

Programming Reference Guide

SWH-PCI HEAD

3 Track Magnetic Stripe Reader **with integrated encryption**

ver 1.1

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For More Information

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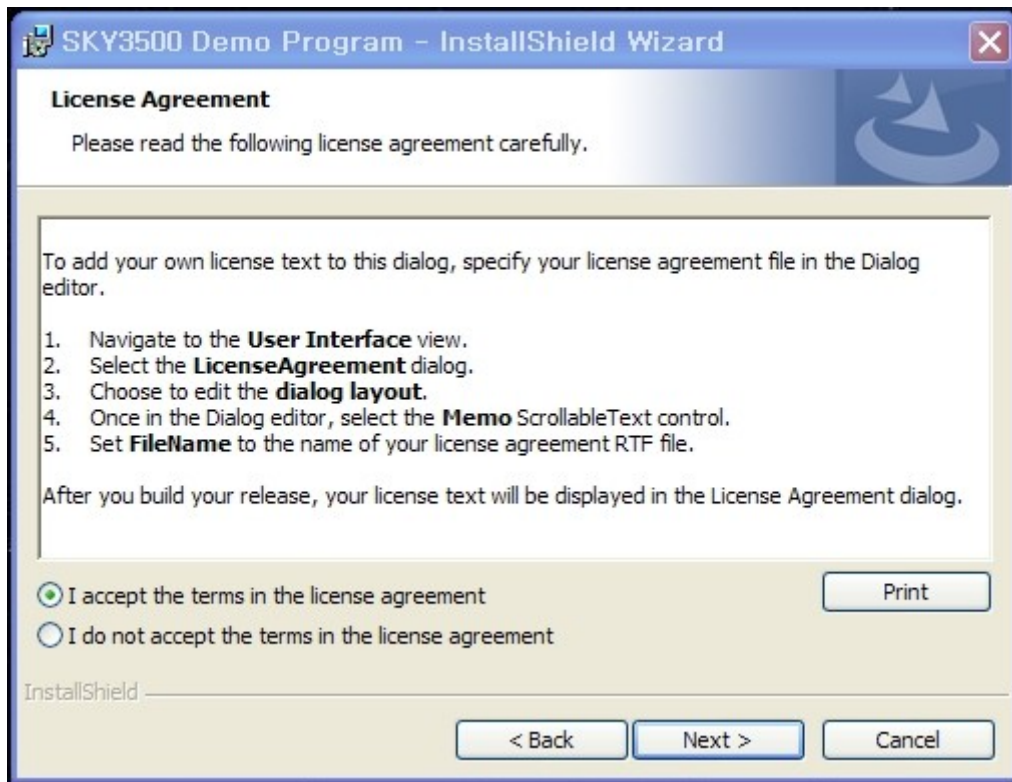
1 PROGRAMMING REFERENCE

SECTION 1 INSTALLATION

The MSR is installed via an InstallShield application. Within the Disk1 folder, double click on the 'setup.exe' file to launch the installation. The following screen shots will be a guide through the installation:



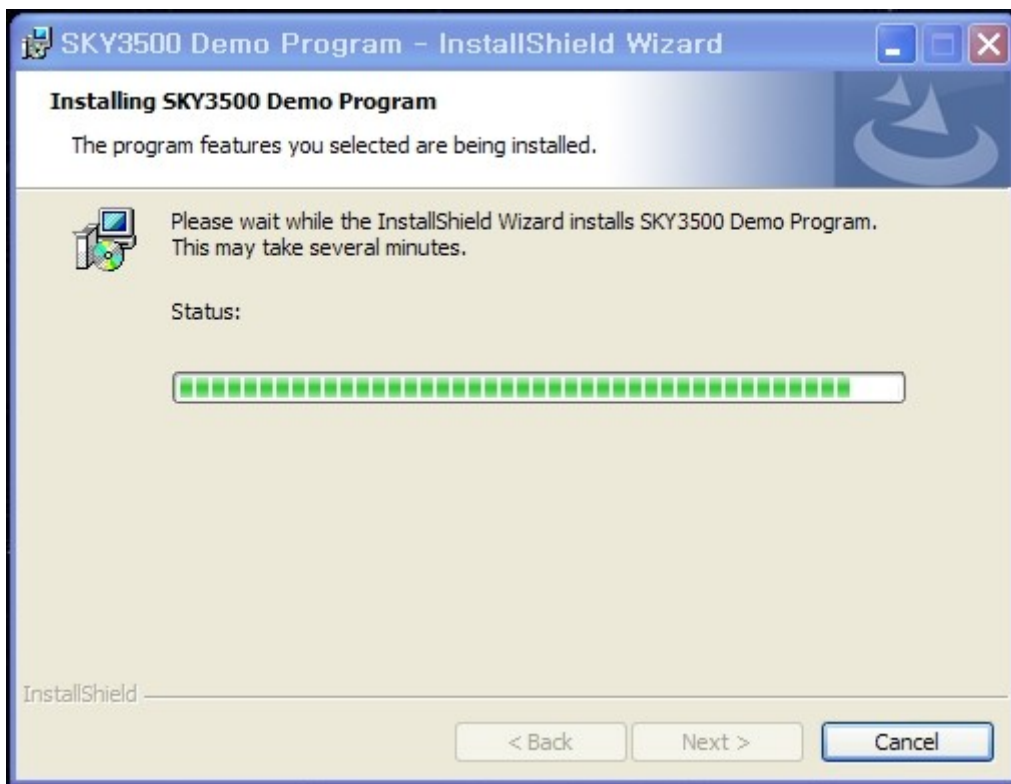
The Initial welcome screen for the installation of the MSR test program.



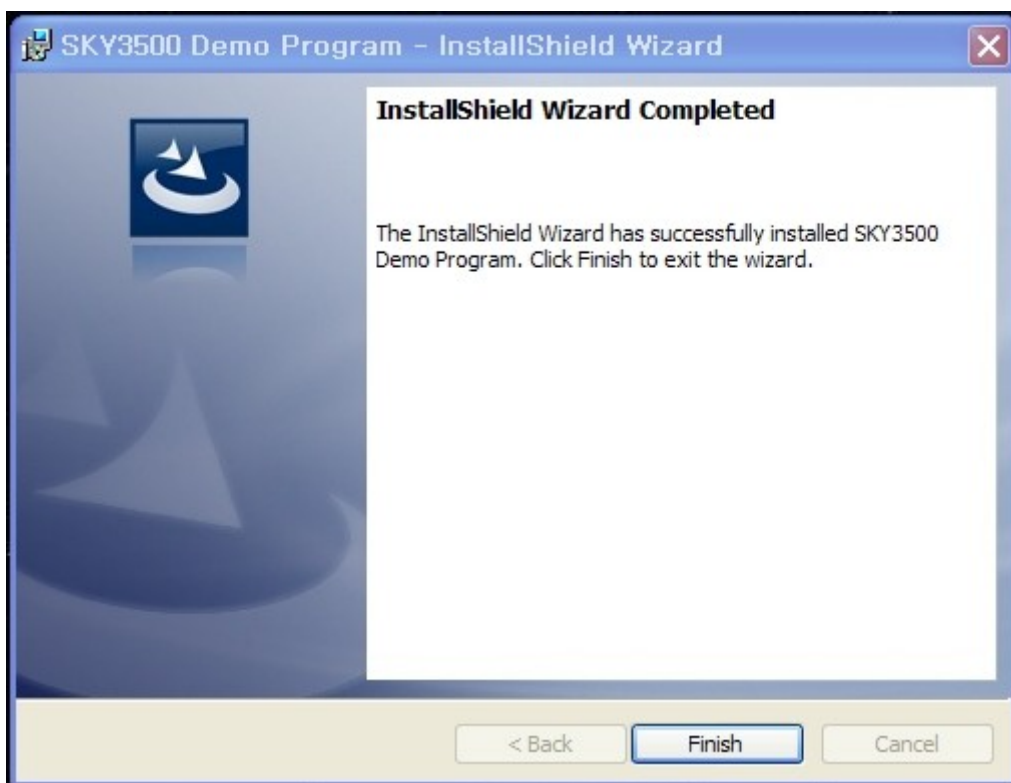
The license agreement display for acceptance or cancellation for the installation of the MSR test program.



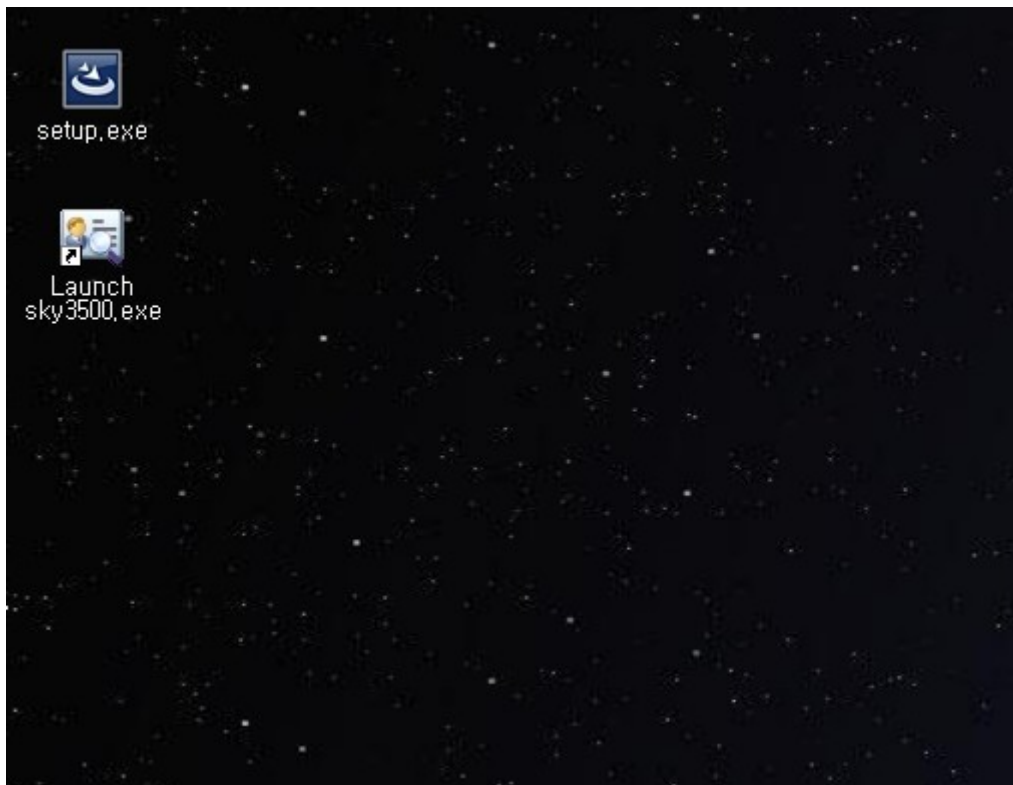
The setup type for the installation of the MSR test program is 'Complete' or 'Custom'. The 'Complete' setup type will proceed to install all components for the SKY3500 MSR.



The current progressing displayed during installation of the MSR Test program.



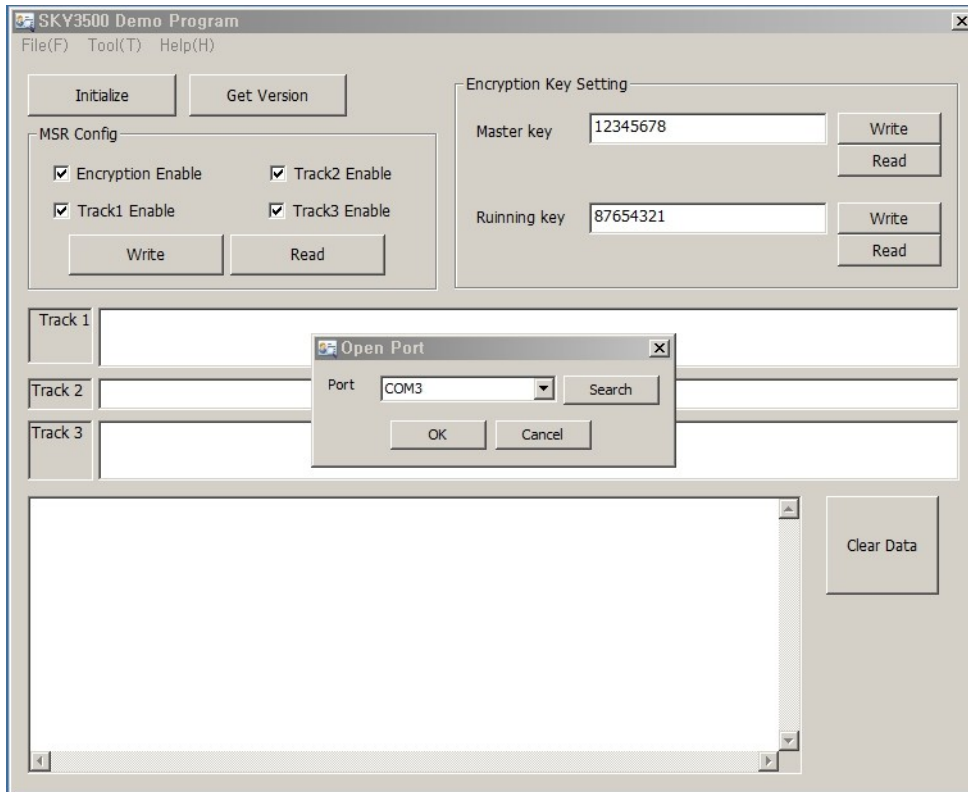
The setup complete will be displayed for a successful installation of the MSR Test program.



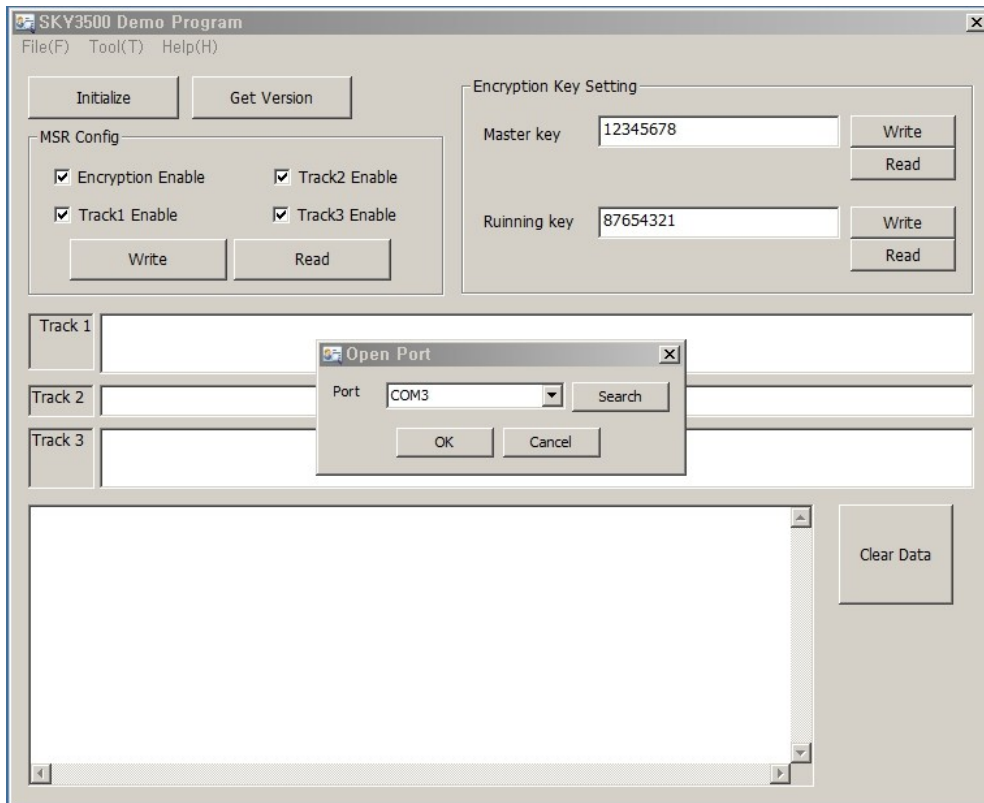
After installation, 'Launch sky3500.exe' will be generated within the MSR target installation folder.

SECTION 2 UTILITY

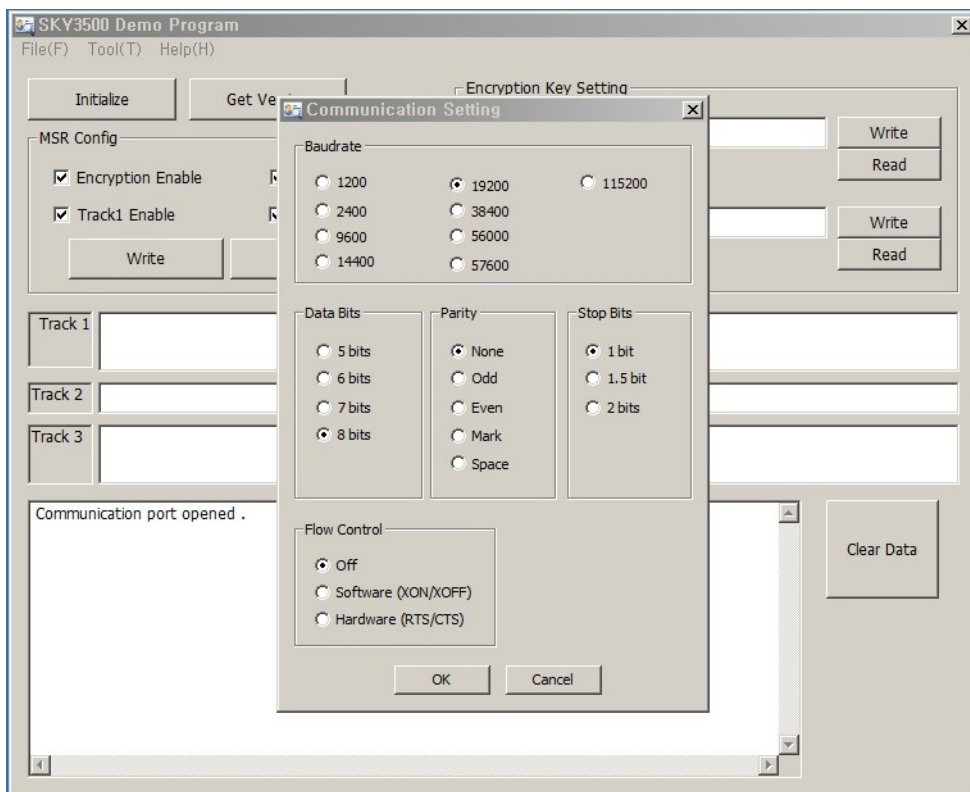
The MSR Utility application performs testing of the MSR SKY3500 device object along with the management of security key. Within the MSR target installation folder, double click on the 'Launch sky3500.exe' file to launch the MSR Utility application.



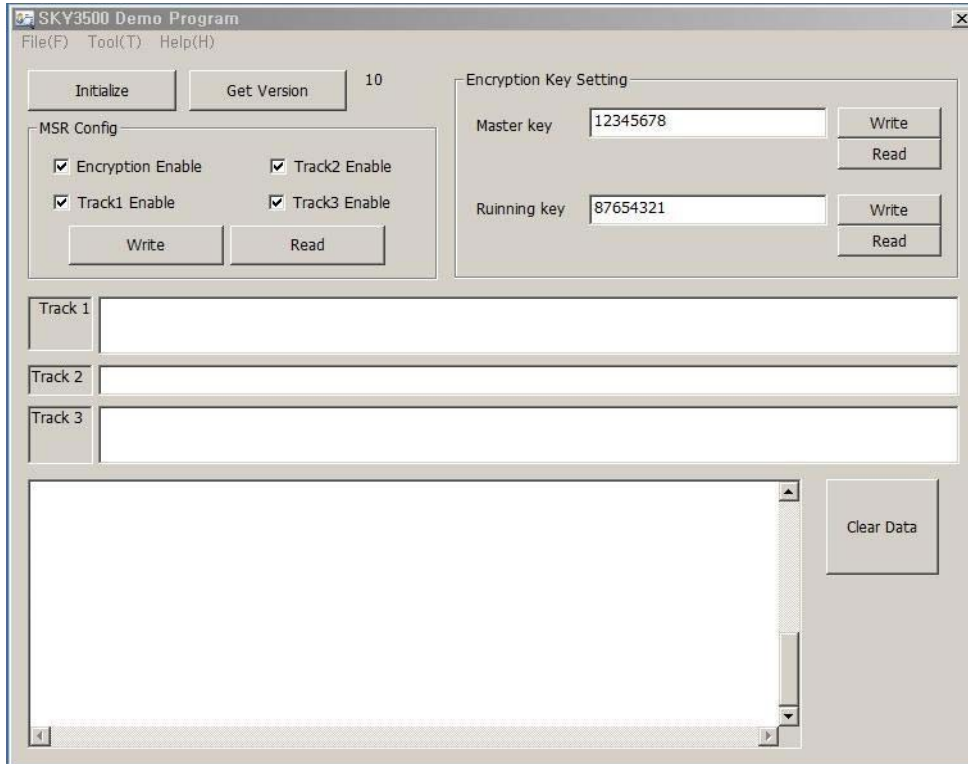
The SKY3500 MSR Utility application primary screen.



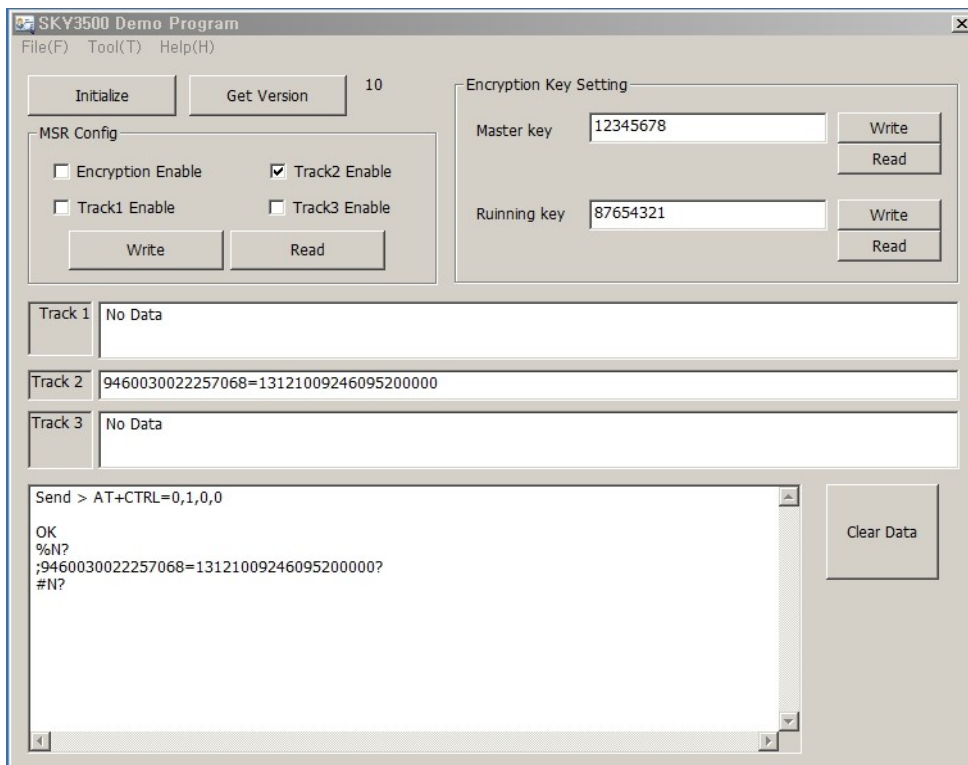
The MSR Communication Port selection within the combo box is to first be selected for the USB connected SKY3500 MSR device by clicking 'File -> Connect'..



Communication setup environment will be displayed when click 'Tool -> Communication Setting'



The 'Clear Data' button will clear all displayed data fields.



By disable 'Encryption Enable' option, it will act as SKY3500_MSR-1 mode(representing the Non-Encrypted reader) again. Clicking the 'Write' button will launch current set environment including Track1/2/3/ Enable/Disable. For example, after set Track1/2/3/ Enable/Disable. For example, after set Track1/2/3/ Enable/Disable and write to register, the disabled track will be displayed as 'No Data' while the track disable.

SECTION 3 PROGRAMMER'S USER GUIDE

3.1 USART Interface

Initialize

Terminal Command : "AT"<CR>

SKY3500 Response : <CR><LF>

SKY3500 Response : "OK"<CR><LF>

Read Version

Terminal Command : "AT+VER?"<CR>

SKY3500 Response : <CR><LF>

SKY3500 Response : "+ VER:01"<CR><LF>

SKY3500 Response : <CR><LF>

SKY3500 Response : "OK"<CR><LF>

Write configuration

Terminal Command : "AT+CTRL=1,1,1,1"<CR>

SKY3500 Response : <CR><LF>

SKY3500 Response : "OK"<CR><LF>

AT+CTRL=[Enable Track1],:[Enable Track2],:[Enable Track3],:[Enable Encryption]

Enable Track1 : '0' or '1' ('1' : Enable Track1, '0':Disable Track1)

Enable Track2 : '0' or '1' ('1' : Enable Track2, '0':Disable Track2)

Enable Track3 : '0' or '1' ('1' : Enable Track3, '0':Disable Track3)

Enable Encryption: '0' or '1' ('1' : Enable Encryption, '0':Disable Encryption)

Read configuration

Terminal Command : "AT+CTRL?"<CR>

SKY3500 Response : <CR><LF>

SKY3500 Response : "+CTRL:1,1,1,1"<CR><LF>

SKY3500 Response : <CR><LF>

SKY3500 Response : "OK"<CR><LF>

+CTRL:[Enable Track1], :[Enable Track2], :[Enable Track3], :[Enable Encryption]
Enable Track1 : '0' or '1' ('1' : Enable Track1, '0':Disable Track1)
Enable Track2 : '0' or '1' ('1' : Enable Track2, '0':Disable Track2)
Enable Track3 : '0' or '1' ('1' : Enable Track3, '0':Disable Track3)
Enable Encryption: '0' or '1' ('1' : Enable Encryption, '0':Disable Encryption)

Read Status

Terminal Command : **"AT+STAT?"<CR>**

SKY3500 Response : **<CR><LF>**

SKY3500 Response : **" +STAT:0,0,0,1,1,1" <CR><LF>**

SKY3500 Response : **<CR><LF>**

SKY3500 Response : **"OK" <CR><LF>**

+STAT:[Track1 Error], [Track2 Error], [Track3 Error], [Track1 Ready], [Track2 Ready], [Track3 Ready]
Track1 Error : '0' or '1' ('1' : Track1 Error, '0': Track1 Normal)
Track2 Error : '0' or '1' ('1' : Track2 Error, '0': Track2 Normal)
Track3 Error : '0' or '1' ('1' : Track3 Error, '0': Track3 Normal)
Track1 Ready : '0' or '1' ('1' : Data Ready, '0': Not Ready)
Track2 Ready : '0' or '1' ('1' : Data Ready, '0': Not Ready)
Track3 Ready : '0' or '1' ('1' : Data Ready, '0': Not Ready)

Write Master Key

Terminal Command : **"AT+MKEY=01234567"<CR>**

SKY3500 Response : **<CR><LF>**

SKY3500 Response : **"OK" <CR><LF>**

Read Master Key

Terminal Command : **"AT+MKEY?"<CR>**

SKY3500 Response : **<CR><LF>**

SKY3500 Response : **" +MKEY:01234567" <CR><LF>**

SKY3500 Response : **<CR><LF>**

SKY3500 Response : **"OK" <CR><LF>**

Write Running Key

Terminal Command : "AT+RKEY=01234567"<CR>

SKY3500 Response : <CR><LF>

SKY3500 Response : "OK"<CR><LF>

Read Running Key

Terminal Command : "AT+RKEY?"<CR>

SKY3500 Response : <CR><LF>

SKY3500 Response : "+RKEY:01234567"<CR><LF>

SKY3500 Response : <CR><LF>

SKY3500 Response : "OK"<CR><LF>

Data Sequence

The reader is always transmitting the card data immediately after swiping a card.

Start Sentinel : Data will be distinguished by '%', ';', '#' as Start Sentinel.

User data : Card data for each track (if data is error, then 'E')

Track data End Sentinel : '?'

Carriage Return : CR (0x0d)

Line Feed : LF (0x0a)

Description	SS(Start sentinel)	ES(End sentinel)
Track 1	%	?
Track 2	;	?
Track 3	#	?

Track1 Data

Data Normal => '%' <Track Data> '? '<CR><LF>

Data Error => '%' 'E' '?' <CR><LF>

Track2 Data

Data Normal => ';' <Track Data> '? '<CR><LF>

Data Error => ';' 'E' '?' <CR><LF>

Track3 Data

Data Normal => '#' <Track Data> '?' <CR><LF>

Data Error => '# 'E' '?' <CR><LF>

3.2 SPI Interface

Register Map

Address	Register	Reset Value	B7	B6	B5	B4	B3	B2	B1	B0
0x00	STATUS (Read Only)	0x00	0	0	E3	E2	E1	RDY3	RDY2	RDY1
0x01	CTRL	0x07	0	0	0	0	ENC	EN3	EN2	EN1
0x02	Version (Read Only)	0x01	0	0	0	0	0	0	0	1

RDY1 : Track1 Data Ready

RDY2 : Track2 Data Ready

RDY3 : Track3 Data Ready

E1 : Track1 Error

E2 : Track2 Error E3 :

Track3 Error EN1 :

Track1 Enable EN2 :

Track2 Enable EN3 :

Track3 Enable

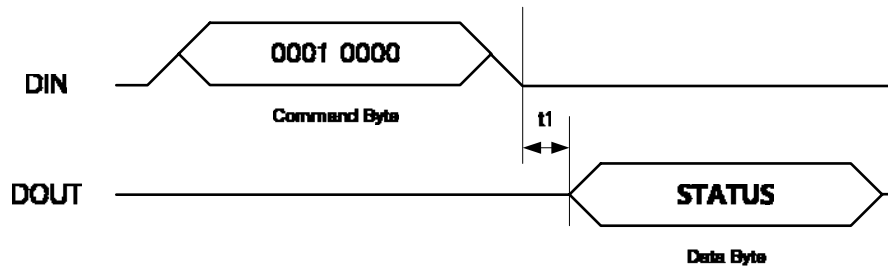
ENC : Encryption Enable

Command Definition

Command	Description	1 st Command
RREG	Read from Register nnnn	0001 nnnn (1xh)
WREG	Write to Register nnnn	1001 nnnn (9xh)
RMKEY	Read Master Key	0010 0001 (21h)
WMKEY	Write Master Key	1010 0001 (a1h)
RRKEY	Read Running Key	0010 0010 (22h)
WRKEY	Write Running Key	1010 0010 (a2h)
RDATA	Read Track(nnnn) Data	0100 nnnn (4xh)

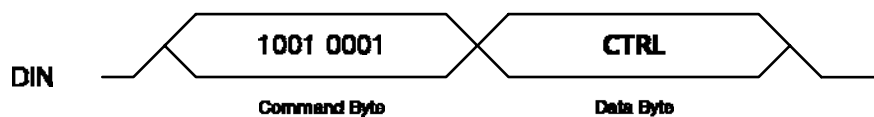
Read from Register (RREG)

Command Byte is "0001 nnnn", where nnnn is address of register. You can read Data byte after t1 by execute Command byte.



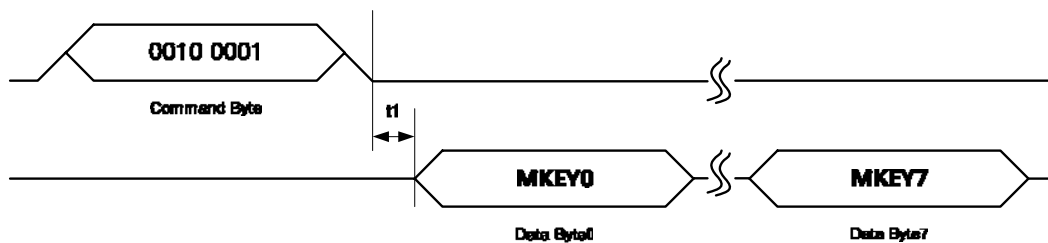
Write to Register (WREG)

Command Byte is "1001 nnnn", where nnnn is address of register. You can write Data byte just after execute Command byte.



Read Master Key (RMKEY)

After Command byte & t1 time duration, you can read 8 byte Master key sequentially.



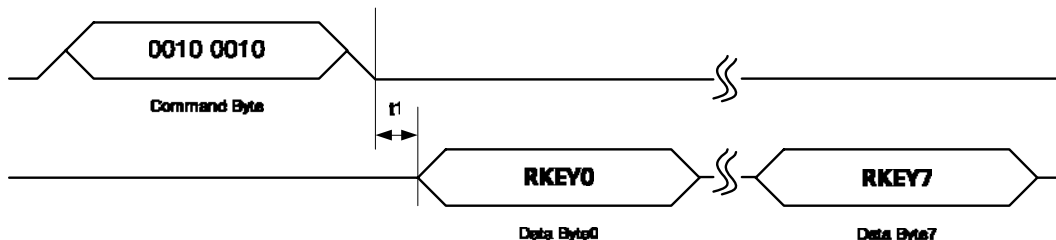
Write Master Key (WMKEY)

Just after Command byte, 8byte Master key need to be written.



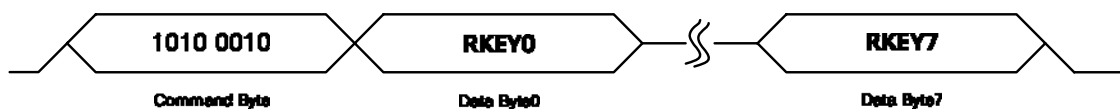
Read Running Key (RRKEY)

After Command byte & t1 time duration, you can read 8 byte Master key sequentially.



Write Running Key (WRKEY)

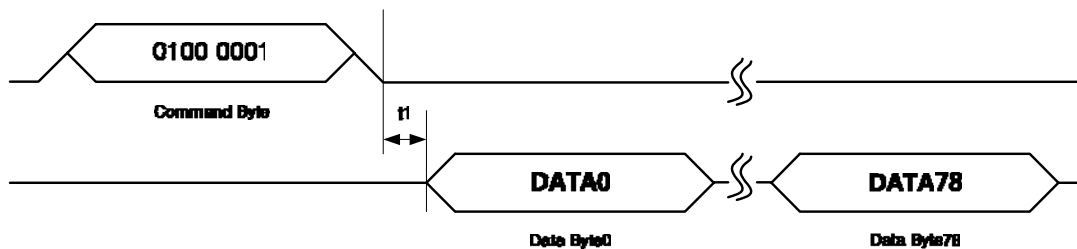
Just after Command byte, 8byte Running key need to be written.



Read Track Data (RDATA)

After Command byte & t1 time duration, you can read "n" byte Track data sequentially.

The successive data contents will be 79byte for Track1, 40byte for track2,107byte for Track3.



(end)