

HCR360

Hybrid Card Reader

RS232 Interface

Configuration Guide

Document #: SM042

Revision A

Dec. 14, 2004

PREFACE

This manual provides detailed information relating to the overall operational, electrical, mechanical, environmental and functional aspects of the HCR360. This document should be read and understood prior to initial operation of the product.

For ease of installation and programming use, we have addressed everything from its attractive features to its various configurations.

When designing the HCR360, we selected what we feel are the most useful features and functions. If in some cases you find that your specific needs differ from our existing products, we welcome your comments and suggestions.

Custom-designed models are also available.

If further questions do arise, please call for technical support. The FAE will assist you in any way we can.

Table of Contents

Chapter1. General	1-1
1.1 EEPROM Configuration	1-1
1.1.1 EEPROM Data Summary	1-1
1.1.2 EEPROM Data Description	1-2
1.2 Configuration Protocol	1-6
1.2.1 Send command: PC → Reader	1-6
1.2.2 Response: Reader → PC	1-6
Chapter2. Configuration Setting Commands	2-1
AAx (41h 41h x) — Auto ATR Enable/Disable	2-1
ATx (41h 54h x) — ATR Mode Setting	2-1
BRx (42h 52h x) — Set Baud Rate	2-1
BL0 (42h 4Ch 00h) — Boot Loader Program	2-1
DFx (44h 46h x) — Default Setting	2-2
ECx (45h 43h x) — Extended Configuration Report Enable/Disable	2-2
EMV (45h 4Dh 56H) — Switch IC Card Reader in EMV Mode	2-2
ESx (45h 53h x) — SS/ES Enable/Disable	2-3
EV0 (45h 56h 00h) — EEPROM Verify	2-3
FAx (46h 41h x) — Set Track 1 Prefix Code	2-3
Fax (46h 61h x) — Set Track 1 Suffix Code	2-3
FBx (46h 42h x) — Set Track 2 Prefix Code	2-4
Fbx (46h 62h x) — Set Track 2 Suffix Code	2-4
FCx (46h 43h x) — Set Track 3 Prefix Code	2-4
Fcx (46h 63h x) — Set Track 3 Suffix Code	2-4
IRx (49h 52h x) — Set Magnetic Stripe Card Read Direction	2-4
ISO (49h 53h 4Fh) — Switch IC Card Reader in ISO 7816 Mode	2-5
LAX (4Ch 41h x) — Auto Latch while ATR Success Enable/Disable	2-5
LCx (4Ch 43h x) — LRC Enable/Disable	2-5
LSx (4Ch 53h x) — Auto Latch while Card Seated Enable/Disable	2-5
MCx (4Dh 43h x) — Set Default Memory Card Type	2-6
PCx (50h 43h x) — Set Host Protocol	2-6
PFx (50h 46h x) — Custom PPS FD Setting	2-6
PHx (50h 48h x) — Set Power On Character	2-6
PNx (50h 4Eh x) — Set PCB Number	2-7
PTx (50h 54h x) — Set Host Parity	2-7
PPx (50h 50h x) — Plug & Play Enable/Disable (Used for PC/SC)	2-7
PSx (50h 53h x) — Custom PPS Setting	2-7
RE0 (52h 45h 00H) — Read EEPROM Data	2-8

RP0 (52h 50h 00H) — Request Current Protocol.....	2-8
SAX (53h 41h x) — Self-Arm Mode Enable/Disable	2-8
SEx (53h 45h x) — Self-Arm Mode Data Envelope Enable/Disable	2-8
SNx (53h 4Eh x) — Set Serial Number	2-9
SPx (53h 50h x) — Set Track Separator	2-9
SRx (53h 52h x) — Sensor Auto-Reporting Enable/Disable	2-9
TAX (54h 41h x) — Set Track 1 ID.....	2-9
TBx (54h 42h x) — Set Track 2 ID.....	2-10
TCx (54h 43h x) — Set Track 3 ID.....	2-10
TKx (54h 4Bh x) — Set Transmitting Data Tracks.....	2-10
UAX (55h 41h x) — Auto Unlatch while ATR Failure (Enable/Disable)	2-10
ULx (55h 4Ch x) — Auto Unlatch while reader in Auto-ATR Mode (Enable/Disable).....	2-11
UPx (55h 50h x) — Auto Unlatch while ICC Power Down (Enable/Disable).....	2-11

Chapter1. General

This document describes the internal configuration settings available for the HCR360 series. Each item includes ASCII, hexadecimal codes and an explanation of the command. The letter “x” indicates a variable and the letter “h” is an abbreviation of “hexadecimal”.

1.1 EEPROM Configuration

1.1.1 EEPROM Data Summary

Field Offset	Description
0	First model byte
1	Second model byte
2	Host communication speed
3	Host protocol type
4	Host address (always 0)
5	Memory card type
6	Reserved for future (always 0)
7	ATR mode
8-13	Date of firmware version
14	Operational mode
15	Self-Arm parameters
16-20	Track 1 prefix, up to 5 bytes
21-25	Track 1 suffix, up to 5 bytes
26-30	Track 2 prefix, up to 5 bytes
31-35	Track 2 suffix, up to 5 bytes
36-40	Track 3 prefix, up to 5 bytes
41-45	Track 3 suffix, up to 5 bytes
46	Track separator
47	Track1 ID
48	Track2 ID
49	Track3 ID
50	Custom PPS setting
51	Custom PPS FD setting
52	Custom latch setting
53-55	Reserved for future (always 0)
56	Custom power on character, default is ‘.’. 00H means no character sent.
57-64	“HCR360”
65-72	Serial Number
73-80	PCB Number
81	Manufacture configuration version number

82	Parity setting
83-127	Reserved (always FFH)

1.1.2 EEPROM Data Description

1. First model byte (offset 0)

7	6	5	4	3	2	1	0	
1	x	1	1	1	1	1	x	Default = BE h

Bit 0: Reserved

Bit 1: TK1 present, if = 1

Bit 2: TK2 present, if = 1

Bit 3: TK3 present, if = 1

Bit 4: Latch present, if = 1

Bit 5: Power fail unlatch present, if = 1

Bit 6: Reserved

Bit 7: Smart card connector present, if = 1

2. Second model byte (offset 1)

7	6	5	4	3	2	1	0	
0	0	x	x	1	1	0	x	Default = 0C h

Bit 0: Reserved

Bit 1: Extended SAM board present, if = 1. (Note: This bit just reserved now and always is 0)

Bit 2: CTS hardware present, if = 1

Bit 3: Plug and Play hardware present, if = 1

Bit 4, 5: Reserved

Bit 6: Send SS/ES when Self-Arm mode, if = 1

Bit 7: Send LRC of magnetic card data when Self-Arm mode, if = 1

3. Host communication speed (offset 2)

The speed communicates with host.

Value	Baud Rate
00 h	1200
01 h	2400
02 h	4800
03 h	9600
04 h	19200
05 h	38400 (default)
06 h	57600
07 h	115200
Other	38400

4. Host protocol type (offset 3)

The protocol communicates with host.

Value	Protocol Type
00 h	USI2 (default)
01 h	TLP224
02 h	TLP-224 Turbo

5. Memory card type (offset 5)

The parameter is the default memory card type after reader power on.

Value	CARDS
00 h	Telephone Card: Siemens SLE4406, SLE4436(E), SGS Thomson ST1305, Solaic E192B, GPM103
01 h	S=9 Card: Siemens SLE4418, SLE4428
02 h	416 Type Card: Siemens SLE4404, GemPlus GPM416-5V, GPM896, Atmel AT88SC101, AT88SC102, Incard MS101, MS102, AMMI 101 and 102
03 h	S=10 Card: Siemens SLE4432, SLE4442
04 h	3 Byte I2C Protocol, Atmel 24C01A, 24C02, 24C04, 24C08, 24C16, Orga OMC256T, OMC2048; SGC Thomson ST14C02C; ZeitControl ZCM02M, ZCM16M
05 h	4 Byte I2C Protocol, Atmel AT24C64, AT24C256; AT24C512, Microchip 24LC65; ZeitControl ZCM64M

6. ATR mode (offset 7)

7	6	5	4	3	2	1	0	
0	1	1	0	x	x	0	1	Default = 61 h

Bit 0: Power on CPU card with 5V, if = 1

Bit 1: Power on CPU card with 3V, if = 1

Note: 1. If bit0 and bit1 both = 1, power on CPU card with 3V first then 5V as ISO 7816.

2. If bit0 and bit1 both = 0, then power on CPU card with 1.8V.

Bit 2, 3: Reserved

Bit 4: 0 = ISO mode, 1 = EMV mode

Bit 5: Send magnetic card data when pulled, if = 1. (Don't care, always = 1)

Bit 6: ATR reset normal, if = 1. (Don't care, always = 1)

Bit 7: ATR reset reverse, if = 1. (Don't care, always = 0)

7. Operational mode (offset 14)

7	6	5	4	3	2	1	0	
1	x	0	x	0	0	0	0	Default = 80 h

Bit 0: Card slot switch reporting automatic, if = 1

Bit 1: Self-Arm mode enable, if = 1

Bit 2: Magnetic car data mode. 1 = AAMVA, 0 = ISO only. (Reserved for AMC 171ADL compatible. Don't care it. HCR360 can recognize card type automatic.)

Bit 3: 1 = Use CTS respect. 0 = CTS ignore. (Reserved for AMC 171ADL compatible. Don't care it.)

Bit 4: Reserved.

Bit 5: Plug & Play enable, if = 1

Bit 6: Reserved

Bit 7: 1 = Configuration response use 1 byte. 0 = Configuration response use 16 bytes.

8. Self-Arm parameters (offset 15)

7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0

Default = 00 h

Bit 0: Don't transmit TK1 data when Self-Arm mode, if = 1

Bit 1: Don't transmit TK2 data when Self-Arm mode, if = 1

Bit 2: Don't transmit TK3 data when Self-Arm mode, if = 1

Bit 3: 1 = don't flash LED when self-arm read error.

0 = flash LED when self-arm read error.

Bit 4: Magnetic card auto read direction. 1 = insertion, 0 = withdraw.

Bit 5: 1 = send magnetic stripe card data using selected protocol when self-arm mode.

0 = send magnetic stripe card data without protocol (i.e. send data only) when self-arm mode.

Bit 6: Automatic ATR transmit, if = 1.

Bit 7: Magnetic card auto read both insertion and withdraw, if = 1. (Note. The bit4 will be ignored if bit7 = 1.)

9. Custom PPS setting (offset 50)

The parameter is implicative PPS setting used for ICC Power On Command ('N' command).

7	6	5	4	3	2	1	0
x	x	x	0	0	x	x	0

Default = 00 h

Bit 0: Preferred mode when multiple choices. 0: prefer T=0, 1: prefer T=1.

Bit 1, 2: Reserved

Bit 3: Delay 4ms before sending PPS, if = 1.

Bit 4: 0 = Send PPS when request. 1 = don't send PPS even when request

Bit 5-7: Reserved

Note: 00H means Custom PPS setting disable.

10. Custom PPS FD setting (offset 51)

The parameter is implicative PPS FD setting used for ICC Power On Command ('N' command). Default is 00H.

Note: 00H means Custom PPS FD setting disable.

List of F/D supported:

F/D	01	02	03	04	08	11	12	13	14
Baud rate	9600	19200	38400	76800	115200	9600	19200	38400	76800
F/D	18	21	22	23	28	31	32	33	34
Baud rate	115200	6400	12800	25600	76800	4800	9600	19200	38400
F/D	35	38	41	42	43	44	48	51	52

Baud rate	76800	56600	3200	6400	12800	25600	38400	2400	4800
F/D	53	54	55	56	58	61	62	63	64
Baud rate	9600	19200	38400	76800	28800	1920	3840	7680	15360
F/D	68	69	91	92	93	94	95	96	A1
Baud rate	23040	38400	6975	13950	27900	55800	111600	223200	4650
F/D	A2	A3	A4	A5	A8	B1	B2	B3	B4
Baud rate	9300	18600	37200	74400	55800	3487.5	6975	13950	27900
F/D	B5	B6	C1	C2	C3	C4	C5	C6	C8
Baud rate	55800	111600	2325	4650	9300	18600	37200	74400	27900
F/D	D1	D2	D3	D4	D5	D6			
Baud rate	1743.75	3487.5	6975	13950	27900	55800			

11. Custom latch setting (offset 52)

7	6	5	4	3	2	1	0	
x	x	x	0	0	x	0	0	Default = 00 h

Bit 0: Auto latch when card seated, if = 1.

Bit 1: Auto latch when ATR success, if = 1.

Bit 2: Reserved.

Bit 3: Auto unlatch when card power down, if = 1.

Bit 4: Auto unlatch when ATR failure, if = 1.

Bit 5: Auto unlatch when reader in Auto-ATR Mode, if = 1. The bit used for in-house test. The IC card will power down automatically if the bit = 1.

Bit 6-7: Reserved

12. Serial Number (offset 65-72)

Setting by customer to identify the reader, up to 8 characters.

13. PCB Number (offset 73-80)

Setting by factory to identify the PCB version, up to 8 characters.

14. Manufacture configuration version number (offset 81)

The identification of configuration setting version, don't change this character.

1.2 Configuration Protocol

There are three ways to configure the EEPROM setting.

1. Send commands by Configuration Protocol described as below.
2. Send <09> command by the reader current protocol (USI2 or TLP...). Please consult the “HCR360 Programmer’s Manual”.
3. Use the AMC 171ADL Demo/Config program.

1.2.1 Send command: PC → Reader

<09H><ADDR><LEN><COMMAND><BCC>

where

<09H><00H><00H><3 BYTE COMMAND><BCC>

is default command format.

ADDR This field is reserved and should always be 00H.

LEN give the length of the command. If LEN is 00h that indicates the commands is 3-bytes.

BCC = <09H> ⊕ <ADDR> ⊕ <LEN> ⊕<COMMAND N>

Note:

If LEN is 00h or 03h, it indicates that 3-byte commands come next.

If LEN is 02h, it indicates that 2-byte commands come next.

In configuration protocol, if the third command byte is <00h>, you can send only 2 bytes command (LEN = 02h) and ignore the third command byte.

1.2.2 Response: Reader → PC

^ (5Eh) – ACK: Acknowledges correct completion of most recent command.

! (21h) – Invalid Command: Command was received correctly, but is not a recognized.

DATA: No wrapped data. For example, the RE<00h> command will respond the data of EEPROM from address 00h to 7Fh.

Chapter2. Configuration Setting Commands

Those configuration commands only use parity setting for None, 8 bits.

AAx (41h 41h x) — Auto ATR Enable/Disable

x = 'E' (45h enable) or 'D' (44h disable)

Auto ATR Setting

Command Form (Hex)	Auto ATR
09h 00h 00h 41h 41h 44h 4Dh	Disable (default)
09h 00h 00h 41h 41h 45h 4Ch	Enable

ATx (41h 54h x) — ATR Mode Setting

x is the setting of ATR Mode. Please refer the offset 7 of EEPROM.

ATR Mode Setting

Command Form (Hex)	ATR Mode
09h 00h 00h 41h 54h 61h 7Dh	Set ATR mode to default

BRx (42h 52h x) — Set Baud Rate

x is an ASCII number '0' – '7' (30h – 37h)

Baud Rate Setting

ASCII	Command Form (Hex)	Baud Rate
'0'	09h 00h 00h 42h 52h 30h 29h	1200
'1'	09h 00h 00h 42h 52h 31h 28h	2400
'2'	09h 00h 00h 42h 52h 32h 2Bh	4800
'3'	09h 00h 00h 42h 52h 33h 2Ah	9600
'4'	09h 00h 00h 42h 52h 34h 2Dh	19200
'5'	09h 00h 00h 42h 52h 35h 2Ch	38400(default)
'6'	09h 00h 00h 42h 52h 36h 2Fh	57600
'7'	09h 00h 00h 42h 52h 37h 2Eh	115200

BL0 (42h 4Ch 00h) — Boot Loader Program

The reader will enter the program download mode after received this command three successive times.

Command Form: <09h 00h 00h 42h 4Ch 00h 07h> or <09h 00h 02h 42h 4Ch 05h >

DFx (44h 46h x) — Default Setting

The reader will restore the configuration to default manufacture setting after received this command.

x is the choice of restore area (0 ~ 2), please see below.

Default Setting

x	Command Form (Hex)	Restore Area
0	09h 00h 00h 44h 46h 00h 0Bh	All of EEPROM
1	09h 00h 00h 44h 46h 01h 0Ah	Offset: 0 ~ 65. Exclude Serial and PCB Number. (Ver.1.C or above)
2	09h 00h 00h 44h 46h 02h 09h	Offset: 0 ~ 15 and 50 ~ 65. Exclude Tracks prefix, suffix...setting. (Recommended) (Ver.1.C or above)

The major default settings of choice 2 are as below:

Reader Protocol	USI2 protocol
Baud rate	38400, N, 8, 1
Self-Arm Mode	Disable
Tracks Enable	Transmit TK1, TK2 and TK3
Auto ATR	Disable
ATR Mode	ISO, 5V
PC/SC PnP Support	Disable
Memory Card Type	Type 0
Auto latch/unlatch	Disable
Power On Character	‘.’

ECx (45h 43h x) — Extended Configuration Report Enable/Disable

x = ‘E’ (45h enable) or ‘D’ (44h disable)

If the Extended Configuration Report Enable, the Configuration Request Command ‘#’ will return an extended 16-byte string with configuration, else return a standard one byte. Please refer the ‘#’ command in the “HCR360 Programmer’s Manual”.

Extended Configuration Report

Command Form (Hex)	Extended Configuration Report
09h 00h 00h 45h 43h 44h 4Bh	Disable, return one byte with configuration (default).
09h 00h 00h 45h 44h 43h 45h 4Ah	Enable, return 16 bytes string with configuration.

EMV (45h 4Dh 56H) — Switch IC Card Reader in EMV Mode

The reader will be switched to EMV mode after received this command. See also “ISO” command.

Switch IC Card Reader in EMV Mode

Command Form (Hex)	
09h 00h 00h 45h 4Dh 56h 57h	EMV Mode

Note: The default setting of IC card reader is ISO 7816 mode.

ESx (45h 53h x) — SS/ES Enable/Disable

x = 'E' (45h enable) or 'D' (44h disable)

ES & SS Enable/Disable

Command Form (Hex)	ES & SS
09h 00h 00h 45h 53h 44h 5Bh	Disable (default)
09h 00h 00h 45h 53h 45h 5Ah	Enable

If SS/ES enabled, the each track data of magnetic stripe card that sent by automation in self-arm mode will be wrapped by SS/ES character. This command is only effective in Self-Arming mode.

EV0 (45h 56h 00h) — EEPROM Verify

The reader will run EEPROM verification after received this command, and return the result.

For example, If the EEPROM verification is successful, the reader will responds the message “^EEPROM verified successfully”.

Command Form:

PC -> Reader: <09h 00h 00h 45h 56h 00h 1Ah> or <09h 00h 02h 45h 56h 18h>

Reader->PC: “^EEPROM verified successfully”.

FAx (46h 41h x) — Set Track 1 Prefix Code

1	x = Up to five bytes of programmable Prefix.
2	x = 00h means do not send track 1 prefix code

Set Track 1 Prefix Code

Command Form (Hex)	Track 1 Prefix Code
09h 00h 00h 46h 41h 00h 0Eh	Disable (default)

Fax (46h 61h x) — Set Track 1 Suffix Code

1	x = Up to five bytes of programmable Suffix.
2	x = 00h means do not send track 1 suffix code

Set Track 1 Suffix Code

Command Form (Hex)	Track 1 Suffix Code
09h 00h 00h 46h 61h 00h 2Eh	Disable (default)

FBx (46h 42h x) — Set Track 2 Prefix Code

1	x = Up to five bytes of programmable Prefix.
2	x = 00h means do not send track 2 prefix code

Set Track 2 Prefix Code

Command Form (Hex)	Track 2 Prefix Code
09h 00h 00h 46h 42h 00h 0Dh	Disable (default)

Fbx (46h 62h x) — Set Track 2 Suffix Code

1	x = Up to five bytes of programmable Suffix.
2	x = 00h means do not send track 2 suffix code

Set Track 2 Suffix Code

Command Form (Hex)	Track 2 Suffix Code
09h 00h 00h 46h 62h 00h 2Dh	Disable (default)

FCx (46h 43h x) — Set Track 3 Prefix Code

1	x = Up to five bytes of programmable Prefix.
2	x = 00h means do not send track 3 prefix code

Set Track 3 Prefix Code

Command Form (Hex)	Track 3 Prefix Code
09h 00h 00h 46h 43h 00h 0Ch	Disable (default)

Fcx (46h 63h x) — Set Track 3 Suffix Code

1	x = Up to five bytes of programmable Suffix
2	x = 00h means do not send track 3 suffix code

Set Track 3 Suffix Code

Command Form (Hex)	Track 3 Suffix Code
09h 00h 00h 46h 63h 00h 2Ch	Disable (default)

IRx (49h 52h x) — Set Magnetic Stripe Card Read Direction

x = ASCII '0', '1' or '2' (30h – 32h)

Read Direction Setting

ASCII	Command Form (Hex)	Read Direction
0	09h 00h 00h 49h 52h 30h 22h	Read in withdraw (default)
1	09h 00h 00h 49h 52h 31h 23h	Read in insert
2	09h 00h 00h 49h 52h 32h 20h	Read in both way

ISO (49h 53h 4Fh) — Switch IC Card Reader in ISO 7816 Mode

The IC card reader will be switched to ISO 7816 mode after received this command. See also “EMV” command.

Switch IC Card Reader in ISO 7816 Mode

Command Form (Hex)	
09h 00h 00h 49h 53h 4Fh 5Ch	ISO 7816 Mode (default)

LAx (4Ch 41h x) — Auto Latch while ATR Success Enable/Disable

x = ‘E’ (45h enable) or ‘D’ (44h disable)

Auto Latch while ATR Success Setting

Command Form (Hex)	Auto Latch while ATR Success
09h 00h 00h 4Ch 41h 44h 40h	Disable (default)
09h 00h 00h 4Ch 41h 45h 41h	Enable

LCx (4Ch 43h x) — LRC Enable/Disable

x = E (45h enable) or D (44h disable)

LRC Enable/Disable Setting

Command Form (Hex)	LRC
09h 00h 00h 4Ch 43h 44h 42h	Disable (default)
09h 00h 00h 4Ch 43h 45h 43h	Enable

If LRC enabled, each track data that sent by automation in self-arm mode will be followed a LRC character. This command is only effective in Self-Arming mode.

LSx (4Ch 53h x) — Auto Latch while Card Seated Enable/Disable

x = ‘E’ (45h enable) or ‘D’ (44h disable)

Auto Latch while Card Seated Setting

Command Form (Hex)	Auto Latch
09h 00h 00h 4Ch 53h 44h 52h	Disable (default)
09h 00h 00h 4Ch 53h 45h 53h	Enable

MCx (4Dh 43h x) — Set Default Memory Card Type

x is an ASCII number '0' – '5' (30h – 35h)

Memory Card Type

ASCII	Cards
'0'	SLE4406, SLE4436, ST1305, Inphone 15, Inphone 25C, GPM103
'1'	SLE4418/4428
'2'	SLE4404, GPM416/896, AT88SC101, MS101/102/416, AMMI 101/102
'3'	SLE4432/4442
'4'	3 Byte I2C Card. Atmel 24C01A/24C02/24C04/24C08. SGC Thomson ST14C02C ...
'5'	4 Byte I2C Card. Atmel 24C64/24C256/24C512; Microchip 24LC65; ZeiControl ZCM64 ...

Memory Card Type Setting

Command Form (Hex)	Memory Card Type
09h 00h 00h 4Dh 43h 30h 37h	Type 0
09h 00h 00h 4Dh 43h 31h 36h	Type 1

PCx (50h 43h x) — Set Host Protocol

x is an ASCII number '0' – '2', '6' (30h – 32h, 36h).

Protocol Setting

ASCII	Command Form (Hex)	Protocol
0	09h 00h 00h 50h 43h 30h 2Ah	USI2 (default)
1	09h 00h 00h 50h 43h 31h 2Bh	TLP224
2	09h 00h 00h 50h 43h 32h 28h	TLP-224 Turbo
6	09h 00h 00h 50h 43h 36h 2Ch	USI1

Note: This command will cause the reader warm-reset.

PFx (50h 46h x) — Custom PPS FD Setting

x is the Custom PPS FD, please refer to the offset 51 of EEPROM.

Custom PPS FD Setting

Command Form (Hex)	Custom PPS FD Setting
09h 00h 00h 50h 46h 00h 1Fh	Disable (default)
09h 00h 00h 50h 46h 18h 07h	18h (115200bps)

PHx (50h 48h x) — Set Power On Character

x is the power on character, default is ':'.

Set Power On Character

Command Form (Hex)	Power On Character
09h 00h 00h 50h 48h 3Ah 2Bh	‘.’ (default)
09h 00h 00h 50h 48h 00h 11h	Disable Power On Character

PNx (50h 4Eh x) — Set PCB Number

x means an up to 8-byte string.

Set PCB Number to “12345678”

Command Form (Hex)	PCB Number
09h 00h 0Ah 50h 4Eh 31h 32h 33h 34h 35h 36h 37h 38h 15h	“12345678”

PTx (50h 54h x) — Set Host Parity

x is an ASCII number ‘0’ – ‘4’ (30h – 34h).

Parity Setting

ASCII	Command Form (Hex)	Protocol
0	09h 00h 00h 50h 54h 30h 3Dh	Even, 7bits
1	09h 00h 00h 50h 54h 31h 2Ch	Odd, 7bits
2	09h 00h 00h 50h 54h 32h 2Fh	Mark, 7bits
3	09h 00h 00h 50h 54h 33h 2Eh	Space, 7bits
4	09h 00h 00h 50h 54h 34h 39h	None, 8bits (default)

Note: This command only use for USI1 protocol.

PPx (50h 50h x) — Plug & Play Enable/Disable (Used for PC/SC)

x = ‘E’ (45h enable) or ‘D’ (44h disable)

Plug & Play Setting

Command Form (Hex)	Plug & Play
09h 00h 00h 50h 50h 44h 4Dh	Disable (default)
09h 00h 00h 50h 50h 45h 4Ch	Enable (PC/SC mode)

PSx (50h 53h x) — Custom PPS Setting

x is the Custom PPS parameter, please refer to the offset 50 of EEPROM.

Custom PPS Setting

Command Form (Hex)	Custom PPS Setting
09h 00h 00h 50h 53h 00h 0Ah	Disable (default)

RE0 (52h 45h 00H) — Read EEPROM Data

The reader will return all EEPROM data after received this command.

For example:

PC -> Reader: <09h 00h 00h 52h 45h 00h 1Eh> or <09h 00h 02h 52h 45h 1Ch>

Reader->PC: BE 0C 05 00 00 00 00 00 61 30 34 30 31 30 37 00 00
 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0D 00
 00 00 00 00 00 00 00 00 00 00 3A 48 43 52 33 36 30 00
 00 30 30 30 30 30 30 30 30 30 31 32 33 34 35 36 37
 38 01 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

RP0 (52h 50h 00H) — Request Current Protocol

The reader will return current protocol and baud rate to host after received this command.

For example:

PC -> Reader: <09h 00h 00h 52h 50h 00h 0Bh> or <09h 00h 02h 52h 50h 09h>

Reader->PC: 30h 35h

where The first byte 30h means protocol 0 (i.e. USI2)

 The second byte 35h means baud rate 5 (i.e. 38400 bps)

SAX (53h 41h x) — Self-Arm Mode Enable/Disable

x = E(45h enable) or D(44h disable)

Self-Arm Mode Setting

Command Form (Hex)	Self-Arm Mode
09h 00h 00h 53h 41h 44h 5Fh	Disable (default)
09h 00h 00h 53h 41h 45h 5Eh	Enable

SEx (53h 45h x) — Self-Arm Mode Data Envelope Enable/Disable

x = E(45h enable) or D(44h disable)

Note: In the self-arm mode, the default is not to send any protocol information with the magnetic stripe card data.

Self-Arm Mode Data Envelope Setting

Command Form (Hex)	Self-Arm Mode Data Envelope
09h 00h 00h 53h 45h 44h 5Bh	Disable. The data is not wrapped in the current protocol envelope (default).
09h 00h 00h 53h 45h 45h 5Ah	Enable. The data is wrapped in the current protocol envelope.

SNx (53h 4Eh x) — Set Serial Number

x means an up to 8-byte string.

Set Serial Number to “10000001”

Command Form (Hex)	Serial Number
09h 00h 0Ah 53h 4Eh 31h 30h 30h 30h 30h 30h 31h 1Eh	“10000001”

SPx (53h 50h x) — Set Track Separator

1	x = Hex Code
2	x = 00h means do not send separator code

Track Separator Setting

Command Form (Hex)	Track Separator
09h 00h 03h 53h 50h 00h 09h	Disable
09h 00h 03h 53h 50h 0Dh 04h	0Dh, <CR> (default)
09h 00h 03h 53h 50h 2Bh 22h	2Bh, <+>
09h 00h 03h 53h 50h 3Bh 32h	3Bh, <;>

SRx (53h 52h x) — Sensor Auto-Reporting Enable/Disable

x = E (45h enable) or D (44h disable)

Table 5-12. Set Sensor Enable/Disable

Command Form (Hex)	Sensor
09h 00h 00h 53h 52h 44h 4Ch	Disable (default)
09h 00h 00h 53h 52h 45h 4Dh	Enable

TAx (54h 41h x) — Set Track 1 ID

1	x = Hex Code
2	x = 00h means do not send Track 1 ID

Track 1 ID Setting

Command Form (Hex)	Track 1 ID
09h 00h 00h 54h 41h 00h 1Ch	Disable (default)
09h 00h 00h 54h 41h 31h 2Dh	‘1’ (31h)

TBx (54h 42h x) — Set Track 2 ID

1	x = Hex Code
2	x = 00h means do not send Track 2 ID

Track 2 ID Setting

Command Form (Hex)	Track 2 ID
09h 00h 00h 54h 42h 00h 1Fh	Disable (default)
09h 00h 00h 54h 42h 32h 2Dh	'2' (32h)

TCx (54h 43h x) — Set Track 3 ID

1	x = Hex Code
2	x = 00h means do not send Track 3 ID

Track 3 ID Setting

Command Form (Hex)	Track 3 ID
09h 00h 00h 54h 43h 00h 1Eh	Disable (default)
09h 00h 00h 54h 43h 33h 2Dh	'3' (33h)

TKx (54h 4Bh x) — Set Transmitting Data Tracks

x is an ASCII number (1-7)

Table 5-8. Transmit Tracks Setting

ASCII	Command Form (Hex)	Transmit Tracks
1	09h 00h 00h 54h 4Bh 31h 27h	Track 1
2	09h 00h 00h 54h 4Bh 32h 24h	Track 2
3	09h 00h 00h 54h 4Bh 33h 25h	Track 1 & 2
4	09h 00h 00h 54h 4Bh 34h 22h	Track 3
5	09h 00h 00h 54h 4Bh 35h 23h	Track 1 & 3
6	09h 00h 00h 54h 4Bh 36h 20h	Track 2 & 3
7	09h 00h 00h 54h 4Bh 37h 21h	Track 1, 2 & 3 (default)

UAx (55h 41h x) — Auto Unlatch while ATR Failure (Enable/Disable)

x = 'E' (45h enable) or 'D' (44h disable)

Auto Unlatch while ATR Failure Setting

Command Form (Hex)	Setting
09h 00h 00h 55h 41h 44h 59h	Disable (default)
09h 00h 00h 55h 41h 45h 58h	Enable

ULx (55h 4Ch x) — Auto Unlatch while reader in Auto-ATR Mode (Enable/Disable)

x = 'E' (45h enable) or 'D' (44h disable)

Auto Unlatch while reader in Auto-ATR Mode

Command Form (Hex)	Setting
09h 00h 00h 55h 4Ch 44h 54h	Disable (default)
09h 00h 00h 55h 4Ch 45h 55h	Enable

Note: This command used for in-house test only. The IC card will power down automatically if this command enable.

UPx (55h 50h x) — Auto Unlatch while ICC Power Down (Enable/Disable)

x = 'E' (45h enable) or 'D' (44h disable)

Auto Unlatch while ICC Power Down Setting

Command Form (Hex)	Setting
09h 00h 00h 55h 50h 44h 48h	Disable (default)
09h 00h 00h 55h 50h 45h 49h	Enable