TELINDUS

TMA

TMA

USER and REFERENCE MANUAL

Version: 5.6 182086

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Version 5.6 24 December 2002

MRP 182086 ©Telindus

Preface

Organisation of this manual

This manual contains two main parts.

Part	This part …
User manual	introduces TMA and explains how to install it. It also shows you the basic functions of TMA.
Reference manual	teaches you more about the advanced functions of TMA.
Annexes	gives some additional information.

User manual

The following table gives an overview of the chapters in the user manual.

Chapter	This chapter …
1	gives an introduction on the Telindus Maintenance Application (TMA).
2	shows you how to install TMA on your computer.
3	explains how to make a connection between the computer running TMA and the Telindus device.
4	teaches you how to open a TMA session.
5	presents some practical examples on opening a TMA session on a device.
6	thoroughly describes all elements of the TMA window such as the pull-down and pop-up menus, the toolbar buttons, etc.

Reference manual

Chapter	This chapter …
7	shows you how to add a user instantiatable object to the containment tree.
8	explains how you can define your own values for attributes that have a string or an integer as value. You can do this using the *custom.txt* file.
9	describes what the TMA sub-system picture is and how you can make it interactive.
10	shows you how to download software towards a Telindus device using TMA.
11	introduces the Telindus Memory Loader (TML), the tool that actually takes care of the software download. It shows you how to evoke it from the command line.
12	describes the communication parameters in the *Cms2Serv.ini* file.
13	helps you when you are unable to open a TMA session.

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Organisation of this manual (continued)

Annexes

The following table gives an overview of the annexes.

Annex	This annex …
Annex A	gives a list of abbreviations.
Annex B	gives a quick overview of the most important TMA error messages.
Annex C	shows ordering information.

Conventions used in this manual

Typographical conventions

The following typographical conventions are used in this manual.

The format …	is used to indicate …
Normal	normal text.
Italic	• new or emphasised words • file names and directory paths, e.g. *C:\Program Files\TMA\bin\Tma.exe*
`Computer`	computer output and code examples, e.g. `NOK,1,1,Invalid command.`
`Computer Bold`	text you have to enter at the prompt, e.g. **`Get sysName`**.
Narrow	objects and attributes in the containment tree of a device when they are mentioned in the normal text. I.e. when they are not a part of computer input or output.
Blue	references to other parts in the manual, e.g. refer to Chapter xx - Technical specifications.
Blue underlined	a hyperlink to a web site, e.g. http://www.telindus.com

Icons

The following icons are used throughout the manual.

Icon	Name	Description
	Remark	Useful information or tips.
	Caution	Read the text that follows carefully in order to insure correct operation.

Software version

This manual describes the features of TMA version S0004/02000.

Your feedback

Your satisfaction about this purchase is an extremely important priority to all of us at Telindus. Accordingly, all electronic, functional and cosmetic aspects of this new unit have been carefully and thoroughly tested and inspected. If any fault is found with this unit or should you have any other quality-related comment concerning this delivery, please submit the Quality Comment Form on our web page at http://www.telindusproducts.com/quality.

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User manual

1. Introduction

This chapter gives an introduction to the Telindus Maintenance Application (TMA). First it describes what TMA is. Then it gives the main features of TMA.

What is TMA?

Due to the continuous evolution in the domain of data communication technology, data communication devices become more and more complex to install and control. This results in a need for an easy maintenance tool.

The Telindus Maintenance Application (TMA) is such a tool. It offers you full control over any Telindus device in your network in combination with a user-friendly man – machine interface (MMI).

Features of TMA

The most important features of TMA are:

- direct connection via the device its control port
- remote connection over the network
- password protected access to the device
- reading and changing the device configuration
- configuration profiles can be stored on hard disk for re-use
- instant status, performance and alarm information
- real time monitoring of the interchange circuits (RS-530, V.35, V.36, X.21, G.703, IP Router, etc.)
- real time monitoring of modem line parameters
- execution of diagnostic tests
- downloading software to the device
- sub-system picture.

2. Installing TMA

This chapter explains how to install TMA. First it gives you the system requirements. Read these requirements carefully to make sure your computer will be able to run TMA. Then it explains the difference between the TMA *application* and the TMA *model files*. After that, the installation procedure is given starting from three different media: floppy disks, CD-ROM and the Telindus web site.

The following table gives an overview of this chapter.

2.1 System requirements

This section states the minimum system requirements to allow a successful installation of TMA. These requirements are:

System component	Minimum requirement
operating system	• Microsoft Windows 95 • Microsoft Windows 98 • Microsoft Windows NT 4.0 • Microsoft Windows 2000 • Microsoft Windows XP
data input device	Depending on how TMA is delivered to you: • 3 ½" floppy drive • CD-ROM drive • internet access
free disk space	• 4 MB without model files • 30 MB with model files (1)
total amount of RAM	• 16 MB for Windows 95/98 • 32 MB for Windows NT 4.0 • 64 MB for Windows 2000
communication port	• serial COM port: 9600, 8+N and / or • Ethernet card
networking	TCP/IP networking installed and configured

(1) Because the model files delivered with TMA evolve as the devices evolve, their size tends to increase with each new release. The figure specified in the table above, is the size of TMA and the model files as it was when this manual was written. For future releases of TMA, this figure may be incorrect.

2.2 The TMA application and model files

The Telindus Maintenance Application comprises two components. This section introduces these components.

TMA can be divided into two components:

Part	Description
the application	This is the TMA program itself, also called TMA engine. By default, the application is installed in the following directory and its subdirectories: *C:\Program Files\TMA*.
the model files	Each Telindus device has its own model file. This file contains the information TMA needs to connect to the device and exchange information with the device. The model files are installed separately from the application. This because the model files evolve as the device evolves. The model files delivered with the device correspond with the latest firmware of the device. This means that if you add devices to your network containing more recent firmware than the current devices, then the model files may have to be re-installed. The model files are backwards compatible. This means that the latest model files support not only the latest, but also all previous firmware revisions of the device. By default, the model files are installed in the following directory and its subdirectories: *C:\Program Files\TMA*.

The latest versions of TMA and the model files can always be downloaded from our web site at http://www.telindusproducts.com/tma.

The application and the model files can be installed from three different media:

- 3 ½" floppy disks
- a CD-ROM
- the Telindus World Wide Web site.

The following sections give an installation procedure for each medium.

2.3 Installing TMA from floppy disks

Normally TMA is delivered on CD-ROM. Exceptionally it is delivered on 3 ½" floppy disks. This section explains how to install TMA from these disks.

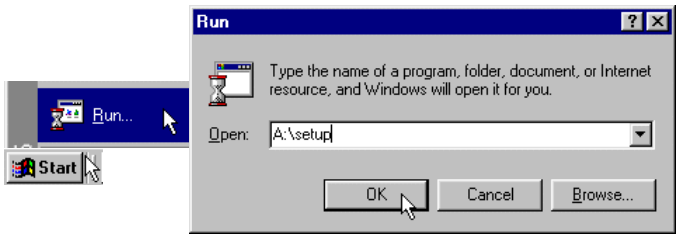
The following table gives an overview of this section.

2.3.1 Installing the application from floppy disk

To install the TMA application from the floppy disks, proceed as follows:

Step	Action
1	Insert the floppy disk labelled *TMA* in the floppy drive.
2	On the taskbar, select: *Start* → *Run…*
3	In the *Run* window: type *A:\setup* and click on *OK*.
4	The InstallShield Wizard guides you through the set-up process.

The following figure displays a few steps of the installation procedure:



2.3.2 Installing the model files from floppy disk

To install the TMA model files from the floppy disks, proceed as follows:

Step	Action
1	Insert the floppy disk labelled *TMA Model Files* in the floppy drive.
2	On the taskbar, select: *Start* → *Run…*
3	In the *Run* window: type *A:\setup* and click on *OK*.
4	The InstallShield Wizard guides you through the set-up process.

2.4 Installing TMA from CD-ROM

This section explains how to install TMA from the CD-ROM. The following table gives an overview of this section.

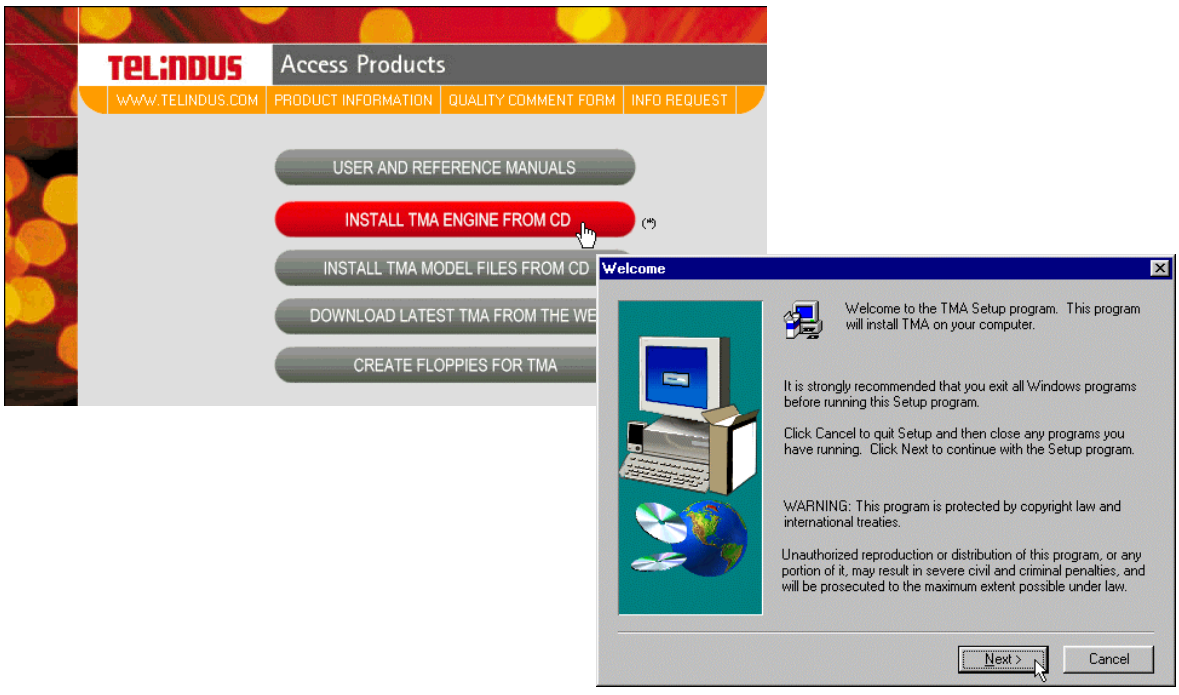
2.4.1 Installing the application from CD-ROM

To install the TMA application from the CD-ROM, proceed as follows:

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Insert the CD-ROM in the CD-ROM drive.</td></tr>
<tr><td>2</td><td>Windows automatically displays a HTML page where you can select from the following:
<table>
<tr><th>Option</th><th>Choose this option to …</th></tr>
<tr><td>USER AND REFERENCE MANUALS</td><td>consult the manuals included on the CD-ROM.</td></tr>
<tr><td>INSTALL TMA ENGINE FROM CD</td><td>install the TMA program from the CD-ROM.</td></tr>
<tr><td>INSTALL TMA MODEL FILES FROM CD</td><td>install the TMA model files from the CD-ROM.</td></tr>
<tr><td>DOWNLOAD LATEST TMA FROM THE WEB</td><td>download the most recent TMA program and / or model files from the Telindus web site.</td></tr>
<tr><td>CREATE FLOPPIES FOR TMA</td><td>create installation floppies for TMA. This enables you to distribute TMA on floppy disks for installation purposes.</td></tr>
</table>

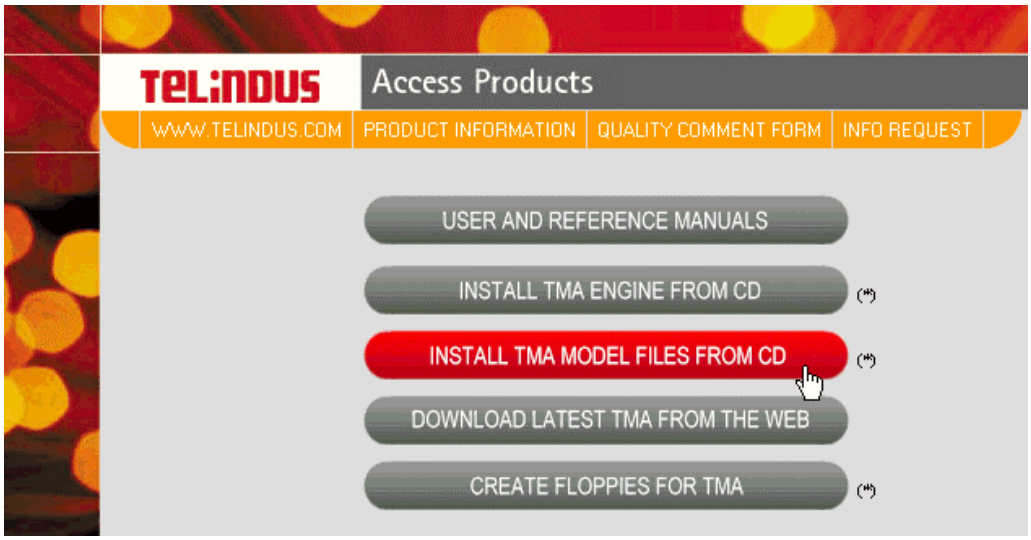
If the HTML page does not appear after insertion of the CD-ROM, then:
1. On the taskbar select Start → Run…
2. In the Run window type X:\StartHtml, where X is the letter of your CD-ROM drive.
3. Click on the OK button.</td></tr>
<tr><td>3</td><td>Select INSTALL TMA ENGINE FROM CD.</td></tr>
<tr><td>4</td><td>The InstallShield Wizard guides you through the set-up process.</td></tr>
</table>

The following figure displays a few steps of the installation procedure:



2.4.2 Installing the model files from CD-ROM

To install the TMA model files from the CD-ROM, proceed as follows:

Step	Action
1	Insert the CD-ROM in the CD-ROM drive.
2	Windows automatically displays a HTML page as shown below: 
3	Select INSTALL TMA MODEL FILES FROM CD.
4	The InstallShield Wizard guides you through the set-up process.

2.5 Installing TMA from the Telindus web site

The latest version of the TMA application and of the TMA model files is always available on the Telindus web site. This section explains how to download and install the application and the model files from the web site.

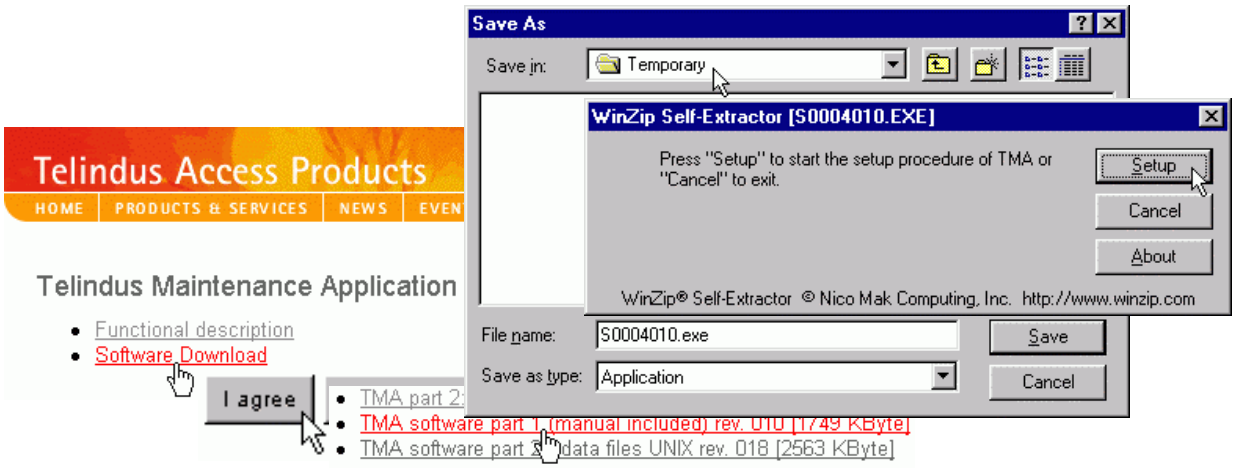
The following table gives an overview of this section.

2.5.1 Installing the application from the web site

To install the TMA application from the Telindus web site, proceed as follows:

Step	Action
1	Open your web browser and enter the following address: http://www.telindusproducts.com/tma
2	Read the License Agreement for Telindus software carefully. • If you agree with the terms stated in the agreement, click on *I agree*. • If you do not agree with the terms stated in the agreement, click on *I don't agree*.
3	Click on the link *TMA part 1: engine (manual included) rev. xxx (xxxx KByte)*.
4	Save the executable file *S0004xxx.exe* (where xxx stands for the revision) to a temporary directory on your hard disk. For instance, *C:\temp\S0004010.exe*.
5	In this temporary directory, double-click on the executable file *S0004xxx.exe*.
6	The InstallShield Wizard guides you through the set-up process.

The following figure displays a few steps of the installation procedure:



2.5.2 Installing the model files from the web site

To install the TMA model files from the Telindus web site, proceed as follows:

Step	Action
1	Open your web browser and enter the following address: http://www.telindusproducts.com/tma
2	Read the License Agreement for Telindus software carefully. • If you agree with the terms stated in the agreement, click on *I agree*. • If you do not agree with the terms stated in the agreement, click on *I don't agree*.
3	Click on the link *TMA part 2: data files rev. xxx (xxxx KByte)*.
4	Save the executable file *S0011xxx.exe* (where xxx stands for the revision) to a temporary directory on your hard disk. For instance, *C:\temp\S0011020.exe*.
5	In this temporary directory, double-click on the executable file *S0011xxx.exe*.
6	The InstallShield Wizard guides you through the set-up process.

2.6 Location of the TMA files

If you did not change the default file location during the set-up, then the TMA related directories and files can be found in the directory *C:\Program Files\TMA*. This directory has the following subdirectories:

Directory	This directory contains …
\bin	the executables. This comprises the TMA executable and some extra executables TMA sometimes summons (such as TML, TmaTftp, …).
\config	the configuration files. These are the **.ini* files. If you create a *custom.txt* file, you should also place it here.
\log	the log files. Sometimes errors are logged to a file. These files can be found in this directory.
\manuals	the user manual of TMA (this manual).
\model	the model files. TMA needs the model files to be able to communicate with the Telindus devices. These **.mod* files are located in this directory.
\picture	the sub-system picture files. These are the **.bmp* and **.def* files that are necessary to display the sub-system picture of a Telindus device.
\snmp	the Telindus MIB files. When using an SNMP browser, you need the MIB files of the Telindus devices. These **.mib* files are located in this directory.
\snmp_info	the SUM files. The **.sum* files give the relationship between the attributes as they are displayed in TMA and the parameters you can see using an SNMP browser.

2.7 Remarks on updating and uninstalling TMA

This section gives some remarks on updating and uninstalling TMA. The following table gives an overview of this section.

2.7.1 Updating TMA

Updating the TMA engine

If you want to install a newer version of the TMA engine, then it is not necessary to uninstall the previous version first. You can just install the new version “on top” of the previous one.

Updating the TMA model files

If you want to install a newer version of the TMA model files, then it is not necessary to uninstall the previous version first. You can just install the new version “on top” of the previous one.

Should you try to install an older version of the TMA model files on top of a newer one, then you get the following message:

```
Warning: you are trying to install an older version of the TMA Model Files
(S0004/03200) over a more recent version (S0004/03300). If you really want to do
so, please uninstall the current version and then run this installer again.
```

2.7.2 Uninstalling TMA

Uninstalling the TMA engine

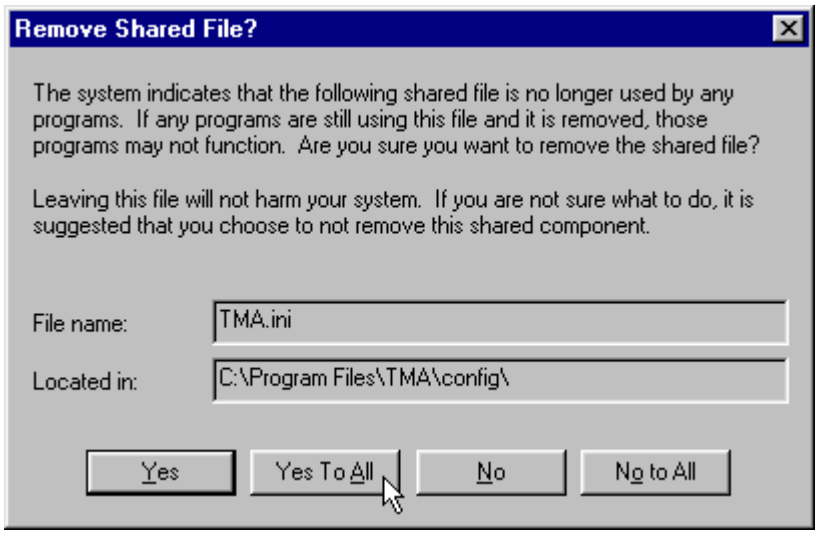
In order to uninstall the TMA engine, do the following:

- On the taskbar, select *Start* → *Programs* → *TMA* → *Uninstall TMA*.

or

- On the taskbar, select *Start* → *Control Panel* → *Add/Remove Programs* → in the list of programs that appears, select *TMA* → click on the *Add/Remove* button.

In case several TMA applications are installed on your computer (for instance TMA and TMA CLI), the common files remain on your system as long as at least one TMA application remains on your computer. If also this last TMA application is uninstalled, then the system asks you whether to remove the common files. You may answer *Yes To All*.



Uninstalling the TMA model files

In order to uninstall the TMA model files, do the following:

- On the taskbar, select *Start* → *Control Panel* → *Add/Remove Programs* → in the list of programs that appears, select *TMA Model Files* → click on the *Add/Remove* button.

2.8 What TMA changes in the registry

When you install TMA, some entries are added to the Microsoft Windows registry. This section lists these entries. This might be interesting …

- for documentation purposes,
- should you experience troubles installing (different) TMA (products and/or versions). In that case, a solution might be to uninstall TMA, remove all possible TMA references from the registry and reinstall TMA.

Browsing the registry

In order to browse the registry, proceed as follows:

Step	Action
1	On the taskbar, select: *Start* → *Run…*
2	In the *Run* window: type *regedit* and click on *OK*.
3	The registry editor opens.

The TMA entries in the registry

The following entries are added to the Microsoft Windows registry when TMA installs:

- `HKEY_LOCAL_MACHINE` → `SOFTWARE` → `Microsoft` → `Windows` → `CurrentVersion` → `App Paths` →
  - `TMA Model Files`
  - `TMA.exe`
  - … (possible other TMA related applications, e.g. `TmaCli.exe`, …)
- `HKEY_LOCAL_MACHINE` → `SOFTWARE` → `Microsoft` → `Windows` → `CurrentVersion` → `Uninstall` →
  - `TMA Model Files`
  - `TMA.exe`
  - … (possible other TMA related applications, e.g. `TmaCli.exe`, …)
- `HKEY_LOCAL_MACHINE` → `SOFTWARE` → `Telindus` →
  - `TMA` → `<version, e.g. S0004/xxx00>`
  - `TMA Model Files` → `<version, e.g. S0011/xxx00>`
  - … (possible other TMA related applications, e.g. `TmaCli` → `<version, e.g. S0106/xxx00>`, …)

3. Connecting to a device

Once the TMA application and the model files are installed, you are ready to interconnect the computer running TMA and a Telindus device. This is explained in this chapter.

First the terms *IP device*, *proxied IP device* and *non-IP device* are explained, for they are used in this and the following chapters.

The following table gives an overview of this chapter.

3.1 What are IP, proxied IP and non-IP devices?

Because in this and the following chapters the terms *IP device*, *proxied IP device* and *non-IP device* are often used, they are explained in this section.

The following table gives a definition of each term together with an example:

Term	Definition
IP device	An IP device is a Telindus access device … • in which you can configure an IP address. • that has a dedicated LAN port through which you can connect the device to a LAN. **Example** The Crocus Inverse Multiplexer is an IP device. You can configure an IP address in the Crocus Inverse Multiplexer using the crocusInvMux/lanInterface/ipAddress attribute. The Crocus Inverse Multiplexer can be connected to a LAN through its TPI port located at the back of the device. Other IP devices are for instance: Orchid 1003 LAN, Crocus Router Interface, Crocus Router 2M, Telindus 1421 SHDSL Router.
non-IP device	A non-IP device is a Telindus access device … • in which you can not configure an IP address. • has no dedicated LAN port and therefore can not be connected directly to a LAN. **Example** The Crocus SDSL F baseband modem is a non-IP device. You can not configure an IP address in the Crocus SDSL F and you can not connect it to a LAN through a dedicated LAN port. Other non-IP devices are for instance: Aster 4 F, Crocus HDSL F, Crocus SDSL F, Crocus FO10M.
proxied IP device	A proxied IP device is actually a non-IP device. This means it is a Telindus access device … • in which you can not configure an IP address. However, you can assign an IP address to the device using a management concentrator as *proxy IP device* (refer to Section 3.4 - Proxied IP connection to a non-IP device). • has no dedicated LAN port and therefore can not be connected directly to a LAN. This is done through a management concentrator which is an IP device and therefore can be connected to a LAN through its dedicated LAN port. **Example** The Crocus SDSL F baseband modem is a non-IP device. However, by connecting the Orchid 1003 LAN to the modem and by assigning an IP address to it in the Orchid 1003 LAN, the modem becomes a proxied IP device. The Orchid 1003 LAN on its turn, is connected through its LAN port to a LAN. I.e. it is as if the modem is connected to the LAN, although not directly.

3.2 Direct connection to a device

This section explains how to make a direct connection between the computer running TMA and a Telindus device.

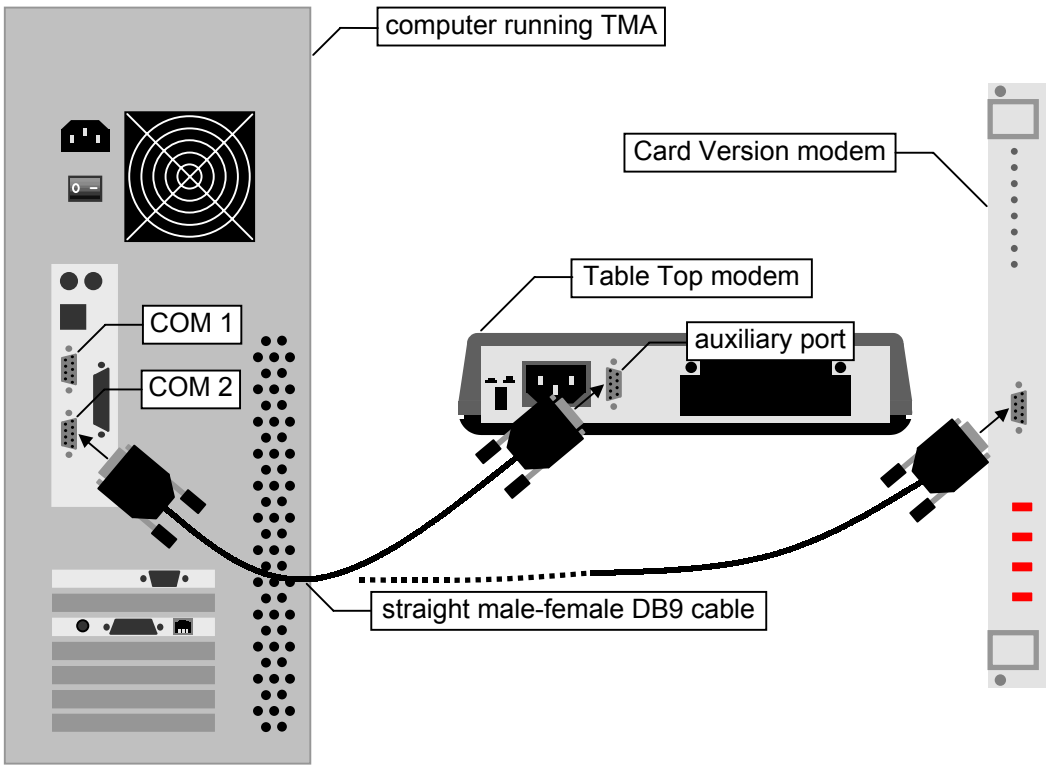
The following table gives an overview of this section.

3.2.1 What is a direct connection?

A direct connection is a connection between a COM port of the computer and the auxiliary port (also called control port) of a Telindus device. Such a connection is made by means of a straight male-female DB9 cable.

There are some exceptions. The Orchid 1003 LAN, for instance. This device has an RJ45 control port. Consequently, the connection is made by means of a DB9 - RJ45 cable. This cable is delivered with the Orchid 1003 LAN.

The following figure shows an example of a direct connection to a Table Top and Card Version modem:



Once the connection is made then the computer running TMA is able to reach the modem.

3.2.2 To which Telindus devices can you make a direct connection?

Every Telindus device that is manageable with TMA has a control port. Hence, you can make a direct connection to any of these devices, regardless of the fact it is a non-IP, IP or proxied IP device.

3.2.3 DB25 – DB9 interconnection cable

If the COM port you want to use has a DB25 connector, then a different cable has to be used. Such a cable has the following layout:

Female DB25 connector for connection towards the computer			**Male DB9 connector for connection towards the Telindus device**		
Pin	Signal	Input / output	Pin	Signal	Input / output
2	TXD	output	3	TXD	input
3	RXD	input	2	RXD	output
4	RTS	output	7	RTS	input
5	CTS	input	8	CTS	output
6	DSR	input	6	DSR	output
7	GND	-	5	GND	-
20	DTR	output	4	DTR	input

3.3 IP connection to an IP device

This section explains how to make an IP connection between the computer running TMA and a Telindus IP device.

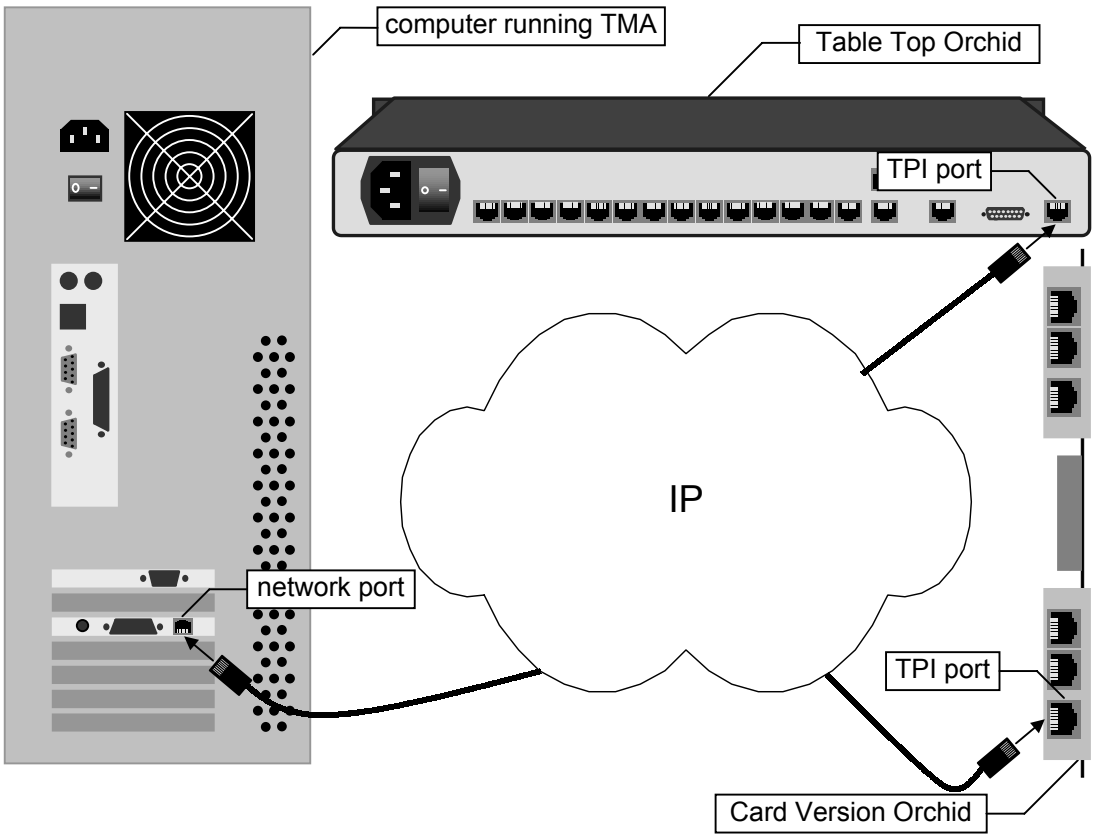
The following table gives an overview of this section.

3.3.1 What is an IP connection?

A connection via IP is a connection between:

- the LAN port of the IP device and the IP network at one side
- the network port of the computer and the IP network at the other side.

The following figure shows an example of a connection via IP to an Orchid 1003 LAN Table Top and Card Version:



As opposed to a direct connection, making the physical connection alone is not sufficient to establish an IP connection between the computer and the IP device. A few basic settings have to be made in the IP device.

3.3.2 To which Telindus devices can you make an IP connection?

You can make an IP connection to every Telindus device that has a dedicated LAN port through which you can connect the device to a LAN. Hence, you can only make a connection via IP to a Telindus IP device, not to a non-IP device.

There is a way to make an IP connection to a non-IP device. However, this involves using a management concentrator with a particular configuration. In that case, the non-IP device becomes a proxied IP device. For more information, refer to Section 3.4 - Proxied IP connection to a non-IP device.

3.3.3 Basic IP device settings to enable an IP connection

To establish an IP connection between the computer running TMA and the IP device, a few basic parameters (called attributes) have to be set in the IP device. These attributes are:

Attribute	Description
IP address	This is a unique address which is assigned to the IP device. By doing this, other devices on the IP network can contact the IP device. **Examples** The following examples display the IP address attribute location in the containment tree of some Telindus IP devices: • Orchid 1003 LAN: o1003/interfaces/lanInterface/ipAddress • Crocus Router 2M or Router Interface: crocusRouter/lanInterface/ipAddress • Crocus Inverse Multiplexer: crocusInvMux/lanInterface/ipAddress
default gateway	This is the gateway of the IP segment the IP device is connected to. I.e. the IP address of the router which handles packets destined for another network. **Examples** The following examples display the default gateway attribute location in the containment tree of some Telindus IP devices: • Orchid 1003 LAN: o1003/router/defaultRoute/gateway • Crocus Router 2M or Router Interface: crocusRouter/router/defaultRoute/gateway • Crocus Inverse Multiplexer: crocusInvMux/lanInterface/defaultRoute

For more detailed information, refer to the user manual of the IP device.

Once these attributes are set then the computer running TMA is able to reach the IP device over an IP network.

3.4 Proxied IP connection to a non-IP device

As stated in Section 3.3 - IP connection to an IP device, it is not possible to make a *true* IP connection to a non-IP device. This because non-IP devices do not have a dedicated LAN port through which you can connect them to a LAN. However, using a management concentrator, you can make a *proxied* IP connection to a non-IP device. This is explained in this section.

The following table gives an overview of this section.

3.4.1 What is a management concentrator?

A management concentrator is a device that collects management information from the network units (i.e. the Telindus devices in the network) and passes it to a network management system (e.g. HP OpenView). So a management concentrator is situated between the network units and the network management system. In other words, it is a key element for centralised network management.

3.4.2 Which Telindus devices are management concentrators?

Examples of management concentrator are:

- the Orchid 1003 LAN (the predecessor of the Telindus 1035 Orchid).
- the Telindus 1031, 1032, 1033 and 1034 Router (note that their management concentrator capabilities are limited due to hardware limitations).
- the Telindus 1035 Orchid (the successor of the Orchid 1003 LAN).

For more detailed information on these devices, refer to their user manuals.

3.4.3 A management concentrator as a proxy IP device

You can connect a Telindus non-IP device (e.g. a Crocus modem) to a management concentrator. In the management concentrator configuration, you can assign an IP address to this non-IP device. In that case, the *non-IP device* becomes a *proxied IP device*. I.e. you can now access the non-IP device over an IP network through the management concentrator. In other words, the management concentrator acts as *proxy IP device* for the non-IP device.

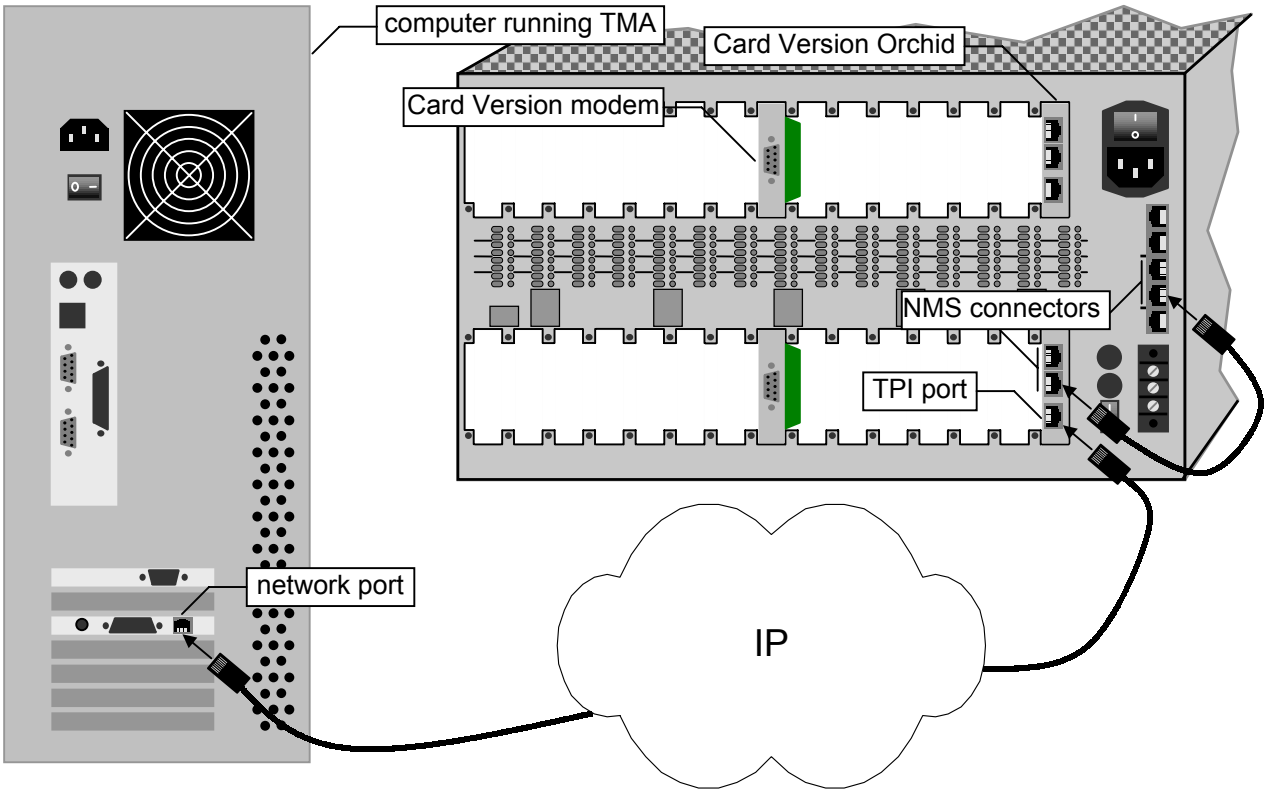
This implies that as opposed to the management concentrator, the non-IP device is not directly connected through a dedicated LAN port to the IP network. An example of an IP connection between the computer running TMA and a non-IP device is given in the following paragraph.

3.4.4 A proxied IP connection to a non-IP device – example

Consider the following components which have to be interconnected:

- the computer running TMA
- the IP network
- a CN4 card nest
- a Card Version modem
- a Card Version Orchid 1003 LAN.

The following figure shows the interconnection between these components:



The following table gives an overview of the connections shown in the figure above. The overview starts at the computer running TMA.

The …	is connected to the …	via …
network port of the computer	IP network	an RJ45 network cable.
TPI port of the Orchid 1003 LAN	IP network	an RJ45 network cable.
NMS port of the Orchid 1003 LAN	NMS port of the CN4 card nest	a straight RJ45 cable.
NMS port of the CN4 card nest	high speed NMS bus of the Card Version modem	the high speed NMS bus on the backplane of the CN4 card nest.

As opposed to a direct connection, making the physical connection alone is not sufficient to establish a proxied IP connection between the computer and the non-IP device. A few basic settings have to be made in the Orchid 1003 LAN. These are shown in the following paragraph.

3.4.5 Basic management concentrator settings to enable a proxied IP connection

To establish an IP connection between the computer running TMA and the non-IP device, a few basic parameters (called attributes) have to be set in the management concentrator:

- The first two attributes are the IP address and default gateway of the management concentrator itself. These parameters are already explained in Section 3.3 - IP connection to an IP device.
- The other attributes are located in the object table of the management concentrator: nmsgroup/objectTable. The relevant attributes are:

Attribute	Description
ipAddress	Use this attribute to assign an IP address to the non-IP device. The IP address should belong to the sub-network of the management concentrator. For example, if the IP address of the management concentrator is 192.168.4.5 with subnetmask 255.255.255.0 then the IP address of the network unit should also be within the range from 192.168.4.1 to 192.168.4.254.
addressType	The management concentrator has to know how it can contact the connected non-IP device. Therefore, use the addressType attribute to specify the type of address: • a relative address • an absolute address. For more information on these address types, refer to Section 4.3.3 - The Connect… – Select device… window selections, Select device... selection 5 – NMS address.
addressValue	If you set the addressType attribute to absolute, then use the addressValue attribute to specify the absolute address value.

Continued on next page

Proxied IP connection to a non-IP device (continued)

<table>
<tr><th>Attribute</th><th>Description</th></tr>
<tr><td>port
or
exitPort</td><td>The exit port specifies through which port of the management concentrator the network unit can be reached.

In case of the exitPort attribute, the underlying attributes are:

<table>
<tr><th>Attribute</th><th>Description</th></tr>
<tr><td>exitPortType</td><td>Use this attribute to specify whether the non-IP device is reachable through …
• one of the asynchronous ports of the management concentrator (port). In this case, also set the attribute portNumber.
• the high speed bus of the CN4 Card Nest (rack). In this case, also set the attributes cardnestAddress, cardPosition and modem.</td></tr>
<tr><td>portNumber</td><td>Use this attribute to specify through which asynchronous port of the management concentrator the non-IP device can be reached.</td></tr>
<tr><td>cardnestAddress</td><td>Use this attribute to specify the CN4 Card Nest address in which the non-IP device (Card Version) resides.</td></tr>
<tr><td>cardPosition</td><td>Use this attribute to specify the position of the non-IP device (Card Version) in the CN4 Card Nest.</td></tr>
<tr><td>modem</td><td>Use this attribute to select the device on the non-IP multi-device (Card Version Twin, Quad, etc.): A, B, C or D.</td></tr>
</table>
</td></tr>
</table>

For more detailed information, refer to the user manual of the management concentrator.

Once these attributes are set then the computer running TMA is able to reach the non-IP device over an IP network.

4. Opening a TMA session

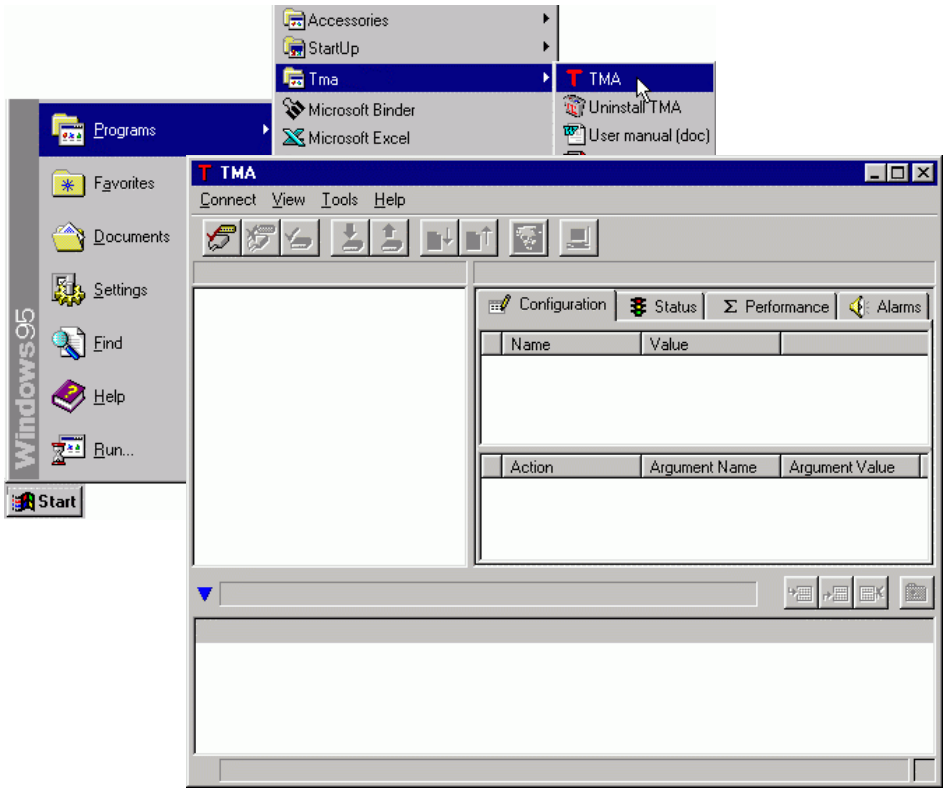
Once the physical connections are made, you are able to open a TMA session on a Telindus device. First this chapter explains how to start TMA. Then it describes how to connect to the network and how to select a device on this network.

The following table gives an overview of this chapter.

4.1 Starting TMA

Before a TMA session can be opened, the application itself has to be started.

To start TMA, proceed as follows:

Step	Action
1	On the taskbar, select *Start*.
2	In the start menu, select *Programs*.
3	In the program menu, select the program group *TMA*.
4	In the program group TMA, select *TMA*. ⇒ The *TMA* window appears. 

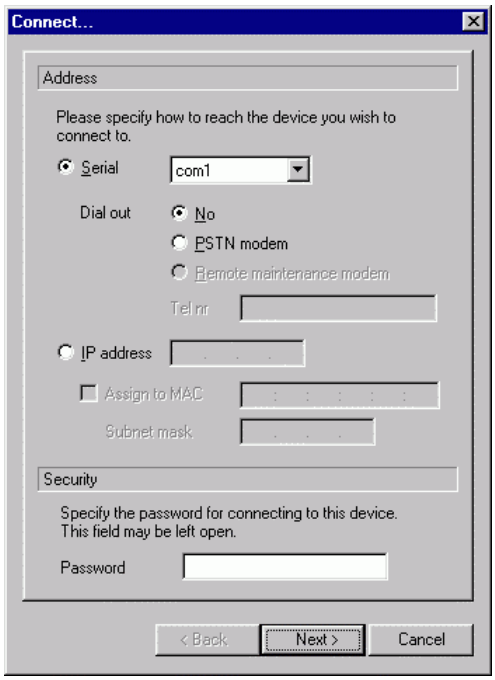
4.2 Connecting to a device

After you made the necessary hardware connections, you have to establish a *software* connection. I.e. you have to establish a link between the computer running TMA and the Telindus device through which you want to access the network. First this section explains how to display the *Connect… – Device…* window. Then it describes in detail the different connection possibilities.

The following table gives an overview of this section.

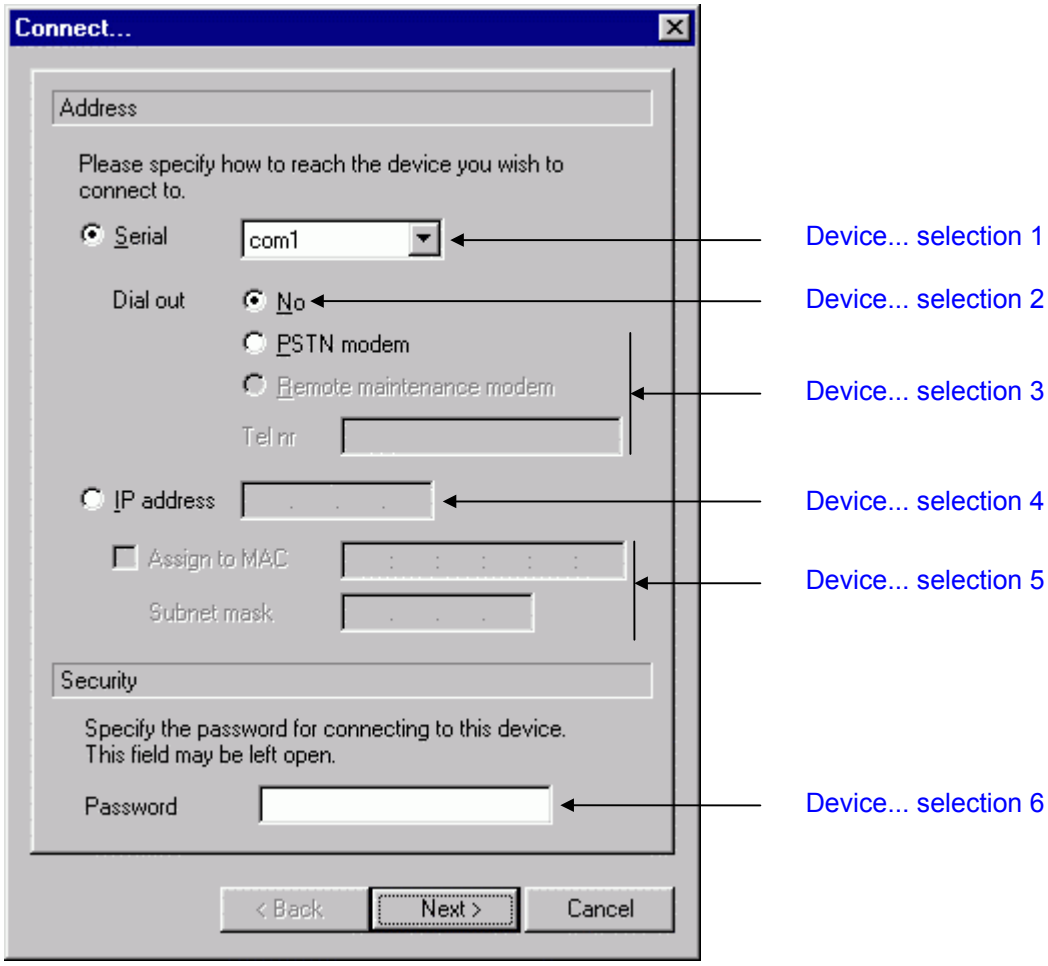
4.2.1 Displaying the *Connect… – Device…* window

To display the *Connect… – Device…* window, proceed as follows:

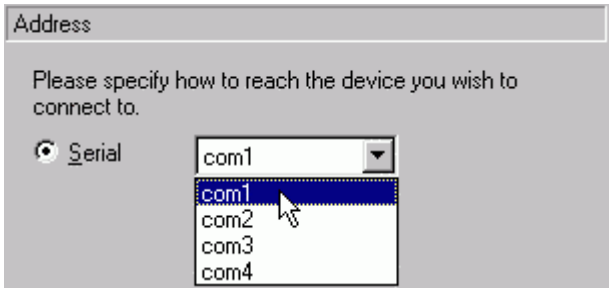
Step	Action
1	Start the TMA application. Refer to Section 4.1 - Starting TMA. ⇒ The *TMA* window appears.
2	In the *TMA* window, either… • press on the *Connect to a device* button:  • or press the shortcut key: Ctrl+N • or select from the menu bar: *Connect* → *Device…* ⇒ The *Connect… – Device…* window appears. 

4.2.2 The *Connect… – Device…* window selections

The following figure displays the *Connect… – Device…* window. All the different selection possibilities are numbered. They are explained in the following paragraphs.



Device... selection 1 - Serial



Make this selection if you want to make a direct (also called serial) connection as described in Section 3.2 - Direct connection to a device. In that case you have to specify which COM port of the computer is connected to the control port of the Telindus device.

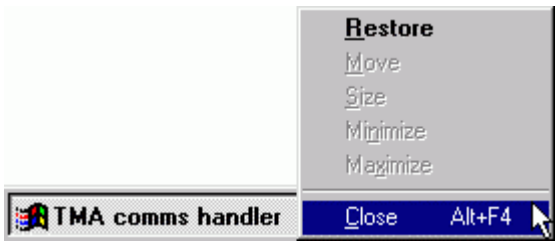
Select one of the four possibilities displayed in the drop-down box:

- COM 1
- COM 2
- COM 3
- COM 4.

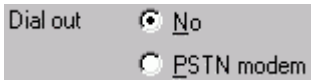
The TMA Comms Handler

The TMA Comms Handler is a part of the TMA software that handles the communication towards the connected devices. If you connect through one of the COM ports of your computer, the TMA Comms Handler locks this COM port for other applications. If you close all TMA sessions and even if you close the TMA application, the TMA Comms Handler waits a certain period before it releases the previously used COM port(s). You can change this timeout with the WaitClose parameter in the *Cms2Serv.ini* file. As default, this timeout period is set to 5 minutes. For more information on this and other communication parameters, refer to Section 12.1 - Parts of the Cms2Serv.ini file.

However, you can force the TMA Comms Handler to close even if the WaitClose time is not elapsed yet. To do so, proceed as follows:

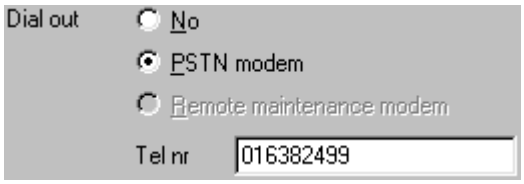
Step	Action
1	Move the Windows arrow to the TMA Comms Handler icon on the taskbar.
2	Press on the right mouse button.
3	From the pop-up menu, choose *Close*. 

Device... selection 2 - Dial out: No



Make this selection if you do not wish to establish a dial-out connection.

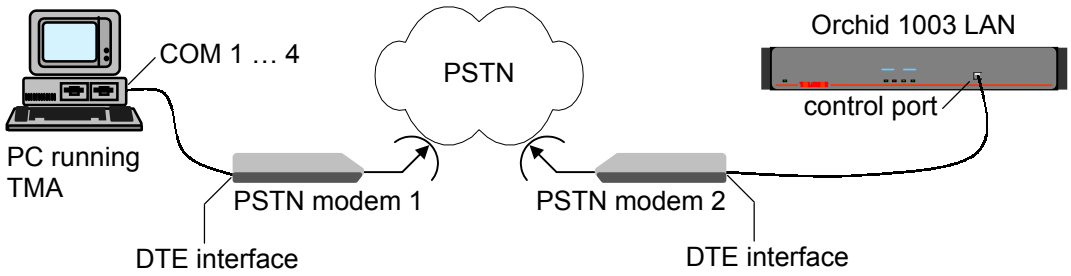
Device... selection 3 - Dial out: PSTN modem



Make this selection if you wish to establish a dial-out connection. An example of a dial-out connection is given below.

Example:

Suppose you want to connect to an Orchid 1003 LAN via a dial-out connection. A possible setup is given in the figure below:



The following table gives an overview of the connections shown in the figure above. The overview starts at the computer running TMA.

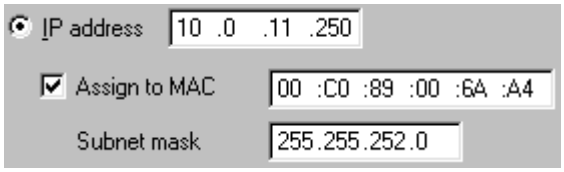
The …	**is connected to the …**	**via …**
COM port of the computer	DTE interface of PSTN modem 1	a DTE – DCE interface cable.
PSTN port of PSTN modem 1	PSTN port of PSTN modem 2	a dial-out connection over the PSTN network.
DTE interface of PSTN modem 2	control port of the Orchid 1003 LAN	a DTE – DCE interface cable.

If the computer has an internal PSTN modem, verify which COM port it uses.

Device... selection 4 - IP address

Make this selection if you want to make a connection over an IP network as described in Section 3.3 - IP connection to an IP device and Section 3.4 - Proxied IP connection to a non-IP device. Enter the IP address of the Telindus device you want to connect to.

Device... selection 5 - Assign to MAC



Connecting TMA – normal situation

Normally, it is possible to make a direct connection with TMA to every Telindus device that has a control port. Also, when a Crocus Router Interface is inserted in a Crocus baseband modem, the Router Interface can be reached on relative address 0 and the modem itself on relative address 1 (for more information on the relative addressing method, refer to Section 4.3.3 - The Connect… – Select device… window selections, Select device... selection 5 – NMS address).

Connecting TMA – Crocus HS

An exception to this rule is the Crocus HS baseband modem. In that case, you can only connect to the Crocus HS through one of the exit ports of a management concentrator (refer to Section 4.3.3 - The Connect… – Select device… window selections, Select device... selection 6 – Exitport). What is more, when a Crocus Router Interface is inserted in a Crocus HS modem, only the modem can be accessed with TMA. This would imply that a non-configured Router Interface (i.e. a Router Interface that has not been assigned an IP address yet) is not accessible by TMA when it is present in a Crocus HS modem. This would also mean that you are unable to configure the Router Interface. Hence, you would be unable to assign an IP address to it.

That is why the *Assign to MAC* option is present in TMA: temporarily assign an IP address to the Crocus Router Interface to enable you to configure the interface.

Continued on next page

Device... selection 5 - Assign to MAC (continued)

How does the *Assign to MAC* option work?

Suppose you have a Crocus HS equipped with a Crocus Router Interface. The configuration of the Router Interface is still in its default state (i.e. no IP address, no subnet mask, etc.). You want to access the Router Interface with TMA in order to edit its configuration.

Proceed as follows:

Step	Action
1	In the *Connect… Device…* window, make the IP address selection. Enter the IP address you want to temporarily assign to the Crocus Router Interface.
2	Tick the *Assign to MAC* selection box. Enter the MAC address of the Crocus Router Interface. Enter the subnet mask that corresponds with the previously entered IP address.
3	Hit the *Next* button. ⇒ The TMA window opens and displays the containment tree of the Crocus Router Interface. ⇒ The previously entered IP address is now *temporarily* assigned to the Crocus Router Interface. *Temporarily* because you will see the IP address in the *Status* group, but not in the *Configuration* group. When the Router Interface reboots, the IP address is lost.
4	Configure an IP address, a subnet mask and a default route in the Crocus Router Interface. Refer to Section 3.3 - IP connection to an IP device.
5	Activate this configuration. ⇒ You now *permanently* assigned an IP address to the Crocus Router Interface. From now on, you are able to access the Router Interface just by typing its IP address in the *Connect… – Device…* window.

Important remarks

In order for the *Assign to MAC* option to work, …

- your computer running TMA has to be connected to the same IP segment as the Crocus Router Interface.
- the configuration of the Crocus Router Interface has to be in its default state (as it leaves the factory). If it is not, reload its default configuration by setting the appropriate DIP switch (refer to the user manual of the Crocus Router Interface).

For additional information on the Crocus HS or Crocus Router Interface, refer to the corresponding user manual.

Device... selection 6 - Password

Enter here the device its password. This is the password of the Telindus device through which you want to access the network. If no password is specified in the Telindus device, leave this field blank.

A Telindus device which is used for the first time has no password.

4.3 Selecting a device

After you established a connection to the Telindus device through which you want to access the network, you can choose to open a TMA session on:

- the device itself.
- a device located after the device through which you are accessing your network. However, the device has to allow this.

Therefore, this chapter first explains when the *Connect… – Select device…* window appears and when it does not. Then it shows how you can open the *Connect… – Select device…* window (in case the currently connected device allows you to do so). This chapter also describes in detail the different selection possibilities.

The following table gives an overview of this section.

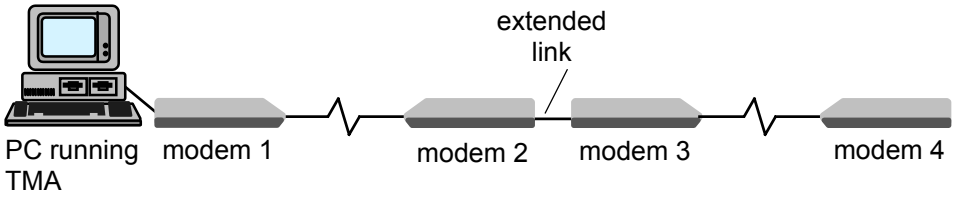
4.3.1 When does the *Connect… – Select device…* window appear?

As said before, the *Connect… – Select device…* window only appears if the device through which you are accessing your network gives the possibility to open a TMA session on a device located further on in the network.

To clarify this, two examples are given. The first example shows you a situation where you will get a *Connect… – Select device…* window. The second example shows you a situation where you will not.

Example 1

Suppose you have the following set-up:



Your computer running TMA is connected on COM1 via a direct connection to the control port of modem 1. So, in the *Connect… – Device…* window you select *Serial: com1*, enter a *Password* if necessary and press on the *Next* button.

In this situation the *Connect… – Select device…* window appears. This window allows you to open a TMA session on:

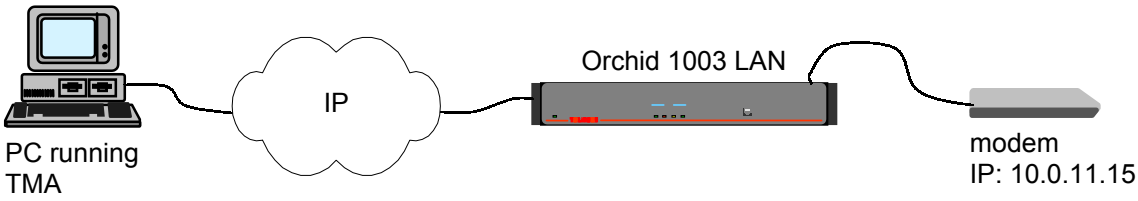
- the modem through which you are accessing your network, i.e. modem 1.
- the modems located after modem 1, i.e. modem 2, 3 and 4.

Suppose you open a TMA session on modem 1 by selecting *On device* in the *Connect… – Select device…* window. Suppose that after a while you want to open a TMA session on modem 3. In that case, you can call the *Connect… – Select device…* window by selecting *Select device…* in the *Connect* menu. For more information, refer to Section 4.3.2 - Displaying the Connect… – Select device… window.

For more information on the selection possibilities in the *Connect… – Select device…* window, refer to Section 4.3.3 - The Connect… – Select device… window selections.

Example 2

Suppose you have the following set-up:



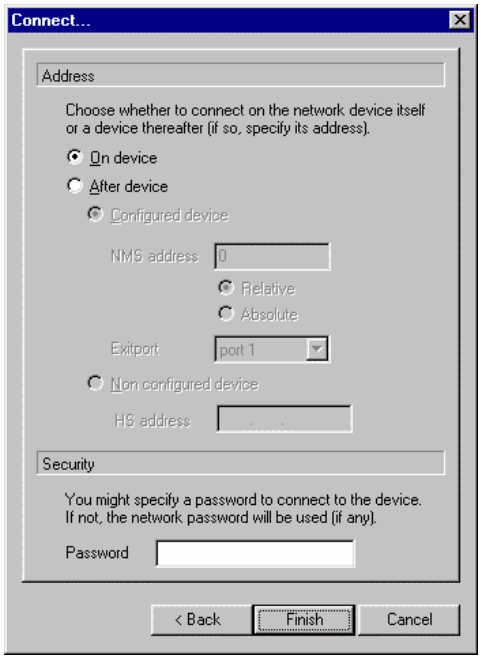
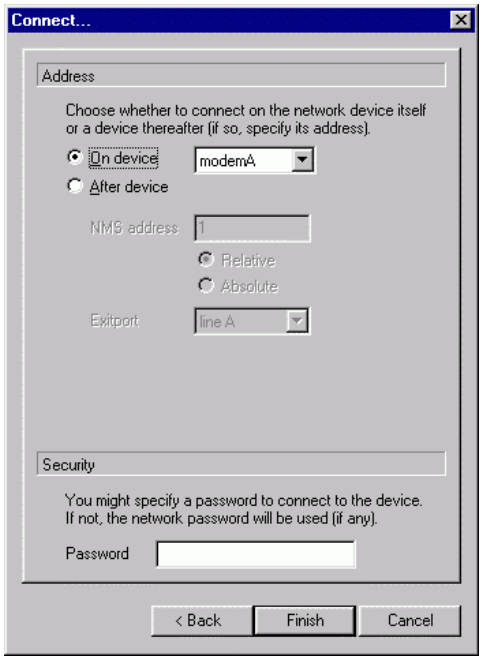
Your computer running TMA is connected over an IP network to an Orchid 1003 LAN. One of the ports of the Orchid is connected to the control port of a modem. This modem is configured in the object table of the Orchid. It is assigned IP address 10.0.11.15. So, in the *Connect… – Device…* window you select *IP address: 10.0.11.15*, enter a *Password* if necessary and press on the *Next* button.

In this situation the *Connect… – Select device…* window does not appear. The TMA session is automatically opened on the modem itself. This because connecting to a modem over IP does not allow you to open TMA sessions on devices behind this modem (even if they are present). In that case, the *Select device…* in the *Connect* menu is not selectable.

4.3.2 Displaying the *Connect… – Select device…* window

As said in the previous section, the *Connect… – Select device…* window only appears if the device through which you are accessing your network allows this. If this is the case, then you will see the following when connecting to such a device:

Step	Action
1	Start the TMA application. Refer to Section 4.1 - Starting TMA. ⇒ The *TMA* window appears.
2	Display the *Connect… – Device…* window. Refer to Section 4.2.1 - Displaying the Connect… – Device… window.
3	Make your selection in the *Connect… – Device…* window. Refer to Section 4.2.2 - The Connect… – Device… window selections. If the connection to the device was successful and if the device allows to open a TMA session on other devices further on in the network, then the *Connect… – Select device…* window appears. ⇒ Depending on whether you are connected to a management concentrator or not, one of the following *Connect… – Select device…* windows appears:

In case you connected to a management concentrator …	In case you connected to any other Telindus device …
	

Continued on next page

Displaying the Connect… – Select device… window (continued)

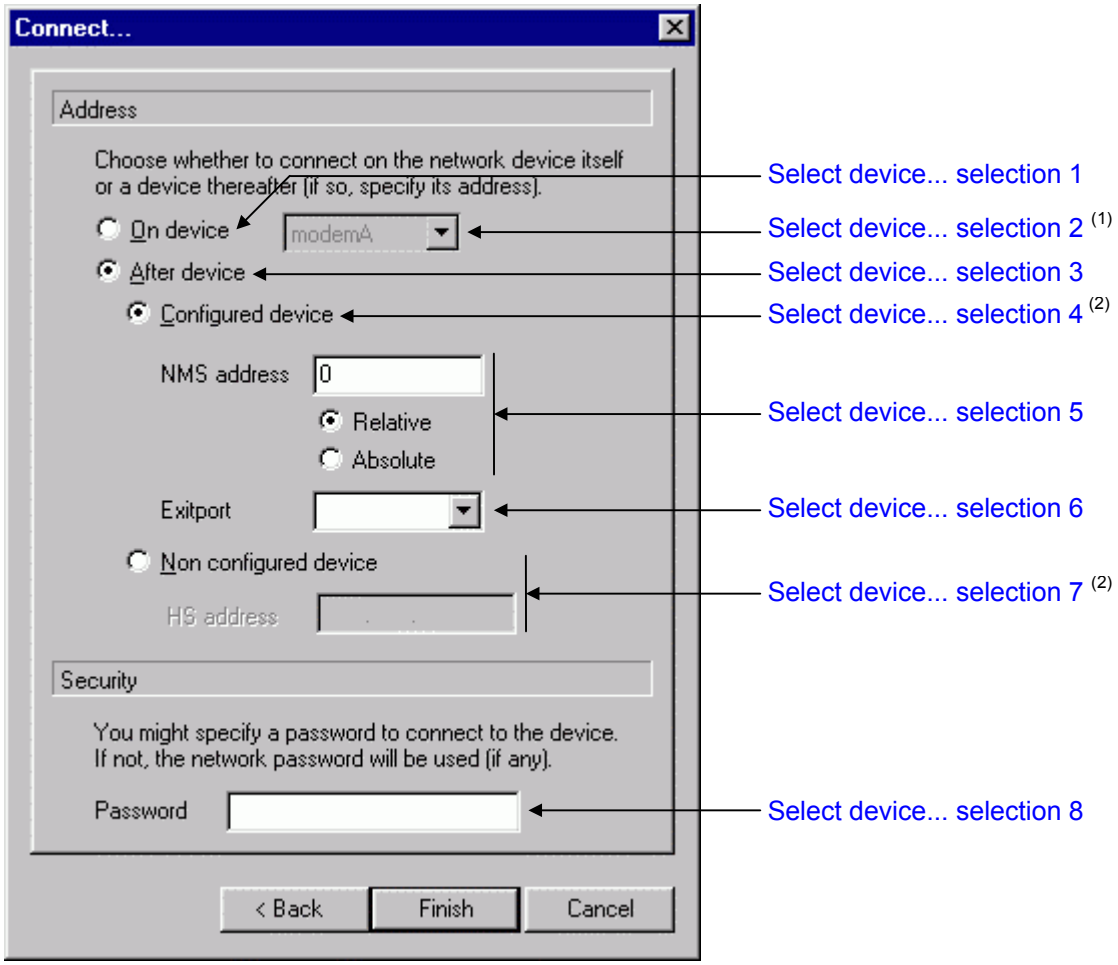
If you already opened a TMA session on a device, but you want to open one on a device further on in the network, proceed as follows:

Step	Action
1	In the *TMA* window, either… • press on the *Select device* button:  • or press the shortcut key: Ctrl+D • or select from the menu bar: *Connect* → *Select device…* ⇒ The *Connect… – Select device…* window appears.
2	Make your selection in the *Connect… – Select device…* window. Refer to Section 4.3.3 - The Connect… – Select device… window selections.
3	Press on the *Next* button. ⇒ A TMA session opens on the device.

4.3.3 The *Connect… – Select device…* window selections

This section shows the *Connect… – Select device…* window. All the different selection possibilities are numbered. They are explained in the following paragraphs.

The *Connect… – Select device…* window is depicted below:



(1) This selection is only visible when connecting to a modem Card Version with more than one modem on it.

(2) This selection is only visible when connecting to a management concentrator that supports this feature.

Select device... selection 1 - On device

Using the *Connect… Device…* window, you connected to a Telindus device through which you want to access your network. If you now want to open a TMA session on the device itself, then select *On device*.

Select device... selection 2 - On device: ModemX

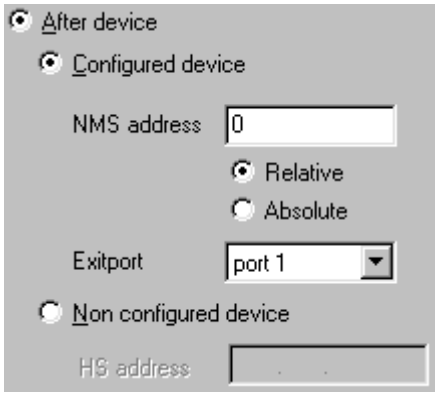
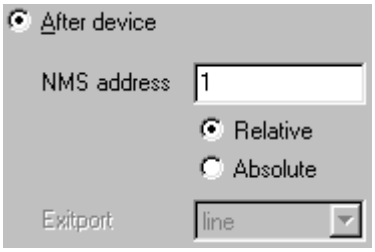
If you are connecting to a modem Card Version with more than one modem on the card (e.g. Crocus HDSL CV Twin, Crocus FO10M CV Twin, …), a drop down box appears after the *On device* selection. Use this drop down box to specify on which modem you want to open the TMA session.

Select device... selection 3 - After device

Using the *Connect… Device…* window, you connected to a Telindus device through which you want to access your network. As said before, if you now want to open a TMA session on the device itself, then select *On device*. However, if you want to open a TMA session on a device located after the device through which you are accessing your network, then select *After device*.

The *After device* parameters

If you make the *After device* selection, you have to specify the "location" of the device you want to open the TMA session on. Do this by means of the parameters *NMS address* and *Exitport*. These are explained in the following paragraphs. However, there is a difference in these parameters depending you connected to a management concentrator or to any other Telindus device. The differences are shown in the following figures:

The *After device* parameters for a management concentrator	**The *After device* parameters for any other Telindus device**
	

The differences are the following:

- The management concentrator makes a distinction between …
  - devices that are already configured in the object table (*Configured device*)
  - devices that are not (yet) configured in the object table (*Non configured device*).

  Other Telindus devices do not have these two options.
- The *Exitport* parameter contains different elements for a management concentrator than for other Telindus devices.

For a management concentrator, the *Configured device* / *Non configured device* selections only appear in case the management concentrator supports this feature.

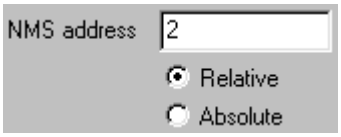
Select device... selection 4 - Configured device

This selection is only visible when connecting to a management concentrator that supports this feature.

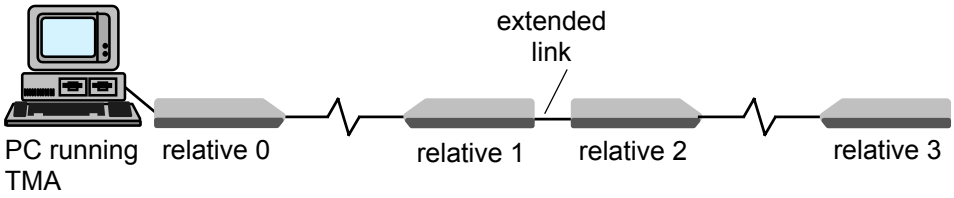
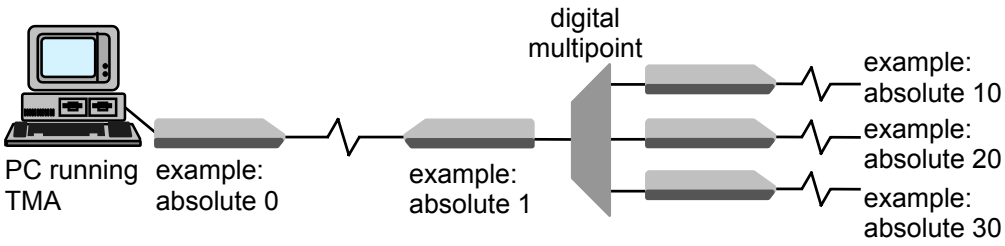
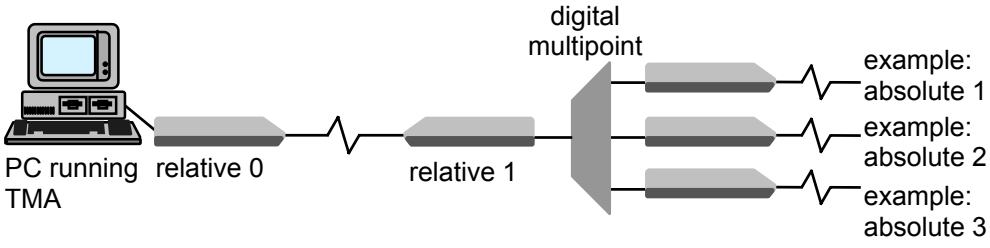
Make this selection if you want to open a TMA session on a device that is connected to a management concentrator and that is configured in the object table of the management concentrator. For more information on the object table, refer to Section 3.4 - Proxied IP connection to a non-IP device and the user manual of the management concentrator.

Now specify the NMS address of the device you want to access with TMA and the exit port of the management concentrator the device is connected to. Refer to Select device... selection 5 – NMS address and Select device... selection 6 – Exitport.

Select device... selection 5 – NMS address



If you want to open a TMA session on a device, you have to specify the address of the device. You can apply three types of addressing methods:

Address type	Description
relative	This type of addressing is meant for a network topology where the modems are connected *in-line* on management level. E.g. with extended management links between two modems. An extended management link is realised with a cross connect cable between the auxiliary connectors of two modems.  To enable relative addressing, no address has to be specified in the modem.
absolute	This type of addressing is meant for a network topology where the modems are not connected *in-line* on management level. E.g. when there is a digital multipoint device present.  To enable absolute addressing, an address has to be specified in the modem. The absolute addressing range goes from 0 up to 65535. Refer to the user manual of the modem for more information.
relative and absolute	Relative and absolute addressing can be mixed. E.g. use relative addressing for the modems which are connected in-line. Use absolute addressing for the modems located after a digital multipoint device. 

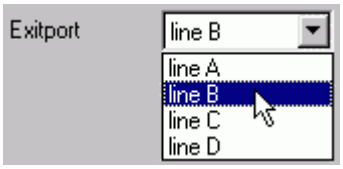
Select device... selection 6 – Exitport

If a device has more than one possible way to pass through it to another device, the *Exitport* drop down box is activated. The values displayed in the box vary, depending to which device you are connected to.

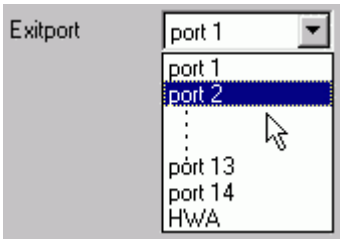
Examples:

For a device that has only one exit port, the drop down box is not activated. In that case , the only possible selection is displayed in grey.

For a device with several exit ports, the drop down box is activated. For instance, for a modem Card Version with more than one modem on the card (e.g. Crocus HDSL CV Twin, Crocus FO10M CV Twin, …), the drop down box may appear as follows:



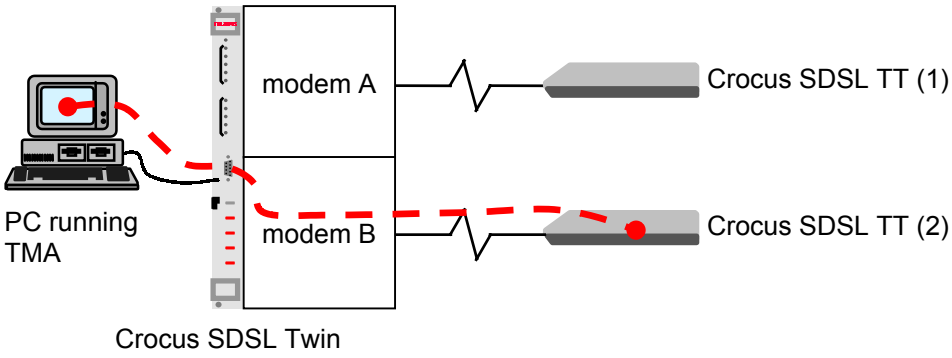
For a management concentrator, the drop down box looks as follows:



Continued on next page

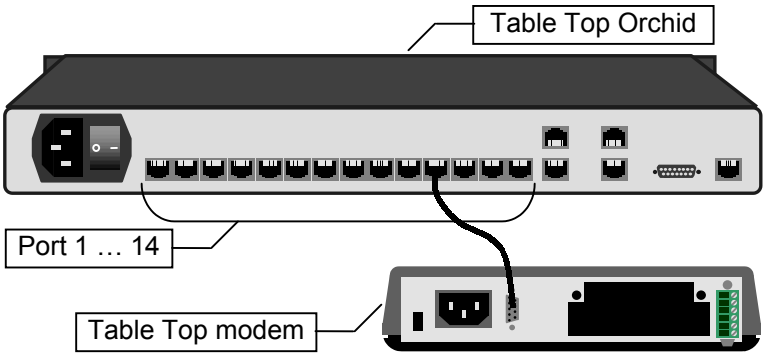
Select device... selection 6 – Exitport (continued)

The different *Exitport* values are explained in the following table:

Exit port	Description
line x	Some Telindus devices incorporate several devices on one card. This is called a *multi-device*. The different devices on a multi-device are referred to using A, B, C, D, etc. Examples of multi-devices are: • Crocus SHDSL CV Twin: incorporates 2 SHDSL modems on one card. • Crocus 2M CNV CV Twin: incorporates 2 interface converters on one card. • Crocus SDSL CV Quad: incorporates 4 SDSL modems on one card. Such multi-devices consequently have several different exit ports. Actually, they have as many exit ports as there are devices on the card. Example: Suppose you have a Crocus SDSL Twin (this is a Card Version with two SDSL modems on it). You want to connect to the remote counterpart of the Crocus SDSL Twin modem B, which is Crocus SDSL TT (2). In that case select in the *Exitport* drop down box: *Exitport* → *line B*. The following figure clarifies this: 

Continued on next page

Select device... selection 6 – Exitport (continued)

Exit port	Description
port x	If you want to address a device connected to one of the asynchronous ports of a management concentrator, you have to specify to which asynchronous port it is connected. Example: The Orchid 1003 LAN TT has 14 asynchronous ports located at the back. You can connect the control port of a Telindus device to one of these ports.  For more information on connections to a management concentrator, refer to the user manual of the management concentrator.

Continued on next page

Select device... selection 6 – Exitport (continued)

<table>
<tr><th>Exit port</th><th>Description</th></tr>
<tr><td>hardware address
(HWA)</td><td>If you want to address a Card Version device which is located in a CN4 card nest, you have to specify the hardware address. This address consists of three fields, separated with a dot:

<table><tr><th>Field</th><th>Description</th></tr><tr><td>1. rack address</td><td>The rack address can be set by means of DIP switches located at the back of the card nest. The address range goes from 0 to 6.

Check the rack address of the card nest containing the Card Version modem you want to address. Enter it in the first field. For example: 2.</td></tr><tr><td>2. card position</td><td>Also the position of the card in the card nest has to be known for addressing purposes. The card slot range goes from 0 up to 14.

Check the position of the card in the card nest. Enter it in the second field. For example: 12.</td></tr><tr><td>3. modem</td><td>If you want to address a certain device on a multi-device, you have to specify which device you want to address: device A, B, C or D.

Verify which device you want to address. Enter it in the third field. For example: B.</td></tr></table>
 
For more information on the card nest address and card position, refer to the user manual of the CN4 card nest.</td></tr>
</table>

Select device... selection 7 – Non configured device

This selection is only visible when connecting to a management concentrator that supports this feature.

Make this selection if you want to open a TMA session on a device (Card Version) which is inserted in a CN4 card nest connected to a management concentrator through the CN4 its high-speed bus, but which is not (yet) configured in the object table of the management concentrator. For more information the object table, refer to Section 3.4 - Proxied IP connection to a non-IP device and the user manual of the management concentrator.

Now specify the hardware address of the device you want to access with TMA. This is of the same form as the hardware address (HWA) in the *Exitport* drop down box:

- field 1: rack address (ranges from 0 up to 6)
- field 2: card position (ranges from 0 up to 14)
- field 3: modem (ranges from A up to D).

Refer to the explanation of hardware address in the Paragraph Select device... selection 6 – Exitport.

Select device... selection 8 – Password

Enter here the device its password. This is the password of the Telindus device on which you want to open a TMA session.

If you enter nothing in this field, the previously entered *network* password is taken as *device* password (see below for more information on these two passwords). If no password is specified in the Telindus device, anything may be entered in the device password field.

A Telindus device which is used for the first time has no password.

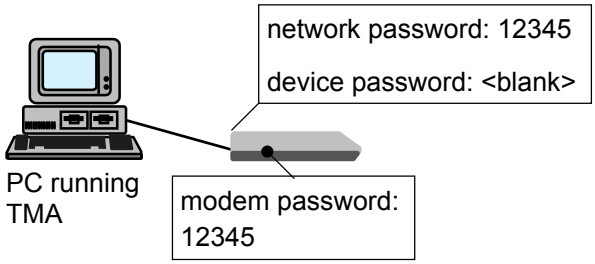
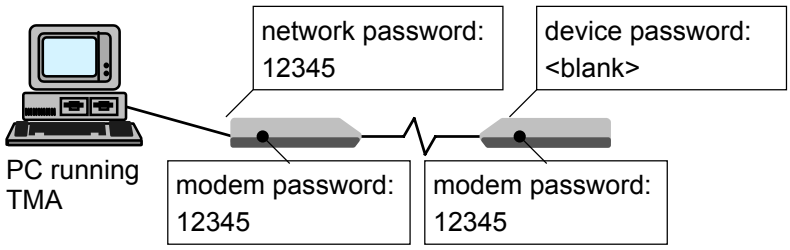
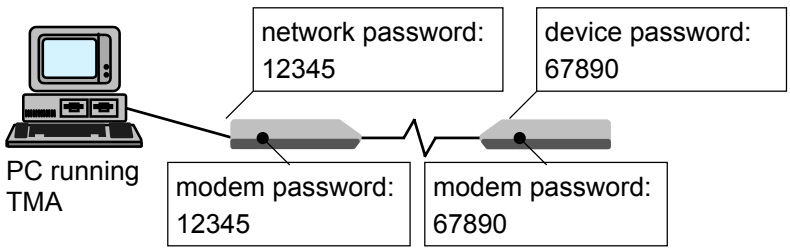
Continued on next page

Select device... selection 8 – Password (continued)

As you can see, there are two different passwords located on two different levels:

- the *network* password: in order to connect to your network through a Telindus device
- the *device* password: in order to open a TMA session on a Telindus device.

Some examples of combinations of network and device passwords are given below:

Example	Description
1	It is possible that the device through which you connect to the network is the device on which you want to open a TMA session. In that case you only have to enter the network password. The device password field can be left blank. 
2	It is possible that the device through which you connect to the network has the same password as the device on which you want to open a TMA session. In that case you only have to enter the network password. The device password field can be left blank. 
3	It is possible that the device through which you connect to the network has a different password than the device on which you want to open a TMA session. In that case you both have to enter network and device password. 

When you connect to a device over IP, i.e. by entering its IP address in the *Connect… Device…* window, you only have to enter the *device* password. This because you immediately open a TMA session on the device itself.

There are some exceptions. The Crocus Router and Orchid 1003 LAN, for instance. This because with these devices you still have the possibility to connect *on* the device, or *after* the device.

4.4 The TMA command line

The three previous sections explained how to open a TMA session on a device using the TMA graphical user interface. However, it is possible to start TMA from the command line. This section explains how you can do this. But before you can actually start TMA from the command line, you have to do some preparatory work.

The following table gives an overview of this section.

4.4.1 Before starting TMA from the command line

To start TMA from the command line, you have to use aliases. When you install TMA for the first time, no aliases are present. This means you have to create them.

The following procedure explains how to create aliases:

Step	Action
1	Start the TMA application as explained in Section 4.1 - Starting TMA.
2	Connect to a device as explained in Section 4.2 - Connecting to a device.
3	Select a device as explained in Section 4.3 - Selecting a device.
4	Create an alias (e.g. *Test device*) for this device as explained in Section 6.2.1 - The Connect menu, Paragraph b) Creating aliases on page 79.
5	Now you are ready to start TMA from the command line.

4.4.2 Displaying the TMA command line help

In order to display the different TMA command line possibilities, open a DOS window and type `tma -h`. The following is returned:

Important remarks

- If the alias name or password contains characters that conflict with the normal DOS syntax (such as a comma, a space, an equal sign, etc.), then you have to surround the alias by a set of double quote characters: “ ”.
- Neither the TMA command nor the alias name are case sensitive.
- If you want to execute the TMA command in a directory different from the *TMA\bin* directory (typically *C:\Program Files\TMA\bin*), then make sure you define the correct path to the TMA executable on your system.
  On Windows 95 and 98 this is typically done with the `set path` command in the *autoexec.bat* file.
  On Windows NT 4.0 and 2000 this is typically done with the *path* string in the *Environment* tab of the *System Properties* window.

4.4.3 Starting TMA from the command line

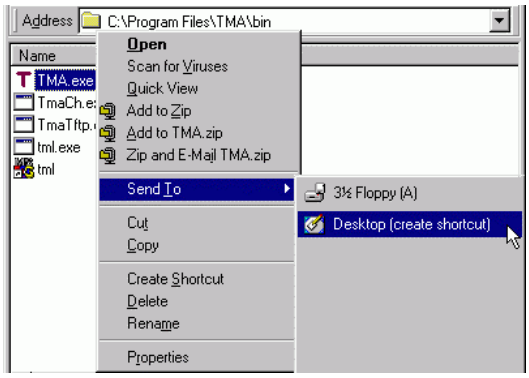
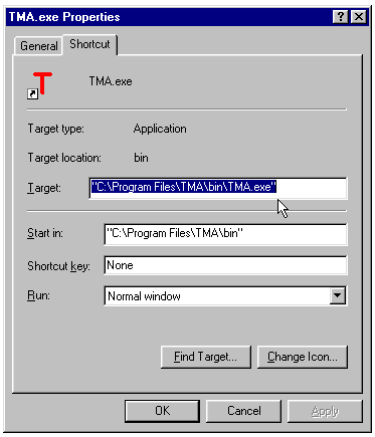
The following table lists and explains the different TMA command line possibilities:

Command	Description
`tma`	Starts the TMA application. You still have to fill in the *Connect* windows (as described in Section 4.2 - Connecting to a device and Section 4.3 - Selecting a device).
`tma -h`	Displays the TMA command line help (refer to Section 4.4.2 - Displaying the TMA command line help).
`tma alias`	Connects you to the device for which this alias was created. Use this command when no password is defined in the device. **Example** Suppose you created for a certain device the alias *Test device*. Suppose no password is defined in this device. In this case, the command syntax is: `tma "test device"`
`tma alias netpw`	Connects you to the device for which this alias was created. Use this command when the network password and the device password are the same. For more information on passwords, refer to Section 4.3.3 - The Connect… – Select device… window selections, Paragraph Select device... selection 8. **Example** Suppose you created for a certain device the alias *Test device*. Suppose the password *12 - 34* is defined in this device. In this case, the command syntax is: `tma "test device" "12 - 34"`
`tma alias netpw devpw`	Connects you to the device for which this alias was created. Use this command when the network password differs from the device password. For more information on passwords, refer to Section 4.3.3 - The Connect… – Select device… window selections, Paragraph Select device... selection 8. **Example** Suppose you created for a certain device the alias *Test device*. Suppose the password *12+34* is defined in this device. Suppose you connect to the network through a device with password *56*78*. In this case, the command syntax is: `tma "test device" "56*78" "12+34"`

4.4.4 Creating TMA command line shortcuts

The command line syntax allows you to create shortcuts. This means that you have immediate access to a device just by clicking on its icon on your desktop.

The following procedure explains how to create such shortcuts:

Step	Action
1	Go to the directory where the TMA executables are located. If you did not change the default file location during the set-up, then this directory is *C:\Program Files\TMA\bin*.
2	Make a shortcut of the *TMA.exe* file and, for instance, place it on your desktop. 
3	Display the properties of the shortcut. 

4	Edit the *Target:* field of the *Properties* window as follows:
	1. Before editing, the *Target:* field displays the following string:
	`"C:\Program Files\TMA\bin\TMA.exe"`
	2. Add the TMA command line syntax to this string:
	`"C:\Program Files\TMA\bin\TMA.exe" "alias" "netpw" "devpw"`
	Example
	Suppose you created for a certain device the alias *Test device*. Suppose the password *12+34* is defined in this device. Suppose you connect to the network through a device with password *56*78*. In this case, the *Target:* field string has to edited as follows:
	`"C:\Program Files\TMA\bin\TMA.exe" "test device" "56*78" "12+34"`

5	Rename the shortcut. E.g. *Test device*.
6	Double clicking on the shortcut immediately opens a TMA session on the corresponding device.

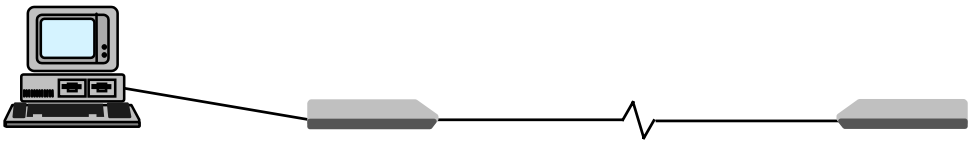
5. Opening a TMA session – examples

This chapter gives two examples of how to open a TMA session. It gives the screenshots of a filled in *Connect… – Device…* and *Connect… – Select device…* window.

The following table gives an overview of this chapter.

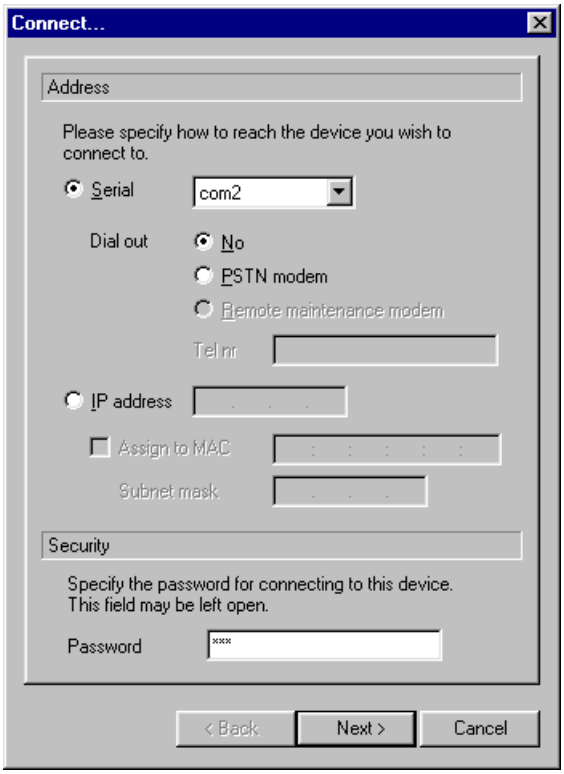
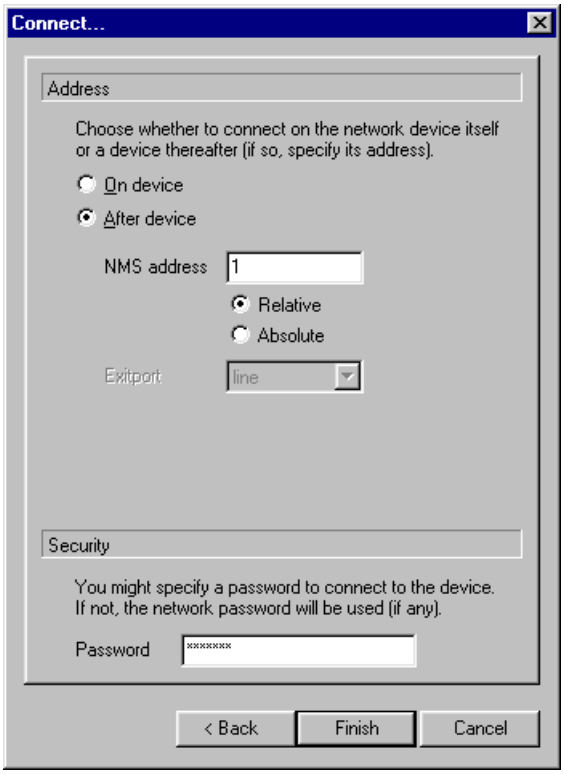
5.1 Example 1 – a direct connection

Suppose you have a set-up as described in the figure below:



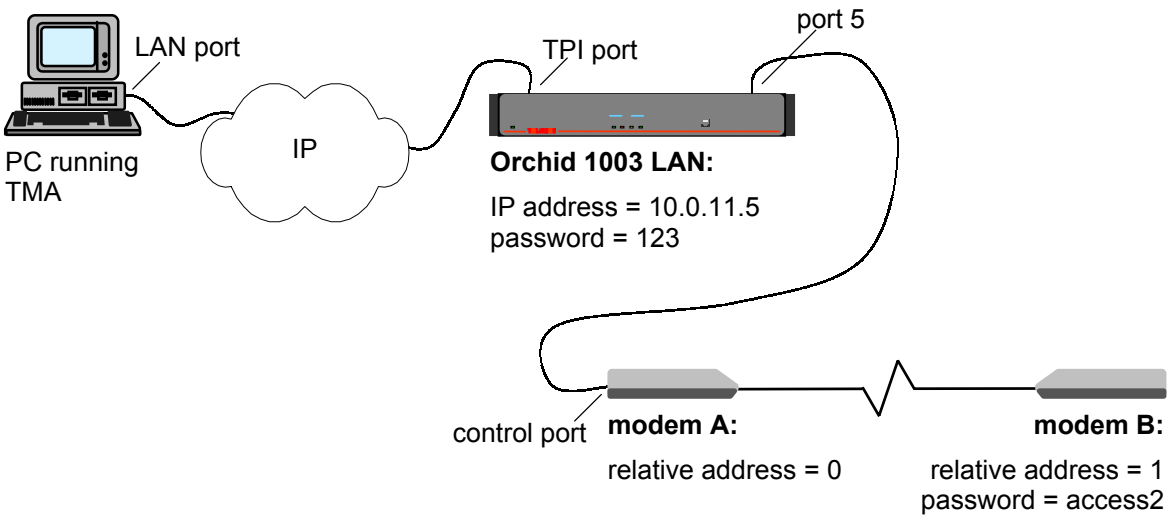
PC running TMA:	**modem A:**	**modem B:**
COM port = COM2	relative address = 0 password = 123	relative address = 1 password = access2

Suppose you want to open a TMA session on modem B. The *Connect… – Device…* and *Connect… – Select device…* windows look as follows:

***Connect… – Device…* window**	***Connect… – Select device…* window**
	

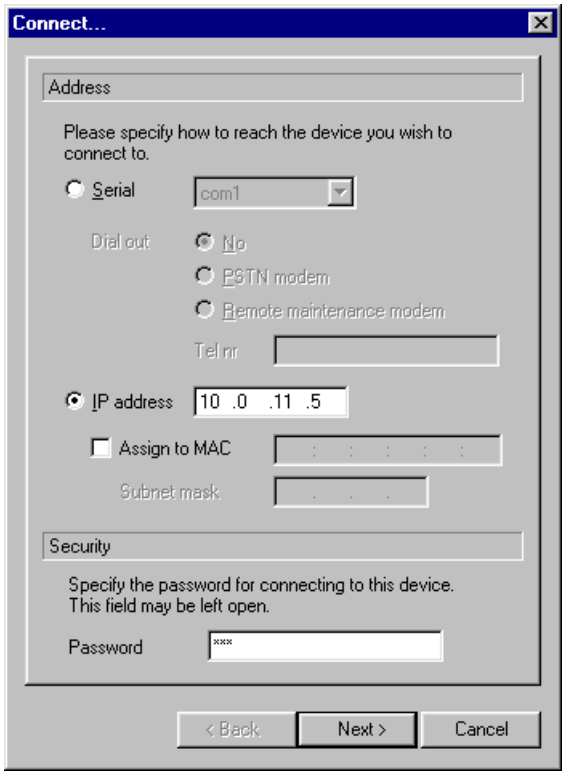
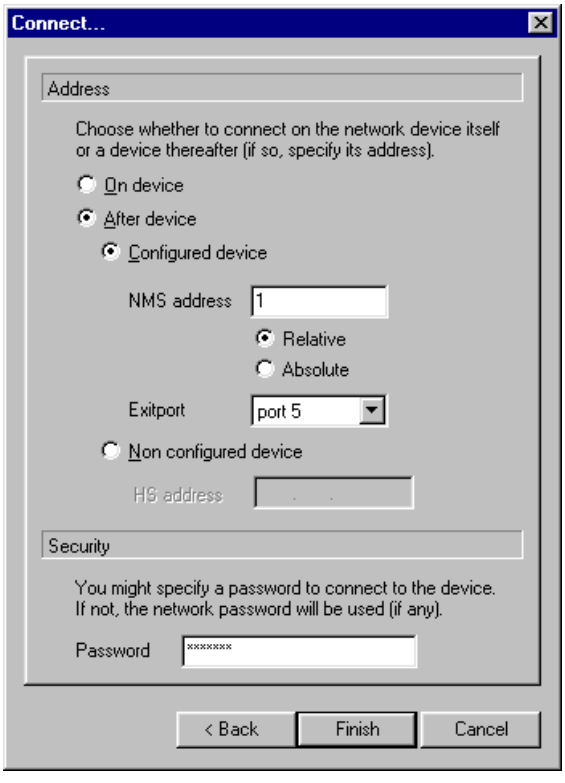
5.2 Example 2 – an IP connection

Suppose you have a set-up as described in the figure below:



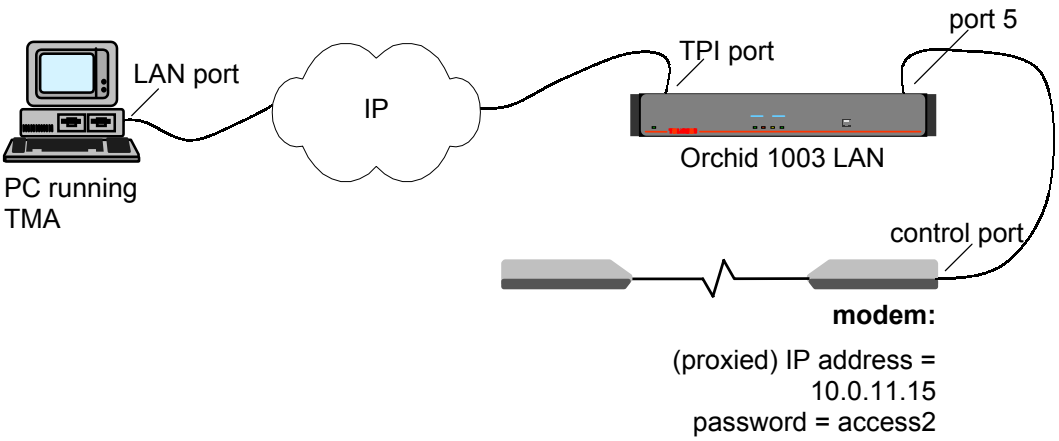
Suppose you want to open a TMA session on modem B. In this example, both modem A and B are configured in the object table of the Orchid 1003 LAN. However, they are not assigned an IP address. I.e. you can not connect to the modem over a proxied IP connection. You have to connect over IP to the Orchid first.

The *Connect… – Device…* and *Connect… – Select device…* windows look as follows:

***Connect… – Device…* window**	***Connect… – Select device…* window**
	

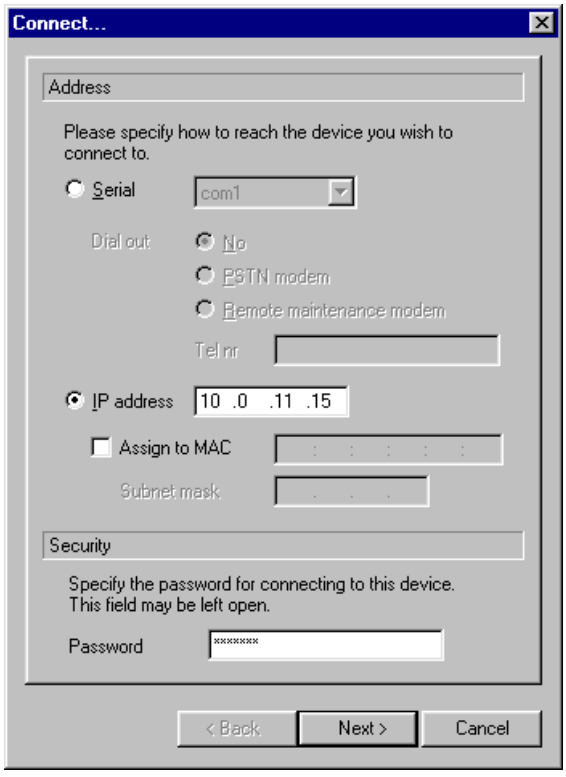
5.3 Example 3 – a proxied IP connection

Suppose you have a set-up as described in the figure below:



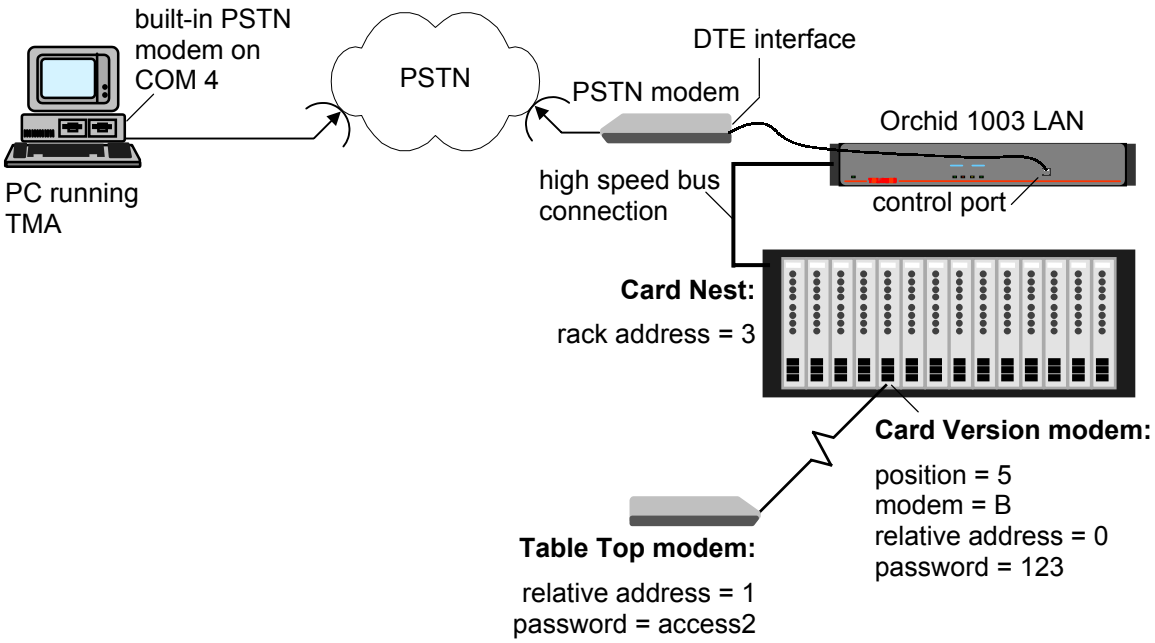
Suppose you want to open a TMA session on the modem. In this example, the Orchid 1003 LAN acts as an IP proxy device for the modem. I.e. the modem is configured in the object table of the Orchid 1003 LAN (IP address, exit port, etc.). For more information, refer to Section 3.4 - Proxied IP connection to a non-IP device.

The *Connect… – Device…* and *Connect… – Select device…* windows look as follows:

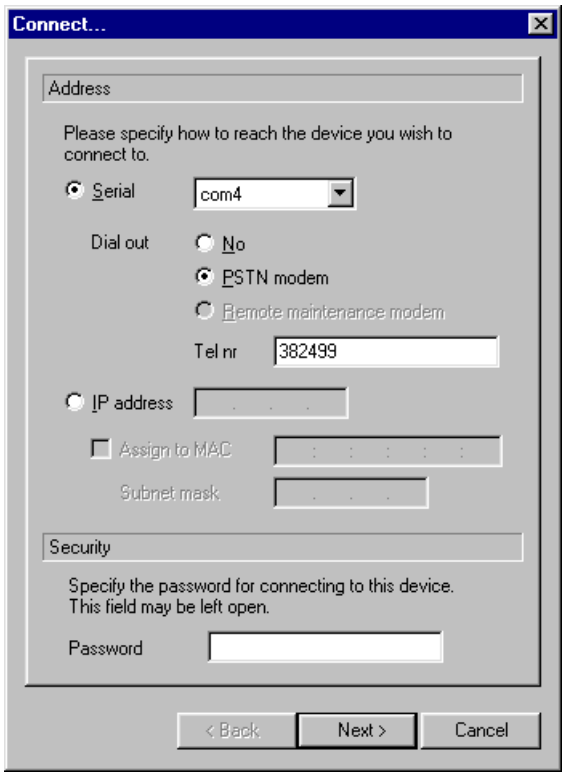
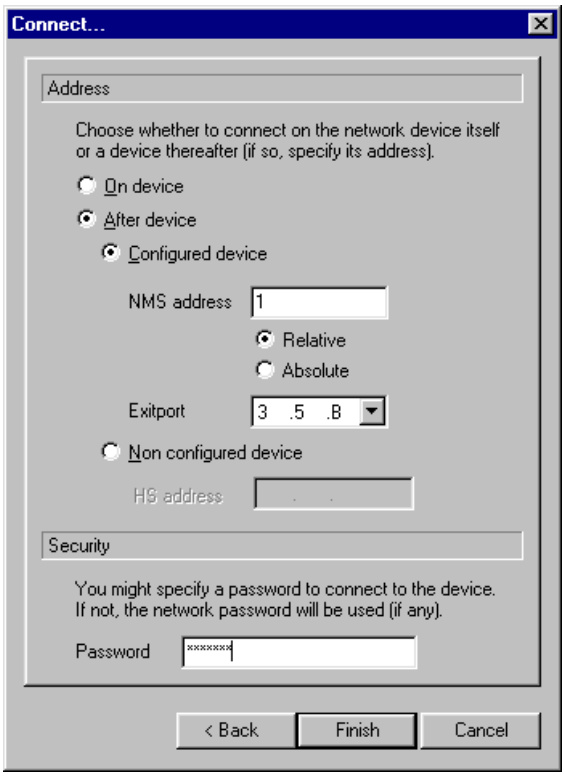
***Connect… – Device…* window**	***Connect… – Select device…* window**
	Connecting to a non-IP device over a proxied IP connection does not bring up the *Connect… – Select device…* window. This because such a connection does not allow you to open TMA sessions on devices behind the non-IP device in question.

5.4 Example 4 – a dial-out connection

Suppose you have a set-up as described in the figure below:



Suppose you want to open a TMA session on the Table Top modem. The *Connect… – Device…* and *Connect… – Select device…* windows look as follows:

***Connect… – Device…* window**	***Connect… – Select device…* window**
	

5.5 Some remarks on dial-out connections

This section gives some remarks on dial-out connections. More particular on the speed of the connection negotiated by the two PSTN modems. Also the data format is important. Also connection messages such as *ring* and *echo off* must be turned off.

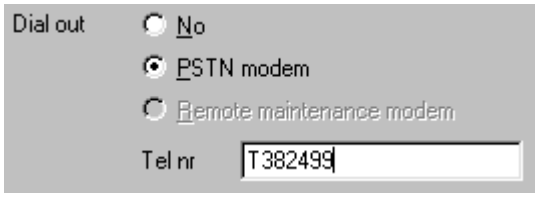
The following table gives an overview of this section.

5.5.1 Adding AT commands to the *Tel nr* field

Consider the example in Section 5.4 - Example 4 – a dial-out connection. In the *Tel nr* field of the *Connect… – Device…* window, you can add supplementary AT commands.

Example

As default, pulse dialling is used to dial out. This because the parameter DialPrefix in the *TMA.ini* file has the following value: AT&D1X4E0V0Q0, where “D” specifies pulse dialling. However it is possible to overrule this by adding the AT command “T” before the telephone number entered in the *Tel nr* field. This is shown in the following figure:



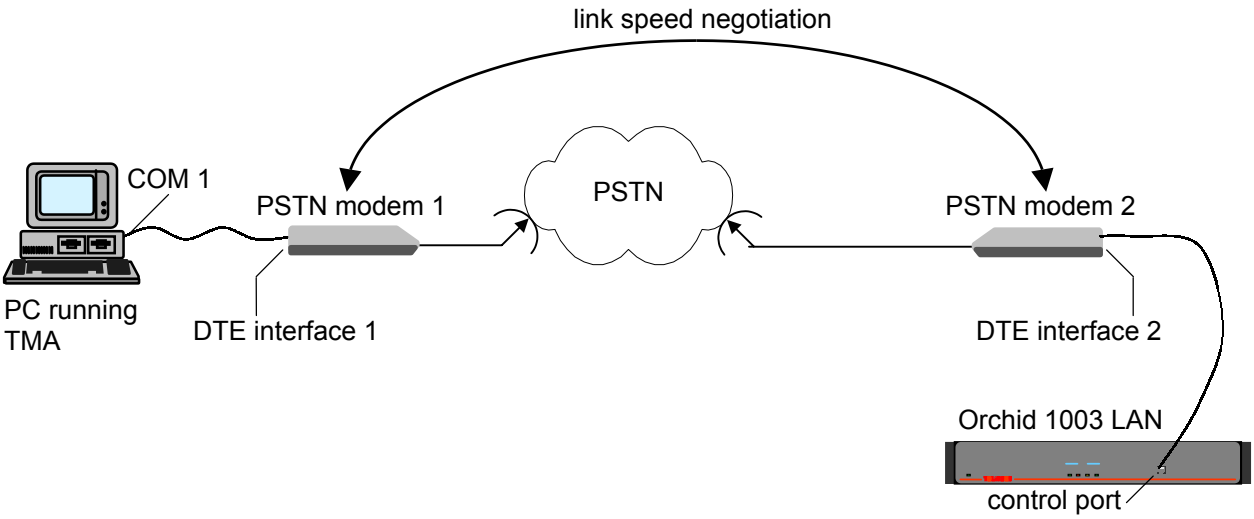
Depending on the AT command, you can place the command before or behind the telephone number.

5.5.2 Speed, data format and connection messages

To make sure the dial-out connection is established successfully, some parameters have to be set to a certain value. This is explained by means of the following example.

Example

Suppose you have a set-up as shown in the figure below:



Going from local side (utmost left side) to the remote side (utmost right side), the following things *have* to be configured:

Interface	Parameter(s)
COM1	As default, the speed parameter for COM1 in the *Cms2Serv.ini* file is 9600 bps.
DTE interface 1	• Because the speed of COM1 is 9600 bps, also set the DTE interface 1 speed to 9600 bps. • Set the data format to 8 + N. • The AT commands on DTE interface 1 have to be: – result codes on (ATQ0) – short result codes (ATV0) – echo off (ATE0). By default this is so, because the DialPrefix parameter in the *TMA.ini* file is AT&D1X4E0V0Q0.
link PSTN modem 1 ↔ 2	The modems are not allowed to negotiate their speed, since this speed can then differ from the COM speed, DTE interface and control port speed. Therefore, set a fixed speed for the link (being 9600 bps).
DTE interface 2	• Because the speed of the control port is 9600 bps, also set the DTE interface 2 speed to 9600 bps. • Set the data format to 8 + N. • The AT commands on DTE interface 2 have to be: – result codes off (ATQ1) – echo off (ATE0). You have to send these AT commands to on DTE interface 2.
Control port	There is nothing to configure on the control port. It uses a fixed speed of 9600 bps and a data format of 8 + N.

6. The TMA window

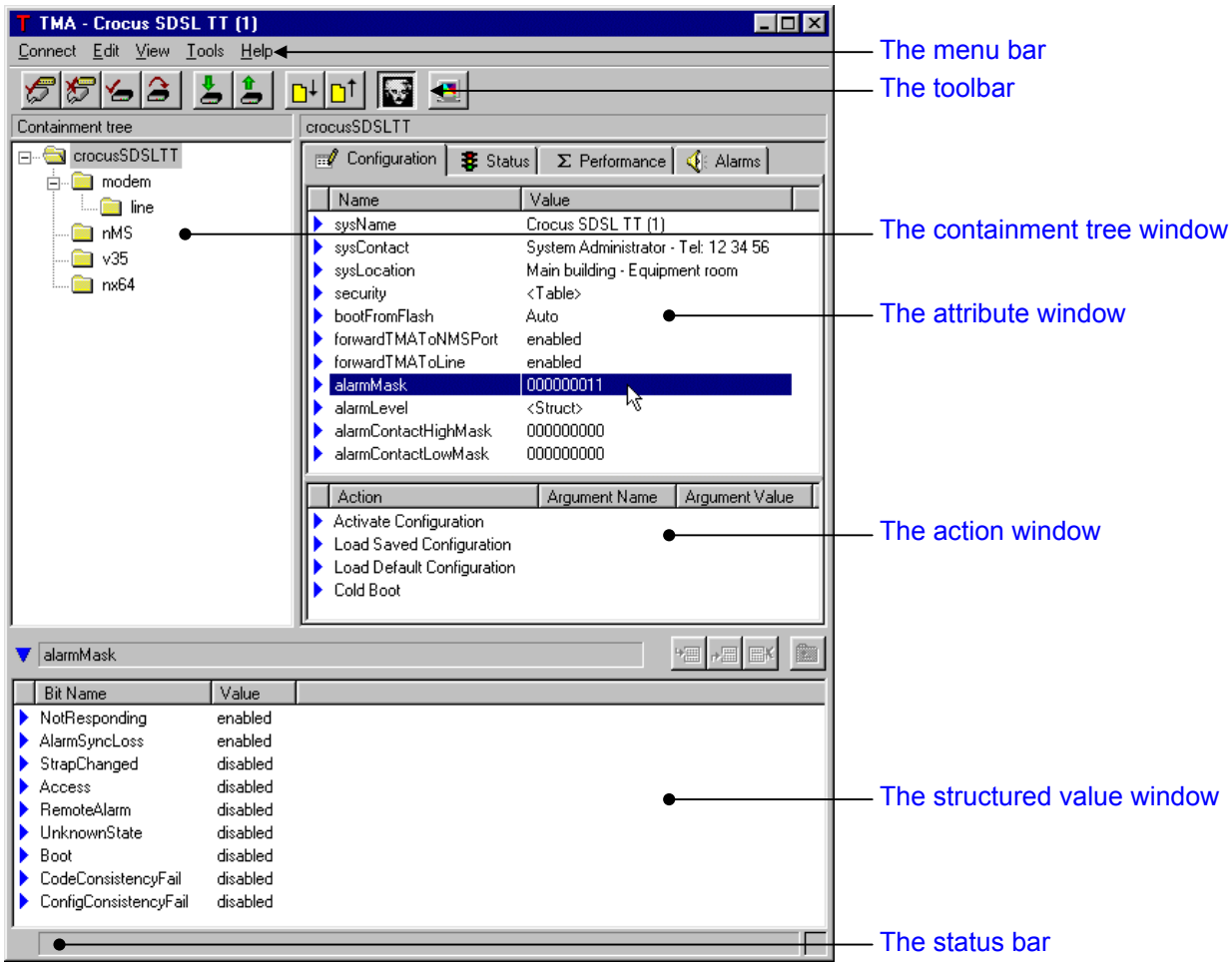
After you have opened a TMA session on a device on the network, you are able to control the device. This chapter explains every item of the TMA window which enables you to do this. First the different parts of the TMA window are displayed and labelled. Then all these parts are explained one by one.

The following table gives an overview of this chapter.

6.1 The TMA window structure

This section displays and labels the different parts of the TMA window.

The following figure shows the TMA window and labels the main parts:

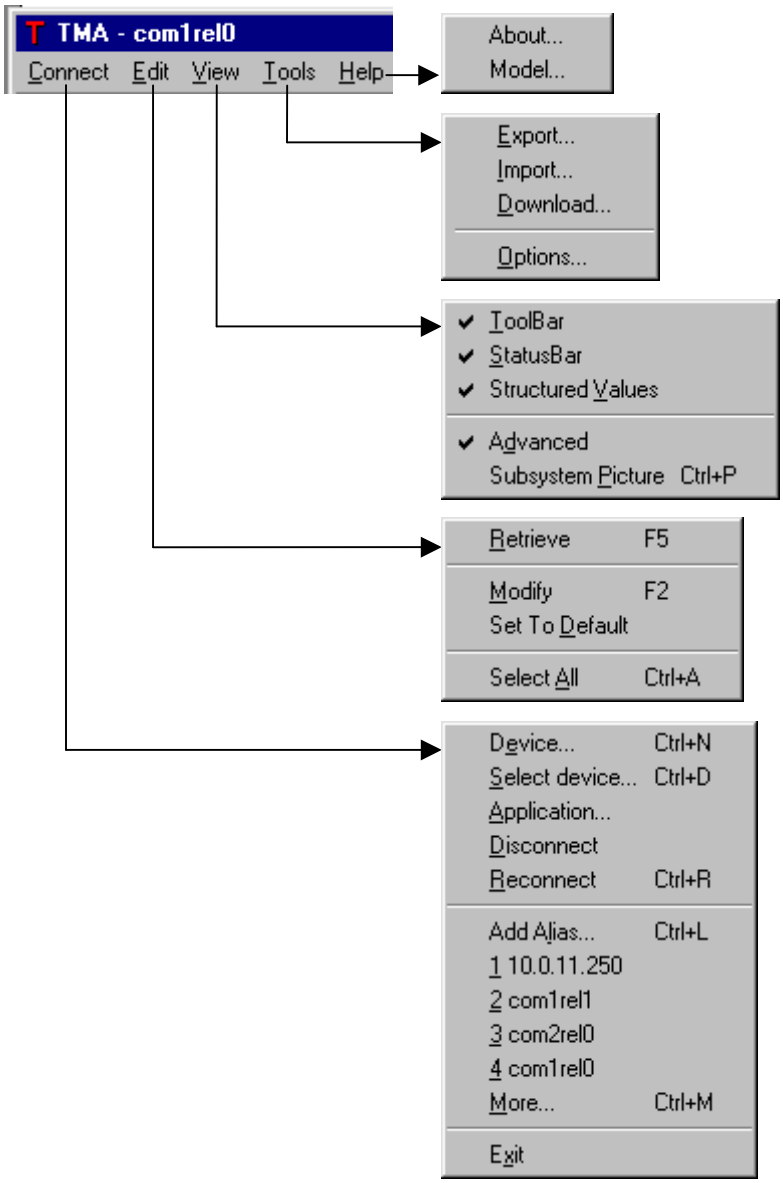


6.2 The menu bar

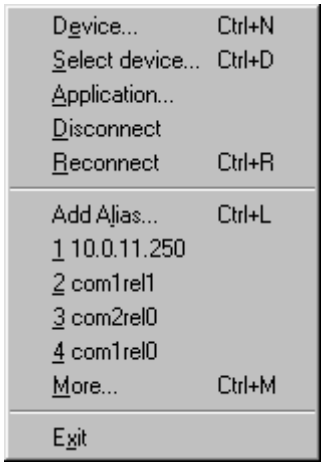
This section describes the pull-down menus located in the menu bar. It displays the pull-down menus and explains the underlying commandos.

The following table gives an overview of this section.

The following figure depicts the menu bar and the underlying pull-down menus:



6.2.1 The *Connect* menu

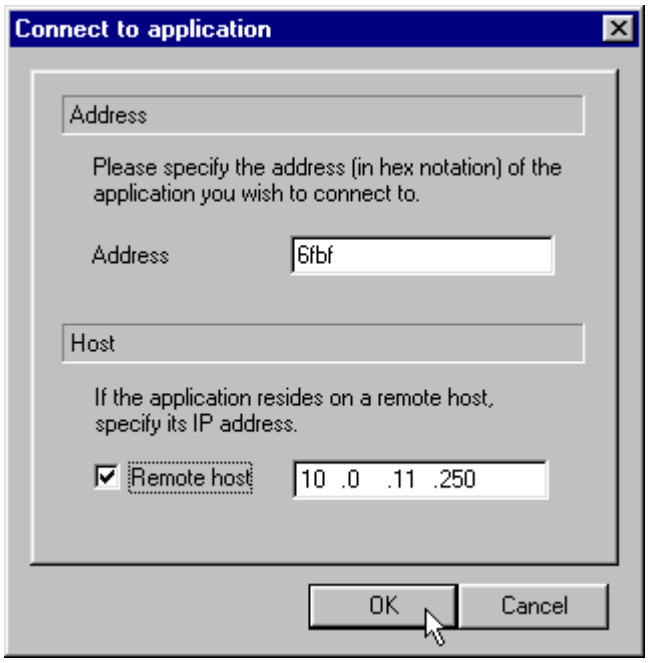


The following table lists and describes all the commands of the *Connect* menu:

Command	Description
Device…	Use this command to connect to a device. Selecting this command brings up the *Connect… – Device…* window. The shortcut key for this command is CTRL+N. For more information refer to Section 4.2.2 - The Connect… – Device… window selections.
Select device…	Use this command to select another device on the network you are currently connected to. Selecting this command brings up the *Connect… – Select device…* window. The shortcut key for this command is CTRL+D. For more information refer to Section 4.3.3 - The Connect… – Select device… window selections.
Application…	Use this command to connect to an application. For more information, refer to Paragraph a) Connecting to an application, page 78.
Disconnect	Use this command to disconnect from the current device or application.
Reconnect	Use this command to reconnect to the current device or application.
Add Alias…	Use this command to create an alias for the current connection. Creating an alias allows you to reconnect to the device or application without having to re-enter the address parameters. The shortcut key for this command is CTRL+L. For more information, refer to Paragraph b) Creating aliases, page 79.
1 … 2 … 3 … 4 …	These are the four most recently used aliases.
More…	This command displays the rest of the aliases. The shortcut key for this command is CTRL+M.
Exit	This command closes the TMA application.

a) Connecting to an application

Use the *Application…* command to connect to an application (e.g. the Alarm Manager of TMA for HP OpenView). Selecting this command brings up the *Connect to application* window:



This feature allows you to open a TMA session on, for example, the Alarm Manager of TMA for HP OpenView and this on a machine that does not run HP OpenView.

The *Connect to application* window is split up in two parts. These are described in the following table:

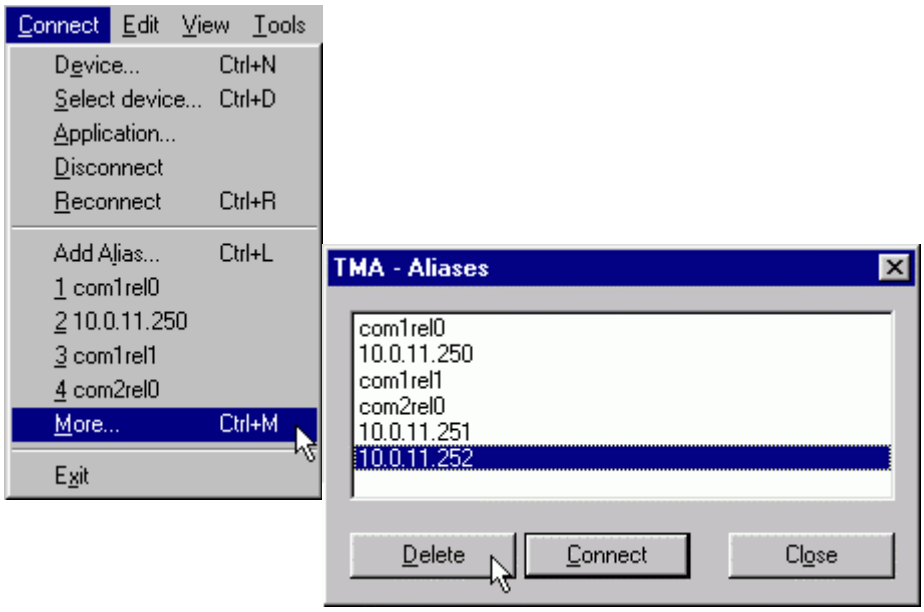
Part	Description
Address	In the address field, enter the address of the application you want to connect to. In case of the Alarm Manager for example, the address is *6fbf*.
Host	Even if the application resides on another machine than the one you are running TMA on, you can still connect to the application. Do this by ticking the *Remote host* box, and entering the IP address of the remote machine running the application you want to connect to.

b) Creating aliases

Use the *Add Alias…* command to create an alias for the currently active connection to a device or application. Selecting this command brings up the *Add Alias* window:

Using an alias allows you to reconnect to the device or application without having to re-enter the address parameters. However, for security reasons, the alias does not include the passwords. I.e. even when an alias is selected, TMA will ask you to enter the *network* and / or *device* password.

You can find the four most recently used aliases under *Connect* in the menu bar. To display the rest of the aliases, click on *More…* or press the shortcut key Ctrl+M. In this window the amount of aliases is unlimited. It also gives you the possibility to remove old aliases.

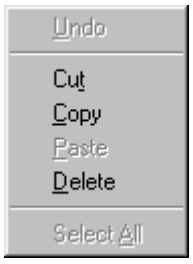
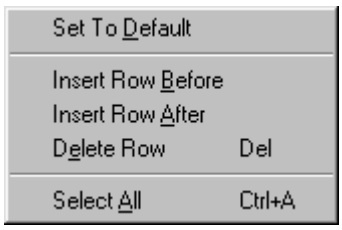


6.2.2 The *Edit* menu

The *Edit* menu is not only available in the menu bar, but can also be displayed as pop-up menu. This is done by selecting an element in the TMA window and pressing the right mouse button.

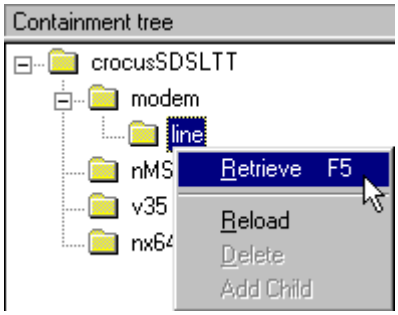
The contents of the *Edit* menu depends on which element is currently selected. The following paragraphs explain how to display the different *Edit* menus. They also list and describe the underlying commands.

The following table gives an overview of the different *Edit* menus:

Figure	Click on the link below to jump to the corresponding paragraph…
	Paragraph a) The containment tree Edit menu, page 81.
	Paragraph b) The attribute Edit menu, page 82.
	Paragraph c) The text Edit menu, page 84.
	Paragraph d) The action Edit menu, page 85.
	Paragraph e) The table Edit menu, page 86.

a) The containment tree *Edit* menu

Display this menu by selecting an object in the containment tree and pressing the right mouse button:

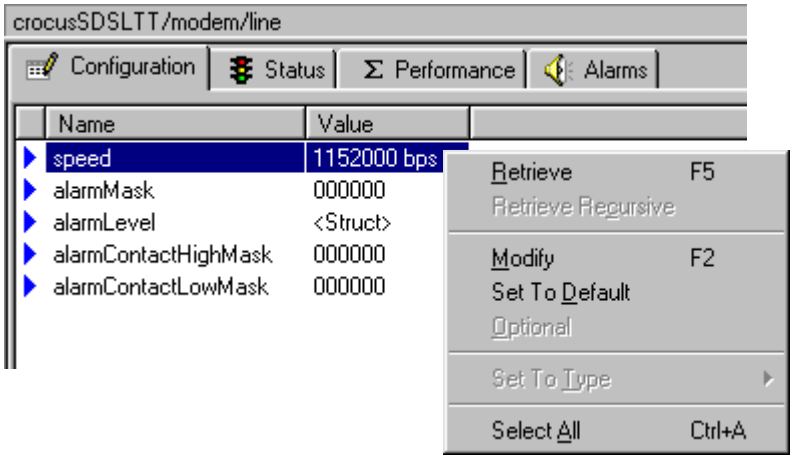


The following table lists and describes the underlying commands:

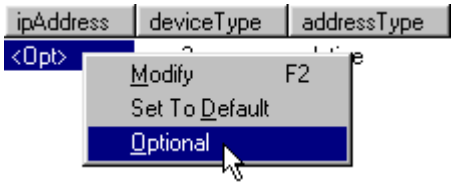
Command	Description
Retrieve	This command retrieves all the attribute values of the currently selected object from the device. The shortcut key for this command is F5.
Reload	This command reloads the currently selected object from the device. If you select the top object and perform a reload, the complete containment tree is reloaded. A reload is necessary when during a TMA session objects appear, disappear or change in the containment tree. This is the case when, for instance, a V35 Nx64k interface module of a Telindus modem is replaced by a RS530 interface module.
Delete	This command deletes a previously added child object. A child object is also called a user instantiatable object. For more information on user instantiatable objects, refer to Chapter 7 - User instantiatable objects.
Add child	This command adds a child object. A child object is also called a user instantiatable object. For more information on user instantiatable objects, refer to Chapter 7 - User instantiatable objects.

b) The attribute *Edit* menu

Display this menu by selecting an attribute in the attribute window and pressing the right mouse button:



The following table lists and describes the underlying commands:

Command	Description
Retrieve	This command retrieves the value of the currently selected attribute from the device. The shortcut key for this command is F5.
Retrieve Recursive	Whereas the *Retrieve* command retrieves the value of the currently selected attribute on the first level, the *Retrieve Recursive* command retrieves the value of the currently selected attribute and all its possible sub-values. This means that in case a table is selected in which structures and other tables (i.e. nested tables) appear, the *Retrieve Recursive* command retrieves all the values present in these structures and tables. TMA does not do this by default as some tables can be very complex and might take a very long time to retrieve.
Modify	This command allows you to modify the value of the currently selected attribute. The shortcut key for this command is F2. Depending on the attribute a drop-down box appears in which you can select a value, or a field appears in which you can enter characters.
Set To Default	This command sets the value of the currently selected attribute to its default value.
Optional	This command clears an optional value. I.e. it clears a value which was entered by the user, but for which it was not mandatory to enter a value. The string <*Opt*> (re)appears. 

Continued on next page

The attribute Edit menu (continued)

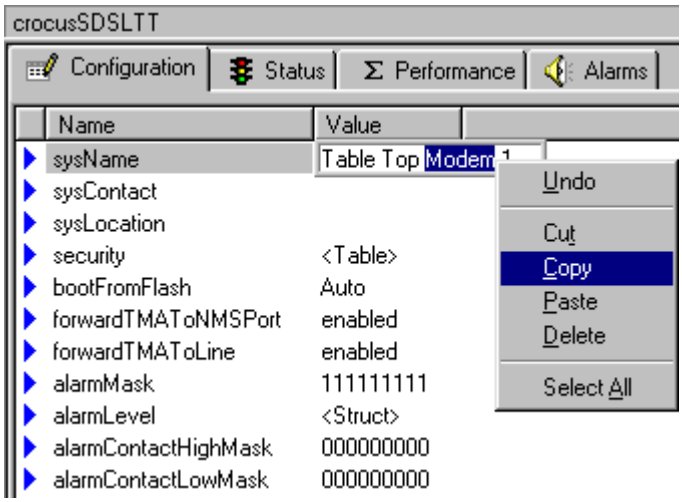
Command	Description
Set To Type	This command allows you to select a value type in case of a choice value. For more information on choice values, refer to Section 6.5 - The attribute window, Paragraph c) Attribute value.
Select All	This command selects all the attributes in the attribute window. The shortcut key for this command is CTRL+A. If you execute the *Select All* command and then the *Set To Default* command, all the attributes in the attribute window are selected and their values are reset to their default value.

When selecting an attribute which is present in a structure or table, one extra command is listed: Set To This Choice Type.

Also this command allows you to select a value type in case of a choice value. For more information on choice values, refer to Section 6.5 - The attribute window, Paragraph c) Attribute value.

c) The text *Edit* menu

Display this menu by selecting an attribute in the attribute window, performing the *Modify* command and pressing the right mouse button:



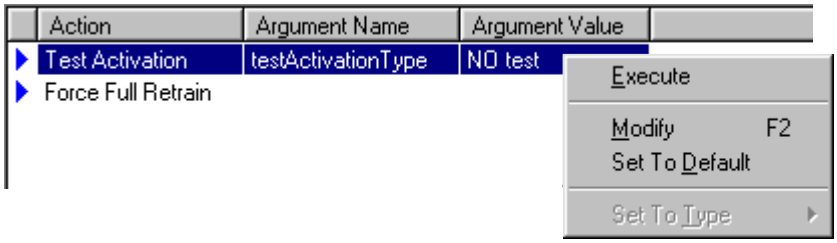
This *Edit* menu does not appear for all attribute values. Only for those values where characters have to be edited.

The following table lists and describes the underlying commands:

Command	Description
Undo	Cancels the previous action.
Cut	Removes the current selection. This selection is placed in the clipboard and therefore can be paste somewhere else.
Copy	Copies the current selection to the clipboard.
Paste	Places the current contents of the clipboard.
Delete	Removes the current selection. This selection is *not* placed in the clipboard.
Select All	Selects the entire string.

d) The action *Edit* menu

Display this menu by selecting an action in the action window and pressing the right mouse button:

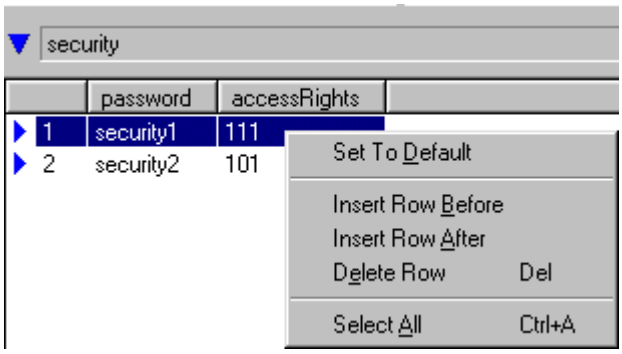


The following table lists and describes the underlying commands:

Command	Description
Execute	This command executes an action. For some actions you first have to set an argument value before you can execute the action.
Modify	This command allows you to modify the argument value of the currently selected action. A drop-down box appears in which you can select a value. The shortcut key for this command is F2.
Set To Default	This command sets the argument value of the currently selected action to its default value.
Set To Type	This command allows you to select a value type in case of a choice value. For more information on choice values, refer to Section 6.5 - The attribute window, Paragraph c) Attribute value.

e) The table *Edit* menu

Display this menu by selecting an attribute which has <*Table*> as value and pressing the right mouse button in the structured value window:

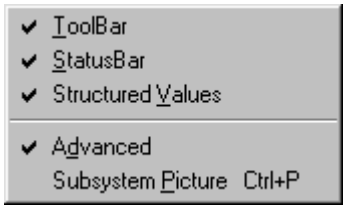


This *Edit* menu does not appear for all structured values. Only for those values where the attribute is followed by the string <*Table*>.

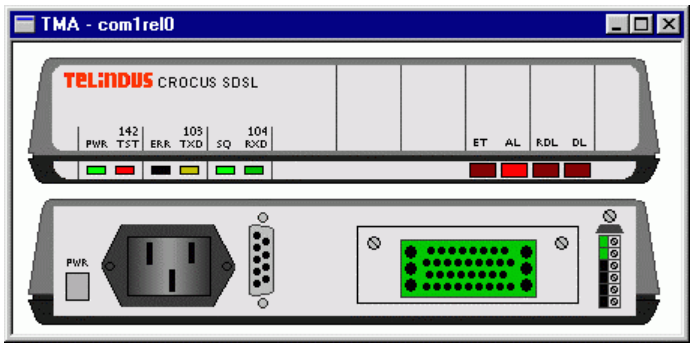
The following table lists and describes the underlying commands:

Command	Description
Set To Default	This command sets the currently selected value to its default value.
Insert Row Before	This command inserts a row before the currently selected row.
Insert Row After	This command inserts a row after the currently selected row.
Delete Row	This command deletes an entire row.
Select All	This command selects all the values in the structured value window. The shortcut key for this command is CTRL+A. If you execute the *Select All* command and then the *Set To Default* command, all the values in the structured value window are selected and are reset to their default value.

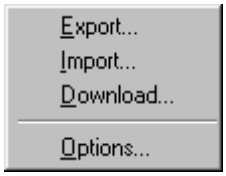
6.2.3 The *View* menu



The following table lists and describes all the commands of the *View* menu:

Command	Description
ToolBar	Toggling this command displays or hides the toolbar.
StatusBar	Toggling this command displays or hides the status bar.
StructuredValues	Toggling this command displays or hides the structured value window.
Advanced	Toggling this command displays or hides the advanced attributes.
Subsystem Picture	This command displays the sub-system picture. The shortcut key for this command is CTRL+P.  The sub-system picture is a TMA tool which visualises the status information of the device. The front panel LED indications of the sub-system picture are the same as those of the device. The sub-system picture also displays the status of the front panel test buttons (if present), the interface connection, the line connection, etc. For more information on the sub-system picture of the Telindus device, refer to its user manual.

6.2.4 The *Tools* menu



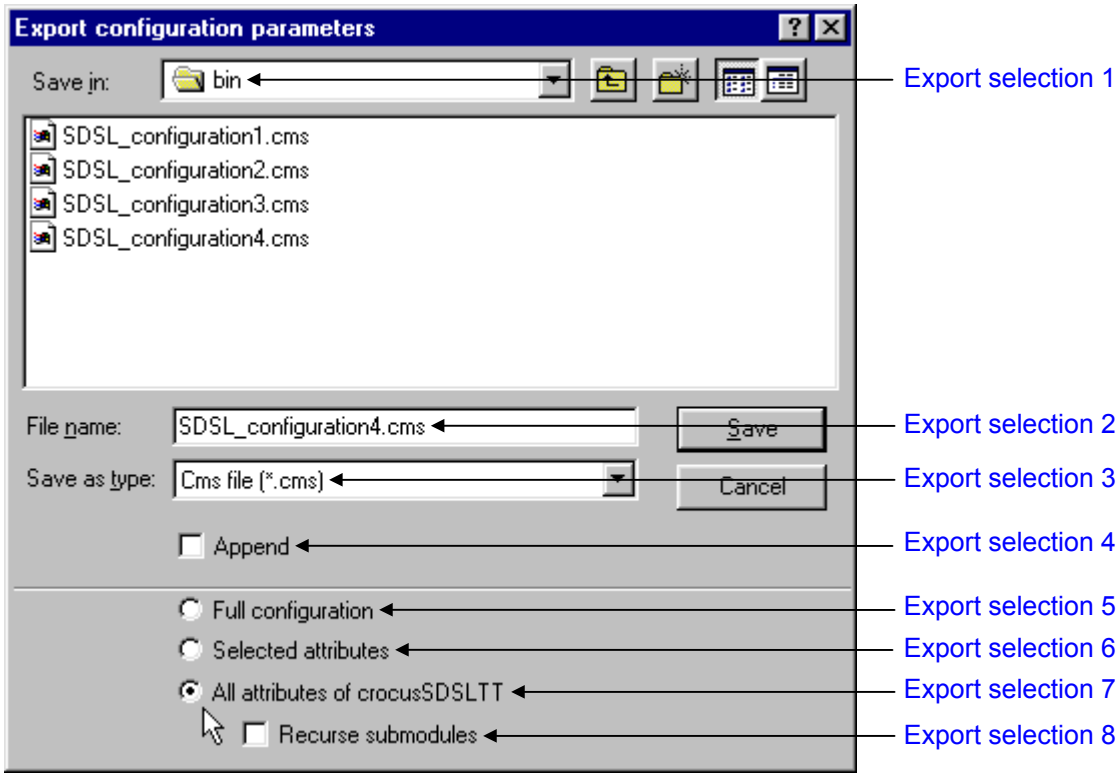
The following table lists and describes all the commands of the *Tools* menu:

Command	Description
Export…	This command enables you to export configuration, status, performance and alarm information towards a file. Selecting this command brings up the *Export configuration parameters* window. Refer to Paragraph a) The Export configuration parameters window selections, page 89.
Import…	This command enables you to import configuration information from a file. Selecting this command brings up the *Import configuration* window. Refer to Paragraph b) The Import configuration window selections, page 97.
Download…	This command enables you to download new firmware to the device. Because this is quite an important feature, it is discussed in a separate section. Refer to Chapter 10 – Downloading software.
Options…	This command enables you to set display and upload options. Refer to Paragraph c) The Options window selection, page 99.

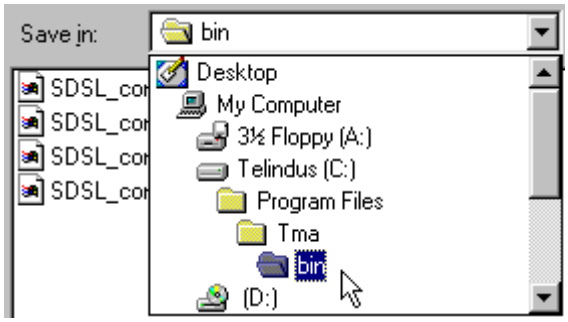
a) The *Export configuration parameters* window selections

This section shows the *Export configuration parameters* window. All the different selection possibilities are numbered. They are explained in the following paragraphs.

The *Export configuration parameters* window is depicted below:



Export selection 1 - Save in



Choose here the location for the export file. As default, the file is saved in the *TMA\bin* directory.

Export selection 2 - File name

Enter here the name of the export file. It is not necessary to enter the file extension, it is added automatically.

Export selection 3 - Save as type

Choose here the type of the export file. The table below shows the different file types:

File type	Can be used to export the …	Description
CMS	configuration attributes	You can export the configuration attributes of a Telindus device to a CMS file. This means that the configuration attribute settings are saved in a file. Later, you can import this configuration in the same or another device. This is particularly interesting when a lot of devices need the same configuration.
TXT	• configuration • status • alarm … attributes	You can export the configuration, status and alarm attributes to a plain text file. This is particularly interesting for documentation purposes. In contrast with the configuration attributes, the status and alarm attributes can only be exported to a TXT file.
CLI	configuration attributes	You can export the configuration attributes of a Telindus device to a CLI file. Analogue to the CMS file, this allows you to distribute configuration files amongst several devices. Some advantages of using a CLI file are: • you can still edit the file using the CLI syntax. • you can use the file when running CLI on the devices themselves (through a terminal or Telnet session). • you can use the file when running TMA CLI on your computer. **Important remarks** • The purpose of the CLI import is to distribute configurations. Not to run scripts as in CLI or TMA CLI. • When you edit the CLI file yourself, make sure that you never use the commands `disconnect` and `exit`. This closes the CLI core and gives unexpected results.
CSV	performance attributes	You can export the performance attributes to a text file. This is particularly interesting for documentation purposes. In contrast with the TXT file, the CSV file is not a plain text file. It is a comma separated value file. This because performance information consists of a lot of tables which could result in a very complex text file. A CSV file has the advantage that it can be easily imported in a spreadsheet or database for further processing.

Export selection 4 - Append

Tick this box if you want to add the data you are about to export to an existing export file. The new export data is inserted at the end of the file.

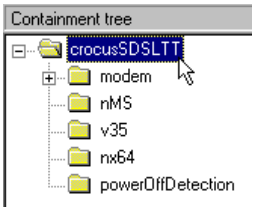
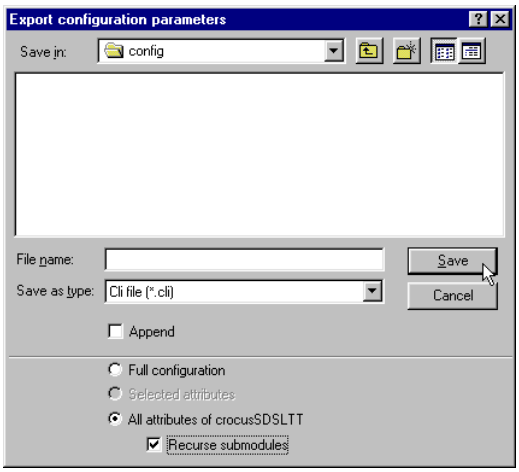
Export selection 5 - Full configuration

This selection is only available when you export the configuration attributes.

When exporting to a …

- TXT file, tick this box if you want to export all the configuration attributes instead of only the configuration attributes of the currently selected object.
- CMS or CLI file, things are a bit different than for a TXT file. In this case, a *load default configuration* action is inserted at the beginning of the file. Then, only those attributes which have a different value than the default value are stored in the file. This results in a compact file.

When you want a CMS or CLI file with the *complete* configuration (instead of only the *non-default* configuration), then proceed as follows:

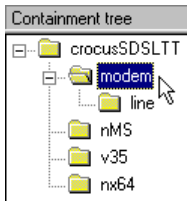
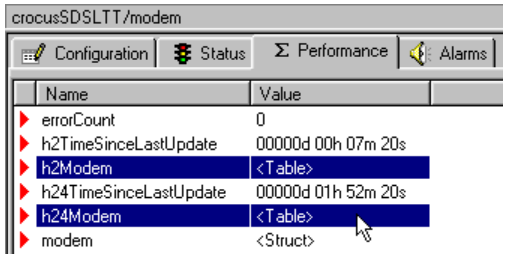
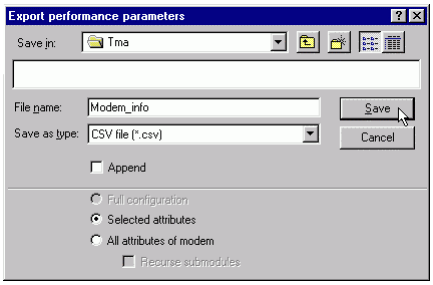
Step	Action	Figure
1	In the containment tree window, select the top object:	
2	In the attribute window, select the *Configuration* tab:	
3	In the *Tools* menu, select *Export…* The *Export configuration parameters* window appears.	
4	Tick the *All attributes of <top object>* and *Recurse submodules* selection.	
5	Enter a file name, a destination and press on the *Save* button.	

Export selection 6 - Selected attributes

Tick this selection if you only want to export the attributes you selected in the attribute window.

Example:

Suppose you only want to export the h2Modem and h24Modem performance attributes of a Crocus SDSL modem. Proceed as follows:

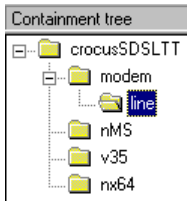
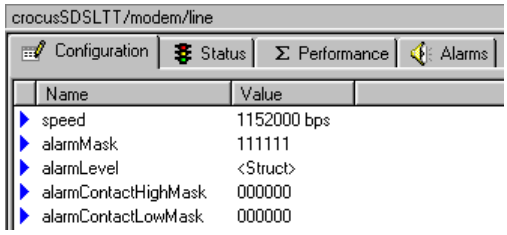
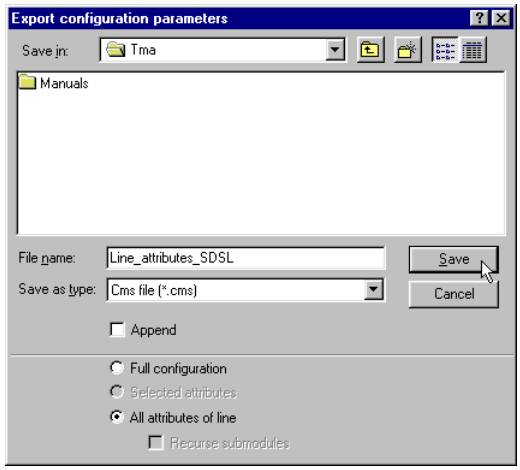
Step	Action	Figure
1	In the containment tree window, select the modem object:	
2	In the attribute window, select the *Performance* tab:	
3	Hold the CTRL-key down and select the h2Modem and h24Modem attributes in the attribute window: Release the CTRL-key.	
4	In the *Tools* menu, select *Export…* In the *Export configuration parameters* window, the *Selected attributes* selection is automatically ticked. Enter a file name, a destination and press on the *Save* button.	

Export selection 7 - All attributes of <object>

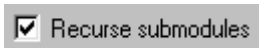
You don't necessarily have to export the complete configuration of a device. You are able to export the configuration attribute settings of one object only.

Example:

Suppose you only want to export the configuration attributes of the line object of a Crocus SDSL modem. Proceed as follows:

Step	Action	Figure
1	In the containment tree window, select the line object:	
2	In the attribute window, select the *Configuration* tab:	
3	In the *Tools* menu, select *Export…* The *Export configuration parameters* window appears.	
4	Tick the *All attributes of line* selection.	
5	Enter a file name, a destination and press on the *Save* button.	

Export selection 8 - Recurse submodules



Tick this selection if you want to export the attributes of the currently selected object *and* the attributes of the underlying objects.

Example:

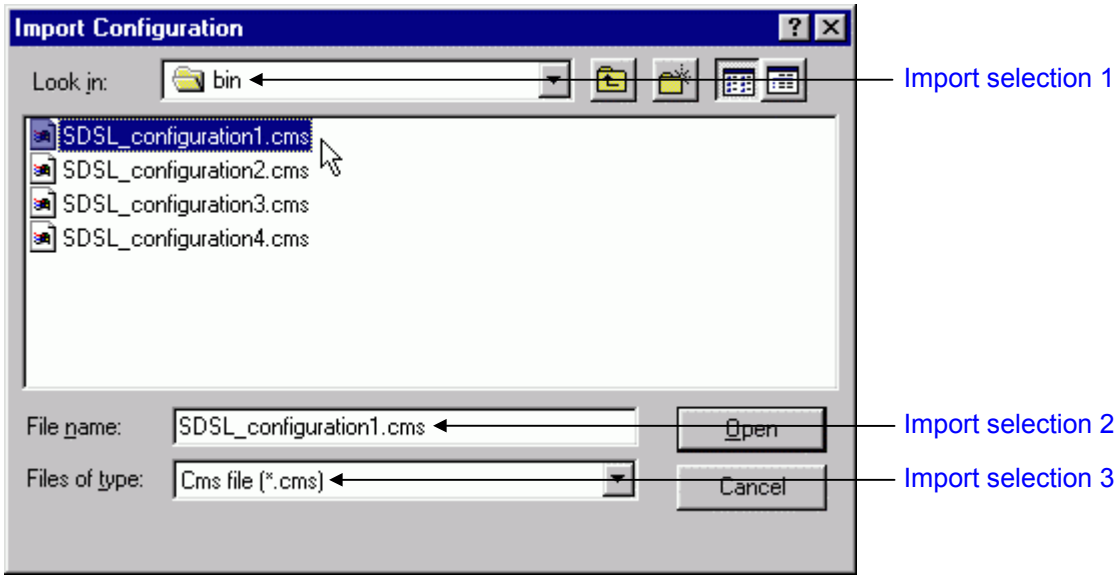
In most Telindus modems the modem object has one or more underlying line objects. To export the attributes of the modem object together with the attributes of the line object(s), proceed as follows:

Step	Action
1	In the containment tree window, select the modem object.
2	In the attribute window, select one of the tabs (depending on which type of attribute you want to export).
3	In the *Tools* menu, select *Export…* The *Export configuration parameters* window appears.
4	In the *Export configuration parameters* window, tick the *Recurse submodels* selection.
5	In the *Export configuration parameters* window, enter a file name, a destination and press on the *Save* button.

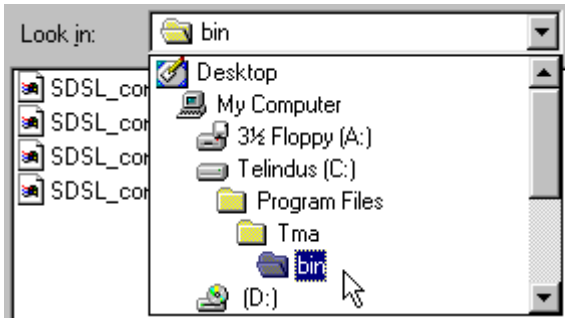
b) The *Import configuration* window selections

This section shows the *Import configuration* window. All the different selection possibilities are numbered. They are explained in the following paragraphs.

The *Import configuration* window is depicted below:



Import selection 1 - Look in

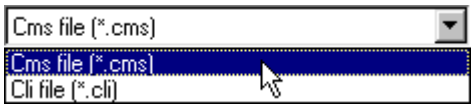


Locate with this selection the file you want to import.

Import selection 2 - File name

Enter here the name of the file you want to import.

Import selection 3 - Files of type



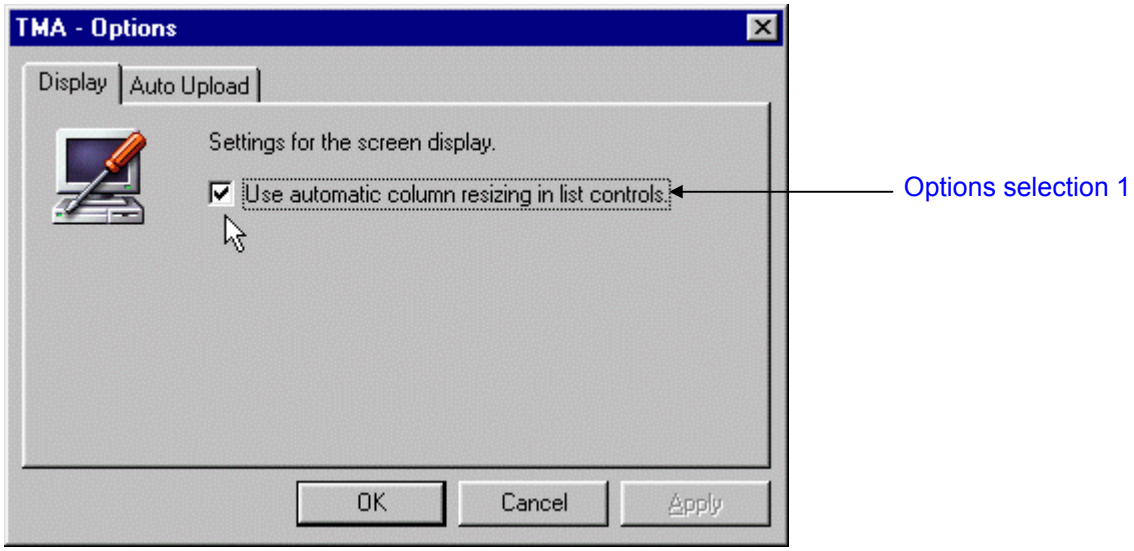
Select whether the file you want to import is a CMS or a CLI file. For more information on these file types, refer to Paragraph Export selection 3 - Save as type, on page 91.

After importing a configuration file, you still have to activate the configuration. Do this by pressing the *Send all attributes to device button*: 

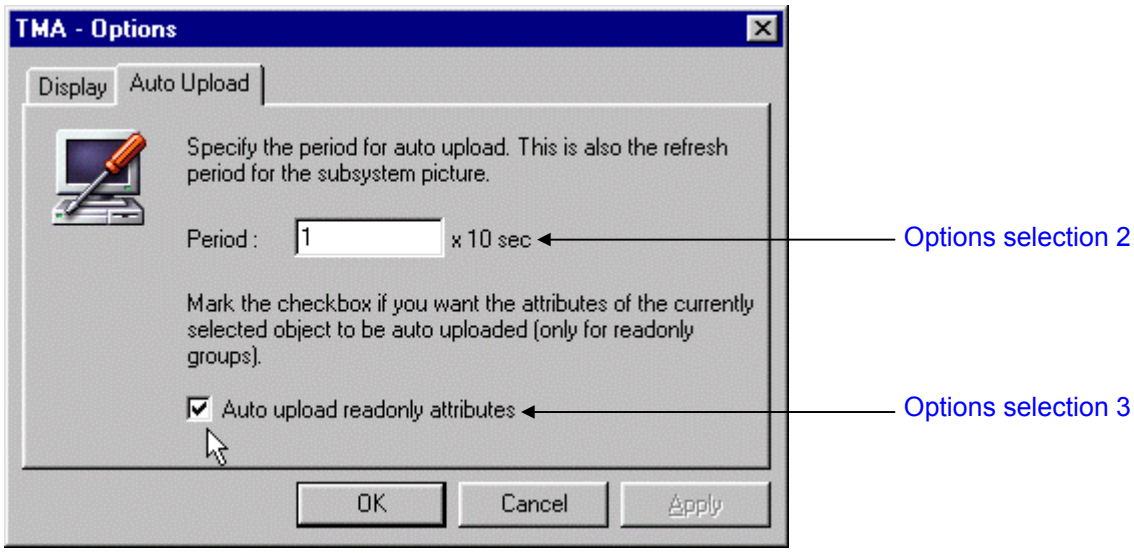
c) The *Options* window selection

This section shows the two *Options* windows. All the different selection possibilities are numbered. They are explained in the following paragraphs.

The *Options - Display* window is depicted below:



The *Options – Auto Upload* window is depicted below:



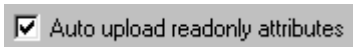
Options selection 1 - Use automatic column resizing in list controls

Tick this box if you want that the columns in the TMA window are automatically resized to fit the displayed strings.

Options selection 2 - Period

Here, you can specify the upload period for the status, performance and alarm attributes. E.g. a period of 1x10 sec means that every 10 seconds TMA will retrieve the values of the status, performance and alarm attributes from the device.

Options selection 3 - Auto upload readonly attributes



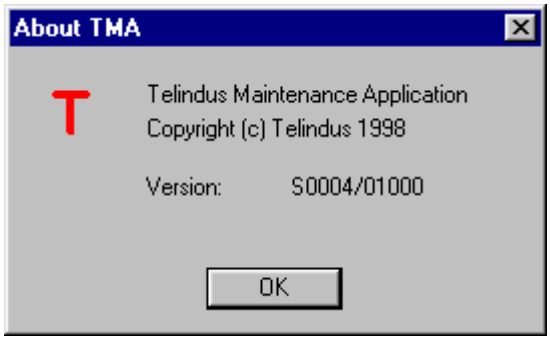
If this box is ticked, the status, performance and alarm attributes are automatically retrieved from the device with an interval as specified in Options selection 2 - Period.

If this box is not ticked, the status, performance and alarm attributes are not automatically retrieved from the device.

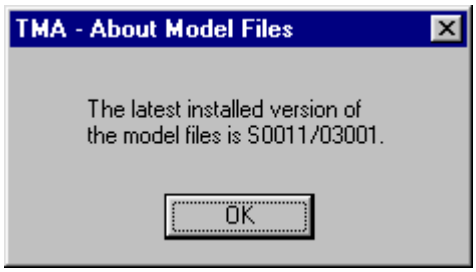
Only the read-only attributes (status, performance and alarm) are retrieved automatically from the device. The configuration attributes are not retrieved automatically.

6.2.5 The *Help* menu

About… displays version information of TMA. An example of an *About TMA* window is given below:



Model… displays version information of the model files. An example of an *About model files* window is given below:



6.3 The toolbar

This section describes the icons located in the toolbar. It displays the icons and explains their function.

The toolbar contains the most important TMA commandos represented as icons. This enables quick access to these commands. The following table lists the icons:

Icon	Name	Function
	Connect to device	Press this button to connect to a device. Pressing this button brings up the *Connect… – Device…* window. For more information refer to Section 4.2.2 - The Connect… – Device… window selections.
	Disconnect from device or application	Press this button to disconnect from the current device or application.
	Select device	Press this button to select another device on the network you are currently connected to. Pressing this button brings up the *Connect… – Select device…* window. For more information refer to Section 4.3.3 - The Connect… – Select device… window selections.
	Reconnect to device or application	Press this button to reconnect to the current device or application.
	Send all attributes to device	Press this button to send the configuration attributes to the device. If you made changes in the configuration of the device, press the *Send all attributes to device* button. It sends the new configuration to the device and this configuration is then activated.
	Retrieve all attributes from device	Press this button to retrieve all the attributes from the device. Provided that the upload functionality is activated, the read-only attributes (status, performance and alarms) are automatically retrieved from the device. This is not so for the configuration attributes. Pressing the *Retrieve all attributes from device* button however, retrieves *all* attributes from the device.
	Export data to file	Press this button to export data to a file. Pressing this button brings up the *Export configuration parameters* window. For more information refer to Section 6.2.4 - The Tools menu.
	Import data from file	Press this button to import data from a file. Pressing this button brings up the *Import configuration* window. For more information refer to Section 6.2.4 - The Tools menu.

Continued on next page

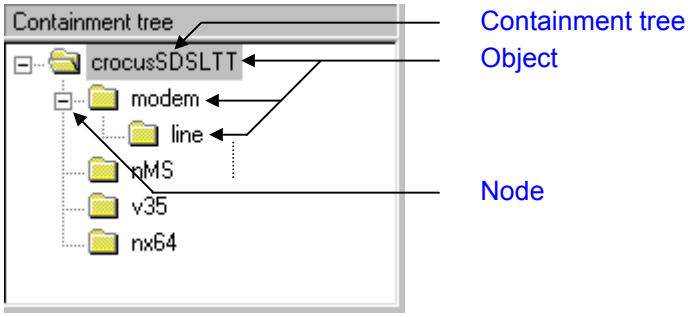
The toolbar (continued)

Icon	Name	Function
	Switch to basic / advanced view	Toggling this button displays or hides the advanced configuration parameters. Hiding the advanced configuration parameters might be useful when you first start using the device. It makes the configuration attributes overview less complex. It also shows you only those configuration attributes which are really necessary to establish a basic connection.
	Sub-system picture	Press this button to display the sub-system picture of the device. For more information refer to Section 6.2.3 - The View menu.
	Cancel all pending requests	Press this button to cancel all requests that are currently pending. When you browse through the containment tree of a device, it sometimes can take a while before all attribute values of the current object are retrieved from the device (this is especially true when the *Performance* group is selected, and even more so when connected to a remote device). If, for some reason, you prematurely want to cancel the retrieving of the attribute values, then press the *Cancel all pending requests* button.

6.4 The containment tree window

This section describes the containment tree window. It displays the containment tree and explains what it contains. It also shows how to navigate in this window.

The following figure shows the containment tree window:



a) Containment tree

What is a containment tree?

The containment tree represents the hierarchical structure of the Telindus device. It is composed of a number of objects that are ordered in a tree. This tree resembles a Windows directory structure:

- it is also a levelled structure, with nodes which can be expanded or reduced
- the containment tree objects can be compared with file folders
- the objects contain attributes like file folders contain files.

b) Object

What is an object?

An object represents a physical interface, an application or a combination of both. Each object has its own set of attributes.

Example:

The top object crocusSDSL contains the sub object modem. On its turn, the sub object modem contains the sub object line. This object contains all the attributes concerning the line pair. E.g. the status attribute lineAttenuation(dB).

c) Node

How to navigate in the containment tree?

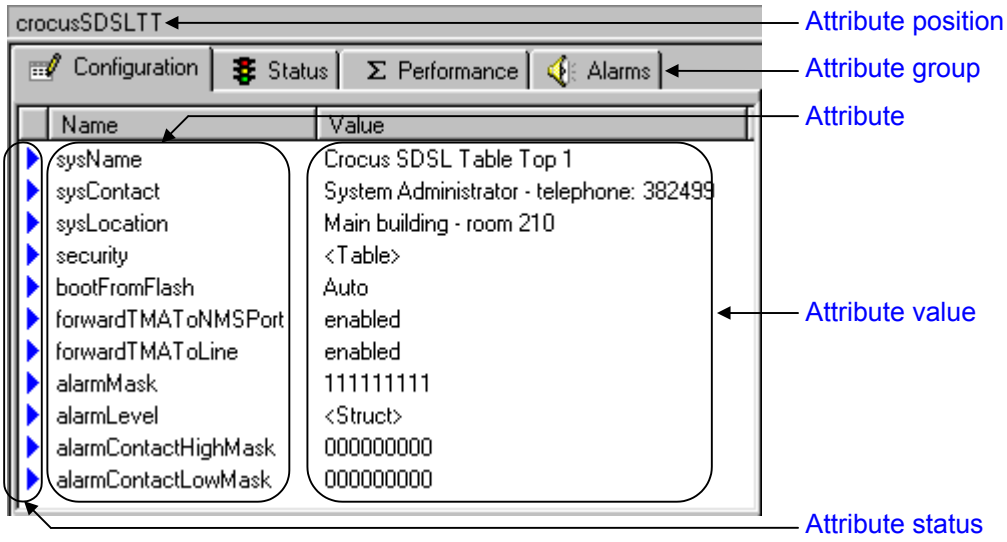
In the containment tree window you can:

- click on the nodes to expand or reduce the containment tree or parts of it.
- select an object in the containment tree. The corresponding attributes are displayed in the attribute window.

6.5 The attribute window

This section describes the attribute window. It explains what an attribute is and shows the different attribute value types. It also explains the difference between the configuration, status, performance and alarm attributes.

The following figure shows the attribute window:



a) Attribute

What is an attribute?

An attribute is a parameter which is related to a certain object. It has a certain value which:

- can be changed in case of a configuration attribute (provided you have write access)
- is read-only in case of a status, performance and alarm attribute.

Example:

The object modem contains the configuration attribute channel. Its value can be set to central or to remote.

b) Attribute position

Here you can see the position of the attribute in the containment tree.

Example:

If the attribute position displays CrocusSDSLTT/modem/line: it means that the attribute window currently displays the attributes of the line object, which is part of the modem object, which is part of the top object CrocusSDSLTT.

c) Attribute value

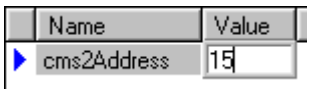
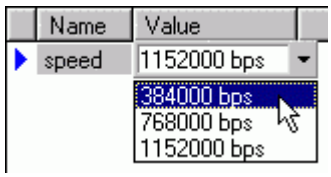
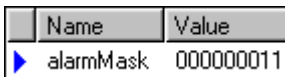
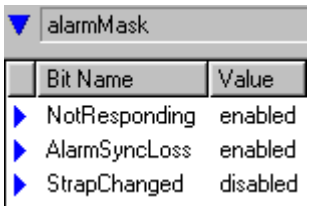
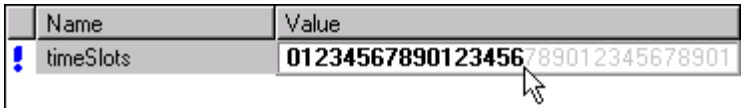
What is an attribute value?

An attribute value is located behind the attribute name. Basically, there are two different value types:

- a simple value: this is a value which is displayed in the attribute window.
- a structured value: this is a list of values which is displayed in the structured value window.

Simple value

A simple value is displayed in the attribute window. The following table gives some examples of simple values:

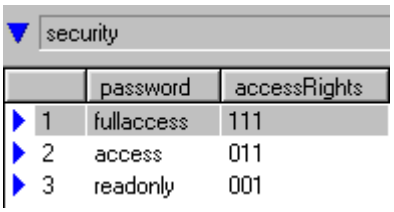
Simple value	Description
direct editable	This simple value can be edited immediately in the attribute window. When you click on it, a cursor appears and you can enter your value.  There are no underlying values in a drop-down box or in the structured value window.
drop-down box	This simple value is selected from a drop-down box. Only configuration attributes can have drop-down box selectable values. 
bit string 	This simple value gives a bit string representation of the underlying values (e.g. 101). These underlying values are visible in the structured value window. They can only adopt two different states: • 1 : enabled or on • 0 : disabled or off.   The bit string is a special case of a simple value. It does have underlying values which are visible in the structured value window, but only to increase readability and clarity. The real value, i.e. the bit string itself, is visible in the attribute window.
direct editable bit string	This is a special case of a bit string. In this case, there are no underlying values in the structured value window. Instead, this bit string is edited by … • clicking on the bit string in order to select it, • dragging the mouse pointer over the bit string. By doing so, you can make the separate bits … • bold, which represents a 1 (enabled or on). • greyed out, which represents a 0 (disabled or off). In the following example, the bits 0 up to 16 are set to 1: 

Continued on next page

Attribute value (continued)

Structured value

A structured value is a list of values which is displayed in the structured value window. In the attribute window they are represented as the strings <Struct> or <Table>. The following table displays these structured values:

Structured value	Description
structure	The <Struct> string indicates that there are underlying values. These underlying values are visible in the structured value window. They are located next to each other, i.e. in one row.  
table	The <Table> string indicates that there are underlying values. These underlying values are visible in the structured value window. They are placed in rows and columns.  

Continued on next page

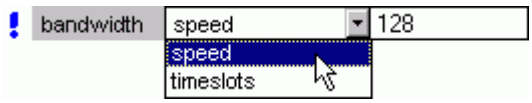
Attribute value (continued)

Choice value

A choice value is a value which has two or more possible *value types*. In other words, you first have to make a “pre-selection” which determines the value type (e.g. direct editable, drop-down box, bit string, structured value, etc.) and then you can edit the value itself. The following example clarifies this.

Suppose you have an attribute bandwidth for which, depending on the application, you have to specify a speed or timeslots. So, you first make a selection between the choice value speed or timeslots. In case you select the choice value …

- speed then you get, for example, a direct editable value in which the default of 128 (kbps) appears. You can change the value by editing the direct editable value.

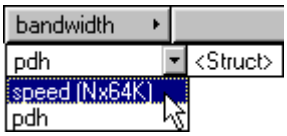


- timeslots then you get, for example, a direct editable bit string in which all bits are selected by default. You can change the value by editing the direct editable value.

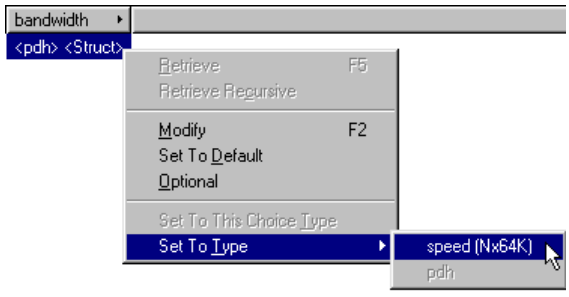
Because editing a choice value is somewhat more complicated than editing other values, it is explained thoroughly below.

Suppose you have an attribute bandwidth, which is present in a table. This attribute has a choice value. Edit this attribute as follows:

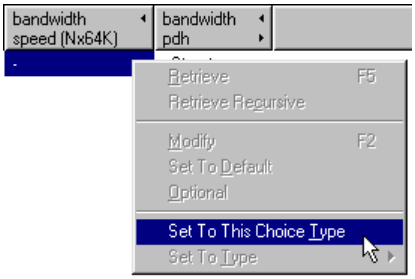
- select the choice value → click the right mouse button → select *Modify* → select a value type from the drop-down box → edit the resulting value type
- select the choice value → press the keyboard key F2 → select a value type from the drop-down box → edit the resulting value type
- double click on the choice value → select a value type from the drop-down box → edit the resulting value type



- select the choice value → press the right mouse button → select *Set To Type* → select a value type from the drop-down box → edit the resulting value type



- expand the choice value → select a value type in the expanded structure → press the right mouse button → select *Set To This Choice Type* → edit the resulting value type



Continued on next page

Attribute value (continued)

How to edit a configuration attribute value?

If you have write access to the device, you are able to edit the configuration of the device. To edit a configuration attribute value, either:

- select the value → click the right mouse button → select *Modify*

or

- select the value → press the keyboard key F2

or

- double click the left mouse button on the value.

d) Attribute status

What do the coloured symbols in front of an attribute mean?

The coloured symbols in front of an attribute reflect the status of the attribute. The following table clarifies this:

Symbol	Description
	The attribute is a configuration attribute and can be modified. I.e. you have write access to the device.
	The value of the configuration attribute has been changed, but has not yet been sent to the device. To send and activate the new configuration, press the *Send all attributes to device*  *n*:
	The attribute is read-only. This means the attribute is: • a status, performance or alarm attribute • a configuration attribute, but you have no write access to the device (only read access).
	The attribute is being retrieved from or send to the device.

e) Attribute group

What is an attribute group?

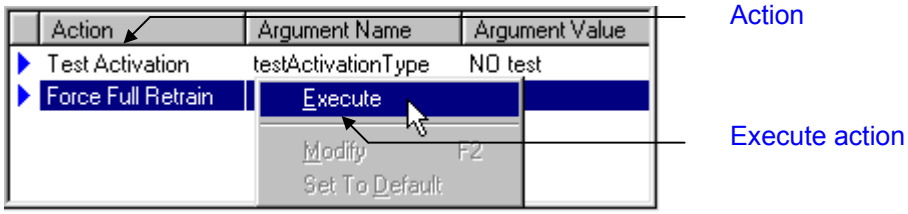
An attribute group assembles a set of attributes related by functionality. There are four attribute groups in TMA, which correspond with the four tabs in the attribute window:

Group	Description
configuration 	In this group all the configuration attributes of the device can be found. Use these to configure the device to accommodate your needs. E.g. retrain in the modem object, speed in the line object, clocking in the <interface> object, etc.
status 	This group displays the status of the device, i.e. its current situation. Should a problem occur, you can immediately check several status attributes to locate the problem. E.g. errorCount in the modem object, noiseMargin in the line object, ifOperStatus in the <interface> object, etc.
performance 	This group gives a *history* of the device its performance. This information allows you, for instance, to trace bottlenecks in the network, to determine overall network performance, etc. E.g. h2Modem in the modem object, h2BitError or h24LineParameters in the line object, etc.
alarms 	This group displays the device alarms which are currently active. As the status attributes, the alarm attributes enable you to locate a problem quickly. E.g. SyncLoss in the modem object, LinkDown in the line object, etc.

6.6 The action window

This section describes the action window. It explains what an action is and shows the different action types.

The following figure shows the action window:



a) Action

What is an action?

An action is an executable parameter which causes the device to do something. E.g. Cold Boot, Load Default Configuration, Test Activation, etc.

The actions are not always visible in the action window. They are assigned to a combination of a group with an object.

Example:

If you select the top object (e.g. CrocusSDSLTT) and the group Configuration, then the action window displays the following actions:

- Activate Configuration
- Load Saved Configuration
- Load Default Configuration
- Cold Boot.

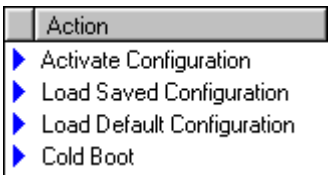
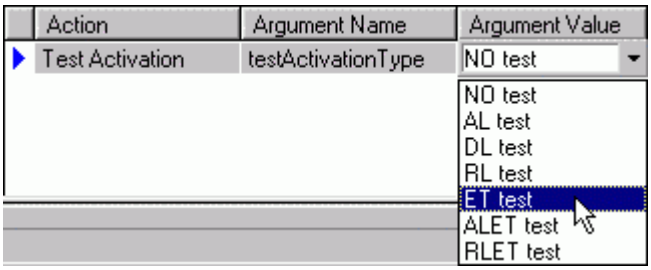
If you select the object modem and the group Performance, then the action window displays the following actions:

- Test Activation
- Force Full Retrain.

b) Execute action

How to execute an action?

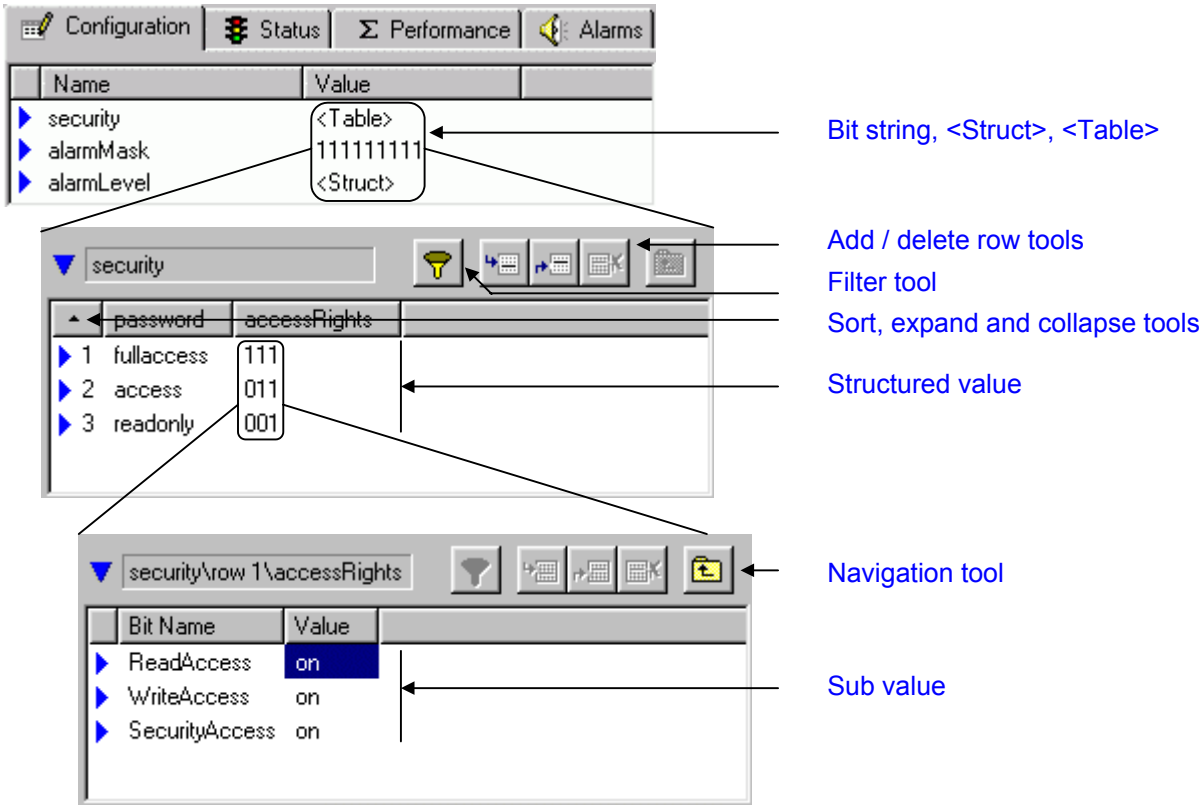
Actions can have an argument value or not. This has an impact on how to execute the action. The following table clarifies this:

Action	Description
without an argument value	In this case, no argument values have to be selected. I.e. you can immediately execute this action.  To execute this action, either: • select the action → click the right mouse button → select *Execute* or • double click the left mouse button on the action.
with an argument value	Before executing this action, you have to select an argument value. Then you can execute the action. As an attribute value, an argument value can be a simple or a structured value.  To execute this action, either: • select an argument value → select the action → click the right mouse button → select *Execute* or • select an argument value → double click the left mouse button on the action.

6.7 The structured value window

This section describes the structured value window. It explains what a structured value is and shows how to navigate in this window.

The following figure shows the different components of a structured value window:



a) Structured value

What is a structured value?

Some attribute values contain underlying values. These underlying values are called a structured value. These values are displayed in the structured value window.

Example:

The configuration attribute security has a structured value which contains the device passwords, the performance attribute lineParameters has a structured value which contains line status information, etc.

b) Bit string, <Struct>, <Table>

How to determine which attribute has a structured value?

When a bit string (e.g. 101) or the string <Struct> or <Table> is displayed in the value field of an attribute, it means that it has a structured value. Selecting this string will reveal the underlying values in the structured value window.

For more information on these structured value types, refer to Section 6.5 - The attribute window, Paragraph c) Attribute value.

c) Add / delete row tools

How to add or delete rows in a table?

Some configuration attributes have a table as structured value. In this table you can filter, add or delete rows. This is done with the structured value tools. The following table shows these tools:

Tool	Name	Function
	Insert row before	Inserts a row before the current selected row. To insert a row, proceed as follows: • if there are no rows in the table yet: just press the *Insert row before* button • if there are already rows in the table: select the entire row by clicking on the blue triangle ▸ → press the *Insert row before* button.
	Insert row after	Inserts a row after the current selected row. To insert a row, proceed as follows: • if there are no rows in the table yet: just press the *Insert row after* button • if there are already rows in the table: select the entire row by clicking on the blue triangle ▸ → press the *Insert row after* button.
	Delete row	Deletes an entire row. To delete a row, select the entire row by clicking on the blue triangle ▸ → press the *Delete row* button.

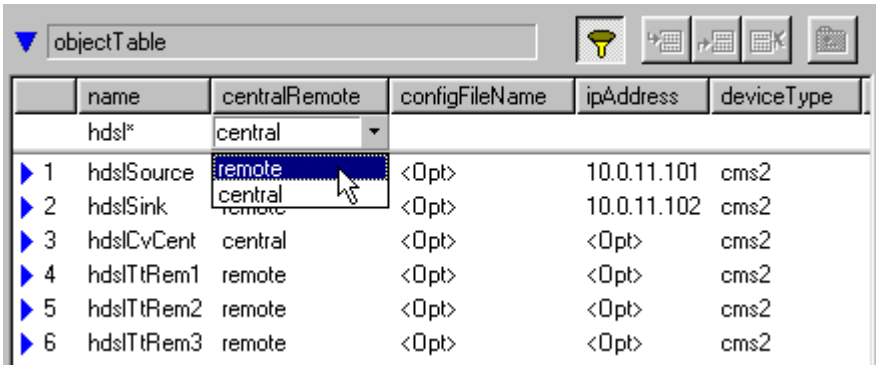
d) Filter tool

What does the filter tool do?

The filter tool allows you to filter out rows from a table. For example, in very long and complex tables, it is very useful when you can filter out only those rows that are of interest to you.

How to filter rows from a table?

In order to filter rows from a table, proceed as follows:

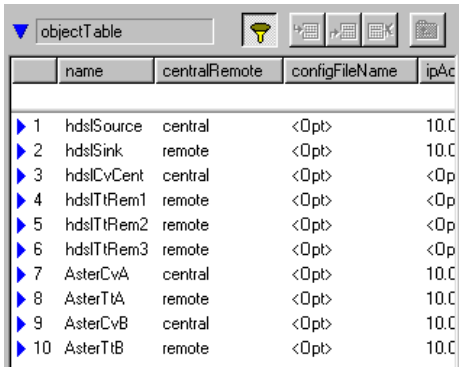
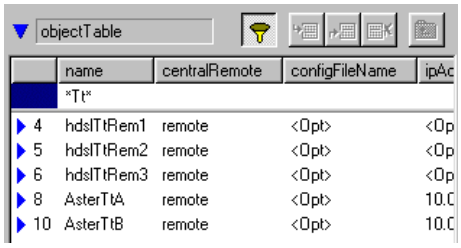
Step	Action
1	Click on the filter button:  ⇒ An empty row appears at the top of the table.
2	In this empty row you can specify the filter criteria. As soon as a criterion is entered, the row(s) that meet(s) this criterion is/are filtered. Example:  The different filter criteria are given below.
3	To undo the filtering, just press the filter button again. ⇒ The table is displayed completely again.

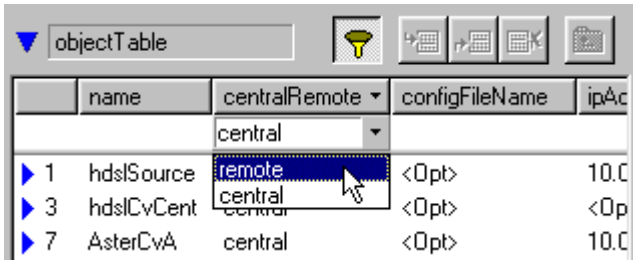
Continued on next page

Filter tool (continued)

What are the possible filter criteria?

It is possible to filter on character strings, integers, enumerated values and IP addresses:

<table>
<tr><th>Filter criteria</th><th>Description</th></tr>
<tr><td>character string</td><td>Either you enter the exact character string, or you use the * character as wildcard. The latter allows you to filter on parts of a character string.
Example:
<table>
<tr><th>Before filtering</th><th>After (character + wildcard) filtering</th></tr>
<tr><td> 
</td><td> 
</td></tr>
</table>

Filtering on character strings is case sensitive.</td></tr>
<tr><td>integer</td><td>Enter the integer based upon which you want to filter. You cannot use a wildcard.</td></tr>
<tr><td>enumerated value</td><td>Select a value from the drop down box.
Example:
 
</td></tr>
<tr><td>IP address</td><td>Enter the IP address based upon which you want to filter. You cannot use a wildcard. I.e. you have to enter the complete, exact IP address.</td></tr>
</table>

e) Sort, expand and collapse tools

Sorting a table

What is the sort tool?

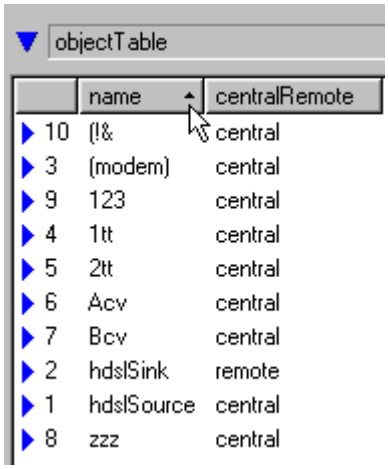
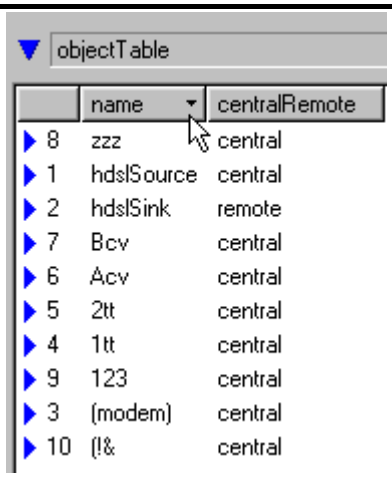
When clicking on a column header in a table, the table is sorted based on that column. When the following indication appears …

- ▲, then the column (and hence the table) is sorted ascending. This means the entries that begin with special characters come first, then those with numbers (from 0 to 9) and finally those with letters (from a to z).
- ▼, then the column (and hence the table) is sorted descending. This means the entries that begin with letters (from z to a) come first, then those with numbers (from 9 to 0) and finally those with special characters.

Just by clicking the column header you can switch between ascending or descending sorting. To undo the sorting, just click on another attribute and then click on the table again.

Example:

The following table is sorted based on the "name" column:

Sorted ascending	Sorted descending
	

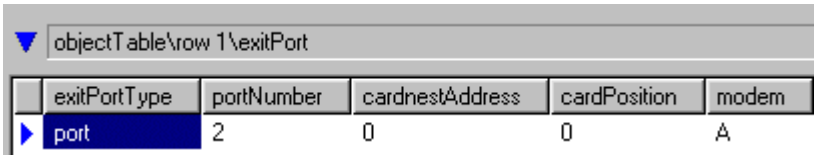
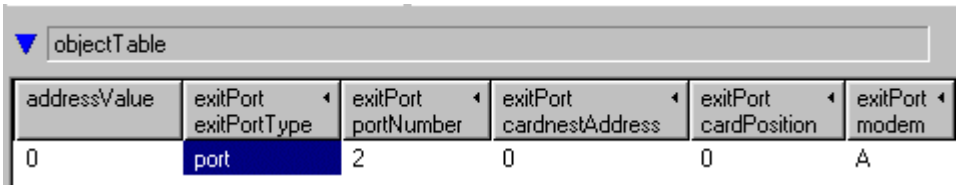
Continued on next page

Sort, expand and collapse tools (continued)

Expanding and collapsing structures

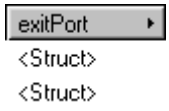
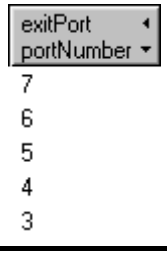
What is the expand and collapse tool?

Some tables contain structures. You can enter these structures by double-clicking on the <Struct> string. The structured value window then displays the structure. However, the expand tool allows you to expand such a structure in such a way that it becomes a part of the table. The following example clarifies this:

You can …	which …
double-click on the <Struct> string, 	displays the structure separately in the structured value window: 
click on the expand tool ▸, 	expands the structure in such a way that it becomes a part of the table:  To collapse the structure again, click on the collapse tool ◂.

Sorting an expanded structure

You can also sort a structure that has been expanded. However, pay attention where to click in order to sort the table or collapse the structure.

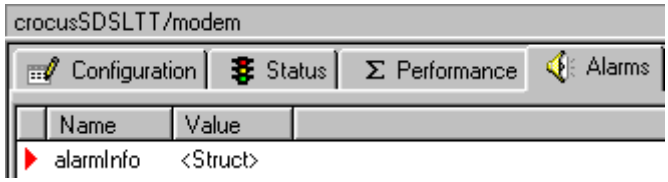
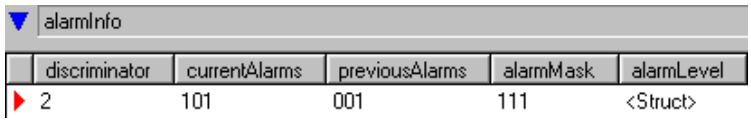
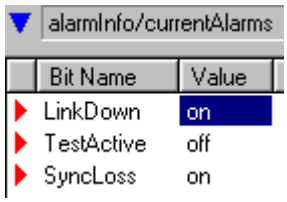
Click on the …	in order to …
upper column header, 	collapse the structure. 
lower column header, 	sort the table based on that column. 

f) Sub value

What is a sub value?

In a structured value you can also encounter a bit, <Struct> or <Table> string. This means that there is yet another underlying value, also called sub value.

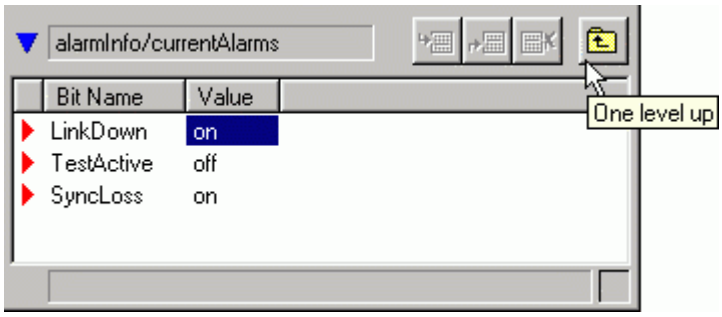
Example:

Step	Action	Result
1	Select the modem object in combination with the Alarms tab.	The alarmInfo attribute appears in the attribute window: 
2	Select the alarmInfo attribute.	The structured value appears in the structured value window: 
3	Double click the left mouse button on the structured value currentAlarms.	The sub value appears in the sub value window: 

g) Navigation tool

How to navigate in the structured value window?

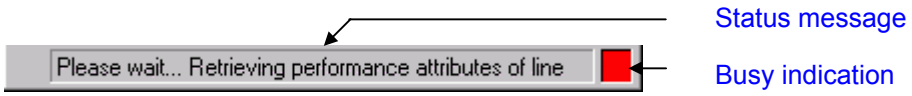
The example in Paragraph f) Sub value shows how to display a sub value. Once you reach the lowest possible level, you can move up again level by level. This is done by the *One level up* button, as shown in the following figure:



6.8 The status bar

This section describes the status bar. It explains the status information which is displayed in the status bar.

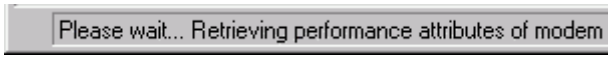
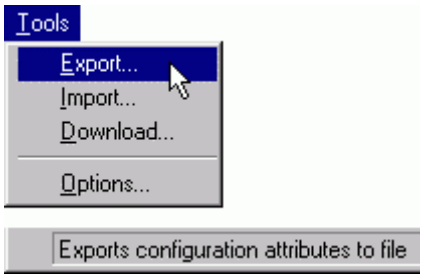
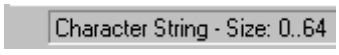
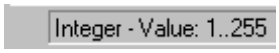
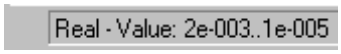
The following figure shows the status bar:



a) Status message

What is a status message?

A status message is a message which communicates status information to the user. Three different types of messages are displayed in the status bar:

Message type	Description
status message	This message gives information about the status of TMA. I.e. it displays what the application is doing. Examples:  
information message	If you open a menu in the menu bar and place the arrow on a certain command, a short explanation of this command appears in the status bar. Example: 
value message	If you modify a *direct* configuration value, the status bar displays: • which type of value you have to enter (character string, integer, real, …) • the value range. Examples:   

b) Busy indication

This square lights up when the application is busy. During that time you can not work in the TMA window. I.e. you can not change groups, change an attribute value, … Once the colour disappears, TMA is available again.

Reference manual

7. User instantiatable objects

This chapter explains what user instantiatable objects are. It also explains how to add and remove user instantiatable objects.

The following table gives an overview of this chapter.

7.1 What is a user instantiatable object?

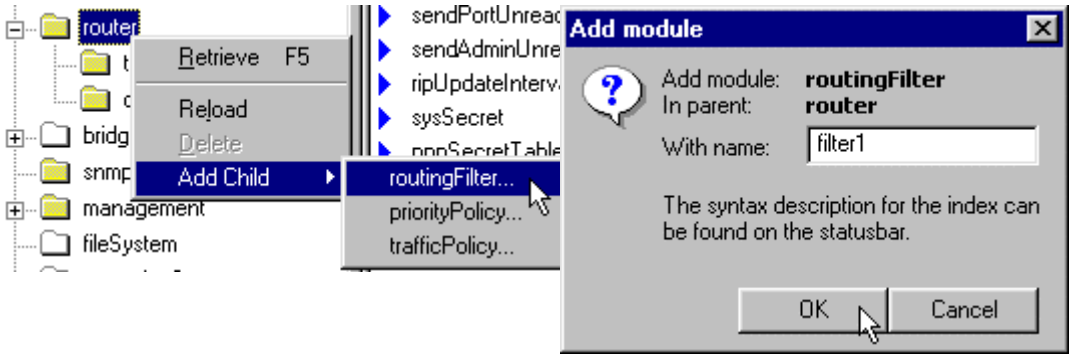
On some device (e.g. the Telindus 1421 SHDSL Router) some objects are not present in the containment tree by default. If you want to use the features associated with such an object, then you have to add the object first. An object that can be added by the user is called a *user instantiatable object*. Also referred to as a *child object* because it is added under a *parent object*.

7.2 Adding a user instantiatable object

To add a user instantiatable object to the containment tree, proceed as follows:

Step	Action
1	Left-click on the object under which you want to add a user instantiatable object. By doing so, the object is selected (highlighted blue). E.g. left-click the router object of the Telindus 1421 SHDSL Router.
2	While the object remains selected, right-click it. ⇒ A pop-up menu appears.
3	In the pop-up menu, select *Add Child*. Possibly a new menu appears in which you can choose from several child objects. Choose a child object. E.g. in our example, select the child object routingFilter. ⇒ The *Add module* window appears.
4	In the *Add module* window, type the name you want to appear after the child object name. I.e. you have to type the *index name*, also called *instance name*. Then click on *OK*. E.g. in our example, type for instance filter1. ⇒ The child object is added under the parent object with the specified instance name.

The following screenshot exemplifies the procedure:



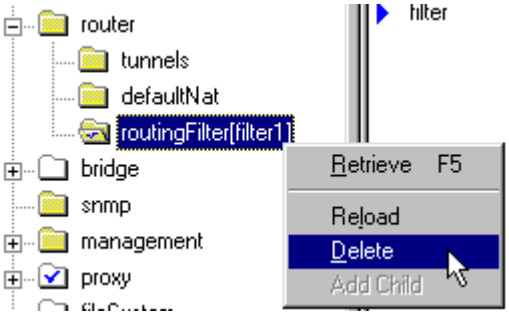
The result is:

7.3 Removing a user instantiatable object

To remove a user instantiatable object from the containment tree, proceed as follows:

Step	Action
1	Left-click the user instantiatable object you added earlier. By doing so, the object is selected (highlighted blue). E.g. left-click the routingFilter[filter1] object of the Telindus 1421 SHDSL Router you added in the example of Section 7.2 - Adding a user instantiatable object.
2	While the object remains selected, right-click it. ⇒ A pop-up menu appears.
3	In the pop-up menu, select *Delete*. ⇒ The user instantiatable object is deleted.

The following screenshot exemplifies the procedure:



8. User defining values using the *custom.txt* file

This chapter explains how you can user define values for attributes that have a string or an integer as value. You can do this using the *custom.txt* file.

The following table gives an overview of this chapter.

8.1 What is user defining values?

What is user defining values?

User defining values has two main advantages:

- You are able to predefine a set of values for a string value. Values which can then be selected from a drop-down box instead of typing the complete string.
- You are able to give a sensible name to an otherwise very cryptic integer value.

You can only user define values for string and integer attribute values. Not for enumerated values, IP addresses, etc. Examples of string values are the values of the attributes sysName, sysContact, sysLocation, etc. Examples of integer values are the values of the attributes cms2Address, alarmFilter, broadcastTimer, etc.

How to user define values?

In order to user define values, you have to create and edit a *custom.txt* file (this file is not created when TMA is installed).

What is the *custom.txt* file?

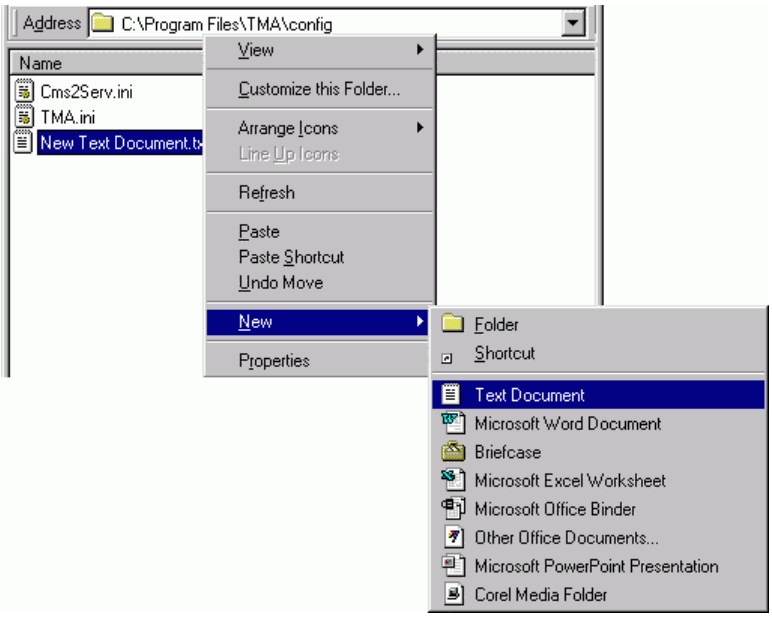
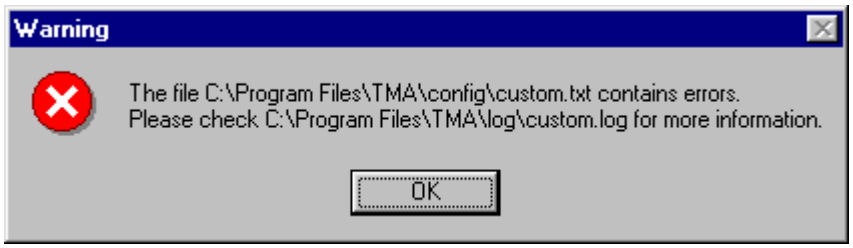
The *custom.txt* file is a plain text file containing special syntax which defines the values you want. This *custom.txt* file is loaded and parsed when TMA starts. When an error is encountered, TMA displays an error message and writes the error in the *custom.log* file.

What is the location of the *custom.txt* file?

You have to place the *custom.txt* file in the *TMA\config* directory (typically *C:\Program Files\TMA\config*).

8.2 Creating the *custom.txt* file

In order to create the *custom.txt* file, proceed as follows:

Step	Action
1	Go to the directory *TMA\config* (typically *C:\Program Files\TMA\config*).
2	Create a new (plain) text document in this directory. 
3	Rename this text document to *custom.txt*.
4	Open the *custom.txt* file and edit it with a plain text editor using the syntax as described in Section 8.3 - The structure of the custom.txt file, Section 8.4 - The sections of the custom.txt file and Section 8.5 - The definitions of the custom.txt file.
5	Save the *custom.txt* file and start TMA. If TMA starts and … • no error message is displayed, then the *custom.txt* file is correct. • the following error message is displayed:  then an error is present in the *custom.txt* file. Read the *custom.log* file to find out more about the nature of the error. For more information, refer to Section 8.7 - Reading the custom.log file.

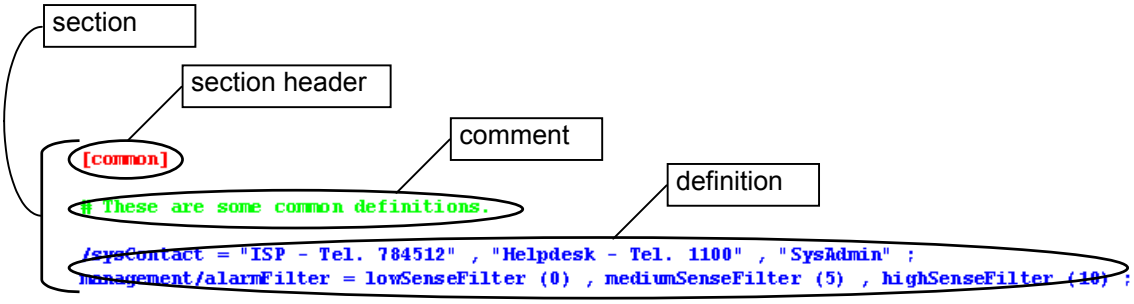
8.3 The structure of the *custom.txt* file

There are three main elements that make up the *custom.txt* file:

Element	Description
section	The file is divided into a number of sections. Each section consists of a *section header* followed by a number of *definitions*. For more information on sections, refer to Section 8.4 - The sections of the custom.txt file.
definition	One section can contain one or several definitions. With these definitions you create the user defined values. For more information on definitions, refer to Section 8.5 - The definitions of the custom.txt file.
comment	Everything that is typed after a "#" character is considered as comment (until the end of the line). This allows you to add personal comments to clarify the *custom.txt* file.

Example

The following figure shows an example of the structure of a *custom.txt* file:




```
[o1003]

nmsgroup/objectTable.name = "HDSL CV - Central x" , "HDSL TT - Central x" , "HDSL TT - Remote x" ;
nmsgroup/objectTable.configFileName = "HDSLCVCentral.cms" , "HDSLTTCentral.cms" , "HDSLTTRemote.cms" ;
deviceSoftware/downloadTable.name = "HDSL CV - Central x" , "HDSL TT - Central x" , "HDSL TT - Remote x";
deviceSoftware/downloadTable.sourceFile = "T1234567.00" , "T9876543.00" , "T9638527.00" ;


[crocusHDSLTT]

# The definition of the LinkDown alarm applies on both lines.
# The definition of the SeverelyErroredSecond alarm applies on line 1 only.

line/alarmLevel.LinkDown = "Priority = low" (0) , "Priority = medium" (5) , "Priority = high" (10) ;
/modem/line[1]/alarmLevel.SeverelyErroredSecond = low (0) , medium (5) , high (10) ;
```

8.4 The sections of the *custom.txt* file

What is a section?

The *custom.txt* file is divided into a number of sections. Each section consists of a *section header* followed by a number of *definitions*:

```
<section> = <section_header> { <defintition> }
```

Section header syntax

The syntax for the section header is:

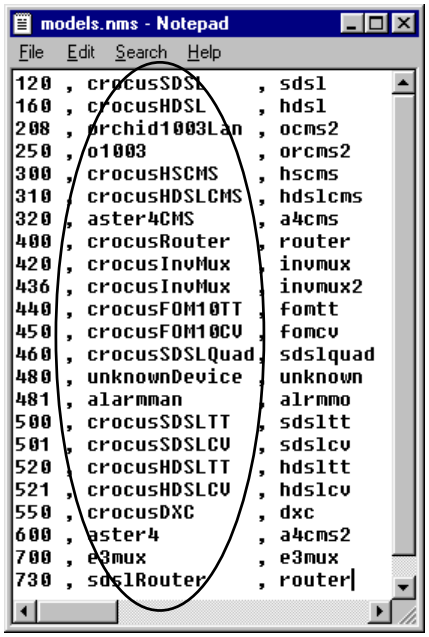
```
<section_header> = "[" IDENTIFIER "]"
```

Section types

There are two types of sections:

Section type	Description
common	This is a common section. Hence, the name of this section is `"common"`. All definitions in this section apply (if possible) to all devices.
specific	This is a device specific section. The name of this section is the name of the top object in the containment tree of the device. All definitions in this section apply to one specific device only.

The top object name can also be found in the second column of the *model.nms* file. E.g. for a Crocus HDSL TT this is `crocusHDSLTT`, for a Crocus DXC this is `crocusDXC`, etc.



8.5 The definitions of the *custom.txt* file

What is a definition?

One section can contain one or several definitions. With these definitions you create the user defined values.

Definition syntax

A definition has the following global syntax:

```
<definition> = <attribute_specification> "=" <value_list> ";"
```

with `<attribute_specification> = <path> <attribute_name> { "." <element_name> }`

Definition description

A definition can span multiple lines. The end of the definition is marked with a `";"` character. The other elements of the definition are listed below:

Element	Description
`<path>`	Refer to Section 8.5.1 - The path, page 136.
`<attribute_name>` `<element_name>`	Refer to Section 8.5.2 - The attribute and element name, page 139.
`<value_list>`	Refer to Section 8.5.3 - The value list, page 140.

8.5.1 The path

What is a path?

A path specifies the way *to reach* a certain attribute or element through the containment tree of a device.

Path syntax

A path has the following syntax:

```
<absolute_path> = "/" { <object_name_index> "/" }
<relative_path> = <object_name> "/"
```

with

```
<object_name_index> = IDENTIFIER [ "[" NUM | IDENTIFIER "]" ]
<object_name> = IDENTIFIER;
```

Path types

There are two types of paths:

Path	Description
absolute	An absolute path starts with a `"/"` character and specifies the full path to an object (and so to an attribute or element). This means the definition applies to one specific object of the containment tree. **Example** `/modem/line[1]/alarmLevel.LinkDown` In this example, the definition *only* applies to the LinkDown element of the alarmLevel attribute in the object line[1]. The definition does *not* apply to the LinkDown element in the object line[2] or line[3].
relative	A relative path starts with the name of an object followed by a `"/"` character (and followed by another object or an attribute or element). This means the definition applies to every object in the containment tree with this name and containing the attribute or element. **Example** `line/alarmLevel.LinkDown` In this example, the definition applies to the LinkDown element of the alarmLevel attribute in all line objects. I.e. the objects line[1], line[2] and line[3].

Continued on next page

The path (continued)

Indexed objects

As you can see in the examples above, some objects in the containment tree are indexed (e.g. the objects line[1], line[2] and line[3] of a 3 pair Crocus HDSL).

As mentioned before, the following applies to indexed objects:

If you want a definition to apply …	then …
to one of the indexed objects specifically,	also specify the index number in the path. E.g. `/modem/line[1]/alarmLevel.LinkDown`
to all indexed objects,	just omit the index number in the path. E.g. `/modem/line/alarmLevel.LinkDown`

Important remarks

- Omitting the index number of indexed objects is possible for both absolute and relative paths.
- Including the index number of indexed objects is *only* possible for absolute paths. In other words, relative paths with indexed objects are *not allowed*.
  Example:
  - `/modem/line[1]/alarmLevel.LinkDown` → ALLOWED
  - `line[1]/alarmLevel.LinkDown` → NOT ALLOWED

Continued on next page

The path (continued)

Path priority rules

You may have written more than one definition with paths that all refer to the same attribute (or element of an attribute). Moreover, these definitions may appear in the common section *and* in a device specific section.

For example, `/modem/line[1]/alarmLevel.LinkDown`, `/modem/line/alarmLevel.LinkDown` and `line/alarmLevel.LinkDown` all apply to the LinkDown element of the alarmLevel attribute.

Therefore, priorities are assigned to the different paths. These are based on three criteria:

<table>
<tr><th>Criteria</th><th>Description</th></tr>
<tr><td>Path type</td><td>The path type priorities are as follows:
<table>
<tr><th>Priority</th><th>Path</th></tr>
<tr><td>highest</td><td>Absolute path, indexed.
Example: <code>/modem/line[1]/alarmLevel.LinkDown</code></td></tr>
<tr><td>medium</td><td>Absolute path, non-indexed.
Example: <code>/modem/line/alarmLevel.LinkDown</code></td></tr>
<tr><td>lowest</td><td>Relative path (only non-indexed allowed).
Example: <code>line/alarmLevel.LinkDown</code></td></tr>
</table></td></tr>
<tr><td>Presence of indexed objects</td><td>In case two or more absolute paths containing one or more indexed objects exist, then the path that contains the indexed object with the highest location in the containment tree has the highest priority.
Example: <code>/quadE1[1]/g703[1]/alarmLevel.linkDown</code> has a higher priority than <code>/quadE1/g703[1]/alarmLevel.linkDown</code></td></tr>
<tr><td>Located in which section?</td><td>Definitions located in specific device sections have a higher priority than definitions located in the common section.</td></tr>
</table>

8.5.2 The attribute and element name

Besides the path, you also have to specify the attribute or element of an attribute in the definition.

Attribute and element syntax

Attributes are separated from the path by a "/" character. Elements of an attribute are separated from the attribute (and each other) by a "." character.

Examples

Suppose you have an Orchid 1003 LAN and you want to user define values for the attributes sysContact, alarmFilter and the element portNumber:

```
/sysContact
/management/alarmFilter
/nmsgroup/objectTable.exitPort.portNumber
```

Note that attributes located in the top object have to be preceded by a "/" character.

8.5.3 The value list

What is a value list?

Using the value list you actually define the values for the corresponding attribute or element as you want to see them.

Value list syntax

A value list has the following syntax:

```
<value_list> = <string_value_list> | <integer_value_list> ";"
```

with `<string_value_list> = { <string_value> "," } <string_value>`

where `<string_value> = ( IDENTIFIER | STRING )`

with `<integer_value_list> = { <integer_value> "," } <integer_value>`

where `<integer_value> = ( IDENTIFIER | STRING ) "(" NUM ")"`

String and integer values

As mentioned before, you can only user define values for attribute values that are string or integer values. For those two value types, the following applies:

<table>
<tr><th>Value type</th><th>Description</th></tr>
<tr><td>string</td><td>There are two ways to encode a string:
<table>
<tr><th>Encoding</th><th>Description</th></tr>
<tr><td>STRING</td><td>The value starts with a double quote (″) character. The end of the string is the next double quote (″) character. Within these two delimiters any character is allowed (even the <code>"#"</code> character, i.e. it will not be considered as comment).

The closing double quote should appear before the end of the line. Else the string is interpreted incorrectly.

Example
<code>/sysContact = "ISP - Tel. 784512"</code></td></tr>
<tr><td>IDENTIFIER</td><td>The value does not start with a double quote. The end of the string is the first space, tab or end of line character that is encountered.

Note that using this encoding, you can not use characters that conflict with the normal syntax (such as a comma, a space, an equal sign, etc.). Use the STRING encoding instead.

Example
<code>/sysContact = sysAdmin</code></td></tr>
</table>

Make sure that the length of the string does not exceed the maximum allowed length as defined in the model.</td></tr>
</table>

Continued on next page

String and integer values (continued)

Value type	Description

integer	For integers, the value consists of two parts:
	• a user defined name (which can, again, be a STRING or IDENTIFIER – see above)
	• the actual value for which this name is defined.
	Examples
	`/management/alarmFilter = low (0)`
	`/management/alarmFilter = "low sensitivity filter" (0)`
	`/management/alarmFilter = "low#1" (0)`

8.6 An example of a *custom.txt* file

The following shows an example of a *custom.txt* file:

```
[common]

# These are some common definitions.

/sysContact = "ISP - Tel. 784512" , "Helpdesk - Tel. 1100" , "SysAdmin" ;
/sysLocation = "Main building - equipment room" , "Remote building" ;
management/alarmFilter = lowSenseFilter (0) , mediumSenseFilter (5) , highSenseFilter (10) ;


[o1003]

nmsgroup/objectTable.name = "HDSL CV - Central x" , "HDSL TT - Central x" , "HDSL TT - Remote x" ;
nmsgroup/objectTable.configFileName = "HDSLCVCentral.cms" , "HDSLTTCentral.cms" , "HDSLTTRemote.cms" ;
deviceSoftware/downloadTable.name = "HDSL CV - Central x" , "HDSL TT - Central x" , "HDSL TT - Remote x" ;
deviceSoftware/downloadTable.sourceFile = "T1234567.00" , "T9876543.00" , "T9638527.00" ;


[crocusHDSLTT]

# The definition of the LinkDown alarm applies on both lines.
# The definition of the SeverelyErroredSecond alarm applies on line 1 only.

line/alarmLevel.LinkDown = "Priority = low" (0) , "Priority = medium" (5) , "Priority = high" (10) ;
/modem/line[1]/alarmLevel.SeverelyErroredSecond = low (0) , medium (5) , high (10) ;
```

Sections

The sections in this example are `common`, `o1003` and `crocusHDSLTT`. The `common` section applies to all devices. The sections `o1003` and `crocusHDSLTT` apply to the Orchid 1003 LAN and the Crocus HDSL F TT, respectively.

Remarks

In the sections `common` and `crocusHDSLTT`, some remarks are given. These remarks are preceded by a `"#"` character.

Continued on next page

An example of a custom.txt file (continued)

Definitions

In section …	Description
`common`	Suppose that in your case the attributes sysContact and sysLocation on all your devices can only have a limited number of possibilities. You can define these files in the `common` section of the *custom.txt* file. However, if necessary, it is still possible to type another value instead of selecting one from the drop-down box. Suppose that you want to give an understandable name to an otherwise very cryptic integer value such as the value of the attribute alarmFilter. Suppose you want to do this for all devices that have the attribute alarmFilter in their management object. In that case include the definition in the common section and format it as in the example.
`o1003`	Suppose that you have an Orchid 1003 LAN to which only a limited number of different types of devices are connected (e.g. only Crocus HDSL modems). In that case you could predefine the names of these Crocus HDSL modems as in the example. In that case you can quickly fill in the objectTable by selecting the names from the drop-down box and just changing the `x` in an integer (e.g. `HDSL CV – central 1` or `HDSL TT – Remote 5`). Also the name element in the downloadTable can be formatted in this way. For the sourceFile element of the downloadTable, you can predefine several firmware file names.
`crocusHDSLTT`	Suppose that for the Crocus HDSL TTs you want to give an understandable name to the values of the elements LinkDown and SeverelyErroredSecond of the alarmLevel attribute of the line objects. However, suppose you want the LinkDown definition to apply to all line objects, but the SeverelyErroredSecond definition to apply to line[1] only. In that case, format the definition as in the example.

8.7 Reading the *custom.log* file

The *custom.txt* file is loaded and parsed when TMA starts. When an error is encountered, TMA displays an error message and writes the error in the *custom.log* file. This section explains how to interpret the *custom.log* file. It also includes an example of such a file.

The following table gives an overview of this section.

8.7.1 What is the *custom.log* file?

What is the *custom.log* file?

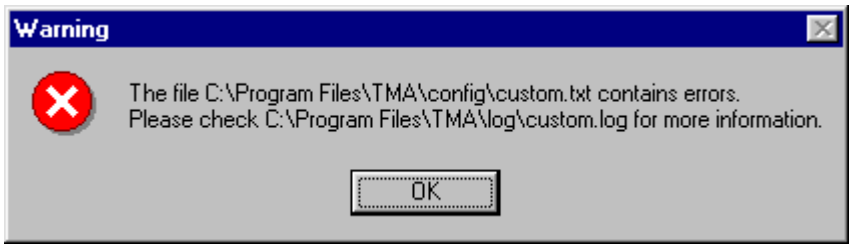
The *custom.txt* file is loaded and parsed when TMA starts. When an error is encountered, TMA displays an error message and writes the error in the *custom.log* file.

What is the location of the *custom.log* file?

The *custom.log* file is created in the *TMA\log* directory (typically *C:\Program Files\TMA\log*).

The TMA error message

When an error is encountered in the *custom.txt* file, the following error message is displayed:

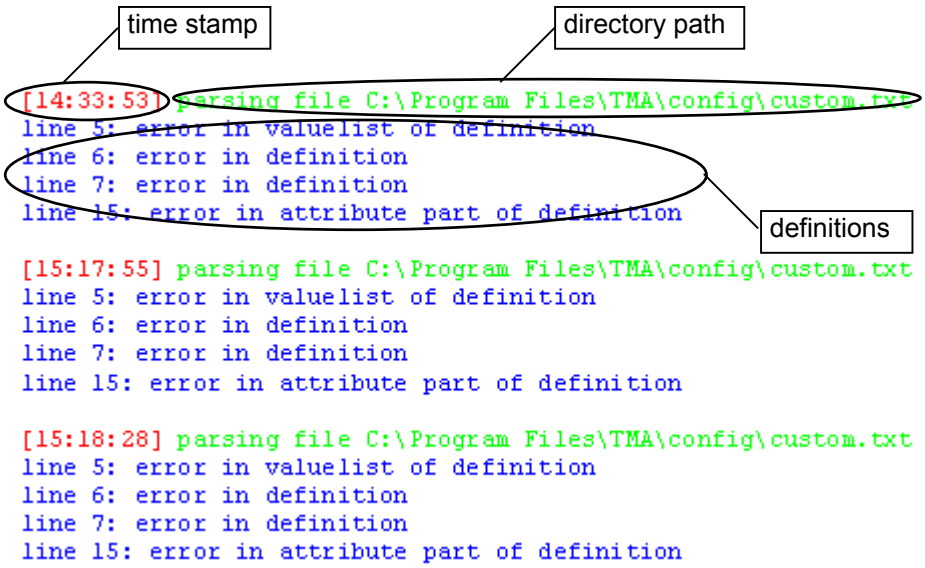


8.7.2 Reading the *custom.log* file

There are three main elements that make up the *custom.log* file:

Element	Description
time stamp	In the *custom.log* file, a time stamp is given every time TMA is started with an erroneous *custom.log* file. The most recent time stamp is at the end of the file, where the oldest time stamp is located at the beginning of the file. Example: `[14:33:53]`
directory path	Immediately after the time stamp, the string `parsing file <custom.txt_path>` appears. The is the directory path where the *custom.txt* file that was parsed is located. Example: `parsing file C:\Program Files\TMA\config\custom.txt`
errors	After the time stamp and directory path, the errors that were encountered in the *custom.txt* file are listed. First the line on which the error occurs is displayed, then the nature of the error is described. Example: • `line 5: error in valuelist of definition` means an error is present in the values that are listed after the equal sign of the definition. • `line 15: error in definition` means an error is present in the path that is listed before the equal sign (or the equal sign itself is not present) of the definition.

Example



8.7.3 Example of a *custom.log* file

Consider the following example of a *custom.txt* file. This files contains several syntax errors:

```
[common]
# These are some common definitions.
/sysContact = "ISP - Tel. 784512"  "Helpdesk - Tel. 1100" , "SysAdmin" ;
/sysLocation : "Main building - equipment room" , "Remote building" ;
management/alarmFilter  lowFilter (0) , mediumFilter (5) , highFilter (10) ;
[crocusHDSLTT]
# The definition of the LinkDown alarm applies on both lines.
# The definition of the SeverelyErroredSecond alarm applies on line 1 only.
line[1]/alarmLevel.LinkDown = low (0) , medium (5) , high (10) ;
/modem/line[1]/alarmLevel.SeverelyErroredSecond = low (0) , medium (5) , high (10) ;
```

This results in the following *custom.log* file:

```
[14:33:53] parsing file C:\Program Files\TMA\config\custom.txt
line 3: error in valuelist of definition
line 4: error in definition
line 5: error in definition
line 9: error in attribute part of definition
```

The following table describes the errors:

Error line …	Description
3	There is no comma (`,`) between the two consecutive values.
4	The double point (`:`) has to be an equal sign (`=`).
5	The equal sign (`=`) is not present.
9	It is not allowed to use an indexed object in a relative path (`line[1]/alarmLevel/LinkDown` should be `line/alarmLevel/LinkDown`).

8.7.4 Remarks on the *custom.log* file

Remark 1

TMA is unable to detect errors in the syntax of the object, attribute or element names.

Example:

If you type `/syContact = ...` instead of `/sysContact = ...`, then this is not detected. Because the attribute `syContact` does not exist, no user defined value will appear.

Remark 2

As mentioned before, a definition can span multiple lines. If an error is detected in the definition, then the returned line number is the line that contains the closing semicolon character (`;`). This is not necessarily the line that contains the actual error.

Example 1:

Consider the following *custom.txt* file:

```
[common]
/sysContact = "ISP - Tel. 784512" , "Helpdesk - Tel. 1100" , "SysAdmin" ;
/sysLocation = "Main building - equipment room" , "Remote building" ;
management/alarmFilter =
     lowSenseFilter (0)
     mediumSenseFilter (5) ,
     highSenseFilter (10) ;
```

As you can see, on line 5 of the file a comma (`,`) is missing. However, when you start TMA, the *custom.log* file will contain the following message:

```
[16:40:49] parsing file C:\Program Files\TMA\config\custom.txt
line 7: error in valuelist of definition
```

As you can see, in the *custom.log* file line 7 is indicated as the erroneous line. This because this line contains the closing semicolon character (`;`) for the definition of the alarmFilter attribute value. The real error, however, is located 2 lines higher. This is due to the way the parser works.

Continued on next page

Remarks on the custom.log file (continued)

Example 2:

Consider the following *custom.txt* file:

```
[common]
$ These are some common definitions.
/sysContact = "ISP - Tel. 784512" , "Helpdesk - Tel. 1100" , "SysAdmin" ;
/sysLocation = "Main building - equipment room" , "Remote building" ;
management/alarmFilter =
     lowSenseFilter (0) ,
     mediumSenseFilter (5) ,
     highSenseFilter (10) ;;
```

As you can see, the remark is preceded by an incorrect *remark* character (it is preceded by a `$` instead of a `#` character). Therefore, the parser thinks this line is already part of a definition. As a consequence the *custom.log* file will contain the following message:

```
[16:40:49] parsing file C:\Program Files\TMA\config\custom.txt
line 3: error in attribute part of definition
```

As you can see, in the *custom.log* file line 3 is indicated as the erroneous line. This because the parser thinks that line 2 is already part of a definition that spans two lines and is ended by the semicolon character (`;`) on line 3.

9. The interactive sub-system picture

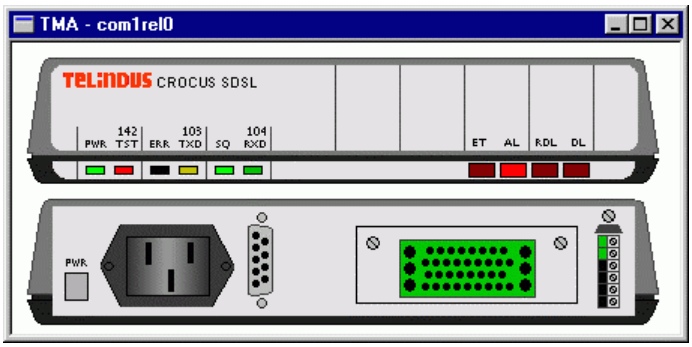
This chapter describes what a sub-system picture is. It also explains how you can make it interactive using the **.usr* file.

The following table gives an overview of this chapter.

9.1 What is an interactive sub-system picture?

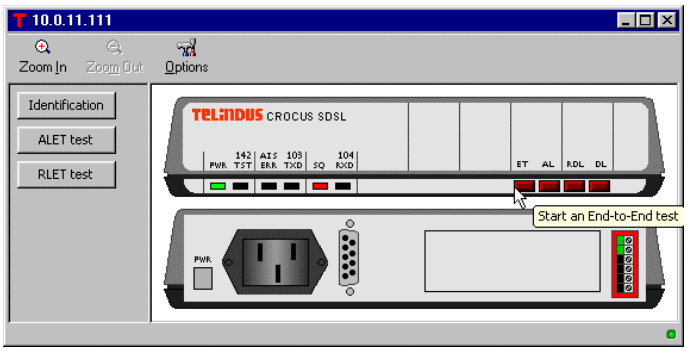
What is a sub-system picture?

The sub-system picture is a TMA tool which visualises the status information of the device. The front panel LED indications of the sub-system picture are the same as those of the device. The sub-system picture also displays the status of the front panel test buttons (if present), the interface connection, the line connection, etc.



What is an interactive sub-system picture?

Whereas the “plain” sub-system picture merely offers you a visual representation of the status of the Telindus device, the interactive sub-system picture offers you a more “controllable” sub-system picture. What is more, you can customise the interactive functions to suit your needs.



How to customise the interactive sub-system picture?

In order to customise the interactive functions of the interactive sub-system picture, you have to edit a **.usr* file.

What is the **.usr* file?

The **.usr* file is a plain text file containing special syntax which defines the interactive functions you want. As each device has its own sub-system picture, each device also has its own **.usr* file. This **.usr* file is loaded and parsed when the sub-system picture is evoked. When an error is encountered, TMA displays an error message and writes the error in the *picture.log* file.

What is the location of the **.usr* file?

When TMA is installed, a default **.usr* file is installed for each device. This offers some standard interactivity to the sub-system picture. You can find these default **.usr* files in the *TMA\picture\usrdefault* directory (typically *C:\Program Files\ TMA\picture\usrdefault*).

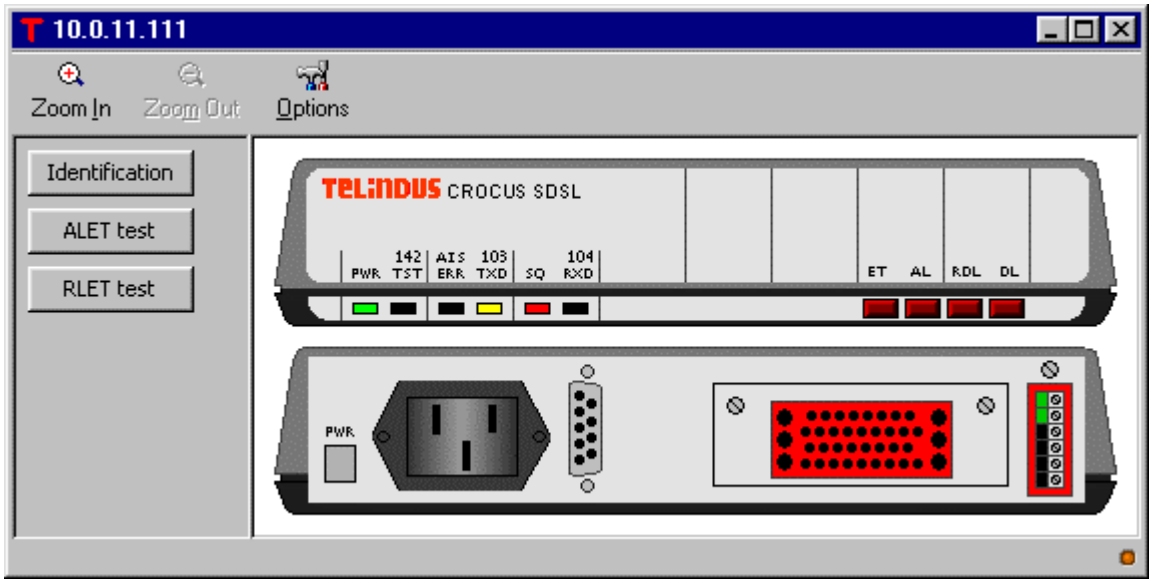
When you want to customise the interactive functions of the interactive sub-system picture, place a file with the same name as the default **.usr* file in the *TMA\picture\usr* directory (typically *C:\Program Files\TMA\picture\usr*). The advantage of this is two-fold:

- The default **.usr* file is separated from the customised **.usr* file which enhances the clarity.
- Your customised **.usr* file is not overwritten when you install a new version of TMA, whereas the default **.usr* files are.

When the interactive sub-system picture is started, both files are loaded and parsed.

9.2 The sub-system picture window

When you evoke the sub-system picture (e.g. by clicking the *Subsystem picture* button  in the toolbar), then the sub-system picture window appears:



The sub-system picture window has the following buttons:

Button	Description
Zoom In	Click on this button to double the size of the sub-system picture.
Zoom Out	When you are zoomed in, click on this button to reduce the sub-system picture to its original size.
Options	Click on this button to display the *Options* window. Here, you can specify the interval between two consecutive refreshes of the sub-system picture. E.g. a period of 1x10 sec means that every 10 seconds TMA will refresh the picture.
✕	Click on this button to close the sub-system picture window.

9.3 Creating a **.usr* file

The best way to create your customised **.usr* file is as follows:

Step	Action
1	Go to the directory *TMA\picture\usrdefault* (typically *C:\Program Files\TMA\picture\usrdefault*).
2	Search the default **.usr* file that belongs to the Telindus device for which you want to customise the interactive sub-system picture. E.g. if you want to customise the sub-system picture of the Crocus SDSL Table Top, then *crocusSDSLTT.usr* is the file you are looking for.
3	Copy this file and paste it in the directory *TMA\picture\usr* (typically *C:\Program Files\TMA\picture\usr*).
4	Open the **.usr* file and edit it with a plain text editor using the syntax as described in the following sections.  The customised **.usr* file has priority over the default **.usr* file. So if the default **.usr* file and the customised **.usr* file define a similar interactive function but with e.g. a different value, the interactive function as defined in the customised **.usr* file is used.
5	Save the **.usr* file and start the sub-system picture. If the sub-system picture starts and … • no error message is displayed, then the **.usr* file is correct. • the following error message is displayed:  then an error is present in the **.usr* file. Read the *picture.log* file to find out more about the nature of the error. For more information, refer to Section 9.12 - Reading the picture.log file.

9.4 The sections of the **.usr* file

For an introduction on the *.usr file, refer to Section 9.1 - What is an interactive sub-system picture?

There are four main sections that make up the **.usr* file:

Section	Description
FRONT	This section resembles the FRONT section in the definition file [1] (**.def* file) of the sub-system picture. While the FRONT section of the **.def* file defines which LEDs, buttons and alarm ports are present on the front of the device in the sub-system picture, the **.usr* file defines which of these have an interactive function. This means that every LED, button or alarm port that you want to give an interactive function, has to be repeated in the **.usr* file followed by an action and/or a help text.  Not all devices have test buttons on the front panel, hence not all FRONT sections have a BUTTONS sub-section. For more information, refer to Section 9.5 - The FRONT and REAR section of the *.usr file.
REAR	This section is the same as the FRONT section, but then for the back of the device in the sub-system picture. For more information, refer to Section 9.5 - The FRONT and REAR section of the *.usr file.
BUTTONS	This section defines the extra buttons that can be found at the left-hand side of the interactive sub-system picture. You can add buttons and assign an action to them.  Do not confuse this BUTTONS section with the BUTTONS sub-section in the FRONT section. Whereas this BUTTONS section defines the customised buttons located at the left-hand side of the sub-system picture, the BUTTONS sub-section in the FRONT section defines the interactive function of the test buttons on the front panel of the device. For more information, refer to Section 9.6 - The BUTTONS section of the *.usr file.
ACTIONS	All actions referred to in the sections above are defined in the ACTIONS section. For more information, refer to Section 9.7 - The ACTIONS section of the *.usr file.

[1] The definition file (**.def* file) together with the bitmap files (**.bmp* files) make up the “plain” (i.e. without interactivity) sub-system picture.

Continued on next page

*The sections of the *.usr file (continued)*

The following figure shows an example of the structure of a **.usr* file:

```
COMPONENT crocusSDSLTT
{
    FRONT
    {
        LEDS
        {
            .lEDPower  , HELP "";
            .lED142Test, HELP "Off: No test is active.\nOn: A front panel or interface test is active.\nBlinking: A test iniated by
the management system is active.\nFlashing: A front panel test has been terminated by the management system.";
            etc...
        }
        BUTTONS
        {
            .keyboardState[0], ACTION startET, HELP "Start an End-to-End test";
            etc...
        }
    }
    REAR
    {
        ALARMPORTS
        {
            .modem, ACTION showStatusModem, HELP "View alarm info and status of modem";
            .modem.line, ACTION showStatusLine, HELP "View alarm info and status of line";
        }
    }
    BUTTONS
    {
        "Identification", ACTION showIdentification, HELP "View identification parameters";
        etc...
    }
    ACTIONS
    {
        showIdentification
            HELP "You can customise yourself the behaviour of the\ninteractive subsystem picture. To make changes,\nplease consult the
TMA user manual and edit the\nfile \"..\TMA\picture\usr\crocusSDSLTT.usr\""
        {
            SEND "select /";
            SEND "selgrp \"Edit Configuration\"";
            SHOW "get";
            SEND "selgrp Status";
            SHOW "get";
        }
        etc...
    }
}
```

9.5 The FRONT and REAR section of the **.usr* file

For an introduction on the FRONT and REAR section of the **.usr* file, refer to Section 9.4 - The sections of the *.usr file.

This section describes the front and rear section of the **.usr* file. It lists the possible sub-sections and what the syntax is within such a sub-section.

The following table gives an overview of this section.

9.5.1 Sub-sections of the FRONT and REAR section

The front and rear section can contain up to three sub-sections:

Sub-section	Description
LEDS	In this sub-section you can assign an interactive function to each LED of the sub-system picture. For more information, refer to Section 9.5.3 - The LEDS sub-section.
BUTTONS 	In this sub-section you can assign an interactive function to each front panel test button of the sub-system picture. Not all devices have test buttons on the front panel, hence not all FRONT sections have a BUTTONS sub-section. For more information, refer to Section 9.5.4 - The BUTTONS sub-section.
ALARMPORTS	In this sub-section you can assign an interactive function to each alarm port of the sub-system picture. For more information, refer to Section 9.5.2 - What is an alarm port? and Section 9.5.5 - The ALARMPORTS sub-section.

9.5.2 What is an alarm port?

An alarm port …

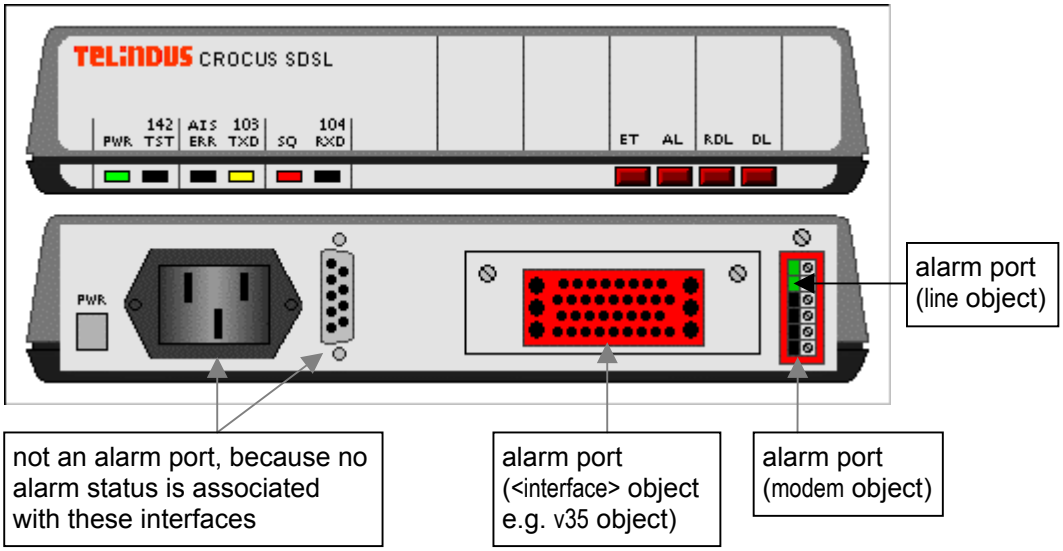
- basically is an interface of the device,
- often associated with a connector,
- always associated with a certain object in the containment tree,
- has an alarm status.

Hence, an alarm port can be given a colour in the sub-system picture corresponding to its current alarm status.

Important remark

The sub-system picture only displays the unmasked alarm status. I.e. only alarms that are unmasked (in other words, the alarm is set to enabled) in the alarm mask of a certain object are shown in the sub-system picture.

The following shows you the sub-system picture of the Crocus SDSL TT and indicates which elements are alarm ports and which not:



9.5.3 The LEDS sub-section

For an introduction on the LEDS sub-section, refer to Section 9.5.1 - Sub-sections of the FRONT and REAR section.

The LEDS sub-section syntax

A LED interactivity specification has the following syntax:

```
LEDS
{
    <LED_identifier>, ACTION <action_name>, HELP "<help_text>";
}
```

where …

- `LEDS` is the front panel LEDs section header.
- `<LED_identifier>` is the identification of the LED in the sub-system picture as defined in the definition file (**.def* file).
- `ACTION` assigns a certain action to the LED.
- `<action_name>` is the name of an action that is defined in the ACTIONS section (refer to Section 9.7 - The ACTIONS section of the *.usr file). It is this action that is assigned to the corresponding LED. The action name may not contain spaces and may not be quoted (“ “).
- `HELP` assigns a tooltip to the LED. The tooltip pops up when you move the arrow over the LED.
- `<help_text>` is the text of the tooltip. You can also refer to a file. For more information, refer to Section 9.10 - The help text.

Make sure the necessary curled brackets, commas, quotes and semicolons are present, else the syntax is incorrect.

Continued on next page

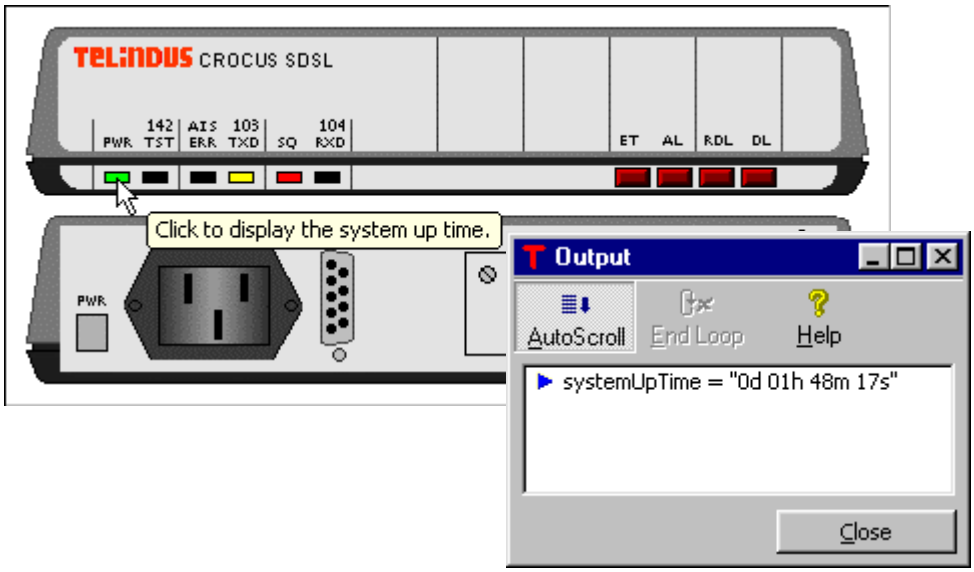
The LEDS sub-section (continued)

Example

The following example assigns the action `showUpTime` to the power LED. Also a tooltip is assigned to this LED.

```
...
FRONT
{
    LEDS
    {
        .lEDPower, ACTION showUpTime, HELP "Click to display the system up time";
    }
}
...
```

This results in the following:



9.5.4 The BUTTONS sub-section

For an introduction on the BUTTONS sub-section, refer to Section 9.5.1 - Sub-sections of the FRONT and REAR section.

The BUTTONS sub-section syntax

A front panel test button interactivity specification has the following syntax:

```
BUTTONS
{
    <button_identifier>, ACTION <action_name>, HELP "<help_text>";
}
```

where …

- `BUTTONS` is the front panel test button section header.
- `<button_identifier>` is the identification of the front panel test button in the sub-system picture as defined in the definition file (**.def* file).
- `ACTION` assigns a certain action to the front panel test button.
- `<action_name>` is the name of an action that is defined in the ACTIONS section (refer to Section 9.7 - The ACTIONS section of the *.usr file). It is this action that is assigned to the corresponding front panel test button. The action name may not contain spaces and may not be quoted (“ “).
- `HELP` assigns a tooltip to the front panel test button. The tooltip pops up when you move the arrow over the front panel test button.
- `<help_text>` is the text of the tooltip. You can also refer to a file. For more information, refer to Section 9.10 - The help text.

Make sure the necessary curled brackets, commas, quotes and semicolons are present, else the syntax is incorrect.

Continued on next page

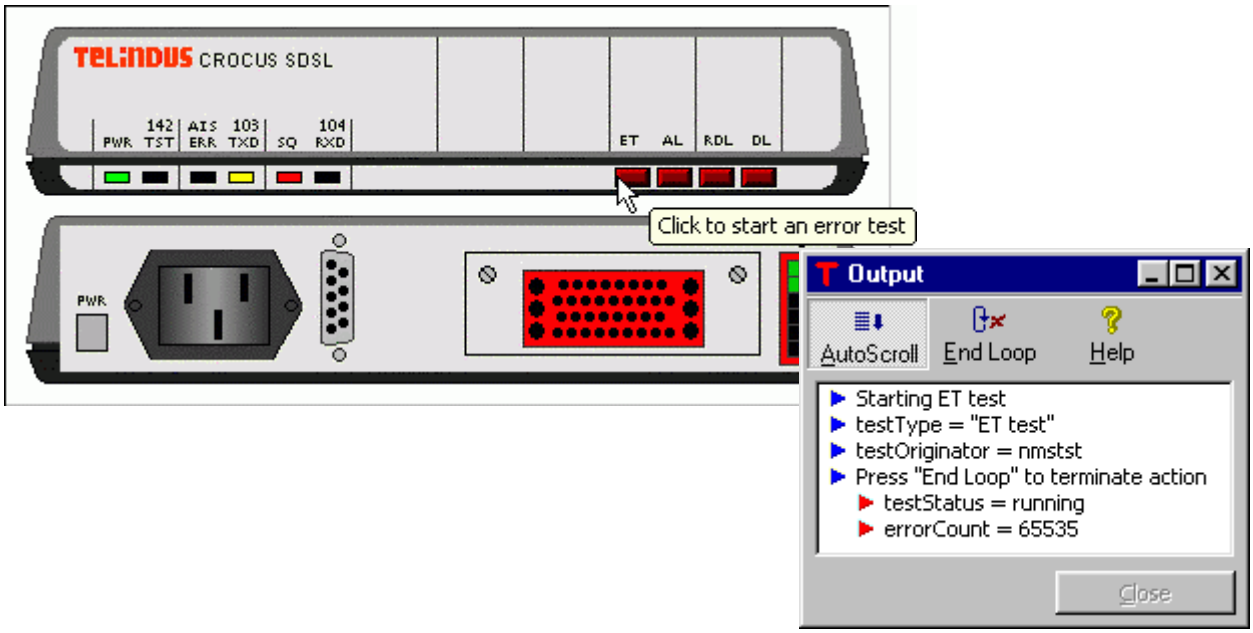
The BUTTONS sub-section (continued)

Example

The following example assigns the action `startET` to the first front panel test button. Also a tooltip is assigned to this front panel test button.

```
...
FRONT
{
    BUTTONS
    {
        .keyboardState[0], ACTION startET, HELP "Click to start an error test";
    }
}
...
```

This results in the following:



9.5.5 The ALARMPORTS sub-section

For an introduction on the ALARMPORTS sub-section, refer to Section 9.5.1 - Sub-sections of the FRONT and REAR section.

The ALARMPORTS sub-section syntax

A alarm port interactivity specification has the following syntax:

```
ALARMPORTS
{
    <alarmport_identifier>, ACTION <action_name>, HELP "<help_text>";
}
```

where …

- `ALARMPORTS` is the alarm port section header.
- `<alarmport_identifier>` is the identification of the alarm port in the sub-system picture as defined in the definition file (**.def* file).
- `ACTION` assigns a certain action to the alarm port.
- `<action_name>` is the name of an action that is defined in the ACTIONS section (refer to Section 9.7 - The ACTIONS section of the *.usr file). It is this action that is assigned to the corresponding alarm port. The action name may not contain spaces and may not be quoted (" ").
- `HELP` assigns a tooltip to the alarm port. The tooltip pops up when you move the arrow over the alarm port.
- `<help_text>` is the text of the tooltip. You can also refer to a file. For more information, refer to Section 9.10 - The help text.

Make sure the necessary curled brackets, commas, quotes and semicolons are present, else the syntax is incorrect.

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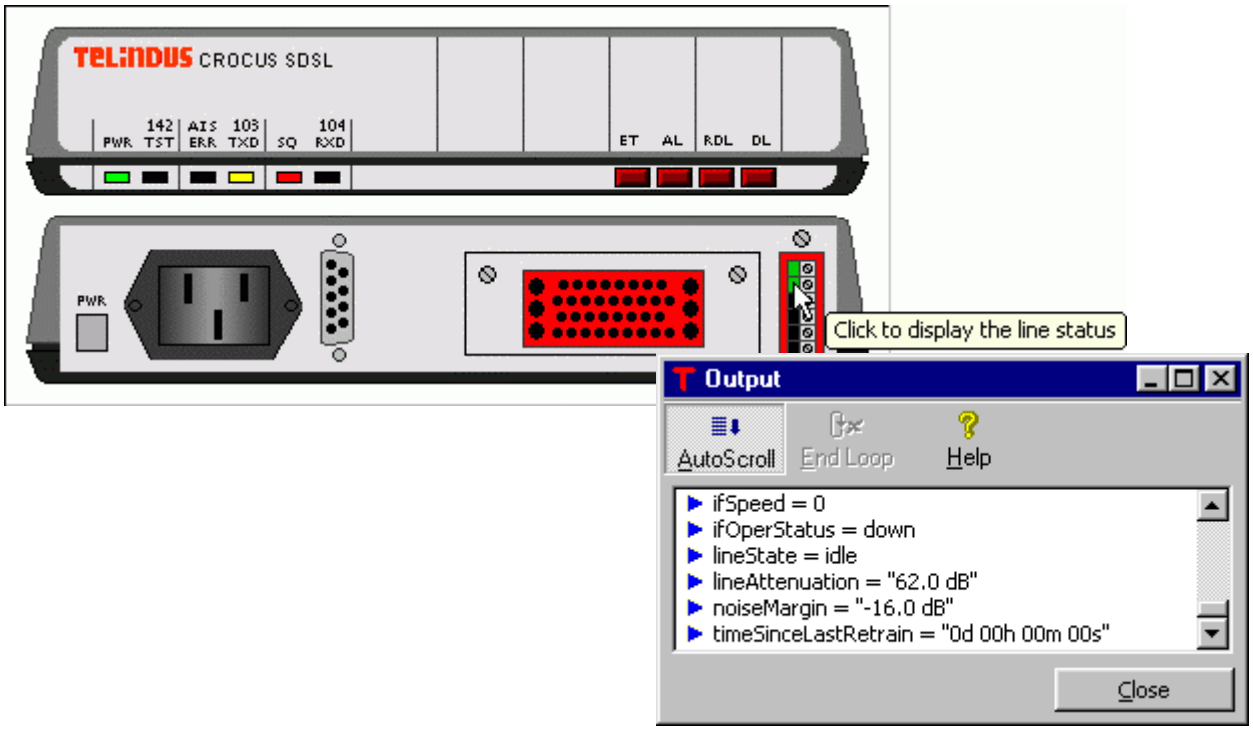
The ALARMPORTS sub-section (continued)

Example

The following example assigns the action `showLineStatus` to the line connector. Also a tooltip is assigned to this connector.

```
...
REAR
{
    ALARMPORTS
    {
        .modem.line, ACTION showLineStatus, HELP "Click to display the line status";
    }
}
...
```

This results in the following:



9.6 The BUTTONS section of the **.usr* file

For an introduction on the BUTTONS section of the **.usr* file, refer to Section 9.4 - The sections of the *.usr file.

Do not confuse this BUTTONS section with the BUTTONS sub-section in the FRONT section. Whereas this BUTTONS section defines the customised buttons located at the left-hand side of the sub-system picture, the BUTTONS sub-section in the FRONT section defines the interactive function of the test buttons on the front panel of the device.

The BUTTONS section syntax

A customised button interactivity specification has the following syntax:

```
BUTTONS
{
    "<button_name>", ACTION <action_name>, HELP "<help_text>";
}
```

where …

- `BUTTONS` is the customised button section header.
- `<button_name>` is the text that has to appear on the customised button.
- `ACTION` assigns a certain action to the customised button.
- `<action_name>` is the name of an action that is defined in the ACTIONS section (refer to Section 9.7 - The ACTIONS section of the *.usr file). It is this action that is assigned to the corresponding customised button. The action name may not contain spaces and may not be quoted (“ “).
- `HELP` assigns a tooltip to the customised button. The tooltip pops up when you move the arrow over the customised button.
- `<help_text>` is the text of the tooltip. You can also refer to a file. For more information, refer to Section 9.10 - The help text.

Make sure the necessary curled brackets, commas, quotes and semicolons are present, else the syntax is incorrect.

Continued on next page

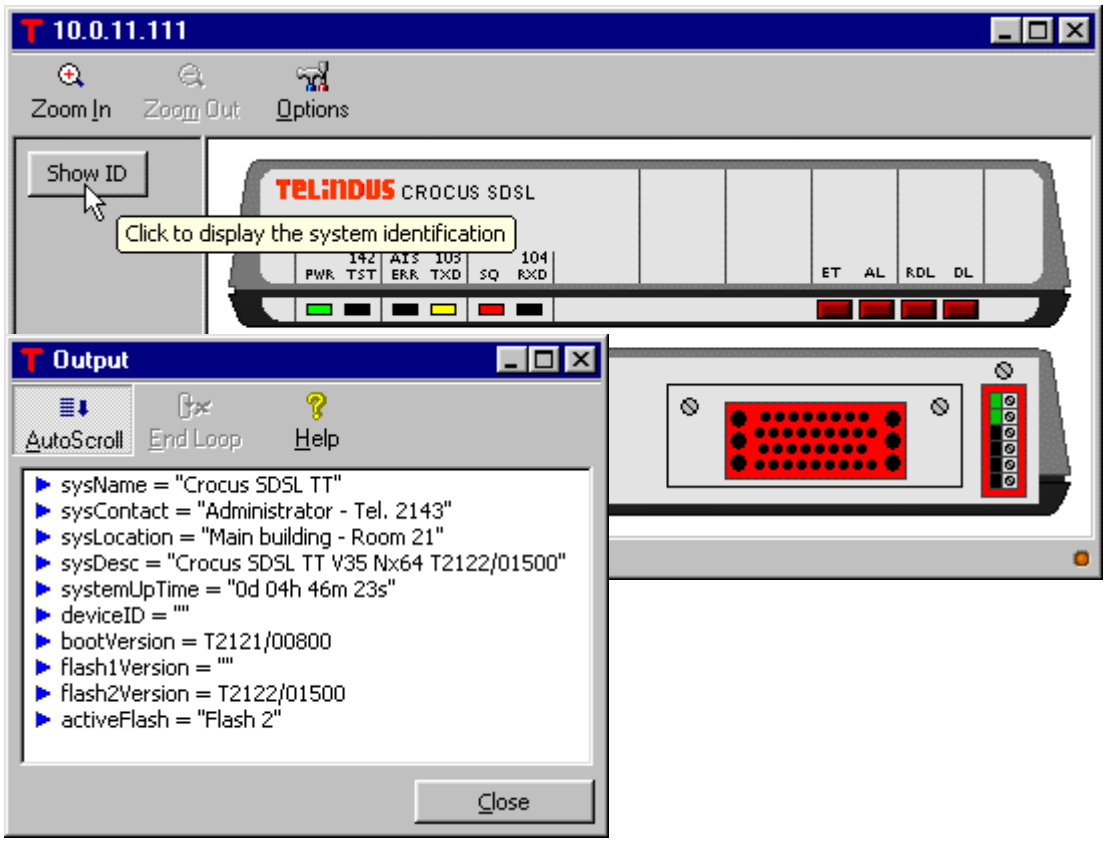
*The BUTTONS section of the *.usr file (continued)*

Example

The following example creates a customised button `Show ID` and assigns the action `showID` to it. Also a tooltip is assigned to this customised button.

```
...
BUTTONS
{
    "Show ID", ACTION showID, HELP "Click to display the system identification";
}
...
```

This results in the following:



9.7 The ACTIONS section of the **.usr* file

For an introduction on the ACTIONS section of the **.usr* file, refer to Section 9.4 - The sections of the *.usr file.

The ACTIONS section syntax

An action definition has the following syntax:

```
ACTIONS
{
    <action_name> HELP "<help_text>"
    {
        <action_command>;
        <action_command>;
        ...
    }
}
```

where …

- `ACTIONS` is the action section header.
- `<action_name>` is the name of the action. This name is used in the other sections to assign an action to a LED, button or alarm port. The action name may not contain spaces and may not be quoted (“ “).
- `HELP` defines that a help text is available in the action output window. If you click the help button in the action output window, the help text appears.
- `<help_text>` is the help text. You can also refer to a file. For more information, refer to Section 9.10 - The help text.
- `<action_command>` this is the action command that makes up the actual action. You can use several action commands in one action. Each action command has to be terminated by a semicolon (except the *loop* command). For more information, refer to Section 9.9 - The action commands.

Make sure the necessary curled brackets, commas, quotes and semicolons are present, else the syntax is incorrect.

Continued on next page

*The ACTIONS section of the *.usr file (continued)*

Example

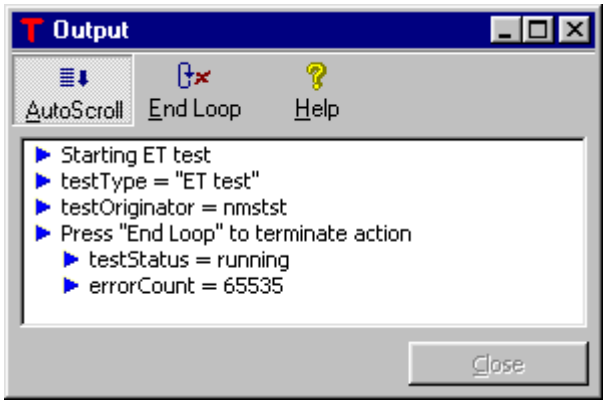
The following example shows the actions that are used in the examples of the previous sections. These actions are:

- `showUpTime` (refer to Section 9.5.3 - The LEDS sub-section)
- `startET` (refer to Section 9.5.4 - The BUTTONS sub-section)
- `showLineStatus` (refer to Section 9.5.5 - The ALARMPORTS sub-section)
- `showID` (refer to Section 9.6 - The BUTTONS section of the *.usr file)

```
...
ACTIONS
{
    showUpTime HELP "This displays the system up time"
    {
        SEND "select /";
        SEND "selgrp Status";
        SHOW "get systemUpTime";
    }
    startET HELP "This starts an error test"
    {
        PRINT "Starting ET test";
        SEND "select /";
        SEND "select modem";
        SEND "selgrp Performance";
        SEND "action \"Test Activation\" testActivationType=\"ET test\"";
        WAIT 2;
        SHOW "get testType:Status";
        SHOW "get testOriginator:Status";
        PRINT "Press \"End Loop\" to terminate action";
        LOOP
        {
            SHOW "get testStatus:Status";
            SHOW "get errorCount";
            WAIT 5;
        }
        PRINT "Stopping ET test";
        SEND "action \"Test Activation\" testActivationType=\"NO test\"";
        WAIT 2;
        SHOW "get testStatus:Status";
        SHOW "get errorCount";
    }
    showLineStatus HELP "This displays the status of the line"
    {
        SEND "select /";
        SEND "select modem/line";
        SEND "selgrp Status";
        SHOW "get";
    }
    showID HELP "This displays the system identification"
    {
        SEND "select /";
        SEND "selgrp \"Edit Configuration\"";
        SHOW "get sysName";
        SHOW "get sysContact";
        SHOW "get sysLocation";
        SEND "selgrp Status";
        SHOW "get";
    }
}
...
```

9.8 The action output window

When an action is executed, the output of this action (if any) is displayed in the action output window:



The action output window has the following buttons:

Button	Description
AutoScroll	Click on this button to enable or disable the auto scrolling.
End Loop	Click on this button to end a loop. This button is only available when a loop is being executed. Some actions contain a loop, i.e. a number of commands are executed in a loop. To stop the loop, click on the *End Loop* button. In that case, the current loop will be completed, but no new loop is started.
Help	Click on this button to display the help text that is associated with the action. For more information, refer to Section 9.7 - The ACTIONS section of the *.usr file and Section 9.10 - The help text.
Close 	Click on this button to close the action output window. This button is only available when the action has completely ended. You can also use the ☒ button of the output window to close the window. However, if you executed an action containing a diagnostic test (e.g. an ET, AL, DL … test) and you close the output window using the ☒ button, then the diagnostic test will keep running. This because an action containing a diagnostic test usually also contains the command lines to stop this test. These command lines are executed when you click the *End Loop* button, but not when you click the ☒ button. In that case you have to stop the diagnostic test yourself or start the action again and then properly stop the action (using the *End Loop* button).

9.9 The action commands

As said before, an action is made up of one or several action commands. This section explains these commands.

The following table gives an overview of this section.

9.9.1 Important remarks on action commands

- The commands are case sensitive.
- Every command line has to be terminated by a semicolon: ;.
- Some commands have to be used in combination with CLI (Command Line Interface) commands. Also see the next remark.
  For more information on CLI and its syntax, refer to the Maintenance tools manual.
- If a CLI command has a value that contains characters that conflict with the normal CLI syntax (such as a comma, a space, an equal sign, etc.), then you have to surround the value by a set of double quote characters: “ ”. E.g. `set /crocusSDSLTT/sysLocation = “Main building, room 21D”`
  Also see the next remark.
- Interactive sub-system picture command values always have to be surrounded by a set of double quote characters: “ “. E.g. `SEND “set /crocusSDSLTT/modem/channel = central”`.
  However, as seen in the previous remark, sometimes you have to use quotes within the value string. This is only possible by placing a backslash before each quote within the value string.

  Example:
  If you want to set the sysLocation attribute with a value that contains special characters, then you have to quote the sysLocation value. These quotes on their turn, have to be preceded by a backslash.
  In other words:
  - do not type `SEND “set /crocusSDSLTT/sysLocation = “Main building, room 21D””`
  - but type `SEND “set /crocusSDSLTT/sysLocation = \“Main building, room 21D\””`

  Another example:
  - Do not type `SEND “action “Activate Configuration””`
  - but type `SEND “action \”Activate Configuration\””`

9.9.2 The clear command

Syntax

```
CLEAR;
```

Description

This command clears the action output window.

Example

Suppose that for a certain modem you want to display the modem status, wait for 5 seconds, clear the window and display the line status. This action would look as follows:

```
ACTIONS
{
    showModemLineStatus
    {
        SEND "selgrp Status";
        SEND "select /";
        SEND "select modem";
        SHOW "get";
        WAIT 5;
        CLEAR;
        SEND "select line";
        SHOW "get";
    }
}
```

9.9.3 The execute command

Syntax

```
EXEC "<application_path> <application_argument>";
```

Description

This command starts an external application. The command has to be followed by a quoted string containing …

- the path to the application (optional),
- the application executable name,
- an application argument (optional).

If no path is specified, then TMA looks for the application in the directory *TMA\bin* (typically *C:\Program Files\TMA\bin*) unless the path to the application is known by the operating system.

On Windows 95 and 98 this is typically done with the `set path` command in the *autoexec.bat* file. On Windows NT 4.0 and 2000 this is typically done with the *path* string in the *Environment* tab of the *System Properties* window.

Example

Suppose you want to open *Notepad.exe* in order to edit the **.usr* file *crocusSDSLTT.usr*. This action would look as follows:

```
ACTIONS
{
    editUsrFile
    {
    EXEC "notepad.exe C:\program files\tma\picture\usr\crocusSDSLTT.usr";
    }
}
```

9.9.4 The from file command

Syntax

```
<command> FROMFILE "<file_path>"
```

Description

This command can only be used in combination with another command. It specifies that the command has to use the contents of the specified file as argument.

If no path is specified, then TMA looks for the file in the directory *TMA\bin* (typically *C:\Program Files\TMA\bin*).

Example

Suppose you want to execute a CLI script that has been saved in the file *C:\Program Files\TMA\scripts\getAlarms.cli*. This action would look as follows:

```
ACTIONS
{
    getAlarmStatus
    {
    SHOW FROMFILE "C:\Program Files\TMA\scripts\getAlarms.cli";
    }
}
```

The *getAlarms.cli* file could contain something like the following:

```
select /
selgrp Alarms
get
select modem
get
select line
get
select /
select v35
get
select /
select powerOffDetection
get
```

9.9.5 The loop command

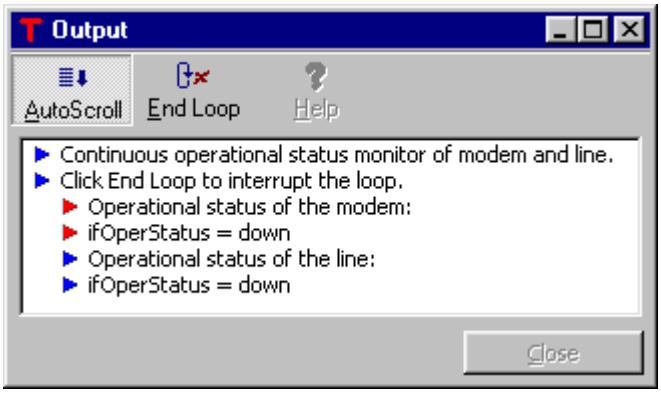
Syntax

```
LOOP
{
    <command>;
    <command>;
    ...
}
```

Description

This command allows that one or more commands are executed in a loop. The commands that have to be looped have to be included between curled brackets, while each command line has to be terminated by a semicolon: ;.

When the loop is running, the *End Loop* button on the action output window becomes active. When you click this button, the current loop is completed, but no new loop is started. E.g. if a loop consists of 10 commands and during execution of the second command the *End Loop* button is clicked, then the remaining 8 commands are executed but the loop does not restart afterwards.



Also in the action output window, the red triangle in front of the output generated by the looped commands gives an indication of the progress of the loop.

Example

Suppose that for a certain modem you continuously want to monitor the operational status of the modem and the line. This action would look as follows:

```
ACTIONS
{
    modemLineStatus
    {
    PRINT "Continuous operational status monitor of modem and line.\nClick End Loop to
interrupt the loop.";
    LOOP
        {
        SEND "select /";
        SEND "selgrp Status";
        SEND "select modem";
        PRINT "Operational status of the modem:";
        SHOW "get ifOperStatus";
        WAIT 2;
        SEND "select line";
        PRINT "Operational status of the line:";
        SHOW "get ifOperStatus";
        WAIT 2;
        }
    }
}
```

9.9.6 The print command

Syntax

```
PRINT "<text>";
```

Description

This command writes text to the action output window. If the print command is followed by …

- only two quotes, then only an empty line is written to the output window.
- a text between quotes, then this text is written to the output window. This text may be a multi-line text. If you want to start a new line, use `\n` as line separator.
- the `FROMFILE` command followed by a quoted string specifying the file, then the text that is contained in the file is written to the output window.

Example

This writes one line to the output window:

```
PRINT "This is an output text."
```

The result is:

```
▶ This is an output text.
```

This writes several lines to the output window (use `\n` as line separator):

```
PRINT "This is an output text.\nThis is a new line.\nThis is another new line.";
```

The result is:

```
▶ This is an output text.
▶ This is a new line.
▶ This is another new line.
```

This writes the contents of the file *text.txt* to the output window (a new line in the file is also a new line in the output window):

```
PRINT FROMFILE "text.txt"
```

The contents of the file *text.txt* is:

```
This is an output text from a file.
This is a new line in the file.
This is another new line.
```

The result is:

```
▶ This is an output text from a file.
▶ This is a new line in the file.
▶ This is another new line.
```

9.9.7 The send command

Syntax

```
SEND "<cli_command>";
```

Description

This command is meant to be used in combination with a CLI command that sends information to the device (e.g. the `set` command, the `action` command, etc.). Since such commands normally do not produce output, no output is written to the action output window. Except when the CLI command causes an error.

The send command can be followed by …

- a CLI command between quotes.
- the `FROMFILE` command followed by a quoted string specifying the file. The file is then interpreted as a CLI script. For more on scripting in CLI, refer to the Maintenance tools manual.

Read Section 9.9.1 - Important remarks on action commands for some important issues concerning the use of quotes, backslashes, etc.

Important remark

As said before, the `SEND` command is used in combination with a CLI command. Do not confuse CLI with TMA CLI! Whereas CLI is a management tool which runs on the Telindus access devices themselves, TMA CLI is a program which you have to install on a computer. TMA CLI is a more elaborate command line interface, with more features and commands then CLI. Whereas most of the TMA CLI commands are the same as the CLI commands, some commands that exist in TMA CLI do not exist in CLI. Hence, you can not use these commands in the interactive sub-system scripts. These commands are:

`exit, logging, exec, cfgload, memload and source.`

It is also best to avoid the `disconnect` command. Else the session between the interactive sub-system picture and the Telindus access device is closed and the interactive sub-system picture “freezes”.

Continued on next page

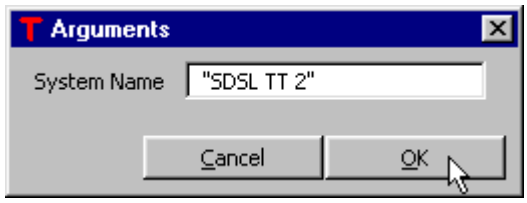
The send command (continued)

The send command and one argument

The send command can also be used with an argument. To do so, use the `ARG` keyword. For example:

```
ACTIONS
{
    setSysName
    {
    SEND "set /crocusSDSLTT/sysName = $1" ARG "System Name";
    }
}
```

When executing this action, a dialog box appears asking you to fill in the field labelled “System Name”. The value you enter is put in a CLI environment variable ($1) and then used as value for the sysName attribute.



Also in the dialog box, do not forget to use quotes (“ “) when the value contains characters that conflict with the normal CLI syntax (such as a comma, a space, an equal sign, etc.)

Continued on next page

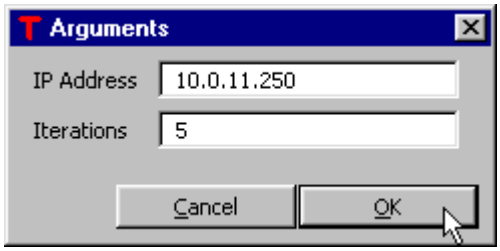
The send command (continued)

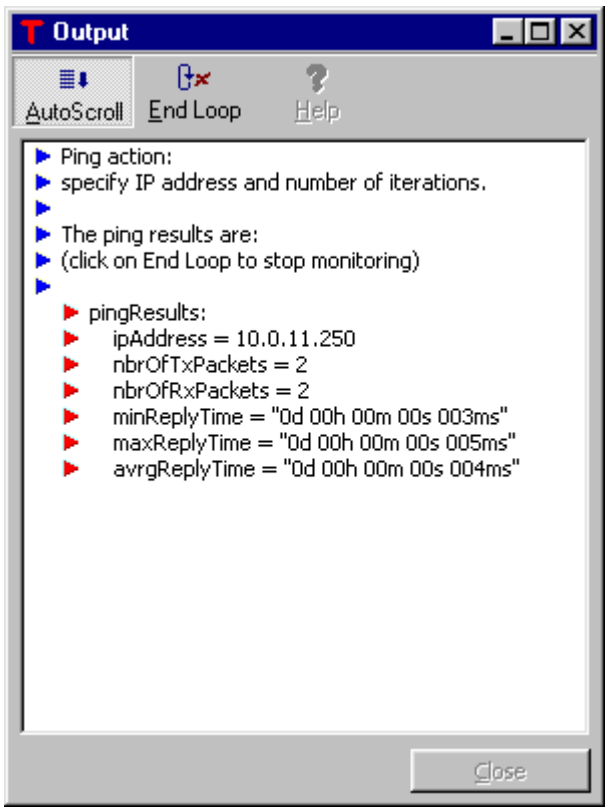
The send command and multiple arguments

If you need multiple arguments, then use the `ARG` keyword followed by a comma separated list of argument names. For example:

```
ACTIONS
{
    ping
    {
    PRINT "Ping action:\nspecify IP address and number of iterations";
    PRINT "";
    SEND "select /o1003/router";
    SEND "selgrp Performance";
    SEND "action startPing pingData = {ipAddress = $1  iterations = $2}" ARG "IP
Address", "Iterations";
    PRINT "The ping results are:\n(click on End Loop to stop monitoring)";
    PRINT "";
    LOOP
        {
        SHOW "get pingResults";
        }
    }
}
```

When executing this action, a dialog box appears asking you to fill in the fields “IP address” and “Iterations”. These values are then used as argument for the startPing action. The result of the ping action is monitored until the *End Loop* button is clicked.





Continued on next page

The send command (continued)

Example

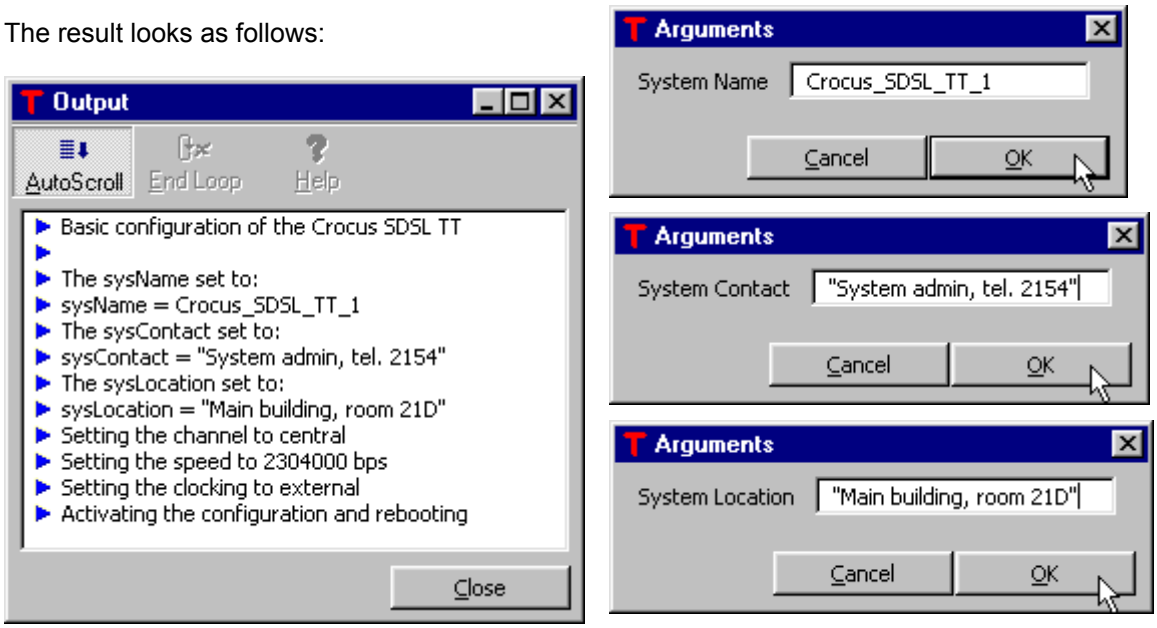
Suppose you want to create an action that sets the basic attributes of a Crocus SDSL TT. Suppose you want to set the …

- sysName, sysContact and sysLocation attributes to a value of your choice,
- channel attribute to central,
- the speed attribute to 2304000 bps,
- and the clocking attribute to external.

This action would look as follows:

```
ACTIONS
{
    setBasicConfig
    {
    PRINT "Basic configuration of the Crocus SDSL TT\n";
    SEND "action \"Load Default Configuration\"";
    SEND "set /crocusSDSLTT/sysName = $1" ARG "System Name";
    PRINT "The sysName set to:";
    SHOW "get /crocusSDSLTT/sysName";
    SEND "set /crocusSDSLTT/sysContact = $1" ARG "System Contact";
    PRINT "The sysContact set to:";
    SHOW "get /crocusSDSLTT/sysContact";
    SEND "set /crocusSDSLTT/sysLocation = $1" ARG "System Location";
    PRINT "The sysLocation set to:";
    SHOW "get /crocusSDSLTT/sysLocation";
    PRINT "Setting the channel to central";
    SEND "set /crocusSDSLTT/modem/channel = central";
    PRINT "Setting the speed to 2304000 bps";
    SEND "set /crocusSDSLTT/modem/line/speed = \"2304000 bps\"";
    PRINT "Setting the clocking to external";
    SEND "set /crocusSDSLTT/v35/clocking = External";
    PRINT "Activating the configuration and rebooting";
    SEND "action \"Activate Configuration\"";
    SEND "action \"Cold Boot\"";
    }
}
```

The result looks as follows:



9.9.8 The show command

Syntax

```
SHOW "<cli_get_command>";
```

Description

This command is meant to be used in combination with the CLI command that retrieves information from the device (e.g. the `get` command). The output is written to the action output window.

The show command can be followed by …

- the CLI `get` command between quotes.
- the `FROMFILE` command followed by a quoted string specifying the file. The file is then interpreted as a CLI script. For more on scripting in CLI, refer to the Maintenance tools manual.

Read Section 9.9.1 - Important remarks on action commands for some important issues concerning the use of quotes, backslashes, etc.

Example

Suppose you want to see the complete configuration of the device. This action would look as follows:

```
ACTIONS
{
    seeCompleteConfig
    {
    PRINT "The complete configuration of the device is:\n";
    SHOW "get -r";
    }
}
```

An example with a `FROMFILE` construction can be found in Section 9.9.4 - The from file command.

9.9.9 The start and stop refresh command

Syntax

```
STOPREFRESH;
```

```
STARTREFRESH;
```

Description

The sub-system picture is refreshed every n*10 seconds, as configured by the user (refer to Section 9.2 - The sub-system picture window). If this period elapses, then the sub-system picture is refreshed. If this happens during the execution of an action, you may experience some delay in the execution of the action commands.

If you find this interfering, then you can stop the refresh with the stop refresh command. The refresh can be started again with the start refresh command. In any case, the refresh is started again when the execution of the action is completed.

Example

When executing an action, the refresh can cause annoying delays in the execution flow. In that case, you can temporally stop the refresh cycle. For example:

```
ACTIONS
{
    setSysAttributes
    {
    STOPREFRESH;
    PRINT "Set the sysName, sysContact and sysLocation\n";
    SEND "set /crocusSDSLTT/sysName = $1" ARG "System Name";
    PRINT "The sysName set to:";
    SHOW "get /crocusSDSLTT/sysName";
    SEND "set /crocusSDSLTT/sysContact = $1" ARG "System Contact";
    PRINT "The sysContact set to:";
    SHOW "get /crocusSDSLTT/sysContact";
    SEND "set /crocusSDSLTT/sysLocation = $1" ARG "System Location";
    PRINT "The sysLocation set to:";
    SHOW "get /crocusSDSLTT/sysLocation";
    SEND "action \"Activate Configuration\"";
    }
}
```

The refresh is started again after execution of this action.

9.9.10 The wait command

Syntax

```
WAIT <seconds>;
```

Description

This command sets a time-out period (in seconds) before proceeding with the next action command. This command is particularly useful within the loop command.

Example

Consider the following action:

```
ACTIONS
{
    startAL
    {
    PRINT "Starting AL test";
    SEND "select /";
    SEND "select modem";
    SEND "selgrp Performance";
    SEND "action \"Test Activation\" testActivationType=\"AL test\"";
    WAIT 2;
    SHOW "get testType:Status";
    SHOW "get testOriginator:Status";
    PRINT "Press \"End Loop\" to terminate action";
    LOOP
        {
        SHOW "get testStatus:Status";
        WAIT 5;
        }
    PRINT "Stopping AL test";
    SEND "action \"Test Activation\" testActivationType=\"NO test\"";
    WAIT 2;
    SHOW "get testStatus:Status";
    }
}
```

The first wait command makes the action wait for 2 seconds after initiating the AL test before retrieving the status of the test. This because immediately after the test, the correct status information may not be available yet. Therefore, it is best to wait a while.

The wait command in the loop, avoids that the status of the test is retrieved continuously. Instead, it is polled every 5 seconds.

The last wait command serves the same purpose as the first one: to make sure the status of the test is stable before retrieving it.

9.10 The help text

You can assign a help text to a LED, button or alarm port of the sub-system picture and to an action. Depending to which item you assigned the help text, the help text appears as a …

- tool-tip.
- a help window.

The source of the help text can be …

- a quoted string.
- a file.

The following table gives an overview of this section.

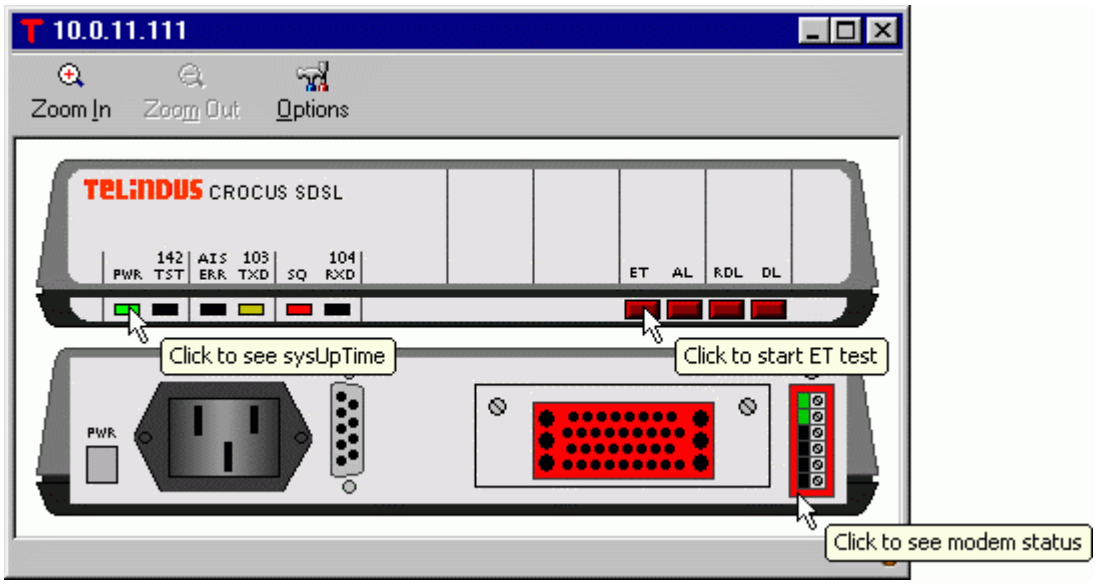
9.10.1 Help as a tool-tip

In this case the help is assigned to a LED, button or alarm port. It appears when you move the pointer over such an item.

The syntax can be seen in the example below:

```
FRONT
{
    LEDS
    {
        .lEDPower, ACTION getUpTime, HELP "Click to see sysUpTime";
    }
    BUTTONS
    {
        .keyboardState[0], ACTION startET, HELP "Click to start ET test";
    }
}
REAR
{
    ALARMPORTS
    {
        .modem, ACTION showModemStatus, HELP "Click to see modem status";
    }
}
```

In the sub-system picture, these tool-tips would appear as follows:



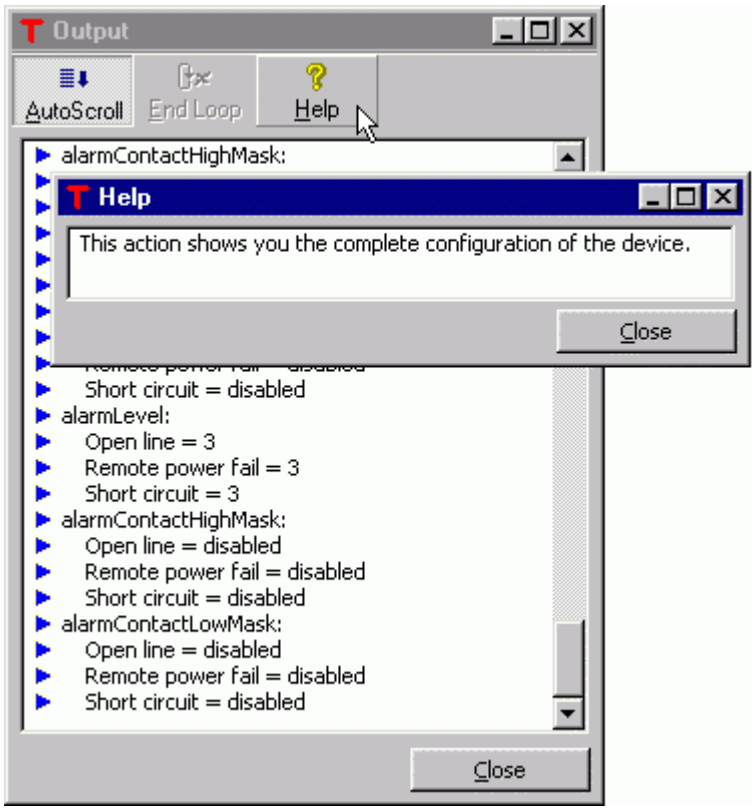
9.10.2 Help in a help window

In this case the help is assigned to an action which, on its turn, is assigned to a LED, button or alarm port of the sub-system picture. It appears when you click the *Help* button in the output action window (refer to Section 9.8 - The action output window).

The syntax can be seen in the example below:

```
ACTIONS
{
    showConfig HELP "This action shows you the complete configuration of the device."
    {
    PRINT "The complete configuration of the device is:\n";
    SHOW "get -r";
    }
}
```

In the action output window, this help window would appear as follows:



9.10.3 A quoted string as help text source

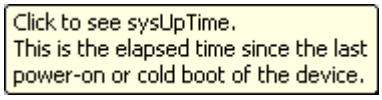
In this case the help text is typed between quotes immediately after the `HELP` command. The syntax can be seen in the example below:

```
LEDS
{
    .lEDPower, ACTION getUpTime, HELP "Click to see sysUpTime";
}
```

This text may be a multi-line text. If you want to start a new line, use `\n` as line separator. The syntax can be seen in the example below:

```
LEDS
{
    .lEDPower, ACTION getUpTime, HELP "Click to see sysUpTime.\nThis is the elapsed
time since the last\npower-on or cold boot of the device.";
}
```

For this example, the tool-tip looks as follows:



9.10.4 A file as help text source

In this case the help text is retrieved from a file using the `HELP` command in combination with the `FROMFILE` command followed by a quoted string specifying the file. The syntax can be seen in the example below:

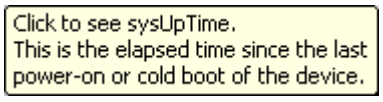
```
LEDS
{
    .lEDPower, ACTION getUpTime, HELP FROMFILE "pwrLedHelp.txt";
}
```

If no path is specified, then TMA looks for the file in the directory *TMA\bin* (typically *C:\Program Files\TMA\bin*). The text may also be a multi-line text. If you want to start a new line, just start a new line in the file.

Suppose the file *pwrLedHelp.txt* contains the following:

```
Click to see sysUpTime.
This is the elapsed time since the last
power-on or cold boot of the device.
```

Then the tool-tip would look as follows:



9.11 Example of a **.usr* file

This section gives an example of a **.usr* file. You can find more examples (for almost every Telindus device) in the directory *TMA\picture\usrdefault* (typically *C:\Program Files\TMA\picture\usrdefault*). You can use these files as a template for your customised version of the **.usr* file.

Important remark

Note that in the **.usr* files that are present in the directory *TMA\picture\usrdefault*, some lines are preceded by two dashes "--". They make the current line "inactive", i.e. the line is not parsed when you evoke the sub-system. If you want to "activate" this line, remove the two dashes and the line will be parsed when you evoke the sub-system.

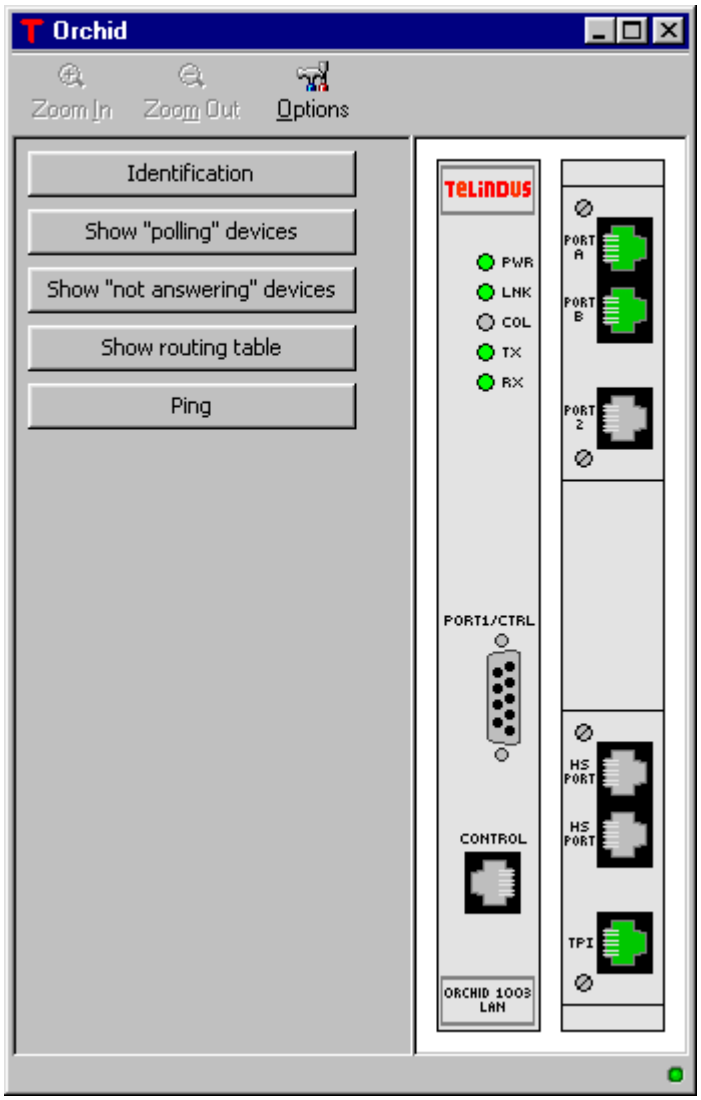
The following shows an example of a **.usr* file for the Orchid 1003 LAN CV (*orchidO1003CV.usr*):

```
COMPONENT orchidO1003CV
{
    FRONT
    {
        LEDS
        {
            .lEDPower, ACTION showUpTime, HELP "Click to see the system up-time";
            .interfaces.lanInterface.lEDLnk, ACTION showAlarmLanPort, HELP "Click to see the alarms of the
LAN interface";
--          .interfaces.lanInterface.lEDCol, HELP "";
            .interfaces.lanInterface.lEDTx, ACTION showPerfLanPort, HELP "Click to see the performance of
the LAN interface";
            .interfaces.lanInterface.lEDRx, ACTION showPerfLanPort, HELP "Click to see the performance of
the LAN interface";
        }
    }
    REAR
    {
        ALARMPORTS
        {
            .interfaces.portA, ACTION showStatusPortA, HELP "Click to see the status of port A";
            .interfaces.portB, ACTION showStatusPortB, HELP "Click to see the status of port B";
            .interfaces.lanInterface, ACTION showStatusLanPort, HELP "Click to see the status of the LAN
interface";
        }
    }
    BUTTONS
    {
        "Identification", ACTION showID, HELP "Click to see the identification of the Orchid";
        "Show \"polling\" devices", ACTION showPolling, HELP "Click to see which devices that are
defined\nin the object table can be polled";
        "Show \"not answering\" devices", ACTION showNoAnswer, HELP "Click to see which devices that are
defined\nin the object table do not answer on when polled";
        "Show routing table", ACTION showRoutingTable, HELP "Click to see the status of the routing table";
        "Ping", ACTION ping, HELP "Click to start a ping action";
    }
```

```
ACTIONS
    {
        showUpTime
        {
            SEND "select /";
            SEND "selgrp Status";
            SHOW "get { LIST { date time sysUpTime } }";
        }
        showAlarmLanPort
        {
            PRINT "The alarms of the LAN interface are:\n";
            SHOW "get /o1003/interfaces/lanInterface:Alarms";
        }
        showPerfLanPort
        {
            PRINT "The performance of the LAN interface is:\n";
            SHOW "get /o1003/interfaces/lanInterface:Performance";
        }
        showStatusPortA
        {
            PRINT "The current status of port A is:\n";
            SHOW "get /o1003/interfaces/portA:Status";
        }
        showStatusPortB
        {
            PRINT "The current status of port B is:\n";
            SHOW "get /o1003/interfaces/portB:Status";
        }
        showStatusLanPort
        {
            PRINT "The current status of the LAN interface is:\n";
            SHOW "get /o1003/interfaces/lanInterface:Status";
        }
        showID
        {
            SEND "select /";
            SEND "selgrp \"Edit Configuration\"";
            SHOW "get sysName";
            SHOW "get sysContact";
            SHOW "get sysLocation";
            SEND "selgrp Status";
            SHOW "get sysDescr";
            SHOW "get sysUpTime";
            SHOW "get deviceID";
            SHOW "get bootVersion";
            SHOW "get flash1Version";
            SHOW "get flash2Version";
            SHOW "get activeFlash";
        }
        ping
        {
            PRINT "Specify the IP address you want to ping\n";
            SEND "select /o1003/router";
            SEND "selgrp Performance";
            SEND "action startPing pingData = {ipAddress = $1  iterations = 0}" ARG "IP Address";
            PRINT "The ping results are:\n(click on End Loop to stop pinging)\n";
            LOOP
                {
                SHOW "get pingResults";
                }
            SEND "action stopPing";
            PRINT "\nPing action stopped";
        }
```

```
showPolling
        {
            PRINT "The devices that are defined in the object table\nand that can be polled are:\n";
            SEND "select /o1003/nmsgroup";
            SEND "selgrp Status";
            SHOW "get -s objectTable = {[f] = {pollState = polling}}";
        }
        showNoAnswer
        {
            PRINT "The devices that are defined in the object table\nand that do not answer when polled
are:\n";
            SEND "select /o1003/nmsgroup";
            SEND "selgrp Status";
            SHOW "get -s objectTable = {[f] = {pollState = \"not answering\"}}";
        }
        showRoutingTable
        {
            PRINT "The status of the routing table is:\n";
            SHOW "get /o1003/router/routingTable:Status";
        }
    }
}
```

This **.usr* file results in the following sub-system picture:



9.12 Reading the *picture.log* file

The **.usr* file is loaded and parsed when the sub-system picture is evoked. When an error is encountered, TMA displays an error message and writes the error in the *picture.log* file. This section explains how to interpret the *picture.log* file. It also includes an example of such a file.

The following table gives an overview of this section.

9.12.1 What is the *picture.log* file?

What is the *picture.log* file?

The **.usr* file is loaded and parsed when the sub-system picture is evoked. When an error is encountered, TMA displays an error message and writes the error in the *picture.log* file.

What is the location of the *picture.log* file?

The *picture.log* file is created in the *TMA\log* directory (typically *C:\Program Files\TMA\log*).

The TMA error message

When an error is encountered in the **.usr* file, the following error message is displayed:

What is the result on the sub-system picture?

The result of en erroneous **.usr* file is that the sub-system picture will be displayed but without any interactive function. I.e. TMA just displays the “plain” sub-system picture.

9.12.2 Example of a *picture.log* file

Consider the following example of a **.usr* file. This files contains several syntax errors:

```
COMPONENT crocusSDSLTT
{
    FRONT
    {
        LEDS
        {
            .lEDPower, ACTION showUpTime, HELP ,
        }
        BUTTONS
        {
            .keyboardState[0], ACTION startET, HELP "Start an End-to-End test";
        }
    }
    REAR
    {
        ALARMPORTS
        {
            .modem, ACTION showStatus, HELP "View alarm info and status of the modem"
        }
    }
    BUTTONS
    {
        "Identification", ACTION showID, HELP "View identification parameters";
    }
    ACTIONS
    {
        showUpTime
        {
            SEND "select /";
            SEND "selgrp Status";
            SHOW "get systemUpTime";
        showStatus
        {
            SEND "select /";
            SEND "selgrp Status";
            SEND "select modem";
            SHOW "get";
            SEND "select line";
            SHOW "get";
        }
        showID
        {
            SEND "select /";
            SEND "selgrp Status";
            SHOW "get";
        }
    }
}
```

Help text is missing.

; is missing.

} is missing.

startET action is not defined in ACTIONS section.

Continued on next page

Example of a picture.log file (continued)

When evoking the sub-system picture you get an error message and the following is written into the *picture.log* file:

```
7: ERROR: bad argument for HELP (expected FROMFILE or string)
19: ERROR: missing ;
33: ERROR: unknown command
33: ERROR: unknown command
34: ERROR: unknown command
```

The following table describes the errors:

Error line …	Description
7	The `HELP` command is present, but no source text. This should either be a quoted string or a `FROMFILE` command with a reference to a file containing the help text.
19	This line should be ended with a semicolon ";".
33 and 34	These errors are a result of the missing closing bracket "}" of the `showUpTime` action. The parser thinks that the string `showStatus` and the following bracket are still part of the `showUpTime` action. Obviously, it does not recognise these as valid commands.

Note that the parser did not detect the error of the undefined `startET` action yet. This because there were more fundamental syntax errors and therefore it was unable to even start processing the **.usr* file. You will first have to correct the syntax errors as described above and then evoke the sub-system picture again. The remaining errors will then be detected in the second run.

To detect all errors in a **.usr* file, it is possible that you might have to go through several loops of correcting the **.usr* file and evoking the sub-system picture to see whether all errors have been solved. This because some errors cause that only part of the **.usr* file can be parsed.

Now correct the errors as detected above (the missing help, the missing ";" and missing "}"). Then evoke the sub-system picture again. Again an error message is displayed and the following is *added* to the *picture.log* file:

```
ERROR: action "startET" used but not defined in component "crocusSDSLTT"
```

Now the parser noticed the undefined `startET` action and gives an error. If you also solve this error, the sub-system picture will display as expected.

10. Downloading software

This section explains how to download software to a Telindus device using TMA. First it explains how to download new firmware in the flash memory of a device. Then it shows how to download files to the file system of a device.

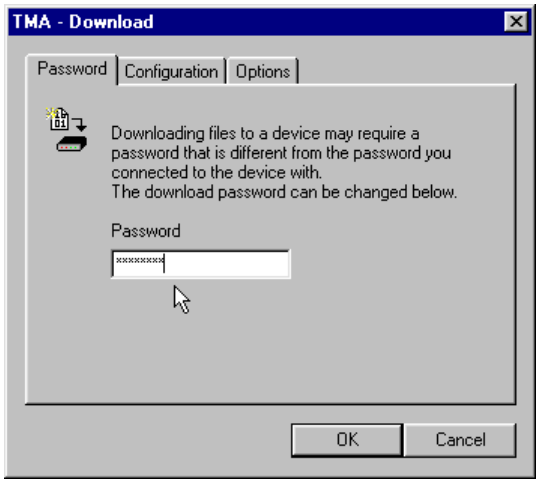
The following table gives an overview of this chapter.

10.1 Downloading firmware to the flash memory

The Telindus devices have a flash memory containing firmware. This firmware gives the devices their features. This firmware evolves continuously as new features are added or changed. You may want to download new firmware to a Telindus device, to give this device the latest features. This section explains how to download new firmware.

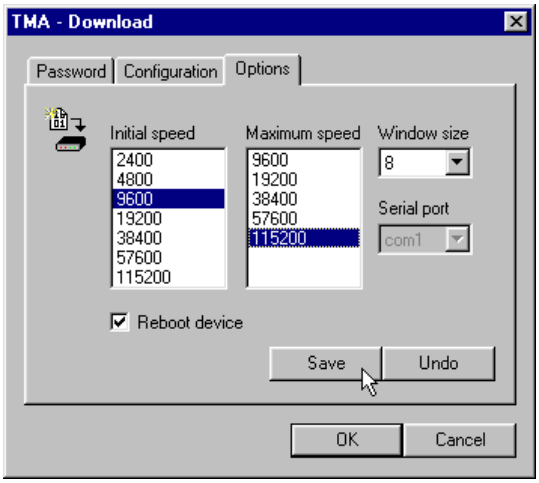
You can not download firmware to a non-IP device over a proxied IP connection. Use the firmware distribution feature of the Orchid for this purpose (refer to the user manual of the Orchid).

Supposing a connection is present between the computer running TMA and the Telindus device, the download procedure is as follows:

Step	Action
1	In the menu bar select *Tools* → *Download…* ⇒ The *Download* window appears.
2	If you are connected to the device with: • write access, then immediately go to step 3. • read-only access, then first select the *Password* tab of the *Download* window and enter the write access password. 

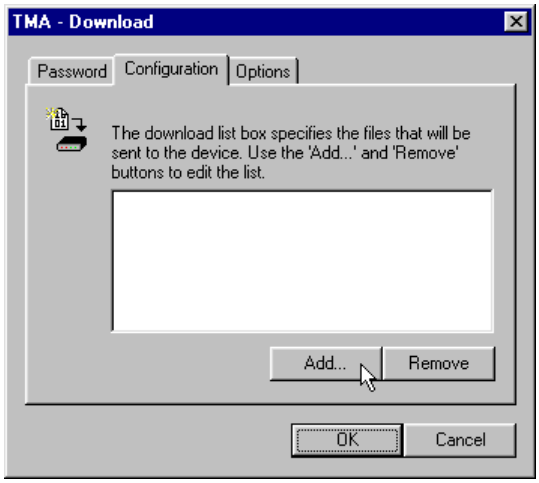
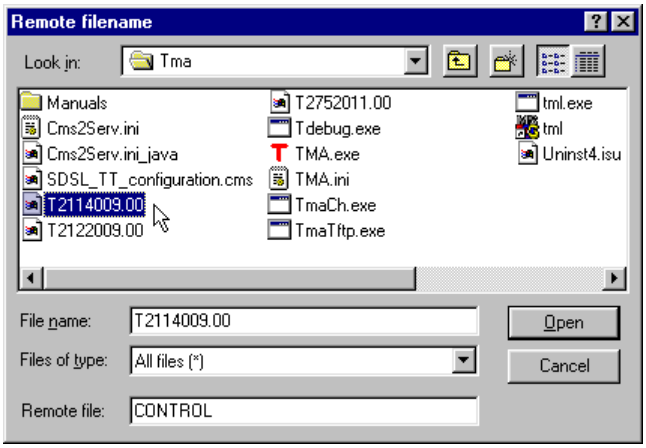
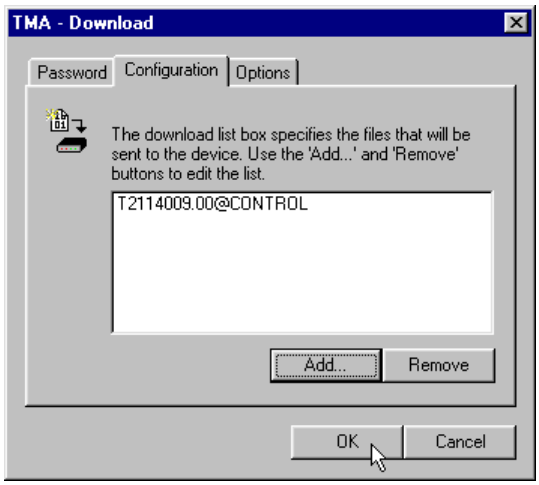
Continued on next page

Downloading firmware (continued)

Step	Action
3	In the *Download* window, select the *Options* tab. Here you can set the following options: • Initial speed: set the initial transfer speed to 9600 bps. • Maximum speed: if you set the maximum transfer speed to 115200 bps, the actual transfer speed will be negotiated between the computer and the device and will be between 9600 bps and 115200 bps. • Window size: can be set between 1 and 8. • Reboot device: tick this box when downloading firmware to … – an Aster 4 Flash. – any Telindus devices containing only one flash memory bank. To verify the amount of flash banks of your device, check the status attribute flashVersion in the top object. The value of this attribute can be 1 or 2 (i.e. the amount of flash banks). This reboot device option is necessary to force the … – Aster to reboot from the EPROM, – The Telindus device with one flash bank to go to loader mode, … before downloading the firmware to the flash bank. • Save: press this button if you want to save the option settings. • Undo: press this button if you want to revert to the previous option settings.  The *Options* tab is only present in case of a direct connection, not in case of an IP connection.

Continued on next page

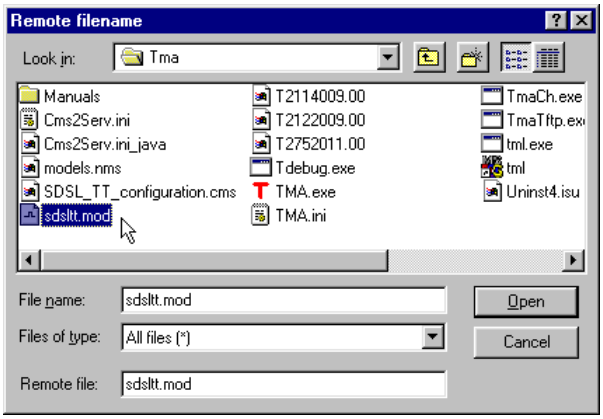
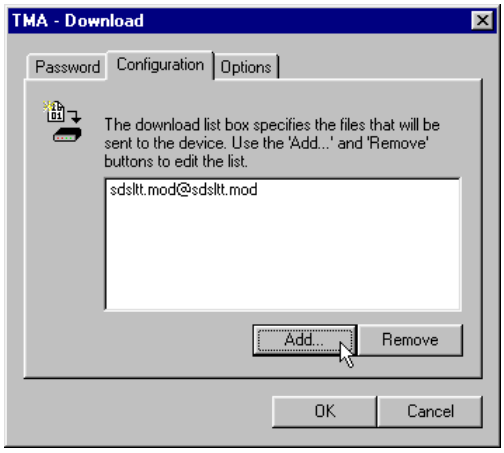
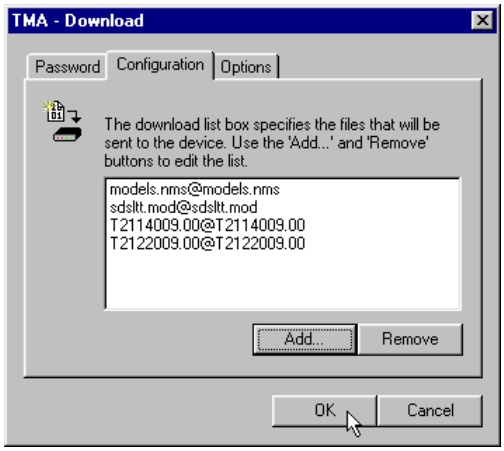
Downloading firmware (continued)

Step	Action
4	In the *Download* window, select the *Configuration* tab and press the *Add…* button. ⇒ The *Remote filename* window appears. 
5	In the *Remote filename* window: 1. Select a firmware file you want to download. 2. In the *Remote file* field, type … – CONTROL : to download the firmware into the non-active flash bank. – CONTROL1 : to download the firmware into flash bank 1. – CONTROL2 : to download the firmware into flash bank 2. 3. Press the *Open* button.  You can only download firmware into a *non-active* flash memory bank.
6	When the *Download* window reappears, press the *OK* button. ⇒ A window appears and shows the download progress. 

10.2 Downloading files to the file system

Some Telindus devices not only need firmware, but also other software or files have to be downloaded to their file system (e.g. in case of the Orchid 1003 LAN, Telindus 1030 Router series, etc.). This section explains how to download files to the file system.

The file download procedure is very similar to the firmware download procedure. Therefore the following procedure shows only the differences:

Step	Action
1	Execute step 1, 2, 3 and 4 of the firmware download procedure. Refer to Section 10.1 - Downloading firmware.
2	In the *Remote filename* window: 1. Select a file you want to download. The name appears in the *File name* field. 2. In the *Remote file* field, type the remote file name. If you leave this field blank, then the name entered in the *File name* field is used as remote file name. 3. Press the *Open* button. 
3	The *Download* window reappears. If you want download more than one file, press *Add…* again and select another file as described in step 2. If you selected a wrong file by accident, you can remove this file from the list: 1. Select the file in the list. 2. Press the *Remove* button. 
4	When you selected all the necessary files, press the *OK* button in the *Download* window. ⇒ A window appears and shows the download progress. 

10.3 Remarks on downloading files to the file system

Remark 1

When downloading files to a Telindus device over a serial connection, TMA uses a small DOS based program called TML. Due to the fact that DOS commands are limited to 126 characters, the number of files you can download in one go is limited. Selecting too many files at once, results in a too long command line. In that case, the following warning appears:

Remove some file names from the download list and try again. Refer to step 3 of the file download procedure.

Remark 2

When downloading files to the Telindus device over an IP connection, TMA uses TFTP. In that case:

- there is no command limit of 126 characters
- the *Options* tab in the *Download* window is not present.

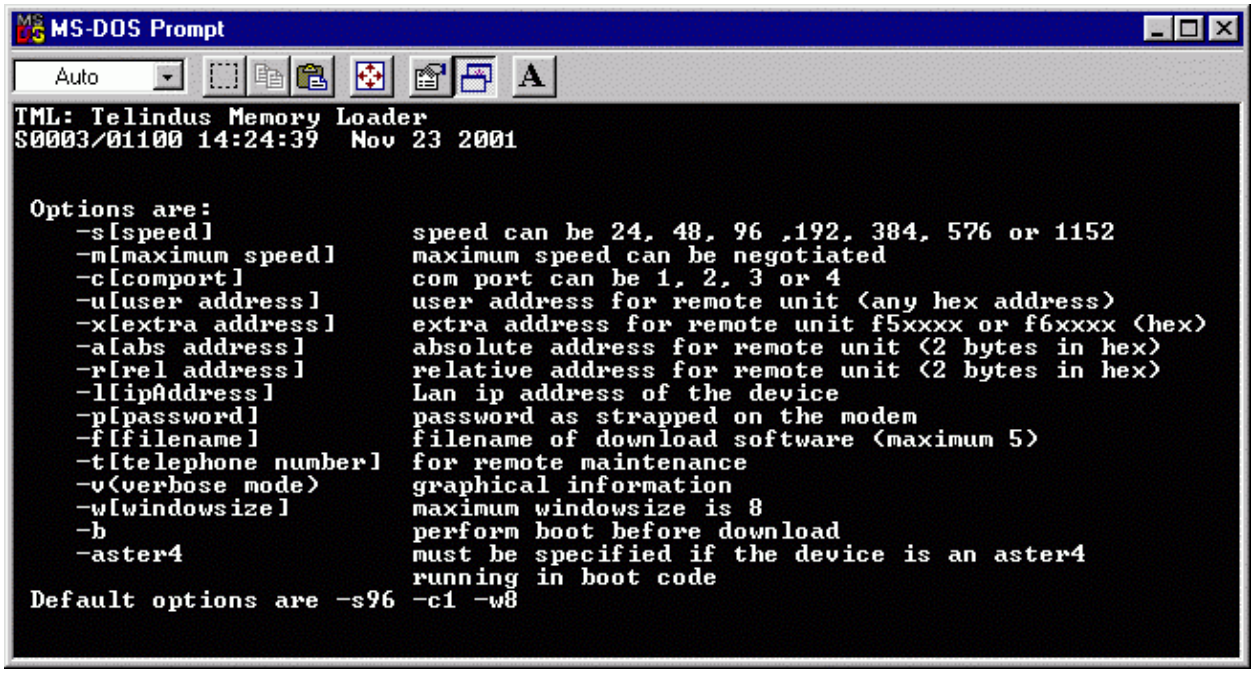
11. Telindus Memory Loader (TML)

When downloading software with TMA (as explained in the previous chapter), you actually evoke TML (Telindus Memory Loader) through TMA. You can also evoke TML from the command line (i.e. without opening TMA). This chapter explains how to do this. It also lists the different TML options.

The following table gives an overview of this chapter.

11.1 Displaying the TML command line help

In order to display the different TML command line options, open a DOS window and type `tml`. The following is returned:



Remarks

- If you want to execute the TML command in a directory different from the *TMA\bin* directory (typically *C:\Program Files\TMA\bin*), then make sure you define the correct path to the TML executable on your system.
  On Windows 95 and 98 this is typically done with the `set path` command in the *autoexec.bat* file.
  On Windows NT 4.0 and 2000 this is typically done with the *path* string in the *Environment* tab of the *System Properties* window.
- TML versions S0003/01000 and lower operated completely independent from TMA. From version S0003/01100 onwards, TML uses the *TMA comms handler* for its communication handling. This means that when TML is started from the command line, the TMA comms handler is started as well.

11.2 Starting TML from the command line

The following table lists and explains the different TML command line options:

Command option	Description
`tml`	Displays the TML command line help (refer to Section 11.1 - Displaying the TML command line help).
`-s`	Specifies the initial download speed. This is the speed the download begins with. Possible values are 24, 48, 96, 192, 384, 576 and 1152, which is respectively 2400, 4800, 9600, 19200, 38400, 57600 and 115200 bps. If you do not specify the initial download speed, 9600 bps is taken by default.
`-m`	Specifies the maximum download speed. The download begins at the initial speed, but during handshaking the maximum download speed is negotiated. In case you experience a lot of retransmissions, try lowering the maximum download speed. Possible values are 24, 48, 96, 192, 384, 576 and 1152, which is respectively 2400, 4800, 9600, 19200, 38400, 57600 and 115200 bps. If you do not specify the initial download speed, 115200 bps is taken by default.
`-c`	Specifies the COM port through which your computer is connected to the Telindus device. Possible values are 1, 2, 3 and 4, which is respectively COM1, COM2, COM3 and COM4. If you do not specify the COM port, COM1 is taken by default.
`-u` `-x`	User address and extra address. These options are reserved for test purposes.
`-a`	Specifies the absolute address of the Telindus device to which the software has to be downloaded. This address has to be entered in hexadecimal format and has to be 2 bytes long. Example: Suppose you want to download software to a Telindus device with absolute address 111. The hexadecimal value of 111 is 6F. Because the absolute address has to be 2 bytes long, you also have to add 2 zeroes. ⇒ Specify the option `-a006F`.
`-r`	Specifies the relative address of the Telindus device to which the software has to be downloaded. This address has to be entered in hexadecimal format and has to be 2 bytes long.
`-l`	Specifies the IP address of the Telindus device to which the software has to be downloaded.

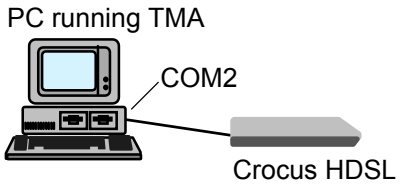
Continued on next page

Starting TML from the command line (continued)

Command option	Description
-p	This option applies on the Aster 4 modem only. It specifies the password as configured in the Aster 4 modem.
-f	Specifies the filename and destination of the file to download. The syntax is as follows: -f<filename>@<destination>?<password>, where • -f is the filename option. • <filename> is the name of the file to download. • @ is the filename / destination separator. • <destination> is the destination of the file. Possible destinations are: – <filename> in case you want to download a file to the file system of a Telindus device. – CONTROL in case you want to download software to the non-active flash memory bank of a Telindus device. – CONTROL1 in case you want to download software to the flash memory bank 1 of a Telindus device. – CONTROL2 in case you want to download software to the flash memory bank 2 of a Telindus device. – DSP in case you want to download DSP software to the flash memory bank of an Aster modem. • ? is the password separator. • <password> is the (optional) password as configured in the Telindus device (except for Aster 4 Flash → use the -p option instead).
-t	Specifies the telephone number for remote maintenance.
-v	Displays graphical information (verbose mode). When you specify this option, a window shows you the download progress.
-w	Specifies the window size. TML sends a number of frames to the Telindus device. Then TML has to receive an acknowledgement from the device before it sends the following frames. The window size sets is the number of frames which TML may send before it has to receive an acknowledgement from the device. Possible values are from 1 up to 8. If you do not specify the window size, 8 is taken by default.
-b	Forces the Telindus device in loader mode. Telindus devices that have only 1 flash memory bank have to be forced in loader mode before software can be downloaded to such a device. Check the manual of your Telindus device for more information.
-aster4	Specify this option in case you want to download software to an Aster 4 modem running in boot code.

11.3 Starting TML from the command line – examples

Downloading to a local device



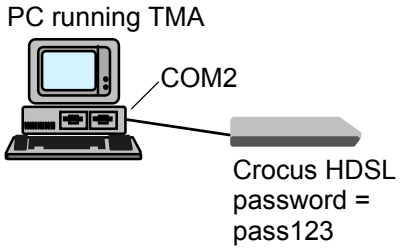
Suppose …

- you want to download new firmware to a local Crocus HDSL modem.
- your computer its COM2 is connected to the auxiliary connector of the local Crocus HDSL modem.
- you want to download the firmware to the flash bank (1 or 2) that is currently non-active.
- you want to see the download progress.

In this case the TML syntax is:

```
tml –v –c2 -fT2114014.00@CONTROL
```

Downloading to a local device with a password



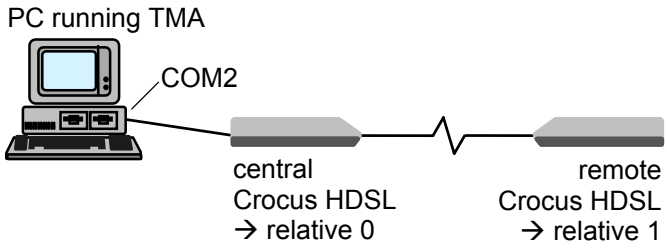
Suppose …

- you want to download new firmware to a local Crocus HDSL modem protected with a password.
- your computer its COM2 is connected to the auxiliary connector of the local Crocus HDSL modem.
- you want to download the firmware to flash bank 2.
- you want to see the download progress.

In this case the TML syntax is:

```
tml –v –c2 -fT2114014.00@CONTROL2?pass123
```

Downloading to a remote device specifying its relative address



Suppose …

- you want to download new firmware to a remote Crocus HDSL modem, specifying its relative address (2 bytes hexadecimal!).
- your computer its COM2 is connected to the auxiliary connector of the local Crocus HDSL modem.
- you want to download the firmware to the flash bank (1 or 2) that is currently non-active.
- you want to see the download progress.

In this case the TML syntax is:

```
tml –v –c2 –r0001 -fT2114014.00@CONTROL
```

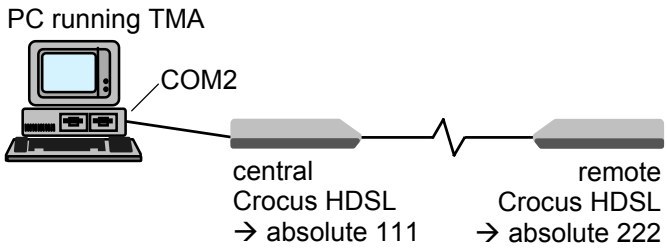
Continued on next page

Starting TML from the command line – examples (continued)

Downloading to a remote device specifying its absolute address

Suppose …

- you want to download new firmware to a remote Crocus HDSL modem, specifying its absolute address (2 bytes hexadecimal!).
- your computer its COM2 is connected to the auxiliary connector of the local Crocus HDSL modem.
- you want to download the firmware to the flash bank (1 or 2) that is currently non-active.
- you want to see the download progress.



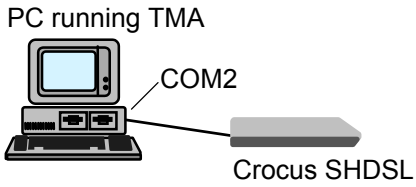
In this case the TML syntax is:

```
tml -v -c2 -a00DE -fT2114014.00@CONTROL
```

Downloading to a local device that only has 1 flash bank

Suppose …

- you want to download new firmware to a local Crocus SHDSL modem. Because the Crocus SHDSL only has 1 flash bank, you have to force the Crocus SHDSL in loader mode using the `-b` option.
- your computer its COM2 is connected to the auxiliary connector of the local Crocus SHDSL modem.
- you want to see the download progress.



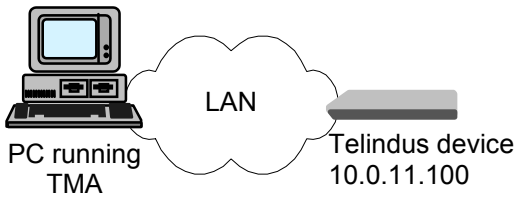
In this case the TML syntax is:

```
tml -v -c2 -b -fT2136007.00@CONTROL
```

Downloading to a device specifying its IP address

Suppose …

- you want to download new firmware to a Telindus device, specifying its IP address.
- your computer its LAN connector is connected to the LAN.
- your Telindus device its LAN connector is connected to the LAN.
- you want to download the firmware to flash bank 1.
- you want to see the download progress.



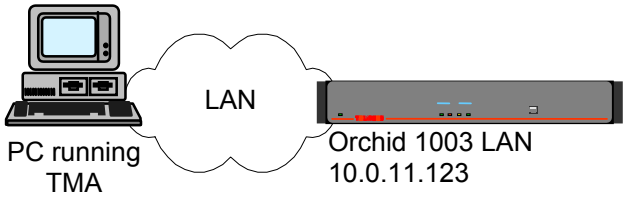
In this case the TML syntax is:

```
tml -v -l10.0.11.100 -fT1234001.00@CONTROL1
```

Continued on next page

Starting TML from the command line – examples (continued)

Downloading a file to the Orchid 1003 LAN specifying its IP address



Suppose …

- you want to download a file to the Orchid 1003 LAN, specifying its IP address.
- your computer its LAN connector is connected to the LAN.
- your Orchid its LAN connector is connected to the LAN.
- you want to download the *models.nms* file to the file system of the Orchid 1003 LAN.
- you want to see the download progress.

In this case the TML syntax is:

```
tml -v -l10.0.11.123 -fmodels.nms@models.nms
```

12. The *Cms2Serv.ini* file

The *Cms2Serv.ini* file contains the communication parameters of TMA. In some cases it may be necessary to change some of these parameters. Therefore, this section lists and explains the different *Cms2Serv.ini* file parameters. It also explains how to add parameters to the *Cms2Serv.ini* file.

The following table gives an overview of this chapter.

12.1 Parts of the *Cms2Serv.ini* file

The *Cms2Serv.ini* file is divided into several parts. Each part and its parameters is explained below. The values behind the parameters are the default values.

The [Cms2] part

The [Cms2] part contains the following parameters:

Parameter	Description
WindowSize=4	TMA sends a number of frames to the device. Then TMA has to receive an acknowledgement from the device before it sends the following frames. WindowSize is the number of frames which TMA may send before it has to receive an acknowledgement from the device.
BufferSize=250	This is the number of bytes in one frame.
Retries=1	When there is no response from the device, TMA will retransmit the current frame a number of times before ending the session. Retries sets the number of retransmissions.
LocalPollDelay=2	The local polling mechanism on itself has nothing to do with TMA. Fact is that TMA is not allowed to send anything during a local polling session. That is way the LocalPollDelay is used. It gives an extra delay, in seconds, on the reply of a device.
ExtTimeOut=10	This is the timeout, in seconds, for opening and closing a session. The timeout is used during *Connect to network* and *Select device* actions. When there is no response from the device after this timeout, the *open* and *close* frames are retransmitted the number of times which is specified in the Retries parameters.
PollPeriod=30	Once you are connected to a device, it is regularly polled to see whether it is still there. PollPeriod sets the poll interval in seconds.
ServerPort=31416	This is the TCP port on which the TMA Comms Handler “listens”.
WaitClose=300	The TMA Comms Handler normally closes when all TMA sessions are closed. However, with WaitClose you can set a timeout (in seconds) for which the TMA Comms Handler will wait before it really closes down. If you restart a new TMA session within this timeout period, the rebooting of the TMA Comms Handler will be accelerated. This because the TMA Comms Handler was not yet closed down completely.

The [Tftp] part

The [Tftp] part contains the following parameters:

Parameter	Description
Rexmt=30	Retransmission timeout, in seconds, for a TFTP connection.
Timeout=60	Total timeout, in seconds, for a TFTP connection. I.e. retransmission continues until Timeout has expired.

Continued on next page

Parts of the Cms2Serv.ini file (continued)

The [Comm] part

The [Comm] part contains the following parameters:

Parameter	Description
Speed=9600	This is the COM port speed in bits per second.
NormTimeOut=8	Normal CMS2 retransmission and reply timeout, in seconds, for a serial connection.

The [LAN] part

The [LAN] part contains the following parameters:

Parameter	Description
NormTimeOut=10	Normal CMS2 retransmission and reply timeout, in seconds, for an IP connection.

12.2 Adding parts to the *Cms2Serv.ini* file

You can set specific communication parameters for each IP address or COM port. The communication parameters in this specific part overrule those in the general part of the *Cms2Serv.ini* file.

Example

Suppose you want to change the following parameters:

- NormTimeOut for IP address 194.7.26.4
- Speed for COM port 2.

Proceed as follows:

<table>
<tr><th>For the part …</th><th>Proceed as follows …</th></tr>
<tr><td>[LAN]</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Copy the [LAN] part, and paste it at the end of the Cms2Serv.ini file.</td></tr>
<tr><td>2</td><td>Rename [LAN] to [LAN_194.7.26.4].</td></tr>
<tr><td>3</td><td>Delete all the parameters except NormTimeOut.</td></tr>
<tr><td>4</td><td>Change the NormTimeOut value from 10 to, for instance, 30.</td></tr>
</table>
</td></tr>
<tr><td>[Comm]</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Copy the [Comm] part, and paste it at the end of the Cms2Serv.ini file.</td></tr>
<tr><td>2</td><td>Rename [Comm] to [Comm_2].</td></tr>
<tr><td>3</td><td>Delete all the parameters except Speed.</td></tr>
<tr><td>4</td><td>Change the Speed value from 9600 to, for instance, 57600.</td></tr>
</table>
</td></tr>
</table>

The added parts are then as follows:

```
[LAN_194.7.26.4]
NormTimeOut=30

[Comm_2]
Speed=57600
```

13. Troubleshooting

This chapter lists some problems you may encounter with a TMA session. It also gives a possible solution to the problem. If this chapter does not help to fix your problem, contact your distributor.

The following table gives an overview of this chapter.

Annex B: TMA error messages gives a quick overview of the most important TMA error messages.

13.1 Failing network connection

The following sections list some problems you may encounter when connecting to a device. The following table gives an overview of this section.

13.1.1 You have problems with a direct connection

You try to establish a direct connection, but the connection fails.

Solution

Check the following:

- Is the cable between the PC running TMA and the device connected at both ends?
- Is it the correct cable?
- Did you select the correct COM port?
- Is the device you are connecting to switched on?

13.1.2 You have problems with a dial-out connection

You try to establish a dial-out connection, but the connection fails.

Solution

Check the following:

- Is the cable between the PC running TMA and the PSTN modem connected at both ends?
- Is it the correct cable?
- Is the PSTN modem connected to the PSTN network?
- Did you select the correct COM port?
- Is the PSTN modem switched on?
- Make sure that the communication parameter settings in the *Cms2Serv.ini* file are adapted for a dial-out connection. Typical values are:
  - Retries=5
  - ExtTimeOut=10.

13.1.3 You have problems with an IP connection

You try to establish an IP connection, but the connection fails.

Solution

Check the following:

- Is the cable between the PC running TMA and the IP network connected at both ends?
- Is it the correct cable?
- Is the cable between the IP network and the Telindus IP device connected at both ends?
- Is it the correct cable?
- Is the Telindus IP device switched on? Try to *ping* it.

13.1.4 You have problems with a proxied IP connection

You try to establish a proxied IP connection, but the connection fails.

Solution

Check the following:

- Is the cable between the PC running TMA and the IP network connected at both ends?
- Is it the correct cable?
- Is the cable between the IP network and the management concentrator connected at both ends?
- Is it the correct cable?
- Is the management concentrator switched on? Try to *ping* it.
- Is there a physical connection between the management concentrator and the non-IP device?
- Is the management concentrator able to poll the non-IP device (check the status of the non-IP device in the object table).

13.1.5 You get a *Wrong password* message

You try to connect to a device, but you get the following error message:

A password is configured in the device you are trying to connect to. You get this message because you entered no password or an invalid password.

13.2 Failing device selection

The following sections list some problems you may encounter when selecting a device. The following table gives an overview of this section.

13.2.1 You have problems selecting a remote device

You have established a direct connection to a local device. Then you try to select a remote device on the network, but the connection fails.

Solution

Check the following:

- Is there a physical connection between the local and the remote device? I.e. is the line connected?
- Is the remote device switched on?
- Is there a data link between the local and the remote device? I.e. is data transfer possible?
- Did you enter the correct address?
- Did you supply the correct device password?
- Try to enlarge the value of the ExtTimeOut communication parameter in the *Cms2Serv.ini* file.

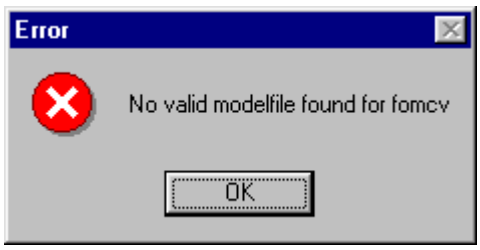
13.2.2 You get a *Wrong password* message

You try to select a device on the network, but you get the following error message:

A password is configured in the device you are trying to select. You get this message because you entered no password or an invalid password.

13.2.3 You get a *No valid model file found* error message

You try to select a device on the network, but you get the following error message:



This means that the model file which corresponds with the device you try to select is not present on your computer.

Example

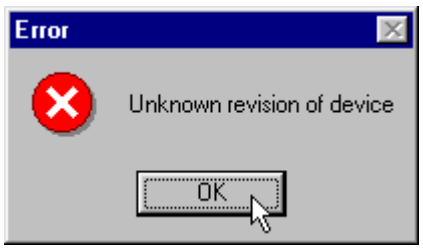
In case you want to select a Crocus SDSL Table Top modem, the *sdsltt.mod* file has to be present in the *C:\Program Files\TMA\model* directory on your computer. The *models.nms* file situated in the same directory should contain a reference to this model file.

Solution

Go to the Telindus web site at http://www.telindusproducts.com/tma, download the latest version of the TMA model files and (re)install them.

13.2.4 You get an *Unknown revision of device* error message

You try to select a device on the network, but you get the following error message:



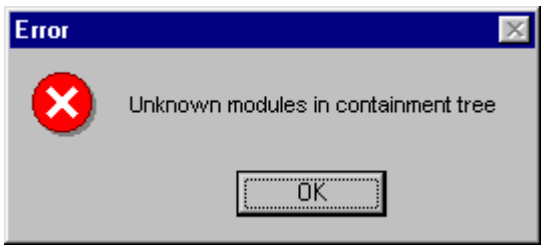
This means that the revision of the firmware which is stored in the active flash bank of the device you try to select, does not correspond with the model file of that device. I.e. the model file has become obsolete and you need a new model file for the device.

Solution

Go to the Telindus web site at http://www.telindusproducts.com/tma, download the latest version of the TMA model files and (re)install them.

13.2.5 You get an *Unknown modules in containment tree* error message

You try to select a device on the network, but you get the following error message:



This is somewhat similar to the previous error message. I.e., it means that the revision of the firmware which is stored in the active flash bank of the device you try to select, does not correspond with the model file of that device. I.e. the model file has become obsolete and you need a new model file for the device.

Solution

Go to the Telindus web site at http://www.telindusproducts.com/tma, download the latest version of the TMA model files and (re)install them.

13.2.6 You get an *Unknown type of device* error message

You try to select a device on the network, but you get the following error message:

This means that the *models.nms* file situated in the *C:\Program Files\TMA\model* directory on your computer does not contain a reference to the model files of the device.

Solution

Go to the Telindus web site at http://www.telindusproducts.com/tma, download the latest version of the TMA model files and (re)install them.

13.2.7 You get an *Unknown object* error message

You try to select a device that is connected to the management concentrator. I.e. you try to connect to the device through the management concentrator, but you get the following error message:

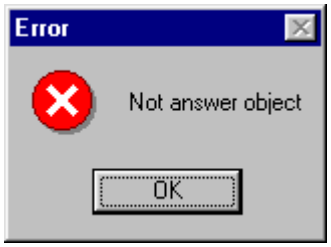
This means that the device is not configured in the object table of the management concentrator.

Solution

Configure the device in the object table of the management concentrator. For more information refer to Section 3.4 - Proxied IP connection to a non-IP device, Paragraph “Basic Orchid settings to enable a proxied IP connection”. For detailed information on configuring the object table, refer to the manual of the management concentrator.

13.2.8 You get a *Not answer object* error message

You try to select a device which is connected to the management concentrator and which is configured in the object table of the management concentrator, but you get the following error message:



This means that the device does not respond on the polls of the management concentrator. In other words, the connection between the Orchid and the device is down (check the status of the device in the object table).

Solution

Check the following:

- Is the physical connection between the management concentrator and the device OK?
  - In case of a Table Top device, is its NMS port connected to an asynchronous port of the Orchid?
  - In case of a Card Version device, is it inserted well in the CN4 card nest? Is the high speed NMS bus of the CN4 card nest connected to the high speed NMS bus of the Orchid?
- Do you use the correct cables to connect the device to the management concentrator?
- Is the device switched on?
- Try to reboot the device.

13.3 Failing software download

You get a *NACK received* error message

You have a direct connection to a device and a TMA session is running on that device. Then you try to download software to the device, but you get the following error message:

Solution

Check the following:

- Make sure the connection between the PC running TMA and the device is OK.
- Did you select the correct firmware? I.e. is the firmware you selected the firmware intended for that device?
- Do you have write access to the device?
- If you have read-only access, did you enter the write access password?
- Did you enter the correct password?
- Did you select the correct initial speed? Make sure it is set to 9600 bps.
- What maximum speed did you select? Try reducing this speed.
- What window size did you select? Try reducing the window size.

13.4 Other possible problems

The following sections list some more possible problems you may encounter. The following table gives an overview of this section.

13.4.1 You get a *Server not available* error message

At a certain point you get the following error message:

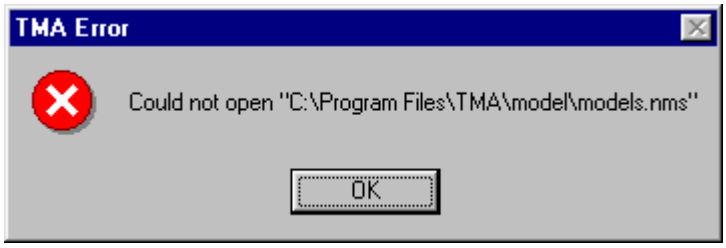
This indicates that the TMA application is unable to communicate with the *TMA comms handler*.

Solution

- Check whether the *TMA comms handler* button is present on the taskbar:
  - If it is not, it means that the *TMA comms handler* has been closed at some point as a result of which the TMA application can no longer communicate with the comms handler.
    Close the TMA application and then restart it.
  - If it is, close the TMA application. Make sure the *TMA comms handler* also closes. Restart TMA.
- If the problem persists, re-install and restart TMA.
- Ultimately, go to the Telindus web site at http://www.telindusproducts.com/tma, download the latest TMA version and install it.

13.4.2 You are unable to start TMA

You want to start TMA, but you get the following or other to the model files related error messages:



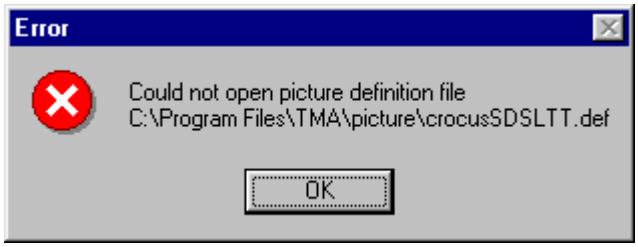
This means that the *models.nms* file is not present on your computer.

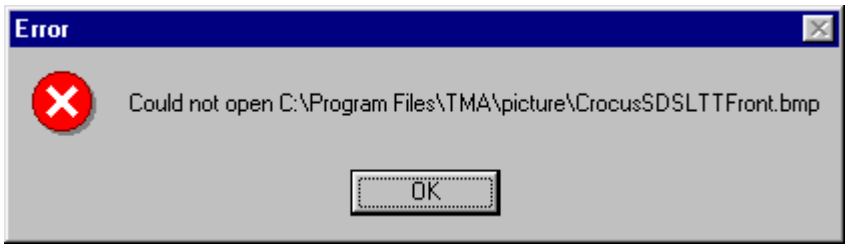
Solution

Go to the Telindus web site at http://www.telindusproducts.com/tma, download the latest version of the TMA model files and (re)install them.

13.4.3 You have problems with the sub-system picture

You have a TMA session running on a device. Then you try to open the sub-system picture, but you get one of the following error messages:





This means that either that:

- the definition file *(*.def)* of the device file is not present on you computer. Normally, this file is located in the *C:\Program Files\TMA\picture* directory.

or

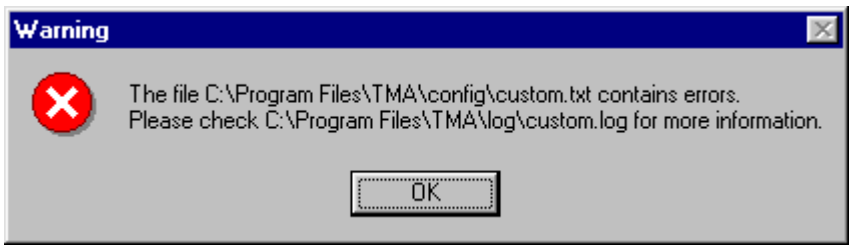
- the bitmap files *(*.bmp)* of the device are not present on you computer. Normally, these files are located in the *C:\Program Files\TMA\picture* directory.

Solution

Go to the Telindus web site at http://www.telindusproducts.com/tma, download the latest version of the TMA model files and (re)install them.

13.4.4 You get a *custom.txt* file error message

You start TMA and get the following error message:



This means that the *custom.txt* file you created contains syntax errors.

Solution

Read the *custom.log* file to determine the nature of the error. Then fix the error in the *custom.txt* file and start TMA again.

For more information on the *custom.txt* file and the *custom.log* file, refer to Chapter 8 - User defining values using the custom.txt file.

Annexes

Annex A: abbreviations

The following table gives a list of abbreviations and their description.

Abbreviation	Description
BMP	BitMaP
bps	bits per second
CN4	Card Nest 4
CTRL	ConTRoL
CV	Card Version
CV-A	Card Version modem A
CV-B	Card Version modem B
DCE	Data Communications Equipment
DTE	Data Terminal Equipment
if	interface
IP	Internet Protocol
LAN	Local Area Network
MIB	Management Information Base
MMI	Man-Machine Interface
NMS	Network Management System
Rx	Receive
SNMP	Simple Network Management Protocol
TFTP	Trivial File Transfer Protocol
TMA	Telindus Maintenance Application
TML	Telindus Memory Loader
TT	Table Top
Tx	Transmit
WAN	Wide Area Network

Annex B: TMA error messages

The following paragraphs give an overview of the error messages you may encounter in TMA. They also try to give a (general) solution.

TMA start errors

The following table lists the error messages you may encounter when starting TMA.

Error message	Cause / Solution
• Could not find ini file • Could not open *Tma_Path*/model/model.nms • *Model_File_Name* is not a valid model file • Model files not installed correctly • No valid model file found for *Device_Name* • Please install the TMA model files first • TMA model files not installed • *Tma_Path* not found. Please reinstall TMA. • Unknown modules in containment tree • Unknown type of device	**Cause** These error messages indicate that something has gone wrong with the installation of TMA, that some of the TMA files are not present on your system or that the model files are not present or incorrect. **Solution** Go to the Telindus web site at http://www.telindusproducts.com/tma, download the latest version of the TMA engine and/or the model files and (re)install.
• Could not read the user configuration file • The configuration file has a bad entry for this user	**Cause** These error messages only apply on TMA CLI and TMA for HP OpenView. They indicate that there is no user configuration file present on your system, or a bad entry is made in it. **Solution** Use the application *TmaUserConf.exe* to create or correct the user configuration file. For more information refer to the manuals of TMA CLI and TMA for HP OpenView.
• The *custom.txt* file contains errors	**Cause** This means that the *custom.txt* file you created contains syntax errors. **Solution** Read the *custom.log* file to determine the nature of the error. Then fix the error in the *custom.txt* file and start TMA again. For more information on the *custom.txt* file and the *custom.log* file, refer to Chapter 8 - User defining values using the custom.txt file.

TMA CLI command line errors

The following error messages only apply on TMA CLI. They list the possible error messages when starting TMA CLI.

Error message	Cause / Solution
• Invalid argument after IP address • Invalid *Argument_Type* argument • Missing exit port or hardware address • Missing NMS address argument • Unexpected *Argument_Type* argument • Unknown argument • Unknown alias	**Cause** These error messages indicate that you entered an incorrect argument value after the *TmaCli* command or that you mistyped it. **Solution** Carefully recheck the arguments you typed after the *TmaCli* command. For a quick help on the possible options and arguments type `TmaCli -h`.

Alias errors

The following table lists the error messages concerning aliases.

Error message	Cause / Solution
• Alias not found or entry corrupt • Already an alias with that name • Invalid alias	**Cause** These error messages indicate that you wanted to use an alias that does not exist, or that you tried to create an alias that already existed. **Solution** Carefully check your aliases. Refer to Section 6.2.1 - The Connect menu, Paragraph b) Creating aliases.

Connect errors

The following table lists the error messages you may encounter when connecting to a device.

Error message	Cause / Solution
• Bad hardware address • Bad HS address • Bad IP address • Bad MAC address • Bad NMS address • Bad subnet mask • Invalid or missing IP address • Missing NMS address • Missing telephone number • Not a valid application address • Please choose serial or IP • Please specify an application address or choose Cancel	**Cause** These error messages indicate that you made an incorrect entry in the *Connect… – Device…* window or the *Connect… – Select device…* window. **Solution** Carefully recheck the entries you made in these windows. Refer to Section 4.2.2 - The Connect… – Device… window selections and Section 4.3.3 - The Connect… – Select device… window selections.
• Unknown error. Please reconnect. • The connection to the device was lost. Please reconnect. • The connection to the network was lost. Please reconnect.	**Cause** These error messages indicate that at a certain moment the connection towards the device or network was lost. **Solution** Try to reconnect by using the *Reconnect* button:  If this does not work, close and restart TMA. Then try to reconnect. If you still have problems, refer to Section 13.1 - Failing network connection and Section 13.2 - Failing device selection.
• Session open by someone else	**Cause** This error message indicates that the maximum number of management sessions (using TMA, TMA CLI, ATWIN, CLI, Web Interface, etc.) has been reached on the device. **Solution** Close one or more management sessions.

Edit errors

The following table lists some error messages you may encounter when editing values.

Error message	Cause / Solution
• Invalid IP Address • Invalid number of Days • Invalid number of hours • Invalid number of minutes • Invalid number of seconds • Invalid value • Value is out of range • Attribute is read-only	**Cause** These error messages indicate that the value you tried to enter is incorrect or out of range, or you tried to change a read-only attribute. **Solution** Carefully check the value you entered.

Export errors

The following table lists some error messages you may encounter when exporting to a file.

Error message	Cause / Solution
• Export failed. Could not create the export file. • Nothing to export • Permission denied • The specified file could not be opened	**Cause** These messages indicate that something went wrong during the export process, you did not select any attributes for export, you only have read-only access to the device or that the file you want to export to is read-only. **Solution** Retry to export the file. Make sure you make a selection. Make sure you have full access to the device. Make sure you have write access to the file you want to export to.

Import errors

The following table lists some error messages you may encounter when importing a file.

Error message	Cause / Solution
• The file *FileName* could not be opened. You might check its permissions. Or the file might be in use by another application. • The file *FileName* is an exported cms file but contains a configuration for a different device or revision than the current one. • The file *FileName* is not an exported cms file. It might be corrupt. • The import succeeded. However, some modules were not imported since no model information for them was available.	**Cause** These messages indicate that you have no access to the file, you tried to import a file of another device or another firmware revision, the file is corrupt. **Solution** Make sure you have full access to the file. Make sure it is a file for the current device. If you are unable to import the file, export a new file and try to import this new file.

Download errors

The following table lists some error messages you may encounter when downloading firmware to a device.

Error message	Cause / Solution
• The local filename may not contain the '@' character. • The remote filename may not contain the '?' character. • The TML command line is too long. There is a limit of 126 characters.	**Cause** These messages indicate that you used characters in the filename that are not allowed, or that you selected to much files for download. **Solution** Recheck the filenames. Select fewer files. Also refer to Section 10.3 - Remarks on downloading files to the .

Sub-system picture errors

The following table lists some error messages you may encounter when opening the sub-system picture.

Error message	Cause / Solution
• Could not open *BitmapFileName* • Could not open picture definition file *DefFileName*	**Cause** These messages indicate that some files needed for the sub-system picture are not present on your system. **Solution** Go to the Telindus web site at http://www.telindusproducts.com/tma, download the latest version of the model files and reinstall them. Also refer to Section 13.4.3 - You have problems with the sub-system picture.
• No picture available	**Cause** There is no sub-system picture for this device.
• Error in the user file	**Cause** This means that the **.usr* file you created contains syntax errors. **Solution** Read the *picture.log* file to determine the nature of the error. Then fix the error in the **.usr* file and start TMA again. For more information on the **.usr* file and the *picture.log* file, refer to Chapter 9 - The interactive sub-system picture.

NACK messages

The following table lists some NACK messages you may receive from a device.

Error message	Cause / Solution
• Unknown object • Not answer object	**Cause** You tried to connect to a device through the management concentrator, but the device is not configured in the object table or the Orchid can not reach the device. **Solution** Define the device in the Orchid its object table. Check the connection between the Orchid and the device. Also refer to Section 13.2.7 - You get an Unknown object error message and Section 13.2.8 - You get a Not answer object error message.
• No response	**Cause** You tried to connect to a device, but you get no response. **Solution** Check the connection between your computer and the device. Also refer to Section 13.1 - Failing network connection and Section 13.2 - Failing device selection.
• Wrong password	**Cause** This message indicates that a password is configured in the device, but that you entered the wrong password when connecting to the device. **Solution** Enter the correct password. For more information on what to do when you forgot the password, refer to the manual of the device itself. Also refer to Section 13.1.5 - You get a Wrong password message and Section 13.2.2 - You get a Wrong password message.

Internal communication errors

The following table lists some internal communication error messages.

Error message	Cause / Solution
• Client not available • Internal communication problem • Internal communication timeout • Server not available • Unknown service	**Cause** This indicates that the TMA application is unable to communicate with the *TMA comms handler*. **Solution** Close TMA and the *TMA comms handler* and restart TMA. If this does not help, try to re-install TMA. Also refer to Section 13.4.1 - You get a Server not available error message.

Annex C: product information

The following table displays the product information of TMA related products.

Sales code	Product name	Description
156986	TMA_HP/OV WINDOWS/SOLARIS/HP-UX DEMO VER.	Demo version for SUN Solaris, Windows NT and HP-UX. max 8 IP Adresses supported.
156689	TMA_HP/OV WINDOWS NT ENTRY LEVEL VER.	Telindus Management Application for HP Openview on Windows NT. SNMP. Up to 250 IP Adresses supported. 3-years Maintenance contract for TMA_HP/OV mandatory.
156690	TMA_HP/OV WINDOWS NT UNLIMITED VER.	Telindus Management Application for HP Openview on Windows NT. SNMP. No limit on IP Adresses supported. 3-years Maintenance contract for TMA_HP/OV mandatory.
156685	TMA_HP/OV SUN SOLARIS ENTRY LEVEL VER.	Telindus Management Application for HP Openview on SUN Solaris. SNMP. Up to 250 IP Adresses supported. 3-years Maintenance contract for TMA_HP/OV mandatory.
156686	TMA_HP/OV SUN SOLARIS UNLIMITED VER.	Telindus Management Application for HP Openview on SUN Solaris. SNMP. No limit on IP Adresses supported. 3-years Maintenance contract for TMA_HP/OV mandatory.
162845	TMA_HP/OV HP-UX ENTRY LEVEL VER.	Telindus Management Application for HP Openview on HP-UX. SNMP. Up to 250 IP Adresses supported. 3-years Maintenance contract for TMA_HP/OV mandatory.
162842	TMA_HP/OV HP-UX UNLIMITED VER.	Telindus Management Application for HP Openview on HP-UX. SNMP. No limit on IP Adresses supported. 3-years Maintenance contract for TMA_HP/OV mandatory.
156688	TMA_CLI WINDOWS NT	Command Line Interface application for WINDOWS NT. 3-years Maintenance contract for TMA_HP/OV mandatory.
156687	TMA_CLI SUN SOLARIS	Command Line Interface application for SUN SOLARIS. 3-years Maintenance contract for TMA_HP/OV mandatory.

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Annex C: product information (continued)

The following table displays the product information on the maintenance contracts for TMA related products.

Sales code	Product name	Description
158673	TMA_HP/OV ENTRY LEVEL MAINT. CONTRACT 3Y	Yearly maintenance contract for TMA_HP/OV Entry Level Versions with a minimum duration of 3 years.
158674	TMA_HP/OV UNLIMITED MAINT. CONTRACT 3Y	Yearly maintenance contract for TMA_HP/OV Unlimited Versions with a minimum duration of 3 years.
163135	TMA_CLI MAINT. CONTRACT 3Y	Yearly maintenance contract for TMA_CLI with a minimum duration of 3 years.
163131	TMA_HP/OV ENTRY LEVEL + TMA_CLI MAINT. CONTRACT 3Y	Yearly maintenance contract for TMA_HP/OV Entry Level Versions combined with TMA_CLI with a minimum duration of 3 years.
163133	TMA_HP/OV UNLIMITED + TMA_CLI MAINT. CONTRACT 3Y	Yearly maintenance contract for TMA_HP/OV Unlimited Versions combined with TMA_CLI with a minimum duration of 3 years.

The following table displays the product information of the TMA applications manuals.

Sales code	Product name	Description
169440	MANUAL TMA (E)	Manuals are delivered with the product in electronic format (CD-ROM) for environmental reasons. If however a hardcopy (print-out) of the manual is required, this sales item can be used. Between brackets an indication of the language.
169441	MANUAL TMA FOR HP-OPENVIEW (E)	Manuals are delivered with the product in electronic format (CD-ROM) for environmental reasons. If however a hardcopy (print-out) of the manual is required, this sales item can be used. Between brackets an indication of the language.
169442	MANUAL TMA-CLI (E)	Manuals are delivered with the product in electronic format (CD-ROM) for environmental reasons. If however a hardcopy (print-out) of the manual is required, this sales item can be used. Between brackets an indication of the language.