

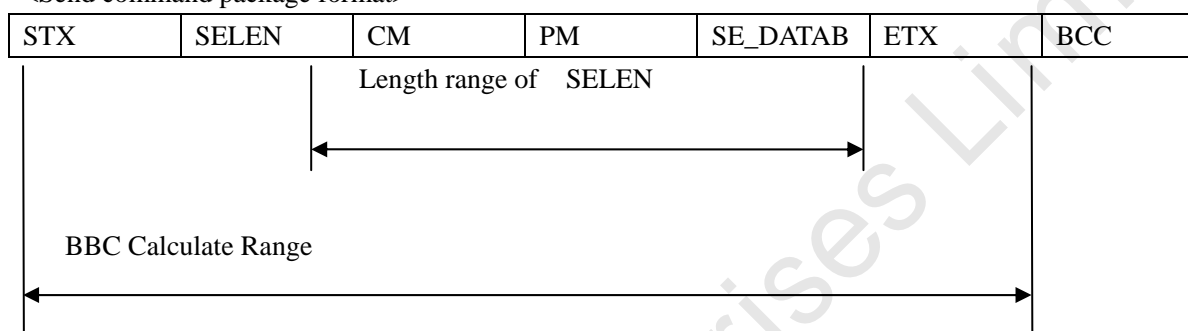
F6 Motorized Card Dispenser/Reader Communication Protocol

1. Communication Data Format:

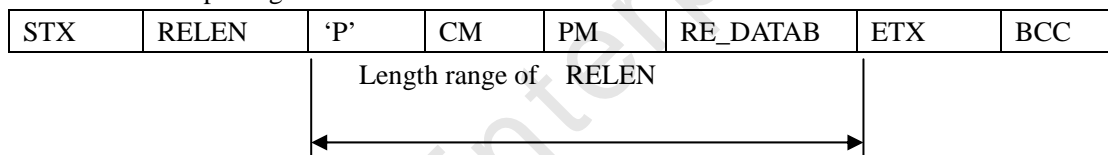
Communicate Mode	Asynchronism communication
Start bit	1bit
Data bit	8bits
Parity bit	No
Stop bit	1bit
Default baud rate	9600bps

2. Data Package Format:

<Send command package format>



<Correct return package format>



<Incorrect return format>

STX	RELEN	'N'	CM	PM	ERR_CD	ETX	BCC
-----	-------	-----	----	----	--------	-----	-----

Explain:

[1]CM: Command code.

[2]PM: Command parameter.

[3]SE_DATAB: Data package of sent.

[4]RE_DATAB: Data package of return.

[5]ERR_CD: Error code.

[6]BCC: XOR check value. Calculate method: from STX (include STX) to ETX (include ETX) each data XOR check.

[7]'P': =0x50. It means execute command successful.

[8]'N': =0x4E. It means execute command fail.

[9]SELEN: Length of sending data package. Length in 2 bytes.

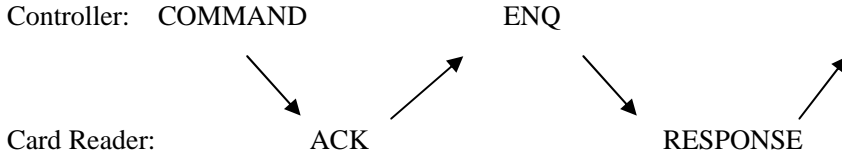
[10]RELEN: Length of return data package. Length in 2 bytes.

[11]STX: Block Start symbol. Fix value: 0x02

[12]ETX: Block end symbol. Fix value: 0x03

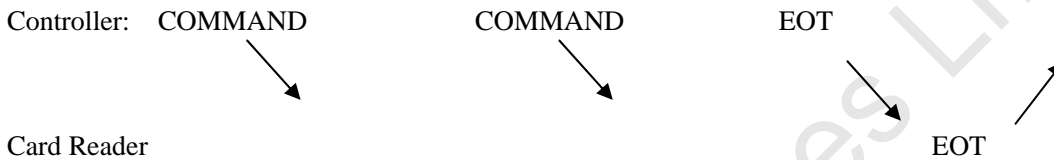
3. Communication Flow:

<Correct communication flow>:

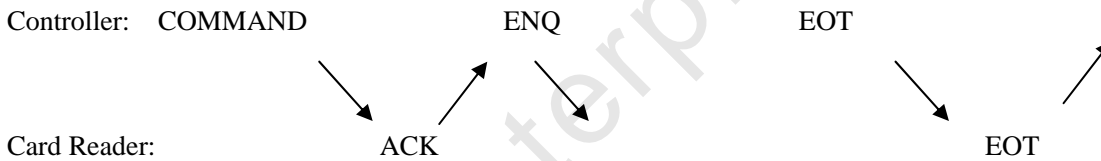


<Incorrect communication flow>:

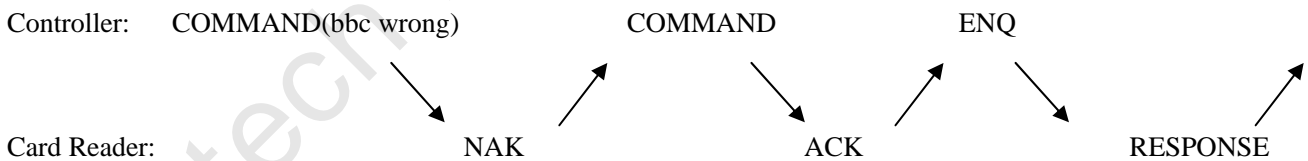
[1] No answer



[2] No response



[3] BBC Error



Explain:

[1]COMMAND: Command package.

[2]RESPONSE: Response package.

[3]ACK: Control character, length in 1 byte, affirm responson, value=0x06.

[4]NAK: Control character, length in 1 byte, denial responson, value=0x15.

[5]ENQ: Control character, length in 1 byte, execute command request, value=0x05.

[6]EOT: Control character, length in 1 byte, cancel command, value=0x04.

Note: ACK, NAK, ENQ, EOT these 4 control character all sending in single character, no need head and tail package. Example: Affirm response data to host should be 0x06.

4. Commands Sheet:

SN	Command Name	Command Code	Parameter	Functions
1	Reset Machine	0x30	0x30	Initialization card reader
			0x31	Initialization card reader and exit card
			0x32	Initialization card reader and swallow card
			0x33	Initialization card reader and hold on card (on mouth)
2	Read machine status	0x31	0x30	Capture card position
			0x31	Capture every sensor status
			0x32	Capture sensor voltage
3	Entry card setting (Command validity: After card in, it will invalidation)	0x32	0x30	Allow card in (magcard or non-magcard), until card in, the machine can response command
			0x32	Dispense card, until card in, the machine can response command. Error alarm within 30 second no card in.
			0x33	Forbid card in. No card can be in.
			0x34	Allow card in (magcard or non-magcard),response command immediately. Whether there is card in the position, need to check by enquiry command.
4	Moving card	0x33	0x30	Moving card inside card reader
			0x31	Moving card to IC card position
			0x32	Moving card to front port and hold
			0x33	Moving card to rear port and hold
			0x34	Drop card from front port
			0x35	Drop card from rear port
			0x36	Moving card to re-reading card position
5	Automatic checking IC card model/style	0x34	0x30	Automatic checking IC card model/style
6	1st LED operation	0x35	0x30	Turn OFF indicate LED
			0x31	Turn ON indicate LED
			0x32	Indicate LED flasing
7	2nd LED operation(ignore)	0x36	0x30	Turn off indicate LED
			0x31	Turn ON indicate LED
			0x32	Indicate LED flasing
8	Read Magnetic card decoded data	0x37	0x30	Read ISO first track data
			0x31	Read ISO second track data
			0x32	Read ISO third track data
			0x33	Read ISO 1&2 tracks data

			0x34	Read ISO 1&3 tracks data
			0x35	Read ISO 2&3 tracks data
			0x36	Read ISO all 3 tracks data
			0x39	Delete data
9	Read Magnetic card un-decoded data	0x38	0x30	Read ISO first track data
			0x31	Read ISO second track data
			0x32	Read ISO third track data
			0x33	Read ISO 1&2 tracks data
			0x34	Read ISO 1&3 tracks data
			0x35	Read ISO 2&3 tracks data
			0x36	Read ISO all 3 tracks data
10	CPU card operation	0x39	0x30	Activation (Voltage 5V)
			0x31	off power
			0x32	Activation (optional voltage)
			0x33	T=0 card communication command
			0x34	T=1 card communication command
11	SAM card operation	0x3A	0x30	Activation (Voltage 5V)
			0x31	off power
			0x32	Activation (optional voltage)
			0x33	SAM T=0 card communication command
			0x34	SAM T=1 card communication command
			0x35	Select SAM card
12	RF S50 card operation	0x3B	0x30	Searching card
			0x31	Read series number
			0x32	Verify pass word
			0x33	Read data
			0x34	Write data
			0x35	Value operated initialization
			0x36	Increase value operation
			0x37	Decrease value operation
			0x38	Stop
13	RF S70 card operation	0x3C	0x30	Searching card
			0x31	Read series number
			0x32	Verify pass word
			0x33	Read data
			0x34	Write data
			0x35	Value operated initialization
			0x36	Increase value operation
			0x37	Decrease value operation
			0x38	Stop
14	RF UL card operation	0x3D	0x30	Searching card
			0x31	Read series number
			0x32	Read card
			0x33	Write card
			0x34	Stop

15	AT24 series card operation	0x3E	0x30	Read data
			0x31	Write data
16	AT45DB041 card operation	0x3F	0x30	Reset
			0x31	Read data
			0x32	Write data
17	AT88S102 card operation	0x40	0x30	Reset
			0x31	Verify pass word
			0x32	Read data
			0x33	Delete data (haven't Personalization)
			0x34	Delete No.1 application area (Personalization)
			0x35	Delete No.2 application area (Personalization)
			0x36	Write data
			0x37	Change pass word
18	AT88S1604 card operation	0x41	0x30	Reset
			0x31	Verify pass word
			0x32	Read data
			0x33	Delete data
			0x34	Write data
			0x35	Change pass word
			0x36	Personalization setting
19	AT88S1608 card operation	0x42	0x30	Activation contact pin and power on,reset
			0x31	Verify pass word
			0x32	Read data
			0x33	Write data
			0x34	Read fuse status
			0x35	fuse
			0x36	Initialization identify
			0x37	Verify identify
20	SLE4442 card operation	0x43	0x30	Activation contact pin and power on,reset
			0x31	Verify pass word
			0x32	Read data
			0x33	Read protect bit
			0x34	Read PSC area
			0x35	Write data
			0x36	Write protect
21	SLE4428 card operation	0x44	0x30	Reset
			0x31	Verify pass word
			0x32	Read data
			0x33	read protect bit
			0x34	Write data
			0x35	With protect bit write data
			0x36	Change pass word

22	IC card ON/OFF power operation	0x45	0x30	ON power
			0x31	Off power
23	Baud rate setting	0x46	0x30	Baud rate=1200
			0x31	Baud rate=2400
			0x32	Baud rate=4800
			0x33	Baud rate=9600
			0x34	Baud rate=19200
			0x35	Baud rate=38400
24	Contactless CPU card (TYPE A)	0x47	0x30	Activation and get reset info
			0x31	
			0x32	
			0x33	APDU command transmitt

5. Command Detail:

(1) Initialization command (After execute initialization command, it need delay 500MS then other command can be sent).

(1.1): Initialization card reader, no motion

0x02	0x00	0x02	0x30	0x30	0x03	BCC
------	------	------	------	------	------	-----

PM=0x32, Initialization card reader, no moving card operation.

<Success return>:

0x02	0x00	0x11	0x50	0x30	0x30	Version info	0x03	BCC
------	------	------	------	------	------	--------------	------	-----

Version info: ACT_F6_V1.06

<Fail return>:

0x02	0x00	0x04	0x4E	0x30	0x30	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(1.2): Initialization card reader and flip card from front port.

0x02	0x00	0x02	0x30	0x31	0x03	BCC
------	------	------	------	------	------	-----

PM=0X31: Initialization card reader and flip card.

<Success return>:

0x02	0x00	0x11	0x50	0x30	0x31	Version info	0x03	BCC
------	------	------	------	------	------	--------------	------	-----

Version info: ACT_F6_V1.06

<Fail return>:

0x02	0x00	0x04	0x4E	0x30	0x31	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(1.3): Initialization card reader, and swallow card

0x02	0x00	0x02	0x30	0x32	0x03	BCC
------	------	------	------	------	------	-----

PM=0X32: Initialization card reader and swallow card

<Success return>:

0x02	0x00	0x11	0x50	0x30	0x32	Version info	0x03	BCC
------	------	------	------	------	------	--------------	------	-----

Version info: ACT_F6_V1.06

<Fail return>:

0x02	0x00	0x04	0x4E	0x30	0x32	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(1.4): Initialization card reader and hold on card

0x02	0x00	0x02	0x30	0x33	0x03	BCC
------	------	------	------	------	------	-----

PM=0X33: Initialization card reader and hold on card

<Success return>:

0x02	0x00	0x11	0x50	0x30	0x33	Version info	0x03	BCC
------	------	------	------	------	------	--------------	------	-----

Version info: ACT_F6_V1.06

<Fail return>:

0x02	0x00	0x04	0x4E	0x30	0x33	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(2). Read Sensor status

(2.1): Capture card inside the reader position

0x02	0x00	0x02	0x31	0x30	0x03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x04	0x50	0x31	0x30	Card Position	0x03	BCC
------	------	------	------	------	------	---------------	------	-----

Card Position: Length in 1 byte.

- =0x30: Card in front port position (not hold)
- =0x31: Card in front port position(card held).
- =0x32: Card in the RF card position.
- =0x33: Card in the IC card position.
- =0x34: Card in rear port (card held).
- =0x35: No card inside the card reader.
- =0x36: Card is not in standard position.

<Fail return>:

0x02	0x00	0x04	0x4E	0x31	0x30	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(2.2): Capture each sensor status.

0x02	0x00	0x02	0x31	0x31	0x03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x0C	0x50	0x31	0x31	P	P	P	P	P					0x03	BCC
						S	S	S	S	S	*1	*2	*3	*4		
						S	S	S	S	S						
						1	2	3	4	5						

*1=Strobe sensor

*2=Card stacker sensor

*3=Reclaim bin sensor

*4=Card less alarm sensor

Sensor Status: Length in 9 byte.

Upload ranking: PSS1, PSS2, PSS3, PSS4, PSS5

=0x30: No card.

=0x31: Have card.

*1=Strobe sensor

=0x30: haven't use

=0x31: have use

*2=Card stacker sensor

=0x30: No card

=0x31: Have card

*3=Reclaim bin sensor

=0x30: No card

=0x31: Have card

*4=Card less alarm sensor

=0x30: No card

=0x31: Have card

<Fail return>:

0x02	0x00	0x04	0x4E	0x31	0x31	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(2.3) Read each sensor voltage

0x02	0x00	0x02	0x31	0x32	0x03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x0C	0x50	0x31	0x31	S	S	S	S	S					0x03	BCC
						e	e	e	e	e	*1	*2	*3	*4		
						n	n	n	n	n						
						1	2	3	4	5						

*1=Strobe sensor voltage

*2=Card stacker sensor voltage

*3=Reclaim bin sensor voltage

*4=Reservation

Sensor voltage status: length at 9 byte

Sen1—Sen9, every one take 2 byte(high byte, low byte)

Sen1—Sen5: sensor voltage

Sen6: Strobe sensor voltage(not use)

Sen7: card stacker sensor voltage

Sen8: reclaim bin sensor voltage

Sen9: Reservation

<Fail return>:

0x02	0x00	0x04	0x4E	0x31	0x32	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(3). Wait for card in setting (Default setting is forbid card in)

(3.1): Front port card in: Both Magcard and Non-Magcard

0x02	0x00	0x02	0x32	0x30	0x03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x32	0x30	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0x00	0x04	0x4E	0x32	0x30	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(3.2): Dispense card

0x02	0x00	0x02	0x32	0x32	0x03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x32	0x32	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

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

(3.3): Forbid card in

0x02	0x00	0x02	0x32	0x33	0x03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x32	0x33	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0x00	0x04	0x4E	0x32	0x33	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(3.4). Entry card immediately: for both Magcard and Non-magcard

0x02	0x00	0x02	0x32	0x34	0x03	BCC
------	------	------	------	------	------	-----

<Success return>:

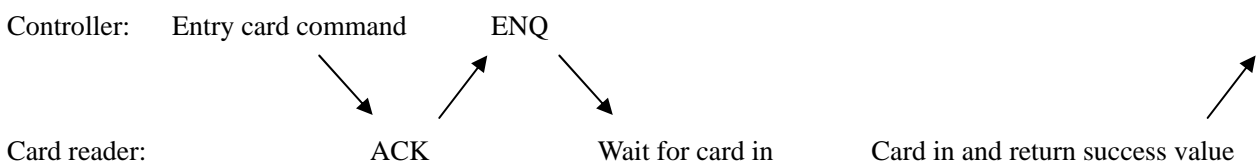
0x02	0x00	0x03	0x50	0x32	0x34	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

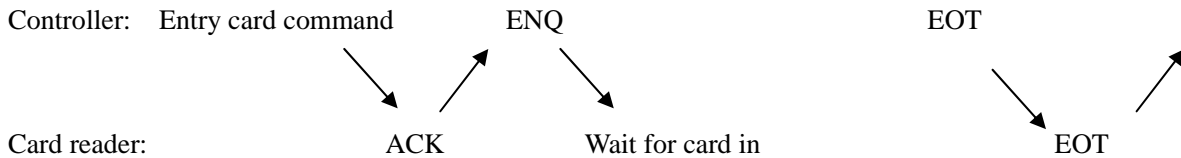
0x02	0x00	0x04	0x4E	0x32	0x34	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

Explain:

[1] Normal entry card flow:



[2] Cancel entry card flow:



[3] Each entry card command execute, can entry only 1pc card. After card exit if want to reload, need to send entry card command again.

(4). Moving card

0x02	0X00	0X02	0x33	PM	0x03	BCC
------	------	------	------	----	------	-----

PM=0X30, Moving card inside card reader.

PM=0X31, Moving card to IC card position.

PM=0X32, Moving card to front port hold on position

PM=0X33, Moving card to rear port hold on position.

PM=0X34, Moving card to front port and flip out.

PM=0X35, Moving card to rear port and flip out.

PM=0X36, Moving card to reload card position

<Success return>:

0x02	0X00	0X03	0x50	0x33	PM	0x03	BCC
------	------	------	------	------	----	------	-----

<Fail return>:

0x02	0x00	0x04	0x4E	0x33	PM	ERR_CD	0x03	BCC
------	------	------	------	------	----	--------	------	-----

(5). Automatic checking IC card style.

0x02	0X00	0X02	0x34	0x30	0x03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0X00	0X03	0x50	0x34	0x30	CARDTP	0x03	BCC
------	------	------	------	------	------	--------	------	-----

[1] CARDTP: Card style

CARDTP=0X30: AT24C01

CARDTP=0X31: AT24C02

CARDTP=0X32: AT24C04

CARDTP=0X33: AT24C08

CARDTP=0X34: AT24C16

CARDTP=0X35: AT24C32

CARDTP=0X36: AT24C64

CARDTP=0X37: AT45DB041

CARDTP=0X38: AT102

CARDTP=0X39: AT1604

CARDTP=0X3A: AT1608

CARDTP=0X3B: SLE4442

CARDTP=0X3C: SLE4428

CARDTP=0X3D: CPU T=0

CARDTP=0X3E: CPU T=1

CARDTP=0XFF: Can not be recognized card style.

<Fail return>:

0x02	0X00	0X04	0x4E	0x34	0x30	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(6). Indicate LED 1 operation.

0x02	0X00	0X02	0x35	PM	0x03	BCC
------	------	------	------	----	------	-----

PM=0X30: Turn OFF indicate LED.

PM=0X31: Turn ON indicate LED.

PM=0X32: Indicate LED flashing.

<Success return>:

0x02	0X00	0X03	0X50	0x35	PM	0x03	BCC
------	------	------	------	------	----	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x35	PM	ERR_CD	0x03	BCC
------	------	------	------	------	----	--------	------	-----

(7). Indicate LED 2 operation.

0x02	0X00	0X02	0x36	PM	0x03	BCC
------	------	------	------	----	------	-----

PM=0X30: Turn OFF indicate LED.

PM=0X31: Turn ON indicate LED.

PM=0X32: Indicate LED flashing.

<Success return>:

0x02	0X00	0X03	0X50	0x36	PM	0x03	BCC
------	------	------	------	------	----	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x36	PM	ERR_CD	0x03	BCC
------	------	------	------	------	----	--------	------	-----

(8). Read Magnetic card decode data.

Explain:

[1] 0XFA, data beginning character of first track.

[2] 0XFB, data beginning character of second track.

[3] 0XFC, data beginning character of third track.

[4] TRX_ST, Reading status of each track.

=0x60, read magnetic card correct.

=0x61, SS error.

=0x62, ES error.

=0x63, P error.

=0x64, LRC error.

=0x65, Blank track.

(8.1). Read ISO 1 track data.

0x02	0x00	0x02	0x37	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0X50	0x37	0x30	Magnetic card data package	0x03	BCC
------	---------	---------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR1_ST	LEN	Data
--------	-----	------

<Fail return>:

0x02	0X00	0X04	0x4E	0x37	0X30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(8.2). Read ISO 2 track data.

0x02	0x00	0x02	0x37	0x31	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0X50	0x37	0x31	Magnetic card data package	0x03	BCC
------	---------	---------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR2_ST	LEN	Data
--------	-----	------

<Fail return>:

0x02	0X00	0X04	0x4E	0x37	0X31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(8.3). Read ISO 3 track data.

0x02	0x00	0x02	0x37	0x32	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0X50	0x37	0x32	Magnetic card data package	0x03	BCC
------	---------	---------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR3_ST	LEN	Data
--------	-----	------

<Fail return>:

0x02	0X00	0X04	0x4E	0x37	0X32	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(8.4). Read ISO 1&2 Track data.

0x02	0x00	0x02	0x37	0x33	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0X50	0x37	0x33	Magnetic card data package	0x03	BCC
------	---------	---------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR1_ST	LEN1	TR2_ST	LEN2	TR1 Data	TR2 Data
--------	------	--------	------	----------	----------

<Fail return>:

0x02	0X00	0X04	0x4E	0x37	0X33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(8.5). Read ISO 1&3 track data.

0x02	0x00	0x02	0x37	0x34	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0X50	0x37	0x34	Magnetic card data package	0x03	BCC
------	---------	---------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR1_ST	LEN1	TR3_ST	LEN3	TR1 Data	TR3 Data
--------	------	--------	------	----------	----------

<Fail return>:

0x02	0X00	0X04	0x4E	0x37	0X34	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(8.6). Read ISO 2&3 track data.

0x02	0x00	0x02	0x37	0x35	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0X50	0x37	0x35	Magnetic card data package	0x03	BCC
------	---------	---------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR2_ST	LEN2	TR3_ST	LEN3	TR2 Data	TR3 Data
--------	------	--------	------	----------	----------

<Fail return>:

0x02	0X00	0X04	0x4E	0x37	0X35	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(8.7). Read ISO all tracks data.

0x02	0x00	0x02	0x37	0x36	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0X50	0x37	0x36	Magnetic card data package	0x03	BCC
------	---------	---------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR1_ST	LEN1	TR2_ST	LEN2	TR3_ST	LEN3	1track data	2track data	3track data
--------	------	--------	------	--------	------	-------------	-------------	-------------

<Fail return>:

0x02	0X00	0X04	0x4E	0x37	0X36	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(9). Read Magnetic card Non-decode data.

Explain:

- [1] 0XFA, data beginning character of first track.
- [2] 0XFB, data beginning character of second track.
- [3] 0XFC, data beginning character of third track.
- [4] TRX_ST, Reading status of each track.
 - =0x60, read magnetic card correct.
 - =0x65, Blank track.

(9.1). Read ISO 1 track data.

0x02	0x00	0x02	0x38	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RLEN_H	RLEN_L	0X50	0x38	0x30	Magnetic card data package	0x03	BCC
------	--------	--------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR1_ST	LEN	Data
--------	-----	------

<Fail return>:

0x02	0X00	0X04	0x4E	0x38	0X30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(9.2). Read ISO 2 track data.

0x02	0x00	0x02	0x38	0x31	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RLEN_H	RLEN_L	0X50	0x38	0x31	Magnetic card data package	0x03	BCC
------	--------	--------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR2_ST	LEN	Data
--------	-----	------

<Fail return>:

0x02	0X00	0X04	0x4E	0x38	0X31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(9.3). Read ISO 3 track data.

0x02	0x00	0x02	0x38	0x32	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RLEN_H	RLEN_L	0X50	0x38	0x32	Magnetic card data package	0x03	BCC
------	--------	--------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR3_ST	LEN	Data
--------	-----	------

<Fail return>:

0x02	0X00	0X04	0x4E	0x38	0X32	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(9.4). Read ISO 1&2 track data.

0x02	0x00	0x02	0x38	0x33	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RLEN_H	RLEN_L	0X50	0x38	0x33	Magnetic card data package	0x03	BCC
------	--------	--------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR1_ST	LEN1	TR2_ST	LEN2	TR1 Data	TR2 Data
--------	------	--------	------	----------	----------

<Fail return>:

0x02	0X00	0X04	0x4E	0x38	0X33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(9.5). Read ISO 1&3 track data.

0x02	0x00	0x02	0x38	0x34	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RLEN_H	RLEN_L	0X50	0x38	0x34	Magnetic card data package	0x03	BCC
------	--------	--------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR1_ST	LEN1	TR3_ST	LEN3	TR1 Data	TR3 Data
--------	------	--------	------	----------	----------

<Fail return>:

0x02	0X00	0X04	0x4E	0x38	0X34	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(9.6). Read ISO 2&3 track data.

0x02	0x00	0x02	0x38	0x35	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RLEN_H	RLEN_L	0X50	0x38	0x35	Magnetic card data package	0x03	BCC
------	--------	--------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR2_ST	LEN2	TR3_ST	LEN3	TR2 Data	TR3 Data
--------	------	--------	------	----------	----------

<Fail return>:

0x02	0X00	0X04	0x4E	0x38	0X35	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(9.7). Read ISO all tracks.

0x02	0x00	0x02	0x38	0x36	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RLEN_H	RLEN_L	0X50	0x38	0x36	Magnetic card data package	0x03	BCC
------	--------	--------	------	------	------	----------------------------	------	-----

Magnetic card data package format:

TR1_ST	LEN1	TR2_ST	LEN2	TR3_ST	LEN3	1track data	2track data	3track data
--------	------	--------	------	--------	------	-------------	-------------	-------------

<Fail return>:

0x02	0X00	0X04	0x4E	0x38	0X36	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(10). CPU card Operation.

Explain:

- [1] CARD_TP: CPU card style. Length in 1 byte: =0X30, means T=0 card; =0X31, means T=1 card.
- [2] RLEN: Length of reset info. Length in 1 byte.
- [3] RESET_DATA: Reset info.
- [4] BLEN: Length of data package, length in 2 byte.

(10.1) CPU card activation IC contact pole, fix voltage.

0X02	0X00	0X02	0X39	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	BLEN	0x50	0x39	0x30	RLEN	CARD_TP	RESET_DATA	0x03	BCC
------	------	------	------	------	------	---------	------------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x39	0X30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(10.2). Off Power.

0X02	0X00	0X02	0X39	0x31	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0X03	0X50	0X39	0X31	0X03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x39	0X31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(10.3). CPU card activation, Optional voltage (1.8V, 3V, 5V).

0x02	0X00	0X02	0x39	0x32	PT	0x03	BCC
------	------	------	------	------	----	------	-----

PT=0x30, Voltage at 1.8V

PT=0x31, Voltage at 3.0V

PT=0x32, Voltage at 5.0V

<Success return>:

0x02	BLEN	0x50	0x39	0x32	RLEN	CARD_TP	RESET_DATA	0x03	BCC
------	------	------	------	------	------	---------	------------	------	-----

<Fail return>:

0x02	0x00	0x04	0x39	0x32	0x45	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(10.4). T=0 card communication command.

Explain:

- [1] T0_CMD: T=0 command package.
- [2] RE-DATA: Package of return.
- [3] SELEN_H, SELEN-L: Package length of sending package.
- [4] RELEN_H, RELEN_L: Package length of return package.
- [5] SELEN: Length of command package.
- [6] RLEN: Length of command executed return value.

0x02	SELEN_H	SELEN_L	0x39	0x33	SELEN	T0_CMD	0x03	BCC
------	---------	---------	------	------	-------	--------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0X50	0x39	0x33	RLEN	RE_DATA	0x03	BCC
------	---------	---------	------	------	------	------	---------	------	-----

<Fail return>:

0x02	0X00	0X04	0x45	0x39	0x33	ERR-CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(10.5). T=1 card communication command.

Explain:

- [1] SE_LEN: T1_CMD length, length in 2 bytes.
- [2] T1_CMD: T=1 command package.
- [3] RE_LEN: Length of return data package. Length in 2 bytes.
- [4] RE_DATA: Data package of return.
- [5] SELEN: Length of command package.
- [6] RLEN: Length of command executed return value.

0x02	SELEN_H	SELEN_L	0x39	0x34	SELEN	T1_CMD	0X03	BCC
------	---------	---------	------	------	-------	--------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0X50	0x39	0x34	RLEN	RE_DATA	0x03	BCC
------	---------	---------	------	------	------	------	---------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x39	0x34	ERR-CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(11). SAM card operation.

Explain:

- [1] SAM_TP: SAM card style, length in 1 byte: =0X30, means T=0 card; =0X31, means T=1 card.
- [2] R_LEN: Length of reset info. Length in 1 byte.
- [3] RESET_DATA: Reset info.
- [4] SAM_NUM: SAM card series number.

(11.1) SAM card activation IC contact poles, fix voltage (5V).

0X02	0X00	0X02	0X3A	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	RELEN	0x50	0x3A	0x30	RLEN	SAM_TP	RESET_DATA	0x03	BCC
------	-------	------	------	------	------	--------	------------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3A	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(11.2). Off power.

0x02	0X00	0X02	0X3A	0x31	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0X02	0X00	0X03	0X50	0X3A	0X31	0X03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3A	0x31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(11.3). SAM card activation, optional voltage (1.8V, 3.0V, 5.0V).

0x02	0X00	0X02	0X3A	0x32	PT	0x03	BCC
------	------	------	------	------	----	------	-----

PT=0X30: Voltage at 1.8V.

PT=0X31: Voltage at 3.0V.

PT=0X32: Voltage at 5.0V.

<Success return>:

0x02	RELEN	0x50	0x3A	0x32	RLEN	SAM_TP	RESET_DATA	0x03	BCC
------	-------	------	------	------	------	--------	------------	------	-----

<Fail return>:

0x02	0x00	0x04	0x3A	0x32	0x45	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(11.4). SAM T=0 card communication command.

0x02	SELEN_H	SELEN_L	0x3A	0x33	SELEN	T0_CMD	0x03	BCC
------	---------	---------	------	------	-------	--------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0X50	0x3A	0x33	RLEN	RE_DATA	0x03	BCC
------	---------	---------	------	------	------	------	---------	------	-----

<Fail return>:

0x02	0X00	0X04	0x45	0x3A	0x33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(11.5). SAM T=1 card communication command.

0x02	SELEN_H	SELEN_L	0x3A	0x34	SELEN	T1_CMD	0x03	BCC
------	---------	---------	------	------	-------	--------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0x50	0x3A	0x34	RLEN	RE_DATA	0x03	BCC
------	---------	---------	------	------	------	------	---------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3A	0x34	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(11.6). SAM card select command.

0x02	0x00	0x03	0x3A	0x35	AM_NUM	0X03	BCC
------	------	------	------	------	--------	------	-----

<Success return>:

0x02	RELEN_H	RELEN_L	0x50	0x3A	0x35	0x03	BCC
------	---------	---------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3A	0x35	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(12). S50 RF card operation command.

(12.1). Searching card.

0x02	0x00	0x02	0x3B	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0X00	0X03	0x50	0x3B	0x30	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3B	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(12.2). Read card series number.

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

<Success return>:

0x02	RELEN_H	RELEN_L	0x50	0x3B	0x31	Card series number	0x03	BCC
------	---------	---------	------	------	------	--------------------	------	-----

<Fail return>:

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

(12.3). Verify pass word.

0x02	0x00	0x0a	0x3B	0x32	Block address	Pass word style	6 byte pass word	0X03	BCC
------	------	------	------	------	---------------	-----------------	------------------	------	-----

Explain:

Pass word style: =0X30, verify KEYA; =0X31, verify KEYB.

Pass word: Sector pass word, length in 6 byte.

<Success return>:

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

<Fail return>:

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

(12.4). Read data.

0x02	0x00	0x03	0x3B	0x33	Block address	0X03	BCC
------	------	------	------	------	---------------	------	-----

<Success return>:

0x02	0x00	0x13	0x50	0x3B	0x33	16 byte data	0x03	BCC
------	------	------	------	------	------	--------------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3B	0x33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(12.5). Write data.

0x02	0x00	0x13	0x3B	0x34	Block address	16 byte data block	0X03	BCC
------	------	------	------	------	---------------	--------------------	------	-----

<Success return>:

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

<Fail return>:

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

(12.6). Value initialization operation.

0x02	0X00	0x13	0x3B	0x35	Block address	16 byte data block	0X03	BCC
------	------	------	------	------	---------------	--------------------	------	-----

<Success return>:

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

ff

0x02	0X00	0X04	0x4E	0x3B	0x35	ERR-CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

Explain: Initialization value format as following:

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

Value: Want initialization 4 byte value, Value's lower byte in front, high byte following.

/Value: Want initialization 4 byte value get reverse.

Adr: Block address of value which want to initialization.

Adr= Sector number X 4 + Block number (S50 card 0-15 sector, S70 card 0-31 sector block value operate address calculate).

Adr= (Sector number - 32) x 16 + 128 + Block number (S70 card 32-39 sector block value operate address calculate).

/Adr: Want initialization block address value get reverse.

Note: Every sector last block can not be operated.

For example:

Initialization sector 5 block 0 value in 10, writing block data into 16 byte sector will be:

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

S70 card 39 sector block0 initialization value in 10, writing block data into 16 byte sector will be:

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

(12.7). Increase value operation.

0x02	0x00	0x07	0x3B	0x36	Block address	4 byte increase value data	0X03	BCC
------	------	------	------	------	---------------	----------------------------	------	-----

Explain: increase value data, lower byte at the beginning, high byte in the following.

<Success return>:

0x02	0X00	0x03	0x50	0x3B	0x36	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3B	0x36	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

4 byte hex data is assigned sector assigned character block increase value(lower byte at the beginning, high byte in the following.). Example: increase0x10, send 4 byte hex data will be: “ 0x10, 0x00, 0x00, 0x00”

(12.8). Decrease value operation.

0x02	0x00	0x07	0x3B	0x37	Block Address	4 byte decrease value data	0X03	BCC
------	------	------	------	------	---------------	----------------------------	------	-----

Explain: Decrease value data, lower byte at the beginning, high byte in the following.

<Success return>:

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

<Fail return>:

0x02	0X00	0X04	0x4E	0x3B	0x37	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

4 byte hex data is assigned sector assigned character block decrease value(lower byte at the beginning, high byte in the following.). Example: decrease0x10, send 4 byte hex data will be: “ 0x10, 0x00, 0x00, 0x00”

(13). S70 RF card operation.

(13.1). Searching card.

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

<Success return>:

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

<Fail return>:

0x02	0x00	0X04	0x4E	0x3C	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(13.2). Read card series number.

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

<Success return>:

0x02	0X00	0X07	0x50	0x3C	0x31	4 byte card series number	0x03	BCC
------	------	------	------	------	------	---------------------------	------	-----

<Fail return>:

0x02	0x00	0X04	0x4E	0x3C	0x31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(13.3) Verify pass word.

0x02	0x00	0x0A	0x3C	0x32	Block address	Pass word type	6 byte pass word	0X03	BCC
------	------	------	------	------	---------------	----------------	------------------	------	-----

<Success return>:

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

<Fail return>:

0x02	0x00	0X04	0x4E	0x3C	0x32	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(13.4). Read data.

0x02	0X00	0x03	0x3C	0x33	Block address	0X03	BCC
------	------	------	------	------	---------------	------	-----

<Success return>:

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

<Fail return>:

0x02	0x00	0X04	0x4E	0x3C	0x33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(13.5). Write Data.

0x02	0x00	0x13	0x3C	0x34	Block address	16 byte data block	0X03	BCC
------	------	------	------	------	---------------	--------------------	------	-----

<Success return>:

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

<Fail return>:

0x02	0x00	0X04	0x4E	0x3C	0x34	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(13.6). Value operate initialization.

0x02	0x00	0x13	0x3C	0x35	Block address	16 byte data block	0X03	BCC
------	------	------	------	------	---------------	--------------------	------	-----

<Success return>:

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

<Fail return>:

0x02	0x00	0X04	0x4E	0x3C	0x35	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

Explain: Initialization value format as following:

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

Value: Want initialization 4 byte value, Value's lower byte in front, high byte following.

/Value: Want initialization 4 byte value get reverse.

Adr: Block address of value which want to initialization.

Adr= Sector number X 4 + Block number (S50 card 0-15 sector, S70 card 0-31 sector block value operate address calculate).

Adr= (Sector number - 32) x 16 + 128 + Block number (S70 card 32-39 sector block value operate address calculate).

/Adr: Want initialization block address value get reverse.

Note: Every sector last block can not be operated.

For example:

Initialization sector 5 block 0 value in 10, writing block data into 16 byte sector will be:

"0x0A, 0x00, 0x00, 0x00, 0xF5 0xFF,0xFF ,0xFF , 0x0A, 0x00, 0x00, 0x00, 0x14, 0xEB,0x14, 0xEB"

S70 card 39 sector block0 initialization value in 10, writing block data into 16 byte sector will be:

"0x0A, 0x00, 0x00, 0x00, 0xF5, 0xFF,0xFF ,0xFF , 0x0A, 0x00, 0x00, 0x00, 0xF0, 0x0F,0XF0, 0x0F"

(13.7). Increase value operation.

0x02	0x00	0x07	0x3C	0x36	Block address	4 byte increase value data	0X03	BCC
------	------	------	------	------	---------------	----------------------------	------	-----

Explain: increase value data, lower byte at the beginning, high byte in the following.

<Success return>:

0x02	0X00	0x03	0x50	0x3C	0x36	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3C	0x36	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(13.8). Decrease value operation.

0x02	0x00	0x07	0x3C	0x37	Block Address	4 byte decrease value data	0X03	BCC
------	------	------	------	------	---------------	----------------------------	------	-----

Explain: Decrease value data, lower byte at the beginning, high byte in the following.

<Success return>:

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

<Fail return>:

0x02	0X00	0X04	0x4E	0x3C	0x37	ERR_CD	0x03	BCC
------	------	------	------	------	------	--------	------	-----

(14) UL RF card operation.

(14.1). Searching card.

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

<Success return>:

0x02	0X00	0X03	0x50	0x3D	0x30	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0x00	0X04	0x4E	0x3D	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(14.2). Read card series number.

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

<Success return>:

0x02	0X00	0X07	0x50	0x3D	0x31	7 byte card series number	0x03	BCC
------	------	------	------	------	------	---------------------------	------	-----

<Fail return>:

0x02	0x00	0X04	0x4E	0x3D	0x31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(14.3)Read data.

0x02	0X00	0x03	0x3D	0x32	Block address	0X03	BCC
------	------	------	------	------	---------------	------	-----

<Success return>:

0x02	0x00	0x13	0x50	0x3D	0x32	16 byte data	0x03	BCC
------	------	------	------	------	------	--------------	------	-----

<Fail return>:

0x02	0x00	0X04	0x4E	0x3D	0x32	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(14.4) Write Data.

0x02	0x00	0x13	0x3D	0x33	Block address	16 byte data	0X03	BCC
------	------	------	------	------	---------------	--------------	------	-----

<Success return>:

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

<Fail return>:

0x02	0x00	0X04	0x4E	0x3D	0x33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

Note: Block address 0~1 can read can not written. Block address 2~3 is special define, please don't write info in if it is not necessary.

(14.5). Stop.

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

<Success return>:

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

<Fail return>:

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

(15). AT24 Series card operation.

(15.1). Read data.

0x02	0x00	0x05	0x3E	0x30	CARDTP	RDLEN	ADDR	0X03	BCC
------	------	------	------	------	--------	-------	------	------	-----

[1] ADDR: Read data start address, length in 2 byte.

[2] RDLEN: Read data's length, length in 1 byte. Must be small or equal to 256.

[3] CARDTP: Card type.

<Success return>:

0x02	RELEN_H	RELEN_L	0x50	0x3E	0x30	Data package	0x03	BCC
------	---------	---------	------	------	------	--------------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3E	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(15.2) Write data.

0x02	SELEN_H	SELEN_L	0x3E	0x31	CARDTP	WLEN	ADDR	Data package	0X03	BCC
------	---------	---------	------	------	--------	------	------	--------------	------	-----

[1] ADDR: Written data start address, length in 2 byte.

[2] Length: Valid value 0X01~0XFF.

[3] Data package: Length must be small or equal to 256.

(16). AT45DB041 Card operation.

(16.1) Reset.

0x02	0x00	0x02	0x3F	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x3F	0x30	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3F	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(16.2). Read data.

0x02	0x00	0x04	0x3F	0x31	ADDR	0X03	BCC
------	------	------	------	------	------	------	-----

[1] ADDR: Read data page address, length in 2 byte.

<Success return>:

0x02	0x01	0x0B	0x50	0x3F	0x31	264 byte data	0x03	BCC
------	------	------	------	------	------	---------------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3F	0x31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(16.3). Write Data.

0x02	0x01	0X0C	0x3F	0x32	ADDR	264 byte data	0x03	BCC
------	------	------	------	------	------	---------------	------	-----

[1] ADDR: Write data page address, length in 2 byte.

<Success return>:

0x02	0x00	0x03	0x50	0x3F	0x32	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x3F	0x32	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(17). AT88S102 card operation.

(17.1) Reset.

0x02	0x00	0x02	0x40	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x40	0x30	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x40	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(17.2). Verify pass word.

0x02	0x00	0x04	0x40	0x31	2 byte pass word	0X03	BCC
------	------	------	------	------	------------------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x40	0x31	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x40	0x31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(17.3). Read data.

0x02	0x00	0x04	0x40	0x32	Address	Length	0X03	BCC
------	------	------	------	------	---------	--------	------	-----

[1] Address: Read data's start address, length in 1 byte.

[2] Length: Read data's length, length in 1 byte.

<Success return>:

0x02	RELEN_H	RELEN_L	0x50	0x40	0x32	Data	0x03	BCC
------	---------	---------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x40	0x32	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(17.4). Delete data (Before Personalization)

0x02	0x00	0x04	0x40	0x33	Address	Length	0X03	BCC
------	------	------	------	------	---------	--------	------	-----

[1] Address: Deleted data's start address, length in 1 byte.

[2] Length: Deleted data's length, length in 1 byte.

<Success return>:

0x02	0x00	0x03	0x50	0x40	0x33	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x40	0x33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(17.5). Delete application area 1, (After card Personalization).

0x02	0x00	0x08	0x40	0x34	6 byte area 1 delete pass word	0X03	BCC
------	------	------	------	------	--------------------------------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x40	0x34	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x40	0x34	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(17.6). Delete application area 2, (After card Personalization).

0x02	0x00	0x07	0x40	0x35	PM	4 byte area 2delete pass word	0X03	BCC
------	------	------	------	------	----	-------------------------------	------	-----

Explain:

PM=0X30, Delete before fuse.

PM=0X31, Delete after fuse.

<Success return>:

0x02	0x00	0x03	0x50	0x40	0x35	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x40	0x35	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(17.7). Write data.

0x02	SELEN_H	SELEN_L	0x40	0x36	Address	Length	Data package	0X03	BCC
------	---------	---------	------	------	---------	--------	--------------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x40	0x36	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x40	0x36	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(17.8) Change pass word.

0x02	SELEN_H	SELEN_L	0x40	0x37	Pass word type	Pass word	0X03	BCC
------	---------	---------	------	------	----------------	-----------	------	-----

Explain:

[1] Pass word type:

=0X30: Revise main pass word, pass word length in 2 byte.

=0X31: Revise area 1 delete pass word, pass word length in 6 byte.

=0X32: Revise area 2 delete pass word, pass word length in 4 byte.

<Success return>:

0x02	0x00	0x03	0x50	0x40	0x37	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x40	0x37	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(17.9). Personalization operation.

0x02	0x00	0x03	0x40	0x38	Working mode	0X03	BCC
------	------	------	------	------	--------------	------	-----

Explain:

[1] working mode:

=0X30: Recoverable mode.

=0X31: Exit Recoverable mode.

=0X32: Can not recover.

<Success return>:

0x02	0x00	0x03	0x50	0x40	0x38	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x40	0x38	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(17.10). Setting area 2 delete arithmometer operate character EC2 to be invalidation operation.

HOST send:

0x02	0x00	0x02	0x40	0x39	0x03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x40	0x39	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x40	0x39	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

NOTE:

If want card under safe mode 2 application area 2 unlimited times delete, need to operate before personalization. Otherwise, card after finished mode 2 setting, card default setting is application area2 in mode2 delete limited times valid (128 times). If this have been done, 128 times limited can not cancel.

At the same time, if card was setting unlimited, it can not be set to be 128times limited any more.

User need to save the EC2 operate status, When card in mode2 and want to operate area2 (verify application area2 pass word) please note the relevant parameter.

(18). AT88S1604 card operation.

(18.1). Reset.

0x02	0x00	0x02	0x41	0x30	0X03	BCC	
------	------	------	------	------	------	-----	--

<Success return>:

0x02	0x00	0x03	0x50	0x41	0x30	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0x04	0x4E	0x41	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

Verify Pass word

0x02	0x00	0x05	0x41	0x31	Pass word type	2 byte pass word	0X03	BCC
------	------	------	------	------	----------------	------------------	------	-----

Explain:

=0x30: Verify Main pass word.

=0x31: Verify application area 1 pass word.

=0x32: Verify application area 1 delete pass word.

=0x33: Verify application area 2 pass word.

=0x34: Verify application area 1 delete pass word.

=0x35: Verify application area 3 pass word.

=0x36: Verify application area 3 delete pass word.

=0x37: Verify application area 4 pass word.

=0x38: Verify application area 4 delete pass word.

<Success return>:

0x02	0x00	0x03	0x50	0x41	0x31	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0x04	0x4E	0x41	0x31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(18.2). Read data.

0x02	0x00	0x05	0x41	0x32	Address	Length	0X03	BCC
------	------	------	------	------	---------	--------	------	-----

[1] Address: Read data start address, length in 2 byte.

[2] Length: Read data length, length in 1 byte.

<Success return>:

0x02	RELEN_H	RELEN_L	0x50	0x41	0x32	Data	0x03	BCC
------	---------	---------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0x04	0x4E	0x41	0x32	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(18.3).Delete data.

0x02	0x00	0x05	0x41	0x33	Address	Length	0X03	BCC
------	------	------	------	------	---------	--------	------	-----

[1] Address: Deleted data start address, length in 2 byte.

[2] Length: Deleted data length, length in 1 byte.

<Success return>:

0x02	0x00	0x03	0x50	0x41	0x33	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0x04	0x4E	0x41	0x33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(18.4) Write data.

0x02	SELEN_H	SELEN_L	0x41	0x34	Address	Length	Data package	0X03	BCC
------	---------	---------	------	------	---------	--------	--------------	------	-----

[1] Address: Written data start address, length in 2 byte.

[2] Length: Written data length, length in 1 byte.

[3] Data package: Written data length is not over 256.

<Success return>:

0x02	0x00	0x03	0x50	0x41	0x34	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0x04	0x4E	0x41	0x34	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(18.5). Change pass word (Card before personalization)

0x02	0x00	0x05	0x41	0x35	Pass word type	2 byte pass word	0X03	BCC
------	------	------	------	------	----------------	------------------	------	-----

Explain:

[1] Pass word type:

=0x30: Verify Main pass word.

=0x31: Verify application area 1 pass word.

=0x32: Verify application area 1 delete pass word.

=0x33: Verify application area 2 pass word.

=0x34: Verify application area 1 delete pass word.

=0x35: Verify application area 3 pass word.

=0x36: Verify application area 3 delete pass word.

=0x37: Verify application area 4 pass word.

=0x38: Verify application area 4 delete pass word.

<Success return>:

0x02	0x00	0x03	0x50	0x41	0x35	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0x04	0x4E	0x41	0x35	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(18.6). Personalization operation.

0x02	0x00	0x03	0x40	0x36	Working mode	0X03	BCC
------	------	------	------	------	--------------	------	-----

Explain:

[1] working mode:

=0X30: Recoverable mode.

=0X31: Exit Recoverable mode.

=0X32: Can not recover.

<Success return>:

0x02	0x00	0x03	0x50	0x41	0x36	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x41	0x36	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(19). AT88S1608 Card operation.

(19.1). Reset.

0x02	0x00	0x02	0x42	0x30	0X03	BCC	
------	------	------	------	------	------	-----	--

<Success return>:

0x02	0x00	0x03	0x50	0x42	0x30	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x42	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(19.2). Verify pass word.

0x02	0x00	0x06	0x42	0x31	Pass word type	3 byte pass word	0X03	BCC
------	------	------	------	------	----------------	------------------	------	-----

Explain:

Pass word type:

- =0x30: Verify application area 1 reading pass word.
- =0x31: Verify application area 2 reading pass word.
- =0x32: Verify application area 3 reading pass word.
- =0x33: Verify application area 4 reading pass word.
- =0x34: Verify application area 5 reading pass word.
- =0x35: Verify application area 6 reading pass word.
- =0x36: Verify application area 7 reading pass word.
- =0x37: Verify application area 8 reading pass word.
- =0x38: Verify application area 1 written pass word.
- =0x39: Verify application area 2 written pass word.
- =0x3A: Verify application area 3 written pass word.
- =0x3B: Verify application area 4 written pass word.
- =0x3C: Verify application area 5 written pass word.
- =0x3D: Verify application area 6 written pass word.
- =0x3E: Verify application area 7 written pass word/Verify main pass word..
- =0x3F: Verify application area 8 written pass word.

<Success return>:

0x02	0x00	0x03	0x50	0x42	0x31	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x42	0x31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(19.3). Read data.

0x02	0x00	0x05	0x42	0x32	Area number	Address	Length	0X03	BCC
------	------	------	------	------	-------------	---------	--------	------	-----

Explain:

Address range of operation:

Application area: 0x00 ~ 0xFF

Setting area: 0x00 ~ 0x80

Operate length range: 0x01 ~ 0x80.

- Area number: =0x30: Application area 1 (len=0x01—0x80)
- =0x31: Application area 2 (len=0x01—0x80)
- =0x32: Application area 3 (len=0x01—0x80)

- =0x33: Application area 4 (len=0x01—0x80)
- =0x34: Application area 5 (len=0x01—0x80)
- =0x35: Application area 6 (len=0x01—0x80)
- =0x36: Application area 7 (len=0x01—0x80)
- =0x37: Application area 8 (len=0x01—0x80)
- =0x38: Setting area (len=0x01—0x80)

<Success return>:

0x02	RELEN_H	RELEN_L	0x50	0x42	0x32	Data	0x03	BCC
------	---------	---------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x42	0x32	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(19.4). Write data.

0x02	SELEN_H	SELEN_L	0x42	0x33	Area number	Address	Length	Data	0X03	BCC
------	---------	---------	------	------	-------------	---------	--------	------	------	-----

Explain:

Address range of operation:

Application area: 0x00 ~ 0xFF

Setting area: 0x00 ~ 0x80

Operate length range: 0x01 ~ 0x80.

- Area number:
- =0x30: Application area 1 (len=0x01—0x80)
 - =0x31: Application area 2 (len=0x01—0x80)
 - =0x32: Application area 3 (len=0x01—0x80)
 - =0x33: Application area 4 (len=0x01—0x80)
 - =0x34: Application area 5 (len=0x01—0x80)
 - =0x35: Application area 6 (len=0x01—0x80)
 - =0x36: Application area 7 (len=0x01—0x80)
 - =0x37: Application area 8 (len=0x01—0x80)
 - =0x38: Setting area (len=0x01—0x80)

<Success return>:

0x02	0x00	0x03	0x50	0x42	0x33	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x42	0x33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(19.5). Read fuse status.

0x02	0x00	0x02	0x42	0x34	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x06	0x50	0x42	0x34	FAB	CMA	PER	0x03	BCC
------	------	------	------	------	------	-----	-----	-----	------	-----

Explain:

FAB: ATMEL chip fuse tag, after out of factory, it was fusing (break).

CMA: Card fuse tag, after out of factory, it was fusing (break).

PER: Distributor fuse, before application system and start personalization it fusing tag.

Fuse status character FAB: =0X30: have been fusing,

=0X31: have not been fusing.

Fuse status character CMA: =0X30: have been fusing,

=0X31: have not been fusing.

Fuse status character PER: =0X30: have been fusing,
=0X31: have not been fusing.

<Fail return>:

0x02	0X00	0X04	0x4E	0x42	0x34	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(19.6) Fuse.

Explain:

Execute this command 1 times, it fusing 1 of fuse. After execute 3 times, all fuse were fusing(break), can not recovered.

Fusing Rank: FAB → CMA → PER

0x02	0x00	0x02	0x42	0x35	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x42	0x35	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x42	0x35	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(19.7). Initialization authentication.

0x02	0x00	0x0A	0x42	0x36	8 byte random number Q0~Q7	0x03	BCC
------	------	------	------	------	----------------------------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x42	0x36	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x42	0x36	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

Explain:

Initialization authentication area is priority reading Nc, Ci, use F1 or F2 algorithm, obtain Gc=F1(Ks, Nc), obtain random number Q0~q7, set in AT88SC1608 card, finish initialization authentication area. Algorithm please check with card supplier.

(19.8). Verify authentication.

0x02	0x00	0x0A	0x42	0x37	8 byte random number Q0~Q7	0x03	BCC
------	------	------	------	------	----------------------------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x42	0x37	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x42	0x37	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

Explain:

Verify authentication area is after Initialization authentication area operation, use F2 algorithm finish Q1=F2(Gc, Ci, Q0), respectively generating Q0,Q1,Q2,Q3,Q4,Q5,Q6,Q7 set in AT88SC1608 card to finish Verify authentication area. Algorithm please check with card supplier.

(19.9). Change pass word.

0x02	0x00	0x06	0x42	0x38	Pass word type	3 byte pass word	0X03	BCC
------	------	------	------	------	----------------	------------------	------	-----

Explain:

Pass word type:

- =0x30: Change Application area 1 reading pass word.
- =0x31: Change Application area 2 reading pass word.
- =0x32: Change Application area 3 reading pass word.

- =0x33: Change Application area 4 reading pass word.
- =0x34: Change Application area 5 reading pass word.
- =0x35: Change Application area 6 reading pass word.
- =0x36: Change Application area 7 reading pass word.
- =0x37: Change Application area 8 reading pass word.
- =0x38: Change Application area 1 written pass word.
- =0x39: Change Application area 2 written pass word.
- =0x3A: Change Application area 3 written pass word.
- =0x3B: Change Application area 4 written pass word.
- =0x3C: Change Application area 5 written pass word.
- =0x3D: Change Application area 6 written pass word.
- =0x3E: Change Application area 7 written pass word./ Verify main pass word.
- =0x3F: Change Application area 8 written pass word.

<Success return>:

0x02	0x00	0x03	0x50	0x42	0x38	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x42	0x38	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(20). SLE4442 card operation.

(20.1) Reset.

0x02	0x00	0x02	0x43	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x43	0x30	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x43	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(20.2). Verify pass word.

0x02	0x00	0x05	0x43	0x31	3 byte pass word	0X03	BCC
------	------	------	------	------	------------------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x43	0x31	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x43	0x31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(20.3). Read data.

0x02	0x00	0x04	0x43	0x32	Address	Length	0X03	BCC
------	------	------	------	------	---------	--------	------	-----

Explain:

[1] Address: Read data start address, valid value: 0x00~0xFF, length in 1 byte.

[2] Length: Read data's length.

<Success return>:

0x02	RELEN_H	RELEN_L	0x50	0x43	0x32	Data	0x03	BCC
------	---------	---------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x43	0x32	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(20.4). Read protect bit.

0x02	0x00	0x02	0x43	0x33	0X03	BCC
------	------	------	------	------	------	-----

Explain:

[1] Address: Read data start address, valid value: 0x00~0x1F, length in 1 byte.

[2] Length: Read data's length.

<Success return>:

0x02	0x00	0x23	0x50	0x43	0x33	Data	0x03	BCC
------	------	------	------	------	------	------	------	-----

Explain:

[1] Data: Valid value : 0X30 and 0X31. 0X30 means the relate address have been protected, data can not be revised.

0X31 means related address have not been protected, data can be revised.

<Fail return>:

0x02	0X00	0X04	0x4E	0x43	0x33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(20.5). Read PSC area.

0x02	0x00	0x02	0x43	0x34	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x07	0x50	0x43	0x34	PSC area data	0x03	BCC
------	------	------	------	------	------	---------------	------	-----

Explain: PSC area data, total in 4 byte, rank as following:

1st byte: pass word wrong counter.

2nd byte: pass word data1.

3rd byte: pass word data2.

4th byte: pass word data3.

Pass word wrong counter code:

=0X07: (No wrong)

=0X06 (Wrong times is 1).

=0X04 (Wrong times is 2).

=0X00 (Wrong times is 3, card rejected).

<Fail return>:

0x02	0X00	0X04	0x4E	0x43	0x34	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(20.6). Writer data.

Explain: Before write data, need to verify pass word success.

0x02	SELEN_H	SELEN_L	0x43	0x35	Address	Length	Data	0X03	BCC
------	---------	---------	------	------	---------	--------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x43	0x35	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x43	0x35	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(20.7). Write protect bit.

Explain:

[1] Before write protect bit, need to verify pass word success.

[2] Data of write protect bit must be same as before, then it can be written success.

[3] After write protect bit success, the relate address data can not be changed.

0x02	SELEN_H	SELEN_L	0x43	0x36	Address	Length	Data	0X03	BCC
------	---------	---------	------	------	---------	--------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x43	0x36	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x43	0x36	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(20.8) Change pass word.

Explain: Before change pass word, need to verify pass word success.

0x02	0x00	0x05	0x43	0x37	3 byte pass word	0x03	BCC
------	------	------	------	------	------------------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x43	0x37	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x43	0x37	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(21). SLE4428 Card operation.

(21.1) Activation contact poles and OF power reset.

0x02	0x00	0x02	0x44	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x44	0x30	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x44	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(21.2). Verify pass word.

0x02	0x00	0x04	0x44	0x31	2 byte pass word	0X03	BCC
------	------	------	------	------	------------------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x44	0x31	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x44	0x31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(21.3). Read data.

0x02	0X00	0X05	0x44	0x32	Address	Length	0X03	BCC
------	------	------	------	------	---------	--------	------	-----

Explain:

[1] Address: Read data start address, valid value: 0x00~0xFF, Length in 2 byte.

[2] Length: Read data's length.

<Success return>:

0x02	RELEN_H	RELEN_L	0x50	0x44	0x32	Data	0x03	BCC
------	---------	---------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x44	0x32	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(21.4). Read protect bit.

0x02	0x00	0x05	0x44	0x33	Address	Length	0X03	BCC
------	------	------	------	------	---------	--------	------	-----

Explain:

[1] Address: Read data start address, valid value: 0x00~0x1F, Length in 2 byte.

[2] Length: Read data's length.

<Success return>:

0x02	RELEN_H	RELEN_L	0x50	0x44	0x33	Data	0x03	BCC
------	---------	---------	------	------	------	------	------	-----

Explain:

[1] Data: Valid value : 0X30 and 0X31. 0X30 means the relate address have been protected, data can not be revised. 0X31 means related address have not been protected, data can be revised.

<Fail return>:

0x02	0X00	0X04	0x4E	0x44	0x33	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(21.5). Write data.

Explain: Before write data, need to verify pass word success.

0x02	SELEN_H	SELEN_L	0x44	0x34	Address	Length	Data	0X03	BCC
------	---------	---------	------	------	---------	--------	------	------	-----

[1] Address: Length in 2 byte.

[2] Length: Written data's length, valid value: 0X00~0XFF. Length in 1 byte.

<Success return>:

0x02	0x00	0x03	0x50	0x44	0x34	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x44	0x34	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(21.6). With protect bit write data.

Explain:

[1] Before writing data, need to verify pass word success.

[2] After written protect bit success, related address data can not be changed.

0x02	SELEN_H	SELEN_L	0x44	0x35	Address	Length	Data	0X03	BCC
------	---------	---------	------	------	---------	--------	------	------	-----

[1] Address: Length in 2 byte.

[2] Length: Written data's length, valid value: 0X00~0XFF. Length in 1 byte.

<Success return>:

0x02	0x00	0x03	0x50	0x44	0x35	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x44	0x35	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(21.7). Change pass word.

Explain: Before change pass word, need verify pass word success.

0x02	0x00	0x04	0x44	0x36	23 byte pass word	0X03	BCC
------	------	------	------	------	-------------------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x44	0x36	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x44	0x36	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(22). IC ON/OFF power operation.

(22.1). ON power.

0x02	0x00	0x02	0x45	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x45	0x30	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x45	0x30	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(22.2). OFF power.

0x02	0x00	0x02	0x45	0x31	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	0x00	0x03	0x50	0x45	0x31	0x03	BCC
------	------	------	------	------	------	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x45	0x31	ERR_CD	0X03	BCC
------	------	------	------	------	------	--------	------	-----

(23). Baud rate setting.

0x02	0x00	0x02	0x46	PM	0X03	BCC
------	------	------	------	----	------	-----

Explain:

PM valid value and related baud rate:

0x30	Baud rate=1200
0x31	Baud rate=2400
0x32	Baud rate=4800
0x33	Baud rate=9600
0x34	Baud rate=19200
0x35	Baud rate=38400

<Success return>:

0x02	0x00	0x03	0x50	0x46	PM	0x03	BCC
------	------	------	------	------	----	------	-----

<Fail return>:

0x02	0X00	0X04	0x4E	0x46	PM	ERR_CD	0X03	BCC
------	------	------	------	------	----	--------	------	-----

(24). Non-Contact CPU card operation.

(24.1). Non-Contact CPU card activation

0x02	0x00	0x02	0x47	0x30	0X03	BCC
------	------	------	------	------	------	-----

<Success return>:

0x02	BLEN	0x50	0x47	0x30	RESET_DATA	0x03	BCC
------	------	------	------	------	------------	------	-----

<Fail return>:

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

(24.2). Non-Contact CPU card APDU command.

0X02	0X00	0X02	0X47	0x33	Sch	Slen	Sapdu	0X03	BCC
------	------	------	------	------	-----	------	-------	------	-----

<Success return>:

0x02	BLEN	0x50	0x47	0x33	Rch	Rapdu	0x03	BCC
------	------	------	------	------	-----	-------	------	-----

<Fail return>:

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

Explain:

- [1] Sch: Link tag, =0 means no need link; =1 means need link.
- [2] Sapdu: APDU command pack which want to send.
- [3] Rch: Receive link tag, =0, means no link; =1, means have link.
- [4] Rapdu: Return APDU command.

6. Error code:

Error Code	meanings
Command error code	
0x00	Have no define command
0x01	Command parameter error
0x02	Command data error
0x03	Command can not be executed
0x04	Command executed fail
Power error code	
0x05	Power error, to high > 13V
0x06	Power error, to low < 10V
0x07	Main Power too low or not exist
0x08	Sensor abnormality
Card motion error code	
0x0a	Card jam
0x0b	Open strobe fail
0x0c	Card abnormality, there is long card
0x0d	Card abnormality, there is short card
0x0e	Rear port entry card time out
IC card operate error code--CPU card	
0x21	CPU card reset fail
0x22	T=0 CPU card command execute fail
0x23	T=1 CPU card capacity request fail
0x24	T=1 CPU card command execute fail
IC card operate error code--SAM card	
0x30	SAM card reset fail
0x31	T=0 SAM card command execute fail
0x32	T=1 SAM card capacity request fail
0x33	T=1 SAM card command execute fail
IC card operate error code--RF card	
0x40	RF card position no card, RF card operation command can not execute
0x41	Searching card fail
0x42	Read card series number fail
0x43	Verify pass word error
0x44	Select card error
0x45	Read data fail
0x46	Write data fail
0x49	Increase value fail
0x4a	Decrease value fail
IC card operate error code	
0x50	IC card position no card, IC card command can not execute
0x51	AT24 series card read data fail
0x52	AT24 series card write data fail

0x53	AT45DB041 card reset fail
0x56	AT88S1608 card reset fail
0x57	AT88S1608 card pass word verify error
0x58	AT88s1608 card read data error
0x59	AT88s1608 card write data error
0x5a	AT88s1608 card write fuse error
0x5b	AT88s1608 card initialization authentication error
0x5c	AT88s1608 card verify authentication error
0x5d	AT88S102 card reset error
0x5e	AT88S102 card verify pass word error
0x5f	AT88S102 card fail(broken)
0x60	AT88S102 card delete operate fail
0x61	AT88S102 card write operate fail
0x62	AT88S102 card set pass word error
0x63	AT88S1604 card reset error
0x64	AT88S1604 card verify pass word error
0x65	AT88S1604 card fail(broken)
0x66	AT88S1604 card delete error
0x67	AT88S1604 card write error
0x68	AT88S1604 card read error
0x69	SLE4442 card reset error
0x6a	SLE4442 card fail(broken)
0x6b	SLE4442 card pass word error
0x70	SLE4428 card reset fail
0x71	SLE4428 card fail(broken)
0x72	SLE4428 card pass word verify error
0x73	SLE4428 card setting pass word error

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