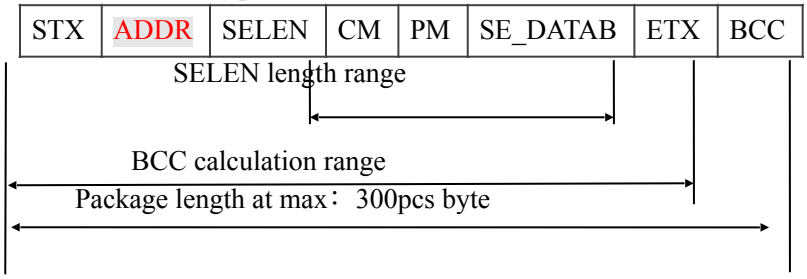
K720/K730/k750 Communication Protocol

I. Communication Data Format

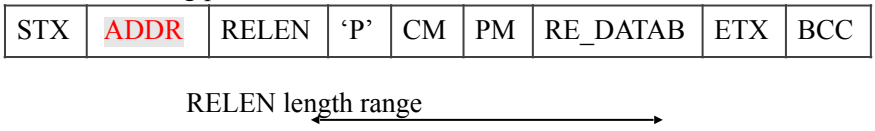
Communication Method	**asynchronous communication, half duplex**
Initial bit	1bit
Data bit	8bits
Check bit	None
Stop bit	1bit
Preset baud rate	9600bps

II. Data packet format

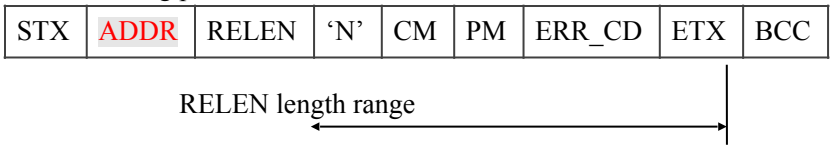
Command-sending packet format



Correct returning packet format



Error returning packet format



Note：

[1]CM，Command code

[2]PM，Command Parameter

[3]SE_DATAB，Sending data bag

[4]RE_DATAB，Returning data bag。

[5]ERR_CD，Error code

[6]BCC，Xor check sum.Calculating method：Xor operation every data from stx (Include STX) to ETX (Include ETX)

[7]‘P’，=0x50。Means that Command operation succeed

[8]‘N’，=0x4E。Means that command operation fail

[9]SELEN，Length of the sending data packet. Two bytes. Consists of sending bag length high bit [SELEN_H] and sending bag length low bit [SELEN_L]. SELEN length = [SELEN_H] × 256 +

[SELEN_L]

[10]RELEN，Length of the returning data packet. Two bytes. Consists of returning bag length high bit [RELEN_H] and returning bag length low bit [RELEN_L]. RELEN length = [RELEN_H] × 256 + [RELEN_L]

[11]STX，Block begin symbol. Preset：0X02

[12]ETX，Block end symbol。Preset：0x03

[13]ADDR，Multiple machine communication address, length is two byte. High bit at front(ADDH)，low bit at back（ADDL）

Note: when Card reader/writer receives command bag from host machine, if character interval time of command bag is over 15MS, it will take it as overtime and void.

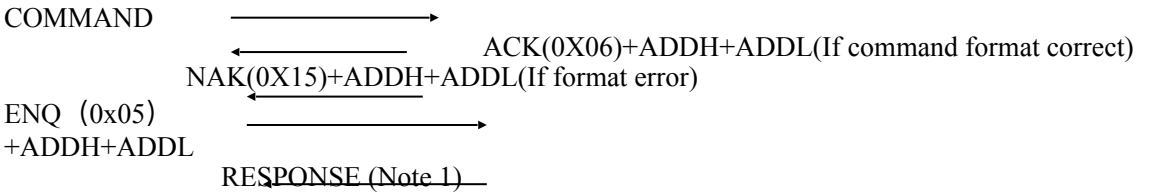
ADDR set by DIP switch，address as belows：

DIP Switch				Hex	ADDH	ADDL
4	3	2	1			
ON	ON	ON	ON	00	30	30
ON	ON	ON	OFF	01	30	31
ON	ON	OFF	ON	02	30	32
ON	ON	OFF	OFF	03	30	33
ON	OFF	ON	ON	04	30	34
ON	OFF	ON	OFF	05	30	35
ON	OFF	OFF	ON	06	30	36
ON	OFF	OFF	OFF	07	30	37
OFF	OFF	OFF	ON	08	30	38
OFF	OFF	ON	OFF	09	30	39
OFF	OFF	ON	ON	0A	31	30
OFF	ON	OFF	OFF	0B	31	31
OFF	ON	OFF	ON	0C	31	32
OFF	ON	ON	OFF	0D	31	33
OFF	ON	ON	ON	0E	31	34
OFF	OFF	OFF	OFF	0F	31	35

Note: when Card reader/writer receives command bag from host machine, if character interval time of command bag is over 50MS, it will take it as overtime and void.

Communication Procedure :

Main controller Device



Note 1：If host machine sending command is belong to "Command list 2", the device does not return response. The host machine through sending check command “RF”(0X52 0X46) or “AP”(0X41 0X50) to get the results of performance

Note：

[1]COMMAND：command packet

[2] RESPONSE：response packet

[3]ACK：Control character , length is one byte, active response, value =0x06

[4]NAK：Control character , length is one byte, negative response, value =0x15

[5]ENQ：Control character , length is one byte, execute command request, value =0x05

[6]EOT：Control character , length is one byte, cancel command，value=0x04

Note:

[1]When machine use multiple-communication，the PC host can control 16set equipment through one serial port.
[2]When machine use multiple-communication, the address of each machine must be set to unique.

二：Command list 1

Command serial	Command name	Command code (CM)	Command PM (PM)	Command function
1	Contactless card S50 operation	0x3B	0x30	Search card
			0x31	Read serial number
			0x32	Check password
			0x33	Read card
			0x34	Write card
			0x35	Value operation initial
			0x36	Increment operation
			0x37	Devalue operation
			0x38	Close down

			0x39	Read EEPROM
			0x3a	Write EEPROM
			0x3b	Lead in password from EEPROM
2	Contactless card S70 operation	0x3C	0x30	Search card
			0x31	Read serial number
			0x32	Check password
			0x33	Read card
			0x34	Write card
			0x35	Value operation initial
			0x36	Increment operation
			0x37	Devalue operation
			0x38	Close down
			0x39	Read EEPROM
			0x3a	Write EEPROM
			0x3b	Lead in password from EEPROM
3	Contactless UL card operation	0x3D	0x30	Search card
			0x31	Read serial number
			0x32	Read card
			0x33	Write card
			0x34	Close down
4	Contactless CPU card operation (ISO14443 TYPEA)	0x47	0x30	Activate card
			0x31	Restore response request
			0x32	PPS request
			0x33	Send APDU command
			0x34	DESELECT request
			0x35	Halt command
6	15693 Card	**0x48**	0x30	Content request
			0x31	Read card
			0x32	Write card
			0x33	Choose
			0x34	Read system info
			0x35	Read secure states
			0x36	Write DSFID

			0x37	Write AFI
			0x3a	Lock block
			0x3b	Lock AFI
			0x3c	Lock DSFID
			0x30	Content request

Command list 2

Command name	Code
Dispense card to front holding position	“DC”(0X44 0X43)
Check	“RF”(0X52 0X46)
Check	“AP”(0X41 0X50)
Recycle card	“CP”(0X43 0X50)
Collect card to card hopper (Only used for k750)	“DB”(0X44 0X42)
Reset	“RS”(0X52 0X53)
Get version	“GV”(0X47 0X56)
Buffer enable	“BE”(0X42 0X45)
Buffer disable	“BD”(0X42 0X44)
Set baud rate	“CS2”(0X43 0X53 0X32) 4800
	“CS3”(0X43 0X53 0X33) 9600
	“CS4”(0X43 0X53 0X34) 19200
	“CS5”(0X43 0X53 0X34) 38400
Dispense card at sensor 2 position	“FC6”(0X46 0X43 0X36)
Get version	“GV”(0X47 0X56)
Dispense card at read card position	“FC7”(0X46 0X43 0X37)
Dispense card at hold card position	“FC4”(0X46 0X43 0X34)
Dispense card out of card mouth	“FC0”(0X46 0X43 0X30)
Enter card to read position from front-side	“FC8”(0X46 0X43 0X38)

LED Control function(Optional item)

CM	PM	SE_DATAB	Note	

“L”	“P”	0x00	Always light on	
		0x01	1 time/Sec	
		0x02	2 times/sec	
		0x03	3times/sec	
		0x04	4times/sec	
		0x05	5times/sec	
		0x06	6times/sec	
		0x07	7times/sec	
		0x08	8times/sec	
		0x09	9times/sec	
		0x0A	10times/sec	
		0x0B	11times/sec	
		0X0C	12times/sec	
		0X0D	13times/sec	
		0X0E	14times/sec	
		0X0F	15times/sec	
		0X82	1 times/sec	
		0X83	1 time/3 sec	
		0X84	1 time /4 sec	
		0X85	1time/5 sec	
		0X86	1time/6	
		0X87	1time/7 sec	
		0X88	1time/8 sec	
		0X89	1time/9 sec	
		0X8A	1time/10 sec	
		0X8B	1time/11 sec	
		0X8C	1time/12 sec	
		0X8D	1time/13 sec	
		0X8E	1time/14 sec	
		0X8F	1time/15 sec	
“L”	“F”		LED closed	

Send “AP” or “RF” command will get below states

Hexadecimal	Binary	States
0x38 0x30 0x30 0x30	1000 0000 0000 0000	Recycling box full
0x34 0x30 0x30 0x30	0100 0000 0000 0000	Could not implement command
0x32 0x30 0x30 0x30	0010 0000 0000 0000	Prepare card failure
0x31 0x30 0x30 0x30	0001 0000 0000 0000	Preparing card（k720）
		Card hopper pre-full（only used for k750）See below note 1
0x30 0x38 0x30 0x30	0000 1000 0000 0000	Sending card
0x30 0x34 0x30 0x30	0000 0100 0000 0000	Collecting card
0x30 0x32 0x30 0x30	0000 0010 0000 0000	Error of issuing card
0x30 0x31 0x30 0x30	0000 0001 0000 0000	Error of recycling card
0x30 0x30 0x38 0x30	0000 0000 1000 0000	Card hopper full(only used for k750)
0x30 0x30 0x34 0x30	0000 0000 0100 0000	Card overlap
0x30 0x30 0x32 0x30	0000 0000 0010 0000	Card jam
0x30 0x30 0x31 0x30	0000 0000 0001 0000	Card pre-empty
0x30 0x30 0x30 0x38	0000 0000 0000 1000	Card empty
0x30 0x30 0x30 0x34	0000 0000 0000 0100	Card at sensor 3 position
0x30 0x30 0x30 0x32	0000 0000 0000 0010	Card at sensor 2 position
0x30 0x30 0x30 0x31	0000 0000 0000 0001	Card at sensor 1 position

Note 1：
K750 and K730 without card pre-dispensing function

三：Command detailed manual

Control and set command of machine

Dispense card process：

Main host　　Dispenser

Check command（AP or RF）→

←　ACK+ADDR

ENQ+ADDR　→

Return working/card hopper states

Dispense card command →

（Card hopper have card and no error of machine, otherwise continued check）

ACK+ADDR ←

ENQ+ADDR　→　Implement dispensing action and restore this states

Continued check card hopper states →

Note：（1）Check machine states before dispensing card, No error then can start implement dispensing command.

（2） Do not implement another command before a command process does not finished.

(3) Two check states must interval 200ms;

1. Check states（"AP"）

1．1、Host send

0x02	ADDH	ADDL	0x00	0x02	"A"	"P"	0x03	BCC

Return：

0x02	ADDH	ADDL	0X00	0X06	"S"	"F"	Machine states（4 bytes）	0x03	BCC

1.2 Check states（"RF"）

Host send：

0x02	ADDH	ADDL	0x00	0x02	“R”	“F”	0x03	BCC

Return

0x02	ADDH	ADDL	0X00	0X05	“S”	“F”	Machine states（3 bytes)	0x03	BCC

Command list 2 and LED command operation manual：

Communication process：

Host Dispenser

LED Control command →

← ACK+ADDR

ENQ+ADDR → Implement LED command

Host send：

0x02	ADDH	ADDL	0x00	0x02（2 bytes command) 0x03（3 bytes command)	The first byte of command	The second byte of command	The third byte of command	0x03	BCC

Note：(1)Command list 2 and LED control command decide the third byte command

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Contactless card operation command

Note：All below commands are bring address，no marked means eliding,send/return response all must bring address .

1、S50 card command

1．1、Search card

0x02	ADDH	ADDL	0x00	0x02	0x3B	0x30	0X03	BCC

Return successfully：

0x02	ADDH	ADDL	0X00	0X03	0x50	0x3B	0x30	0x03	BCC

Return with failure：

0x02	ADDH	ADDL	0X00	0X04	0x4E	0x3B	0x30	ERR_CD	0X03	BCC

Note：The address （ADDH、ADDL）of below commands been elided，when you send/return command must add address(ADDH.ADDL), the format see above "search card" command

1．2、Read card serial no

0x02	0x00	0x02	0x3B	0x31	0X03	BCC

Return successfull：

0x02	RELEN_H	RELEN_L	0x50	0 x 3 B	0x31	Card serial no	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3B	0x31	ERR_CD	0X03	BCC

1．3、Check password

0x02	0 X 00	0 X 0 A	0 x 3 B	0 x 3 2	B l o c k address	P S W type	6 bytes PSW	0X03	BCC

Note：
PSW type:=0X30,check KEYA;=0X31,check KEYB
Password(PSW)：Length is 6 bytes sector password

Return successfull：

0x02	0x00	0x03	0x50	0x3B	0x32	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3B	0x32	ERR_CD	0X03	BCC

1．4、Read data

0x02	0x00	0x03	0x3B	0x33	Block Addr	0X03	BCC

Return successfull：

0x02	0 x 0 0	0x13	0x50	0x3B	0x33	16 bytes data block	0x03	BCC

Return with failure：

0x02	0X00	0 X 04	0x4E	0x3B	0 0x 33	ERR_CD	0X03	BCC

1．5、Write data

0x02	0x00	0x13	0x3B	0x34	B l o c k Addr	16 bytes data block	0X03	BCC

Return successfull：

0x02	0x00	0x03	0x50	0x3B	0x34	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3B	0x34	ERR_CD	0X03	BCC

1．6、Value initial operation

0x02	0x00	0x13	0x3B	0x35	B l o c k Addr	16 bytes data block	0X03	BCC

Return successfull：

0x02	0x00	0x03	0x50	0x3B	0x35	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3B	0x35	ERR_CD	0X03	BCC

Note: Initialized value format as below

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Value				/Value				Value				Adr	/Adr	Adr	/Adr

Value: Need to initialize 4 byte value, low byte at front, high byte at behind.
/Value: Negate the 4 byte value which need to initialize
Adr: Need to initialize value's block address

Adr= sector number X 4 + block number (S50 card 0-15 sector，S70 card the 0 –31 sector block value operation address calculation)

Adr=（sector number – 32） X 16 + 128 + block number （S70 card the 32 – 39 sector block value operation address calculation）

/Adr: Negate the block address which you need to initialize value

Noted：！For each sector last block, please do not operate their value.

E.g： Make the five sector block initialization value 0 to 10, write data to 16 byte sector block is:
“ 0x0A, 0x00, 0x00, 0x00, 0xF5 0xFF,0xFF ,0xFF , 0x0A, 0x00, 0x00, 0x00, 0x14, 0xEB, 0x14, 0xEB ”

For s70 card,make the 39 sector block initialization value 0 to 10, write data to 16 byte sector block is:
“ 0x0A, 0x00, 0x00, 0x00, 0xF5, 0xFF,0xFF ,0xFF , 0x0A, 0x00, 0x00, 0x00, 0xF0, 0x0F, 0XF0, 0x0F ”

1．7、Increment operation

0x02	0x00	0x07	0x3B	0x36	Block Addr	4 bytes increment data	0X03	BCC

Note: Increment data, low byte at front, high byte at behind

Return successfull：

0x02	0x00	0x03	0x50	0x3B	0x36	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3B	0x36	ERR_CD	0X03	BCC

4 byte hex data is appointed sector,appointed block value need to increase value.(low byte at front, high byte at behind)

If need to increase 0x10，send 4 byte hex data is：“ 0x10, 0x00, 0x00, 0x00 ”

1．8、Decrement operation

0x02	0x00	0x07	0x3B	0x37	Block Addr	4 bytes decrement data	0X03	BCC

Note: Devalue data, low byte at front,high byte at behind.

Return successfull：

0x02	0x00	0x03	0x50	0x3B	0x37	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3B	0x37	ERR_CD	0X03	BCC

4 byte hex Data is appointed sector and appointed block value need to increase value.(low byte at front, high byte at behind)

If need to decrease 0x10，send 4 byte hex data is：“ 0x10, 0x00, 0x00, 0x00 ”

1．9、Read eeprom

0x02	0x00	0x03	0x3B	0x38	MSB	LSB	LEN	0X03	BCC

Return successfull：

0x02	0x00	0x13	0x50	0x3B	0x38	Data	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3B	0x38	ERR_CD	0X03	BCC

Parameter not：

MSB：EEPROM address, high 8 bits

LSB：EEPROM address, low 8 bits

LEN：Read length

1．10、Write eeprom

0x02	0x00	0x03	0x3B	0x39	MSB	LSB	LEN	DATA	0X03	BCC

Return successfull：

0x02	0x00	0x13	0x50	0x3B	0x39	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3B	0x39	ERR_CD	0X03	BCC

Parameter note：

MSB：EEPROM address, high 8 bits

LSB：EEPROM address, low 8 bits

LEN：Write data length

DATA：Write data

1．11、Import password from EEPROM

0x02	0x00	0x03	0x3B	0x3a	MSB	LSB	0X03	BCC

Return successfull：

0x02	0x00	0x13	0x50	0x3B	0x3a	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3B	0x3a	ERR_CD	0X03	BCC

Parameter note：

MSB：EEPROM address, high 8 bits

LSB：EEPROM address,low 8 bits

2.S70 card command

2．1、Search card

0x02	0x00	0x02	0x3C	0x30	0X03	BCC

Return successfull：

0x02	0X00	0X03	0x50	0x3C	0x30	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3C	0x30	ERR_CD	0X03	BCC

2．2、Read serial number

0x02	0x00	0x02	0x3C	0x31	0X03	BCC

Return successfull：

0x02	0X00	0X07	0x50	0x3C	0x31	4 bytes card serial	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3C	0x31	ERR_CD	0X03	BCC

2．3、Check password

0x02	0x00	0x0A	0x3C	0x32	Block Addr	PSW type	6 bytes PSW	0X03	BCC

Return successfull：

0x02	0x00	0x03	0x50	0x3C	0x32	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3C	0x32	ERR_CD	0X03	BCC

2．4、Read data

0x02	0x00	0x03	0x3C	0x33	Block Addr	0X03	BCC

Return successfull：

0x02	0x00	0x13	0x50	0x3C	0x33	16 bytes data block	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3C	0x33	ERR_CD	0X03	BCC

2．5、Write data

0x02	0x00	0x13	0x3C	0x34	Block Addr	16 bytes data block	0X03	BCC

Return successfull：

0x02	0x00	0x03	0x50	0x3C	0x34	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3C	0x34	ERR_CD	0X03	BCC

2．6、Value initialize operation

0x02	0x00	0x13	0x3C	0x35	Block Addr	16 bytes data block	0X03	BCC

Return successfull：

0x02	0x00	0x03	0x50	0x3C	0x35	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3C	0x35	ERR_CD	0X03	BCC

Initialized value format as below

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Value				/Value				Value				Adr	/Adr	Adr	/Adr

“ 0x0A, 0x00, 0x00, 0x00, 0xF5, 0xFF,0xFF ,0xFF , 0x0A, 0x00, 0x00, 0x00, 0xF0, 0x0F, 0XF0, 0x0F ”

Value: Need to initialize 4 byte value, low byte at front, high byte at behind.

/Value: Negate the 4 byte value which need to initialize

Adr: Need to initialize value's block address

Adr= sector number X 4 + block number (S50 card 0-15 sector，S70 card the 0 –31 sector block value operation address calculation)

Adr=（sector number – 32） X 16 + 128 + block number （S70 card the 32 – 39 sector block value operation address calculation）

/Adr: Negate the block address which you need to initialize value

Noted：！For each sector last block, please do not operate their value.

E.g： Make the five sector block initialization value 0 to 10, write data to 16 byte sector block is:

“ 0x0A, 0x00, 0x00, 0x00, 0xF5 0xFF,0xFF ,0xFF , 0x0A, 0x00, 0x00, 0x00, 0x14, 0xEB, 0x14, 0xEB ”

For s70 card,make the 39 sector block initialization value 0 to 10, write data to 16 byte sector block is:

“ 0x0A, 0x00, 0x00, 0x00, 0xF5, 0xFF,0xFF ,0xFF , 0x0A, 0x00, 0x00, 0x00, 0xF0, 0x0F, 0XF0, 0x0F ”

2．7、Increment operation

0x02	0x00	0x07	0x3C	0x36	Block Addr	4 bytes increment data	0X03	BCC

Note: Increment data, low byte at front, high byte at behind

Return successfull：

0x02	0x00	0x03	0x50	0x3C	0x36	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3C	0x36	ERR_CD	0X03	BCC

2．8、Decrement operation

0x02	0x00	0x07	0x3C	0x37	Block Addr	4 bytes decrement data	0X03	BCC

Note: Devalue data, low byte at front,high byte at behind.

Return successfull：

0x02	0x00	0x03	0x50	0x3C	0x37	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3C	0x37	ERR_CD	0X03	BCC

2．9、Read eeprom

0x02	0x00	0x03	0x3c	0x38	MSB	LSB	LEN	0X03	BCC

Return successfull：

0x02	0x00	0x13	0x50	0x3c	0x38	data	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3c	0x38	ERR_CD	0X03	BCC

Parameter note：

MSB：EEPROM address, high 8 bits

LSB：EEPROM address,low 8 bits

LEN：Read length

2．10、Write eeprom

0x02	0x00	0x03	0x3c	0x39	MSB	LSB	LEN	DATA	0X03	BCC

Return successfull：

0x02	0x00	0x13	0x50	0x3c	0x39	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3c	0x39	ERR_CD	0X03	BCC

Parameter note：

MSB：EEPROM address, high 8 bits

LSB：EEPROM address,low 8 bits

LEN：Write data length

DATA：Write data

2．11、Import password from EEPROM

0x02	0x00	0x03	0x3c	0x3a	MSB	LSB	0X03	BCC

Return successfull：

0x02	0x00	0x13	0x50	0x3c	0x3a	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3c	0x3a	ERR_CD	0X03	BCC

Parameter note：

MSB：EEPROM address, high 8 bits

LSB：EEPROM address,low 8 bits

3、UL card command

3．1、Search card

0x02	0x00	0x02	0x3D	0x30	0X03	BCC

Return successfull：

0x02	0x00	0x03	0x50	0x3D	0x30	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3D	0x30	ERR_CD	0X03	BCC

3．2、Read serial number

0x02	0x00	0x02	0x3D	0x31	0X03	BCC

Return successfull：

0x02	0x00	0x0a	0x50	0x3D	0x31	7 bytes serial no	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3D	0x31	ERR_CD	0X03	BCC

3．3、Read operation

0x02	0x00	0x03	0x3D	0x32	B l o c k Addr	0X03	BCC

Return successfull：

0x02	0x00	0x13	0x50	0x3D	0x32	16 bytes data	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3D	0x32	ERR_CD	0X03	BCC

3．4、Write operation

0x02	0x00	0x13	0x3D	0x33	B l o c k Addr	16 bytes data	0X03	BCC

Return successfull：

0x02	0x00	0x03	0x50	0x3D	0x33	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3D	0x33	ERR_CD	0X03	BCC

Note：block address 0-1 only read could not be write, block address 2-3 with special meaning, please do not write in it.

3．5、Close down

0x02	0x00	0x07	0x3D	0x34	0X03	BCC

Return successfull：

0x02	0x00	0x03	0x50	0x3D	0x34	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x3D	0x34	ERR_CD	0X03	BCC

4.TYPEA contactless smart card command

4.1、Activate card

0x02	0x00	0x03	0x47	0x30	0X03	BCC

Return successfull：

0x02	LH	LL	0x50	0x47	0x30	UID	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x47	0x30	ERR_CD	0X03	BCC

Parameter note：

[1]LH，package length high 8 bits. LL，package length low 8 bits

4.2、Read reset response

0x02	0x00	0x03	0x47	0x31	0X03	BCC

Return successfull：

0x02	LH	LL	0x50	0x47	0x31	ATS	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x47	0x31	ERR_CD	0X03	BCC

4.3、PPS request

0x02	0x00	0x03	0x47	0x32	PPS0	PPS1	0X03	BCC

Return successfull：

0x02	LH	LL	0x50	0x47	0x32	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x47	0x32	ERR_CD	0X03	BCC

4.4、Protocol transmission

0x02	SH	SL	0x47	0x33	CH	CAPDU	0X03	BCC

Return successfull：

0x02	LH	LL	0x50	0x47	0x33	CH	RAPDU	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x47	0x33	ERR_CD	0X03	BCC

Parameter note：

[1]CH：Link icon,=0x30 no link，=0x31 with link。

[2]CAPDU：PCD command package

[3]RAPDU：PICC return package

[4]SH,send package length high 8 bits；SL，send package length low 8 bits

4.5、DESELECT

0x02	0x00	0x03	0x47	0x34	0X03	BCC

Return successfull：

0x02	LH	LL	0x50	0x47	0x34	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x47	0x34	ERR_CD	0X03	BCC

4.6、HALT

0x02	0x00	0x03	0x47	0x35	0X03	BCC

Return successfull：

0x02	LH	LL	0x50	0x47	0x35	0x03	BCC

Return with failure：

0x02	0X00	0X04	0x4E	0x47	0x35	ERR_CD	0X03	BCC

5. 15693 card command

5. 1 Content request

0x02	0x00	0x02	0x48	0x30	0x03	BCC

Return successfull：

0x02	0x00	0x0B	0x50	0x48	0x30	UID	0x03	BCC

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0X30	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0X30	2 bytes 15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

5. 2 Read card

Read without UID

0x02	0x00	0x05	0x48	0x31	0x02	First Block Addr	Block Qty	0x03	BCC

Read with UID

0x02	0x00	0x0D	0x48	0x31	0x22	UID	First Block Addr	Block Qty	0x03	BCC

Return successfull：

0x02	RELEN_H	RELEN_L	0x50	0x48	0x31	Read data	Read data length	0x03	BCC

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0X31	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0X31	2 bytes 15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

5. 3 Write Card

Write with UID

0x02	RELEN_H	RELEN_L	0x48	0x32	0x02	First Block Addr	Block data	data	0x03	BCC

Write without UID

0x02	RELEN_H	RELEN_L	0x48	0x32	0x22	UID	First Block Addr	Block Qty	data	0x03	BCC

Return successfull：

0x02	0x00	0x04	0x50	0x48	0x32	Success written block qty	0x03	BCC

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0x32	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0x32	2 bytes15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

5.4 Choose card

0x02	0x00	0x0B	0x48	0x33	0x22	UID	0x03	BCC

Return successfull：

0x02	0x00	0x04	0x50	0x48	0x33	0x00	0x03	BCC

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0x33	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0x33	2 bytes 15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

5．5 Read system info：02 00 0B 48 34 22 91 89 2F 5D 00 01 04 E0 03 DB

Without UID

0x02	0x00	0x03	0x48	0x34	0x02	0x03	BCC

With UID

0x02	0x00	0x0B	0x48	0x34	0x22	UID	0x03	BCC

Return successfull：02 00 12 50 48 34 00 0F 91 89 2F 5D 00 01 04 E0 04 04 1B 03 01 03 A6

0x02	RELEN_H	RELEN_L	0x50	0x48	0x34	Return data						EXT	BCC
						Icon	Info Icon	UID	DSFID	AFI	Info filed		

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0x34	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0x34	2 bytes 15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

5．6 Read security states：

Without UID

0x02	0x00	0x05	0x48	0x35	0x02	First Block Addr	Block Qty	0x03	BCC

With UID

0x02	0x00	0x0D	0x48	0x35	0x22	UID	First Block Addr	Block Qty	0x03	BCC

Return successfull：

0x02	RELEN_H	RELEN_L	0x50	0x48	0x35	Return data	Return Block Qty	EXT	BCC

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0x35	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0x35	2 bytes 15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

5．7 Write DSFI：02 00 0C 48 36 22 91 89 2F 5D 00 01 04 E0 04 03 DA

With UID

0x02	0x00	0x0c	0x48	0x36	0x22	UID	Data（1 byte）	0x03	BCC

Return successfull：

0x02	0x00	0x04	0x50	0x48	0x36	0x00	0x03	BCC

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0x36	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0x36	2 bytes 15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

5．8 Write AFI：

With UID

0x02	0x00	0x0c	0x48	0x37	0x22	UID	Data(1 byte)	0x03	BCC

Return successfull：

0x02	0x00	0x04	0x50	0x48	0x37	0x00	0x03	BCC

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0x37	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0x37	2 bytes 15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

5．9 Lock block：

0x02	0x00	0x0c	0x48	0x3a	0x22	UID	Block Addr	0x03	BCC

Return successfull：

0x02	0x00	0x04	0x50	0x48	0x3a	0x00	0x03	BCC

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0x3a	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0x3a	2 bytes 15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

5. 10 Lock AFI：

0x02	0x00	0x0b	0x48	0x3b	0x22	UID	0x03	BCC

Return successfull：

0x02	0x00	0x04	0x50	0x48	0x3b	0x00	0x03	BCC

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0x3b	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0x3b	2 bytes 15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

5. 11 Lock DSFID：

0x02	0x00	0x0b	0x48	0x3c	0x22	UID	0x03	BCC

Return successfull：

0x02	0x00	0x04	0x50	0x48	0x3c	0x00	0x03	BCC

Return with failure1：

0x02	0x00	0x04	0x4E	0X48	0x3c	ERR_CD	0x03	BCC

Return with failure2：

0x02	0x00	0x05	0x4E	0X48	0x3c	2 bytes 15693 error code	0x03	BCC

Refer to 15693 《Response error definition》

Error code	Meaning
Command error code	
0x00	Undefined command （sent non-existent command）

0x01	Command parameter error
0x02	Command data error
0x03	Command could not be executed
0x04	Command execution fails
Card operation error code-RF card	
0x41	Search card failure
0x42	Read serial number failure
0x43	Check password error
0x44	Choose card error
0x45	Read data failure
0x46	Write data failure
0x49	Increment failure
0x4a	Devalue failure