

EXHIBIT C

User Manual

EZ100R Smart Card Reader Programmer's Manual For Windows 9x and NT

Reference: RD/SI/RL/9809.211

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REFERENCE

- EZ100R Smart Card Reader Programmer's Manual
Ref: RD/SI/RL/9809.211
- EZ100R Smart Card Reader Technical Manual
Ref: RD/SI/RL/9809.212
- EZ100R Smart Card Reader, Installation Manual
Ref: RD/SI/RL/9809.213

ABOUT THIS MANUAL

This manual describes the application programming interfaces (API), allowing to drive the EZ100R Smart Card Reader.

It is dedicated to software developer. The API is an identical regardless the computer operating system.

1. INTRODUCTION

The EZ100R Smart Card Reader has been designed to work with various master machines, or "Hosts". It is supplied with the TLP224 like communication protocol resident in internal memory.

The EZ100R can be used for "transparent" card communications. That means it executes instructions from the host to the card and reports the results to the host but does not process the information.

1.1. Application Programming Interface (API)

The main role of Application Programming Interface (API) is to manage communication with card readers in a way that is transparent for applications. It provides a set of advanced services:

- Establishment of an end-to-end dialogue between the application and the card at the level of the ISO command set.
- Supervision of card presence.
- Subdivision of the reader into logical items, to separate the different reader functionalities.
 - Access to card.
 - Supervision of presence of card.

1.2. The EZ100R Smart Card Reader APIs:

init_reader

Opening of a session, allocation of memory and I/O resources.
Reservation of the item if it cannot be shared.

exit_reader

Closure of session and release of resources allocated.

sc_stt

Get the status of the smart card reader.

ifd_type_ver

Get the type and version of EZ100R smart card reader.

sc_poll

Power on the card and read the card identification when it is inserted.

sc_can

Power down the card.

sc_ic

Send to the smart card an incoming command.

sc_og

Send to the smart card an outgoing command.

T1_apdu

Send to the smart card a T=1 apdu command.

2. Application Interface Functions

2.1. Introduction

This chapter describes the API generic interface functions. The exact definition of parameter types depends on the implementation. A file to be included is providing to define specific types or types not defined by the system.

Similarly, the values of constants (errors, events, etc.) and prototype functions are provided in this file.

2.2. Determining UART Address & IRQ Settings

You may not need to know the port addresses or IRQ assignments that made by Windows. This information is maintained by Windows and is available all the time when you need it.

Windows 3.X, Windows 95, and Windows NT maintain a list of serial port settings. On Windows 3.X systems, choose the "Ports" icon in the "Control Panel" in the "Main Group". Select "Settings" and then "Advanced" to view the COM port UART address and IRQ settings.

In Windows 95, choose "My Computer" icon ("or whatever your computer icon is named"), select the "Control Panel" folder and the "System" icon. Click on the "Device Manager" tab. Then click "Computer", "Properties" and the "View Resources" tab. To view reserved resources, click the resource type at the top of the dialog box (i.e., "Interrupt request (IRQ)" or "Input/output (I/O)").

The four standard COM ports which Windows typically controls are:

Port	Address	IRQ
Com1	0x3F8	4
Com2	0x2F8	3
Com3	0x3E8	4
Com4	0x2E8	3

2.3. Interface Functions

init_reader

Opening of session.

Syntax

```
int init_reader( COMM port);
```

Parameters

Input

port

Identifies an open communication port.

Com1: port =0, Com2: port =1, Com3: port =2, Com4: port =3

Output

NONE

Description

This function is used to open a session.

The meaning of port depends on the context and the choice of communication port implementation.

init_reader allocates memory resources to the session, programs the input-output device, and if necessary attempts to establish a dialogue with the card coupling system.

Value returned by function

The return value is an error code. It is 0 if there is no error. Otherwise this code has one of the following values: **IE-BADID**, **IE_OPEN**

exit_reader

Closure of session.

Syntax

```
int exit_reader( COMM port);
```

Parameters**Input****port**

Identifies an open communication port.

Com1: port =0, Com2: port =1, Com3: port =2, Com4: port =3

Output

NONE

Description

This function closes the session and releases allocated resources.

Generally, exit_reader stop any operation in progress.

Value returned by function

The return value is an error code. It is 0 if there is no error. Otherwise this code has one of the following values: **IE-BADID, IE_NOPEN**

sc_stt

Get the status of smart card reader.

Syntax

```
int sc_stt( COMM port);
```

Parameters**Input****port**

Identifies an open communication port.

Com1: port =0, Com2: port =1, Com3: port =2, Com4: port =3

Output

NONE

Description

This function is to check the card accept status.

Value returned by function

The return value is an error code. It is 0 if there is no error. Otherwise this code has one of the following values: **IE-BADID, IE_NOPEN, CMD_EBYTE, CMD_ELRC, CMD_ELEN, ICC_NSPT, ICC_DUMB, ICC_CERR, ICC_ABSENT**

lfd_type_ver

Get the smart card reader's type and version.

Syntax

```
int lfd_type_ver ( COMM port, unsigned char *buffer, int *len_buffer);
```

Parameters

Input

port

Identifies an open communication port.

Com1: port =0, Com2: port =1, Com3: port =2, Com4: port =3

Output

buffer

Smart card reader type and version.

len_buffer.

The received length of buffer.

Description

This function is to get the smart card reader's type and version.

Value returned by function

The return value is an error code. It is 0 if there is no error. Otherwise this code has one of the following values: **IE-BADID**, **IE_NOPEN**, **CMD_EBYTE**, **CMD_ELRC**, **CMD_ELEN**

sc_poll

Power on the card and read the card identification when it was inserted.

Syntax

```
int sc_poll ( COMM port, unsigned char *ATR, int *len_ATR);
```

Parameters**Input****port**

Identifies an open communication port.

Com1: port =0, Com2: port =1, Com3: port =2, Com4: port =3

Output**ATR**

Smart card identification data (the data of answer to reset data).

INFORMATION TO THE USER

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device. Pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception. Which can be determined by turning the equipment off and on the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This booklet is available from the US government Printing Office
*Washington, DC 20402, Stock NO. 004-000-00345-4.

CAUTION: Any changes of modifications not expressly approved by the grantee of this device could void the users authority to operate the equipment.

The shielded RS-232 cable are to be used in order to ensure compliance with FCC Part 15, and it is the responsibility of the user to provide and use shielded RS-232 cable from modem to personal computer.