SPH Series

Programmable Magnetic Head Technical Manual

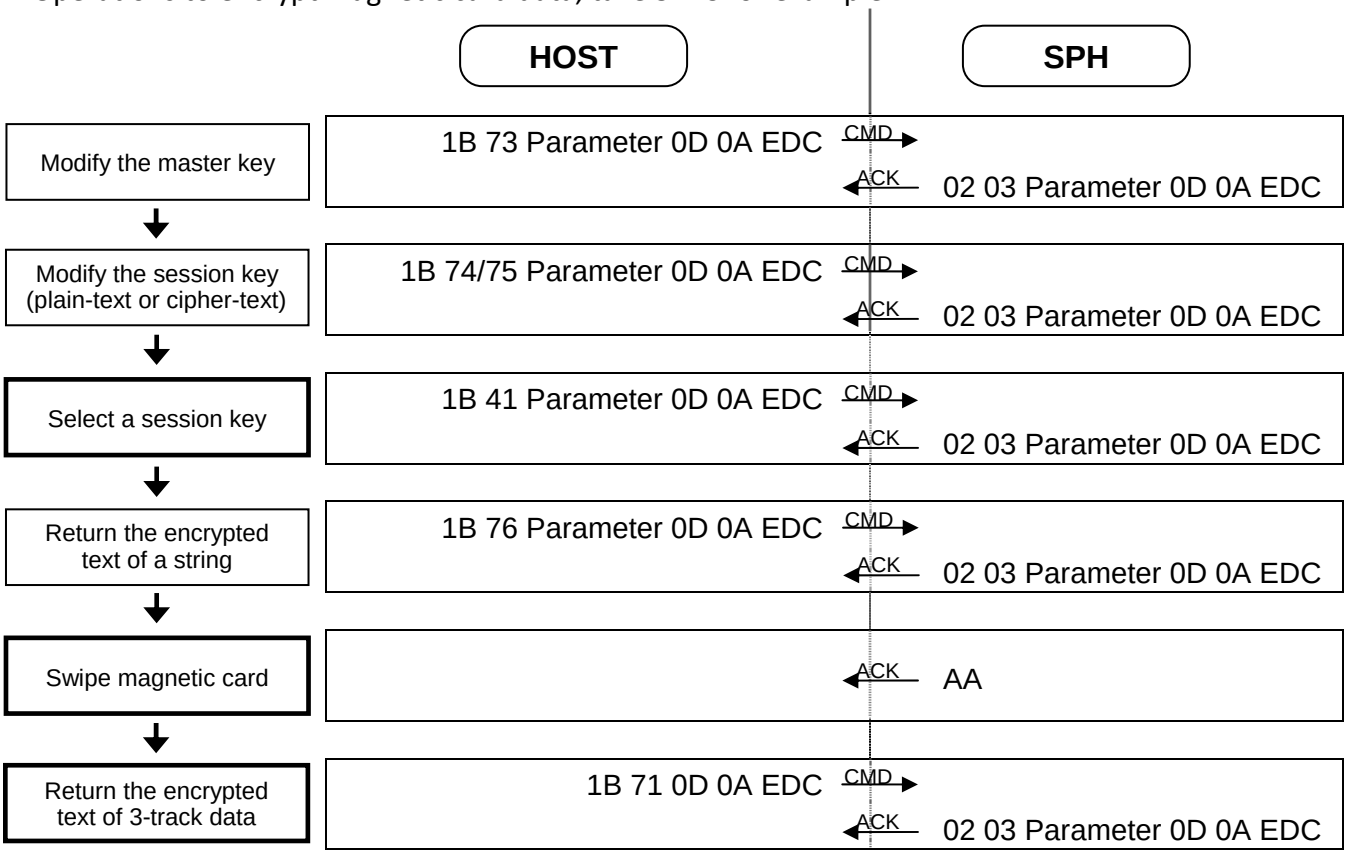
Version：V1.5

SPH series *Programmable Magnetic Head*

1. Procedure：

Obligatory operation　　Optional operation

➢ Operations to encrypt magnetic card data, take 3DES for example:



SPH series *Programmable Magnetic Head*

➢ Operations to initialize SPH:

Set Communication Parameters	1B 42 Parameter 0D 0A EDC	CMD →	
		← ACK	02 03 Parameter 0D 0A EDC
Get the device firmware version	1B 56 0D 0A EDC	CMD →	
		← ACK	02 0N Parameter 0D 0A EDC
Reset the device with default Settings	1B 72 00 00 0D 0A EDC	CMD →	
		← ACK	02 03 Parameter 0D 0A EDC
Write Series Number	1B 25 9A 4D Parameter 0D 0A EDC	CMD →	
		← ACK	1B 00 00 EDC
Read Series Number	1B 25 9B 4D EDC	CMD →	
		← ACK	1B 00 Parameter EDC

2. Default Settings：

A. Communication Port: 9600, N, 8, 1 (9600 bps, No parity bit, 8 data bits, 1 stop bit)

B. Des:

Master Key: (hex)3838383838383838（= 0x38 * 8）.

Session key: (hex)0000000000000000（= 0x00 * 8）.

Addr	Master Key(8byte)
0x00	0x38…
.	.
.	.
.	.
0x1E	

Session Key(8byte)	Addr
0x00…	0x00
	0x01
	0x02

C. Triple Des:

Master Key: (hex)383838383838383838383838383838383838（= 0x38 * 16）.

Session key: (hex)00000000000000000000000000000000（= 0x00 * 16）.

Addr	Master Key(16byte)
0x00	0x38…
.	.
.	.
.	.
0x1E	

Session Key(16byte)	Addr
0x00…	0x00
	0x01
	0x02

D. Default Settings Master Key No.0, Session Key No.0

3. Protocol：

A. From Host to Device:

STX	DATA	ETX	EDC

Abbr.	Length (of bytes)	Description
STX	1 byte	Start to transmission
DATA	(Not specified)	Data to transmit
ETX	2 byte	End of transmission
EDC	1 byte	Error Detection Code, checksum with LRC algorithm (xor all bytes)

B. From Device to Host:

STX	DATA LEN	DATA	ETX	EDC

Abbr.	Length (of bytes)	Description
STX	1 byte	Start to transmission
DATA Len	1 byte	Data to transmit
DATA	DATA LEN	Length of Data to transmit
ETX	2 byte	End of transmission
EDC	1 byte	Error Detection Code, checksum with LRC algorithm (xor all bytes)

4. Command Set:

	CMD	Encryption	STX	DATA		ETX	EDC
				Command	Parameter		
1	Set Communication Parameters	Des & 3Des	0x1B	0x42	1 byte	0x0D 0x0A	1 byte
2	Get the device firmware version.	Des & 3Des	0x1B	0x56	0 byte	0x0D 0x0A	1 byte
3	Warm reset	Des & 3Des	0x1B	0x5A	0 byte	0x0D 0x0A	1 byte
4	Reset the device with default settings.	Des	0x1B	0x52	2 byte	0x0D 0x0A	1 byte
		3Des	0x1B	0x72	2 byte	0x0D 0x0A	1 byte
5	Return the encrypted text of a string.	Des	0x1B	0x48	8 byte	0x0D 0x0A	1 byte
		3Des	0x1B	0x76	16 byte	0x0D 0x0A	1 byte
6	Return the encrypted text of 3-Track data without saving	Des	0x1B	0x46	0 byte	0x0D 0x0A	1 byte
		3Des	0x1B	0x71	0 byte	0x0D 0x0A	1 byte
7	Return the encrypted text of 3-Track data (Condition A)	3Des	0x1B	0x77	0 byte	0x0D 0x0A	1 byte
8	Modify the master key in plain-text format.	Des	0x1B	0x4D	17 byte	0x0D 0x0A	1 byte
		3Des	0x1B	0x73	33 byte	0x0D 0x0A	1 byte
9	Modify the session key in plain-text format.	Des	0x1B	0x55	18 byte	0x0D 0x0A	1 byte
		3Des	0x1B	0x74	34 byte	0x0D 0x0A	1 byte
10	Modify the session key in cipher-text format.	Des	0x1B	0x53	10 byte	0x0D 0x0A	1 byte
		3Des	0x1B	0x75	18 byte	0x0D 0x0A	1 byte
11	Select a session key.	Des & 3Des	0x1B	0x41	3 byte	0x0D 0x0A	1 byte
12	Communication synchronization	Des & 3Des	0x1B	0xFF	0xFF	0x0D 0x0A	1 byte
13	Write Series Number	Des & 3Des	0x1B	3 byte	N byte	—	1 byte
14	Read Series Number	Des & 3Des	0x1B	3 byte	—	—	1 byte

5. Programmable Magnetic Head Command：

1) Operation- Set Communication Parameters

- Explanation
  Set Baud rate.

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x42	1 byte	0x0D 0x0A	1 byte

Parameter

Baud Rate: 1 byte
01H: 1200bps
02H: 2400bps
03H: 4800bps
04H: 9600bps
05H: 14400bps
06H: 19200bps
07H: 38400bps
08H: 57600bps
09H: 115200bps

- Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Failed	0x02	0x03	0x55	0x42	0x01	0x0D 0x0A	1 byte
Not Support	0x02	0x03	0x55	0x42	0xFF	0x0D 0x0A	1 byte

2) Operation- Get the device firmware version

- Explanation
  Get the device firmware version

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x56	0 byte	0x0D 0x0A	1 byte

- Response

ACK	STX	DATA LEN	DATA	ETX	EDC
Successful	0x02	0x0N	N byte	0x0D 0x0A	1 byte

DATA LEN Length of Data
DATA Firmware version string

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Failed	0x02	0x03	0x55	0x56	0x01	0x0D 0x0A	1 byte

3) Operation- Warm reset

- Explanation
  Reset Baud rate and cleanup cache.

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x5A	0 byte	0x0D 0x0A	1 byte

- Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Failed	0x02	0x03	0x55	0x5A	0x01	0x0D 0x0A	1 byte

4) Operation- Reset the device with default Settings

- Explanation

Reset the master key and session key to default value, and Master Key No.0, Session Key No.0.

Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x52	2 byte	0x0D 0x0A	1 byte

Parameter

L1	1 byte	00H
P1	1 byte	00H

- Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Failed	0x02	0x03	0x55	0x52	0x01	0x0D 0x0A	1 byte

Triple Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x72	2 byte	0x0D 0x0A	1 byte

Parameter

L1	1 byte	00H
P1	1 byte	00H

- Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Failed	0x02	0x03	0x55	0x52	0x01	0x0D 0x0A	1 byte

5) Head- Return the encrypted text of a string

- **Explanation**

Send a string with length of 8 bytes (ECB mode and padding with 0x00 if data is less than 8 bytes) into the device and then encrypt it with the session key to generate its encrypted text. See Part6 Ex.1 as an example.

Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x48	8 byte	0x0D 0x0A	1 byte

Parameter

String S 8 byte ASCII code

- Response

ACK	STX	DATA LEN	DATA	ETX	EDC
Successful	0x02	0x08	8 byte	0x0D 0x0A	1 byte

DATA

Data The encrypted text of the original string

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Failed	0x02	0x03	0x55	0x48	0x01	0x0D 0x0A	1 byte

Triple Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x76	8 byte	0x0D 0x0A	1 byte

Parameter

String S 8 byte ASCII code

- Response

ACK	STX	DATA LEN	DATA	ETX	EDC
Successful	0x02	0x08	8 byte	0x0D 0x0A	1 byte

DATA

Data The encrypted text of the original string

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Failed	0x02	0x03	0x55	0x48	0x01	0x0D 0x0A	1 byte

6) Head- Return the encrypted text of 3-track data without saving

- Explanation

Encrypt 3-track data (ECB mode and padding with 0x00 if data is less than 8 bytes) with the session key and then generate an encrypted text. After every swipe, the head will return “0xAA” for a successful swipe and “0x55” for a failed swipe. After a successful swipe, you can send this command to get the encrypted text of 3-track data.

Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x46	0 byte	0x0D 0x0A	1 byte

- Response

ACK	STX	DATA LEN	DATA	ETX	EDC
Successful	0x02	0x0N	N byte	0x0D 0x0A	1 byte

DATA LEN 6 + T2Len + T3Len + T1Len

DATA the encrypted text of 3-track data
=0x73 T2Len T2Data 0x41 T3Len T3Data 0x7E T1Len T1Data
(If the track is empty Len=0x00 , Data=0x7F)

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Data Empty	0x02	0x03	0x55	0x46	0x00	0x0D 0x0A	1 byte
Track1 Error	0x02	0x03	0x55	0x46	0x01	0x0D 0x0A	1 byte
Track2 Error	0x02	0x03	0x55	0x46	0x02	0x0D 0x0A	1 byte
Track3 Error	0x02	0x03	0x55	0x46	0x03	0x0D 0x0A	1 byte
Track12 Error	0x02	0x03	0x55	0x46	0x12	0x0D 0x0A	1 byte
Track13 Error	0x02	0x03	0x55	0x46	0x13	0x0D 0x0A	1 byte
Track23 Error	0x02	0x03	0x55	0x46	0x23	0x0D 0x0A	1 byte
Track123 Error	0x02	0x03	0x55	0x46	0x33	0x0D 0x0A	1 byte
Not Support	0x02	0x03	0x55	0x46	0xFF	0x0D 0x0A	1 byte

Triple Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x71	0 byte	0x0D 0x0A	1 byte

- Response

ACK	STX	DATA LEN	DATA	ETX	EDC
Successful	0x02	0x0N	N byte	0x0D 0x0A	1 byte

DATA LEN 6 + T2Len + T3Len + T1Len

DATA the encrypted text of 3-track data

=0x73 T2Len T2Data 0x41 T3Len T3Data 0x7E T1Len T1Data

(If the track is empty Len=0x00 , Data=0x7F)

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Data Empty	0x02	0x03	0x55	0x46	0x00	0x0D 0x0A	1 byte
Track1 Error	0x02	0x03	0x55	0x46	0x01	0x0D 0x0A	1 byte
Track2 Error	0x02	0x03	0x55	0x46	0x02	0x0D 0x0A	1 byte
Track3 Error	0x02	0x03	0x55	0x46	0x03	0x0D 0x0A	1 byte
Track12 Error	0x02	0x03	0x55	0x46	0x12	0x0D 0x0A	1 byte
Track13 Error	0x02	0x03	0x55	0x46	0x13	0x0D 0x0A	1 byte
Track23 Error	0x02	0x03	0x55	0x46	0x23	0x0D 0x0A	1 byte
Track123 Error	0x02	0x03	0x55	0x46	0x33	0x0D 0x0A	1 byte
Not Support	0x02	0x03	0x55	0x46	0xFF	0x0D 0x0A	1 byte

7) Head- Return the encrypted text of 3-track data (Condition A)

➢ Explanation

The encryption is Based on condition A. After every swipe, the head will return “0xAA” for a successful swipe and “0x55” for a failed swipe. After a successful swipe, you can send this command to get the encrypted text of 3-track data.

Condition A for cards needing encryption (3DES) of Track2:

- Track1 is not empty.
- Track2 starts with "3","4","5" or "6" and card number before separator "=" is equal to or less than 16 digits.
- Track3 is empty or not starts with "996048" or "996047"

Triple Des:

➢ Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x77	0 byte	0x0D 0x0A	1 byte

➢ Response

ACK	STX	DATA LEN	DATA	ETX	EDC
Successful	0x02	0x0N	N byte	0x0D 0x0A	1 byte

DATA LEN 6 + T2Len + T3Len + T1Len

DATA the encrypted text of 3-track data
=T2Flag T2Len T2Data T3Flag T3Len T3Data T1Flag T1Len T1Data
(If the track is empty Len=0x00 , Data=0x7F)
T2Flag: flag 0x73 for T2 no encrypted; flag 0xE3 for T2 encrypted
T3Flag: flag 0x41 for T3 no encrypted; flag 0xE1 for T3 encrypted
T1Flag: flag 0x7E for T1 no encrypted; flag 0xEE for T1 encrypted

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Data Empty	0x02	0x03	0x55	0x46	0x00	0x0D 0x0A	1 byte
Track1 Error	0x02	0x03	0x55	0x46	0x01	0x0D 0x0A	1 byte
Track2 Error	0x02	0x03	0x55	0x46	0x02	0x0D 0x0A	1 byte
Track3 Error	0x02	0x03	0x55	0x46	0x03	0x0D 0x0A	1 byte
Track12 Error	0x02	0x03	0x55	0x46	0x12	0x0D 0x0A	1 byte
Track13 Error	0x02	0x03	0x55	0x46	0x13	0x0D 0x0A	1 byte
Track23 Error	0x02	0x03	0x55	0x46	0x23	0x0D 0x0A	1 byte
Track123 Error	0x02	0x03	0x55	0x46	0x33	0x0D 0x0A	1 byte
Not Support	0x02	0x03	0x55	0x46	0xFF	0x0D 0x0A	1 byte

8) Head- Modify the master key in plain-text format

- Explanation

Modify a master key in plain-text format. This command only works when the master key is the same as the one in the device. See Part6 Ex.2 as an example.

Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x4D	17 byte	0x0D 0x0A	1 byte

Parameter

P	1 byte	Master Key No.: 0x00=<P<=0x1E
OK	8 byte	Original Master
NK	8 byte	New Master Key

- Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Wrong Master Key	0x02	0x03	0x55	0x4D	0x01	0x0D 0x0A	1 byte
Key No. Error	0x02	0x03	0x55	0x4D	0x02	0x0D 0x0A	1 byte
Failed to modify	0x02	0x03	0x55	0x4D	0x03	0x0D 0x0A	1 byte

Triple Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x73	33 byte	0x0D 0x0A	1 byte

Parameter

P	1 byte	Master Key No.: 0x00=<P<=0x1E
OK	16 byte	Original Master
NK	16 byte	New Master Key

- Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Wrong Master Key	0x02	0x03	0x55	0x4D	0x01	0x0D 0x0A	1 byte
Key No. Error	0x02	0x03	0x55	0x4D	0x02	0x0D 0x0A	1 byte
Failed to modify	0x02	0x03	0x55	0x4D	0x03	0x0D 0x0A	1 byte

9) Head- Modify the session key in plain-text format

➢ Explanation

Modify a session key in plain-text format. This command only works when the master key is the same as the one in the device. See Part6 Ex.3 as an example.

Des:

➢ Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x55	18 byte	0x0D 0x0A	1 byte

Parameter

M	1 byte	Master Key No.: 0x00=<M<=0x1E
N	1 byte	Session Key No.: 0x00=<N<=0x02
MK	8 byte	Master Key
UK	8 byte	New Session Key

➢ Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Wrong Master Key	0x02	0x03	0x55	0x55	0x01	0x0D 0x0A	1 byte
Key No. Error	0x02	0x03	0x55	0x55	0x02	0x0D 0x0A	1 byte
Failed to modify	0x02	0x03	0x55	0x55	0x03	0x0D 0x0A	1 byte

Triple Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x74	34 byte	0x0D 0x0A	1 byte

Parameter

M	1 byte	Master Key No.:0x00=<M<=0x1E
N	1 byte	Session Key No.:0x00=<N<=0x02
MK	16 byte	Master Key
UK	16 byte	New Session Key

- Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Wrong Master Key	0x02	0x03	0x55	0x55	0x01	0x0D 0x0A	1 byte
Key No. Error	0x02	0x03	0x55	0x55	0x02	0x0D 0x0A	1 byte
Failed to modify	0x02	0x03	0x55	0x55	0x03	0x0D 0x0A	1 byte

10)Head- Modify the session key in cipher-text format

- Explanation

Modify a session key in cipher-text format. Decrypt an encrypted string S and then save the result as a new session key. This command only works when the master key is the same as the one in the device. See Part6 Ex.4 as an example.

Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x53	10 byte	0x0D 0x0A	1 byte

Parameter

M	1 byte	Master Key No.: 0x00=<M<=0x1E
N	1 byte	Session Key No.: 0x00=<N<=0x02
S	8 byte	ASCII code

- Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Failed to decrypt S	0x02	0x03	0x55	0x53	0x01	0x0D 0x0A	1 byte
Key No. Error	0x02	0x03	0x55	0x53	0x02	0x0D 0x0A	1 byte
Failed to modify	0x02	0x03	0x55	0x53	0x03	0x0D 0x0A	1 byte

Triple Des:

- Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x75	18 byte	0x0D 0x0A	1 byte

Parameter

M	1 byte	Master Key No.: 0x00=<M<=0x1E
N	1 byte	Session Key No.: 0x00=<N<=0x02
S	16 byte	ASCII code

- Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Failed to decrypt S	0x02	0x03	0x55	0x53	0x01	0x0D 0x0A	1 byte
Key No. Error	0x02	0x03	0x55	0x53	0x02	0x0D 0x0A	1 byte
Failed to modify	0x02	0x03	0x55	0x53	0x03	0x0D 0x0A	1 byte

11)Head- Select a session key

➢ Explanation

Select a session key N under a master key M. Default settings: Master Key No.0, Session Key No.0.

➢ Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0x41	3 byte	0x0D 0x0A	1 byte

Parameter

M	1 byte	Master Key No.: 0x00=<M<=0x1E
N	1 byte	Session Key: 0x00=<N<=0x02
F	1 byte	Encryption method:
	31H	DES encryption
	32H	Triple DES encryption

➢ Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Not Support	0x02	0x03	0x55	0x41	0x01	0x0D 0x0A	1 byte
Key No. Error	0x02	0x03	0x55	0x41	0x02	0x0D 0x0A	1 byte
Fail to select	0x02	0x03	0x55	0x41	0x03	0x0D 0x0A	1 byte

12)Operation- Communication synchronization

➢ Explanation

Update、adjust communication sequence for synchronous processing.

➢ Command

STX	DATA		ETX	EDC
	Command	Parameter		
0x1B	0xFF	0xFF	0x0D 0x0A	1 byte

➢ Response

ACK	STX	DATA LEN	DATA			ETX	EDC
			ERROR	ERROR1	ERROR2		
Successful	0x02	0x03	0xAA	0x00	0x00	0x0D 0x0A	1 byte
Failed	0x02	0x03	0x55	0x42	0x01	0x0D 0x0A	1 byte

13) Operation- Write Series Number

- Explanation

  Write Series Number. See Part6 Ex.5 as an example.

- Command

STX	Command			DATA LEN	Data	EDC
0x1B	0x25	0x9A	0x4D	2byte	1~16byte	1 byte

Parameter

DATA LEN	2 byte	HLen LLen: Length of Data
Data	1~16byte	Series Number, up to 16byte

- Response

ACK	DATA			EDC
Successful	0x1B	0x00	0x00	1 byte
Failed	0x1B	0x01	0x00	1 byte

14) Operation- Read Series Number

- Explanation

  Read Series Number.

- Command

STX	Command			EDC
0x1B	0x25	0x9B	0x4D	1 byte

- Response

ACK	STX		DATA LEN	DATA	EDC
Successful	0x1B	0x00	2 byte	16 byte	1 byte
Failed	0x1B	0x01	—	0x00	1 byte

DATA LEN	2 byte	HLen LLen: Length of Data
Data	16byte	Series Number

6. Examples：

Ex.1 Head- Return the encrypted text of a string.

Encrypt a string “0x31 0x31 0x31 0x31 0x31 0x31 0x31 0x31” and then return the result.

Command:

STX+INS	0x1B 0x48
PARA	0x31 0x31 0x31 0x31 0x31 0x31 0x31 0x31
ETS + EDC	0x0D 0x0A

Ex.2 Head- Modify the master key in plain-text format

Master Key No. = 0x01

Original Master Key = 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38

New Master Key = 0x31 0x31 0x31 0x31 0x31 0x31 0x31 0x31

Command:

STX+INS	0x1B 0x4D
PARA1	0x01
PARA2	0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38
PARA3	0x31 0x31 0x31 0x31 0x31 0x31 0x31 0x31
ETS + EDC	0x0D 0x0A

Ex.3 Head- Modify the session key in plain-text format

Master Key No. = 0x02

Session Key No. = 0x01

Original Master Key = 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38

New Session Key = 0x31 0x31 0x31 0x31 0x31 0x31 0x31 0x31

Command:

STX+INS	0x1B 0x55
PARA1	0x02
PARA2	0x01
PARA3	0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38
PARA4	0x31 0x31 0x31 0x31 0x31 0x31 0x31 0x31
ETS + EDC	0x0D 0x0A

Ex.4 Head- Modify the session key in cipher-text format

Master Key No. = 0x03
Session Key No. = 0x02
An encrypted string = 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38

Command:

STX+INS	0x1B 0x53
PARA1	0x03
PARA2	0x02
PARA3	0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38
ETS + EDC	0x0D 0x0A

Ex.5 Write Series Number

Write the Series number = 0x01 0x02 0x03 0x04 0x05 0x06 0x07 0x08

Command:

STX+INS	0x1B 0x25 0x9A 0x4D
DATA LEN	0x00 0x08
PARA	0x01 0x02 0x03 0x04 0x05 0x06 0x07 0x08
EDC	

7. Version History

Version	Date	Content
V1.0	2012/4/13	New created.
V1.1	2012/10/17	1. Fix 16byte to 8byte. 2. Fix the length error of the encrypted text of 3-track data.
V1.2	2012/11/30	1. Delete Save the encrypted data 2. Delete Get the encrypted data saved previously
V1.3	2013/02/01	1. Add Triple DES arithmetic 2. Modify Key Quantity 3. Add commands of read/write Series Number
V1.4	2013/02/22	Modify the track cipher-text empty format
V1.5	2013/05/07	1. Add “Procedure” 2. Add command: Return the encrypted text of 3-Track data(Condition A) 3. Add command: Communication synchronization 4. Fix 8byte to 16byte.