

QR code scanner communication

protocol v3.6

Two-dimensional code scanner communication protocol V3.6

This Agreement supports:

Ethernet TCP mode

WIFI TCP mode

485,232, TTL mode

You can enter different modes by using related configuration items in the configuration tool

NOTE: All configuration options in the protocol become invalid after the protocol is restarted. To take effect for a long time, use the configuration tool.

Command chart

Command	Describe	External openness or not
0x01	Device status inquiry	Y
0x02	Get device ID	Y
0x03	Set device time	Y
0x04	LED light & beeper control	Y
0x05	Turn on/off scan code function	Y
0x06	Switch key number update	Y
0x07	Get random number	N
0x08	Device external authentication instruction	Y
0x09	Opening and closing magnetic report (conflict, according to 3.5)	Y
0x0A	Obtaining the device SN (Conflicts, as described in 3.5)	Y
0x0B	Obtain the device UUID	Y
0x0C	Obtain the main control chipID	N
0x0D	Set key configuration instructions	N
0x0E	Internal authentication instruction	N
0x0F	Transparent data transmission to the device	Y
0x10	GET MAC	Y
0x11	Set the authentication mode for VF devices	Y

0x21	Code system, NFC switch Settings	Y
0x22	Set the scanning mode	Y
0x23	Set the code scanning interval	Y
0x24	LED configuration	Y
0x25	Buzzer response configuration	Y
0x26	GPIO_0 control	Y
0x27	GPIO_1 control	Y
0x28	GPIO_0 and GPIO_1 output high level voltage control	Y
0x29	Play audio file	Y
0x2A	Relay control	Y
0x2B	Heartbeat Enable and Heartbeat Report (In 3.5, not in this word document)	Y
0x2C-0x2F	Not enabled	Y
0x30	Get result 1	Y
0x31	Result Reporting mode was set	Y
0x32	Key value reporting	Y
0x33	Get result 2	Y
0x37	Obtain the software version number	Y
0x40	Set admin password	Y
0x41	Whitelist filtering function	Y
0x42	Add white list card number	Y
0x43	Delete white list card number	Y
0x44	Delete all white list	Y
0x45	Configure white list successfully	Y
0x46	Deliver whitelist card numbers in batches	Y
0x47	Check the credit card history	Y
0x48	Delete the credit card history	Y
0x51	The data of the M1 card was read	Y
0x52	Write a piece of data to the M1 card	Y
0x53	Card number reporting switch	Y
0x59	Set the device to upgrade mode	N
0x54	Firmware upgrade: Start transmitting data	Y
0x58	Firmware upgrade: Transmission data	Y
0x56/0x5a	Firmware upgrade: Stop transmitting data	Y
0x57	Firmware upgrade: Overlay mounting	Y
0x5C	Fetch: Fetch request	Y
0x5D	Fetch: Photo transfer	Y
0x81	Audio or picture update: Ready	Y

0x82	Audio or picture update: Subcontract transmission	Y
0x83	Audio or picture update: End instruction	Y
0x8a	Audio or picture update: Delete an audio file or picture	Y
0x90	Send iso14443-3 command	N
0x91	SAM Card operation instruction	
0x92	MF0 Card operation instruction	
0xA0	Read multiple blocks in the M1 sector	Y
0xA1	Write multiple blocks in the M1 sector	Y
0xA2	Initializes a block of values	N
0xA3	Read the value from the plant block	N
0xA4	Add/subtract value	N
0xA5	Backup/Restore	N
0xA6	Send the apdu command	N
0xA7	Select card	N
0xA8	Read any block	N
0xA9	Write arbitrary block	N
0xAA	Locking block	N
0xAB	Write AFI	N
0xAC	Lock AFI	N
0xAD	Write DSFID	N
0xAE	Lock DSFID	N
0x60	Modify Bluetooth parameter instruction	N
0x61	Respond to swipe card, scan code box ,Bluetooth data	Y
0x62	Displays custom data	Y
0x63	Show picture	Y
0x64	Go to a specific window	Y
0xB0	Example Query or modify device configurations	Y

1.Data transmission protocol

1.1 Request data format

Command head + command word + length word + data filed + check word

Command head: two bytes, Default is 0X55, 0XAA

Command word: one byte

Length word: two bytes, indicate this command start from length word to check words bytes (not include check word),low-order in front

Data filed: this option can be 0

Check word: Byte-by-byte XOR value from the command head to the last byte of the data field

1.2 Reply data format

Command head + command word + identifier word + length word + data field + check word

Command head: two bytes, Default is 0x55, 0xAA

Command head: one byte

Identifier word: one byte, 0x00 means response successfully, others means defeated or error

Length word: two bytes, indicate this command start from length word to check words' bytes (not include check word), low-order in front

Data field: this option can be 0

Check word: Byte-by-byte XOR value from the command head to the last byte of the data field

Note: Command head can be altered via configuration tool

2. QR code scanner control request message

2.1 Command 0x01 Device status enquiry

Command: 0x01					
Instruction: Identification word 00 Indicates the device is working; Not 0 Abnormal					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2 byte	Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA
Command word	1 byte	0x01	Command word	1 byte	0x01
Data field length	2 byte	0x00 0x00	Identification word	1 byte	0x00 : success
					Not 0: fail
Data field	0 byte	No such item	Data field length	2 byte	N
			Data field	N byte	Data N=0 No such item
Check word	1 byte		Check word	1 byte	

For example:

PC-->Reader :55 AA 01 00 00 FE

Reader-->PC :55 AA 01 00 02 00 55 AA 03

2.2 Command 0x02 Get Device ID

Command: 0x02					
Instruction: The ID needs to be configured with the configuration tool in advance, that is, the configuration item "equipment number" in the configuration tool.					
Note: The ID passed here is a number of unsigned int type, not ASCII code.					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2 byte	Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA
Command word	1 byte	0x02	Command word	1 byte	0x02
Data field length	2 byte	0x00 0x00	Identification word	1 byte	0x00 : success
					Not 0: fail
Data field	0 byte	No such item	Data field length	2 byte	N
			Data field	N byte	N > 0 Device ID, low order first
Check word	1 byte		Check word	1 byte	

For example:

PC-->Reader :55 AA 02 00 00 FD

Reader-->PC :55 AA 02 00 04 00 80 00 00 00 79

The red part represents the device ID, the low order is in the front,80000000 represents that the device ID is 128.

2.3 Command 0x03 Update or query the system time of the scanner

Command: 0x03
<p>Instruction:</p> <p>Update system time mode--</p> <p>When the field value is 0x00,it means that the scanner will automatically synchronize the network time immediately (the equipment needs to support the network function, and the network is normal). When the field value is 0x01, it means that the scanner will synchronize the network time regularly, the synchronization frequency is 24 hours / time, and the synchronization time is 24:00 (the equipment needs to support the network function, and the network is normal). When the value of this field is 0x02, it means that the scanner time is updated by the upper computer, and the upper computer transmits the timestamp.</p> <p>Note: When there is no data field in the request packet,the data length is 0, the device</p>

will return the device timestamp. The timestamp is the number of milliseconds from January 1, 1970 (00:00:00 GMT) to the present. The storage method is in the first place.							
PC->Reader(Send)					Reader->PC(Receive)		
Item	byte	instruction			Item	byte	instruction
Packet head	2 byte	Default: 0x55 0xAA			Packet head	1 byte	Default: 0x55 0xAA
Comm and word	1 byte	0x03			Command word	1 byte	0x03
Data field length	2 byte	N			Identification word	1 byte	0x00 : success
							Not 0: fail
Data field	0 byte	Update the system time mode	1 byte	0x00 Automatic update time 0 x 01 Periodic update time 0 x 02 Time set on the upper computer	Data field length	2 byte	N
		time stamp	0 byte	If the mode is 2, the unit is MS, and the lowest is the first	Data field	N byte	Data N=0 No such item
Check word	1 byte				Check word	1 byte	

For example:

PC-->Reader :55 AA 03 00 00 FC Get the time of scanning system

Reader-->PC :55 AA 03 00 08 00 **5D 7A 12 1F 74 01 00 00** AB

The red part is the time stamp (the low order comes first):

Hexadecimal1741F127A5D==>Decimalism:1598249138781=020-08-24 14:05:38

For example:

Immediate update time: 55 AA 03 01 00 00 FD Device networking required

Regular update time: 55 AA 03 01 00 00 FC Device networking required

Upper computer setting time: 55 AA 03 09 00 02 5D 7A 12 1F 74 01 00 00 AB

2.4 Command 0x04 LED light & beeper control

For example: Each flash 0x50*50ms (decimal 80) interval 0x0A*50 ms (decimal 10)

Command: 0x04						
Instruction: Confirm that the equipment has correspond lights.						
PC->Reader(Send)				Reader->PC(Receive)		
Item	byte		instruction	Item	byte	instruction
Packet head	2 byte		Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA
Command word	1 byte		0x04	Command word	1 byte	0x04
Data field length	2 byte		0×05 0×00	Identification word	1 byte	0x00 : success
						Not 0: fail
Data field	5 byte	1byte	Switch: 0 is off, 1 is enabled bit0: reserved bit1: red light control bit bit2: green control bit bit3: buzzer control bit bit4: Blue light control bit	Data field length	2 byte	N
		1byte	Times	Data field	N byte	Data N=0 No such item
		1byte	Each duration (unit 50ms)			
		1byte	Each interval time (unit 50ms)			
		1byte	Keep			
Check word	1 byte			Check word	1 byte	

55 AA 04 05 00 02 03 50 0A 00 A5
seconds, the interval is 0.5 seconds

Control the red light to flash three times in 4

55 AA 04 05 00 08 03 50 0A00 AF
interval is 0.5 seconds

The buzzer rings three times in 4 seconds, the

55 AA 04 05 00 08 04 28 28 00 F2
interval is 2 seconds

The buzzer rings four times in 2 seconds, the

55 AA 04 05 00 04 03 50 0A00 A3
4 seconds, the interval is 0.5 seconds

Control the green light to flash three times in

55 AA 04 05 00 0A 03 50 0A 00 AD
interval 0.5s

Red light and buzzer three times in 4 seconds.

55 AA 04 05 000C 03 50 0A 00 AB Green light and buzzer three times in 4 seconds, interval 0.5s

55 AA 04 05 0006 03 50 0A 00 A1 Red and green light flash three times in 4 seconds, interval 0.5s

55 AA 04 05 000E 03 50 0A 00 A9 Red and green light flash and buzzer three times in 4 seconds, interval 0.5s

55 AA 04 05 0018 03 50 0A 00 BF Blue light and buzzer three times in 4 seconds, interval 0.5s

2.5 Command 0x05 Turn on/off scan code function

Command: 0x05					
Instruction: Used to turn on or turn off the scan function					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2 byte	Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA
Command word	1 byte	0x05	Command word	1 byte	0x05
Data field length	2 byte	0x00 0x00	Identification word	1 byte	0x00 : success
					Not 0: fail
Data field	1 byte	1 turn off, 0 turn on	Data field length	2 byte	N
			Data field	N byte	Data N=0 No such item
Check word	1 byte		Check word	1 byte	

For example:

PC-->Reader :55 AA 05 01 00 01 FA turn off the scan function

PC-->Reader :55 AA 05 01 00 00 FB turn on the scan function

Reader-->PC :55 AA 05 00 00 00 FA

2.6 Command 0x06 Switch key number update

Command: 0x06					
Instruction: Apply to DW100					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2 byte	Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA

Command word	1 byte	0x06	Command word	1 byte	0x06
Data field length	2 byte	0x00 0x00	Identification word	1 byte	0x00 : success
					Not 0: fail
Data field	1 byte	0 turn off, 1 turn on	Data field length	2 byte	N
			Data field	N byte	Data N=0 No such item
Check word	1 byte		Check word	1 byte	

For example:

PC-->Reader :55 AA 06 01 00 01 F9 Open button report

PC-->Reader :55 AA 06 01 00 00 F8 Close button report

Reader-->PC :55 AA 06 03 00 00 FA

2.7 Command 0x09 Open the door on the magnet

Command: 0x09					
Instruction: Applicable to devices with the door status sensor function					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2 byte	Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA
Command word	1 byte	0x09	Command word	1 byte	0x09
Data field length	2 byte	0x01 0x00	Identification word	1 byte	0x00 : success
					Not 0: fail
Data field	1 byte	0 turn off, 1 turn on	Data field length	2 byte	N
			Data field	N byte	Data N=0 No such item
Check word	1 byte		Check word	1 byte	

For example:

PC-->Reader :55 AA 09 01 00 01 F6 Open button report

PC-->Reader :55 AA 09 01 00 00 F7 Close button report

Reader-->PC :55 AA 09 00 00 00 F6

2.8 Command 0x0A Obtaining the device SN

Command: 0x0A					
Instruction: Obtaining the device SN					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2 byte	Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA
Command word	1 byte	0x0A	Command word	1 byte	0x0A
Data field length	2 byte	0x00 0x00	Identification word	1 byte	0x00 : success
					Not 0: fail
Data field	1 byte	No such item	Data field length	2 byte	N
			Data field	N byte	Data N=0 No such item
Check word	1 byte		Check word	1 byte	

For example:

PC-->Reader :55 AA 0A 00 00 F5

Reader-->PC :55 AA 0A 00 10 00 **75 A2 37 20 16 A2 A0 07 00 00 00 00 84 0B 9C CF EA**

The red part indicates the device SN, which contains 16 bytes

2.9 Command 0x0B Obtain the device UUID

Command: 0x0B					
Instruction: Obtaining the device UUID					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2 byte	Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA
Command word	1 byte	0x0B	Command word	1 byte	0x0B
Data field length	2 byte	0x00 0x00	Identification word	1 byte	0x00 : success
					Not 0: fail
Data field	1 byte	No such item	Data field length	2 byte	N
			Data field	N byte	Data N=0 No such item
Check word	1 byte		Check word	1 byte	

For example:

PC-->Reader :55 AA 0B 00 00 F4

Reader-->PC :55 AA 0B 00 06 00 77 DB 00 F7 08 84 25

The red part indicates the device UUID.

2.10 Command 0x10 Obtain the device MAC

Command: 0x10					
Instruction: Obtaining the device MAC					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2 byte	Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA
Command word	1 byte	0x10	Command word	1 byte	0x10
Data field length	2 byte	0x00 0x00	Identification word	1 byte	0x00 : success
					Not 0: fail
Data field	1 byte	No such item	Data field length	2 byte	N
			Data field	N byte	Data N=0 No such item
Check word	1 byte		Check word	1 byte	

For example:

PC-->Reader :55 AA 10 00 00 EF

Reader-->PC :55 AA 10 00 11 00 39 30 3A 65 38 3A 36 383A 38 35 3A 64 63 3A 61
33 C6

2.11 Command 0x21 QR, Bar-Code,NFC setting

Command 0x21								
Instruction: When the bar code is enabled, the control word is two bytes. The second byte is optional. Corresponding to position 1, the function is enabled successfully								
	Bit7	Bit6	Bit5	Bit4	Bit73	Bit2	Bit1	Bit0
Control word 1	CODE 39	ISBN13	EAN13	EAN8	NFC	Bar code is enabled	DM	QR
Control word 2	UPCE	ISBN10	ITF	PDF417	BAR_EXP	DATABAR	CODE 128	CODE 93
<p>Note:</p> <p>1.The part marked in red indicates that the function is not enabled or not supported.</p>								

<p>If the command is sent, the device replies to execute SUCCESS to enable other code systems, the first control word BIT2 position 1 and the Data length is 2 bytes, that is, Data field is 0x02 0x00</p> <p>2.About the first control word bit2 bits:</p> <p>A. When the bit2 position is 1 and only the control word 1 exists in the command, the bit2 indicates that all bar codes are enabled</p> <p>B. When the bit2 position is 1 and the command contains two control words, the bit2 bits at this time indicate that the corresponding bar code can be independently controlled</p>					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x21	Command word	1Byte	0x21
Data field length	2Byte	0x01 0x00 or 0x02 0x00	Identification word	1Byte	0x00 : success
					Not0: fail
Data field	N Byte	The first control word	1 Byte	Data field length	2Byte
		The second control word (optional)	1 Byte	Data field	N Byte
Check word	1Byte		Check word	1Byte	

For example:

PC-->Reader :55 AA 21 01 00 00 DF Empty the code value

PC-->Reader :55 AA 21 01 00 01 DE QR

PC-->Reader :55 AA 21 01 00 02 DD DM Does not support temporary

PC-->Reader :55 AA 21 01 00 04 DB Barcode

PC-->Reader :55 AA 21 01 00 08 D7 NFC

PC-->Reader :55 AA 21 02 00 14 00 C8 EAN8

PC-->Reader :55 AA 21 02 00 24 00 F8 EAN13

PC-->Reader :55 AA 21 02 00 84 00 58 CODE39

PC-->Reader :55 AA 21 02 00 04 01 D9 CODE93

PC-->Reader :55 AA 21 02 00 04 02 DA CODE128

PC-->Reader :55 AA 21 02 00 04 10 C8 PDF417

PC-->Reader :55 AA 21 02 00 04 20 F8 ITF

PC-->Reader :55 AA 21 02 00 04 40 98 isbn10 EAN13 needs to be opened

PC-->Reader :55 AA 21 02 00 04 80 58 Upce

PC-->Reader :55 AA 21 01 00 09 D6 QR,NFC

PC-->Reader :55 AA 21 01 00 0F D0 QR,DM, Barcode, NFC

Reader-->PC :55 AA 21 00 00 00 DE

2.12 Command 0x22 Scan code work mode setting

Command 0x22								
Instruction: Common mode:Output all scan content Single mode:The same code is output only once (in the continuous scan code) Interval mode:The same code is printed only once at a certain time interval								
PC->Reader(Send)					Reader->PC(Receive)			
Item	byte	instruction			Item	byte	instruction	
Packet head	2Byte	Default: 0x55 0xAA			Packet head	1Byte	Default: 0x55 0xAA	
Command word	1Byte	0x22			Command word	1Byte	0x22	
Data field length	2Byte	0x01 0x00 或 0x03 0x00			Identification word	1Byte	0x00 : success	
							Not0: fail	
Data field	N Byte	Mode	1 Byte	0x01	Common mode	Data field length	2Byte	N
				0x02	Single mode			
				0x03	Interval mode			
		Interval(s)	2 Byte	Low before (optional, sub-item can only be set in interval mode)		Data field	N Byte	Data N=0 No such item0
Check word	1Byte				Check word	1Byte		

For example:

PC-->Reader :55 AA 22 01 00 01 DD Common mode

PC-->Reader :55 AA 22 01 00 02 DE Single mode

PC-->Reader :55 AA 22 03 00 03 02 00 DF Interval mode(2s)

Reader-->PC :55 AA 22 00 00 00 DD

2.13 Command 0x23 Set the interval of scan time in interval mode

Command 0x23	
Instruction: The interval for scanning takes effect only when the interval mode is set	
PC->Reader(Send)	Reader->PC(Receive)

Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x23	Command word	1Byte	0x23
Data field length	2Byte	0x02 0x00	Identification word	1Byte	0x00 : success Not0: fail
Data field	2 Byte	Millisecond interval code (unit, the range of 0 ~ 60000), low in the front	Data field length	2Byte	N
Check word	1Byte		Data field	N Byte	Data N=0 No such item
			Check word	1 Byte	

For example:

PC-->Reader :55 AA 23 02 00 F4 01 2B Interval 500ms

PC->Reader :55 AA 23 02 00 E8 03 35 Interval 1000ms

PC-->Reader :55 AA 23 02 00 D0 07 09 Interval 2000ms

Reader-->PC :55 AA 23 00 00 00 DC

2.14 Command 0x24 LED backlight control

Command 0x24					
Instruction: Ensure that the device has a corresponding color indicator. For position 1, enable led of corresponding color					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x24	Command word	1Byte	0x24
Data field length	2Byte	0x01 0x00	Identification word	1Byte	0x00 : success Not0: fail
Data field	1 Byte	bit0: White light control position	Data field length	2Byte	N
		bit1: Red light control position	Data field	N Byte	Data N=0 No such item
		bit2: Green light control position			
		bit3: Blue light control position			

Check word	1Byte		Check word	1Byte	
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For example:

PC-->Reader :55 AA 24 01 00 00 DA Turn off

PC-->Reader :55 AA 24 01 00 01 DB Turn on the white light

PC->Reader :55 AA 24 01 00 02 D8 Turn on the red light

PC-->Reader :55 AA 24 01 00 04 DE Turn on the green light

PC-->Reader :55 AA 24 01 00 08 D2 Turn on the blue light

PC-->Reader :55 AA 24 01 00 0A D0 Purple light (MC device only)

PC-->Reader :55 AA 24 01 00 0B D1 Purple white light (MC device only)

PC-->Reader :55 AA 24 01 00 06 DC Red Green light

PC-->Reader :55 AA 24 01 00 03 D9 Red white light

PC-->Reader :55 AA 24 01 00 05 DF Green white light

PC-->Reader :55 AA 24 01 00 09 D3 Blue white light

Reader-->PC :55 AA 24 00 00 00 DB

2.15 Command 0x25 Buzzer response configuration

Command 0x25					
Instruction: Used to configure the buzzer action after code scanning or card scanning					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x25	Command word	1Byte	0x25
Data field length	2Byte	0x01 0x00	Identification word	1Byte	0x00 : success Not0: fail
Data field	1 Byte	0: The buzzer is off	Data field length	2Byte	N
		1: The buzzer is on	Data field	N Byte	Data N=0 No such item
Check word	1Byte		Check word	1Byte	

For example:

PC-->Reader :55 AA 25 01 00 01 DA The buzzer works after scanning.

PC-->Reader :55 AA 25 01 00 00 DB The buzzer does not work after scanning.

Reader-->PC :55 AA 25 00 00 00 DA

2.16 Command 0x26 GPIO_0 Control

Command 0x26
Instruction: Verify that the device supports this pin. By default, only (MX86) devices are

supported.					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x26	Command word	1Byte	0x26
Data field length	2Byte	0x01 0x00	Identification word	1Byte	0x00 : success
					Not0: fail
Data field	1 Byte	0: Output low level	Data field length	2Byte	N
		1: Output high level	Data field	N Byte	Data N=0 No such item
Check word	1Byte		Check word	1Byte	

For example:

PC-->Reader :55 AA 26 01 00 01 D9 Output high level

PC-->Reader :55 AA 26 01 00 00 D8 Output low level

2.17 Command 0x27 GPIO_1 Control

Command 0x27					
Instruction: Verify that the device supports this pin. By default, only (MX86) devices are supported.					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x27	Command word	1Byte	0x27
Data field length	2Byte	0x01 0x00	Identification word	1Byte	0x00 : success
					Not0: fail
Data field	1 Byte	0: Output low level	Data field length	2Byte	N
		1: Output high level	Data field	N Byte	Data N=0 No such item
Check word	1Byte		Check word	1Byte	

For example:

PC-->Reader :55 AA 27 01 00 01 D8 Output high level

PC-->Reader :55 AA 27 01 00 00 D9 Output low level

2.18 Command 0x28 GPIO_0 and GPIO_1 Output high level voltage control

Command 0x28					
Instruction: Verify that the device supports this pin. By default, only (MX86) devices are supported.					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x28	Command word	1Byte	0x28
Data field length	2Byte	0x01 0x00	Identification word	1Byte	0x00 : success
					Not0: fail
Data field	1 Byte	0: The output high level is 4.3V	Data field length	2Byte	N
		1: The output high level is 3.3V	Data field	N Byte	Data N=0 No such item
Check word	1Byte		Check word	1Byte	

For example:

PC-->Reader :55 AA 28 01 00 01 D7 The output high level is 3.3V

PC-->Reader :55 AA 28 01 00 00 D6 The output high level is 4.3V

2.19 Command 0x29 Voice control

Command 0x29					
Audio file formats: single channel 16bit wav format: 8Khz -192Khz					
Instruction: This directive only applies to devices that support audio					
Audio file name: 0.wav 1.wav ...6 audio files in total					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x29	Command word	1Byte	0x29

Data field length	2Byte	0x01 0x00	Identification word	1Byte	0x00 : success
					Not0: fail
Data field	1 Byte	Numeric value represents the name of the audio file (without extension)	Data field length	2 Byte	N
			Data field	N Byte	Data N=0 No such item
Check word	1Byte		Check word	1Byte	

For example:

PC->Reader :55 AA 29 01 00 00 D7 0.wav Welcome to use Vguang scanning equipment

PC-->Reader :55 AA 29 01 00 01 D6 1.wav Welcome to Ali pay

PC-->Reader :55 AA 29 01 00 02 D5 2.wav Welcome to Wechat Pay

PC-->Reader :55 AA 29 01 00 03 D4 3.wav Welcome to Wechat Pay

PC-->Reader :55 AA 29 01 00 04 D3 4.wav No voice

PC-->Reader :55 AA 29 01 00 05 D2 5.wav No voice

2.20 Command 0x2A Relay control

Command 0x2A						
Instruction: Verify that the device supports relays.						
When the relay is turned on without a transmission duration field, the relay does not close itself.						
PC->Reader(Send)			Reader->PC(Receive)			
Item	byte	instruction	Item	byte	instruction	
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA	
Command word	1Byte	0x2A	Command word	1Byte	0x2A	
Data field length	2Byte	0x02 0x00	Identification word	1Byte	0x00 : success	
Data field	2 Byte	1 Byte	0x01: open	Data field length	2Byte	N
		0x00: close				
		1 Byte or byte	When the relay is on, this byte represents the duration (in 50MS) 0x00: Use the default time	Data field	N Byte	Data N=0 No such item
Check	1Byte		Check	1Byte		

word	e		word		
------	---	--	------	--	--

For example:

PC-->Reader :55 AA 2A02 00 0102 D4 Relay open 100ms

PC-->Reader :55 AA 2A02 00 01 0A DC Relay open 500ms

PC-->Reader :55 AA 2A02 00 01 64 B2 Relay open 5000ms

PC-->Reader :55 AA 2A01 00 01 D5 Open the relay

PC-->Reader :55 AA 2A01 00 00 D4 Close the relay

2.21 Command 0x2B Heartbeat enabling and heartbeat reporting

Command 0x2B					
Instruction: The data part of the instruction is a JSON format string utf-8: {"heart_en":1,(On:1, off: 0) {"heart_en":1,(off: 0) heart_data: xxxxxxxx,(content of the heartbeat packet, a maximum of 40 bytes) heart_time :30(Heartbeat time, ranging from 30s to 86400s)}					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x2A	Command word	1Byte	0x2A
Data field length	2Byte	0x02 0x00	Identification word	1Byte	0x00 : success Not0: fail
Data field	2 Byte	1 Byte	Data field length	2Byte	N
		0x01: open 0x00: close	Data field	N Byte	Data N=0 No such item
		When the relay is on, this byte represents the duration (in 50MS) 0x00: Use the default time			
Check word	1Byte		Check word	1Byte	

Calculated web address: <https://www.sojson.com/hexadecimal.html>

example:

PC-->Reader :55 AA 2B 31 00 7B 22 68 65 61 72 74 5F 65 6E 22 3A 31 2C 22 68 65 61 72 74 5F 64 61 74 61 22 3A 22 31 32 33 22 2C 22 68 65 61 72 74 5F 74 69 6D 65 22 3A 36 30 7D E5 Open heartbeat

Data content: {"heart_en":1,"heart_data":"123","heart_time":60} Reader-->PC :55 AA 2B 00 00 00 D4

PC-->Reader :55 AA 2B 3B 00 7b 22 68 65 61 72 74 5f 65 6e 22 3a 31 2c 22 68 65
61 72 74 5f 64 61 74 61 22 3a 22 76 67 75 61 6e 67 5f 74 65 73 74 31 32 33 22 2c 22
68 65 61 72 74 5f 74 69 6d 65 22 3a 31 7d 9D Open heartbeat

Data content:: {"heart_en":1,"heart_data":"vguang_test123","heart_time":1}

Reader-->PC :55 AA 2B 00 00 00 D4

PC-->Reader :55 aa 2b 0e 00 7b 22 68 65 61 72 74 5f 65 6e 22 3a 30 7d e8 Close
heartbeat

Data content:: {"heart_en":0}

Reader-->PC :55 AA 2B 00 00 00 D4

Note:

The device responds only when heartbeat packets are enabled or disabled. The device does not respond when heartbeat packets are sent.

Device heartbeat reporting

Command 0x2B					
Instruction: heartbeat reporting					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	None	Item	byte	instruction
Packet head	2Byte		Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte		Command word	1Byte	0x2A
Data field length	2Byte		Identification word	1Byte	0x00 : success Not0: fail
			Data field length	2Byte	N
Data field	2 Byte		Data field	N Byte	Data N=0 No such item
Check word	1Byte		Check word	1Byte	

Reader-->PC :55 AA 2B 00 03 00 31 32 33 E7 heartbeat content

2.22 Command 0x37 Query version number instruction

Command: 0x37					
Instruction: 2.x Support					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2 byte	Default: 0x55	Packet head	1 byte	Default: 0x55

		0xAA			0xAA
Command word	1 byte	0x37	Command word	1 byte	0x37
Data field length	2 byte	0x00 0x00	Identification word	1 byte	0x00 : success
					Not 0: fail
Data field	0 byte	No such item	Data field length	2 byte	N
			Data field	N byte	Data N=0 No such item
Check word	1 byte		Check word	1 byte	

For example:

PC-->Reader : 55 AA 37 00 00 C8

PC-->Reader : 55 AA 37 00 1C 00 6D 75 38 36 5F 76 67 5F 65 33 5F 76 32 2E 32 2E 34 2E 31 31 2E 70 31 EA (mu86_vg_e3_v2.2.4.11.pl)

3 QR Code scanner scan result message feedback

There are two ways for the host computer to obtain data results:

1. The upper computer polls and sends instructions to obtain results from the scanner, that is, the scanner works in command mode.
- 2, the scanner actively sends the result to the upper machine, that is, the scanner works in the active reporting mode.

Note: By default, the scanner works in active reporting mode, using 0x30 to report data results

3.1 Command 0x31 Result Reporting Mode Settings

Instruction: 0x31

Description: Set the working mode of the code scanner, which command to obtain or report data, and set the data validity time.

Pattern field description, the gray part is reserved bit --

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0		Mode field value
0	0	0	0	0	0	0	0	Command mode, the upper computer sends 0x30 instruction to obtain data. No data distinction marks.	0x00
0	0	0	0	0	0	0	1	In active reporting mode, the scanner uses 0x30 instruction to actively send data to the upper computer. No data distinction marks.	0x01

1	0	0	0	0	0	0	0	Command mode, the upper computer sends 0x33 instruction to obtain data. With data distinction marks.	0x80
1	0	0	0	0	0	0	1	In active reporting mode, the scanner uses 0x33 instruction to actively send data to the upper computer. With data distinction marks.	0x81

Data validity time -- (code scanner data validity time is 2000ms by default) --

When the scanner works in command mode, this setting is enabled. From the time when the scanner obtains data to the time when the data is invalid, if the scanner receives the command from the upper computer to fetch the result within this time period, the scanner can send the result to the upper computer. Otherwise, the scanner regards the data as invalid data and will not send the data to the host computer, that is, the command polling interval of the host computer should not be lower than the data validity time, otherwise the host computer may not be able to obtain the result in time.

Data differentiator -

the data source of the scanner includes scanning code data, swipe card (card number) data, Bluetooth data, and key value data. The data distinction flag can be used to distinguish which type of data it is. See instruction 0x33 for details.

PC->Reader(Send)					Reader->PC(Receive)		
Item	byte	instruction			Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA			Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x31			Command word	1Byte	0x31
Data field length	2Byte	0x01 0x00 or 0x02 0x00			Identification word	1Byte	0x00 : success
							Not0: fail
Data field	N Byte	Mode field	1 Byte	See instruction's red part	Data field length	2Byte	N
		Data validity time (optional)	1 Byte	(Unit: 50MS)		N Byte	Data N=0 No such item
				0x00 -> 50 Ms			
				Not 0 -> N*50 Ms			
Check word	1Byte				Check word	1Byte	

For example

PC-->Reader :55 AA 31 01 00 01 CE Set the scanner to work in the reporting mode and use 0x30 instruction to actively report data

PC-->Reader :55 AA 31 01 00 00 CF Set the scanner to work in command mode, and the upper computer polls 0x30 to obtain scanner data

PC-->Reader :55 AA 31 01 00 81 4E Set the scanner to work in the reporting mode and use 0x33 instruction to actively report data

PC-->Reader :55 AA 31 01 00 80 4F Set the scanner to work in command mode, and the upper computer polls 0x33 to obtain scanner data

PC-->Reader :55 AA 31 02 00 00 14 D8 Set the scanner to work in command mode, the data valid time is 1000ms, and the upper computer obtains scanner data by polling 0x30

PC-->Reader :55 AA 31 02 00 00 64 A8 Set the scanner to work in command mode, the data valid time is 5000ms, and the upper computer obtains scanner data by polling 0x30

PC-->Reader :55 AA 31 02 00 80 14 58 Set the scanner to work in command mode, the data valid time is 1000ms, and the upper computer obtains scanner data by polling 0x33

Reader-->PC :55 AA 31 00 00 00 CE

PC-->Reader :55 AA 31 02 00 80 64 28 Set the scanner to work in command mode, the data valid time is 5000ms, and the upper computer obtains scanner data by polling 0x33

Reader-->PC :55 AA 31 00 00 00 CE

3.2 Command 0x30 Results are obtained regardless of the data

source

Command: 0x30			This command is used when the upper computer actively polls or the device actively reports the result		
Instruction: The data returned by this instruction does not distinguish the data source, that is, the host computer cannot judge the data after getting the data is the scan code data, the swipe card (card number) data or Bluetooth data					
Note: This instruction does not return key-value data					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2 byte	Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA
Command word	1 byte	0x30	Command word	1 byte	0x30
Data field length	2 byte	0x00 0x00	Identification word	1 byte	0x00 : success
					Not 0: fail
Data field	0 byte	No such item	Data field length	2 byte	N
			Data field	N byte	Data N=0 No such item
Check word	1 byte		Check word	1 byte	

Example:

In command mode, the host computer polls and sends this command to obtain data

PC-->Reader : 55 AA 30 00 00 CF

Reader-->PC : 55 AA 30 00 00 00 CF No data

Reader-->PC : 55 AA 30 00 08 00 37 36 64 30 33 34 39 31 9D Feedback data

3.3 Command 0x33 gets results to distinguish data sources

Command: 0x33			This command is used when the upper computer actively polls or the device actively reports the result				
Instruction: 1. The data returned by this command distinguishes the data source, that is, the host computer can distinguish the data through the data distinction mark, and the data obtained is the scan code data, the swipe card (card number) data, Bluetooth data or key value data. 2. DATA_TYPE: indicates the type of the returned data Scan code data: 0x10 to 0x3F Card: 0x40 to 0x7F Bluetooth data: 0x8X Key: 0xAX							
PC->Reader(Send)			Reader->PC(Receive)				
Item	byte	instruction	Item	byte	instruction		
Packet head	2 byte	Default: 0x55 0xAA	Packet head	1 byte	Default: 0x55 0xAA		
Command word	1 byte	0x33	Command word	1 byte	0x33		
Data field length	2 byte	0x00 0x00	Identification word	1 byte	0x00 : success		
					Not 0: fail		
Data field	0 byte	No such item	Data field length	2 byte	N		
			Data field	N byte(Data N=0 No such item)	Data distinguishing mark	1 byte	DATA_TYPE
					result	1 byte	result
Check word	1 byte		Check word	1 byte			

Example:

In command mode, the host computer polls and sends this command to obtain data (blue -- data type, red -- data).

PC->Reader :55 AA 33 00 00 CC

Reader->PC :55 AA 33 00 00 00 CC No data

Reader->PC :55 AA 33 00 07 00 11 31 32 33 34 35 36 DC Scan code data

Reader->PC :55 AA 33 00 09 00 42 37 64 39 30 64 61 36 31 DD Swipe data

Reader->PC: Door status sensor Off: 55 aa 33 00 02 00 b0 00 7e Door status sensor On: 55 aa 33 00 02 00 b0 01 7f Door status sensor data

Scan data DATA_TYPE:

Qr Code: 11

pdf417: 1A

code 39: 15

code 93: 16

code 128: 17

upca /puce.ean8/ean13/isbn10: 1F

ITF: 1C

Aztec: 20

NFC (M1 card, cpuA card) : 42

NFC (cpuB card) : 4A

NFC (Identity card) : 46

Bluetooth: 80

3.4 Command 0x32 Key value Reported

Command 0x32			Report key value		
Instructions:					
1. The data returned by this command distinguishes the data source, that is, the host computer can distinguish the data through the data distinction mark, and the data obtained is the scan code data, the swipe card (card number) data, Bluetooth data or key value data. 2. DATA_TYPE: indicates the type of the returned data					
Scan code data: 0x10 to 0x3F					
Card: 0x40 to 0x7F					
Bluetooth data: 0x8X					
Key: 0xAX					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x32	Command word	1Byte	0x32
Data field	2Byte	0x00 0x00	Identification	1Byte	0x00

length			on word		
			Data field length	2Byte	N
					Key value
					1 Byte
					N>0 Must exist
					N>1 exist
					N=1 nonexistence
Data field	0 Byte	No such item	Data field	N Byte	Attachme nt data
Check word	1Byte		Check word	1Byte	

For example:

PC-->Reader :55 AA 32 00 00 CD

3.5 Command 0x0F Transparent transmission instruction

Command 0x0F			This command is used when the upper computer actively polls or the device actively reports the result		
Description: Transparent data transmission to device P1: Bit_8: Bit_8= 0: indicates that V is transmitted in plain text; Bit_8=1: indicates that V is transmitted in ciphertext Bit_7: indicates the link flag bit. If the value is 1, the link is linked. If the value is 0, the link ends or is not linked. When the length of the protocol packet is greater than the MTU supported by the current transmission channel, the transmission V needs to be split. Bit_2~6: RFU Bit_0: indicates the block number. The default value is 0, and when the link flag is at position 1, the block number of the second packet is 1, which is then flipped in turn until the link flag is set to 0(end of link). When the link flag bit of the first packet of data is 0, the block number is 0 P2: RFU P3: Format type used to identify plaintext V (identification value unique) Note: The length of the data V to be transferred plus the format bytes of this instruction cannot be greater than the maximum length of the protocol package supported by the device					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x32	Command word	1Byte	0x32
Data field length	2Byte	0x00 0x00	Identification word	1Byte	0x00

	0		Data field length	2Byte	N
Data field	Byte	No such item	Data field	N Byte	Data N=0 No such item
Check word	1Byte		Check word	1Byte	

4. White list admin command

To enable the whitelist setting function, you need to run the 0x40 command or the Micro Interconnection Whitelist Configuration Management Tool on the PC to change the initial password. The initial password cannot be used to enable the scanning and editing whitelist function.

The whitelist function works in three modes:

- 1, normal working mode -- filter function (can be set by 0x41 instruction)
2. Swipe the card to automatically add the card number to the whitelist (need to be enabled or disabled by the configuration code)
3. Swipe the card to automatically delete the card from the whitelist (need to enable or disable the configuration code)
4. The timestamp used in the instruction is a unix timestamp

The normal working mode of the low-level communication protocol can be enabled using the 0x41 command. The other two modes can be set using the PC tool. For details, see the Low-level Interconnection Whitelist Configuration Management Tool. Instructions 0x42 and 0x43 are valid in any operating mode.

Note: The whitelist stores physical card numbers in positive order without prefixes or suffixes, and does not add a return line feed. The output format of swiping card is direct output.

4.1 command 0x40 Set the Administrative Password

Command 0x40					
Password: ASCLL					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x40	Command word	1Byte	0x40
Data field	2Byte	0x20 0x00	Identification	1Byte	0x00 : success

length					on word		Not0: fail
Data field	32 Byte	Original password	16 Byte	Original password: 1234567887654321	Data field length	2Byte	N
		New password	16 Byte		Data field	N Byte	N=0 No such item
Check word	1Byte				Check word	1Byte	

For example:

Set the management password 1996049520111111 (Blue----the original password.
Red----the password to be set)

PC-->Reader :55 AA 40 20 00 31 32 33 34 35 36 37 38 38 37 36 35 34 33
32 31 31 39 39 36 30 34 39 35 32 30 31 31 31 31 31 A2

4.2 Command 0x41 Whitelist filtering function

Command 0x41					
Instruction: Use or forbidden white list query function					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x41	Command word	1Byte	0x41
Data field length	2Byte	0x01 0x00	Identification word	1Byte	0x00 : success Not0: fail
		0: Close the white list filtering capabilities(default)	Data field length	2Byte	N
Data field	1 Byte	1: Open the white list filtering capabilities	Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

For example:

PC-->Reader :55 AA 41 01 00 00 BF Close the white list filtering capabilities

PC-->Reader :55 AA 41 01 00 01 BE Open the white list filtering capabilities

Note: The whitelist stores physical card numbers in positive order without prefixes or suffixes, and does not add a return line feed. The output format of swiping card is direct output.

Command 0x42 Add white list card number

Command 0x42					
Note: The card number is in positive order without prefix and suffix, and the high position is in front If the length of the card number is less than 8 bytes, it is followed by a zero.					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x42	Command word	1Byte	0x42
Data field length	2Byte	0x08 0x00	Identification word	1Byte	0x00 : success Not0: fail
Data field	8	unsigned long long data (card number)	Data field length	2Byte	N
	Byte		Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

For example

PC-->Reader :55 AA 42 08 00 FF 81 4C 00 00 00 00 00 87 The card number 5014015 is whitelisted

4.3 Command 0x43 Delete white list card number

Command 0x43					
Instruction: The card number is in positive order without prefix or suffix, with the highest order in the first place If the card number contains less than 8 bytes, add 0 after the card number					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x43	Command word	1Byte	0x43
Data field length	2Byte	0x08 0x00	Identification word	1Byte	0x00 : success Not0: fail
Data field	8	unsigned long long data (card number)	Data field length	2Byte	N
	Byte		Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

For example:

PC-->Reader :55 AA 43 08 00 FF 81 4C 00 00 00 00 86 Delete the card
5014015 from the whitelist

4.4 Command 0x44 Delete all white list

Command: 0x44					
Instruction: Delete all card numbers from the whitelist					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x44	Command word	1Byte	0x44
Data field length	2Byte	0x00 0x00	Identification word	1Byte	0x00 : success
					Not 0: fail
Data field	0	No such item	Data field length	2Byte	N
	Byte		Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

For example:

PC-->Reader :55 AA 44 00 00 BB Delete all card numbers from the whitelist

4.5 Command 0x46 Batch modifying whitelists

Command: 0x46					
Instructions: DATA field format: TYPE + LEN + DATA + CRC16 TYPE: Indicates whether the DATA is compressed. 0: No compression 1: zlib compression LEN: The number of bytes from TYPE to DATA DATA: The format is as follows if not compressed <pre>{ "wlist": [{"ID":12345678, "M": 0 }, {"ID":765422, "M": -1},] }</pre> ID: Card number (integer) M: Modified identifier 0: added -1: deleted CRC16: Calculates the CRC16 value from TYPE to DATA. CRC16 poly: 0x8005 -> $X^{16} + X^{15} + X^2 + 1$, starting at 0					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA

head					
Command word	1Byte	0x46	Command word	1Byte	0x46
Data field length	2Byte		Identification word	1Byte	0x00 : success Not0: fail
		TYPE 1 Byte DATA Indicates whether to compress data LEN 2 Byte DATA First DATA N Byte JSON format CRC16 2 Byte The low position is in the front	Data field length	2Byte	N
Data field	0 Byte		Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

4.6 Command 0x45 Configure white list successfully

Command 0x45								
Instruction: When the card is in the whitelist, it indicates that the card is swiped successfully. At this time, the scanner will give feedback prompt according to the set action.								
	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Action	Audio	Relay	GPIO Pin	Blue light	Green light	Red light	Back light	Buzzer
	Bit15	Bit14	Bit13	Bit12	Bit11	Bit10	Bit9	Bit8
Action	Bit8 - Bit15 RFU							
PC->Reader(Send)				Reader->PC(Receive)				
Item	byte	instruction		Item	byte	instruction		
Packet head	2Byte	Default: 0x55 0xAA		Packet head	1Byte	Default: 0x55 0xAA		
Command word	1Byte	0x45		Command word	1Byte	0x45		
Data field length	2Byte			Identification word	1Byte	0x00 : success Not 0: fail		
				Data field length	2Byte	N		
Data field	2 Byte	Set the successful behavior of the scanner		Data field	N Byte	N = 0 No such item		
Check word	1Byte			Check word	1Byte			

Example:

PC--> Reader: 55 AA 45 02 00 01 00 B9 Buzzer after whitelist verification is successful

PC--> Reader: 55 AA 45 02 00 02 00 BA Blinking white

PC--> Reader: 55 AA 45 02 00 04 00 BC Blinking red

PC--> Reader: 55 AA 45 02 00 08 00 B0 Blinking green

PC--> Reader: 55 AA 45 02 00 10 00 A8 Flashing blue

PC--> Reader: 55 AA 45 02 00 20 00 98 GPIO pin

PC--> Reader: 55 AA 45 02 00 40 00 F8 Relay action

PC--> Reader: 55 AA 45 02 00 05 00 BD Ring The buzzer blinks red

PC--> Reader: 55 AA 45 02 00 09 00 B1 Ring The buzzer blinked green

PC--> Reader: 55 AA 45 02 00 11 00 A9 Buzzer Flashing blue

PC--> Reader :55 AA 45 02 00 0b 00 B3 Buzzer Blinking White Green

**.

PC--> Reader: 55 AA 45 02 00 07 00 BF Buzzer Blinking White Red

PC--> Reader: 55 AA 45 02 00 14 00 AC Blinking red and blue

PC--> Reader: 55 AA 45 02 00 43 00 FB Buzzer white light relay

PC--> Reader: 55 AA 45 02 00 45 00 FD Buzzer red light relay

PC--> Reader: 55 AA 45 02 00 49 00 F1 Buzzer green relay

PC--> Reader: 55 AA 45 02 00 51 00 E9 Buzzer Blue light relay

PC--> Reader: 55 AA 45 02 00 4B 00 F3 Buzzer White indicator Green relay

4.7 Command 0x47 Obtain records according to time period

Command: 0x47					
Instructions:					
1. Example explanation of JSON_PARAM:					
{					
“STimeStramp”: xxxx, // “ETimeStramp”: xxxx , //					
}					
2. Answer data field format:					
TYPE: 0 indicates that the DATA is uncompressed. 1: indicates that the DATA is compressed by zlib					
DATA: Uncompressed format Example:					
{					
“Total”:12, “CurCnt”: 8, “TRecords”:[{“ID”:12345, “TimeStramp”:1234567, },]					
}					
CRC16: verifies TYPE to DATA					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x47	Command word	1Byte	0x47

Data field length	2Byte		Data field length	2Byte	N		
					TYPE	1 Byte	
					DATA	N Byte	
Data field	N Byte	JSON_PARAM	Data field	N Byte	CRC16	2Byte	Low in front
Check word	1Byte		Check word	1Byte			

4.8 Command 0x48 Delete records based on the time range

Command: 0x48					
Instructions:					
1. Example explanation of JSON_PARAM:					
{					
“STimeStramp”: xxxx, //					
“ETimeStramp”: xxxx , //					
}					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x48	Command word	1Byte	0x48
Data field length	2Byte		Identification word	1Byte	0x00 : success
					Not0: fail
	0		Data field length	2Byte	N
Data field	Byte	JSON_PARAM	Data field	N Byte	
Check word	1Byte		Check word	1Byte	

5 NFC module operation

NFC module can support Mifare One card read and write, CPU card to send APDU instructions, see the specific instructions.

Noun explanation:

Task start flag bit--This flag bit is used to tell the scanner when to start the operation of the card and when to end the operation of the card, or to tell the scanner that the

instruction of the operation of the card is independent without inter-instruction dependence.

This flag bit is used to set the operating environment of the card. There are three flag bit values:

0x00->AUTO Indicates to the scanner that the instruction can be executed independently without dependency between instructions.

0x01->START Indicates to the scanner that the card operation has started or has not finished and that there may be dependencies between instructions.

0x02->FINISH Inform the scanner that this instruction is the last instruction to operate the card and restore the card operating environment to silent state. If the instructions to operate the card are independent, such as reading and writing a piece of M1 card data, the flag bit can be set to AUTO or FINISH.

Note:

The old version 《Vguang Communication protocol v2.10》 does not have this flag bit, old users can read and write the M1 card by using 0x51 and 0x52.

1.If START is used to start the card operation, FINISH must be used to finish the card operation. Otherwise, the NFC module cannot work properly. You must restart the NFC module before using it again.

2. If multiple card operation instructions are involved in the card operation, the task START flag bit of the instruction is START and the last instruction is FINISH.

5.1 Command 0x53 Card number reporting switch

Command 0x53					
Instruction: When the value of the data field is set to 0x01 or 0x00 (that is, entering or exiting command mode), the operation is null and the scanner responds to SUCCESS. Objective To be compatible with V2.10 Vguang communication protocol Note: The card number reporting function is enabled by default. If the card number reporting function is disabled, the protocol does not obtain the card number in any mode. At this point, the scanner is used to directly read and write M1 cards or operate CPU cards, without getting the card number.					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x53	Command word	1Byte	0x53
Data field length	2 Byte	0x01 0x00	Identification word	1Byte	0x00 : success Not0: fail
			Data field length	2 Byte	N

		0x01: The module enters command mode 0x00: The module exits the command mode 0x02: Swipe card report 0x03: Turn off the report			
Data field	1 Byte		Data field	N Byte	This item does not exist for data N = 0
Check word	1 Byte		Check word	1 Byte	

Example:

PC-->Reader: 55 AA 53 01 00 02 AF Enable card number reporting

PC-->Reader: 55 AA 53 01 00 03 AE Disables card number reporting

Reader-->PC : 55 AA 53 00 00 00 AC

5.2 M1 Card operation

5.2.1 Command 0x51 Read a block data of M1 card

Command 0x51		Read a block data of M1 card						
Instruction:The task start flag field is optional. If the command does not contain the flag bit, the command is executed by default								
PC->Reader(Send)				Reader->PC(Receive)				
Item	byte	instruction			Item	byte	instruction	
Packet head	2Byte	Default: 0x55 0xAA			Packet head	1Byte	Default: 0x55 0xAA	
Command word	1Byte	0x51			Command word	1Byte	0x51	
Data field length	2 Byte	N			Identification word	1Byte	0x00 : success Not0: fail	
		Key type	1Byte	0x60-> KEY A 0x61-> KEY B	Data field length	2 Byte	N	
		block number	1 Byte	0 ~ 0xFF				
		Secret key	6 Byte					
		Task start Flag Bit (optional)	1 Byte	0x00-> AUTO 0x01 -> START 0x02-> FINISH				
Data field	N Byte				Data field	N Byte		N=0 No such item
Check word	1 Byte				Check word	1Byte		

For example:

Use A (0x60) key for authentication, read the second block (the absolute block number is 0x19) in sector 6.

The authentication key is FF FF FF FF FF FF FF, and the flag bit is optional.

PC-->Reader :55 AA 51 09 00 60 19 FF FF FF FF FF FF 00 DE Contain flag bit

PC-->Reader :55 AA 51 08 00 60 19 FF FF FF FF FF FF DF No flag bit

Reader-->PC :55 AA 51 00 10 00 12 34 56 78 90 12 34 56 78 90 12 34 56 78 90 12

34 Read the card successfully

Reader-->PC :55 AA 51 FF 00 00 51 Fail or no card

5.2.2 0x52 Write data to a certain block of M1 card

0x52			Write data to a certain block of M1 card							
Instruction: The task start flag field is optional. If the command does not contain the flag bit, the command is executed by default										
PC->Reader(Send)				Reader->PC(Receive)						
Item	byte	instruction		Item	byte	instruction				
Packet head	2 Byte	Default: 0x55 0xAA		Packet head	1Byte	Default: 0x55 0xAA				
Command word	1 Byte	0x52		Command word	1Byte	0x52				
Data field length	2 Byte	N		Identification word	1Byte	0x00 : success Not0: fail				
		Key type	1 Byte	0x60 -> KEY A	Data field length	2Byte	N			
				0x61 -> KEY B						
		block number	1 Byte	0 ~ 0xFF						
		secret key	6 Byte							
		Data	16 Byte							
		Task flag bit (optional)	1 Byte	0x00 -> AUTO						
				0x01 -> START						
				0X02 -> FINISH						
		Data field	N Byte					Data field	N Byte	N=0 No such item
		Check word	1 Byte					Check word	1Byte	

For example:

Write data to block 2 in sector 6 (the absolute block number is 0x19) using key B (0x61) for authentication.

The authentication key is FF FF FF FF FF FF FF, and the flag bit is optional.

PC-->Reader :55 AA 52 19 00 61 19 FF FF FF FF FF FF 11 11 11 11 11 11 11 22

22 22 22 22 22 22 00 CC

Contain flag bit

PC-->Reader :55 AA 52 18 00 61 19 FF FF FF FF FF FF 12 34 56 78 90 12 34 56
 12 34 56 78 90 12 34 56 CD No flag bit
 Reader-->PC :55 AA 52 00 00 00 AD Read the card successfully
 Reader-->PC :55 AA 52 FF 00 00 52 Fail or no card

5.2.3 Command 0xA0 Read M1 multiple blocks

Command 0×A0						Read multiple blocks in the sector of the M1 card			
<p>Note: The S50/S70 card can be read. The sector number, offset, and block number are determined according to the card type</p> <p>Offset - Calculates the base address of the block to be read with the selected sector 0 block as the starting address.</p> <p>Number of blocks - The selected base address block is the start block of the read card, and the selected number of blocks is read continuously.</p>									
Command parsing: Read 1 block and 2 block data of 2 sectors of a card 55 AA A0 0B 00 00 60 02 01 02 FF FF FF FF FF FF 35									
55 AA	A0	0B 00	00	60	02	01	02	FF ~FF	35
Command Header	Instruction	Data length	AUTO	Key	Sector number	Base address of the block	Start at the base address	Secret key	Check word
							Read several blocks		
Note: The number of blocks cannot be 0, if 0 is considered as invalid instruction; Block data cannot be read across sectors in an instruction									
PC->Reader(Send)						Reader->PC(Receive)			
Item	byte	Instruction				Item	byte	Instruction	
Packet head	2Byte	Default: 0x55 0xAA				Packet head	1Byte	Default: 0x55 0xAA	
Command word	1Byte	0xA0				Command word	1Byte	0x51	
Data field length	2Byte	N				Identification word	1Byte	0x00 : success Not0: fail	
Data field	11 Byte	Task flag bit	1 Byte	0x00 -> AUTO	Data field length	2Byte	N		
				0x01 -> START					
				0x02 -> FINISH					

AA		00						~FF		
Command header	Instruction	Data length	AUTO	Key type	Sector number	Base address of block	Write blocks in succession from the base address	Secret key	Data to be written	Check word
Note: The number of blocks to be written cannot be 0, otherwise, it is regarded as invalid instruction. Data cannot be written across sectors in an instruction.										
PC->Reader(Send)							Reader->PC(Receive)			
Item	byte	instruction					Item	byte	instruction	
Packet head	2 Byte	Default: 0x55 0xAA					Packet head	1 Byte	Default: 0x55 0xAA	
Command word	1 Byte	0xA1					Command word	1 Byte	0xA1	
Data field length	2 Byte	N					Identification word	1 Byte	0x00 : success Not0: fail	
	N	Task flag bit	1 Byte	0x00 -> AUTO			Data field length	2 Byte	N	
				0x01 -> START						
				0X02 -> FINISH						
		Key type	1 Byte	0x60 -> KEY A						
				0x61 -> KEY B						
		Sector number	1 Byte	S50 -> 0x00~0x0F						
				S70 -> 0x00~0x27						
		Offset	1 Byte	S50 -> 0x00~0x03						
				S70 -> 0x00~0x03 or 0x00~0x0F						
		blocks	1Byte	S50 -> 0x01~0x04						
				S70 -> 0x01~0x04 or 0x01~0x10						
Secret key	6 Byte									
Data field	N Byte	Data	N Byte	N=16*块数			Data field	0 Byte	N=0 No such item	
Check word	1 Byte						Check word	1 Byte		

For example:

Using A (0x60) key for authentication, data is written to block 1 and block 2 in sector 2, that is, two blocks are written consecutively with block 1 as the base address. The authentication key is FF FF FF FF FF FF FF FF and the flag bit is AUTO.

PC-->Reader :55 AA A1 2B 00 00 60 02 01 02 FF FF FF FF FF FF 11 11
 11 11 11 11 11 11 11 00 00 00 00 00 00 00 00 00 00 00 00 00 33 33 33
 33 33 33 33 33 33 36

Reader-->PC : 55 AA A1 00 00 00 5E Write the data successfully

Reader-->PC :55 AA A1 FF 00 00 A1 Fail or no card

5.3 ISO14443-4

5.3.1 Command 0xA6 Send APDU directives

Command 0xA6						
Instruction: Used for communication between the CPU card, APDU commands can see "FMCOS2.0 user manual"						
PC->Reader(Send)				Reader->PC(Receive)		
Item	byte			Item	byte	instruction
		instruction				
Packet head	2 Byte	Default: 0x55 0xAA		Packet head	1 Byte	Default: 0x55 0xAA
Command word	1 Byte	0xA6		Command word	1 Byte	0xA6
Data field length	2 Byte	N		Identification word	1 Byte	0x00 : success Not0: fail
		Task flag bit	1 Byte	Data field length	2 Byte	N
Data field	N Byte	APDU DATA	N Byte	Data field	N Byte	N=0 No such item
Check word	1 Byte			Check word	1 Byte	

For example: The part in red is the APDU instruction

Select the application directory:

PC-->Reader :55 AA A6 08 00 01 00 A4 00 00 02 3F 01 C8

Reader-->PC : 55 AA A6 00 11 00 6F 0D 84 05 41 44 46 30 31 A5 04 9F 08 01 02 90 00 4C

Get 4 random digits:

Reader-->PC : 55 AA A6 06 00 01 00 84 00 00 04 DE

Reader-->PC :55 AA A6 00 06 00 7C C9 56 38 90 00 14

External authentication: four random digits used for external authentication, authentication mode is DES single length, default key (1122334455667788)

PC-->Reader :55 AA A6 0E 00 01 00 82 00 00 08 71 7E B1 7D 4C F6 81 17 33

Reader-->PC : 55 AA A6 00 02 00 90 00 CB

Select the binary file:

PC-->Reader :55 AA A6 06 00 02 00 B0 83 00 00 6E

Reader-->PC : 55 AA A6 00 12 00 11 22 33 44 55 66 77 88 00 00 00 00 00 00 00 90 00 5337

6 UI Interface operation instructions

6.1 Command 0x61 Response of code, card, bluetooth data

Command 0x61
Instruction: The instruction data part is a STRING utf-8 in JSON format:

{“ack”: “xxxxx” , (Reply messages, such as "success" and "fail", cannot exceed 128 BYTES in length)“msg”: “xxxx” (A brief instruction of "ack")}					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x61	Command word	1Byte	0x61
Data field length	2Byte		Identification word	1Byte	0x00 : success Not0: fail
	N		Data field length	2Byte	N
Data field	Byte	JSON data	Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

Example:

```
{
"ack": "Vguang",
"msg": "hulian"
}
```

PC-->Reader : 55 AA 61 28 00 7B 0A 20 20 20 22 61 63 6B 22 3A 22 E5 BE AE E5 85 89 22 2C 0A 20 20 20 22 6D 73 67 22 3A 22 E4 BA 92 E8 81 94 22 0A 7D AB

```
{
"ack": "123",
"msg": "456"
}
```

PC-->Reader : 55 AA 61 22 00 7B 0A 20 20 20 22 61 63 6B 22 3A 22 31 32 33 22 2C 0A 20 20 20 22 6D 73 67 22 3A 22 34 35 36 22 0A 7D 8B

```
{
"ack": "Vguang test_12345",
"msg": "hulian test_67890"
}
```

PC-->Reader : 55 AA 61 33 00 7b 22 61 63 6b 22 3a 22 e5 be ae e5 85 89 74 65 73 74 5f 31 32 33 34 35 22 2c 22 6d 73 67 22 3a 22 e4 ba 92 e8 81 94 74 65 73 74 5f 36 37 38 39 30 22 7d BB

6.2 Command 0x62 Display custom data

Command 0x62

Instruction:					
1. The data portion of this directive is a JSON string utF-8:					
{“page_data”: “xxxxx”, (page content)					
“key_left”: “The first page”,(Displayed in the lower left corner of the screen)					
“key_mid”: “page 5”,(Display in the middle at the bottom of the screen)					
“key_right” : ”the next page” (Displayed in the lower right corner of the screen)}					
2. This directive only works on the home screen and custom data screen					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x62	Command word	1Byte	0x62
Data field length	2Byte	N	Identification word	1Byte	0x00 : success Not0: fail
	N		Data field length	2Byte	N
Data field	Byte	JSON data	Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

Example: custom data

```
{
  "page_data":"Hello",
  "key_left":"First page",
  "key_mid":"5 page",
  "key_right":"Next page"
}
```

PC-->Reader : 55 AA 62 66 00 01 7B 0A 20 20 20 22 70 61 67 65 5F 64 61 74 61
 22 3A 22 E4 BD A0 E5 A5 BD 22 2C 0A 20 20 20 22 6B 65 79 5F 6C 65 66 74
 22 3A 22 E7 AC AC E4 B8 80 E9 A1 B5 22 2C 0A 20 20 20 22 6B 65 79 5F 6D
 69 64 22 3A 22 35 20 E9 A1 B5 22 2C 0A 20 20 20 22 6B 65 79 5F 72 69 67 68
 74 22 3A 22 E4 B8 8B E9 A1 B5 22 0A 7D B5

Reader-->PC: 55 AA 62 00 00 00 9D

```
{
  "page_data":"1",
  "key_left":"2",
  "key_mid":"3",
  "key_right":"4"
}
```

PC-->Reader : 55 AA 62 4A 00 01 7B 0A 22 70 61 67 65 5F 64 61 74 61 22 3A 20

22 31 22 2C 0A 22 6B 65 79 5F 6C 65 66 74 22 3A 20 22 32 22 2C 20 0A 22 6B 65
79 5F 6D 69 64 22 3A 20 22 33 22 2C 0A 22 6B 65 79 5F 72 69 67 68 74 22 20 3A
20 22 34 22 0A 7D 9D

Reader-->PC: 55 AA 62 00 00 00 9D

Example: Display two-dimensional code

{"dynamic_qr_str":"Vguanghulian_testABC@<12345>"}

PC-->Reader : 55 AA 62 32 00 02 7b 22 64 79 6e 61 6d 69 63 5f 71 72 5f 73 74 72
22 3a 22 e5 be ae e5 85 89 e4 ba 92 e8 81 94 5f 74 65 73 74 41 42 43 40 3c 31 32 33
34 35 3e 22 7d C5

{"dynamic_qr_str":"Beijing Vguang Internet Technology Co., Ltd.+Suzhou Koodle
Tech Co., Ltd."}

PC-->Reader : 55 AA 62 53 00 02 7b 22 64 79 6e 61 6d 69 63 5f 71 72 5f 73 74 72
22 3a 22 e5 be ae e5 85 89 e4 ba 92 e8 81 94 e7 a7 91 e6 8a 80 e6 9c 89 e9 99 90 e5
85 ac e5 8f b8 2b e9 85 b7 e8 b1 86 e7 89 a9 e8 81 94 e7 a7 91 e6 8a 80 e6 9c 89 e9
99 90 e5 85 ac e5 8f b8 22 7d CB

6.3 Command 0x63 Display picture

Command 0x63					
Instruction: For details on how to import pictures to the device, see section 7 Audio or Picture update instructions					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x63	Command word	1Byte	0x63
Data field length	2Byte	N	Identification word	1Byte	0x00 : success
					Not0: fail
Data field	1Byte	Number of the image to be displayed	Data field length	2Byte	N
			Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

Example:

PC-->Reader: 55 AA 63 01 00 01 9C Displays the picture numbered 1

PC-->Reader: 55 AA 63 01 00 02 9F Displays the picture numbered 2

PC-->Reader: 55 AA 63 01 00 03 9E Displays the picture numbered 3

PC-->Reader: 55 AA 63 01 00 04 99 Displays the picture numbered 4

PC-->Reader: 55 AA 63 01 00 05 98 Displays the picture numbered 5

PC-->Reader: 55 AA 63 01 00 0a 97 Displays the picture numbered 10

6.4 Command 0x64 Enter a specific window

Command 0x64					
Instruction: For details on how to import pictures to the device, see section 7 Audio or Picture update instructions.					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x64	Command word	1Byte	0x64
Data field length	2Byte	N	Identification word	1Byte	0x00 : success Not0: fail
Data field	N Byte	0x01: main window	Data field length	2Byte	N
		0x02: Device Information window	Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

For example:

PC-->Reader :55 AA 64 02 00 01 00 98

PC-->Reader :55 AA 64 02 00 02 00 9B

7 Firmware Upgrade

7.1 Command 0x54 Begins data transfer

Command 0x54					
Instruction					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x54	Command word	1Byte	0x54
Data field length	2Byte	N	Identification word	1Byte	0x00 : success Not0: fail
Data field	N Byte	Upgrade package size (unit: byte) Low in front, high in back	Data field length	2Byte	N
			Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

7.2 Command 0x58 Transfers data

Command 0x58					
Instruction					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x58	Command word	1Byte	0x58
Data field length	2Byte		Identification word	1Byte	0x00 : success
					Not0: fail
	N		Data field length	2Byte	N
Data field	Byte	Upgrade packet data	Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

7.3 Command 0x56/0x5A Stops data transmission

Command 0x56/0x5A					
Instruction:1. 0x5A Command data field: md5 value of the file					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x56/0x5A	Command word	1Byte	0x56/0x5A
Data field length	2Byte		Identification word	1Byte	0x00 : success
					Not0: fail
	N		Data field length	2Byte	N
Data field	Byte	Upgrade packet data	Data field	N Byte	N = 0 No such item
Check word	1Byte		Check word	1Byte	

7.4 Command 0x57 Overwrites the installation

Command 0x57					
Instruction					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA

head					
Command word	1Byte	0x57		Command word	1Byte 0x57
Data field length	2Byte			Identification word	1Byte
					0x00 : success
					Not0: fail
		0x00	Restart Now	Data field length	2Byte N
Data field	1 Byte	0x01	Non-automatic restart	Data field	N Byte N = 0 No such item
Check word	1Byte			Check word	1Byte

7.5 Command 0x57 Fetch a Graph: Initiates a fetch request

Command 0x5C					
<p>Instruction:</p> <ol style="list-style-type: none"> 1. This command is used to get the graph from the device. The whole process is completed by the two commands 0x5C and 0x5D. 2. This command (0x5C) is used to start the overall drawing process 3. The overall transmission process is as follows: <ol style="list-style-type: none"> (1) The host computer uses the command 0x5C to send a drawing request to the device, and the request packet data is the start flag (2). The device uses the command 0x5C to send a reply packet to the host computer. The data field of the reply packet is as follows: <ul style="list-style-type: none"> 2 bytes Total number of packets 1 byte picture type 2 bytes image width 2 bytes picture height 1 byte image bit depth (3) The upper host uses 0X5D to send a drawing request to the device, and the data field of the request packet is the subpackage number (4). The device uses the command 0x5D to send the reply packet to the host computer, and the data field is subcontract data (5) When the host computer no longer uses the 0x5D command to send a request packet to the device, it is considered to be the end of the signal, there are two cases: <ol style="list-style-type: none"> 1: The picture is transmitted successfully, and the host computer gets the complete data 2: The image transmission fails, and the upper computer again uses the command 0x5C to initiate the image fetch request 					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command	1Byte	0x5C	Command word	1Byte	0x5C

word					
Data field			Identification		0x00 : success
length	2Byte		word	1Byte	Not0: fail
			Data field length	2Byte	0x08 0x00
					Total number of subcontracts
					2 Byte
					Picture type
					1 Byte
					Picture bit depth
					1 Byte
					Picture width
					2 Byte
Data field	1 Byte	Rest art Now 0x01	Data field	8 Byte	Picture height
					2 Byte
Check word	1Byte		Check word	1Byte	

7.6 Command 0x5D Fetch Graph: Subcontract data transfer

Command 0x5D					
<p>Instruction: 0x5D</p> <ol style="list-style-type: none"> This command is used to get the graph from the device. The whole process is completed by the two commands 0x5C and 0x5D. This command (0x5C) is used to start and end the graph fetching process The overall transmission process is as follows: <ol style="list-style-type: none"> (1) The host computer uses the command 0x5C to send a drawing request to the device, and the request packet data is the start flag (2). The device uses the command 0x5C to send a reply packet to the host computer. The data field of the reply packet is as follows: <ul style="list-style-type: none"> 2 bytes Total number of packets 1 byte picture type 2 bytes image width 2 bytes picture height 1 byte image bit depth (3) The upper host uses 0X5D to send a drawing request to the device, and the data field of the request packet is the subpackage number (4). The device uses the command 0x5D to send the reply packet to the host computer, and the data field is subcontract data (5) When the host computer no longer uses the 0x5D command to send a request packet to the device, it is considered to be the end of the signal, there are two cases: <ol style="list-style-type: none"> 1: The picture is transmitted successfully, and the host computer gets the complete data 2: The image transmission fails, and the upper computer again uses the command 0x5C to initiate the image fetch request 					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA

Command word	1Byte	0x5D	Command word	1Byte	0x5D
Data field length	2Byte		Identification word	1Byte	0x00 : success Not0: fail
Data field	1 Byte	Picture subpackage number	Data field length	2Byte	
Check word	1Byte		Data field	N Byte	EPD
			Check word	1Byte	

7.7 Command 0xb0 Configures/queries devices

Command 0xb0					
This command is used to set or query the configuration fields of the device					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction		Item	byte instruction
Packet head	2Byte	Default: 0x55 0xAA		Packet head	1Byte Default: 0x55 0xAA
Command word	1Byte	0xB0		Command word	1Byte 0xB0
Data field length	2Byte	0x01 0x00		Identification word	1Byte 0x00 : success Not0: fail
	1 Byte	0x00	Querying the current configuration	Data field length	N Byte Low in front
		0x01+C			N Byte Query configuration Return to current configuration
Data field	(1+N) Byte	onfigura tion field	Change current configuration	0	Modify configuration No return data
Check word	1Byte			Check word	1Byte

Read card configuration protocol format:

PC->Reader: 55 aa b0 2a 00 01 5f 5f 5f 56 42 41 52 5f 43 4f 4e 46 49 47 5f 56 31 2e 31 2e 30 5f 5f 5f 7b 73 65 63 74 6f 72 5f 73 77 69 74 63 68 3d 31 7d 54

Reader->PC: 55 aa b0 00(ff) 00 00 4f(b0)

Data field: (0x01) **VBAR_CONFIG_V1.1.0** The fields to be configured are in parentheses. Multiple items can be configured at the same time, separated by commas

1、Config Query:55 aa B0 01 00 00 4E

2、The company name is displayed on the configuration screen:

VBAR_CONFIG_V1.1.0{devname="Beijing Vguang Internet Technology Co., Ltd."}
}--y+Q5UObEeoCZKL+sv07irA==

55 aa b0 63 00 01 5f 5f 5f 56 42 41 52 5f 43 4f 4e 46 49 47 5f 56 31 2e 31 2e 30 5f 5f
5f 7b 64 65 76 6e 61 6d 65 3d 22 e5 8c 97 e4 ba ac e5 be ae e5 85 89 e4 ba 92 e8 81
94 e7 a7 91 e6 8a 80 e6 9c 89 e9 99 90 e5 85 ac e5 8f b8 22 7d 2d 2d 79 2b 51 35 55
4f 62 45 65 6f 43 5a 4b 4c 2b 73 76 30 37 69 72 41 3d 3d 70

3、Configure the development 485 output:

VBAR_CONFIG_V1.1.0{w_mode=2,dchannel=64,ndchannel=64,bldchannel=64,p_ua
uart1="115200-8-N-1",ochannel=2,nochannel=2,blochannel=2
}--y15fY77HIEkQjDuGgXj6Tw==

55 aa B0 9F 00 01 5f 5f 5f 56 42 41 52 5f 43 4f 4e 46 49 47 5f 56 31 2e 31 2e 30 5f 5f
5f 7b 77 5f 6d 6f 64 65 3d 32 2c 64 63 68 61 6e 6e 65 6c 3d 36 34 2c 6e 64 63 68 61
6e 6e 65 6c 3d 36 34 2c 62 6c 64 63 68 61 6e 6e 65 6c 3d 36 34 2c 70 5f 75 61 72 74
31 3d 22 31 31 35 32 30 30 2d 38 2d 4e 2d 31 22 2c 6f 63 68 61 6e 6e 65 6c 3d 32 2c
6e 6f 63 68 61 6e 6e 65 6c 3d 32 2c 62 6c 6f 63 68 61 6e 6e 65 6c 3d 32 7d 2d 2d 79
31 35 66 59 37 37 48 6c 45 6b 51 6a 44 75 47 67 58 6a 36 54 77 3d 3d 96

4、Configure the output of the common tcp protocol, and configure the tcp server and delay. The transmission succeeds in playing voice, the action relay, the relay delay 1000ms, and the transmission fails in playing voice.

VBAR_CONFIG_V1.1.0{w_mode=1,taddr="192.168.10.120",port=7878,touttime=2,
awifi_s=1088,relayd=1000,awifi_f=2048,owifi=8,ochannel=584,nochannel=584,bloc
hannel=584

}--KS6obtdgOf6P9llv9yzBAw==

55 aa B0 c1 00 01 5f 5f 5f 56 42 41 52 5f 43 4f 4e 46 49 47 5f 56 31 2e 31 2e 30 5f 5f
5f 7b 77 5f 6d 6f 64 65 3d 31 2c 74 61 64 64 72 3d 22 31 39 32 2e 31 36 38 2e 31 30
2e 31 32 30 22 2c 70 6f 72 74 3d 37 38 37 38 2c 74 6f 75 74 74 69 6d 65 3d 32 2c 61
77 69 66 69 5f 73 3d 31 30 38 38 2c 72 65 6c 61 79 64 3d 31 30 30 30 2c 61 77 69 66
69 5f 66 3d 32 30 34 38 2c 6f 77 69 66 69 3d 38 2c 6f 63 68 61 6e 6e 65 6c 3d 35 38
34 2c 6e 6f 63 68 61 6e 6e 65 6c 3d 35 38 34 2c 62 6c 6f 63 68 61 6e 6e 65 6c 3d 35
38 34 7d 2d 2d 4b 53 36 6f 62 74 64 67 4f 66 36 50 39 6c 49 76 39 79 7a 42 41 77 3d
3d AF

5、Configure a static ip address for the device

VBAR_CONFIG_V1.1.0{ip_mode=1,ip="192.168.10.188",mask="255.255.255.0",g
ateway="192.168.10.1",dns="114.114.114.114"

}--tRCIPNt/mK5kl/squMdlFw==

55 aa B0 94 00 01 5f 5f 5f 56 42 41 52 5f 43 4f 4e 46 49 47 5f 56 31 2e 31 2e 30 5f 5f
5f 7b 69 70 5f 6d 6f 64 65 3d 31 2c 69 70 3d 22 31 39 32 2e 31 36 38 2e 31 30 2e 31
38 38 22 2c 6d 61 73 6b 3d 22 32 35 35 2e 32 35 35 2e 32 35 35 2e 30 22 2c 67 61 74
65 77 61 79 3d 22 31 39 32 2e 31 36 38 2e 31 30 2e 31 22 2c 64 6e 73 3d 22 31 31 34
2e 31 31 34 2e 31 31 34 2e 31 31 34 22 7d 2d 2d 74 52 43 6c 50 4e 74 2f 6d 4b 35 6b
6c 2f 73 71 75 4d 64 49 46 77 3d 3d A1

6、Configure the dynamic ip address of the device

VBAR_CONFIG_V1.1.0{ip_mode=0

}--67TcSMIO2Nchn9zNtc0WBg==

55 aa B0 3e 00 01 5f 5f 5f 56 42 41 52 5f 43 4f 4e 46 49 47 5f 56 31 2e 31 2e 30 5f 5f 5f 7b 69 70 5f 6d 6f 64 65 3d 30 7d 2d 2d 36 37 54 63 53 4d 49 4f 32 4e 63 68 6e 39 7a 4e 74 63 30 57 42 67 3d 3d 3A

7、Configure the normal 485 output, scan code, swipe card, Bluetooth prefix suffix and carriage feed

VBAR_CONFIG_V1.1.0{w_mode=1,p_uart1="115200-8-N-1",ochannel=2,nochannel=2,blochannel=2,chorc=1,prefix="3132",postfix="3132",cr=1,nl=1,anfc=1,horc=0,pri="3334",pos="3334",ncr=1,nnl=1,blhorc=1,blpri="3536",blpos="3536",blcr=1,blnl=1

}--0hUTpadr318gfddu/TfCUw==

55 aa B0 08 01 01 5f 5f 5f 56 42 41 52 5f 43 4f 4e 46 49 47 5f 56 31 2e 31 2e 30 5f 5f 5f 7b 77 5f 6d 6f 64 65 3d 31 2c 70 5f 75 61 72 74 31 3d 22 31 31 35 32 30 30 2d 38 2d 4e 2d 31 22 2c 6f 63 68 61 6e 6e 65 6c 3d 32 2c 6e 6f 63 68 61 6e 6e 65 6c 3d 32 2c 62 6c 6f 63 68 61 6e 6e 65 6c 3d 32 2c 63 68 6f 72 63 3d 31 2c 70 72 65 66 69 78 3d 22 33 31 33 32 22 2c 70 6f 73 74 66 69 78 3d 22 33 31 33 32 22 2c 63 72 3d 31 2c 6e 6c 3d 31 2c 61 6e 66 63 3d 31 2c 68 6f 72 63 3d 30 2c 70 72 69 3d 22 33 33 33 34 22 2c 70 6f 73 3d 22 33 33 33 34 22 2c 6e 63 72 3d 31 2c 6e 6e 6c 3d 31 2c 62 6c 68 6f 72 63 3d 31 2c 62 6c 70 72 69 3d 22 33 35 33 36 22 2c 62 6c 70 6f 73 3d 22 33 35 33 36 22 2c 62 6c 63 72 3d 31 2c 62 6c 6e 6c 3d 31 7d 2d 2d 30 68 55 54 70 61 64 72 33 31 38 67 66 64 64 75 2f 54 66 43 55 77 3d 3d 42

8、Configure the device development mode -485 low-light level communication protocol output, scanning prefix and suffix format char format, content 3132, check enter line feed, scanning mode interval mode, interval time 300ms, scanning buzzer, buzzer delay 30ms, scanning output direct output, default fixed mac address, dynamic access to ip, open swipe card, Open cloud card, ID card output ID number, swiping starting bit 1 length 8, direct output of positive sequence, buzzer after swiping card, swiping prefix format char format, content 3334, check enter feed, Bluetooth prefix suffix format char format, content 3536, check Enter feed, Bluetooth data direct output, open startup voice, volume 60, The heartbeat content is hello. The time is 60s. The device number is 128.

9、VBAR_CONFIG_V1.1.0{w_mode=2,dchannel=64,ndchannel=64,bldchannel=64,p_uart1="115200-8-N-1",ochannel=2,nochannel=2,blochannel=2,chorc=1,prefix="3132",postfix="3132",cr=1,nl=1,s_mode=0,interval=300,ascan=1,beepd=30,ledd=200,ft=0,fixed_macaddr_enable=0,ip_mode=0,nfc=1,nfc_identity_card_enable=3,nfc_card_protocol=3,st=1,len=8,nft=0,anfc=1,horc=0,pri="3334",pos="3334",ncr=1,nnl=1,ord=0,idord=0,nfc_otag=32,online_id_format=1,blhorc=1,blpri="3536",blpos="3536",blcr=1,blnl=1,blft=0,volume=60,boot_music=1,heart_en=1,heart_time=60,heart_data="hello",devnum=128

}--kJlIIP2iLoAyBdOKbWk6A==

55 aa B0 4D 02 01 5f 5f 5f 56 42 41 52 5f 43 4f 4e 46 49 47 5f 56 31 2e 31 2e 30 5f 5f 5f 7b 77 5f 6d 6f 64 65 3d 32 2c 64 63 68 61 6e 6e 65 6c 3d 36 34 2c 6e 64 63 68 61 6e 6e 65 6c 3d 36 34 2c 62 6c 64 63 68 61 6e 6e 65 6c 3d 36 34 2c 70 5f 75 61 72 74 31 3d 22 31 31 35 32 30 30 2d 38 2d 4e 2d 31 22 2c 6f 63 68 61 6e 6e 65 6c 3d 32 2c 6e 6f 63 68 61 6e 6e 65 6c 3d 32 2c 62 6c 6f 63 68 61 6e 6e 65 6c 3d 32 2c 63 68

6f 72 63 3d 31 2c 70 72 65 66 69 78 3d 22 33 31 33 32 22 2c 70 6f 73 74 66 69 78 3d
22 33 31 33 32 22 2c 63 72 3d 31 2c 6e 6c 3d 31 2c 73 5f 6d 6f 64 65 3d 30 2c 69 6e
74 65 72 76 61 6c 3d 33 30 30 2c 61 73 63 61 6e 3d 31 2c 62 65 65 70 64 3d 33 30 2c
6c 65 64 64 3d 32 30 30 2c 66 74 3d 30 2c 66 69 78 65 64 5f 6d 61 63 61 64 64 72 5f
65 6e 61 62 6c 65 3d 30 2c 69 70 5f 6d 6f 64 65 3d 30 2c 6e 66 63 3d 31 2c 6e 66 63
5f 69 64 65 6e 74 69 74 79 5f 63 61 72 64 5f 65 6e 61 62 6c 65 3d 33 2c 6e 66 63 5f
63 61 72 64 5f 70 72 6f 74 6f 63 6f 6c 3d 33 2c 73 74 3d 31 2c 6c 65 6e 3d 38 2c 6e
66 74 3d 30 2c 61 6e 66 63 3d 31 2c 68 6f 72 63 3d 30 2c 70 72 69 3d 22 33 33 33 34
22 2c 70 6f 73 3d 22 33 33 33 34 22 2c 6e 63 72 3d 31 2c 6e 6e 6c 3d 31 2c 6f 72 64
3d 30 2c 69 64 6f 72 64 3d 30 2c 6e 66 63 5f 6f 74 61 67 3d 33 32 2c 6f 6e 6c 69 6e
65 5f 69 64 5f 66 6f 72 6d 61 74 3d 31 2c 62 6c 68 6f 72 63 3d 31 2c 62 6c 70 72 69
3d 22 33 35 33 36 22 2c 62 6c 70 6f 73 3d 22 33 35 33 36 22 2c 62 6c 63 72 3d 31 2c
62 6c 6e 6c 3d 31 2c 62 6c 66 74 3d 30 2c 76 6f 6c 75 6d 65 3d 36 30 2c 62 6f 6f 74
5f 6d 75 73 69 63 3d 31 2c 68 65 61 72 74 5f 65 6e 3d 31 2c 68 65 61 72 74 5f 74 69
6d 65 3d 36 30 2c 68 65 61 72 74 5f 64 61 74 61 3d 22 68 65 6c 6c 6f 22 2c 64 65 76
6e 75 6d 3d 31 32 38 7d 2d 2d 6b 4a 6a 31 49 6c 50 32 69 4c 6f 41 79 42 64 4f 4b 62
57 6b 36 41 3d 3d 4F

9、Set Bluetooth name

VBAR_CONFIG_V1.1.0{ble_name="DW200_7.3test"

}--Y9dP25sw9ep0V3UcaANrLg==

55 aa B0 4D 00 01 5f 5f 5f 56 42 41 52 5f 43 4f 4e 46 49 47 5f 56 31 2e 31 2e 30 5f
5f 5f 7b 62 6c 65 5f 6e 61 6d 65 3d 22 44 57 32 30 30 5f 37 2e 33 74 65 73 74 22 7d
2d 2d 59 39 64 50 32 35 73 77 39 65 70 30 56 33 55 63 61 41 4e 72 4c 67 3d 3d 0D

8. Audio or picture updates

Audio files are transmitted as compressed packages, and the audio file name must conform to :[0-6].wav or F.AV, S.AV. The image file must be: 0.png, 1.png 2.png... Or logo.png, bk.png. After decompression, only level-1 directories exist.

8.1 Command 0x81 Prepared

Command 0x81					
Instruction: The subcontract rules When the data amount is more than 1024: the data is sent in 1024 bytes. When the amount of data is less than 1024: send directly.					
PC->Reader(Send)			Reader->PC(Receive)		
Item	byte	instruction	Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA	Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x81	Command word	1Byte	0x81

Data field length	2Byte	N			Identification word	1Byte	0x00 : success Not0: fail
Data field	1Byte	Compression type	1Byte	0x01: xz Compressed package	Data field length	2Byte	N
				0x02: zip Compressed package			
		Total number	2Byte		Data field	NByte	N=0 No such item
		File size	4Byte	Compression size (low first)			
Check word	1Byte				Check word	1Byte	

8.2 Command 0x82 The subcontract transmission

Command 0x82							
Instruction: The subcontract rules							
When the data amount is more than 1024: the data is sent in 1024 bytes							
When the amount of data is less than 1024: send directly							
PC->Reader(Send)					Reader->PC(Receive)		
Item	byte	instruction			Item	byte	instruction
Packet head	2Byte	Default: 0x55 0xAA			Packet head	1Byte	Default: 0x55 0xAA
Command word	1Byte	0x82			Command word	1Byte	0x82
Data field length	2Byte	N			Identification word	1Byte	0x00 : success
							Not0: fail
Data field	1 Byte	Serial number	2 Byte	This package serial number (serial number increasing starting from 0, has been to: the total number of packages - 1), low in the former	Data field length	2Byte	N
		Data	N Byte		Data field	N Byte	N=0 No such item
Check word	1Byte				Check word	1Byte	

8.3 Command 0x83 End Instruction

Command 0x83										
Instruction:										
PC->Reader(Send)					Reader->PC(Receive)					
Item		byte	instruction			Item		byte	instruction	
Packet head		2Byte	Default: 0x55 0xAA			Packet head		1Byte	Default: 0x55 0xAA	
Command word		1Byte	0x83			Command word		1Byte	0x83	
Data field length		2Byte	N			Identification word		1Byte	0x00 : success	
Data field		1Byte	RFU	2Byte		Data field length		2Byte	N	
			MD5	16Byte	Md5 value of the compressed package	Data field		NByte	N = 0 No such item	
Check word		1Byte				Check word		1Byte		

8.4 Command 0x8A Delete audio files or pictures

Command 0x8A								
Instruction: This directive supports deleting 0.wav 1.wav ...0.png 1.png ...documents etc.								
PC->Reader(Send)					Reader->PC(Receive)			
Item	byte	instruction			Item	byte	instruction	
Packet head	2Byte	Default: 0x55 0xAA			Packet head	1Byte	Default: 0x55 0xAA	
Command word	1Byte	0x8A			Command word	1Byte	0x8A	
Data field length	2Byte	N			Identification word	1Byte	0x00 : success	
Data field	1 Byte	Type	1 Byte	01: Image files	Data field length	2Byte	N	
				02: Audio files				
		File label	16 Byte	Range of audio file labels: [0-5]	Data field	N Byte		N=0 No such item
				Range of image file				

			labels: [0-255]			
Check word	1Byte			Check word	1Byte	

Example:

Delete /vgapp/wav/0.wav: 55 AA 8A 02 00 02 00 75

Delete /vgapp/wav/1.wav: 55 AA 8A 02 00 02 01 74

Delete /vgapp/res/image/0.png: 55 AA 8A 02 00 01 00 76

Delete /vgapp/res/image/1.png: 55 AA 8A 02 00 01 01 77

Delete /vgapp/res/image/3.png: 55 AA 8A 02 00 01 03 75

Appendix 1: List of reply package identifiers

Identification	Number specification
0x00	Successful
0x10	Succeeded, the result is not empty
0x90	Failed
0x01	Verification failed
0x02	Data length exceeds the limit
0x03	This command is not supported
0x04	JSON parsing failed
0x05	Insufficient memory
0x06	Density length error
0x07	Density check error
0x08	Function is not enabled
0x09	Length of the card number exceeds the limit
0x0A	Upgrade timeout failed
0x0B	Failed to write data to the flash
0x0C	Packet sequence number is incorrect
0x0D	Unsupported compression mode
0x0E	Parameter is incorrect
0x93	FLASH Space is insufficient

Appendix 2: Modification record table

Version Number	Reason for modification	Modification Type	Summary of modified content	modifier	Revision date	Execution date
2.6			Add the 0x53 command			2018.04.18

2.7			Add the 0x29 command			2018.05.30
2.8			Add the 0x04 command			2018.06.28
2.9			The NFC working mode configuration code is added			2018.10.25
2.10			The 2.1 Code setting command is modified Add the 0x05 command			2018.11.02
3.0			1. Add the Open Key Report 0x06 command 2. Add UI interface operation instructions 3. Add the button to report the 0x32 command 4. Add audio and picture file replacement instructions 5. Add the task start flag identifier function to the NFC module 6. Add the 0xA0, 0xA1, and 0xA6 card operation instructions 7. Add the 0x45 command 8. Add instructions and update the document format 9. Add Appendix 1- Identification Number description			2020.08.24
3.1			Increase the heartbeat enable			2021.06.25
3.2			Add whitelist operation instruction Modify the DATA_TYPE field of the 0x33 instruction			2021.07.19
3.3			Added the instructions for obtaining the device SN			2022.01.05
3.5			Added 0x09 Open and close magnetic operation instruction			2023.03.20
3.5			Added 0x46 Batch Whitelist Change instruction			2023.03.20
3.5			Added 0x47 Get Record operation instruction by Time range			2023.03.20
3.5			Added 0x48 Delete Records by Time Range operation instruction			2023.03.20
3.6			Added the 0xb0 Configuration/Query Device operation instruction			2023.03.20
3.6			Modify command 0x62 to modify the data field format to support both custom data and QR code data in the data field	Panlong He		2023.06.07

3.6			Added the command 0x5C/0x5D for the upper computer to obtain the graph from the device	Panlong He		2023.06.28
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