

WinGPR

User's Guide

16-32 bits

Version 1.1

February 1997

At press time, this guide was as thorough and correct as possible;
the information contained herein may however have been updated after this date.
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About This Document

Introduction

This document describes how to use the GEMPLUS WinGPR application.

Audience

This document assumes that you are familiar with smart card and smart card reader technology, as well as your PC's hardware.

How to Use This Document

The following paragraphs tell you where to find information when you need it. It is important that you read this section to use this document to its full potential.

Overview

Read this section for a general description of the WinGPR application.

Installing WinGPR

Read this section for instructions on how to install, run and exit from WinGPR, and how to assign the reader that you want to use.

Managing Sessions

Read this section for information on how to assign the type of card that you are using and how to open, close, and switch sessions.

Trace Files

Read this section for information on how to record and replay sequence traces.

Card Commands

Read this section for information on how to send APDU commands and binary commands to the card.

Reader Commands

Read this section for information on how to send commands to the reader, and how to record, replay, modify and delete commands stored in macro files.

Reader Management

Read this section for details on how to view the reader information, how to change the protocol and baud rate of the reader, how to read and load the reader memory, and how to make active and deactivate the card driver or OS Filter in the RAM or Flash memory.

This section also describes how you can put the reader into the low energy consumption idle mode, how to return it to operating mode and how to reset it.

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Overview

Introduction

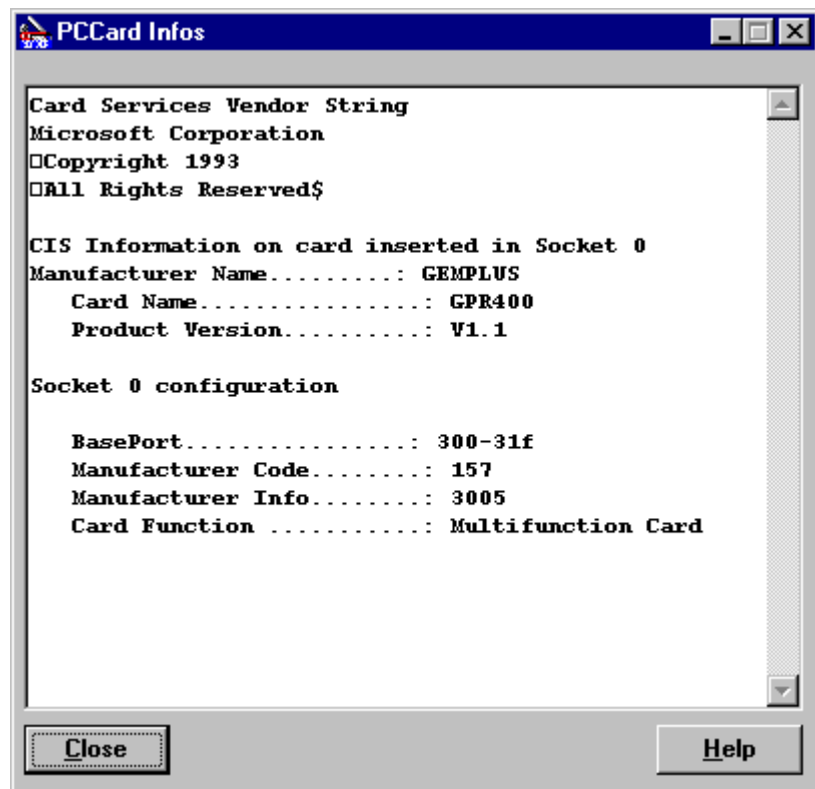
WinGPR provides a menu driven screen interface with all types of smart cards supported by the GPR400 Compact Smart Card Reader Writer that runs under Windows.

WinGPR enables you to select enhanced GPR features such as memory downloads.

Product Information

To view information about WinGPR, click on the About option in the Help menu.

To view information about the PCCard, click on the PCCard Infos option in the Options menu. The **PCCard Info** dialog box opens:



PCCard Dialog Box

Installing WinGPR

Introduction

This section describes how to install, run and exit from the WinGPR application, and how to assign the reader that you want to use.

Installing WinGPR

The steps below describe how to install WinGPR.

1. Insert the diskette labeled WinGPR into your PC floppy drive.
2. Type X:\setup, where X is your floppy drive source.
3. Follow the instructions on the screen.

Running WinGPR

To run WinGPR, click on the WinGPR icon in the GEMPLUS Applications window. Before you can run the program you also have to select a reader.


WinGPR has a *Wait Mode* option that enables you to have the program open but not running. You can also choose if you want to run the *Warnings* option.

You can run WinGPR in the Novice or Expert mode. The Novice Mode is the default mode.

WinGPR in Wait Mode

To prevent you from having to close the application between uses, WinGPR has an idle mode.

To put the application in idle mode, click on the *Wait Card* option in the *Card* menu or

click on the  icon in the toolbar. The application is iconized, and opens when you insert a card into the reader.

Warnings Option

To run WinGPR using the *Warning* option, click on the *Warning* option in the *Options* menu. A check mark next to the option shows that the option is active.

When this option is active, warning messages appear on the screen to highlight certain functions you must carry out.

Running WinGPR in Expert Mode

Note: Make sure that your card supports these functions before you use them. Using these functions with the wrong type of card may cause permanent damage to the card. The Expert mode offers the following additional options:

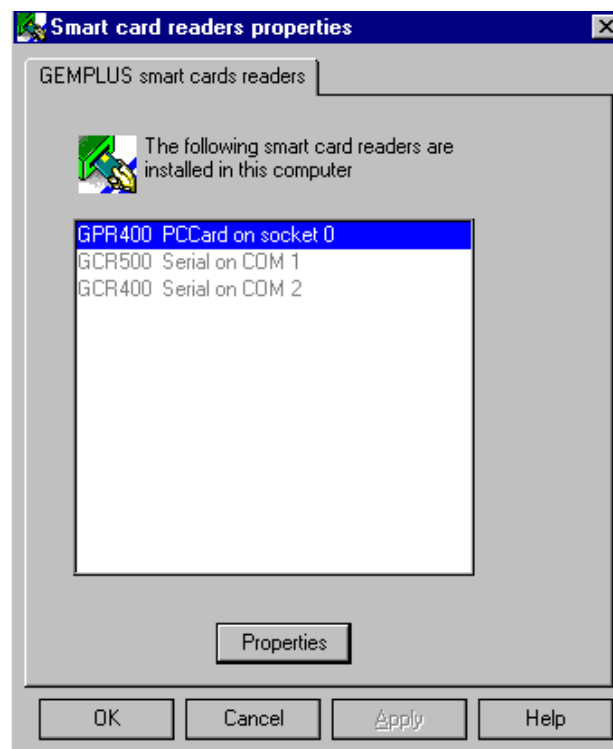
Option	Menu	Description
Fast Open Session	Card	Opens a session in half the time of the standard command.
Load	Reader	Loads data to the RAM or Flash memory.
Read	Reader	Reads data from the RAM or Flash memory.
Activate/Deactivate	Reader	Activates or deactivates the card driver or OS filter in the RAM or Flash memory.

To use the *Expert* option, click on the *Expert* option in the **Options** menu.

Selecting a Reader

Before you run the application, make sure you assign the reader that you are using. Follow the steps below to assign the reader. Changing the reader after the *Sleep* command does not wake the reader up, even if WinGPR acts as if the reader is awake. To communicate with the reader, carry out a reset.

1. Select the *Selection* option in the **Reader** menu. The **Reader - Selection** dialog box opens.



Reader - Selection Dialog Box

2. Highlight the reader that you want to assign, then click **OK**.

Exiting from WinGPR

To exit from WinGPR, click on the *Exit* option from the **File** menu.

Managing Sessions

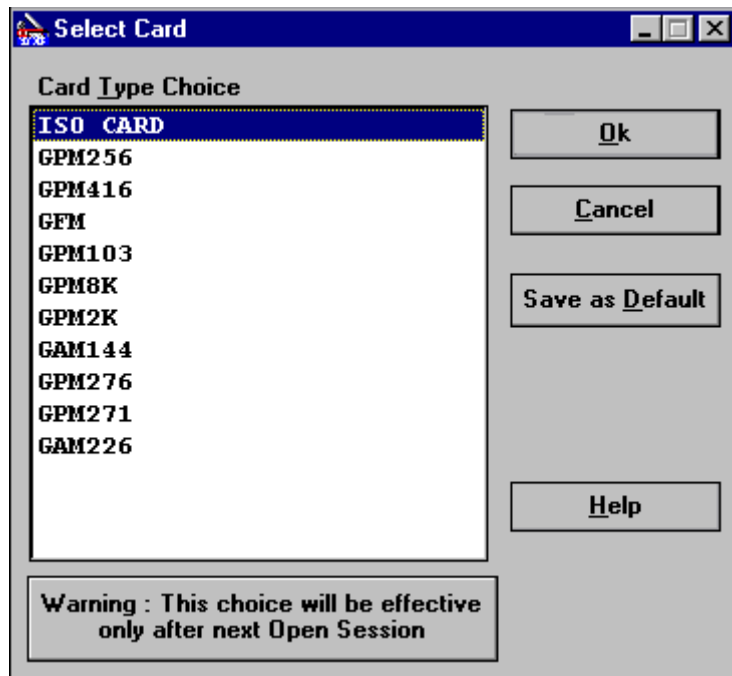
Introduction

This section describes how to assign the type of card that you are using and how to open, close, and switch sessions.

Assigning Your Card Type

WinGPR supports all memory and microprocessor cards. The steps below describe how to assign the type of card that you are using with your reader. Any changes that you make are registered after the next open session.

1. Click on the Select Card option in the Card menu. The **Select Card** dialog box opens listing the available card types.




Select Card Dialog Box

2. Click on the type of card that you are using so that it is highlighted.
3. Click **Ok** to select this card type for the next session, or click **Save as Default** to keep this card type as the default selection.

Opening a Session

Before you can use your smart card to perform transactions, such as sending commands, you have to open a session.

Select the Open Session (Reset) option in the Card menu, or click on the  icon in the toolbar. The card returns the Answer-to-Reset.

Fast Open

Note: Non-ISO cards do not support this function. Call GEMPLUS before using your card to check that you can use this function.

WinGPR enables you to open a session (cold reset) with the GPR400 at twice the speed of the standard open session command. This option is only available when you are running in the expert mode.

Select the *Open Fast Session* option in the **C**ard menu, or click on the  icon in the toolbar. The card returns the *Answer-to-Reset*.

Closing a Session

After you finish transacting with a card, you close a session, leaving the network available for transactions with other cards.

Select the *C*lose Session (*Vcc Off*) option from the **C**ard menu. Removing the card from the reader has the same effect as the *C*lose Session command.

Switching Between Sessions

If the card supports more than one protocol or baud rate, you can switch between them, informing the reader of the switch, removing power from the card.

Example:

The card is used in an ATM banking application. When you enter the card into the ATM reader, the card is recognized and powered up using T=0, 9600 baud. When you enter it into the toll reader, it switches to 115200 baud.

Select the *S*witch Session option from the **C**ard menu. The card returns the *Answer-to-Reset*.

Trace Files

Introduction



This section describes how to record and replay sequence traces.

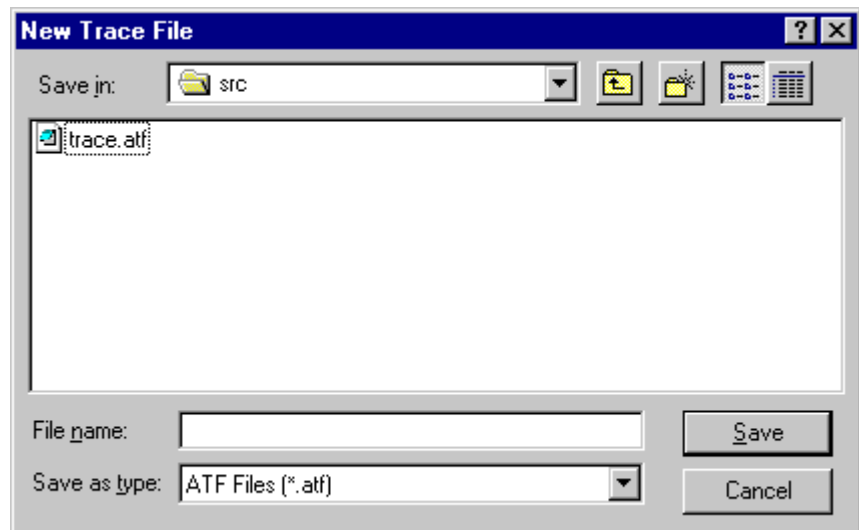
WinGPR enables you to record a sequence of tasks, then see the code generated by WinGPR to perform these tasks. The task coding is recorded in trace files. You typically use trace files:

- to see how you program the recorded tasks
- to troubleshoot by replaying exactly what went wrong
- to replay simple personalization sequences

Recording Card Exchanges

Follow the steps below to record a card exchange.

1. Open a trace file to record the sequence in by selecting the **New Trace** option from the **File** menu, or click on the  in the toolbar. The icon changes to  and the **New Trace File** dialog box opens:



2. To Record the Sequence to a New Trace File, type a file name into the **File Name** box.

To Record the Sequence to an Existing Trace File:

- i. Type an existing trace file name or select one from the drop down list.
- ii. Click **OK** or press ENTER.

When you enter the trace file name, all the card exchanges that you perform are recorded in the file until you close it.

Ending a Card Exchange

To stop recording a card exchange, close the trace file by selecting the **C**lose Trace option from the **F**ile menu.

Replaying a Task Sequence


WinGPR enables you to replay a card exchange that you recorded in a trace file to see the code that was generated to perform the task.

You can replay a task sequence in one of two modes: single step mode or run mode. Single step mode replays each command individually, waiting for you to prompt it to replay the next step. Run mode replays the recorded card exchange from beginning to end.

You access both modes from the **P**lay **T**RACE **F**ile dialog box. You can mix these two modes, starting the trace in run mode for example and switching to single step mode if an unacceptable code is returned. You can finish the trace in the run mode, or continue step by step.

You can control the status code returns and the data that is returned by the card using the *Status controls* options and the *Data controls* options. See *Status Controls* and *Data Controls* below.

Follow the steps below in order to run a trace file:

1. Click on the **R**eplay option in the **F**ile menu, or click on the  icon in the toolbar. The **O**pen a **T**race **F**ile (**R**eplay) dialog box opens.
2. Type the name of the trace file that you want to run in the **F**ile **N**ame box, or select a name from the drop down list.
3. Click **O**K. The **R**eplay dialog box opens.
4. Click on **R**un to replay the trace in run mode or **N**ext **S**tep to replay the trace in single step mode. The trace begins.
5. Click on **R**estart to restart the replay if it is interrupted, or to advance to the next step if you are replaying in single step mode.

Status Controls

Note: If you select the continuous option, the replay does not stop regardless of the status control selected.

When a replay is interrupted, the line with the error in it is highlighted, and the expected data is shown.

Select this	To do this
Status not controlled	Ignore the status controls
Status = 90 00	Stop the replay if the card returns a status value other than 90 00
Status = File status	Stop the replay if the card returns a status value other than that recorded in the trace file

Data Controls

Note: If you select the continuous option, the replay does not stop regardless of the data control selected.

Select this	To do this
Data not controlled	ignore the data control
Data = File data	stop the replay if the card returns data that is different from that stored in the trace file.

Card Commands


Introduction

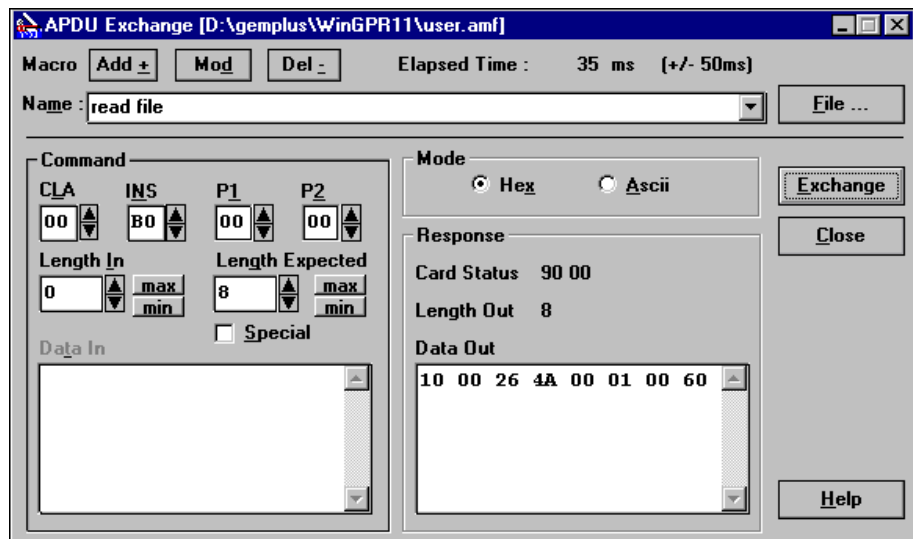
This section describes how to send APDU commands and binary commands to the card.

Before you send a command make sure that you opened a session.

Sending Commands

Follow the steps below to send an APDU command to a card:

1. Click on the *APDU Exchange* option in the **Card** menu, or click on the  icon in the toolbar. The **APDU Exchange** dialog box opens:



Note: One MPCOS command requires that you click in the **Special** box. It is only possible to click in this box when the Length In = 0. See the appropriate card reference manual for further detail.

2. Select a command that you previously saved in a macro, or enter a new command. See below.

To enter a command saved in a macro, see *Using Macros*.

To Enter a New Command

Move the cursor to the *Commands* field and enter the command fields as follows:

In this field	Enter this:
CLA	instruction class
INS	instruction code
P1	parameter 1
P2	parameter 2

Length In	length of data (if any) that you enter with the command
Length Expected	length of data that you expect the command to return.

See the appropriate reference manual for the card that you are using for further detail about commands.

- Click on **Send** to send the command. The command returns its response in the *Response* field. the following tables describes these fields:


This field	Holds this data
Card Status	status code that the card returns. See the appropriate reference manual for the card that you are using.
Length out	length of the data (if any) that the card returns in response to the command.
Data	data (if any) that the card returns in response to the command

Using Macros


You can save the APDU commands that you send a card by entering them in a macro. This is a useful shortcut for replaying commands that you use often. The paragraphs below describe how to record macros and how to replay them from a file.

Note: You cannot use the same macro name twice. Macro files can contain a maximum of 255 macros.


Recording Macros

- Select the *APDU Exchange* option from the **Card** menu or click on the  icon in the toolbar. The **APDU Exchange** dialog box opens.
- Click on the *File* option button in the **APDU Exchange** dialog box. The **Open a Macro File** dialog box opens.
- Type the macro file name in the **File Name** box. Make sure that you include the .amf file extension.
- Click on **OK** or press ENTER to return to the **APDU Exchange** dialog box.
- Type the macro name in the **Name** box.
- Enter the APDU command or commands that you want to record in the macro following the instructions provided in *Sending APDU Commands* .
- Save the macro by clicking on the **Add±** option button.


Replaying Macros

1. Select the *APDU Exchange* option from the **C**ard menu or click on the  icon in the toolbar. The **APDU Exchange** dialog box opens.
2. Click on the *File* option button in the **APDU Exchange** dialog box. The **Load a Macro File** dialog box opens.
3. Type or select the name of the macro file that contains the macro that you want to replay in the **File Name** box.
4. Click on **OK** or press ENTER to return to the **APDU Exchange** dialog box.
5. Type the macro name in the **Name** box or enter a macro from the drop down list.
6. Click **OK** to send the macro.

Modifying Macros

1. Select the *APDU Exchange* option from the **C**ard menu or click on the  icon in the toolbar. The **APDU Exchange** dialog box opens.
2. Click on the *File* option button in the **APDU Exchange** dialog box. The **Load a Macro File** dialog box opens.
3. Type or select the name of the macro file that contains the macro that you want to modify in the **File Name** box.
4. Click on **OK** or press ENTER to return to the **APDU Exchange** dialog box.
5. Modify the command contents for the macro.
6. Click on the *Mod* option button. The macro is modified.

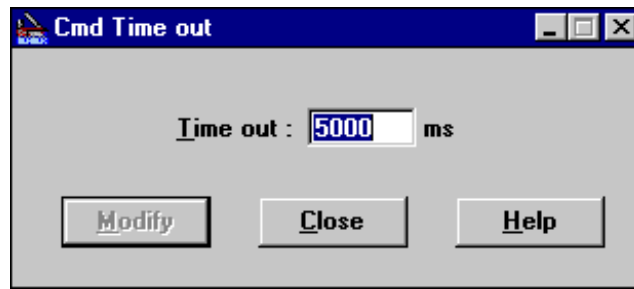
Deleting Macros

1. Select the *APDU Exchange* option from the **C**ard menu or click on the  icon in the toolbar. The **APDU Exchange** dialog box opens.
2. Click on the *File* option button in the **APDU Exchange** dialog box. The **Load a Macro File** dialog box opens.
3. Type or select the name of the macro file that contains the macro that you want to delete in the **File Name** box.
4. Click on **OK** or press ENTER to return to the **APDU Exchange** dialog box.
5. Select the macro that you want to delete from the drop down list.
6. Click on the *Del* option button. The macro is deleted.

Command Timeout Mechanism

When you send a command to the reader or to the card through the reader, the PC waits a certain amount of time for a response. This option enables you to determine this time length.

To initialize or change this time, select the *Cmd TimeOut* option from the **C**ard menu. The **Cmd TimeOut** dialog box opens displaying the current time-out period:



Cmd Timeout Dialog Box

To change this time, enter the time that you want in the **Time Out** box then click on the *Modify* option button. The time-out period is changed.

Reader Commands

Introduction

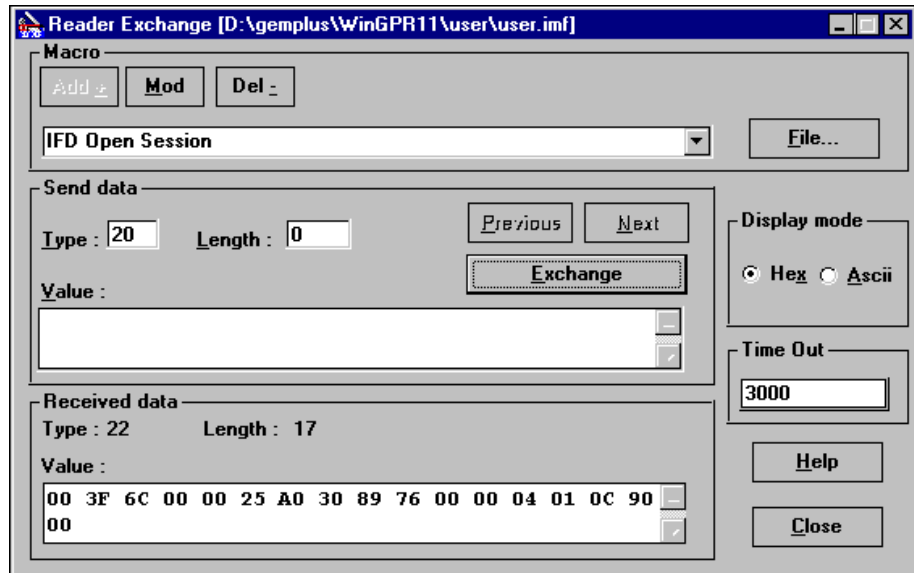
The following paragraphs describe how to send low level commands to the reader. It also describes how to record, replay, modify and delete commands stored in macro files.

You can send commands to the reader in hexadecimal or ASCII format.

Sending Commands

Follow the steps below to send commands to the reader.

1. Select the *Exchange* option from the **Reader** menu. The **Reader Exchange** dialog box opens:



Reader Exchange Dialog Box

2. Select a command that you previously saved in a macro, or enter a new command. See below.

To enter a command saved in a macro see *Using Macros*.

To Enter a New Command

- i. Enter the type and length for the data, and enter the data that you want to send.
- ii. Click on the *Exchange* option button. The data returned from the reader appears in the **Received Data** box.

Using Macros

You can save the IFD commands that you send to a reader by entering them in a macro. This is a useful shortcut for replaying commands that you use often. The paragraphs below describe how to record macros and how to replay them from a file.

Note: You cannot use the same macro name twice. Macro files can contain a maximum of 255 macros.

Recording Macros

1. Select the *Exchange* option from the **Reader** menu. The **Reader Exchange** dialog box opens.
2. Click on the *File* option button. The **Open a IFD Macro File** dialog box opens.
3. Type the macro file name in the **File Name** box. Make sure that you include the .imf file extension.
4. Click on **OK** or press ENTER to return to the **Reader Exchange** dialog box.
5. Type the macro name in the **Name** box.
6. Enter the command or commands that you want to record in the macro following the instructions provided in *Reader Commands*.
7. Save the macro by clicking on the **Add±** option button.

Replaying Macros

1. Select the *Exchange* option from the **Reader** menu. The **Reader Exchange** dialog box opens.
2. Click on the *File* option button in the **Reader Exchange** dialog box. The **Open a IFD Macro File** dialog box opens.
3. Type or select the name of the macro file that contains the macro that you want to replay in the **File Name** box. Make sure that you include the .imf file extension.
4. Click on **OK** or press ENTER to return to the **Reader Exchange** dialog box.
5. Type the macro name in the **Name** box or enter a macro from the drop down list.
6. Click **OK** to send the macro.

Modifying Macros

1. Select the *Exchange* option from the **Reader** menu. The **Reader Exchange** dialog box opens.
2. Click on the *File* option button in the **Reader Exchange** dialog box. The **Open a IFD Macro File** dialog box opens.
3. Type or select the name of the macro file that contains the macro that you want to replay in the **File Name** box. Make sure that you include the .imf file extension.
4. Click on **OK** or press ENTER to return to the **Reader Exchange** dialog box.
5. Type the macro name in the **Name** box or enter a macro from the drop down list.
6. Modify the command contents for the macro.
7. Click **OK** to send the macro.

Deleting Macros

1. Select the *Exchange* option from the **Reader** menu. The **Reader Exchange** dialog box opens.
2. Click on the *File* option button. The **Open a IFD Macro File** dialog box opens.
3. Type the macro file name in the **File Name** box. Make sure that you include the .imf file extension.

4. Click on **OK** or press ENTER to return to the **Reader Exchange** dialog box.
5. Type or select the macro name in the **Name** box.
6. Click on the *Del_* option button. The macro is deleted.

Reader Management

Introduction

This section describes how to view the reader information, how to change the protocol and baud rate of the reader, how to read and load the reader memory, and how to make active and deactivate the card driver and OS Filter in the RAM or Flash memory.

It also describes how you can put the reader into the low energy consumption idle mode, and how to return it to operating mode, and how you can reset the reader.

Putting the Reader into Idle Mode

When you are not using the reader you can put it into a low energy consumption idle mode. When this mode is active you can no longer use the following options:

Menu	Option
File	Replay
Card	Open Session
Card	Open Fast Session
Card	Switch Session
Card	Switch Protocol
Card	Close Session
Reader	Exchange
Reader	Status
Reader	Load
Reader	Read
Reader	Activate/Deactivate
Reader	Sleep
Reader	Reset

To put the reader into idle mode click on the **Sleep** option in the **Reader** menu.

To put the reader into operation after invoking the idle mode, click on the **Wake up** option in the **Reader** menu.

Resetting the Reader

To reset the reader click on the **Reset** option in the **Reader** menu. You are asked to confirm your choice.

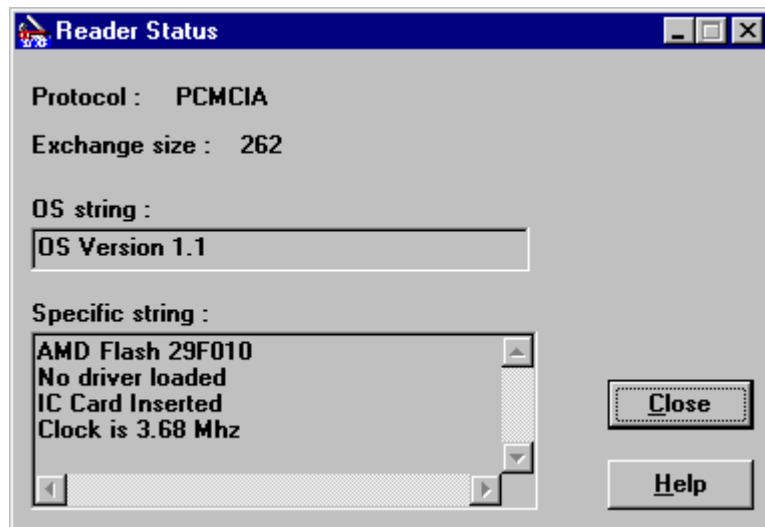
This has the same effect as removing the reader - all the active memory is erased.

This command works even when there is no GPR present. When the **No Response from Reader** appears while a GPR is connected, carry out a reset.

Current Reader Information

You can find out the working specifications of the current reader by clicking on the **Status** option in the **Reader** menu.

The **Reader Status** dialog box opens displaying the following reader information:



Reader Status Dialog Box

- Protocol = communication protocol the reader is using
- Exchange size = size of the exchange buffer
- OS string = operating system identifier
- specific string = indicates if the reader has flash memory, if a card is inserted in the reader, if the driver is active, as well the clock frequency.

Click on **Close** to close this dialog box.

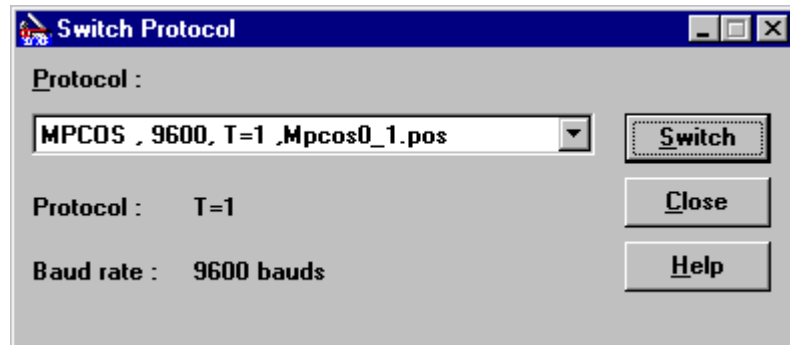
Click on **Help** to bring up the on-line help.

Changing Protocol & Baud Rate

Note: This function does not work with the GPR400.

You can change the protocol and baud rate that the reader communicates with by using the Switch Protocol command.

1. Click on the *Switch Protocol* option in the **Card** menu. The **Switch Protocol** dialog box opens displaying the current protocol and baud rate in use.



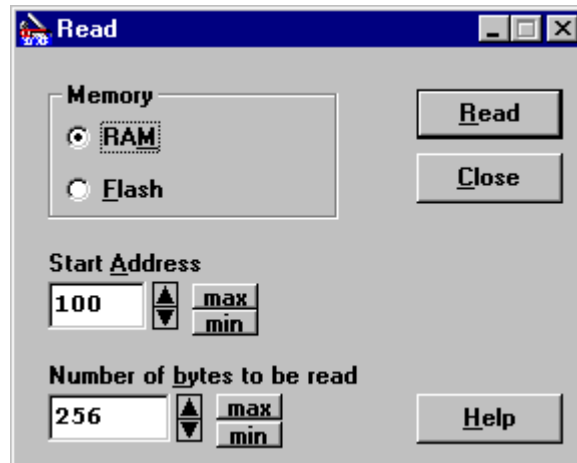
Switch Protocol Dialog Box

2. Click on the drop down list and select the protocol that you want to switch to.
3. Click on the *Switch* option button. The protocol is changed.
4. Click on **Close** to close this dialog box. Click on **Help** to bring up the on-line help.

Reading GPR400 Memory (Expert Mode Only)

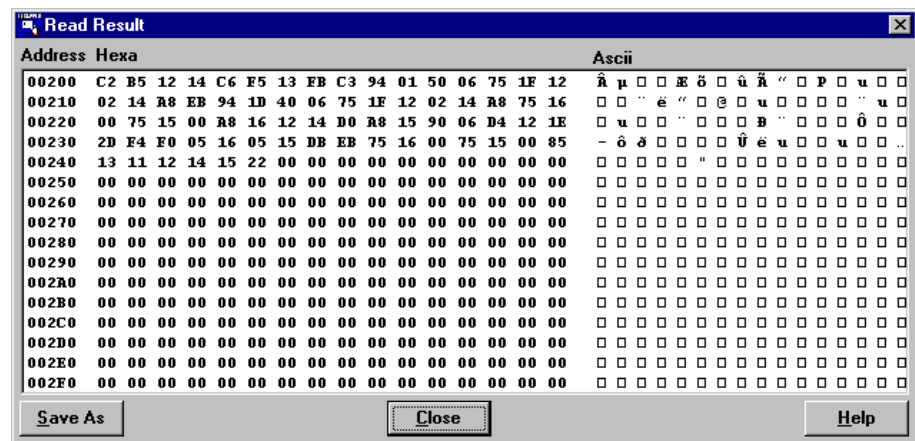
You can read the RAM and the flash memory (if you have this option) of the reader. You can only read up to address 6D3 in the RAM - for a standard product.

1. Click on the Read option button in the Read menu. The **Read** dialog box opens.



Read Dialog Box

2. Click on the RAM radio button to read the RAM, or the Flash radio button to read the flash memory.
3. Set the address that you want to start reading from and the number of bytes that you want to read.
4. Click on Read. The **Read Result** dialog box opens and you can read the data that is in the memory of the reader.



Read Result Dialog Box

5. To save the result, click on Save As. The standard Windows® Save File as window opens. Save the result under the file name of your choice then click OK. It is stored in binary form.

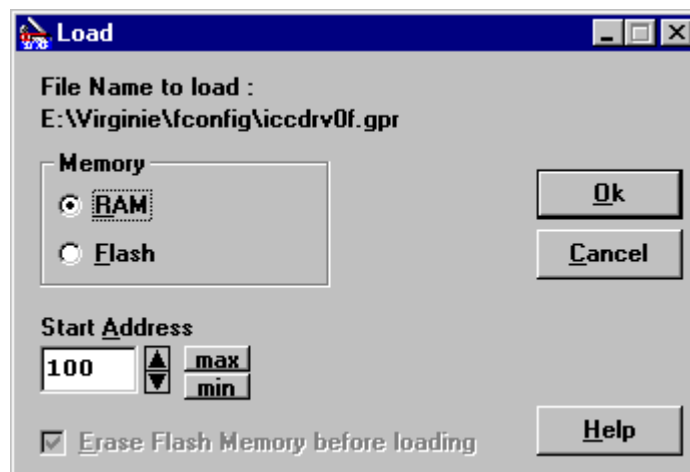
To exit from the window without saving the configuration, click Close.

Loading a File to the GPR400 Memory (Expert Mode Only)

If there are changes or additions to the OS filter, you can download the file that contains the changes to the RAM or the flash (if you have this option) memory.

You can only load a driver in the flash memory for a synchronous card at the 2100 address. To make this driver active you have to select address 100 in the *Activate/Deactivate* window.

1. Click on the Load option in the Readers menu. The **Open File to be Loaded** dialog box opens.
2. Select the file that contains the data that you want to load to the memory, then click **OK**. The **Load** dialog box opens.



Load Dialog Box

3. Choose whether you want to load the RAM or the Flash memory and set the address that you want to load from.

If you want to erase the flash memory before loading, click in the check box at the bottom of the screen.

4. Click **OK**.

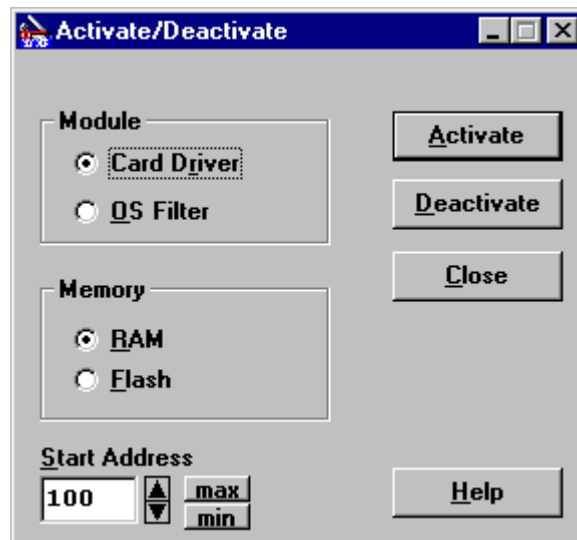
Activating & Deactivating a Module or the Memory (Expert Mode Only)

Note: At present you have to use the filter and OS provided by GEMPLUS. If you want to make changes to either of these, contact GEMPLUS.

Note: If you activate invalid data, you have to reset the reader.

You can activate or deactivate a card driver and the OS filter in the RAM or the flash memory (if you have this option) of the reader.

1. Click on the Activate/Deactivate option in the Readers menu. The **Activate/Deactivate** dialog box appears.



Activate / Deactivate Dialog Box

2. Select the entity that you want to activate or deactivate by clicking in the appropriate radio button.

Example:

If you want to deactivate the card driver in the RAM, click in the card driver radio button and the RAM radio button.

3. Set the address that you want to start the activate/deactivate command at, then click on the **Activate** or **Deactivate** button.