

# *Mini 400*

**Portable magstripe reader with rechargeable Battery**

## **User's Manual**

**Revision B**

**2012-10-09**

## Standard Package:

- a. **Mini400**
- b. **CD-ROM**
- c. **Chain Sling**
- d. **USB Cable**

**Trademark:**

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**statement:**

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**Note:**

This manual display screen pictures and other pictures for reference only, and the actual product may vary.

# Connections

Specifications.....	3
Operational Description.....	5
Card Data Format.....	6
Communication Protocol.....	7

## FCC COMPLIANCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### **Read the instructions on your device before installing batteries**

1. Insert batteries into your device properly, with the (+) and (-) terminals aligned correctly.
2. Always fully charge your batteries before use.
3. When you charge the batteries for the first time, or if the batteries have been stored for a long time, it normally takes about 3 charge and discharge cycles for the batteries to regain full capacity.
4. It is normal for batteries to become hot during charging and they will gradually cool down to room temperature after fully charged.
5. Store the batteries in a cool and dry place.
6. Remove batteries from the electrical device if the device is not going to be used for a long time.
7. Keep battery contact surfaces and battery compartment contacts clean by rubbing them with a clean pencil eraser or a rough cloth each time you replace batteries.
8. If the performance of the batteries decrease substantially, it is time to replace the batteries.
9. Keep batteries away from children. If swallowed, contact a physician at once.

# Specifications

## Magnetic Stripe Card :

TRACK 1 / IATA / 210 bpi / 79 Alphanumeric Characters

TRACK 2 / ABA / 75 bpi / 40 Numeric Characters

TRACK 3 / Thrift / 210 bpi / 107 Numeric Characters

## RS232 Interface :

RS232 , Half-Duplex , 8N1 , 9600 bps

## USB Interface

Full compliance with the USB Specification V 1.1

The device uses a Virtual Serial Port Driver, making it appear to have the software like a standard RS232 Serial Port.

## CLOCK :

Real Time Clock (RTC) module and back-up capacitor

## Memory Size for Storing Data :

CMOS Serial Flash Memory 2M bytes

Up to 2048 records ( 256 Bytes / Record )

## Battery Power :

Rechargeable Lithium-ion Polymer Battery

Nominal Capacity: 250 mAH ( Typical )

Nominal Voltage: 3.7 V

Cycle Life: 300 cycles ( at least )

Low Battery Detect and Built-in Quick Charge Circuit

## Power Supply for Charge :

DC 5V , 200mA ( for RS-232 ) or USB Powered

Charging duration time : 1.5 ~ 2.5 hr

Working duration time after charge : 48 hr ( always power on )

## Environment :

Operating Temp : -0°C ~ +60°C ( Discharge )

-0°C ~ +45°C ( Charging )

Storage Temp : -10 ~ +65°C

Humidity : 10 ~ 90 % relative

## Dimensions :

L 78 x W 20 x H 26.5 mm

## Mounting :

Portable or Any surface

# Display Information

## Operational Indicator

Status	Green LED	Red LED	Buzzer *1	Read Card
Power On	Take turns blink 2 times		Beep. Beep.	X
Auto Power Off	Take turns blink 2 times		Beep. Beep.	X
Ready	On	Off	X	O
Read OK	Blink 1 times	Off	Beep.	X
Read Error	Off	Blink 1 times	Beep. Beep. Beep.	X
Inactive Battery	Off	Blink 3 times	Beep. Beep. Beep.	X
RTC No Setting	Take turns blink		X	X
Memory will be Full	Slow Blink	Off	X	O
Memory Full	Fast Blink	Off	X	X
Memory bad	Off	Blink	X	X
Firmware Management mode	Off	On	X	X

## Battery Indicator

Status	Green LED	Red LED
Power On	Take turns blink 2 times	
Standby	Off	Off
Precharge in progress	Off	Slow Blink
Fast charge in progress	Off	On
Charge done	On	Off
Charge suspend (temperature ,Timer Fault)	Off	Fast Blink
Low Battery	Blink	Off
Inactive Battery	Take turns blink 2 times	

# Operational Description

## 1. Powered by Battery

For normal use, the unit is powered by battery. Push the Power Switch Button for about 1.5 seconds to turn on the unit. Also push the Power Switch Button for about 1.5 seconds to turn off the unit. After the unit is turned on, the power would be turned off automatically if there is no swiping a card on the unit in 30 seconds. This means the unit would be turned off if no swiping a card again in every 30 seconds after every card swiping. It would have Low Battery Detect/Warning indication when the unit is powered by battery.

## 2. Powered by Cable

When the unit is connected with the PC through the communication Cable and the PC is running Mini400 software and open the COM PORT for the unit, then the unit will be turned on in about 0.5 second by the PC through the RS-232 COM PORT. Then you can do the unit Setting, Configuration or data downloading. When the software closes the COM PORT or exits, the power turn off from the PC immediately. When powered by cable from PC, the Power Switch would have no function and the unit would have no Low Battery Detect/Warning function.

## 3. Real Time Clock Setting

Before start using the unit, you must set the Real Time Clock (RTC) inside the unit to your local time. If there is no battery for quite a while or it is powered by cable for quite a while this would cause Real Time clock (RTC) malfunctioned due to no power supply. When put on the battery to turn on the unit and the Red/Green LED take turns blinking, this means the RTC is malfunctioning and you must do the RTC time setting before you use the unit.

## 4. Low Battery Detect

When powered by battery, it would have Low Battery Detect function. When the battery goes low, the LED would flash green once every 2 second and you must charge battery immediately, otherwise, the unit would shut down any time without pre-warning.

## 5. Charge Mode

There are three different charge modes for Mini400: low battery mode, real time mode and manual charge mode. Low battery charge mode is used when the battery hits low voltage, it starts to be charged automatically. Real time charge mode is whenever the Mini400 cable is connected to USB or Power adapter, it would be charged immediately. Manual charge mode is the charge is controlled by Demo software. User can use the software to start or stop charging.

## 6. Charge Status Indication

When Mini400 is in charge, Battery Status Indicator light show slow blink red that means the battery is in the pre-charge. When Battery Status Indicator light turns to red, it means the battery is in charge status. When Battery Status Indicator light turns to green, it means the charge is finished. If the charge process has unusual situation, Battery Status Indicator light will show red fast blink. If Mini400 cable is connected, and battery is not in charge, Battery Status Indicator light will turn off. The default set mode is on low battery charge mode.

## 7. Memory Low Warning

Log database memory is almost full (>90%). Adding new records is still possible but you are advised to free up the log database memory by uploading the data to the PC as soon as possible.

## 8. Memory Full Warning

Log database memory is full. You not be able to add any new records. Free the log database memory by uploading the data to the PC.

## 9. Firmware Management mode (FMM)

FMM allows you to quickly upgrade your Mini400's internal firmware via com port and also check validity of currently loaded firmware. Contact your dealer for most recent firmware upgrade files.

# Card Data Format

## CARD DATA STRING

TRACK 1			TRACK 2			TRACK 3			DATE & TIME					
SS	TRACK1 DATA	ES	SS	TRACK2 DATA	ES	SS	TRACK3 DATA	ES	SP	DATE	SP	TIME	SP	WEEK
%	TRACK1 DATA	?	;	TRACK2 DATA	?	+	TRACK3 DATA	?		DATE		TIME		WEEK

### TRACK 1

%	CARD ID	?
---	---------	---

1. SS is the start sentinel ( % ).
2. ES is the end sentinel ( ? ).
3. Card Id up to 76 alphanumeric data characters.

Track 1 IATA	
Bits Per Inch	210
Bits Per Character	7
Alphanumeric Characters	79

### TRACK 2

;	CARD ID	?
---	---------	---

1. SS is the start sentinel ( ; ).
2. ES is the end sentinel ( ? ).
3. Card Id up to 37 numeric data characters.

Track 2 ABA	
Bits Per Inch	75
Bits Per Character	5
Numeric Characters	40

### TRACK 3

+	CARD ID	?
---	---------	---

1. SS is the start sentinel ( + ).
2. ES is the end sentinel ( ? ).
3. Card Id up to 104 numeric data characters.

Track 3 Thrift	
Bits Per Inch	210
Bits Per Character	5
Numeric Characters	107

### DATE&TIME&WEEK

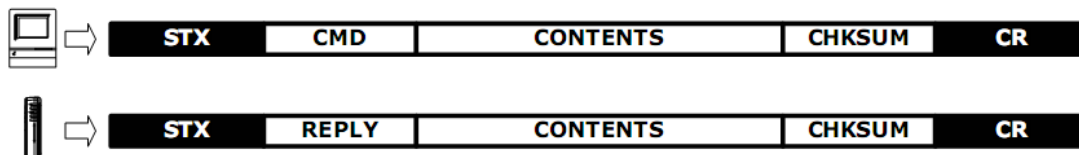
SP	DATE	SP	TIME	SP	WEEK
	YYYY/MM/DD	SP	HH:MM:SS	SP	W

1. SP is the SPACE characters ( 20h ).
2. TIME is 24hr .

WEEK	
SUN	1
MON	2
TUE	3
WED	4
THU	5
FRI	6
SAT	7

# Communication Protocol

## Packet Format



ITEM	Dec	Hex	Control Key	Function
<b>STX</b>	2	02	^B	Start of Text
<b>CMD</b>	Ascii	Ascii	Ascii	Command Code
<b>CONTENTS</b>	Ascii	Ascii	Ascii	Contents Data
<b>CHKSUM</b>	Ascii	Ascii	Ascii	Check Sum
<b>CR</b>	13	0d	^M	Carriage Return
<b>REPLY</b>	(78) 65	(4e) 41	(N) A	(Negative) Acknowledge

## Command Index Table

Topic	Command	Contents	Description
<b>SETTING</b>	L	4 Characters for Login(0000)	Login
	O	-	Logout
	P	New four digit password	Set Password
	B	-	Get Register
	C	-	Set register
	F	-	Get Product Version
	S	Date,Time,Week	Set Date,Time and Week
<b>DATABASE</b>	T	-	Get Date and Time
	N	-	Get Number of Record
	G	Number	Read Record by Number
	E	-	Erase All Record

## Reply Index Table

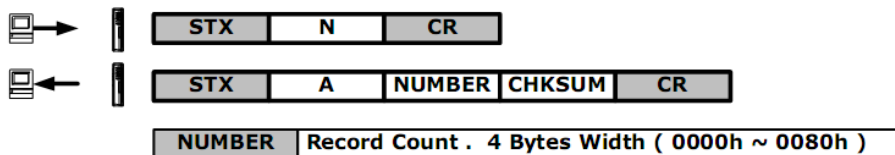
Topic	Reply	Contents	Description
<b>ACK</b>	<b>A</b>	Reply Information	ACK+Information
<b>NAK</b>	<b>N</b>	See Error Index Table	NAK+Information

## Error Index Table ( For Reply NAK )

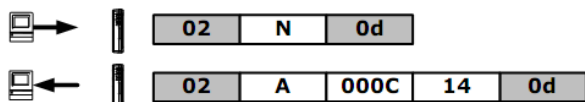
Topic	Error Index	Description
<b>ACCESS LEVEL</b>	<b>00</b>	Access Denied or Password Error
<b>COMMAND CODE</b>	<b>01</b>	Command packet is too long
	<b>02</b>	Command packet is empty
	<b>03</b>	Command code is out of range
	<b>04</b>	Illegal Command or Data
<b>DATABASE</b>	<b>05</b>	Database and Register is Empty
	<b>06</b>	Record number is out of range
	<b>07</b>	Check Sum Error
	<b>08</b>	Memory Not Enough
	<b>09</b>	Action Failure
<b>FILE</b>	<b>0A</b>	File Not Exist



**1. GET NUMBER OF RECORD :**

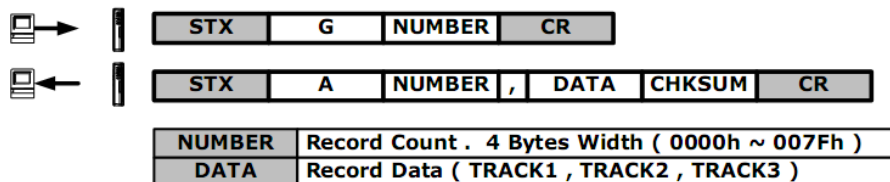


**EXAMPLE**

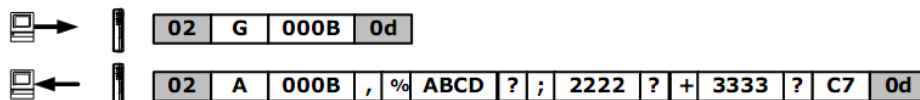


The Total of Record Count : 12

**2. READ RECORD BY NUMBER :**

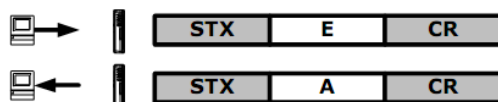


**EXAMPLE**

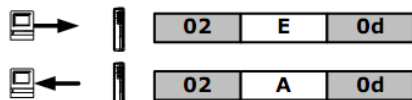


Read Record Number : 11  
 TRACK1 ID : ABCD , TRACK2 ID : 2222 , TRACK3 ID : 3333

**3. ERASE ALL RECORD :**



**EXAMPLE**



ERASE ALL RECORD

**4. SET DATE AND TIME :**

→ 

STX	S	YYYYMMDDhhmmssw	CR
-----	---	-----------------	----

  
 ← 

STX	A	CR
-----	---	----

YYYY	Year (1980 - 20xx )
MM	Month (01 - 12 )
DD	Date ( 01 - 31 )
hh	Hour ( 00 - 23 )
mm	Mintue ( 00 - 59 )
ss	Second ( 00 - 59 )
W	Week ( 1 - 7 )

Week	
SUN	1
MON	2
TUE	3
WED	4
THU	5
FRI	6
SAT	7

**EXAMPLE**

→ 

02	S	200005051230006	0d
----	---	-----------------	----

  
 ← 

02	A	0d
----	---	----

Set Date = 2000 / 5 / 5  
Set Time = 12 : 30 : 00 , Friday

**5. GET DATE AND TIME:**

→ 

STX	T	CR
-----	---	----

  
 ← 

STX	A	YYYYMMDDhhmmssw	CR
-----	---	-----------------	----

**EXAMPLE**

→ 

02	T	0d
----	---	----

  
 ← 

02	A	200011081420314	0d
----	---	-----------------	----

Get Date : 2000 / 11 / 8  
Get Time : 14 : 20 : 31 , Wednesday

**6. GET PRODUCT VERSION :**

→ 

STX	F	CR
-----	---	----

  
 ← 

STX	A	VERSION	CR
-----	---	---------	----

**VERSION** VxxRmm , Vxx : Firmware Version x.x , Rmm : Modify mm Times

**EXAMPLE**

→ 

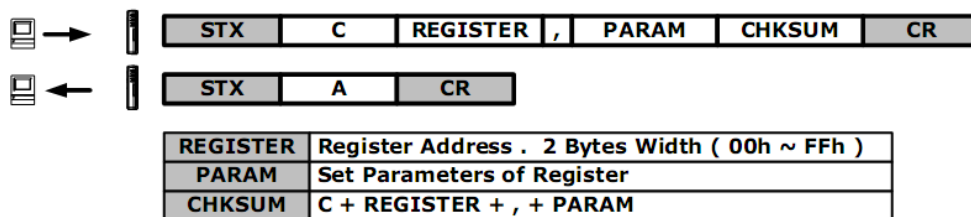
02	F	0d
----	---	----

  
 ← 

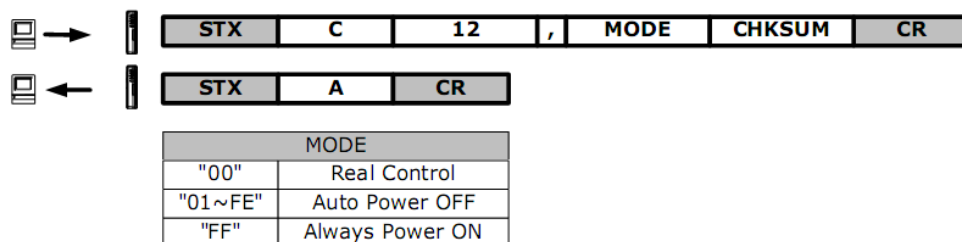
02	A	V1.0R00	0d
----	---	---------	----

Firmware Version = 1.0  
Modify times = 0

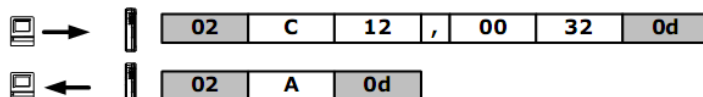
### 7. SET REGISTER :



#### 7-1. SET POWER MODE :

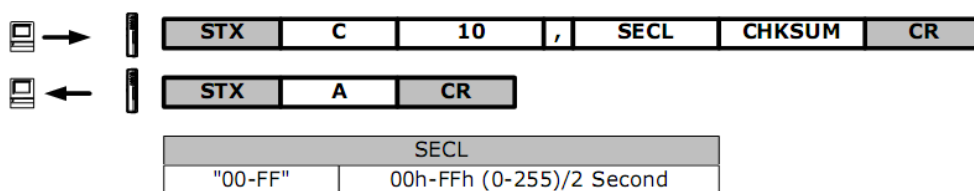


#### EXAMPLE

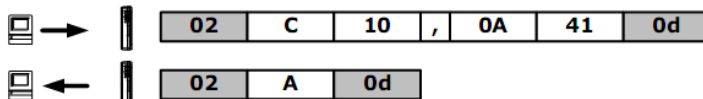


Write to Parameter Table Address : 12 h  
 Set Power Mode : Real Control  
 $CHKSUM = 43h(C) + 31h(1) + 32h(2) + 2Ch(,) + 30h(0) + 30h(0) = 132h$   
 $= 33h(3) + 32h(2)$

#### 7-2. SET AUTO POWER OFF TIME (LOW BYTE) :

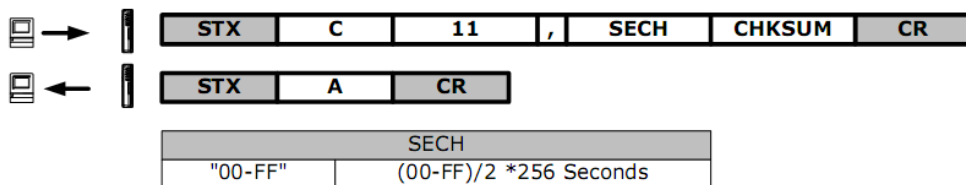


#### EXAMPLE

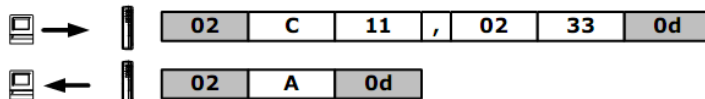


Write to Parameter Table Address : 10 h  
 Auto Power Off Time (Low Byte) : 5 Seconds

**7-3. SET AUTO POWER OFF TIME (HIGH BYTE) :**

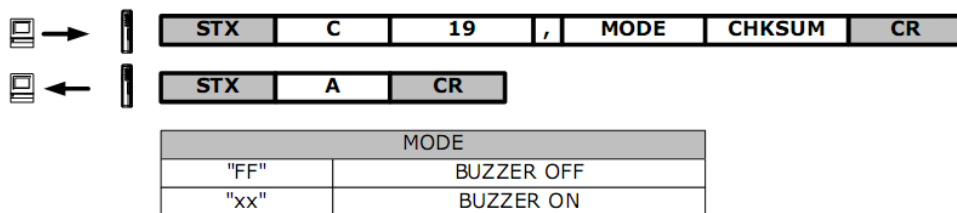


**EXAMPLE**

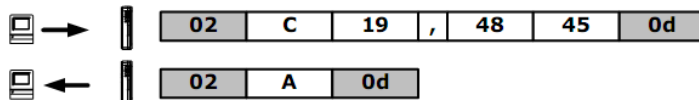


Write to Parameter Table Address : 11 h  
 Auto Power Off Time (High Byte) : 2/2\*256 Seconds

**7-4. SET BUZZER ON/OFF :**

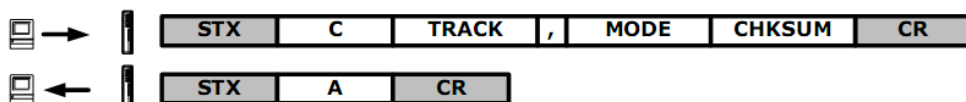


**EXAMPLE**



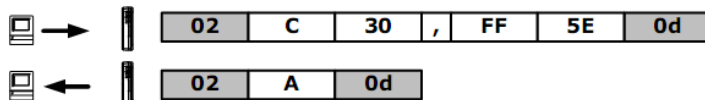
Write to Parameter Table Address : 19 h  
 xx : any value

**7-5. SET TRACK ACTIVE MODE :**



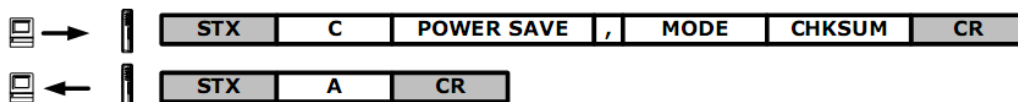
TRACK		MODE	
"30"	TRACK 1	"FF"	ENABLE
"31"	TRACK2	"00"	DISABLE
"32"	TRACK3	"01"	REQUIRED

**EXAMPLE**



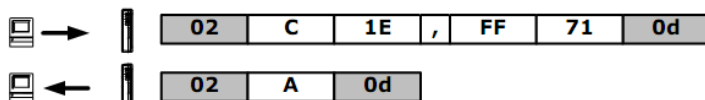
Write to Parameter Table Address : 30 h  
 TRACK ACTIVE MODE : TRACK 1 ENABLE .

**7-6. SET POWER SAVE MODE :**



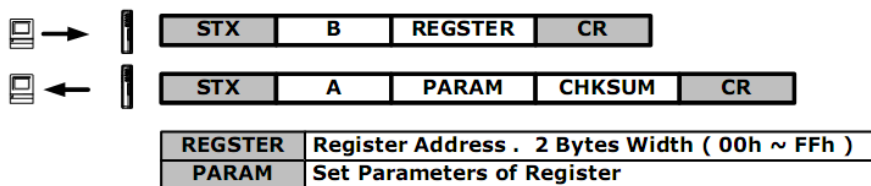
MODE	
"FF"	DISABLE
"00~FE"	ENABLE

**EXAMPLE**

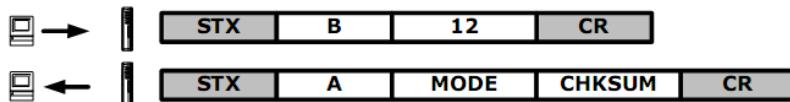


Write to Parameter Table Address : 1E h  
 Power Save Mode : Power Save Mode Disable .

**8. GET REGISTER :**

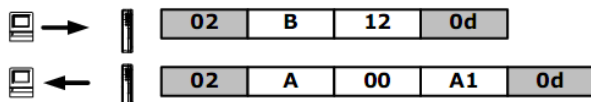


**8-1. GET POWER MODE :**



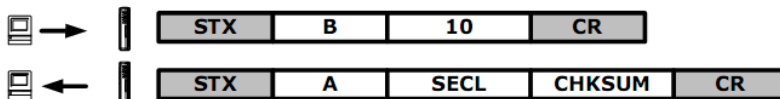
Same 7-1. SET POWER MODE

**EXAMPLE**



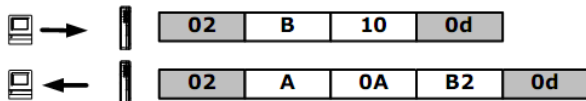
Write to Parameter Table Address : 12 h  
Get Power Mode : Real Control

**8-2. GET AUTO POWER OFF TIME (LOW BYTE) :**



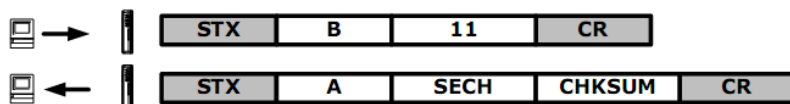
Same 7-2. SET AUTO POWER OFF TIME (LOW BYTE )

**EXAMPLE**



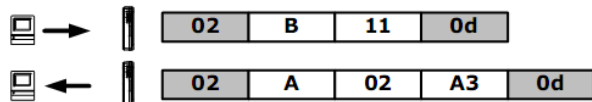
Get Parameter From Parameter Table Address : 10 h  
Auto Power Off Time Period (Low Byte) : 5 Seconds

**8-3. GET AUTO POWER OFF TIME (HIGH BYTE) :**



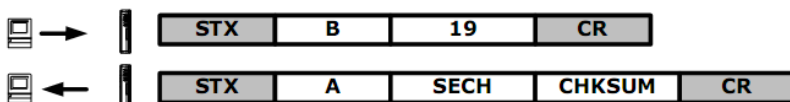
Same 7-3. SET AUTO POWER OFF (HIGH BYTE)

**EXAMPLE**

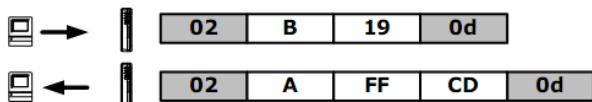


Get Parameter From Parameter Table Address : 11 h  
Auto Power Off Time Period (High Byte) : 2\*256/2 Seconds

**8-4. GET SOUND MODE :**

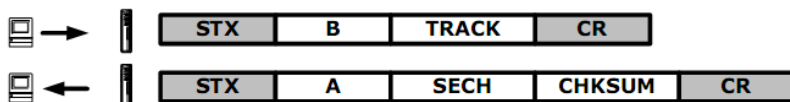


**EXAMPLE**



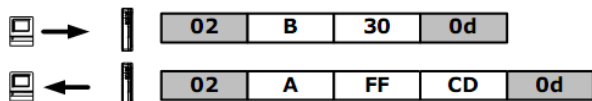
Get Parameter From Parameter Table Address : 19 h  
SOUND MODE : ENABLE

**8-5. GET TRACK ACTIVE MODE :**



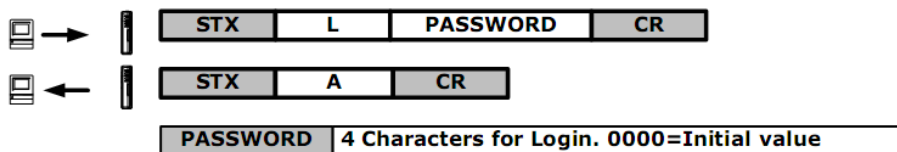
TRACK	
"30"	TRACK 1
"31"	TRACK2
"32"	TRACK3

**EXAMPLE**

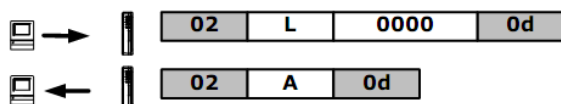


Get Parameter From Parameter Table Address : 30 h  
TRACK 1 ACTIVE MODE : ENABLE

**9. LOGIN :**

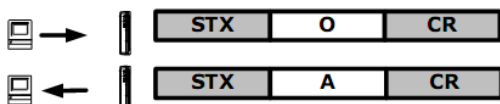


**EXAMPLE**

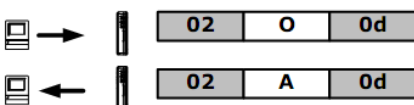


Login password : 0000

**10. LOGOUT :**

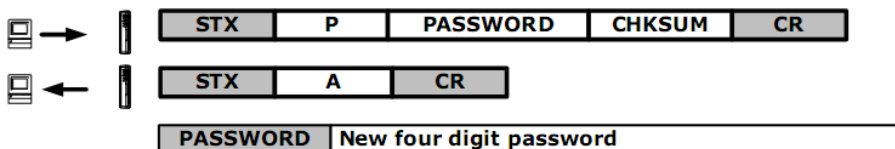


**EXAMPLE**

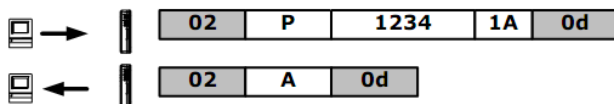


Logout

**11. SET PASSWORD :**



**EXAMPLE**



Set new password : 1234