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Modular Touchscreen Base
Optional Magnetic Stripe Reader
Keyboard Wedge (PS/2) interface



Agency Approved

Specifications for subpart B of part 15 of FCC rule for a Class A computing device.

Limited Warranty

The manufacturer warrants this product to be in good working order for a period of one year from the date of purchase. If this product is not in good working order as warranted above, or should this product fail to be in good working order at any time during the warranty period, repair or replacement shall be provided by the manufacturer.

This warranty does not cover incidental or consequential damages incurred by consumer misuse, or modification of said product. For limited warranty service during the warranty period, please contact the manufacturer to obtain an RMA number and instructions for returning the product.

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SECTION 1

INTRODUCTION

Description

The MiniMag™ compact magnetic stripe reader can read 1, 2, or 3 tracks of magnetic stripe information. In addition, it has full data editing capabilities.

When connected to the host computer as a keyboard wedge, the MiniMag is completely compatible with the host's software. The decoded data appears to the host as if it were entered manually by the operator through the keyboard.

This unit is fully programmable through the keyboard. The data can be formatted with preamble/postamble and terminator characters to match the format expected by the host.

Power, when the scanner is configured as a keyboard wedge, is obtained from the host.

SECTION 2 INSTALLATION

Host CONNECTIONS

The MiniMag reader is connected between the keyboard input port of the host computer and the keyboard itself using a “Y” adapter cable.

The “Y” cable has a 5-pin DIN male connector on one end, and a 6-pin mini-DIN female on the other.

The supplied adapter cable has a 5-pin DIN female connector on one end, and a 6-pin mini-DIN male connector on the other end. The adapter cable is used in all installations on one end of the “Y” cable or the other. This converts the available cable ends for use on either PS/2-style 6-pin mini-DIN keyboards, or AT-style 5-pin DIN keyboards.

To connect the reader to the host, turn the power off and disconnect the keyboard from the computer. Insert the male end of the “Y” cable into the keyboard port. Then connect the keyboard to the female end of the “Y” connector. This “wedges” the reader between the host and the keyboard.

Manually-entered data from the keyboard passes through the unit to the host, leaving the keyboard fully functional at all times.

Magnetic data “swiped” into the unit is transmitted to the host keyboard port, where it appears to the host as coming directly from the keyboard. This makes the reader, as a data source, completely transparent to the host’s application software. In other words, if it is expecting data from the keyboard, that same data can be entered via the MiniMag and make no difference to the host.

Since the host computer’s application software is expecting data to be input in a particular order and format, the reader’s output can be

configured to simulate the keyboard-entered data stream by adding terminating characters and special preamble and/or postamble character strings to scanned data.

Section 3 CONFIGURATION

The MiniMag reader must be appropriately configured to your application. Configuration settings enable the reader to work with the host system. These settings are programmed into the reader through the keyboard. Once programmed, these configuration settings are stored in the reader's non-volatile memory (so they are not affected by the cycling of power).

Default Settings

The MiniMag reader is shipped from the factory with the default settings already programmed. In the following sections, the default settings are shown in **boldface**. For a table of default settings, see Appendix A. In order to modify these settings, the host computer and keyboard must be IBM PC/AT compatible.

If you have a different keyboard, you must use an AT-compatible keyboard to first change the configuration settings, and changing the default terminal type last. After changing terminal type, you must then connect the reader to the appropriate computer. (Most keyboards on PCs with 5 pin DIN and 6 pin MiniDIN connectors are AT compatible.)

To enter the setup mode and change the configuration via keystroke entry, specific syntax is used. Each setup command starts with /e/d/fx where "x" is a different lower case character for each command. The e,d,and f characters must also be lower case. This initial character string is followed by a space and some option selection characters for some commands. Selections for each group take effect when you press enter.

If you unplug the MiniMag while you are in the middle of a command and have not pressed enter, your custom configuration for that command will not be saved. If, however, you press ENTER after a

correct command, but before unplugging the reader, your selections for that command will remain programmed until you change them or reset all commands to default.

When entering keyboard commands, type no more than two characters per second. After entering each group, wait one second before moving to the next group. All commands are case sensitive, so use lower case for all commands. One beep indicates an accepted command, and two beeps indicate an incorrect command. If you make a mistake in entering a command, you must re-enter the entire command. Do not use backspace and retype the character.

Configuration Setup Steps

1. On an AT-compatible computer, enter any edit mode. (When running Windows, the Notepad accessory will work fine.)
2. Enter your commands as needed. Refer to the selections available to you on the following pages. In each instance, you will enter GROUP SETUP MODE by typing /e/d/fx, followed by the variable syntax. (The "x" will be different every time, depending on the group setting you wish to make.)
3. Enter a SPACE <space>.
4. Enter the code for the selection you have made.
5. When finished, exit the group's setup mode by entering <ENTER> (the ENTER key).

EXAMPLE:

To set the beep volume to HIGH, enter:

```
/e/d/fa<space>b2<ENTER>
```

GENERAL SELECTIONS

This group of configuration settings define the basic operating parameters of the scanner.

Syntax: /e/d/fa<space>b1b2b3<ENTER> where...

TERMINAL TYPE SELECTIONS

The MiniMag can be programmed to interface to a number of different terminal types. The terminal types supported are:

b1=0 for PC-AT

b1=1 for PS/2 Models 25 and 30

b1=2 for PS/2 Model 50

b1=3 for PS/2 Model 70

b1=4 for Macintosh

BEEP VOLUME

The beep volume can be adjusted to two different levels, or turned off entirely.

b2=0 for beep volume off

b2=1 for beep volume low

b2=2 for beep volume high

INTERCHARACTER DELAY

This is the time period the reader will wait before sending the next successive character. Certain terminals and computers require an intercharacter delay to simulate their keyboard's intercharacter delay.

b3=0 for 2 ms intercharacter delay

b3=2 for 10 ms intercharacter delay

b3=3 for 20 ms intercharacter delay

b3=4 for 50 ms intercharacter delay

b3=5 for 100 ms intercharacter delay

EXAMPLE

To set the terminal type to PC-AT, the beep to high, and the intercharacter delay to 5 milliseconds, enter:

```
/e/d/fa<space>021<ENTER>
```

Note: Two beeps will be heard if entered numbers are outside the allowable range.

CHANGE TO DEFAULT SETTINGS

This command, /e/d/fn, returns all settings for all groups to their default values. Data Editing will be turned off, and the formulas will be retained.

Syntax: /e/d/fn<ENTER>

REVIEW SETTINGS

This command, /e/d/fo, activates the review settings command. This will send the resident settings for the general group to the host computer, allowing you to review them. The firmware version number is also shown.

Syntax: /e/d/fo<ENTER>

Reading and Decoding Settings

This command will turn the MiniMag on or off, and set the decoding directions. If the reader is disabled, no data will be sent to the host.

Syntax: /e/d/fu<space>b1b2<ENTER> where...

MSR Reading Settings

b1=0 MSR Reading Disabled

b1=1 MSR Reading Enabled

Decoding Method Settings

The MiniMag can support three kinds of decoding directions. With the bi-directional method, the user can swipe the card in either direction and still read the data on the magnetic stripe. Otherwise, the card can only be swiped in one direction to read the card.

b2=1 Decoding in both directions

b2=2 Moving stripe along head in direction of encoding

b2=3 Moving stripe along head against direction of encoding

Message Formatting Selections

Terminator Setting

Terminator characters are used to end a string of data in some applications.

Syntax: /e/d/fb<space>b1<ENTER>where...

b1 = 0 for Enter

b1 = 1 for Enter

b1 = 2 for Enter

b1 = 3 for none

Preamble Setting

Characters can be added to the beginning of a string of data. These can be special characters for identifying a specific reading station, to format a message header expected by the receiving host, or any other character string. Up to nine ASCII characters can be defined.

Syntax: /e/d/fc<space>string<ENTER>(length is 0 to 9)

Postamble Selection

The postamble serves the same purpose as the preamble, except it is added to the end of a string of data (after any terminator characters).

Syntax: /e/d/fd<space>string<ENTER>(length is 0 to 9)

Note: /e/d/fc or /e/d/fd without parameters will go back to default: no preamble and postamble.

Magnetic Track Selections

Track Selection

There are up to three tracks of encoded data on a magnetic stripe. This option selects the tracks that will be read and decoded. Note that the MiniMag reader must have heads aligned for reading the specified tracks. If a single or dual-track reader is being used, the heads must be positioned to read the tracks selected by this option.

Syntax: /e/d/fp<space>b1<ENTER>where...

b1=0 for Any Tracks

- b1=1 for Track 1 only
- b1=2 for Track 2 only
- b1=3 for Tracks 1 and 2
- b1=4 for Track 3 only
- b1=5 for Track 1 and Track 3
- b1=6 for Tracks 2 and 3
- b1=7 for Tracks 1, 2, and 3

Track Separator Selection

This option allows the user to select the character to be used to separate data decoded by a multiple-track reader.

Syntax: /e/d/fq<space>b1<ENTER>where...

b1= the new track separator character can be selected from the keyboard for printable characters, or from Appendix B: Function Code Table (1 function code only).

/e/d/fq<ENTER> will return the separator character to its default value <ENTER>. /e/d/fq<space>\nul will turn off the separator character.

Example: To set the Track Separator to TAB, enter /e/d/fq<space>\tab<ENTER> (13 keystrokes).

Start/End Sentinel and Track 2 Account Number Only

The MiniMag can be set to either send or not send, to invoke the Start/End sentinel, and to send either the Track 2 account number only, or all the encoded data on Track 2. (The Track 2 account number setting doesn't affect the output of Track 1 and Track 3.)

Syntax: /e/d/fv<space>b1<ENTER> where...

- b1=0 Not send start/end sentinel and send all data on Track 2
- b1=1 Send start/end sentinel and send all data on Track 2**
- b1=2 Not send start/end sentinel and send account number on Track 2
- b1=3 Send start/end sentinel and send account number on Track 2

SECTION 4 DATA EDITING

The MiniMag has a data editing feature incorporated into its firmware. This feature allows the data read from the magnetic stripe to be sent to the host in the exact format expected by the host software, eliminating the need for modifications to the application software.

The data (that is, the input record from the magnetic stripe) can be divided up into a number of separate fields, according to established standards (such as ISO, ANSI, AAMVA, and CDL). The data in each of these fields can then be edited, and new fields can be defined using the Data Edit commands.

The edited data fields are then transmitted to the host in any order desired, regardless of their position on the original magnetic stripe.

FUNCTIONS

The following editing functions can be performed:

Rearrange the Data: The fields within a track, created by established standards, can be transmitted to the host in any order desired, regardless of the order in which they occurred in the card track.

Insert Character Strings into the Output Data Record: Character strings can be defined and inserted at any place in the data output record.

Duplicate Fields: Fields within a track can be transmitted to the host as many times as desired, and in any order.

Select Output Fields: Fields within a track can be selected for output or not selected for output.

Fields

By separating the input data record into smaller blocks (called “fields”), each block can be edited individually. Additional fields can also be added to the record, allowing specific functions, such as carriage returns or keyboard function keys, to be inserted at any point. (The field standards for ISO Credit Cards, California driver’s licenses, and AAMVA driver’s licenses are listed in Appendix D.)

By separating the input data record into smaller blocks (fields), each block can then be treated individually. Additional fields can also be added to the record in any position, allowing specific functions, such as carriage returns. Fields are identified by a one-character ID starting with the character “a,” up to and including “z,” in the order they were created, allowing as many as 26 fields to be defined. These fields are then sent to the host in the order which the user specifies. For example, if the input data record is in the Credit Card Format for Track 2:

```
;1234567890123456=9912xxxxxx?c
```

```
Field ID |a|      b      |c| d | e  |f|g|
```

and your application software is looking for the data to be in the following format:

```
9912<ENTER>
```

```
1234567890123456<ENTER>
```

then we must divide the data record into fields, select only those fields desired, reverse the order in which they are sent to the host, and create a new field <ENTER> and insert it after each field.

We do this by using the defined fields and adding a new field:

```
Field b = 1234567890123456
```

```
Field d = 9912
```

```
Field h = <ENTER>
```

```
and sending {Field d} {Field h} {Field b} {Field h}
```

Formulas

The set of instructions programmed into the MiniMag to edit data is referred to as the data editing “formula.” More than one formula (to a maximum of four) can be resident in the reader at one time. If more than one formula resides in memory, the reader will apply the first formula to the input data. If the scanned data matches the format (credit card, driver’s license, etc.) of the first formula, then it will apply the data editing functions and output the reformatted data to the host.

If the data does not match the criteria spelled out in the first formula, then the criteria of the second formula is applied. This process continues for each of the successive formulas until a match is found. If no matches are found to any of the formulas programmed into the reader, then either nothing will be transmitted to the host, or the unedited data record will be transmitted, according to the data editing matched flag, whether set or not.

The MiniMag supports four kinds of formulas: credit card, California driver’s license, and AAMVA formats, as well as a customized format. The user can define all four, or only one at a time. However, the MiniMag can only keep one credit card, one California driver’s license, one AAMVA, and one customized format at a time.

Data Editing Setup Commands

The following commands are used to set the operating parameters of the data editing feature.

Data Editing On/Off, Matched/Unmatched

Syntax: /e/d/fe<space> b1b2 <ENTER>

where:

b1 = 1 Data Editing On

b1 = 0 Data Editing Off

b2 = 1 if no formula matches card data, send out whole card data

b2 = 0 if no formula matches card data, do not send anything

Data Editing Added Field

An output field is created containing the character string. Up to six fields can be defined. The maximum characters of each field is six.

Syntax: /e/d/fr<space>f1<space>f2<space>f3<space>f4<space>f5<space>f6<ENTER>

where:

Maximum of Added field is six;

Maximum characters of each field is six;

Separator between each field in command is space;

Example: /e/d/fr<space>Idt<space>;<space>\cr<space>\f1<space>\htITS<ENTER>

where:

Added field 1 = Idt

Added field 2 = ;

Added field 3 = \cr (carriage return)

Added field 4 = \f1(function key F1)

Added field 5 = \htITS(tab + ITS)

Data Editing Search Command

In working with a user-defined format that is not credit card, CA DMV, or AAMVA, the MiniMag will support any combination of the following five search methods:

Length Match: For a particular track, indicate the minimum and maximum number of characters acceptable for the data editing formula.

String Match: For a particular track, indicate a specific string of characters, as well as the character position at which that string must begin, in order to be acceptable to the data editing formula.

Search Before: For a particular track, the MiniMag will create a data field which contains all characters that come before the specified occurrence of a given character sequence. (For example, the second occurrence of the character sequence ABC.)

Search Between: For a particular track, the MiniMag will create a data field which contains all characters that come between the specified occurrence of one sequence of characters and another.

Search After: For a particular track, the MiniMag will create a data field that contains the specified number of characters that come after the specified occurrence of a given character sequence. (An offset of a given number of character positions can also be indicated.)

Syntax: /e/d/fs<space>[length_match]... [string_match]...
[search_before]... [search_between]...[search_after]...<ENTER>

where:

length_match: = a{track_no}(minimum characters)(maximum characters)

string_match: = b{Track_no}(offset)(length)(string)

search_before: = c{track_no}{field_no}(times) (length)(string)

search_between: = d{Track_no}{field_no}(times1)
(length1)(string1)(times2)(length2)(string2)

search_after: = e{Track_no}{field_no}(times) (offset)(length2)
(length1)(string1)

track_no: = 1 | 2 | 3

field_no: = a...z

Times, Times1, and Times2: Times and Times1 define how many times a specified string is searched from the start of data on a specific track. Times2 defines how many times a specified string is searched from the rest of the data on a specific track after the first string has been searched.

Offset: The offset of String Match is from the start of data for a particular track. The offset of String After is from the start of the rest of the string, after the specified string, after the specified number of times.

Example:

/e/d/fs c1a0101? d2b0101=0201=

where generating two flexible fields:

First Flexible Field:

c: Search before method

1a: The first flexible field is in Track1

01: once search;

01: the length of searched string

?: searched string

Second Flexible Field:

d: Search between method

2b: The second flexible field is in Track2

01: once search

01: the length of first searched string

=: the first searched string

01: once search

01: the length of second searched string

=: the second searched string

Data Editing SEND COMMAND

Send out the field according to the customer-defined order.

Syntax: /e/d/ft [ccsmd] [dmvsmd] [aamvasmd] [flexsmd]

where:

ccsmd: = 7a{field}{field}...(credit card)

dmvsmd: = 7b{field}{field}...(CA driver's license)

aamva: = 7c{field}{field}...(AAMVA)

flexsmd: = 7d{field}{field}...(custom format)

field: = {add_fd_tag} {field_no} | {track_no} {field_no}

add_fd_tag: = 0

track_no: = 1 | 2 | 3

field_no: = a...z

Example: /e/d/ft <space>7a0e1b0c1c0c2d0b0c<space>
 7b1c0c1e0c1f0c3d3e0e2f0c<space>7d1a0c2b0c
 <ENTER>

where generating three formulas—one for Credit Card, one for DMV, and one custom format.

Credit Card formula is:

7a0e1b0c1c0c2d0b0c

7a: Credit Card

0e: Added Field 5

1b: Track1 format field (No. is 2)

0c: Added Field 3

1c: Track1 Account Number (No. is 3)

0c: Added Field 3

2d: Track2 Expiration Date (No. is 4)

0b: Added Field 2

0c: Added Field 3

If the added fields are line feed, “;”, carriage return, “IDT”, “ITS”, respectively, data will be output as:

<ITS>

<Account No.>

<Expiration Date><:>

DMV formula is:

7b1c0c1e0c1f0c3d3e0e2f0c

7b: DMV Format

1c: Track1 Name Field (No. is 3)

0c: Added Field 3

1e: Track1 Address Field (No. is 5)

0c: Added Field 3

1f: Track1 City Field (No. is 6)

0c: Added Field 3

3d: Track3 State Field (No. is 4)

3e: Track3 Zip Code Field (No. is 5)

0c: Added Field 3

2f: Track2 Birthday Field (No. is 6)

0c: Added Field 3

Data will be output as:

<Card Holder Name>

<Address>

<City>

<State><Zip Code>

<Birthday>

Notes

Flexible formula is:

7d1a0c2b0c

7d: Flexible format

1a: Track1 data before end sentinel

0c: Added Field 3

2b: Track2 data between the first equal sign and the second equal sign

0c: Added Field 3

Data will be output as:

< Track1 data before end sentinel >

< Track2 data between the first equal sign and the second equal sign >

SECTION 5 OPERATION

The MiniMag reader is easy to operate. Just follow these simple steps:

1. Make sure the reader is properly cabled and is receiving sufficient power. (See Section 5, Troubleshooting, if there is a cabling or power problem.)
2. To read a card, slide the card, in either direction, through the reader slot, with the magnetic stripe facing the magnetic head (LED side).
3. While swiping the card through the reader, the LED will go off.
4. Once the entire magnetic stripe has been read, the LED indicator will light up as green to signal a "good read." If a good read is not obtained, the LED indicator will light up as red.
5. A beep will also sound to indicate a good read on each track. If all three tracks have been read successfully, the reader will beep three times.

SECTION 6 TROUBLESHOOTING

The MiniMag reader is easy to install and use. Most problems encountered can be attributed to:

- Incorrect Interface Cabling
- Incorrect Configuration Setup
- Bad Magnetic Stripe Quality

GENERAL PROCEDURES

The troubleshooting process can be simplified by following these simple diagnostic procedures.

1. The unit should emit one long beep when power is first applied. If it does not, then the unit is not receiving power.
2. Once it has been confirmed that the unit is correctly powered, try swiping a credit card. The LED will go off while decoding, then light green to indicate a "good read," or red to indicate a "bad read."
3. Once the unit has indicated a "good read," then proceed to check the interface cabling connections.

Keyboard Interface Problems

Installation of the reader is generally trouble free, but there are some things to watch for if you are experiencing problems.

Do you have the proper cable?

Most modern computers and terminals use a PC/XT/AT-compatible keyboard. However, the cable connecting it to the keyboard port may have variations in either the signal pins or the connector itself. Make sure that you have the proper cable for the computer/terminal with which you are interfacing.

Does the keyboard work?

Since the data from the keyboard must pass through the reader, the cabling connections are correct if the keyboard is operational.

Can the host computer accept the data fast enough?

Some computers and terminals are expecting the data rate from the keyboard port to come in at a keystroke rate, and might not be able to accept it as fast as the reader is transmitting. Try adjusting the intercharacter delay to simulate the effects of keystroke delays.

Appendix A. Default Settings Table

The MiniMag reader is shipped from the factory with the following default settings already programmed:

Magnetic Track Basic Data Format

Track 1: <SS1><T₁ Data><ES><ENTER>*

Track 2: <SS2><T₂ Data><ES><ENTER>*

Track 3: <SS3><T₃ Data><ES><Enter>*

where: SS1(start sentinel track 1) = %
SS2(start sentinel track 2) = ;
SS3(start sentinel track 3) = ; for ISO, ! for CDL,
% for AAMVA
ES(end sentinel all tracks) = ?

Keyboard Wedge Communication Default Settings

Terminal type: IBM PC/AT

Intercharacter delay: 5 ms

Language: US English

Start or End Sentinel: Characters in encoding format which come before the first data character (start) and after the last data character (end), indicating the beginning and end, respectively, of data.

Track Separator: A designated character which separates data tracks.

Terminator: A designated character which comes at the end of the last track of data, to separate card reads.

LRC: Check character, following end sentinel.

CDL: Old California Drivers License format.

**Note: The <ENTER> commands shown above for tracks 1 & 2 and 2 & 3 denote the default character for this position, the Track Separator position. The <Enter> command shown for track 3 denotes the default character for this position, the Terminator position.*

Appendix B. Function Code Table

Character	Keystroke	Character	Keystroke
F1	\f1	End	\end
F2	\f2	Right	\right
F3	\f3	Left	\left
F4	\f4	Up	\up
F5	\f5	Down	\down
F6	\f6	PgUp	\pgup
F7	\f7	PgDn	\pgdn
F8	\f8	Tab	\tab
F9	\f9	Back Tab	\btab
F10	\f10	Esc	\esc
F11	\f11	Enter	\enter
F12	\f12	CR	\cr
Ins	\ins	LF	\lf
Home	\home	Backspace	\bs

To input the “\” character, type it twice. For example, typing `ab\cd` in a preamble string will result in `ab\cd` as the preamble.

Appendix C: Non-printable ASCII Characters

Character	Keystroke
NULL	\nul
SOH	\soh
STX	\stx
ETX	\etx
EOT	\eot
ENQ	\enq
ACK	\ack
BEL	\bel
BS	\bs
HT	\ht
LF	\lf
VT	\vt
FF	\ff
CR	\cr
SO	\so
SI	\si
DLE	\dle
DC1	\dc1
DC2	\dc2
DC3	\dc3
DC4	\dc4
NAK	\nak
SYN	\syn
ETB	\etb
CAN	\can
EM	\em
SUB	\sub
ESC	\esc
FS	\fs
GS	\gs
RS	\rs
US	\us

Appendix D: Magnetic Stripe Standard Data Formats

International Standards Organization (ISO) Credit Card Format

Track 1

Field ID Character	Contents	Length
a	Start Sentinel	1
b	Format Code "B"	1
c	Account Number	13 or 16
d	Separator "^"	1
e	Cardholder Name	variable
f	Separator "^"	1
g	Expiration date	4
h	Optional Discretionary data	variable
i	End Sentinel	1
j	Linear Redundancy Check (LRC) Character 1	

Track 2

a	Start Sentinel	1
b	Account Number	13 or 16
c	Separator "="	1
d	Expiration date "YYMM"	4
e	Optional discretionary data	variable
f	End Sentinel	1
g	Linear Redundancy Check (LRC) Character 1	

California Driver's License Format

Track 1

a	Start Sentinel	1
b	Format Code Type	1
C = Commercial, S = Salesperson, D = Driver I = Identification, R = Senior Citizen		
c	Name Line 1	29
d	Name Line 2	29
e	Address Line 1	29
f	City	13
g	End Sentinel	1
h	Linear Redundancy Check (LRC) Character 1	

Track 2

a	Start Sentinel	1
b	Identification Number	
	ANSI User ID	6
	DL/ID Alpha Translated2	
	7 position DL/ID number	7
	Check Digit	1
c	Field Separator "="	1
d	Expiration Date	4
e	Field Separator "="	1
f	Discretionary Data, 8 position birthdate	8
g	End Sentinel	1
h	Linear Redundancy Check (LRC) Character 1	

Track 3

a	Start Sentinel	1
b	Class	4
c	Endorsements	4
d	State Code	2
e	Zip Code	9
f	Sex	1
g	Hair	3
h	Eyes	3
i	Height	3
j	Weight	3
k	Restrictions	10
l	Issue Date	8
m	Office	3
n	Employee ID	2
o	LRE ID	2
p	Fee Due Year	4
q	Address Line 2	29
r	Reserved Space	10
s	End Sentinel	1
t	Linear Redundancy Check (LRC) Character 1	

AAMVA Driver's License Format**Track 1**

a	Start Sentinel	1
b	State or Province	2
c	City	13
d	Name	35
e	Address	29
f	End Sentinel	1
g	Linear Redundancy Check (LRC) Character 1	

Track 2

a	Start Sentinel	1
b	ANSI User Code	1
c	ANSI User ID	5
d	Jurisdiction ID/DL	14
e	Expiration date	4
f	Birthdate	8
g	Remainder of Jurisdiction ID/DL	5
h	End Sentinel	1
i	Linear Redundancy Check (LRC) Character 1	

NOTES

