

Taiwan Secom Co., Ltd.

OPC-003C
Card Reader

Technical Manual V1.0

OPC-003C

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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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This 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.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

1. System Description

1.1 Introduction

OPC-003C is a Mifare NFC reader , it can be running with 3 modes: Independ mode 、 terminal mode 、 lift control.

Independ mode : The reader is capitable with controller functions to connect to Acess Server directly, running without access controller. All of access related data include the user information 、 access parameters can be stored withing the reader. It can be worked along without server connection for access operation. The access record s will upload to Server once server connection establish. The Access Server also be able to query the access related data without access controller. The reader is capitable with operation with its own keypad for parameters and access records inquiry.

Terminal mode : The reader be card reading function only. In this mode, it has to connect to access controller via RS-485.

Life control mode : The reader is able to connect to I/O module (CTM-0080) via RS-485 for lift control. User information can be added with the lift floors access right information. It can control up to 50 floors.

Regarding the card management, card unumber data is sepreated with 2 parts, system code and user code, system code data length is 3 up to 7 bytes, and user code data length 7 to 10 bytes, up to user requirement.

The reader support following NFC card data type: ISO14443-A 、 ISO15693 、 ISO14443-B 與 Felica 。

Since the reader is able running independent with access controller for access control, like the card idenfication 、 door open 、 access reader storage. The access system cost will decrease cost.

1.2 Function description

1. Chinese/English LCD
English Message: 4 row x 16 column
Chinese Message: 4 row x 8 column
For Company Name 、 Date 、 Card Number 、 Operation Message 、 Attendance Status etc., 。
2. LED Indicator:
Blue LED Always lighting: power on

Blue LED Flash one time: card access normal

Red LED Flash for 3 times: card access innormal

Red & Blue LED Flash interchange: card system alert(ex. communication error 、reader dismantle)

3. Buzzer: for card access and keypad press indication
4. Keypad: <0> ~ <9> , <C> , <←> , <F1> , <F2> , <F3> , <F4> 16 press button for password and attendance status change
5. Keypad with backlight
6. RS-485: there are 2 pair of RS-485 commnuication wires,one is for access controller and the other for CTM-0080 device connection or lift controller module
7. RJ45: Network communication to connect to access server for data exchange
8. Dismantle detection: Reader will deliver the alarm event once dismantle detected
9. NFC module: contain with MIFARE NFC module
10. Support NFC card data type: ISO14443-A MIFARE® family include DESFire EV1/EV2 、ISO15693 、ISO14443-B 與 Felica
11. RTC : RTC with battery, it allow to set via access server
12. EEPROM: for reader system parameters storage
13. SRAM: for card numbers 、 access records 、 system parameters storage.
14. FLASH: data backup for card numbers 、 access records and firmware temporary storage during the updating
15. Card data: up to 20,000 record for card information, it include the card number 、 password 、 vaild date 、 time zone for door and lift access.
16. Access record: up to 20,000 record
17. Alarm record: up to 2,000 record
18. Time zone group for door: one group up to 24 time zone, and time zone group can be set related to specified door to defind the access right
19. Time zone group for card holder: one group up to 64 time zone, and time zone group can be set related with the card holder to defind the access right
20. Holiday Group: support 3 holiday group definition, each up to 60 holiday.
The access right can be enable or disable during the holiday
21. Music time zone: support 3 music time zone group, there are 36 music time zone definition. Each Digital Output can specified for music active. Each music time active period is 1~99 seconds.
22. DI detective mode: Reader support 3 Digital Input channel, there are 8 type of DI detective mode
Innormal input
Normal lock active
Fire alert trigger

Security system enable/disalbe
Security system innormal
Push button active
Door senseor
Report input

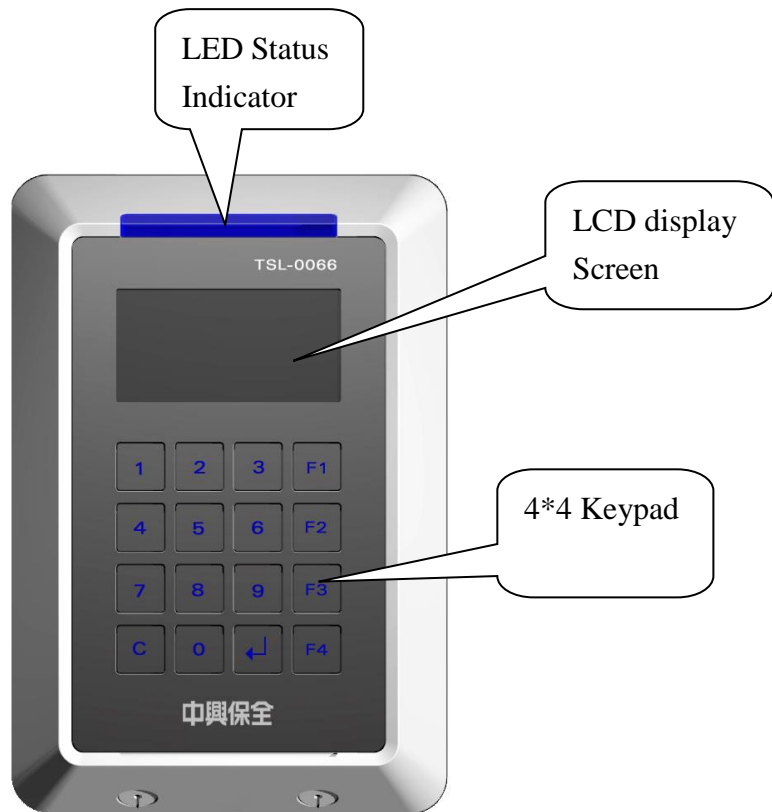
23. DO action mode: Reader support 3 Digital Output channel, there are 20 type of DO related active mode

Door open
Door close
Illeag card access
Communication error
Reader dismantle detective
Door open forcing
Door close over time limit
Anti-duress
External innormal input
Door lock
Manual trigger
Any kind of innormal alert
Invalid card access
Card access during control time
Music active
Card access and "1" button pressed
Card access and "2" button pressed
Card access and "3" button pressed
Card access and "4" button pressed
Reader case open/close

24. Support anti-duress operation: Press "9"+Enter before card access or password input

2. Reader outline

2.1 Reader Outlook



2.2 System outline description

2.2.1 LED Indicator:

Blue LED Always lighting: power on

Blue LED Flash one time: card access normal

Red LED Flash for 3 times: card access innormal

Red & Blue LED Flash interchange: card system alert

(ex. communication error 、 reader dismantle)

2.2.2 LCD display :

Display message include with following information

Comany name

User Name

Access Date/Time

Attendance Status

Error message

2.2.3 Keypad :

1. Normal operation :

- 1.1. **0~9** key : for password input, password length is 4 to 7 digital , press **↵** for enter ◦
- 1.2. **C** key : cancel key-in data ◦
- 1.3. **↵** key : for password key-in enter ◦
- 1.4. **F1~F4** key : for attendance status selection ◦
- 1.5. **C** + **111** : to display current reader ID ◦
- 1.6. **C** + **880** : reset reader ◦
- 1.7. **C** + **888** : for LCD with Chinese or English character display ◦
- 1.8. **C** + **000** : Date/Time display ◦
- 1.9. **C** + **999** : Reader MAC address display ◦
- 1.10. **C** + **222** : Reader Firmware version information display ◦
- 1.11. **C** + **333** : Communication status display ◦
- 1.12. **C** + **444** : Display reader configuration screen ◦
- 1.13. **C** + **555** : Display access record re-send screen ◦
- 1.14. **C** + **666** : Display reader current access mode ◦

2. Menu operation

- 2.1 **0~9** : Select function or data input ◦
- 2.2 **C** : cancel or return the last page ◦
- 2.3 **↵** : enter to next page or confirm the data input ◦
- 2.4 **F1~F4** : direction for up/down/right/left ◦

2.3 Reader connector description

2.3.1 CN4 : 5Pin for Power and RS-485 interface

	Label	Wire Color	Description
1	+12	Red	PWR +12V
2	G	Black	PWR -
3	L+	Blue	RS485 L+
4	L-	White	RS485 L-
5	G	Brown	Float GND

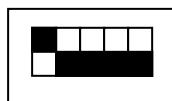
2.3.2 CN2 : 8P Digital Input/Output

	Label	Wire Color	Description
1	RL1N		RELAY 1
2	RL1C		RELAY 1 COM
3	RL2N		RELAY 2
4	RL2C		RELAY 2 COM
5	RL2N		RELAY 3
6	RL2C		RELAY 3 COM
7	SW1		DI 1
8	SW2		DI 2
9	SW3		DI 3
10	G		GND

2.3.3 CN8 : 3P RS-485 for CTM-0080 device connection or lift controller module

	Label	Wire color	Description
1	DL+		RS485 L+
2	DL-		RS485 L-
3	G		GND

2.3.4 DIP SW



ON(1)

OFF(0)

DIP SW 1~2 : (reserve)

DIP SW 3 : reboot machine when network disconnected for 24hours (ON : Enable , OFF : Disable) °

DIP SW 4 : testing mode(for manufacture testing) °

DIP SW 5 : for supervisor card access , turn SW 5 on and access supervisor card for two times

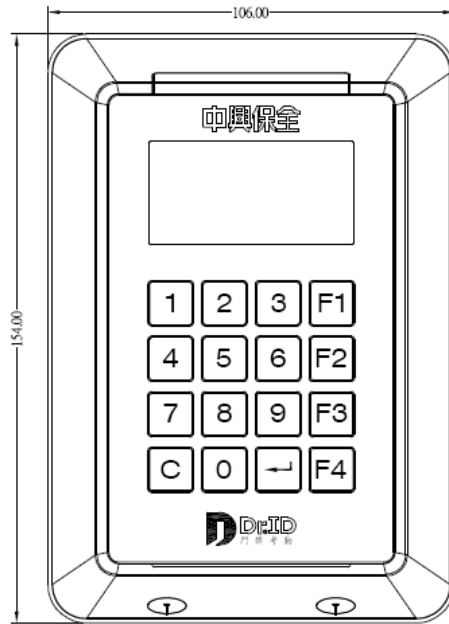
2.4 Reader Hardware Specification

2.4.1 Outlook

2.4.1.1 case material : Silver gray ABS resin

2.4.1.2 operation environment : temperature -10~45°C humidity 20%~90%

2.4.1.3 size: 15.4 cm(long) , 10.6 cm(wide) , 3.0 cm(height)



2.4.1.4 wieght: 250g

2.4.1.5. water proof : IP53

2.4.2 Electronic Specification :

2.4.2.1 input power : DC 12V (10V~15V)

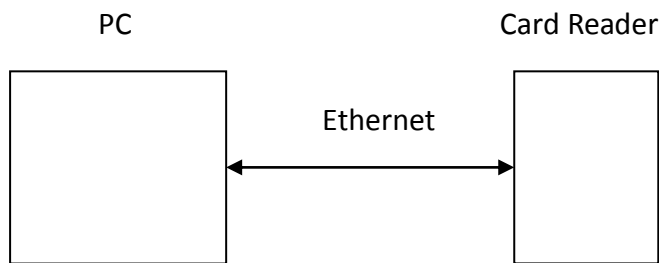
2.4.2.2 Maximum current consumption :

3. System Description:

3.1. system architecture

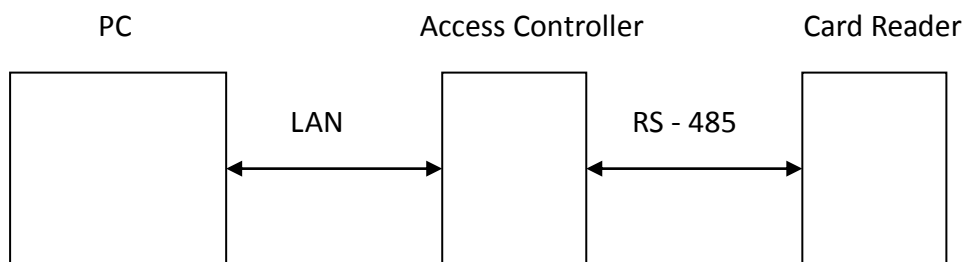
3.1.1 Architecture for independent reader contain with controller function

The reader and the PC are connected through the network, and the PC can set the parameter and record inquiry to reader, and the reader will upload the status by yourself, ex. card access status or abnormal status. If the the network disconnected, the reader is still can work independly.



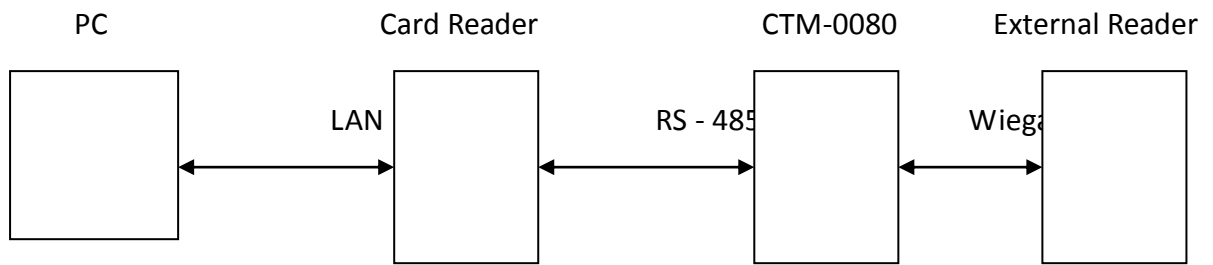
3.1.2 Architecture for reader only

The card reader connect with access controller, and all parameters or commands are communicate through by the access controller. If card reader disconnected with controller, then the reader will be able judge reader access right by itself. Once the reader re-connect with controller, it will send all of

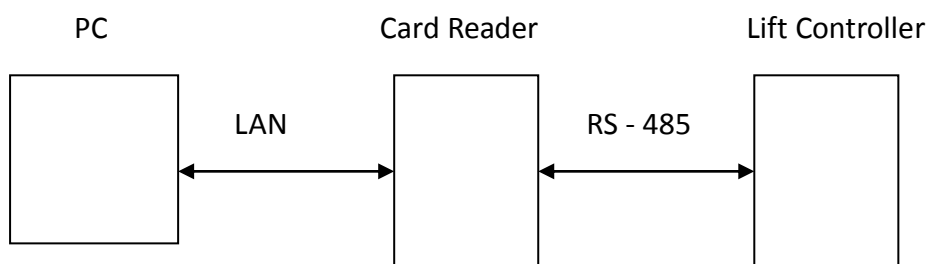


3.1.3 External Access Reader:

Card reader is capable to connect to external wiegand reader via CTM-0080. All of access records by external reader will send back to PC through card reader.



3.1.4 Lift Control : Card reader is able to control lift floor button via lift controller determine by card access right.



3.2 Function Description

3.2.1 Card Access :

(1) Card data format :

Mifare Classic card, 14 digital numbers. It separate as two parts, one is System Code, and the other is user ID.

System Code: It can be set as 4~7 digital numbers. It can be treated as company ID.

User ID: For personal use. It can be set as 7-10 digital numbers.

If the reader set as for Mifare serial number access, there are 10 digital numbers, and the System Code has to be set as "0001".

The default card type is: 14 sector, it can be reconfigured as user need.

OPC-003C support new card type: DESFire v2 card.

1. If reader config to read card serial number, it will be able access following card type:
 1. ISO14443-A
 2. ISO15693
 3. ISO14443-B
 4. Felica
2. If reader connect to the CTM-0080 convertor , it will be able connect with the Wiegand & ABA reader .

3. Card access judge mode as following:
 1. Card only ◦
 2. Password + Card ◦
 3. System Code only ◦
 4. Always Open ◦
 5. Always Close ◦
 6. Card or Password ◦
 7. Finger Print ◦
 8. DI related DO reactive ◦
 9. Card + Password ◦
 10. Serial Access mode with card only ◦ (only for 24 time sections)
 11. Anti-Passback control mode ◦ (only for 24 time sections)
 12. Serial Access mode with Password + card ◦ (only for 24 time sections)
 13. Card Access once ◦ (only for 24 time sections)
4. Reader support 8 system code and up to 20,000 card data ◦

3.2.2 Display and Buzzer :

1. Access status :
 - 1.1 Authorize Card Access : Blue LED flash one time ◦
 - 1.2 Unauthorize Card Access : Buzzer one tone for 3 seconds , Red LED flash 3 times, each time for 0.5 second ◦
 - 1.3 Status description :

Controller response	Buzzer	LED
1. Authorize Card Access	silence	Blue LED flash 1 time
2. Unauthorize Card Access	Buzzer one tone for 3 seconds	Red LED flash 3 times, each time for 0.5 second
▪ Password Error		
▪ Expire Date		
▪ Unregister Card		
▪ System Code Error		
▪ Denied Mode		
3. Control period	Buzzer one tone for 3 seconds	Red LED flash 3 times, each time for 0.5 second
4. Case Open Alert		

2. Attendance Status Display :
 - 2.1 User is able to setting the Attendance Status up to 3 Chinese characters for reader display by Access Manager Software ◦
 - 2.2 Manual Attendance Status setting :

- i. **F 1** press 1 time –“On Duty” , **F1** press 2 times –“Lunch Break Start” ◦
 - ii. **F 2** press 1 time –“Off Duty” , **F 2** press 2 times –“Lunch Break End” ◦
 - iii. **F 3** press 1 time –“Overtime Start” , **F 3** press 2 times –“Go Out” ◦
 - iv. **F 4** press 1 time –“Overtime End” , **F 4** press 2 times –“Come Back” ◦
 - v. Display will turn back be normal state after 10 seconds ◦
3. External Reader : It support external reader via Wiegand/ABA for card access ◦
Card data format : Support HID 26/35/34/56 Bit Wiegand reader and YOKEEM 14/10 ABA format reader ◦
 4. Firmware Information : It will show the firmware information during the reader bootup for 5 seconds.

3.3.3 Data Communication :

1. Upload Data : Reader will upload the access records to access system software via network.It also can send records via RS-485 through acces controller ◦
2. System code register : It can be set by access system software via network, or manual operate via reader keypad ◦
3. Anti-Coercion :
 - 3.1. Card acces mode : Press '9'+ ←'first, then card access, the reader will send the Anti-Coercion to access system software ◦
 - 3.2. Card + Password acces mode : Press the user's password, then card access ◦
 - 3.3. Card or Password acces mode :
 - (1) Keyin password then +'9' + ←' , door will open and the reader will send the Anti-Coercion to access system software ◦
 - (2) Press'9'+ 'Enter', then access card, door will open and the reader will send the Anti-Coercion to access system software ◦ ◦
 - 3.4. If user press password and do nothing then, after 10 seconds, reader will go back to stand by mode ◦