble	Fault Reason	Fault Reason & Solution
Reading distance too close	1.Card quality issue 2.Switch power supply interferences card reading	1.Please use original card 2.Power supply and standalone access control need connect to ground wire.
User password setting error	1.The password setting does not comply with the specification 2.Setting user password under card reader mode	1. User password can not set to 1234 2. User password only can be 4-6 digits
Cannot open door after inputting user password	Use password 1234 to open door	1234 is user password initial data, and can not use to open door, it must modify to other password number.
Alarm under normal situation	When the product is installed, there is light leakage at the bottom.	When the device is installed, the bottom should be close to the wall without light leakage.
No reaction after reading card	The product is not at the standby state.	Press "*" to exit, the indicator become red, let the device standby state
The Keypad light doesn't work.	Keypad light mode setting incorrect.	1.Please set the key light mode to normal ON or automatic 2.In automatic mode, the indicator light will turn off automatically without operation after 30S.
Can not enter administrator setting	Forget administrator password	Reset to factory default, default administrator password is 888888. Use conditions and parameters need to be reset without losing user data.
Other Trouble	Not in above list	Users can't solve the problem by themselves, please contact the distributor Technical Support Team