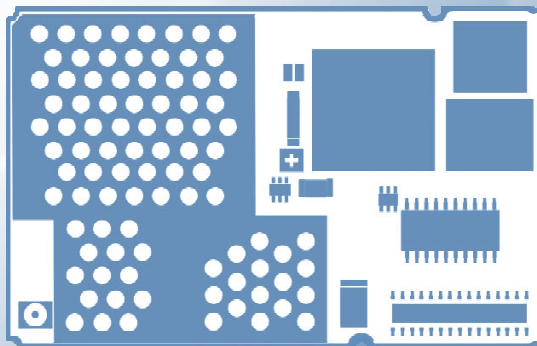


SIEMENS

Multiplexer Installation Guide

(Windows 2000 and Windows XP)



Siemens Cellular Engines

Version: 03
DocID: Mux_drv_inst_v03

Wireless Modules

Document Name: **Multiplexer Driver Installation Guide**

Version: **03**

Date: **July 25, 2003**

DocId: **Mux_drv_inst_v03**

Status: **Released**

General notes

Product is deemed accepted by Recipient and is provided without interface to Recipient's products. The documentation and/or Product are provided for testing, evaluation, integration and information purposes. The documentation and/or Product are provided on an "as is" basis only and may contain deficiencies or inadequacies. The Documentation and/or Product are provided without warranty of any kind, express or implied. To the maximum extent permitted by applicable law, Siemens further disclaims all warranties, including without limitation any implied warranties of merchantability, completeness, fitness for a particular purpose and non-infringement of third-party rights. The entire risk arising out of the use or performance of the Product and documentation remains with Recipient. This Product is not intended for use in life support appliances, devices or systems where a malfunction of the product can reasonably be expected to result in personal injury. Applications incorporating the described product must be designed to be in accordance with the technical specifications provided in these guidelines. Failure to comply with any of the required procedures can result in malfunctions or serious discrepancies in results. Furthermore, all safety instructions regarding the use of mobile technical systems, including GSM products, which also apply to cellular phones must be followed. Siemens or its suppliers shall, regardless of any legal theory upon which the claim is based, not be liable for any consequential, incidental, direct, indirect, punitive or other damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information or data, or other pecuniary loss) arising out the use of or inability to use the Documentation and/or Product, even if Siemens has been advised of the possibility of such damages. The foregoing limitations of liability shall not apply in case of mandatory liability, e.g. under the German Product Liability Act, in case of intent, gross negligence, injury of life, body or health, or breach of a condition which goes to the root of the contract. However, Claims for Damages arising from a breach of a condition which goes to the root of the contract shall be limited to the foreseeable damage which is intrinsic to the contract, unless caused by intent or gross negligence or based on liability for injury of life, body or health. The above provision does not imply a change on the burden of proof to the detriment of the Recipient. Subject to change without notice at any time. The interpretation of this general note shall be governed and construed according to German law without reference to any other substantive law.

Copyright notice

Transmittal, reproduction, dissemination and/or editing of this document as well as utilization of its contents and communication thereof to others without express authorization are prohibited. Offenders will be held liable for payment of damages. All rights created by patent grant or registration of a utility model or design patent are reserved.

Copyright © Siemens AG 2003

Trademark notice

MS Windows® is a registered trademark of Microsoft Corporation.

Contents

0 Document history..... 4

1 Introduction 5

1.1 Supported product versions 5

1.2 References..... 6

1.3 Abbreviations 6

2 Installation 7

2.1 Required files 7

2.2 Installing the WinMux2k driver 7

2.3 Deinstalling the driver..... 8

2.4 Settings on the Serial Multiplexer Property page 8

3 Known problems 9

3.1 Booting the operating system..... 9

3.2 Shutdown of the operating system..... 9

3.3 Standby of the operating system..... 9

3.4 Wake on ring..... 9

Tables

Table 1: Required driver files.....7

0 Document history

Preceding document: "Multiplexer Installation Guide" Version 02.00

New document: "Multiplexer Installation Guide" Version **03**

Chapter	Page	What is new
1	5	Revised chapter, added further supported products
2.1	7	Renamed file: Winmux35.inf → New file name: Winmux2k.inf
2.2	7	Recommendation for installing the WinMux2k driver with a different module added
2.4	8	Chapter "Serial Multiplexer Property page" added
3.1	9	Added note regarding the TC45 behaviour

1 Introduction

The multiplex mode according to the ETSI TS 101 369, GSM 07.10 Multiplexer protocol enables one physical serial interface to be partitioned into three virtual channels. This allows you to take advantage of three sessions running simultaneously on one serial interface. For example, you can send or receive data on the first channel, while the remaining channels stay in AT command mode.

In order to properly communicate with the wireless modem, the application needs to support the multiplex protocol and 3 virtual ports must be installed. For this purpose a Windows 2000/XP multiplexer driver WinMux2k can be provided. This driver offers the basic multiplexer functionality and serves as a reference implementation to aid developers and system integrators in designing, developing and testing customized multiplexer applications. As such, it has been tested by Siemens using a variety of applications and platforms, but naturally, even the most extensive test setup can never be adequate to cover all conceivable configurations.

The Siemens AG does not guarantee any support regarding the integration of the driver into a customer's application. However, the documentation as well as code binaries and source files can be provided and used for further development.

This document describes how to install the Windows 2000/XP multiplexer driver WinMux2k in a Windows 2000/XP based application.

1.1 Supported product versions

Please note that this User Guide refers to the following products:

- TC35 and TC37 from Version 03.10 onwards
- MC35: from Version 03.00 onwards
- AC35

The following products support version 3 of the multiplexer protocol with enhanced features:

- AC43
- AC45
- MC35i
- MC35i Terminal
- MC39i
- MC45
- MC46
- MC388
- TC35i
- TC35i Terminal
- TC45

To visit the Siemens Website you can use the following link:

<http://www.siemens.com/wm>

1.2 References

- [1] Digital Cellular Telecommunications Systems (Phase 2+); Terminal Equipment to Mobile Station (TE-MS) "Multiplexer Protocol"; ETSI TS 101 369 V7.1.0 (1999-11), GSM 07.10 Version 7.1.0, Release 1998
- [2] Multiplexer Driver Developer's Guide for Windows 2000 and Windows XP
- [3] Multiplexer User's Guide
- [4] MC35 Multiplexer User's Guide; as of Version 02.00, for MC35 only
- [5] TC3x Multiplexer User's Guide; as of Version 03.10, for TC35 and TC37 only
- [6] Application Note 24: Application Developers' Guide

1.3 Abbreviations

ACPI	Advanced Configuration and Power Interface
ETSI	European Telecommunications Standards Institute
GPRS	General Packet Radio Service
GSM	Global System of Mobile Communication
MS	Mobile Station
PC	Personal Computer
TE	Terminal Equipment
UART	Universal Asynchronous Receiver Transmitter

2 Installation

2.1 Required files

The following files are part of the WinMux2k driver installation.

Table 1: Required driver files

File	Comment
Wmuxinst.exe	WinMux2k driver installation program
Winmux2k.inf	INF file for the WinMux2k driver. It contains all driver settings and module specific settings stored in the Windows Registry during the installation.
Winmux2k.sys	Device driver image
Wmuxprop.dll	Property page for the module, co-installer

2.2 Installing the WinMux2k driver

Before starting the installation ensure that all files are located in the same folder as the `wmuxinst.exe`:

- `winmux2k.inf`
- `winmux2k.sys`
- `wmuxprop.dll`

1. Start the program **wmuxinst.exe**.
2. Ensure that the module is connected to a serial port and turn the module power on.
3. Press the "Scan" button of the application. All Siemens modules found will be listed in a box. If no modem has been installed yet, the virtual ports can be selected. If it is properly installed, the virtual ports are shown. If at least one modem is found, the "Install" button becomes active. Pressing this button will cause the selected modules to be installed.
4. Use the Device Manager to check that the installation was successful.

The virtual ports are available without reboot. The driver instances are visible in the device manager class *"Multi-port Serial Adapters"*. If you wish to uninstall the driver see chapter 2.3.

When migrating to another module type you are required to uninstall the driver and reinstall it with the new module. This is significant because the `winmux2k.inf` file contains module specific settings, as stated in Table 1.

Note: During the installation a pop-up dialog with *"Digital Signature Not Found"* will appear. Please ignore this message and continue the installation process. The reason for the message is that the driver has not been registered with Microsoft, but its correct functionality is ensured.

2.3 Deinstalling the driver

In order to deinstall the Windows Multiplexer Driver perform the following steps:

Windows 2000:

1. Start the *Control Panel*
2. Select *System*
3. Select the *Hardware* property sheet
4. Double click the *Device manager* button
5. Under *Multi-port serial adapters* right click *Serial Multiplexer*
6. Choose *Uninstall Driver* and answer the confirm dialog with yes to finally uninstall the driver

Win XP (with the new desktop not the classic desktop):

1. Start the *Control Panel*
2. Under *Performance and Maintenance* select *System*
3. Select the *Hardware* property sheet
4. Double click the *device manager* button
5. Under *Multi-port serial adapters* right click *serial Multiplexer*
6. Choose *Uninstall Driver* and select *Yes* from the *Confirm File Deletion* dialog.

2.4 Settings on the Serial Multiplexer Property page

From the *Serial Multiplexer* Property page (see chapter 2.3 for details) select the *Port Settings* tab if you wish to set the following parameters:

- Physical serial port
- Baud rate on the physical serial port
- Virtual serial port names

3 Known problems

3.1 Booting the operating system

Windows 2000 and Windows XP toggle the signals of the serial interfaces. As a result, the module will be switched on, even if the WinMux2 driver is not active. The driver accesses the connected module only when the virtual ports are accessed.

If the WinMux2k driver is used by accessing one or more of the virtual ports, it switches off the module when the last virtual port is closed again. Only TC45 does not switch off in this case.

3.2 Shutdown of the operating system

If the supported operating system has been installed in ACPI mode, the power supply will be automatically switched off. This power down might cause pulses on those signals of the serial interfaces which are responsible for switching the module on. This may happen, even if it had correctly switched off before by the driver.

If the module has its own power supply it might stay switched on after the shutdown procedure of the computer has completed.

3.3 Standby of the operating system

If the operating system has been installed in ACPI mode, it supports improved power management by also sending computer components into suspend mode. The serial WinMux2k driver supports this power management by switching the module into standby mode, if the driver is in use by accessing one or more of the virtual ports. If the operating system has been properly configured together with the BIOS, incoming calls or real clock alarms wake the operating system up again. During this wake up the first characters sent by the module to the operating system via the serial interface are lost. This is no restriction of the serial WinMux2k driver, but caused by the operating system.

E.g. in case of an incoming call the first RING event is lost. Usually this causes no problem because the RING is repeated every few seconds. However, in case of the real clock alarm the module only sends one CALA URC. As a result, the URC will not be indicated though the alarm will be correctly executed.

Additionally, in some cases when the computer switches to suspend mode, this causes pulses on the serial interface signals which wake up the module again.

3.4 Wake on ring

If the operating system is in standby mode and the module has not been switched off, incoming calls and real time clock alarms should wake up the operating system (wake on ring). This feature belongs to the ACPI power management mechanisms that are not properly implemented on all PC systems. It is independent of the multiplexer driver. When the ring signal toggles on the serial interface like on incoming calls and real time clock

alarms, this should wake up the operating system, if the PC has been properly configured. On some systems not the ring signal but data transferred to the PC (the "RING" or "CALA" messages from the module) wake up the operating system. To avoid loss of data the multiplexer driver switches on the hardware flow control on the module. This means that the module cannot send data to the PC, if the operating system is in standby mode and therefore the serial interface is blocked by the hardware flow control. As a consequence the operating system does not wake up, if the system ignores the ring signal, because the module cannot send the "RING" or "CALA" messages to the PC.