Contents

1. About this manual .................................................................11
  1.1. Copyrights ...........................................................................11
  1.2. Trademarks ........................................................................11
  1.3. Guarantee ..........................................................................11
  1.4. General .............................................................................11
  1.5. Use of symbols ...................................................................12
  1.6. Abbreviations .....................................................................12
  1.7. Related documents ............................................................12
  1.8. Document revisions ...........................................................13

2. Introduction to SMS 510 ......................................................15
  2.1. General .............................................................................15
  2.2. Documentation guidance ...................................................15
    2.2.1. Documentation in general ............................................15
    2.2.2. Navigating in the SMS 510 User’s Guide .....................15
    2.2.3. SMS 510 User’s Guide contents ...................................15
    2.2.4. Separate documentation .............................................16
  2.3. Operational features ..........................................................16
  2.4. User interface ....................................................................17
  2.5. Base system .......................................................................17
  2.6. Applications .......................................................................17
  2.7. SMS 510 functions and tools ..............................................17
    2.7.1. Project Structure Navigator .......................................17
    2.7.2. Project handling .......................................................17
    2.7.3. System configuration ...............................................18
    2.7.4. Monitoring functions ...............................................19
    2.7.5. Relay Setting tools ..................................................20
    2.7.6. Disturbance recording tools ......................................21
    2.7.7. Disturbance evaluation tools ....................................22
    2.7.8. Additional tools .......................................................22

3. Quick start example ..............................................................23
  3.1. Inserting objects, to observe ............................................23
  3.2. Summary of steps .............................................................23
  3.3. Projects .............................................................................24
  3.4. Views ................................................................................24
  3.5. Object types .....................................................................24
  3.6. Object type groups ..........................................................24
  3.7. Starting SMS 510 ..............................................................25
  3.8. Exiting SMS 510 ...............................................................25
3.9. Insertion of objects ................................................................. 25
3.10. Moving objects in the project ................................................... 31
3.11. System configuration ............................................................. 32
3.12. Configuration of device objects ................................................. 33
   3.12.1. General ................................................................. 33
   3.12.2. Relay configuration procedure ....................................... 33
      3.12.2.1. RED 500 relay object types .......................... 34
      3.12.2.2. SPACOM relay object types ......................... 36
      3.12.2.3. REx 216/316 relay object types .................... 38
      3.12.2.4. REB 500 relay object type ......................... 39
      3.12.2.5. REx 5xx relay object types ......................... 39
   3.12.3. Summary ............................................................... 40
3.13. Using user views ..................................................................... 40
3.14. Launching object tools ............................................................ 42
   3.14.1. Launching tools for RED 500 ...................................... 43
   3.14.2. Launching tools for SPACOM ....................................... 43
   3.14.3. Launching tools for REx 216/316 .................................. 43
   3.14.4. Launching tools for REB 500 ...................................... 43
   3.14.5. Launching tools for REx 5xx ...................................... 44
4. Project Structure Navigator .................................................... 45
   4.1. General ........................................................................ 45
   4.2. Projects ........................................................................ 45
      4.2.1. Master Design View ........................................... 45
      4.2.2. User views ........................................................ 45
   4.3. Object types ...................................................................... 46
   4.4. Object type groups ............................................................ 46
   4.5. User interface ................................................................. 46
   4.6. Entering the Project Structure Navigator ................................ 48
   4.7. File menu .......................................................................... 49
      4.7.1. File Open .............................................................. 49
      4.7.2. File Close .............................................................. 50
      4.7.3. Organize Projects ................................................... 50
      4.7.4. File History List ..................................................... 50
      4.7.5. Exit ........................................................................ 50
   4.8. Edit menu .......................................................................... 50
      4.8.1. Insert Object .......................................................... 51
      4.8.2. Delete Object ........................................................ 53
      4.8.3. Object Properties .................................................... 53
         4.8.3.1. General Object Attributes dialog ..................... 54
         4.8.3.2. Moving objects ................................................ 55
   4.9. Views menu ....................................................................... 55
      4.9.1. Create View ........................................................... 56
User’s Guide

4.9.2. Delete View .................................................................57
4.9.3. View Properties ..........................................................57
4.9.4. View List ..................................................................58
4.10. System Tools menu .......................................................58
4.10.1. Customize .................................................................59
4.11. Help menu .................................................................59
4.11.1. About Project Structure Navigator .............................59
4.11.2. About SMS 510 .........................................................59

5. Project Export/Import Tool ..............................................61
5.1. General ........................................................................61
5.2. Starting the Project Export/Import Tool .......................61
5.3. Features ......................................................................62
5.3.1. Updating the project list .............................................62
5.3.2. Project Storage ..........................................................63
5.3.3. Copying projects between network computers ..........63
5.3.4. Choosing storage location for temporary projects ......65
5.3.5. Exporting projects .....................................................65
5.3.6. Importing projects .....................................................66
5.3.7. Project properties .......................................................67
5.3.8. Deleting a project .......................................................67
5.3.9. Duplicating a project ................................................68
5.3.10. Creating a new project ............................................68
5.3.11. Set As Local ............................................................68
5.3.12. Errors accessing remote disk resources ..................69

6. Plant Structure Settings ..................................................71
6.1. General ........................................................................71
6.2. Starting the Plant Structure Settings Tool ....................71
6.3. Attributes of Plant Structures ........................................71
6.3.1. Level Id ..................................................................72
6.3.2. Level Description .....................................................72
6.3.3. Field Length .............................................................72

7. Plant Structure object types ............................................73
7.1. Overview ....................................................................73
7.2. General ......................................................................73
7.3. Field Length ...............................................................73
7.4. Station ........................................................................73
7.5. Bay ............................................................................74

8. User Structure object types ............................................77
8.1. Overview ....................................................................77
8.2. General ......................................................................77
8.2.1. Inserting Level objects .............................................77
User's Guide

9. Gateway object types (COM 610) ............................................ 79
   9.1. General ............................................................................ 79
   9.2. Supported protocols ...................................................... 79
   9.3. Insertion .......................................................................... 80
   9.4. Communication setting .................................................... 81
      9.4.1. Communication settings of COM 610 object ............. 81
      9.4.2. Communication settings of device object ................. 81
   9.5. Using COM 610 object ...................................................... 82

10. System Self Supervision .................................................. 83
   10.1. General ......................................................................... 83
   10.2. System Self Supervision activation ................................ 83
   10.3. Objects supervised by System Self Supervision ............ 83
      10.3.1. System Self Supervision object presentation .......... 84
      10.3.2. System Self Supervision object maintenance .......... 84
   10.4. Enabling System Self Supervision ................................ 84
   10.5. Disabling System Self Supervision ............................... 85
   10.6. Opening the System Self Supervision view .................... 85
      10.6.1. Exiting the System Self Supervision view ............... 86
   10.7. SSS object status representation ................................. 86
      10.7.1. Status information .................................................. 86
      10.7.2. Status icons ......................................................... 87
         10.7.2.1. Icon OK ......................................................... 87
         10.7.2.2. Icon Not OK .................................................. 87
         10.7.2.3. Icon Dimmed .................................................. 88
         10.7.2.4. Icon NoConf .................................................. 88
         10.7.2.5. Icon Stop ....................................................... 89
         10.7.2.6. Icon No ........................................................ 89
      10.7.3. Application State supervision ................................ 89
      10.7.4. Line Communication supervision ........................... 90
      10.7.5. Operating System Events supervision ..................... 91

11. Supervision Log Viewer .................................................... 93
   11.1. Overview ....................................................................... 93
      11.1.1. Supervision Log Viewer users ................................ 93
   11.2. Types of log events ....................................................... 93
      11.2.1. Glossary ............................................................... 94
      11.2.2. Common events ...................................................... 94
      11.2.3. Operating System events ........................................ 95
         11.2.3.1. System events ................................................ 95
         11.2.3.2. Security events .............................................. 97
         11.2.3.3. Application events ........................................ 97
   11.3. Starting Supervision Log Viewer ................................... 98
User’s Guide

11.4. Toolbar and menus .........................................................98
  11.4.1. Log menu ...............................................................99
  11.4.2. View menu ............................................................100
  11.4.3. Filter menu ............................................................102
  11.4.4. Options menu ........................................................105
  11.4.5. Help Menu ............................................................108

12. Remote connections .............................................................109
  12.1. General .................................................................109
  12.2. Features .................................................................109
    12.2.1. LAN and Remote/RAS ........................................109
      12.2.1.1. Application areas .........................................109
      12.2.1.2. Supported relays and tools .........................109
    12.2.2. Dial-Up (SPA) ..................................................110
      12.2.2.1. Application areas .........................................110
  12.3. Activating a remote connection ......................................110
    12.3.1. Remote/RAS activation .........................................111
    12.3.2. Connection Status ............................................111
    12.3.3. Remote Task Monitoring ......................................111
  12.4. Closing a remote connection .........................................112
  12.5. Initial steps before adding a remote connection ..............113
    12.5.1. Passwords and access using LAN and Remote/RAS ....113
  12.6. Preparing remote connections .......................................113
    12.6.1. Adding an item to the Remote Connection List ..........114
    12.6.2. Modifying an item in the Remote Connection List ....114
    12.6.3. Deleting an item in the Remote Connection List .......114
    12.6.4. Configuring properties for a Remote Connection List ...114
      12.6.4.1. Configuring a LAN type of connection ............114
      12.6.4.2. Two LAN setting examples ............................116
      12.6.4.3. Checking connection ....................................117
      12.6.4.4. Configuring a remote type of connection (RAS) ....117
      12.6.4.5. Remote/RAS setting example .......................119
      12.6.4.6. Advanced settings ......................................119
  12.6.5. Connecting to SYS 500 or COM 500 ..........................120
    12.6.5.1. Connecting to SYS 500 or COM 500 systems that have LIB 5x0 installed .....................120
    12.6.5.2. Connecting to SYS 500 or COM 500 systems that have no LIB 5x0 installed ................121
    12.6.5.3. Remote Connection Properties when connecting to SYS 500/LIB 5x0 or COM 500/LIB 5x0 systems over LAN or RAS ........122
  12.6.6. Configuring Dial-Up (SPA) type of connection ............122
13. **Time/Date Settings, Time Synchronization and General Settings** ................................................................. 127
   13.1. **Time/Date Settings** ................................................................. 127
   13.1.1. **Starting Time/Date Settings** ..................................................... 127
   13.1.2. **Menus** .................................................................................. 127
       13.1.2.1. **Settings menu** .......................................................... 128
       13.1.2.2. **Help menu** ............................................................... 128
   13.2. **Time synchronization** ............................................................... 128
       13.2.1. **Starting/Stopping Time Synchronization (SPA)** ................. 128
   13.3. **General Settings** .................................................................... 129
       13.3.1. **Automatic Monitor Logoff** .................................................. 129
       13.3.2. **System Self Supervision** ..................................................... 130
       13.3.3. **MicroSCADA user settings for remote connections** .......... 130

14. **User Management** ........................................................................... 133
   14.1. **General** ................................................................................ 133
   14.2. **Starting User Management** ..................................................... 133
   14.3. **User Manager main switch** ...................................................... 133
       14.3.1. **User language** .................................................................. 134
       14.3.2. **User interface** ................................................................ 134
   14.4. **File menu** .............................................................................. 135
       14.4.1. **Save** ............................................................................. 135
       14.4.2. **Print** ............................................................................ 135
       14.4.3. **Print Setup** ................................................................... 136
       14.4.4. **Exit** .............................................................................. 136
   14.5. **View menu** .............................................................................. 136
   14.6. **Tools menu** ............................................................................ 136
       14.6.1. **Add User** ....................................................................... 136
       14.6.2. **Remove User** ................................................................ 137
       14.6.3. **Add Group** .................................................................... 137
       14.6.4. **Remove Group** ............................................................... 138
       14.6.5. **Change Password** .......................................................... 138
       14.6.6. **Define View Monitors** ...................................................... 138
   14.7. **Help menu** ............................................................................. 138
       14.7.1. **Help** ............................................................................... 138
       14.7.2. **About User Management** ..................................................... 138

15. **Task scheduling** ................................................................................. 139
   15.1. **General** ................................................................................ 139
   15.2. **Scheduler operating principles** .................................................. 139
   15.3. **Activation of scheduled tasks** ................................................... 139
   15.4. **Stopping of Scheduler tasks** ..................................................... 140
   15.5. **Opening the Scheduler for task preparation** ............................ 140
User’s Guide

15.6. Task preparation for task scheduling ........................................ 142
  15.6.1. Adding tasks .......................................................... 142
    15.6.1.1. Adding a predefined tool ............................... 145
  15.6.2. Adding a user defined tool ....................................... 146
    15.6.2.1. Browsing for user defined tools ....................... 146
  15.6.3. The finished example ............................................. 149
15.7. Uploading of disturbance recordings using the Scheduler ........... 149
  15.7.1. Connection methods .............................................. 149
  15.7.2. Connection type dependent upload ........................... 150
15.8. Running DR-Collector Tool over LAN/Remote ............................. 150

16. Task monitoring .................................................................. 151
  16.1. General ..................................................................... 151
  16.2. Task status colors .................................................... 151
    16.2.1. Green color ....................................................... 151
    16.2.2. Yellow color ..................................................... 151
    16.2.3. Red color ......................................................... 152
  16.3. Task Monitor ............................................................ 152
    16.3.1. Task Monitor status list ........................................ 153
      16.3.1.1. Task with status waiting ............................ 154
  16.4. Removing of tasks with status waiting .............................. 154

17. SMS Conversion Tool ...................................................... 155
  17.1. Purpose ..................................................................... 155
  17.2. What is an SMS 010 application? .................................... 155
  17.3. Features .................................................................... 155
  17.4. Limitations ............................................................... 155
    17.4.1. Import remarks .................................................. 156
  17.5. Abbreviations and terms ............................................... 156
  17.6. Starting SMS Conversion Tool ...................................... 157
  17.7. User interface ........................................................... 157
  17.8. Menus and toolbar .................................................... 158
    17.8.1. File menu .......................................................... 158
    17.8.2. Application menu ............................................... 159
    17.8.3. Project menu ...................................................... 160
    17.8.4. Options menu .................................................... 162
    17.8.5. Help menu ........................................................ 162
  17.9. Browsing for SMS 010 applications to import ..................... 162
    17.9.1. Select path ......................................................... 162
    17.9.2. Select a Directory ............................................... 163
  17.10. Importing SMS 010 applications .................................... 165
    17.10.1. Select Application Root Node ............................ 167
    17.10.2. Starting the import operation ............................. 167
User’s Guide

17.10.3. Import Summary Report .............................................. 168
  17.10.3.1. Import summary messages ........................... 170
17.11. Browsing SMS 510 projects ................................................... 170
17.12. Modifying imported projects ................................................... 170
17.13. Taking the imported project into use in SMS 510 ............. 171

18. Index .................................................................................. 173
1. **About this manual**

1.1. **Copyrights**

The information in this document is subject to change without notice and should not be construed as a commitment by ABB Oy. ABB Oy assumes no responsibility for any errors that may appear in this document.

In no event shall ABB Oy be liable for direct, indirect, special, incidental or consequential damages of any nature or kind arising from the use of this document, nor shall ABB Oy be liable for incidental or consequential damages arising from use of any software or hardware described in this document.

This document and parts thereof must not be reproduced or copied without written permission from ABB Oy, and the contents thereof must not be imparted to a third party nor used for any unauthorized purpose.

The software or hardware described in this document is furnished under a license and may be used, copied, or disclosed only in accordance with the terms of such license.

Copyright © 2006 ABB Oy

All rights reserved.

1.2. **Trademarks**

ABB is a registered trademark of ABB Group. All other brand or product names mentioned in this document may be trademarks or registered trademarks of their respective holders.

1.3. **Guarantee**

Please inquire about the terms of guarantee from your nearest ABB representative.

1.4. **General**

This manual provides thorough information on the SMS 510, Substation Monitoring System software and its applications. This document complies with the SMS 510 version 1.3.0.

Pictures shown are examples only, and they may represent older program versions.

Additional information such as the Release Note and README.TXT can be found on the program distribution media.

ABB Oy regularly provides standard training courses on its main products. The training program is available on the Internet at http://www.abb.com/substationautomation. Contact your ABB representative for more information.
1.5. Use of symbols

This publication includes warning, caution, and information icons that point out safety related conditions or other important information. It also includes tip icons to point out useful information to the reader. The corresponding icons should be interpreted as follows:

The caution icon indicates important information or warning related to the concept discussed in the text. It might indicate the presence of a hazard which could result in corruption of software or damage to equipment or property.

The information icon alerts the reader to relevant facts and conditions.

The tip icon indicates advice on, for example, how to design your project or how to use a certain function.

Although warning hazards are related to personal injury, and caution hazards are associated with equipment or property damage, it should be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process performance leading to personal injury or death. Therefore, comply fully with all warning and caution notices.

1.6. Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSB</td>
<td>Hot Stand-By</td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Network</td>
</tr>
<tr>
<td>LON</td>
<td>Local Operating Network, communication protocol developed by Echelon</td>
</tr>
<tr>
<td>PSN</td>
<td>Project Structure Navigator</td>
</tr>
<tr>
<td>PST</td>
<td>Parameter Setting Tool</td>
</tr>
<tr>
<td>RAS</td>
<td>Remote Access Service</td>
</tr>
<tr>
<td>SMSCT</td>
<td>SMS Conversion Tool</td>
</tr>
<tr>
<td>SPA</td>
<td>Data communication protocol developed by ABB</td>
</tr>
<tr>
<td>SSS</td>
<td>System Self Supervision</td>
</tr>
<tr>
<td>UNC</td>
<td>Universal Naming Convention</td>
</tr>
</tbody>
</table>

1.7. Related documents

*MicroSCADA Status Codes* is not included in the delivery of the electronic documentation.

The latest versions can be obtained from the Internet. See the page: www.abb.com/substationautomation.
User's Guide

In column Use, E stands for Engineering type of tasks while O stands for Operation.

<table>
<thead>
<tr>
<th>Name of the manual:</th>
<th>Use</th>
<th>Document ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation and commissioning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMS 510 Installation and Commissioning Manual</td>
<td>E</td>
<td>1MRS751265-MEN</td>
</tr>
<tr>
<td>LON Gateways Configuration, Configuration Guide</td>
<td>E</td>
<td>1MRS751870-MEN</td>
</tr>
<tr>
<td>Relay Tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIB, CAP and SMS, Tools for Relays and Terminals, User's Guide</td>
<td>E+O</td>
<td>1MRS752008-MUM</td>
</tr>
<tr>
<td>Parameter Setting Tool (PST) User's Manual</td>
<td>O</td>
<td>1MRK511114-UEN</td>
</tr>
<tr>
<td>REB 500/REB 500sys Operating Instructions</td>
<td>O</td>
<td>1MRB520292-Uen</td>
</tr>
<tr>
<td>CAP2/316</td>
<td>O</td>
<td>1MRB520271-Uen</td>
</tr>
<tr>
<td>SPTO Configuration Tool, Configuration Guide</td>
<td>E</td>
<td>1MRS751906-MEN</td>
</tr>
<tr>
<td>HV/Collect User's Manual</td>
<td>O</td>
<td>1MRK511117-UEN</td>
</tr>
<tr>
<td>REB500 Selector, Description</td>
<td>O</td>
<td>1KHA000967-AEN</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMS 510 Release Note</td>
<td>E,O</td>
<td></td>
</tr>
<tr>
<td>MicroSCADA Status Codes manual</td>
<td>O</td>
<td>1MRS750850-MEN</td>
</tr>
</tbody>
</table>

1.8. Document revisions

<table>
<thead>
<tr>
<th>Version</th>
<th>SW Revision number</th>
<th>Date</th>
<th>History</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1.2.0-1</td>
<td>05.01.2005</td>
<td>Maintenance updates</td>
</tr>
<tr>
<td>D</td>
<td>1.3.0</td>
<td>07.02.2006</td>
<td>- New Chapter 9. &quot;Gateway object types (COM 610)&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Maintenance updates</td>
</tr>
</tbody>
</table>
2. **Introduction to SMS 510**

This chapter introduces SMS 510, its documentation, operational features, base system, user interface, functional description and tools.

2.1. **General**

SMS 510, the **Substation Monitoring System**, is a monitoring and parametrization software system product for medium and high voltage relays in the RED 500 series, SPACOM series, REx 216/316 series, REB 500, REx 5xx and RET 521.

SMS 510 can be used locally in a substation, at a remote location or in a distributed system both with a local and a remote SMS.

SMS 510 is the successor of the well-proven SMS 010.

2.2. **Documentation guidance**

The SMS 510 documentation, which comprises this User’s Guide and the manuals listed in Section 1.7. Related documents, is comprehensive. This section shortly describes how to use the SMS 510 documentation.

2.2.1. **Documentation in general**

The functions and tools are described in their own stand-alone chapters or in manuals of their own. That makes it easier to find information about the function or tool and to get a detailed description of it. The documentation contains screen shots to make it easy to orientate in the manuals and to present examples.

2.2.2. **Navigating in the SMS 510 User’s Guide**

The manual contains references and links within the texts to tables, pictures and other related chapters and sections, a table of contents list at the beginning of the manual as well as an index at the end of the manual, all in order to make it easier to navigate. Just click the linked item (no links for indexes), and the target destination is brought into focus.

2.2.3. **SMS 510 User’s Guide contents**

The chapters in this **SMS 510 User’s Guide** are stand-alone descriptions of the function or tool in question and can be used during operation of SMS 510, as well as technical references.

The following chapters in particular are recommended for those not yet familiar with SMS 510:

**SMS 510 system introduction**

An introduction to SMS 510 as a whole can be found in Chapter 2. Introduction to SMS 510.
Getting started

A guidance in form of an example of building a project with levels and relays is found in Chapter 3. Quick start example.

Tools and functions

Refer to Section 2.7. SMS 510 functions and tools for a description of SMS 510 functions and tools and corresponding documentation.

2.2.4. Separate documentation

The SMS 510 Installation and Commissioning manual describes the installation of SMS 510 and basic SMS 510 system configuration.

The Relay Tools and Disturbance Recordings Uploading Tools are described in stand-alone manuals, see Section 1.7. Related documents.

2.3. Operational features

This is a summary of functions provided by SMS 510:

- Product engineering (bay level)
- On-line and off-line engineering
- Framework for relay tools
- Loading of parameters to the relay
- Loading of parameters from the relay
- Loading of recorded values from the relay
- Comparison of present and saved values
- Uploading of disturbance recordings from the relay
- Graphical presentation of disturbance recordings (COMTRADE format)
- Project management
- Object oriented project data management
- User Management
- Integrated System Self Supervision
- Supervision Log Viewer
- Local/remote communication
- Time synchronization of connected units
- Setting of time/date
- Scheduler for defining of tasks to be performed on a regular basis
- Automatic dial-up of substations
- Task Monitor for monitoring the progress of tasks defined in the Scheduler
- Relay Event Log Viewer
2.4. User interface

The user interface of the SMS 510 system consists of the following components:

- Login view
- Project Structure Navigator for tool selection and object management
- Various tools and views

2.5. Base system

The SMS 510 system contains a base system and a communication system.

Supported communication protocols are:

- SPA, through the relay rear or front panel interfaces.
- LON communication, through LonTalk adapter to the relay rear panel interface
- Supported LON communication cards are:
  - PCC-10 PC Card
  - PCLTA-20 Card
  - RER 109 PCLTA Card (in windows NT only)

2.6. Applications

A station control and protection system contains a wide variety of components and functions. SMS 510 is used for handling data and tools during relay engineering projects and for continuous follow-up and maintenance.

2.7. SMS 510 functions and tools

The following sections contain an overview of functions and tools provided within SMS 510. When the function or tool is described within this manual, the corresponding chapter or section is mentioned, otherwise the documentation is found in a separate manual, see Section 1.7. Related documents.

2.7.1. Project Structure Navigator

The Project Structure Navigator provides the tools for building a project tree with objects and a navigator for navigating in the project tree. User-defined views can also be made. Furthermore, the Project Structure Navigator manages insertion and configuration of objects, e.g. relays and launching of relay tools.

This is described in Chapter 4. Project Structure Navigator.

2.7.2. Project handling

Organize projects

The Organize Projects tool is used for project management purposes like deletion, duplication, and creation of projects. In addition to this, the tool is used when a project is to be transferred to another system or brought into the current collection of projects.

This is described in Chapter 5. Project Export/Import Tool.
SMS Conversion Tool
With the SMS Conversion Tool, applications from SMS 010 can be imported to projects for use in SMS 510.
This is described in Chapter 17. SMS Conversion Tool.

2.7.3. System configuration

Plant Structure Settings
The Plant Structure Settings Tool is used for defining the attributes for the plant structure object types.
This is described in Chapter 6. Plant Structure Settings, see also Chapter 8. User Structure object types.

System Configuration Tool
The System Configuration Tool is used for configuring the projects’ system.
The System Configuration Tool contains three pages:
1. Communication
The Communication page is used for setting of the basic communication configuration and time synchronization settings for communication over the serial ports and LON. This is described in the SMS 510 Installation and Commissioning manual.
2. Scheduler
The Scheduler is a function for defining scheduled task lists to be performed on a regular basis according to given time intervals. The Scheduler also allows suspension of defined tasks and/or task scheduling for an arbitrary period of time.
This is described in Chapter 15. Task scheduling.
3. General Settings
The General Settings page contains the means for enabling/disabling the automatic logoff from SMS 510. This is described in Section 13.3. General Settings.
The General Settings page also contains the means for enabling/disabling the System Self Supervision.
This is described in Section 10.4. Enabling System Self Supervision and Section 10.5. Disabling System Self Supervision.
The General Settings page also contains the MicroSCADA user password for remote connections. This is described in Section 13.3.3. MicroSCADA user settings for remote connections.

Device communication settings
The Communication page, which is opened by selecting the properties function for devices in the project tree, is used for configuring the communication settings, e.g. addressing of the device objects.
User’s Guide

Remote connections
The Remote Connections tool is used for setting up various kinds of connections:

• LAN over the local area network to another SMS 510, SYS 500 or COM 500 installation.
• Dial-Up (SPA) over the telephone network
• Remote (RAS) to another SMS 510, SYS 500 or COM 500 installation

This is described in Chapter 12. Remote connections.

User management
The User Management tool is used for defining SMS 510 users with designated authorization levels in SMS 510.

This is described in Chapter 14. User Management.

Time/Date
With the Time/Date tool the operator can check the time and date of the system within the SMS 510 program and also, when needed, change the time and date of the PC.

This is described in Section 13.1. Time/Date Settings.

2.7.4. Monitoring functions

System Self Supervision
The System Self Supervision supports the operator in diagnosing errors encountered in the system.

This is described in Chapter 10. System Self Supervision.

Supervision Log Viewer
The Supervision Log viewer presents operational events in the SMS 510 system. Events generated in the relay modules are not included.

This is described in Chapter 11. Supervision Log Viewer.

Task Monitor
The task monitor displays both historical and actual progress of the tasks that have been defined in the Scheduler.

This is described in Chapter 16. Task monitoring.

Event Log Viewer
The Event Log Viewer is used for uploading and viewing event logs from the RED 500 terminals. An event log is a snapshot of the current events in the event view of the connected terminal. This tool is documented in the Tools for Relays and Terminals manual.
User’s Guide

Relay Setting tools
The Relay Setting Tools provide service data, e.g. measurement values, counters and registered data from the relays.

2.7.5. Relay Setting tools
The Relay Setting tool (several occurrences depending on selected relay type) is used for parametrization of the relay units. The parameters are set on-line or off-line and downloaded to the relay or uploaded from the relay over a communication port.

The following Relay Setting tools are available in SMS 510 (for manuals, see Section 1.7. Related documents):

**RED Relay Setting Tool for**
- Parametrization of RED 500 series of relays
- REF54x - REF 54_ relay series
- REM54x - REM 54_ relay series
- REC52x - REC 52_ relay series
- RET54x - RET 54_ relay series
- REJ5xx - REJ 5_ relay series
- REU5xx - REU 5_ relay series
- REX52x - REX 52_ relay series
- REx61x - RE_ 61_ relay series
- SPA communication
- LON communication

**SPACOM Relay Setting Tool for**
- Parametrization of SPACOM series of relays
- SPA communication

**CAP 2/316 Tool for**
- Parametrization of REx 216/316 series of relays
- SPA communication
- LON communication

**REBWIN Tool for**
- Parametrization of REB 500 relays
- Serial communication on dedicated serial port

**Parameter Setting Tool (PST) for**
- Parametrization of the REx 5xx series of relays and RET 521
- SPA communication
- LON communication
Graphical I/O Setting Tool

Graphical I/O Setting Tool is a setting tool for REX 521 relays used for the following tasks:

• Setting of digital inputs, digital outputs and alarm LED signals with graphical matrices
• On-line and off-line parametrization
• Uploading or downloading a group of parameters

The Graphical I/O Setting Tool is complementary to the RED Relay Setting Tool; a change of parameter setting in the Graphical I/O Setting Tool will be visible in the RED Relay Setting Tool, and vice versa.

SPTO Configuration Tool

This tool targets the control modules SPTO 1D2, SPTO 1D5, SPTO 1D6 in SPAC 300 series and SPTO 6D3 in the SPAC 500 and 600 series in the SPACOM range of products.

The tool can be used to configure the SPTO 1D2, 1D5, 1D6 in the SPAC 300 series, when the default setting groups in the modules are not applicable, or whenever it is desirable to make an own configuration.

This tool is documented in the SPTO Configuration Tool manual.

2.7.6. Disturbance recording tools

SMS 510 provides the following tools for uploading of recordings from disturbance collecting relays (for manuals see Section 1.7. Related documents):

DR-Collector Tool

With the DR-Collector Tool, disturbance records can be uploaded from the RED 500 and SPACOM series of relays. The supported recording file format is COMTRADE.

HV/Collect

With the HV/Collect Tool, disturbance records can be uploaded from the REx 5xx series of relays and RET 521. The supported recording file formats are COMTRADE and REVAL.

CAP 2/316 Tool for

• Disturbance file uploading
• SPA communication
• LON communication
2.7.7. **Disturbance evaluation tools**

**Disturbance Draw**

With the Disturbance Draw Tool disturbance recordings in COMTRADE format can be graphically presented.

2.7.8. **Additional tools**

**MicroSCADA Service Access manager**

The user groups that can start and use SMS 510 are defined with this tool. This tool is documented in the *SMS 510 Installation & Commissioning manual*.

**SPA Terminal Emulator**

The SPA Terminal Emulator is used for manual sending of SPA messages to SPACOM relays, e.g. for address changing or communication test purposes.
3. **Quick start example**

**About this chapter**
This chapter discusses the basic steps for getting started with SMS 510 and is intended to serve as an introductory reading to users not familiar with SMS 510.

The quick start example:
- Guides you through the process of constructing a representation of a simple station with bays with RED 500, SPACOM, REx 216/316, REB 500, REx 5xx relays, familiarizing you with basic functions such as adding, configuring and moving objects in a project.
- Illustrates one solution to organize the project by means of user views.

In this example, it is assumed that you have completed commissioning of the SMS 510 software, which is explained in the *SMS 510 Installation and Commissioning manual*.

3.1. **Inserting objects, to observe**
You can insert different object types to the project in almost any order. This example starts by inserting the relay objects to the root level of the project. As the next step, the structure with station and bays is inserted and the relay objects are moved to bay level. You can also start by creating the tree level structure with stations and bays and later insert the relays directly to the target location.

This Quick Start example features a moving of objects operation, as an illustration of how it is done. Moving objects is not a part of the ordinary insertion procedure. Furthermore, you can have the relay devices inserted on several levels in the project, starting from the root level.

You should try using project structuring and correct naming conventions, in order to make your project easy to handle and use. You can later change the names of the objects you have inserted.

3.2. **Summary of steps**
The steps for project building, i.e. insertion and preparation of objects, system configuration (basic communication) for the project and device level addressing, are listed below. The steps are not numbered because the order is not critical, but use it as a recommendation. (These steps are illustrated in this Quick Start chapter together with launching of object tools).

- Insert the objects to the project
- Use the Properties function to select the proper Object type (relay family)
- Use the Attributes function (when needed) to assign relay modules
- Give the Communication address of the devices

When your project is prepared and ready, you can start configuring other functions or taking additional functions into use, e.g. from the System Tools menu. You can also start launching tools for the objects.
3.3. Projects
SMS 510 supplies an initial empty project titled ‘SOST’. Initially, the SOST project is set as the default project, meaning that this project will contain the new objects unless another project is explicitly created and opened, e.g. the Quick Start project, using the Create… function in the Project Export/Import Tool, see Fig. 5.2.-1 and Section 5.3.10. Creating a new project. For detailed information on working with SMS 510 projects, see Chapter 5. Project Export/Import Tool.

3.4. Views
The Project Structure Navigator provides the possibility to define different view contexts. This feature makes it possible to group the inserted objects arbitrarily, which is a useful feature when the number of inserted objects is large. For detailed information on working with project views, see Section 3.13. Using user views.

3.5. Object types
There are three main categories of object types, i.e. level object types, device object types and compound object types.

The level object types are used for building the structure of the projects and their views.

The device object types are used when a physical device is to be configured. For example, REF54x is a device object type.

Compound object types combine behaviour of both level and device object types. In essence, compound object types participate in the structuring of a project but they also have configurable properties, similar to the device object types. For instance, you can use Station and Bay objects to build a representation of a station and its bays. Another example is the communication gateway object types, e.g. LSG (LON/SPA Gateway). Device objects can be hosted by a gateway object, for which you define correct communication settings to enable communication through the gateway.

3.6. Object type groups
Each object type belongs to one named object type group, which provides similar functionality.

Four object type groups are available:

User Structure Object types of this group serve the purpose of project structuring.

Plant Structure Object types of this group serve the purpose of project structuring.

Gateway Object types of this group serve the purpose of project structuring and representation of communication gateway devices.

Protection & Control Object types of this group serve the purpose of representing protection and control devices.
3.7. **Starting SMS 510**

To start SMS 510, select the **Start SMS 510** icon from the SMS 510 program folder, created by the SMS 510 installation program, see Fig. 3.7.-1.

![Start_SMS](image)

*Fig. 3.7.-1  Starting SMS 510*

The SMS 510 Login window, see Fig. 4.6.-1, appears. Click the **Login** button to open the Project Structure Navigator with the default project opened in the Master Design View mode.

3.8. **Exiting SMS 510**

By selecting **Exit** from the **File** menu in the Project Structure Navigator, a logout is performed and the Login window appears, see Fig. 4.6.-1. By selecting **Exit** in the Login window, the SMS 510 session is ended completely.

3.9. **Insertion of objects**

In this section, you begin by inserting four RED 500 device objects and one SPACOM device object to the project. Then you add a simple representation of a station with three bays, illustrating how to move the device objects in the project structure.

**Device object insertion**

At this point, your project contains only the abstract root node, which is titled ‘ROOT’. Click on the root node, so that the navigator knows where to insert the new object in the project structure. Next, choose **Insert Object** on the navigator’s Edit menu, which causes the Add Project Object dialog to appear, see Fig. 3.9.-2. An alternative and quicker way to insert device objects is to use the Insert Object button, see Fig. 3.9.-1, but the easiest way is to press the <Ins> key on the keyboard.

![Insert_Object](image)

*Fig. 3.9.-1  The Insert Object button*
Fig. 3.9.-2 Adding a new object to the project

This dialog displays the object type groups and the object types present in the system. As you are now inserting a device object, the interest group is ‘Protection & Control’, which groups the RED 500 series, SPACOM series, REx 216/316, REB 500, REx 5xx series and RET 521 object types.

To insert a device object representing a REF54x relay terminal of the RED 500 relay series, click on the Protection & Control list item. As a result, the list of Protection & Control object types appears on the screen. The first available object type is automatically selected, as shown in Fig. 3.9.-3.

Fig. 3.9.-3 Selecting the type of the object

The appropriate object type (REF54x) is already selected. To insert it, click OK, which opens the New Object’s Properties dialog for entering the object's name and title, see Fig. 3.9.-4.

‘Object Name’ is used for SMS 510 object managing and should be unique within the project. ‘Object Title’ is the object description that is presented to the user in the Project tree for the particular object. Object Name and Object Description can later on be changed in the Properties/General Object Attributes dialog, see Fig. 3.12.2.-2.

26
Type in the name and title and click **OK**, so that the dialog closes and the object is inserted under the root node. Now your project should look like the one shown in the figure below:

![Figure 3.9.-4](image1)

**Fig. 3.9.-4  Entering the name and title for the object**

Repeat this insertion procedure twice, specifying ‘OUT1’ and ‘OUT2’ as the names and ‘Protection and control’ as the title for both of the objects. These new REF54x objects will also be inserted under the project’s root node, as the project does not yet contain any compound objects being able to host the device objects. Your project should now look like the one shown in **Fig. 3.9.-6**.

![Figure 3.9.-5](image2)

**Fig. 3.9.-5  The inserted REF54x device object in the project view**

![Figure 3.9.-6](image3)

**Fig. 3.9.-6  Three REF54x device objects in the project**
Now you have three REF54x device objects in the project. As you may recall, the aim is to also insert a device object of the SPACOM type.

To accomplish this, repeat the insertion procedure, with the exception that you select the SPACOM object type from the Protection & Control group. For the object’s name and title, specify ‘INCOMER2’ and ‘Differential protection’. When you are ready, the project should look like the one shown in Fig. 3.9.-7.

Notice that in terms of usability, these newly inserted device objects are somewhat abstract, since they lack essential information about the physical relay terminals they represent. These objects need to be configured before they can be used. The configuration procedure is explained later.

As you now have some device objects, you can proceed to add compound objects to the project, in order to organize the contents of the project.

**Compound object insertion - Plant Structure**

Next, you will build a simple representation of a station with three bays.

Start by selecting the project’s root node that will be the insert-location for the Station object. In fact, the only location where you can insert a Station object is the project’s root node.

In the **Edit menu**, choose **Insert Object** to bring up the Add Project Object dialog. Since the Station object type belongs to the Plant Structure group, select **Plant Structure** group as shown in Fig. 3.9.-8.
To insert the Station object, click **OK**. The dialog that now appears for entering attributes for the object is specific for insertion of Plant Structure objects, as illustrated in Fig. 3.9.-9. Enter ‘Eastwick’ as the object’s title and ‘STA1’ as its name.

![Add Plant Structure Object - Station](image)

*Fig. 3.9.-9  Inserting a Plant Structure object - Station*

Click **OK** to insert the station object. Now your project should look like the one in Fig. 3.9.-10.

![SMS 510 - Master Design View](image)

*Fig. 3.9.-10  The new Station object in the project view*

You now have a Station object capable of hosting the bays. Next, you will insert three Bay objects under the station. Eventually, the project’s device objects will be moved under these bays.

As the station will be the parent for the bays, select the **Station object** to set the correct insert-location.

Invoke the Add Project Object dialog. The navigator is aware of the currently selected object’s type (Station) and displays the available object groups and types accordingly, see Fig. 3.9.-11.
To insert the object, click OK and specify the name and title as in Fig. 3.9.-12.

Next, add two bays similarly, specifying ‘Bay2’, ‘Bay3’ and ‘Outgoing 1’, ‘Outgoing 2’ as their names and titles. Now your project should look like the one shown in Fig. 3.9.-13.
You are now ready to organize the project further by moving the device objects to more appropriate locations in the project structure.

3.10. **Moving objects in the project**

In this section, the existing device objects are moved to new locations in the project structure.

Fig. 3.10.-1 illustrates the intended final organization of the device objects in the Master Design View.
The procedure for moving objects in the project’s views consists of the following steps:

1. Select the object you intend to move by clicking it.
2. On the Project Structure Navigator’s Edit menu, select Object Properties to bring up the General Object Attributes dialog or press <Alt>+<Enter> on the keyboard.
3. Click Move on the General Object Attributes dialog to bring up the Move Object dialog.
4. From the project structure, select the target compound object, which will host the moved object.
5. Click Move Here on the Move Object dialog to move the object to the selected target location.

Following this procedure, move the objects one at a time to the locations shown in Fig. 3.10.-1. Notice that moving a device object under a bay object causes the station node to collapse. A collapsed node is expanded by either double-clicking it or by clicking the plus sign (+) on the node's left-hand side.

3.11. System configuration

The system communication should also be configured at some point. It has to be done before you configure the communication settings on device (relay) level, see Fig. 3.12.2.2.-3. You need to make the basic communication definitions for the serial ports and LON channels. From the System Tools menu, select item System Configuration and page Communication, see Fig. 3.11.-1.

![System Configuration](image)

*Fig. 3.11.-1 Setting up the serial ports*
How to set up the LON channel is described in the *SMS 510 Installation and Commissioning manual*.

Use the Add button to add a serial port. Usually the default settings are sufficient. Press OK, to save and to exit.

Next, you will advance by configuring the project's device objects.

### 3.12. Configuration of device objects

#### 3.12.1. General

Prior to using an inserted device object, the object must be configured. Otherwise, attempts to launch an object tool result in notifications requesting you to configure the object.

For instance, configuring a REF54x device object means that the object is assigned:

1. The software configuration (SW), which is a set of hardware dependent files. The software configurations are supplied solely by ABB.
2. The application (Apl) configuration, which is a set of application dependent files. An application configuration is either supplied by ABB or created within the SMS 510 environment, which is why it has been saved in the application library of the object’s object type.

#### 3.12.2. Relay configuration procedure

A device object is configured in the Master Design View by means of a dialog, which is dependent on the device object’s type. To enter this type-dependent dialog:

1. **Select the device object** in the project structure.
2. **Select Object Properties** on the **Edit menu** to open the General Object Attributes dialog for the object or press `<Alt>`+ `<Enter>` on the keyboard. You can use the **Properties** button as well, see Fig. 3.12.2.-1.

![Fig. 3.12.2.-1 The Properties button](image)

3. **Click Attributes** to open the object’s configuration dialog, see Fig. 3.12.2.-2. (No attribute function is needed for setting of REx 5xx and RET 521 relays).
3.12.2.1. **RED 500 relay object types**

1. In the SW library, select the SW configuration that matches the relay terminal that is to be used.

2. **Select an application** in the Apl library, or if the application is unknown, some of the RED relay object types allow **uploading of the configuration** from the relay terminal. The uploaded configuration is available for selection in the Apl library list.

Close the object’s configuration dialog by clicking **OK** to return to the General Object Attributes dialog. For more information on configuring device objects, see the Tools for Relays and Terminals manual.

**Configuring quick start device objects**

To proceed with the example, you need to configure the device objects in the order they appear in the project. Once you are done, the objects are configured as shown in Table 3.12.3-1.

To proceed, select the device object ‘INCOMER1’ which is titled ‘Incomer protection and control’. On the Edit menu, select **Object Properties** to bring up the General Object Attributes dialog. The tabbed page titled **General** is active, displaying general information on the object. Notice that in this dialog, you can change some of the object’s attributes in the Master Design View.

To configure the REF54x device, click **Attributes** and you enter the REF54x Configuration dialog, shown in Fig. 3.12.2.1.-1.
Assigning software configuration

As stated in Table 3.12.3-1, this object’s software configuration should be ‘REF543-1MRS118501 rev. F’, which means that the software configuration suggested by default has to be changed. In the dialog’s upper area, the Select New check box is checked, allowing you to select the appropriate software configuration.

To change the configuration, select the configuration named ‘REF543-1MRS118501’ from the list titled SW library and select revision ‘F’ from the list titled ‘Rev’.

Assigning application configuration

To complete this object’s configuration, you need to assign the intended application configuration for the object, in this example it is ‘1MRS114502’ revision ‘A’.

To assign it, select the application configuration ‘1MRS114502’ from the list titled ApI library and the revision ‘A’ from the list titled Rev. Next, click OK to apply the configuration, saving it to the project database. You now returned to the General Object Attributes dialog, close it by clicking OK.
Uploaded application configurations in REF54x, REM54x, REC52x and RET54x object types

The REF54x, REM54x, REC52x and RET54x object types provide an alternative to use an application configuration, which you can upload from the relay terminal. Upon completion of the upload, you save the uploaded configuration into the object type’s user-application library. These application configurations are stored without revision information and are available through the Apl library list, shown in Fig. 3.12.2.1.1. The use of uploaded application configurations is outlined below:

1. **Insert the device object** to the project.
2. **Configure the object** as explained above, assigning an empty application configuration, which you eventually will replace with the uploaded configuration. Apply the configuration normally and then return to the Project Structure Navigator.
3. **Reopen the General Object Attributes** dialog selecting the Communication page to provide communication settings for the object. Select the communication protocol and enter the communication settings that match the settings in the relay unit. Connect the communication cable, if not done yet.
4. **Open the object type’s configuration** dialog. Click Apl Utils… and enter the dialog for maintaining the user application library.
5. By clicking Receive, the upload starts bringing up a progress indicator dialog. Upon completion of the upload, you provide the name for the uploaded configuration. This name will appear in the Apl library list.
6. Close the user-application library management dialog by clicking Close. Now, to assign the newly uploaded application configuration, check the Select New check box and select the configuration from the Apl library list.
7. Close the object type’s configuration dialog by clicking OK. You are prompted to confirm the replacement of the application configuration, click Yes to enforce the new configuration.

To proceed with the example, configure the other two REF54x device objects (‘OUT1’ and ‘OUT2’) using Table 3.12.3-1 as reference.

### 3.12.2.2. SPACOM relay object types

At this point, the SPACOM device object (‘INCOMER2’) is still not configured. To configure it, enter the object’s configuration dialog as you did with the REF54x objects (Attributes button). The configuration dialog that appears (see Fig. 3.12.2.2.1) differs from the one you used for the REF54x objects (see Fig. 3.12.2.1.1). For more information on configuring device objects, see the Tools for Relays and Terminals manual.
Now locate the module named ‘SPAD 346’ from the Modules: list and click Add -> when you have selected the module. The dialog should look like the one shown in Fig. 3.12.2.2.-2.

Fig. 3.12.2.2.-2 The selected SPACOM configuration

To apply the configuration, click OK and you return to the General Object Attributes dialog.

Before you can make the communication setup for the individual objects, you have to set up the system configuration as described in Section 3.11. System configuration. Alternatively, you can click the System Configuration button in the General Object Attributes dialog (see Fig. 3.12.2.2.-3), which brings up the System Configuration dialog (see Fig. 3.11.-1).
After having configured the system, you can make the communication setup for the devices. The presentation may vary depending on the selected device.

### 3.12.2.3. REx 216/316 relay object types

The general object attributes, see Fig. 3.12.2.-2, have two parts: general data and communication data. Configuring the communication data is possible only after the general data has been set. This is done after creating the device object as follows:

1. Select the **General** page
2. Click the **Attributes…** button. A panel with an **OK** button appears, and for a short moment, an **Initialising…** window is shown. Another panel appears telling you that you may not use this function a second time.
3. Click the **OK** button on the panels. There are no parameters to be set, only the initialization has to be done and is now done.
4. Select the **Communication** page and set the communication parameters in the same way as for any other device.

If the device has been initialized once, no parameter change by means of the **Attributes…** button is possible nor is it necessary. Changing communication parameters on the **Communication** page can be done if necessary, as for all other devices. RExx16 devices support two protocols: Direct SPA communication via PC_NET (protocol SPA), or via the front connector and LON (protocol LON).

When you now operate a relay of the type REx 216/316, the appropriate setting tool CAP2/316 appears. All relay settings as well as the upload of disturbance data are handled with this tool (see separate *Getting Started CAP2/316 manual* for the appropriate relay type).
3.12.2.4. **REB 500 relay object type**

The general object attributes only have the **General** data part, and there are no additional parameters to be set here. Communication parameters are set within the REBWIN setting tool, which already may be launched at this stage.

The COM port selected for communication within the REBWIN setting tool must not be one of those used by the SMS 510 System Configuration. That is, if REBWIN uses COM1, the SMS 510 SPA communication must not use COM1, but COM2 instead (or the other way around).

3.12.2.5. **REx 5xx relay object types**

The general object attributes have three parts: General data, Communication data and Terminal Version data. Configuring the communication data is possible only after the general data has been set. This is done after creating the device object as follows:

1. Select the **General** page. Notice that no attribute function is needed for setting REX 500 and RET 521 relays, therefore the **Attributes…** button is disabled.
2. Select **Terminal Version** page and select the **Terminal Type** of the REx 5xx relay, either RET or REX. **Terminal Version also** has to be assigned.
3. Select the **Communication** page and set the communication parameters in the same way as for any other device.
4. Click the **OK** button to save the configuration and exit.

### Fig. 3.12.2.5.-1 General object attributes for REx 5xx types of relays

Changing communication parameters on the **Communication** page can be done as necessary as for any other device. REx 5xx devices support two protocols: Direct SPA communication via PC_NET (protocol SPA) and via the front connector as well as LON (protocol LON).

When you now operate a relay of type REx 5xx, the appropriate setting tool PST appears. All relay settings are handled with this tool, while disturbance uploading is done by HV/Collect. (See the Parameter Setting Tool (PST) User's Manual and the HV/Collect User's Manual for functions).
3.12.3. Summary

For example, the following devices with the following configuration have been added to the project:

Table 3.12.3-1 Example device configuration

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Configuration</th>
<th>Model</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCOMER1</td>
<td>REF543-1MRS118501 rev. F</td>
<td>1MRS114502 rev. A</td>
<td></td>
</tr>
<tr>
<td>OUT1</td>
<td>REF541-1MRS118500 rev. C</td>
<td>1MRS114501 rev. A</td>
<td></td>
</tr>
<tr>
<td>OUT2</td>
<td>REF541-1MRS118500 rev. C</td>
<td>1MRS114501 rev. A</td>
<td></td>
</tr>
<tr>
<td>SPACOM device</td>
<td>Relay Description</td>
<td>SPAD 346</td>
<td></td>
</tr>
<tr>
<td>INCOMER2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rexx16 device</td>
<td></td>
<td>Rexx16</td>
<td></td>
</tr>
<tr>
<td>OUT3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REB500 device</td>
<td></td>
<td>REB500</td>
<td></td>
</tr>
<tr>
<td>OUT4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REx5xx device</td>
<td>Terminal Type</td>
<td>Terminal Version</td>
<td></td>
</tr>
<tr>
<td>440KVLINE</td>
<td>REX</td>
<td>REX500_20</td>
<td></td>
</tr>
</tbody>
</table>

At this stage, you have almost completed the example. Next, you can familiarize yourself with the use of user views in projects. Remember that regarding views, the example project only contains the Master Design View, which is the only view allowing you to insert device objects to the project and configure them.

3.13. Using user views

General

No specific rules for the use of user views exist in regard to their logical contents or amount.

Creating user views

In this example, you will create two rather self-explanatory user views, namely one named ‘Outgoing’ and another named ‘Incoming’. You will also populate these views with the previously inserted device objects.

To proceed building the example project, select Create view on the Views menu of the Project Structure Navigator. This opens the Project View Properties dialog shown in Fig. 3.13.-1.
Fig. 3.13.-1 Entering information for the new user view

Specify the information for the view as shown in the figure above. You can later change these properties of views, by selecting the View Properties menu item on the Views menu. Click OK to create the view. The navigator opens the view immediately. Notice that the Views menu now contains the newly added view below the Master Design View menu item.

Next, add the other user view similarly and specify ‘Outgoing’ for the view’s properties. Now your Views menu should contain the menu items shown in Fig. 3.13.-2.

Fig. 3.13.-2 User view menu items in place

Adding objects to a user view

The final step of this example is to populate the user views with the device objects. The procedure for adding objects to user views is simplified compared to Master Design View, since the objects already have been assigned names and other basic information.

If the ‘Outgoing’ view is not currently active, activate it by selecting the ‘Outgoing’ menu item on the Views menu. Now, select Insert Object on the Edit menu to bring up the ‘Add object from Master Design View’ dialog, see Fig. 3.13.-3. The dialog lists all device objects that exist in the project, displaying both the titles and the names of the objects. Object names are displayed in parentheses.
Fig. 3.13.-3 List of objects in Master Design View

Notice the Add Level button in the dialog. By clicking this button, you can add Level objects to the user view for organizing the view’s contents.

The intention is to add the objects ‘OUT1’ and ‘OUT2’ into this view. Select the object named ‘OUT1’ from the list and click OK to add the object and close the dialog. The contents of the view should now be as shown in Fig. 3.13.-4.

Fig. 3.13.-4 Object ‘OUT1’ in place

Similarly, add the object named ‘OUT2’ to this view.

Next, switch the view by selecting the ‘Incoming’ menu item on the Views menu. Add the remaining device objects ‘INCOMER1’ and ‘INCOMER2’ to this view.

3.14. Launching object tools

Object tools are launched as follows (see Fig. 3.14.-1):

1. Select the target device object in the project. Object tools are available in all views of a project.
2. Double-click the object tool on the Object Tools list or
3. Select the tool from the Object Tools list and press <Enter> on the keyboard.

The Project Structure Navigator allows only one object tool to be used at a time.
3.14.1. Launching tools for RED 500

When you select a relay of type RED 500, the Relay Setting Tool is the only tool available. It launches the RED Relay Setting Tool. All relay settings (upload, download and offline configuration) and detailed device diagnostics are available with this tool.

3.14.2. Launching tools for SPACOM

When you select a relay of type SPACOM, the Relay Setting Tool is the only tool available. It launches the SPACOM Relay Setting Tool. All relay settings (upload, download and offline configuration) and detailed device diagnostics are available with this tool.

3.14.3. Launching tools for REx 216/316

When you select a relay of type RExx16, the Relay Setting Tool is the only tool available. It launches the CAP2/316. All relay settings (upload, download and offline configuration) as well as upload of disturbance data and detailed device diagnostics are available with this tool (see separate Getting Started CAP2/316 manual for the appropriate relay type/version).

If you forget to close the setting tool before you exit/shut down SMS 510, an exception error message may appear. Just press the message button to ignore it; SMS 510 finishes its shut down, and the setting tool enters into offline mode and can be exited as usual.

3.14.4. Launching tools for REB 500

When you select a relay of type REB 500, the Relay Setting Tool is the only tool available. It launches the REBWIN program. All relay settings (upload, download and offline configuration) as well as upload of disturbance data and detailed device diagnostics are available with this tool (see separate REB 500/REB 500sys Operating Instructions manual for the appropriate relay type/version).
3.14.5. Launching tools for REx 5xx

When you select a relay of type REx 5xx, the PST is the only tool available. It launches the Parameter Setting Tool. All relay settings (upload, download and offline configuration) and detailed device diagnostics are available with this tool.
4. **Project Structure Navigator**

This chapter describes the elements and functionality of the Project Structure Navigator.

4.1. **General**

The Project Structure Navigator is your workspace for managing data and tools. It provides you with access to the SMS 510 tools and project-based object-oriented data management.

4.2. **Projects**

In SMS 510, projects are the containers for object-oriented data management and storage. Projects allow you to build representations of power stations and their protection and control devices. The maximum number of projects in SMS 510 is limited only by the available disk space on your computer.

The navigator allows you to build projects and operate these by means of a hierarchical tree structure. The structure is comprised of nodes where each node is an instance of an object type. Initially, all projects are empty, meaning that the project tree contains only one node (root level) that gives you a starting point to build the project upon.

The Project Structure Navigator works in one of two modes, the Master Design View mode, or the user view mode.

4.2.1. **Master Design View**

The Master Design View allows insertion of all available object types in SMS 510. It is the only view, in which you can:

- Insert objects to the project
- Configure the objects
- Configure the communication settings of the objects

The device objects are also available for use in the user views. The Master Design View is a built-in view, meaning that it is always available in every project and cannot be deleted.

4.2.2. **User views**

User views are intended for designing browsable operator views, e.g. for showing only objects with importance to the user. The object hierarchy in a user view may differ from the one in the Master Design View. Object types of the User Structure object types group provide you with the means of arranging the hierarchy of user views. The device objects, which are available in the Master Design View, can be inserted into the user views.
4.3. **Object types**

The Project Structure Navigator handles objects of three types, namely:

**Level object types**  
Level object types serve as structuring items in a project. A level object type does not set restrictions on what object types can be inserted underneath it. In many respects, levels behave like directories in a file system since directories may contain files and subdirectories. An example of level object type is the Level type.

**Device object types**  
Device object types control physical devices. A device object stores parameters about physical hardware, e.g. a REF 541 terminal.

**Compound object types**  
Compound object types combine the behaviour of level and device object types. In a project, a compound object has both object properties and structuring properties. As a result, a compound object has private object settings and a view level, under which it is possible to insert objects of object types allowed by the object type. The main difference between views of a level object type and a compound object type is that compound object types set restrictions on what object types can be represented in its views. Examples of compound object types are plant structures and communication gateways.

4.4. **Object type groups**

Each object type belongs to one named object type group, whose member types provide common functionality.

Four object-type groups are available:

**User Structure**  
Object types of this group serve the purpose of project structuring. Contains level object types only.

**Plant Structure**  
Object types of this group serve the purpose of MicroSCADA compatible project structuring. Contains compound object types only.

**Gateway**  
Object types of this group serve the purpose of project structuring and representation of communication gateway devices. Contains compound object types only.

**Protection & Control**  
Object types of this group represent protection and control devices. Contains device object types only.

4.5. **User interface**

Access to the various tools and functions is provided by means of a toolbar, menus and keyboard shortcuts. Fig. 4.5.-1 illustrates the navigator’s user interface and its elements.
Fig. 4.5.-1 The user interface of the Project Structure Navigator

User interface elements

Caption bar Displays the name of the current view. In Fig. 4.5.-1, it is the Master Design View. The caption bar also contains the standard operating system’s window management commands for minimising, maximising and closing the window.

Menu bar File, Edit, Views, System Tools and Help menu.

Toolbar The toolbar contains shortcuts for quick access to the frequently used functions.

Object tools list An object-selection sensitive list of object tools that are available for the object currently selected in the project structure.

Structure Displays the objects in the current project view for object selection and navigation.

Status bar Displays the path of the current project and the type of the object currently selected in the project structure. The right-hand box shows alerts from the System Self Supervision. By clicking the alert, the System Self Supervision Tree is brought into focus, see Chapter 10. System Self Supervision.
The following icon symbols are used for different object type groups in the project view:

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="User Structure or Plant Structure" /></td>
<td>User Structure or Plant Structure</td>
</tr>
<tr>
<td><img src="image2" alt="Gateway" /></td>
<td>Gateway</td>
</tr>
<tr>
<td><img src="image3" alt="Protection &amp; Control" /></td>
<td>etc. Protection &amp; Control</td>
</tr>
</tbody>
</table>

The menu contents and buttons in Fig. 4.5.-1 are described later in this chapter.

### 4.6. Entering the Project Structure Navigator

To enter Project Structure Navigator, proceed as follows:

1. In the SMS 510 program folder, select the shortcut **Start SMS 510**, see Fig. 3.7.-1. This starts the MicroSCADA service bringing up the SMS 510 Login window. Fig. 4.6.-1 illustrates the login panel of the window.
2. In the SMS 510 Login window, click **Login** to enter the Project Structure Navigator.

![The login panel of the SMS 510 Login window](image4)

Notice that if you attempt to start a second instance of SMS 510, which is not allowed, you are notified that SMS 510 is already running, see Fig. 4.6.-2.
File menu

The File menu, see Fig. 4.7.-1, contains the project handling functions and exit.

4.7.1. File Open

Keyboard entry: \(<\text{Ctrl}>+<\text{O}>\)

Toolbar entry:

By selecting the File Open alternative, the currently open project is closed and the Open Project dialog is opened, see Fig. 4.7.1.-1.

Fig. 4.6.-2 Notification that SMS 510 is already running
Dismiss the notification by clicking OK.
To open a project into the navigator view, first select the project and then click **Open**. This also enforces the project’s communication configuration, which you can view and modify by means of the **System Configuration Tool** and the **Communication** page.

### 4.7.2. File Close

**File Close** closes the currently open project.

### 4.7.3. Organize Projects

When selecting **Organize Projects**, the Project Export/Import Tool is started. This tool is described in Chapter 5, **Project Export/Import Tool**.

### 4.7.4. File History List

The File menu includes a file history list of the previously opened projects. It helps to open some recently used local project quickly.

The five last opened projects (if any) are listed and sorted so that the last used project is the first name on the list. By clicking the project name or by entering the order number from the keyboard, the currently open project is closed and the requested project is opened.

### 4.7.5. Exit

**Keyboard entry:** `<Alt><F4>`

By selecting **Exit**, the tool session is terminated and you enter the SMS 510 Login window.

> To close SMS 510, click **Exit** on the SMS 510 Login window; this will stop the MicroSCADA service.

### 4.8. Edit menu

The Edit menu contains functions for adding and deleting objects and for invoking the General Object Attributes dialog for the currently selected object.

Accessibility to the menu items depends on the currently selected object. For instance, the **Delete Object** item in Fig. 4.8.-1 is disabled, indicating that the currently selected object cannot be deleted.

![Edit menu](image)
4.8.1. **Insert Object**

Keyboard entry: `<Insert>`

**Toolbar entry:**

Through this menu alternative, you initiate the insertion of objects in the project.

**Insert Object in the Master Design View**

When you select the **Insert Object** function in the Master Design View, the Add Project Object dialog (shown in Fig. 4.8.1.-1) appears, allowing you to specify the type of the object to be added to the currently selected location.

![Add Project Object](image)

*Fig. 4.8.1.-1  Insertion of an object*

The Project Structure Navigator displays all object type groups currently available in the SMS 510 environment. However, the object types of these groups are filtered according to the currently selected object, which will host the new object.

To insert the object, first choose the appropriate object type group. Select the type for the new object and click **OK** to enter the dialog, where you give the basic properties for the new object, see Fig. 4.8.1.-2. Notice that this dialog varies according to the type of the new object.

![New Object's Properties](image)

*Fig. 4.8.1.-2  Providing properties for the new object*

Type in the title and the name for the object and click **OK** to complete its insertion.
‘Object Name’ is used for SMS 510 object managing and should be unique within the project. ‘Object Title’ is the object description that is presented to the user in the Project tree for the particular object. Object Name and Object Description can later be changed from Properties/General Object Attributes dialog, see Fig. 4.8.3.1.-1.

If you do not fill in the Object Name field, the Project Structure Navigator still generates a name.

The maximum number of STA objects in a SMS 510 project is limited to a total of two hundred (200). One object instance can reserve more than one STA object, so the actual maximum object count in a project may be smaller than 200. If you try to add more than 200 objects, the following notification dialog will be shown:

![Add Project Object](add_object.tif)

**Fig. 4.8.1.-3** The limitation of project object instances is exceeded

### Insert Object in the user views

When you select the Insert Object function in a user view, the Add object from Master Design View dialog appears, allowing you to select the object to be added to the currently selected location.

![Add object from Master Design View](otherv.setIcon)

**Fig. 4.8.1.-4** Inserting a device object to a user view

To insert a device object, select it from the object list and click **OK** to close the dialog.

All device objects that you have inserted in the Master Design View are available for selection. However, you can insert a device object only once to a given user view.
This dialog also allows you to insert Level objects, which you can use for organizing the contents of the user view. This is accomplished through the Add Level button, see Fig. 4.8.1.-4.

To insert a Level object, either select the root node of the view or another Level object and click Add Level to enter the dialog for providing the title of the object, see Fig. 4.8.1.-5.

![Add Level dialog](image)

*Fig. 4.8.1.-5  Inserting a Level object to a user view*

Give a unique title in the view's scope and click OK to close the dialog.

4.8.2. Delete Object

**Keyboard entry:** `<Delete>`

**Toolbar entry:**

![Delete button](image)

To delete the currently selected object, use the function Delete Object. You can delete only such objects, which do not contain any subordinate objects.

If you are working in a user view, the deleted object remains in the project database and it can thus be re-added to any user view in the project. However, deleting an object from the Master Design View permanently removes the object from the project database, which in essence means erasing the object’s file storage from the hard disk.

4.8.3. Object Properties

**Keyboard entry:** `<Alt>+<Return>`

**Toolbar entry:**

![Object Properties button](image)

To bring up the General Object Attributes dialog for the currently selected object, select Object Properties.

Notice that if you select the root node, this function brings up the dialog for changing and viewing properties of the project (in the Master Design View) or properties of a user view (in a user view).
4.8.3.1. General Object Attributes dialog

The General Object Attributes dialog, see Fig. 4.8.3.1.-1, is a central tool for project object management. The dialog contains two tabbed pages; General and Communication for setting and viewing of objects’ attributes. The General page is available for all objects in all views, whereas the Communication page is displayed only in the Master Design View for objects that require communication settings. With the dialog's buttons, you invoke the object's configuration dialog (if supported by the object type) and the dialog for moving the object in the project hierarchy.

The Communication page is not documented here. For detailed information on configuring the communication settings, refer to the manual describing the respective object type (e.g. the Tools for Relays and Terminals manual).

Fig. 4.8.3.1.-1 The General Object Attributes dialog

The following table describes the elements found in Fig. 4.8.3.1.-1.

Table 4.8.3.1-1 General Object Attributes dialog items

<table>
<thead>
<tr>
<th>Field</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object Title</td>
<td>A read/write attribute in the Master Design View, read-only in user views.</td>
</tr>
<tr>
<td>Object Name</td>
<td>A read/write attribute in the Master Design View, read-only in user views.</td>
</tr>
<tr>
<td>Object Type</td>
<td>The type of the object, read-only in all views.</td>
</tr>
<tr>
<td>Version</td>
<td>The version of the object’s type, read-only in all views.</td>
</tr>
<tr>
<td>Group</td>
<td>The group of the object’s type, read-only in all views.</td>
</tr>
<tr>
<td>Remarks</td>
<td>Remarks on the object. A read/write attribute in the Master Design View, read-only in user views. <strong>Note!</strong> Data is automatically truncated to 253 characters without notice.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Button</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>Closes the dialog saving the changes to the object’s general attributes.</td>
</tr>
<tr>
<td>Cancel</td>
<td>Closes the dialog discarding the changes to the object's general attributes. <strong>Note!</strong> This button does not have any impact on changes to the object's configuration.</td>
</tr>
</tbody>
</table>
4.8.3.2. Moving objects

Objects can be moved only within the current view. The procedure involves using the Move Object dialog, see Fig. 4.8.3.2.-1. The dialog is invoked using the General Object Attributes dialog (button **Move**). You can access this function only if the currently selected object’s type supports moving objects.

**Fig. 4.8.3.2.-1  The Move Object dialog**

To move an object:

1. Select the object you intend to move.
2. From the **Edit** menu, select **Object Properties** to open the General Object Attributes dialog.
3. Click **Move** to open the Move Object dialog.
4. In the project structure, select the node, which will host the moved object.
   Notice that you can work with the project tree in a normal manner, i.e. expand and collapse nodes.
5. On the Move Object dialog, click **Move Here** to move the object. The Move Object dialog closes causing the project structure to collapse. Notice that in case the Project Structure Navigator detects that the currently selected target node cannot host the object you are about to move, you are not allowed to perform the move operation. This means that clicking **Move Here** has no effect.

To cancel moving the object, click **Cancel** in the Move Object dialog.

4.9. Views menu

The Views menu contains view manipulation functions and the list of user views, if such have been created in the current project. For example, in Fig. 4.9.-1 below, the project contains one user view, titled “User view 1”, while ‘Master Design View’ shows the entire project. ‘ROOT’ and ‘SSS-System Self Supervision’ are used for changing views in the navigator. ‘ROOT’ or the name assigned to the root of the project, see Fig. 4.9.1.-1 and Fig. 4.9.3.-1, is showing the active view (in this case

<table>
<thead>
<tr>
<th><strong>Attributes</strong></th>
<th><strong>General Object Attributes dialog items</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Attributes</td>
<td>Invokes the dialog for configuring the object. Enabled in Master Design View only, on the condition that the object’s type supports object configuration, otherwise this button is disabled.</td>
</tr>
<tr>
<td>Move</td>
<td>If the object’s type supports moving objects, this button invokes the dialog for moving the object within the current view, otherwise this button is disabled. For details on moving objects, see Section 4.8.3.2. Moving objects.</td>
</tr>
</tbody>
</table>
either ‘Master Design View’ or ‘User View 1’) with devices and access to tools from
the System Tools menu, while ‘SSS - System Self Supervision’ shows the status of
the entire SMS 510 system.

![Fig. 4.9.-1 The Views menu](image)

**4.9.1. Create View**

With this menu option it is possible to create new user views.

![Create View 2](image)

**Fig. 4.9.1.-1 Creating a new view**

New user views are created by defining the view name, i.e. the instance name, and
the view description, i.e. a logical name for the view. The root name is the name of
the root node in the new view and can be given a more descriptive name.

Different view colors can be used to differentiate separate projects and/or separate
views of one project. By clicking the button next to the "Own color" sample color
box, a Color Chooser dialog is opened for selecting a color. The "Default color"
option reverts to the default light blue color.
4.9.2. Delete View

This option deletes the current view, but only user views can be deleted, i.e. you cannot delete the Master Design View.

4.9.3. View Properties

By selecting this option, the current view’s properties can be changed.

The project name is the instance name and the project description is a logical name for the project. The root name is the name of the root node, i.e. the very first element in the project view presented by the project navigator. The root name can be given a name suitable for the presentation in the project navigator.
The background color for the view can be changed by clicking the button next to the "Own color" sample color box, or the default light blue color selected with the "Default color" option.

4.9.4. View List

The view list is a list of all views defined for the project. By selecting one of the views, the navigator changes the active view. Only the ‘Master Design View’ is always available, user views are optional.

The difference between ‘ROOT’ (or the name given to it, see Fig. 4.9.1.-1 or Fig. 4.9.3.-1) and ‘SSS - System Self Supervision’ is that Root shows the selected view e.g. ‘Master Design View’ or ‘User View 1’, while ‘SSS - System Self Supervision’ shows the entire project from the System Self Supervision point of view. SSS is also generated automatically from the project.

4.10. System Tools menu

The System Tools menu, Fig. 4.10.-1, contains the tools that are available for use at the SMS 510 system level.

![System Tools menu](image)

*Fig. 4.10.-1 The System Tools menu*

You can modify the contents of the menu by selecting the Customize… option, see Section 4.10.1. Customize…. By default, menu items for invoking the User Management, Time_Date, System Configuration, Plant Structure Settings, DR-Collector Tool, SMS Conversion Tool and Supervision Log functions are available.

For detailed information on the System Configuration tool/Communication, refer to the *SMS 510 Installation and Commissioning manual*.

For detailed information on the DR-Collector Tool, refer to the *Tools for Relays and Terminals manual*.

See also the following chapters and sections in this manual:


Chapter 15. Task scheduling.

Section 13.1. Time/Date Settings.


Chapter 17. SMS Conversion Tool.

Chapter 11. Supervision Log Viewer.
4.10.1. **Customize...**

The Customize… menu alternative, see Fig. 4.10.1.-1, makes it possible to add and remove tools to and from the System Tools menu.

![Customize System Tool Menu](image)

*Fig. 4.10.1.-1 The customization dialog*

By selecting a system tool from the right hand list and clicking <<, the tool is added to the System Tools menu. By selecting a tool from the left-hand list and clicking **Remove**, the tool is removed from the System Tools menu.

4.11. **Help menu**

The Help menu, see Fig. 4.11.-1, contains the function for invoking the About dialog of the Project Structure Navigator and SMS 510.

![Help](image)

*Fig. 4.11.-1 The Help menu*

4.11.1. **About Project Structure Navigator**

This About dialog contains information about the current version of the Project Structure Navigator and the Project Manager.

4.11.2. **About SMS 510**

**Keyboard entry: <F1>**

The About dialog contains information about the current version of SMS 510.

The information presented in the About SMS 510 dialog should be available when contacting your local support. It can be copied to the Windows clipboard in a textual format by clicking the Copy button on the About dialog.
5. **Project Export/Import Tool**

5.1. **General**

The Project Export/Import Tool is used for copying, exporting, importing, deleting, duplicating, creating of new projects and selecting of the project that is to be regarded as local.

In network environments, this tool can be used to transfer projects to/from e.g. SMS 510, CAP 501, CAP 505, SYS 500 and COM 500.

5.2. **Starting the Project Export/Import Tool**

The Project Export/Import Tool is started from the File menu by selecting Organize Projects..., see Fig. 5.2.-1.

![Fig. 5.2.-1 File menu with Organize Projects...](image)

The user interface of the Project Import/Export Tool is shown in Fig. 5.2.-2.

![Fig. 5.2.-2 The user interface of the Project Export/Import Tool](image)

Table 5.2.-1 presents the project-management functionality provided by the Project Export/Import Tool.
5.3. Features

5.3.1. Updating the project list

The operating principle of the Project Export/Import Tool is to first select a project collection to the list view. The project list is updated by selecting the Source button. The project list can be one of the following:

- The user’s SMS 510 application projects. By default, the project list displays this selection.
- MicroSCADA application projects on a logical drive, which may also be a network drive.
- Projects stored in an arbitrary user-specified directory.

The project list displays project names in the format APL/ProjectName. When APL is SMS 510 or CAP 505, it means that the project is in the SMS 510 or in the CAP 505 project collection respectively. Any other APL indicates the MicroSCADA application and project name.

The Source button invokes the following dialog for choosing one of the alternatives above:

---

**Table 5.2.-1 Description of the Project Export/Import dialog buttons:**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close</td>
<td>For closing the dialog.</td>
</tr>
<tr>
<td>About PEIT</td>
<td>Provides additional information about the tool and System Information.</td>
</tr>
<tr>
<td>Copy to...</td>
<td>For copying projects.</td>
</tr>
<tr>
<td>Export...</td>
<td>For exporting projects from the SMS 510 project collection to an arbitrary user-defined location.</td>
</tr>
<tr>
<td>Import...</td>
<td>For importing projects from an arbitrary user-defined location to the SMS 510 project collection.</td>
</tr>
<tr>
<td>Properties</td>
<td>Provides information about the project folder.</td>
</tr>
<tr>
<td>Delete...</td>
<td>For deleting projects from the SMS 510 project collection.</td>
</tr>
<tr>
<td>Duplicate...</td>
<td>For duplicating projects in the SMS 510 project collection.</td>
</tr>
<tr>
<td>Create...</td>
<td>For creating projects in the SMS 510 project collection.</td>
</tr>
<tr>
<td>Source</td>
<td>For defining the Project Source Directory. It can be the computer you are using or the MicroSCADA environment. You can also define the path manually.</td>
</tr>
</tbody>
</table>

---

*Fig. 5.3.1.-1 The Project Source Directory dialog*
The **MicroSCADA Apl On Drive** and **Path** entries allow you to access both local and network computers.

To use the MicroSCADA Apl On Drive option, specify the drive letter followed by a colon (:), for example ‘R:’. The Path entry allows using the Universal Naming Convention (UNC) format in addition to the standard format: <drive>:<directory path>. Sample UNC entries are provided below:

**Using a share name**

```
\WORKSTA\Backup\SMS510\Projects
```

where:

- **WORKSTA** is the name of the target computer.
- **BACKUP** is a share name on the target computer.
- **SMS510\PROJECTS** is a directory path under the share name.

**Using an administrative share name**

```
\WORKSTA\C$\Backup\SMS510\Projects
```

where:

- **WORKSTA** is the name of the target computer.
- **C$** is an administrative share name on the target computer, the root directory of the drive 'C'.
- **Backup\SMS510\Projects** is a directory path under the share name.

### 5.3.2. Project Storage

In SMS 510, projects are stored in the **PRJ** directory, for example:

```
<DRIVE:>\SMS510\PRJ
```

The MicroSCADA application projects are stored under the directory:

```
<DRIVE:>\SC\APL\APLNAME\PROTECTION\PRJ
```

where:

- **APLNAME** is the name of the MicroSCADA application.

### 5.3.3. Copying projects between network computers

In network environments, projects can be copied from the local computer to/from other computers in the network, see Fig. 5.3.3.-1. Other computers are referred to by using their computer name, which is a feature of the operating system. You should be granted full access to the share name if the intention is to copy projects to the network computer’s project database collection.

The destination can be one of the following alternatives:

- The SMS 510 project collection on the local computer
- A MicroSCADA library application on a drive letter
• A network directory
• A MicroSCADA library application on a network computer

The object types are not copied along with the project. Before the project is copied, it is up to you to verify that the object types and tools in the project are compatible or equal on the remote system. If the project contains objects of later versions or foreign object types, the remote system may encounter problems if the project is using object types of other versions than what is expected by the object types and tools.

Also notice that a project’s system configuration is transferred along with the project. Depending on the communication settings of the project’s objects and the communication capabilities of the target computer, the system configuration and/or objects’ communication settings may have to be modified to enable correct communication for all objects in the project.

In Hot Stand-By base systems (HSB) it is important that MicroSCADA is shut down while the project is being copied.

When a project is copied to a MicroSCADA application, it is copied to the application’s PROTECTION\PRJ directory, e.g. when the application is named PKS, the destination would be \SC\APL\PKS\PROTECTION\PRJ. Since a MicroSCADA library application can process one project only, it is named PRJ.

If a project already exists in the destination directory, you are prompted to replace the project or abort the operation. In addition, if you enter a destination directory, which is the same as the source directory, you will be notified that the copying cannot continue.

The Copy To button brings up the dialog shown in Fig. 5.3.3.-1, for choosing a destination for the selected project in the project list view.

![Copy Project dialog](image)
In order for the option **MicroSCADA APL on Drive** to operate, the drive letter must refer to the root directory of the drive on which MicroSCADA has been installed. The network computer name is entered in UNC format, for example `\L40017\MYPRJ`. In this example, the computer name is L40017 and MYPRJ is the share name.

The option **MicroSCADA APL on Network \Computer\Share** refers to the APL directory on the MicroSCADA computer, for example `\L40017\D_root\SC\APL`. Press <Enter> when your option is MicroSCADA APL on Drive or MicroSCADA APL on Network \Computer\Share to update the list of MicroSCADA APL applications.

### 5.3.4. Choosing storage location for temporary projects

A temporary project is a compressed project that has been exported from SMS 510 or another product. It is recommended to save such projects in a special-purpose directory outside the directory structure of SMS 510, for example `C:\EXPORTS`.

![Warning](exclamation.png) Especially avoid using the directory `\SMS510\TEMP` for such purposes, since the SMS 510 kernel may choose to erase its contents at any time.

### 5.3.5. Exporting projects

Exporting a project means that all associated object entries in a project are duplicated to some other location specified by you, see Fig. 5.3.5.-1. The destination location can be on the local system or on a network drive: the destination location is specified as a directory path, for example `C:\EXPORTS`. Notice that the destination directory must exist when you issue the export command.

The output result in the specified directory is a compressed archive file with the file extension `.AR`. For example, if the project file name (which is also the actual directory name for the project) is `KRISTIINANKAUPUNKI`, the compressed archive file name is truncated to `KRISTIIN.AR`.

![Info](info.png) When the project is later imported, the full project name must be used, although its compressed project file name is only eight (8) characters in length.

The object types used in the project are not exported along with the project, which means that the functionality in a sense is the same as with copying the projects, as described in Chapter 5. Copying projects between network computers.

![Export Project](export_project.png)

**Fig. 5.3.5.-1  The Export Project dialog**
Importing projects

Importing a project is done similarly as exporting, except for the directory entry: the source directory is the location from where the project is copied to your project collection, see Fig. 5.3.6.-1. The source directory can be a directory on your local computer system or on a network drive. The directory entry must be the full directory path to the project, for example C:\EXPORTS\KRISTINANKAUPUNKI means that a compressed project archive file KRISTIN.AR is in the directory C:\EXPORTS.

Notice that the project must be specified using its complete project file name although its compressed archive file name is only eight (8) characters in length.

If the compressed archive was distributed to you on several disks, you must first copy the contents from all disks to a common directory on a hard disk drive and import the project from there, see the note in the figure below:

![Fig. 5.3.6.-1 The Import Project dialog](image)

The source directory is the path to the project in the export directory. For example, if a project ‘DEMO’ was exported to X:\EXPORTS then the source directory would be X:\EXPORTS\DEMO (if the drive letter X: is mounted to the same location on both systems).

The system configuration of the project (i.e. the communication settings in the System Configuration and the object level addresses) is preserved when the project is imported. If the communication settings are obsolete or the current communication environment differs too much from the source environment, the communication settings of the project can later be reset from the System Configuration dialog (see Section 3.11. System configuration in this manual). The applicable settings are automatically converted, if the source project is detected to have been exported from another compatible tool product.
5.3.7. **Project properties**

The General Project Properties dialog shows the file name of the selected project, see Fig. 5.3.7.-1:

![General Project Properties dialog](image1.png)

*Fig. 5.3.7.-1 The General Project Properties dialog*

5.3.8. **Deleting a project**

Deleting a project is an irreversible operation that cannot be undone, see Fig. 5.3.8.-1:

![Project Export/Import dialog](image2.png)

*Fig. 5.3.8.-1 Deleting a project*
5.3.9. **Duplicating a project**

Duplicating a project means that an exact copy of the selected project is copied to your project collection, see Fig. 5.3.9.-1. During the process of duplication, you can specify a different project name and description. The project file name is actually a folder name (directory name) which will become the project’s home directory. The project file name may not already exist.

The ‘Project Filename’ must be a single-word name without spaces or characters other than:

- A - Z
- 0 - 9

**Fig. 5.3.9.-1 The Duplicate Project dialog**

5.3.10. **Creating a new project**

Creating a new project is done in a dialog similar to duplicating a project. The newly created project is assigned an empty system configuration, that is, no LON or serial port communication channels exist in the project's system configuration. Regarding project creation, the same restrictions that apply to the project duplication also apply here, see Section 5.3.9. Duplicating a project.

5.3.11. **Set As Local**

The function **Set As Local** sets a project as “Local”. Local means that the project is “owned” by the current SMS 510 installation and that it is used for direct connection to the relay units, also via telephone modem or other direct communication. This project is also available during logoff mode.

In the list of projects, select the project that you want to use as local and press **Set As Local**, see Fig. 5.2.-2. The project set as “Local” is shown on the row **Local Connection Project**. The name of the local connection project is visible also on the SMS 510 Login dialog, see Fig. 5.3.11.-1.
Notice that you can still open and use any of your other projects in the Project Structure Navigator even if one is set as local.

Set As Local is used in the following cases:

- Connecting one SMS 510 to another SMS 510 over LAN or Remote/RAS (the project to connect to should be set as local)
- Using the Scheduler and e.g. DR-Collector Tool and/or HV/Collect

When choosing the project to be used when uploading disturbance recordings, you can only select among the project set as local (same SMS 510 installation) and projects defined as Remote connection projects (another SMS 510 installation) in the Scheduler. The remote projects are located in the SMS 510 to be connected to.

For more details on using and setting up Remote connections and the Scheduler, see Chapter 12. Remote connections and Chapter 15. Task scheduling.

**5.3.12. Errors accessing remote disk resources**

If you attempt to access a disk resource on a remote computer, which does not contain matching MicroSCADA user account, you will receive errors illustrated in Fig. 5.3.12.-1 and Fig. 5.3.12.-2.
Fig. 5.3.12.-2  Notification about a failed import operation

The notification in Fig. 5.3.12.-2 also appears if the specified project does not exist.

To recover from such a situation, ensure that the target computer’s MicroSCADA user account is assigned the same password as your local computer.
User's Guide

6. **Plant Structure Settings**

This chapter describes the functionality of the Plant Structure Settings tool.

6.1. **General**

To be able to define the attributes for the plant structure object types that are applicable to the whole project, this system level tool is available. The tool provides the possibility to modify the predefined attributes and define the properties of the undefined levels in the object type. For more information on the Plant Structure Object Types, see Chapter 7. Plant Structure object types.

The lowest tree levels are disabled because there are no use for them in the SMS 510 environment.

6.2. **Starting the Plant Structure Settings Tool**

Start the tool by selecting the Plant Structure Settings on the System Tools menu in the Project Structure Navigator, see Fig. 6.2.-1.

![System Tools Menu](SyTo_PSS)

*Fig. 6.2.-1 Starting the Plant Structure Settings tool*

6.3. **Attributes of Plant Structures**

The attributes of the plant structure, see Fig. 6.3.-1, are applicable to the whole project, i.e. there cannot be several definitions of the plant structure’s attributes. The attributes that can be modified through this tool are:

- Level Id (see Section 6.3.1. Level Id)
- Level Description (see Section 6.3.2. Level Description)
- Field Length (see Section 6.3.3. Field Length)

These attributes are described in more detail in the following chapters.
The default values have been chosen on the basis of the corresponding functionality in the MicroSCADA Network Control system.

It is not recommended to change the default values, as such a change probably would cause compatibility problems when e.g. exporting projects to MicroSCADA.

### 6.3.1. Level Id

The Level Id attribute defines what the identifier is for recognising a certain level in a plant structure.

The defaults are:
- ‘STA’ that is used for recognising station level objects
- ‘BAY’ that is used for recognising bay level objects
- ‘DEV’ that is used for recognising device level objects

### 6.3.2. Level Description

The Level Description attribute is used for describing the different levels in the Add Object dialog when an object is inserted.

The defaults are:
- ‘Station’
- ‘Bay’
- ‘Device’

### 6.3.3. Field Length

The Field Length attribute defines the maximum possible length of the instances’ names when adding an object of the plant structure type to the project.

The defaults are:
- ‘10’
- ‘15’
- ‘5’
7. **Plant Structure object types**

This chapter describes the object types included in the plant structure object group.

7.1. **Overview**

The plant structure object types are intended to be used when building MicroSCADA compatible project structures. It is possible to define five structure levels, although three of them are predefined. For more information on structure level definition, see Chapter 6. Plant Structure Settings.

7.2. **General**

The plant structure object types are level sensitive. This means that it is only possible to insert predefined objects under each level of the structure. For example, it is not possible to insert a bay object under the root level, while the same operation is allowed under the station level.

7.3. **Field Length**

The length of the instance name in the plant structure object type is restricted to the value defined for the level in the Plant Structure Settings, see Chapter 6. Plant Structure Settings for more information.

![Fig. 7.3.-1 Notification about the instance name length](image)

If the instance name is longer than defined in the Plant Structure Settings, the notification shown in Fig. 7.3.-1 appears. When this happens, the correct thing to do is to shorten the instance name to the maximum number of characters indicated by the notification.

7.4. **Station**

The station level is intended to be used in conjunction with a subsequent bay level. Highlight the project’s root node and select **Insert Object** from the **Edit** menu to open the Add Project Object dialog, see Fig. 7.4.-1.
Fig. 7.4.-1  Adding a station level object

Insert the station object by selecting the Plant Structure object group and then the Station object type and click OK to open the station level object dialog, see Fig. 7.4.-2. (Notice that in the Project Structure Navigator’s status bar, the displayed object type is ‘OI’ for objects of Station type).

Fig. 7.4.-2  Adding a Station level object

Type in an appropriate name and title for the object and click OK to have the station level object inserted.

The name of the object identifies the unique instance in the structure. The instance name length is restricted to the number of characters defined in the Plant Structure Settings. The maximum length of the name is also displayed on the dialog.

The title of the object is a symbolic description and it is visible in the Project Structure Navigator.

7.5.  Bay

Highlight a station level object of a plant structure and select Insert Object from the Edit menu to open the Add Project Object dialog, see Fig. 7.5.-1.
Insert the bay object by selecting the Plant Structure object group and then the Bay object type and click OK to open the bay level object dialog, see Fig. 7.5.-2. (Notice that in the Project Structure Navigator’s status bar, the displayed object type is ‘OI’ for objects of Bay type).

Type in an appropriate name and title for the object and click OK to have the bay level object inserted.

The name of the object identifies the unique instance in the structure. The instance name length is restricted to the number of characters defined in the Plant Structure Settings. The maximum length of the name is also displayed in the dialog.

The title of the object is a symbolic description and it is visible in the Project Structure Navigator.
This chapter describes the object types included in the User Structure object group.

8.1. Overview

User Structure object types are intended to serve as structuring objects for structures that have other structuring requirements than MicroSCADA compatibility. The level structure can be built as deep as is required for the purpose intended.

8.2. General

The user structure object types can be used in both the Master Design View and in the user views.

The main difference between User Structure object types and Plant Structure object types is that the User Structure does not have the guided insertion order which means that the levels and their purposes are defined by the user.

8.2.1. Inserting Level objects

Highlight a level object and select Insert Object from the Edit menu to open the Add Project Object dialog, see Fig. 8.2.1.-1. Notice that in every view, the root node is also a Level object.

![Fig. 8.2.1.-1 Adding a User Structure object](image)

To insert the level object, select the User Structure object group and then the Level-Level object type. Click OK to open the Add Level dialog shown in Fig. 8.2.1.-2.

![Fig. 8.2.1.-2 Adding a Level object](image)

Enter a title for the object and click OK to insert it into the tree structure. The title is visible in the Project Structure Navigator and it must be unique in the scope of its view, that is, you cannot have two Level objects having the same title in a single view.
9. **Gateway object types (COM 610)**

SMS 510 supports the following gateways:

- LON/SPA Gateway SPA-ZC 100/102 (LSG)
- LON Star Coupler RER 111
- COM 610 communication gateway

The two LON gateway object types are described in a separate *LON Gateways Configuration manual* (see Section 1.7. Related documents). This chapter describes only the COM 610 object type.

9.1. **General**

In SMS 510, the COM 610 communication gateway can be used as a SPA router for the following relays and terminals:

- RED 500 series
- SPACOM family

Being a communication gateway, the task of a COM 610 is to make protocol conversions between process communication and remote communication. The protocol used in process communication is called the master protocol (protocol between COM 610 and relay/terminal), and the protocol used in remote communication is called the slave protocol (protocol between SMS 510 and COM 610). In general, the master protocol can be selected independently on the selected slave protocol.

For the protocol conversions to be possible, cross-references between different protocols must be done with the engineering tools provided by COM 610. This engineering includes also the mapping of the protocol addresses.

Installation, configuration and usage of a COM 610 communication gateway itself is not described here. The documentation and tools accompanying the gateway must be utilized.

9.2. **Supported protocols**

The following master/slave protocols supported by COM 610 can be used in SMS 510.

**Slave protocol:**

- COM 610 object can be connected to SMS 510 only via SPA router protocol.

**Master protocols:**

- COM 610 object allows SPA or LON protocols to be defined as the master protocol for the RED 500 series.

- COM 610 object allows only SPA protocol to be defined as the master protocol for the SPACOM family.
SPA relays connected to a SPA-ZC 400/402 Ethernet adapter and using an IEC 61850 OPC server in COM 610 are also supported. In that case, the SPA must be selected as the protocol for the device object in SMS 510.

9.3. Insertion

Adding and using a COM 610 object in a project is mandatory only in the situation, where the relay is connected to a COM 610 gateway with LON protocol. If the devices are using SPA protocol, then the device objects can be added to the project with or without a COM 610 object.

COM 610 objects can be inserted only in the Master Design View mode of the Project Structure Navigator, and cannot be used in a project's user views. However, the device objects hosted by a COM 610 object are normally visible also in the user views.

You can insert COM 610 objects into the following locations of a project:

- Under the root node of the project
- Under a Station object
- Under a Bay object
- Under a Level object

In contrast to other objects, COM 610 objects are non-movable. This means that once inserted, a COM 610 object cannot be moved elsewhere in the tree structure.

The modifiable attributes of COM 610 objects are the same as for the other object types (see Fig. 9.3.-1).

![General Object Attributes](image)

*Fig. 9.3.-1* General object attributes for COM 610 objects
9.4. Communication setting

Due to the nature of a communication gateway usage, the communication settings for both the master and the slave protocol must be defined separately. These settings together define the complete communication settings of a single relay/terminal.

In addition, since the cross-reference tables between the master and slave protocols must have been done for COM 610, also the protocol addresses are mapped. In other words, the SPA address of a relay/terminal to be used in SMS 510 is not necessarily the same as defined in the physical relay/terminal.

SPA addresses behind one COM 610 object must be unique in SMS 510.

9.4.1. Communication settings of COM 610 object

In order to be able to configure the communication settings of the COM 610 object, the project's system configuration must contain one or more serial ports.

The communication settings of COM 610 objects are configured on the Communication page of the General Object Attributes dialog in the Project Structure Navigator (see Fig. 9.4.1.-1).

![Fig. 9.4.1.-1 Communication settings for COM 610 objects](image)

The only required definition is the serial port to be used. For the protocol there are no other choices, and the SPA address is not applicable for the gateway itself.

9.4.2. Communication settings of device object

In order to be able to configure the communication settings of the device object, the parent COM 610 object's communication settings must have been defined first.

The communication settings of device objects are configured on the Communication page of the General Object Attributes dialog in the Project Structure Navigator (see Fig. 9.4.2.-1).
Irrespective of the protocol to be selected (SPA or LON), the only required address definition is the SPA address.

Address mappings between SMS 510 and COM 610 are based on SPA addresses with all the master protocols.

9.5. Using COM 610 object

Here is an example of a configured COM 610 object:
10. System Self Supervision

This chapter describes the System Self Supervision function in SMS 510. The examples are taken from a project named “Model Switchyard” using two serial ports and having 5 remote devices connected on each.

10.1. General

The intention with System Self Supervision (SSS) is to provide the user with on-line information about the status of the SMS 510 system and devices connected to it. The SSS project view shows the active project in form of a tree using both status icons and texts for the monitored objects, see example in Fig. 10.3.1.-1. Thereby the SMS 510 operator is provided with information about alerts from the supervised objects. The operator can also switch to the SSS project view to check the state of objects of interest.

SSS is operating in the background for currently open projects in the Project Structure Navigator. One project is supervised at a time. Alerts from SSS are shown in red text in an “alert box” down in the right-hand corner in the Project Structure Navigator, see example in Fig. 10.6.-1.

Since the System Self Supervision view is just another view in the project, its background color can be changed by selecting View Properties from the View menu. This view can be made easily recognizable by some other color, if wanted.

10.2. System Self Supervision activation

By default, the System Self Supervision is not activated in SMS 510. Therefore you have to activate the SSS functionality before you can get the System Self Supervision running, see Section 10.4. Enabling System Self Supervision. When you build projects and work off-line in SMS 510, it is convenient to have SSS inactive, see Section 10.5. Disabling System Self Supervision.

10.3. Objects supervised by System Self Supervision

The following types of objects are supervised by SSS:

- Application state (see Section 10.7.3. Application State supervision)
  - Application state
  - Application memory pool supervision
- Line Communication (see Section 10.7.4. Line Communication supervision)
  - (Serial) ports
  - LON Channels
  - Devices
- Operating System (see Section 10.7.5. Operating System Events supervision)
  - Application events from the operating system
  - System events from the operating system
  - Security events from the operating system
10.3.1. **System Self Supervision object presentation**

System Self Supervision presents the objects of the project as a tree, as in Fig. 10.3.1.-1. It shows the entire project with all objects, even if the user might have defined his own views with fewer objects, see Section 3.13. Using user views.

The Supervision Log Viewer also presents information provided by the System Self Supervision, but in list format, see Chapter 11. Supervision Log Viewer.

Fig. 10.3.1.-1 System Self Supervision for the active project

When the SSS project is in focus in the Navigator, other project functions belonging to the project view are disabled. Thus, you cannot modify objects in the project or start tools like DR-Collector Tool, System Configuration etc.

10.3.2. **System Self Supervision object maintenance**

The System Self Supervision project is created automatically from the active project in the Project Structure Navigator (PSN) upon starting SMS 510 or by opening another project. When the project is modified in the PSN, the SSS project is rebuilt automatically. This means that the operator does not need to create or modify any SSS project or views, since it is done automatically by the PSN.

10.4. **Enabling System Self Supervision**

Enabling SSS is easy. Select **System Configuration** from the **System Tools** menu (see Fig. 15.5.-1) and select the **General Settings** page (see Fig. 10.4.-1). Check the **System Self Supervision enabled** check box, and save and exit by clicking **OK** or apply the change by clicking **Apply**.
10.5. **Disabling System Self Supervision**

When you want to disable the System Self Supervision, you reverse the operation described in the above Section 10.4. Enabling System Self Supervision.

Remove the ‘x’ from the check box by clicking at it, see Fig. 10.5.-1. No additional measures need to be taken.

The Supervision Log Viewer (Chapter 11. Supervision Log Viewer) is not updated as to the items Common System Messages and Unknown Process Messages when SSS is disabled. History is still available.

10.6. **Opening the System Self Supervision view**

The System Self Supervision tree structure is accessible either by clicking the alerts in the Project Structure Navigator alert box or on demand by the operator in the Views menu.

Proceed as follows:

- By clicking the Alert message as in Fig. 10.6.-1, the SSS view is opened. Status code is in parentheses.
Fig. 10.6.-1 Opening the SSS view by clicking the alert

• To manually open the SSS view, select **SSS - System Self Supervision** in the **Views** menu, see Fig. 10.6.-2.

Fig. 10.6.-2 Entering the SSS view

‘SSS-System Self Supervision’ is not shown in the Views menu when SSS is not in use.

10.6.1. **Exiting the System Self Supervision view**

Having examined the SMS 510 system in SSS you can return to the project by selecting a view from the **Views** menu. In Fig. 10.6.-2, the project is called Model Switchyard (default name is ROOT). The SSS session can also be ended by choosing **File** menu/Exit and thereby exiting SMS 510.

10.7. **SSS object status representation**

The following describes the graphical representation, icons used, texts and reasons for alerts from the SSS function and some measures to solve the cases.

10.7.1. **Status information**

In Fig. 10.3.1.-1 and Fig. 10.7.4.-2, there is a field to the right containing **Status Information** which gives the status of the object currently selected in the SSS tree structure.
Status Code
The code for the status. There is an exception for OK, which does not show any code. For instance, code 13251 means that the device is suspended, that is, no contact to the device. The codes are listed in the MicroSCADA Status Codes Manual.

Status text
The status text is the text for the status code of the selected object, but also other texts provided by the system. The status text can be e.g. Device OK, Device Suspended, System initialized.

10.7.2. Status icons
The status of the supervised objects are presented by icons as shown in the following sections. Depending on the type of alerts, different types of measures can or should be taken. Some alerts are not severe and can occur during the configuration or creation of the project. For some icons (select the icon in the SSS project tree), a technical explanation of the deviation is given. This technical explanation is intended for expert analysis. The list of corrective measures for each icon lists measures that can be taken to solve the reported deviation.

10.7.2.1. Icon OK

![Icon OK]

*Fig. 10.7.2.1.-1 Status OK*

**Reason for occurrence**
The icon in Fig. 10.7.2.1.-1 represents the “OK” situation for a supervised object and the object is operational. It is, however, possible that the icon is shown even though the device reports a warning indication, but in such cases the warning is not critical or indicates any errors.

10.7.2.2. Icon Not OK

![Icon Not OK]

*Fig. 10.7.2.2.-1 The object is not operational*

**Reason for appearance**
The most probable reasons for the icon in Fig. 10.7.2.2.-1 to appear are:

1. Communication with the device is lost or fails
2. The communication software is temporarily inactive (e.g. when the operator edits the system configuration)

Other possible reasons are:

3. SSS kernel malfunction
4. The SSS configuration file contains invalid or incomplete data
5. The SSS configuration and the system configuration does not match
6. The device status code is unknown to the SSS kernel

Corrective measures
Measures for correcting the status of the objects are listed in Table 10.7.4-1.

10.7.2.3. Icon Dimmed

Reason for appearance
The reason for the icon in Fig. 10.7.2.3.-1 to appear is that data for the object is missing, possible reasons are:
1. Device communication settings are incorrect in the system configuration
2. The device is disconnected or switched off
3. The device has not communicated since the system configuration was activated

Corrective measures
1. Check the communication settings of the object
2. Check the system Configuration communication settings
3. Check that the object is powered on

10.7.2.4. Icon NoConf

Reason for appearance
The icon in Fig. 10.7.2.4.-1 appears when the project’s SSS structure includes an object entry that is not in the SSS kernel station list.
The icon appears as a result of an internal consistency malfunction due to interrupted structure updates during parametrization or project entry deletion.
This icon is used when the SSS entry is loaded and it remains unchanged for the rest of the project session.

Corrective measures
Measures to correct the status is to turn the Self Supervision off (see Section 10.5. Disabling System Self Supervision) and then turn it back on (see Section 10.4. Enabling System Self Supervision), to rebuild the SSS project objects.
10.7.2.5. **Icon Stop**

*Fig. 10.7.2.5.-1 Data about object in database inconsistent (internal)*

**Reason for appearance**
The icon in Fig. 10.7.2.5.-1 indicates that the SSS kernel fails in executing its program code. The reason for this is most likely internal due to invalid/incomplete data or corrupted program code.

**Corrective measures**
Measures to correct the status are:

1. Turn the Self Supervision off, (see Section 10.5. Disabling System Self Supervision) and then turn it back on (see Section 10.4. Enabling System Self Supervision) to rebuild the SSS project objects.
2. Create a dummy project, open it and make the system configuration for it. After this operation, open the original project again and the SSS project is rebuilt.
3. Stop SMS 510 (by **Exit** in the Login window as in Fig. 4.6.-1) and then start SMS 510 again.
4. In case of a persisting indication, delete the object from your project and add it again.

10.7.2.6. **Icon No**

*Fig. 10.7.2.6.-1 Fault reported by internal status code (internal)*

**Reason for appearance**
The icon in Fig. 10.7.2.6.-1 appears when the internal status code for the item’s attributes indicates a failure or malfunction.

**Corrective measures**
Delete the object from your project and add it again.

10.7.3. **Application State supervision**

Application State supervision is supervising the SMS 510 application in general and available memory.

The part of the project tree belonging to Application State supervision is shown in Fig. 10.7.3.-1, together with the designations that are used in the object box (shows selected object). The same applications are shown in the Supervision Log Viewer.
Fig. 10.7.3.-1  Application State Monitoring objects with terms

Alerts generated by the Application State are listed in the following table.

**Table 10.7.3-1 Application state supervision items, alerts and measures**

<table>
<thead>
<tr>
<th>Supervised item</th>
<th>Reason for alerts</th>
<th>Corrective measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application state</td>
<td>The SMS 510 system has severe problems.</td>
<td>Restart SMS 510.</td>
</tr>
<tr>
<td>(APL_ST)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application memory pool</td>
<td>The memory pool reserved to the application is running low</td>
<td>Restart SMS 510.</td>
</tr>
<tr>
<td>supervision (APL_POOL)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**10.7.4. Line Communication supervision**

Line Communication supervision is supervising the serial communication over the serial port(s) to the communication equipment and relay devices for both LON and SPA protocols.

The part of the project tree belonging to Line Communication supervision is shown in Fig. 10.7.4.-1, together with the designations that are used in the object box (shows selected object). The same applications are shown in the Supervision Log Viewer.

Fig. 10.7.4.-1  Line Communication objects with terms

The reason for alerts by Line Communication are listed in the following table.

**Table 10.7.4-1 Line Communication supervision items, alerts and measures**

<table>
<thead>
<tr>
<th>Supervised item</th>
<th>Reason for alerts</th>
<th>Corrective measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line Communication (NODE)</td>
<td>System Configuration might be faulty or inconsistent</td>
<td>Check the settings of the communication channels in the System Configuration and that you have proper equipment connected</td>
</tr>
<tr>
<td>COMx /Line x (LINE)</td>
<td>Serial port hardware error or wrong settings made for the serial port initialization in the System Configuration, therefore it cannot be detected and messages cannot be sent or received</td>
<td>Check the settings of the communication channels in the System Configuration and that you have proper equipment connected</td>
</tr>
<tr>
<td>Device (STATION)</td>
<td>The external device is not responding to communication or communication not properly configured or communication broken</td>
<td>Check the communication settings of the unit; protocol, serial port, address, and the System Configuration of the project. Furthermore, check that the object is powered on and that possible cables and fibres are properly connected.</td>
</tr>
</tbody>
</table>
User's Guide

Line Communication alert, example

Fig. 10.7.4.-2 shows an example of a relay module on COM1 not responding to the system.

![Diagram showing a project structure navigator with a selection of nodes under Operating System]

10.7.5. Operating System Events supervision

The Operating System (OS) events generated by the OS are available by using the Event Viewer in Administrative Tools. The part of the project tree belonging to Operating System is shown in Fig. 10.7.5.-1, together with the designations that are used in the object box (shows selected object).

![Diagram showing Operating System objects with terms]

Fig. 10.7.5.-1 Operating System objects with terms

The operating system alerts reference sections are listed in the following table.

<table>
<thead>
<tr>
<th>Supervised item</th>
<th>Reason for alerts</th>
<th>Corrective measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>System events</td>
<td>See Section 11.2.3.1. System events.</td>
<td>Check with your IT support</td>
</tr>
<tr>
<td>Security events</td>
<td>See Section 11.2.3.2. Security events.</td>
<td>Check with your IT support</td>
</tr>
<tr>
<td>Application events</td>
<td>See Section 11.2.3.3. Application events.</td>
<td>Check with your IT support</td>
</tr>
</tbody>
</table>

Table 10.7.5-1 Operating System supervision items, alerts and measures

Operating System based events are generated by the operating system (OS) and the information in the log file is consistent with events visible through the Event Viewer provided by the OS. Three different event types are generated by the OS: System, Security and Application.
11. **Supervision Log Viewer**

This chapter describes the usage of Supervision Log Viewer

11.1. **Overview**

The Supervision Log Viewer is used to monitor the information that has been collected by the System Self Supervision and the operating system (OS).

The information that the Supervision Log Viewer presents can be ordinary run-time events occurring during normal operations or events generated during faults or other similar situations when there is need to examine the system.

The Supervision Log Viewer displays the information included in several log file types stored on the hard disk. These files contain information in form of events originating from both hardware and software.

Filters can also be used to focus on information from certain objects of interest. The user can only view the log entries in the Supervision Log Viewer, editing is not possible. The updating of the Supervision Log Viewer display is manual. That is, the display has to be refreshed to show new information that has been entered since the display was opened.

The information collected by System Self Supervision can also appear in event and alarm lists (not available in SMS 510), but by default always in the generated log files.

Supervision Log viewer is based on the System Self Supervision functions. SSS has to be enabled to collect information for the Supervision Log Viewer. Activating SSS is described in Section 10.4. Enabling System Self Supervision.

11.1.1. **Supervision Log Viewer users**

Some examples of users benefiting from information provided by the system information provided by Supervision Log Viewer are listed in the table below:

<table>
<thead>
<tr>
<th>User</th>
<th>Needed information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operators</td>
<td>Accurate information about system parts that inhibit or limit operation or events occurring during normal operation</td>
</tr>
<tr>
<td>Maintenance people</td>
<td>Detailed information about failing system parts that must be replaced</td>
</tr>
<tr>
<td>Engineers and after sales support engineers</td>
<td>Incorrect engineering and behaviour of the system needs to be reported, e.g. application load, communication load.</td>
</tr>
</tbody>
</table>

11.2. **Types of log events**

Each type of log information can be viewed only from the appropriate menu item in the Log menu. One log event type at a time can be viewed in Supervision Log Viewer.
Views presenting SMS 510 system information:
- Common System Messages
- Unknown Process Messages

Views presenting Operating System logs:
- System Events from Operating System
- Security Events from Operating System
- Application Events from Operating System

The Operating System events that are shown in the Supervision Log Viewer are restricted to events concerning the SMS 510 (MicroSCADA) system. All OS events are available from the Event Viewer in Administrative Tools provided by the Operating System.

Event codes coming from the relay modules are not presented in the Supervision Log Viewer.

11.2.1. **Glossary**

Some terms used in the Supervision Log Viewer might need explanation. The terminology is common within MicroSCADA.

MicroSCADA = In this case SMS 510

NET = Communication

Net Line = Communication Line, e.g. Serial port

Running = Connection established to a device

Station = Device, e.g. relay module

Station 30 = Device with SPA address 30

Suspended = e.g. communication is lost to a device

Events with the same time stamp are generally related to the same topic, i.e. there can be a general and a more detailed level of description for a certain event.

11.2.2. **Common events**

Common events, see Fig. 11.2.2.-1, include events from the communication unit as well as predefined events in stations and in the SMS 510. Predefined events occur, for example, when a connection to a remote device is lost or re-established, whereas occurrences of SMS 510 events are related to a certain event from the printer, communication unit or external clock connected to the system.
Common system messages contain the following information:

- Time stamp with milliseconds, e.g. 2003-06-12 11:32:49.521
- Object type, e.g. Station (relay module)
- Object number, e.g. 115 (module address)
- Communication unit (NET) number (if any), e.g. 2
- Communication unit line (NET Line) number (if any), e.g. 1
- Status code, e.g. Device suspended [13371] (system message from the communication unit) or text, e.g. Running (if application or base system event)

### 11.2.3. Operating System events

Operating System based events are generated by the operating system, e.g. Windows NT, Windows 2000 or Windows XP. The information in log file is consistent with events visible through the OS Event Viewer. Three different event types generated by the OS are System, Security and Application. These incoming events are, if defined so, stored into own types of files by the Supervision, described in separate sections below.

#### 11.2.3.1. System events

An example of an OS System event is shown in Fig. 11.2.3.1.-1.
System events contain the following information:

- Time stamp with seconds, e.g. 1999-12-03 08:30:52
- Source specific event id, which together with the name of the source identifies the message, e.g. 9
- Type of event (e.g. ERROR, WARNING, INFORMATION, AUDIT_SUCCESS, AUDIT_FAILURE)
- Source-specific sub category. This information is shown only in the Event Details dialog.
- Active user (if possible to define) at the time the event was logged, e.g. Administrator
- Name of the computer that generated the event, e.g. FIMIT-RVS-S11
- Domain name of the computer that generated the event
- Name of the source, i.e. application, service, driver, subsystem that generated the entry, e.g. Print
User's Guide

• Log type of the event is always SYSTEM. When SYSTEM events are shown in Supervision Log Viewer, it is not possible to view SECURITY or APPLICATION events simultaneously.

• Source specific message string.

If N/A (Not Applicable) is shown for an event, it means that the specified item is not included in the received event information.

11.2.3.2. Security events

Security events contain the following information:

• Time stamp with seconds, e.g. 1999-12-03 08:30:52

• Source specific event id, which together with the name of the source identifies the message, e.g. 9

• Type of event (e.g. ERROR, WARNING, INFORMATION, AUDIT_SUCCESS, AUDIT_FAILURE)

• Source specific sub category. This information is only shown in the Event Details dialog.

• Active user (if possible to define) at the time the event was logged, e.g. Administrator

• Name of the computer that generated the event, e.g. FIMIT-RVS-S11

• Domain name of the computer that generated the event

• Name of the source, i.e. application, service, driver, subsystem that generated the entry, e.g. Print

• Log type of the event is always SECURITY. When SECURITY events are shown in Supervision Log Viewer, it is not possible to view SYSTEM or APPLICATION events simultaneously.

• Source specific message string. This information is shown only in the Event Details dialog.

If N/A (Not Applicable) is shown for an event, it means that the specified item is not included in the received event information.

11.2.3.3. Application events

Application events contain the following information:

• Time stamp with seconds, e.g. 1999-12-03 08:30:52

• Source specific event id, which together with the name of the source identifies the message, e.g. 9

• Type of event (e.g. ERROR, WARNING, INFORMATION, AUDIT_SUCCESS, AUDIT_FAILURE)

• Source specific sub category. This information is shown only in the Event Details dialog.

• Active user (if possible to define) at the time the event was logged, e.g. Administrator

• Name of the computer that generated the event, e.g. FIMIT-RVS-S11

• Domain name of the computer that generated the event
User’s Guide

- Name of the source, i.e. application, service, driver, subsystem that generated the entry, e.g. Print
- Log type of the event is always APPLICATION. When APPLICATION events are shown in Supervision Log Viewer, it is not possible to view SYSTEM or SECURITY events simultaneously.
- Source specific message string. This information is shown only in the Event Details dialog.

If N/A (Not Applicable) is shown for an event, it means that the specified item is not included in the received event information.

11.3. Starting Supervision Log Viewer

The Supervision Log Viewer is started from the System Tools menu by selecting Supervision Log as in Fig. 11.3.-1.

![Fig. 11.3.-1 Starting the Supervision Log Viewer from the System Tools menu](SyTo_SL)

11.4. Toolbar and menus

The following section describes the toolbar buttons and the menus in the Supervision Log Viewer.

In the table below, the buttons are presented as a group, but also one by one when the matching menu items are presented. Some of the toolbar buttons and menu items are enabled only when a certain function or view is selected in the Log menu.

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>![EXIT]</td>
<td>Exit the Supervision Log Viewer.</td>
</tr>
<tr>
<td>![LOG_SETTINGS]</td>
<td>Log Settings, select the amount of events to be shown.</td>
</tr>
<tr>
<td>![MECHANISM_PARAMETERS]</td>
<td>Setting of Mechanism Parameters for the Unknown Process Object. This button is disabled in SMS 510.</td>
</tr>
<tr>
<td>![SYSTEM_MESSAGES_EVENTS]</td>
<td>Select operating System Events and Events Types. The button is enabled when the view System Messages from the Operating System is active.</td>
</tr>
<tr>
<td>![PREVIOUS_PAGE]</td>
<td>Scroll one page backward on the list.</td>
</tr>
<tr>
<td>![NEXT_PAGE]</td>
<td>Scroll one page forward on the list.</td>
</tr>
</tbody>
</table>
11.4.1. Log menu

In the Log menu, see Fig. 11.4.1.-1, you can select different views of events and exit the Supervision Log Viewer.

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Define color settings for the Supervision Log Viewer and view the system colors.</td>
</tr>
<tr>
<td></td>
<td>Define font settings for the Supervision Log Viewer and view the font settings of the MicroSCADA base system.</td>
</tr>
<tr>
<td></td>
<td>View the About Supervision Log Viewer dialog.</td>
</tr>
</tbody>
</table>

**Common System Messages**

This selection shows events in the scope of Common System Events. More information is given in Section 11.2.2. Common events.

**Unknown Process Objects**

This function is not available in SMS 510.

**System Events from Operating System**

This selection shows events in the scope of System Events from the Operating System. More information is given in Section 11.2.3. Operating System events.

**Security Events from Operating System**

This selection shows events in the scope of Security Events from the Operating System. More information is given in Section 11.2.3.2. Security events.

**Application Events from Operating System**

This selection shows events in the scope of Application Events from the Operating System. More information is given in Section 11.2.3.3. Application events.
Clear All Events

Before the deletion of the appropriate log type, the following dialog is displayed (see Fig. 11.4.1.-2). If you click Yes, the contents of the log type will be cleared.

![Dialog for confirming the clearing of events](image)

**Fig. 11.4.1.-2** Dialog for confirming the clearing of events

Exit

Exit ends the Supervision Log Viewer session.

**Keyboard entry:** &lt;Alt&gt;+&lt;F4&gt;

**Toolbar entry:**

11.4.2. View menu

The View menu, see Fig. 11.4.2.-1, contains several functions, which are described in the following sections. All the menu items in the View menu have effect on the view selected from the Log menu.

![View menu items](image)

**Fig. 11.4.2.-1** View menu items

**All Events**

Displays all events of the selected log type, events to be shown are not filtered. This is the default selection, if not otherwise defined in the Supervision Log profile by the user.
User’s Guide

Use Event Filter

By selecting the option **Use Event Filter**, the filtering is activated according to the definitions in Supervision Log profile dialog in the Filters menu.

Newest First

Sorts the events in the view, with the newest event on top. This is the default selection, if not otherwise defined into Supervision Log profile by the user.

Oldest First

Sorts the events in the view, with the oldest event on top.

Details…

**Keyboard entry: <Enter>**

Displays all the event information in the Details dialog for the selected event in the view. It is applicable only when some of the Operating System log types are active in Supervision Log Viewer, i.e. System Events, Security Events or Application Events.

The third way to present details is to double click an event line in the view, see example in Fig. 11.2.3.1.-1.

![Event Details dialog](image)

*Fig. 11.4.2.-2 Event Details dialog*
The following table explains the buttons shown in Fig. 11.4.2-2 above.

**Table 11.4.2-1 Buttons and functions in Event Details**

<table>
<thead>
<tr>
<th>Button</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close</td>
<td>Closes the presentation of event details</td>
</tr>
<tr>
<td>Next</td>
<td>Shows details of the event on the next line</td>
</tr>
<tr>
<td>Previous</td>
<td>Shows details of the event on the previous line</td>
</tr>
</tbody>
</table>

**Next Page**

**Keyboard entry:** `<Ctrl>+<N>`

**Toolbar entry:**

![Next button](image)

Next Page scrolls forward one page in the list. The count of events to be shown in the view page in the Supervision Log Viewer is defined in the Log Settings dialog accessible from the Options menu.

**Previous Page**

**Keyboard entry:** `<Ctrl>+<N>`

**Toolbar entry:**

![Previous button](image)

Previous Page scrolls backward one page in the list. The count of events to be shown in the view page in the Supervision Log Viewer is defined in the Log Settings dialog accessible from the Options menu.

**Refresh**

**Keyboard entry:** `<F5>`

The Supervision Log Viewer is not automatically updated if new events are received into log files when the Supervision Log Viewer is open. When the user refreshes the view, these new events are displayed in the view. Note that if the Oldest First selection is active in the View menu, the newest events are included at the bottom of the last page.

**11.4.3. Filter menu**

The Filter Menu, see Fig. 11.4.3.-1, is used to select filters and Supervision Log profile.
Unknown Process Objects

Toolbar entry:

This function is not available in SMS 510.

Operating System Events

Toolbar entry:

The Operating System Events function, see Fig. 11.4.3.-2, is used to display how the Operating System Events are to be supervised in the system.

The function Operating System Events can be activated when any of the Operating System events views is active, i.e. selected from the Log Menu.

Fig. 11.4.3.-2 Check boxes for selecting Operating System events
A description of the options in Fig. 11.4.3.-2 is given in the following table:

Table 11.4.3-1  The check boxes available in the Operating System Events dialog

<table>
<thead>
<tr>
<th>Selection</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handler State</td>
<td>Indicates whether the Operating System Events are to be supervised in the SMS 510 (Enabled) or not (Disabled). If the handler is in the enabled state, it is possible to log five types of events. If the appropriate dialog item for ERROR, WARNING, INFORMATION, AUDIT SUCCESS or AUDIT FAILURE is selected in the Operating System Events dialog, it means that it has been configured to be supervised into the SMS 510.</td>
</tr>
<tr>
<td>ERROR</td>
<td>Error events indicate significant problems that the user should be informed about. These types of events usually indicate a loss of functionality or data.</td>
</tr>
<tr>
<td>WARNING</td>
<td>Warning events indicate problems that are not significant immediately, but that may cause problems in future.</td>
</tr>
<tr>
<td>INFORMATION</td>
<td>Information events indicate typically infrequent, but important and successful operations in the OS. For instance, when Microsoft SQL Server is initialized successfully, there may be a need to log an information event stating that &quot;SQL Server has started successfully.&quot;</td>
</tr>
<tr>
<td>AUDIT SUCCESS</td>
<td>Success audit events are security events that occur when an audited access attempt has been successful, e.g. a successful logon has occurred in the OS.</td>
</tr>
<tr>
<td>AUDIT FAILURE</td>
<td>Failure audit events are security events that occur when an audited access attempt has failed, e.g. an unsuccessful logon has occurred in the OS.</td>
</tr>
</tbody>
</table>

The settings in Fig. 11.4.3.-2 are settable on-line via HSI and are in use until SMS 510 is shut down.

Supervision Log Profile

By using Supervision Log Profile, see Fig. 11.4.3.-3, it is possible to filter the displayed event information in Supervision Log Viewer. Only events found in the log files that fulfil the filter conditions are shown in the Supervision Log Viewer. This way it is easier to focus on events received from certain supervised object items.

The Supervision Log Profile menu item is available for log types selected from the Log menu. By means of this function you can select events for all log types:

- Events from the first event to the last event
- Events within a certain period of time
- Events after last system start up

With this function, you can also select the following for an Unknown Process Object log type:

- Station items of interest to monitor
With this function you can also select the following for a Common System Message log type:

- Communication unit, communication unit line and station items of interest to monitor

Fig. 11.4.3.-3 Supervision Log Profile

In the figure above, events from stations 4, 5 and 11 are selected. The buttons and corresponding functions in Fig. 11.4.3.-3 are listed in the table below:

**Table 11.4.3-2 Buttons and explanations to Supervision Log Profile**

<table>
<thead>
<tr>
<th>Button</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load New…</td>
<td>Opens the File Chooser for loading Supervision Log profile from specified folder. Supervision Log profile files include extension .evt</td>
</tr>
<tr>
<td>Save As…</td>
<td>Opens the File Chooser for saving the defined Supervision Log profile in the Supervision Log Viewer to the specified folder. It is recommended that the default file extension .evt is used when renaming the profile file.</td>
</tr>
<tr>
<td>OK</td>
<td>Activates the profile settings to be used in Supervision Log Viewer.</td>
</tr>
<tr>
<td>Cancel</td>
<td>No change is being made to the profile settings.</td>
</tr>
</tbody>
</table>

The profile settings are immediately taken into effect and are also active at the next start-up of the Supervision Log Viewer. In other words, the settings are active until they are changed or another profile is loaded. The profiles are user-specific.

**11.4.4. Options menu**

The Options menu, see Fig. 11.4.4.-1, provides settings for changing the environment in the Supervision Log Viewer. The definitions done in the Supervision Log Viewer by using these menu items have an immediate effect on the functionality
User’s Guide

of the Supervision Log Viewer and are also stored into the user-specific parameter file. Next time the Supervision Log Viewer is opened, the same definitions are taken into use.

Fig. 11.4.4.-1 Options menu

Toolbar Visible

The toolbar buttons are visible or invisible by selecting this function.

Background Color...

By selecting this menu item the Color Chooser is displayed from which you can select the color that you want to use as background in the Supervision Log Viewer.

Foreground Color...

By selecting this menu item the Color Chooser is displayed from which you can select the color that you want to use as foreground in the Supervision Log Viewer.

Default Colors

Restore the default colors to be used both for the background and foreground in the Supervision Log Viewer.

Configure Font...

By selecting this menu item, the Font Chooser is displayed, see Fig. 11.4.4.-2, from which you can select the font and size of the text.
Fig. 11.4.4.-2 Setting fonts for the Supervision Log Viewer

**Default Font**
Restores the default font settings in the Supervision Log Viewer.

**Enlarge Font**
Enlarges the font size used in the Supervision Log Viewer.

**Reduce Font**
Reduces the font size used in the Supervision Log Viewer.

**Log Settings**

**Toolbar entry:**

The Log Settings function, see Fig. 11.4.4.-3, is used to access the Log Settings dialog. In this dialog, it is possible to define how many events that should be shown on each page of the Supervision Log Viewer. The value range for event count is between 100 and 1000.
11.4.5. **Help Menu**

The Help menu provides information about the Supervision Log Viewer.
12. Remote connections

There are several different types of remote connections possible with SMS 510, but in this chapter the focus is set on the function Remote Connections provided by SMS 510, i.e. LAN, Remote/RAS and Dial-Up (SPA). Beyond the scope of this chapter is a description of how to establish a remote connection using fibre optic equipment. From an SMS 510 point of view, it is basically the same as using direct communication over cable to the relays.

12.1. General

In the SMS 510 Remote Connections function, there are three ways of establishing remote connections:

1. LAN over a local network
2. Remote/RAS (Remote Access Service) using a telephone modem
3. Dial-Up (SPA) over the telephone network

12.2. Features

The SMS 510 Remote Communications function features are listed in the following sections.

12.2.1. LAN and Remote/RAS

- LAN and Remote/RAS functions support establishing of connections to projects made and managed by another SMS 510, COM 500 with LIB 5x0 or SYS 500 with LIB 5x0.
- LAN and Remote/RAS do not necessarily need a project of their own in the SMS 510 initializing the connection, since the accessed project is located in the target system.
- Password protected.

12.2.1.1. Application areas

- Direct connection to relays via the remote SMS 510, SYS+LIB 5x0 or COM 500 +LIB 5x0, e.g. for parametrization tasks, but also enabling uploading of recordings from disturbance recorders (manual operation in DR-Collector Tool). The communication is based on the remote project.
- Task Scheduling for transfer of data to/from a remote project. For instance, DR-Collector Tool for collecting already uploaded disturbance recordings from a remote system, at present supported when connecting one SMS to another SMS.

12.2.1.2. Supported relays and tools

SMS 510 to SMS 510 connection:

- RED 500 relays, RED Relay Setting Tool, DR-Collector Tool, Event Log Viewer
- SPACOM relays, SPACOM Relay Setting Tool, DR-Collector Tool
- REx 5xx relays, Parameter Setting Tool, HV/Collect
SMS 510 to SYS+LIB 5x0 or COM 500 +LIB 5x0:

- RED 500 relays, RED Relay Setting Tools, DR-Collector Tool, Event Log Viewer
- SPACOM relays, SPACOM Relay Setting Tool, DR-Collector Tool

12.2.2. Dial-Up (SPA)

- The project used for the Dial-Up (SPA) connection is located in and managed by the SMS 510 performing the Dial-Up.
- Projects within the own SMS 510 project pool are available.
- Same operations possible as when using direct connection to the relays.
- Utilizing the telephone network.
- SPA protocol.

12.2.2.1. Application areas

- Connection to relays for data exchange like parametrization, disturbance upload, reading of registered values etc.

12.3. Activating a remote connection

A remote connection is activated by selecting the desired connection from the Remote Connections list, see Fig. 12.3.-1.

The following is carried out upon selecting an item from the Remote Connections list:

- When selecting an item from the Remote Connections list, an attempt to open the connection is made. In case another remote connection is open, that connection is first closed before the new connection is established.
- Remote connections change focus in the Project Navigator to the project that has been defined for the connection.

![Fig. 12.3.-1 Selecting a connection from the Remote Connections list](image)

Before the remote connection is established, you have to assure that it is OK to open a remote connection, see Fig. 12.3.-2.
12.3.1. **Remote/RAS activation**

For Remote/RAS type of connections, you need to activate the RAS Service in the target system.

In the SMS 510 from which you initiate the Remote/RAS connection, the SMS 510 initiating the connection is considered as client, but the target system is considered as RAS server. *The RAS Server has to be started before connecting.*

To see the status of the RAS service, select **Administrative Tools** and **Remote Access Admin** from the **Programs** menu in your OS. The service is started by selecting **Start Remote Access Service…** in the **Server** menu.

12.3.2. **Connection Status**

When being connected to a remote system, a Connection Status dialog opens, see Fig. 12.3.2.-1.

![Connection Status](image)

*Fig. 12.3.2.-1  Connection status*

In Fig. 12.3.2.-1, the button Task Monitor for Dial-Up (SPA) type of connections is disabled. The Connection Status dialog is available as long as there is a connection on-line and it also presents the time elapsed whilst being on-line.

12.3.3. **Remote Task Monitoring**

When there is a remote connection using LAN or Remote/RAS, the Connection Status dialog in Fig. 12.3.2.-1 is shown. The button **Task Monitor** opens the remote Task Monitor, see Fig. 12.3.3.-1 (disabled for Dial-Up (SPA) type of connections).
The remote Task Monitor supervises possible ongoing tasks performed by the Scheduler in the remote target system.

The Task Monitor itself is described in Chapter 16. Task monitoring, but there are two buttons, which are not described there. The following table describes the buttons shown in Fig. 12.3.3.-1.

<table>
<thead>
<tr>
<th>Button</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop Task Manager</td>
<td>The Task Manager is stopped. After the connection is closed, the Task Manager is restarted automatically.</td>
</tr>
<tr>
<td>Terminate Task</td>
<td>Select the task to be terminated</td>
</tr>
<tr>
<td>Close</td>
<td>Closes the Task Monitor</td>
</tr>
</tbody>
</table>

### 12.4. Closing a remote connection

A remote connection is stopped or ended as follows:

- By selecting **Local Project** the remote connection activity is closed, see Fig. 12.3.3.-1. This means that no projects will be opened in the PSN after the connection is closed, but the user can select one by choosing **Open** in the **File** menu.

- By selecting **another remote connection**, the present one is ended and a new connection is opened, see Fig. 12.3.3.-1

- By selecting any menu item in the **File** menu, i.e. **Open**, **Close**, **Organize Projects** and **Exit** (exiting the Project Structure Navigator)

- By pressing the **Abort** button which is available when there is a connection on-line, see Fig. 12.3.2.-1

The user is notified that the remote connection is being closed.
12.5. Initial steps before adding a remote connection

Before the remote connections can be taken into use, the following is required:

- For a LAN or RAS type of connection, there has to be a project available on remote; you cannot establish a connection in advance.
- Prior to using a RAS type of connection, the RAS functionality has to be installed.
- For a Dial-Up (SPA) type of connection, the project has to be available in the local SMS 510.
- Projects can be imported to SMS 510 by selecting Organize Projects from the File menu, when needed from e.g. CAP 50x, another SMS 510, COM 500 with LIB 5x0 and SYS 500 with LIB 5x0 when needed.

12.5.1. Passwords and access using LAN and Remote/RAS

A connection by means of LAN or Remote/RAS **requires that the operator is a member of the administrator group in the operating system in both systems interconnecting**. The user also has to use the same login password when using tools establishing automatic connections via LAN or Remote/RAS, e.g. Scheduler functions.

When connecting manually from the Remote Connections list, see Fig. 12.3.-1, the user is prompted for password to login to the remote system.

12.6. Preparing remote connections

**Toolbar entry:**

By clicking this button, the Remote Connection List is opened, see Fig. 12.6.-1, and you can start creating new remote connections or modify/delete the existing ones.

*Fig. 12.6.-1 Remote Connection List*
Adding an item to the Remote Connection List

By pressing the **Add** button in the Remote Connections dialog, see Fig. 12.6.-1, an empty item with description ‘--’ is inserted into the list. The next step **Properties** is started directly upon clicking **Add**.

Modifying an item in the Remote Connection List

Select the item that is to be modified from the list and click on **Properties** to configure it, see Fig. 12.6.-1.

Deleting an item in the Remote Connection List

By selecting the list item to be deleted and clicking **Delete**, see Fig. 12.6.-1, the selected item with its properties is deleted.

The deletion is carried out without prior confirmation request.

Configuring properties for a Remote Connection List item

The Remote Connection List items are configured by selecting **Properties** in the Remote Connection List, see Fig. 12.6.-1. The Properties function is started automatically when the **Add** button has been pressed.

The Remote Settings are described separately for each Remote Connection type in the following sections.

Configuring a LAN type of connection

A LAN type of connection can be established only when the password in both the actual SMS 510 (MicroSCADA User) and the remote system (MicroSCADA User) is the same. The password for SMS 510 can be changed from the **Programs** menu by selecting **SMS 510/Tools/MicroSCADA User Password**.

For more information on additional settings of the target system, refer to the *SMS 510 Installation & Commissioning Manual*.

There are two scenarios when configuring a LAN connection, depending on the type of ‘Target System’ selected.

- Connecting to a remote SMS 510
- Connecting to COM 500/LIB 5x0 or SYS 500/LIB 5x0

Depending on the ‘Target System’, the following applies to the project to be connected:

- When the ‘Target System’ is SMS 510, the project to be connected to is the one set as ‘Local’.
- When the ‘Target System’ is SYS 500/LIB 5x0 or COM 500/LIB 5x0, the application (project) to be connected to must be identified by both the ‘Local Station Address’ as well as the ‘Target Station Address’. The Target Station
Address data is located in SYS_BASCON.COM in the remote system. It can either be detected by means of the Detect function or inserted manually.

The following settings are to be made in the Remote Settings page, see Fig. 12.6.4.2.-1 and Fig. 12.6.4.2.-2.

**Description**

Give the name of the LAN connection. That name is presented in the Remote Connections List, see Fig. 12.3.-1 and Fig. 12.6.-1.

**Connection Type**

Select LAN

**Target System**

Select whether it is another SMS 510 installation, a SYS 500/LIB 5x0 or COM 500/LIB 5x0.

**Installed on**

Select the drive where the Target System is located

**IP Address**

Give the IP address of the remote computer

**Local Station Address**

When the target system is SYS 500/LIB 5x0 or COM 500/LIB 5x0, the Local Station Address is the address of the SMS 510. The setting you specify must not overlap with any station address used by the target system. To find out which station addresses are in use by the target system, either use the target system’s System Configuration Tool or inspect the target system’s SYS_BASCON.COM.

**Target Station Address**

When the target system is SYS 500/LIB 5x0 or COM 500/LIB 5x0, the Target Station Address is the station address of the remote system. The setting is not available when the ‘Target System’ is SMS 510. The setting can be given manually or by using Detect.

**Application**

The application number refers to the number in the SYS_BASCON.COM file used for LIB 5x0 applications in SYS 500 and COM 500. Use the Detect button to get a list with the names of the applications. The setting is not available when the ‘Target System’ is SMS 510. The setting can be selected from the numbers available or from the application names presented by using Detect.
Exit and save

After having configured the LAN connection, you can exit the Remote Connection Properties by clicking OK.

12.6.4.2. Two LAN setting examples

Fig. 12.6.4.2.-1 shows the configuration made for a connection to another SMS 510 and Fig. 12.6.4.2.-2 shows a configuration made for a connection to a COM 500.

**SMS 510**

![Remote Connection Properties](LAN1.tif)

Fig. 12.6.4.2.-1 LAN connection to another SMS 510

**COM 500/LIB 5x0 or SYS 500/LIB 5x0**

![Remote Connection Properties](LAN2.tif)

Fig. 12.6.4.2.-2 LAN connection to a COM 500 system
12.6.4.3. Checking connection

The LAN connection configuration can be done without checking that a connection can be established, but it is more convenient to check the connection already during the configuration.

Try

The function Try can be applied after the IP address has been given to verify that the connection is OK, see Fig. 12.6.4.3.-1.

![Remote computer found, connection is OK](image)

Fig. 12.6.4.3.-1 Remote computer found, connection is OK

Detect

Upon a successful Detect operation the ‘Station Address’ is given the remote station address and the applications numbers in ‘Application’ are changed to the texts as defined in the remote SYS_BASCON.COM to which the detect is done.

12.6.4.4. Configuring a remote type of connection (RAS)

A RAS remote type of connection can be established only when the password in both the actual SMS 510 (MicroSCADA User) and the remote system (MicroSCADA User) is the same. The password for SMS 510 can be changed from the Programs menu by selecting SMS 510/Tools/MicroSCADA User Password.

Additional settings required in the target system are that the remote system is configured as RAS server, while the target system is configured as client. These definitions are made when installing the RAS functions.

For more information on additional settings of the target system, refer to the SMS 510 Installation & Commissioning Manual.

There are two scenarios when configuring a RAS connection, depending on the type of ‘Target System’ selected.

- Connecting to a remote SMS 510
- Connecting to COM 500/LIB 5x0 or SYS 500/LIB 5x0

Depending on the 'Target System,' the following applies to the project to be connected:

- When the ‘Target System’ is SMS 510, the project to be connected to is the one set as ‘Local’.
When the ‘Target System’ is SYS 500/LIB 5x0 or COM 500/LIB 5x0, the application (project) to be connected to must be identified by both the ‘Local Station Address’ as well as the ‘Target Station Address’. The Target Station Address data is located in SYS_BASCON.COM in the remote system. The following settings are to be made on the Remote Settings page, see Fig. 12.6.4.5.-1.

**Description**

Give the name of the Remote/RAS connection. That name is then presented in the Remote Connections List, see Fig. 12.3.-1 and Fig. 12.6.-1.

**Connection Type**

Select Remote

**Target System**

Select whether it is another SMS 510 installation, a SYS 500/LIB 5x0 or a COM 500/LIB 5x0

**Installed on**

Select the drive where the Target System is located

**IP Address**

Give the IP address of the remote computer

**Phone Number**

Give telephone number

**Comm. Port**

Select the serial port

**Advanced**

The Advanced button brings up a Windows system dialog for configuration of the connection. This function is shortly described in Section 12.6.4.6. Advanced settings.

**Local Station Address**

When the target system is SYS 500/LIB 5x0 or COM 500/LIB 5x0, the Local Station Address is the address of the SMS 510. The setting you specify must not overlap with any station address used by the target system. To find out which station addresses are in use by the target system, either use the target system’s System Configuration Tool or inspect the target system’s SYS_BASCON.COM.
Target Station Address
When the target system is SYS 500/LIB 5x0 or COM 500/LIB 5x0, the Target Station Address is the station address of the remote system. The setting is not available when the ‘Target System’ is SMS 510. The setting is given manually.

Application
The application number refers to the number in the SYS_BASCON.COM file used for LIB 5x0 applications in SYS 500 and COM 500. The setting is not available when the ‘Target System’ is SMS 510. The setting is selected from the numbers available.

Exit and save
After having configured the Remote/RAS connection, you can exit the Remote Connection Properties by clicking OK.

12.6.4.5. Remote/RAS setting example
In Fig. 12.6.4.5.-1, a setting example for a Remote/RAS type of connection is given. The settings in grey are disabled, i.e. they are not settable.

![Fig. 12.6.4.5.-1 Example settings for Remote over RAS to another SMS 510](image)

12.6.4.6. Advanced settings
By clicking the Advanced button in Fig. 12.6.4.5.-1, an Edit Phonebook Entry dialog is opened, see Fig. 12.6.4.6.-1. This dialog is part of the operating system RAS subsystem. For details, refer to the operating system documentation about RAS.
12.6.5. Connecting to SYS 500 or COM 500

12.6.5.1. Connecting to SYS 500 or COM 500 systems that have LIB 5x0 installed

The global logical path CMD_TOOL has to be defined in the base system attribute SYS:BPH. The path has to point to a directory, where the file BGU_PRODUCT.INI resides. In LIB 5x0 systems this path is /LIB4/BASE/BBONE/USE. The definition can be made in the file BGU_GLPATH.TXT in the directory /LIB4/BASE/BBONE/USE.

For example:

```plaintext
; ##LIB 500 revision 4.0.2##
; Global paths used in LIB500 4.0
; if executed by sys_bascon.com, return list of global paths
; otherwise create global paths
@HOST = SCIL_HOST
#IF HOST:VNAME == "MAIN" #THEN #BLOCK
   @GLOBAL_PATHS = LIST(-
      BBONE     = VECTOR("/LIB4/BASE/BBONE/USE"),-
      BBONE_INST = VECTOR("/LIB4/BASE/BBONE/INST"),-
      B_4TRPRI   = VECTOR("/LIB4/BASE/BBONE/USE"),-
      CMD_TOOL   = VECTOR("/LIB4/BASE/BBONE/USE"))
#RETURN @GLOBAL_PATHS
#BLOCK_END
#ELSE_IF LENGTH(SELECT(LIST_ATTR(APL:BPH),"==""BBONE"")) == 0 #THEN #BLOCK
 ;path for reading paths
  #PATH BBONE /LIB4/BASE/BBONE/USE
 ;path for creating standard function list (MLIB_INDEX.TXT)
  #PATH BBONE_INST /LIB4/BASE/BBONE/INST
 ;path for transparent printout method from FORM pictures
  #PATH B_4TRPRI /LIB4/BASE/EVENT/USE
#BLOCK_END
;Path for default project (handled separately, directory may not exist)
```
User's Guide

@APL_NAME = APL:BNA

#PATH DEF PRJ /APL/'APL_NAME'/PROTECTION
;DR-Collector Tool: Default directory for the disturbance recordings
#PATH RECORDER /APL/'APL_NAME'/RECORDER
;this logical path determines where Project Manager resides,
;(defined only in a LIB4 application)
#if LENGTH(PATH("LIB4")) > 0 #THEN #PATH CMD_TOOL NO_CREATE, /LIB4/Base/BBONE/USE

If the RAS connection is used, the file NETEXT.EXE has to reside in the directory of Communication manager, i.e. in /LIB4/Base/BBONE/USE, into which it should be copied from the SMS 510 directory /SERVICES/COMMUNICATION/USE. NETEXT.EXE is used for fetching the IP address from the remote computer.

12.6.5.2. Connecting to SYS 500 or COM 500 systems that have no LIB 5x0 installed

The project has to exist in the remote system. When the LIB 5x0 is not installed in the system, the project has to be created elsewhere and be copied to the remote system. The directory structure should comply with the rules of LIB 5x0, i.e. the project should reside in the directory: /APL/APL_NAME/PROTECTION/PRJ.

File BGU_PRODUCT.INI has to be copied to a remote system from the system where the project has been created. The path for the file should comply with the rules of LIB 5x0, i.e. the file should reside in the directory: /LIB4/Base/BBONE/USE.

The global logical path CMD_TOOL has to be defined in the base system attribute SYS:BPH. The path should point to a directory, where the file BGU_PRODUCT.INI resides. The definition can be made for example in the file /STOOL/DEF/PATH_DEF.TXT.

Example of PATH_DEF.TXT:

;File: Path_Def.txt
;Description: MS-STool Path definitions
;Version 8.4.2
;---------------------------------------
@t_Error_State = Error_State
@l_Global_Paths = List(GPRC = vector("/LAN/ACTIVE/GPRC"),-
CONF = vector("/LAN/ACTIVE/CONF"),-
TEMP = vector("/TEMP"),-
START = vector("/Prog/Exec"),-
SYS_CONF = vector("/SYS/ACTIVE/SYS."),-
CMD_TOOL = VECTOR("/LIB4/Base/BBONE/USE")

#path TEMP /TEMP
@l_Host = Scil_Host
#if l_Host: Vname == "MAIN" #then #block; Sys_bascon.com
#Error 't_Error_State'
#Return @l_Global_Paths
#block_end
#else #block
#if length(Path("SYS_TOOL")) == 0 #then #block; no tool paths created
@v_Path_Names = List_attr(@l_Global_Paths)
#loop_with i=1..length(@v_Path_Names)
@t_Path_Name = @v_Path_Names[%i]
@t_Directories = collect(@l_Global_Paths:"t_Path_Name","")
#path 't_Path_Name' no_create, 't_Directories'
#loop_end
#block_end

121
User's Guide

;---------- Create Par directories to application ----------
#Path tmp  +Par       ;** Create Par  **
#Path Apl_Par Par/Apl ;** Create Apl  **
#Path User_Par Par/Default ;** Create Default **
;------ Create dummy files for shadowing ---------------
@Dummy = write_text("Apl_Par/Info.txt",vector("Rev"))
@Dummy = write_text("User_Par/Info.txt",vector("Rev"))
#Error 't_Error_State'
#block_end

If the RAS connection is used, the file NETEXT.EXE has to reside in the directory of Communication manager, i.e. in /LIB4/BASE/BBONE/USE, into which it should be copied from the SMS 510 directory /SERVICES/COMMUNICATION/USE. NETEXT.EXE is used for fetching the IP address from the remote computer.

12.6.5.3. Remote Connection Properties when connecting to SYS 500/LIB 5x0 or COM 500/LIB 5x0 systems over LAN or RAS

This section applies to connections from SMS 510 to SYS 500/LIB 5x0 or COM 500/LIB 5x0 over LAN or RAS.

On the Remote Connection Properties dialog, the field Station Address has been renamed to Target Station Address. It represents the station address of the remote SYS 500/LIB 5x0 or COM 500/LIB 5x0 system, respectively. The data for this field is located in the file SYS_BASCON.COM of the remote system. You can use the Detect function to fetch the value automatically or you can insert it manually.

A new field, named Local Station Address, has been added to the Remote Connection Properties dialog. The purpose of this field is to allow per-connection definition of the local station address (i.e. the station address of the SMS 510). Initially, SMS 510 assigns a default station address to this field. However, in case this default value is in use in the remote system, it has to be changed to avoid overlapping station addresses. Notice that in addition to the Target Station Address, a SYS 500/LIB 5x0 or COM 500/LIB 5x0 system may use several station addresses which you cannot use as the Local Station Address. To find out which addresses you can use, either use the System Configuration Tool of the remote SYS 500/LIB 5x0 or COM 500/LIB 5x0 system, or manually inspect the remote system's SYS_BASCON.COM, looking for reserved station address definitions.

12.6.6. Configuring Dial-Up (SPA) type of connection

The Dial-Up (SPA) type of connection is based on telephone modems and there is one telephone number for each project. The project has to be located in the actual SMS 510 installation.

Using Dial-Up (SPA) requires configuration by two different tools i.e.

• Properties in Remote Connections List for the Dial-Up (SPA) connection
• System Configuration of the actual project, see Fig. 12.6.6.-2

The following settings are to be made on the Remote Settings page, see Fig. 12.6.6.-1.
User’s Guide

Description
Give the name of the Dial-Up (SPA) connection. That name is then presented in the Remote Connections List, see Fig. 12.3.-1 and Fig. 12.6.-1.

Connection Type
Select Dial-up (SPA).

Phone Number
Give the telephone number that is to be used.

Exit and save
After having configured the Dial-Up (SPA), you can exit the Remote Connection Properties by pressing OK.

Example setting
Fig. 12.6.6.-1 shows an example of settings for a dial-up connection. The settings in grey are disabled.

Fig. 12.6.6.-1  Configuring Dial-Up SPA

System configuration for Dial-Up (SPA)
In addition to the Dial-Up (SPA) made to the Remote Connections List, the system configuration, see Fig. 12.6.6.-2, has to be prepared for each project using modem. In the System Tools menu, select System Configuration and the Communication page.

The project that is to be prepared for modem connection has to be open in the Project Structure Navigator. In case the project is not open, open it by choosing Open in the File menu.
Fig. 12.6.6.-2  Selecting Connection Type: modem on COM1 and the default initialization string for the modem and SPA default settings.

The following settings should be made in System Configuration, see Fig. 12.6.6.-2.

**Serial Port**
Add a Serial port in case there is no port in the list.

**Protocol**
Protocol is always SPA.

**Connection Type**
The connection type should be set to Modem.

**Modem Command (AT)**
By default, the modem initialization string gives the initialization string AT Q0 %C0 &K0, but other AT commands can be given as well. When you have pre-configured the modems, you can leave this field empty.
SPA dial-up configuration

When configuring a SPA dial-up connection, the following modem settings should be used.

The following AT commands have to be set to the modem in the station (SPA IBB):

- %C0 Disables Data Compression
- &K0 Flow control disabled
- Q1 Disable Result Codes
- &D0 Respond as if DTR is always on

The following AT commands have to be set in the modem connected to the SMS 510 computer:

- %C0 Disables Data Compression
- &K0 Flow control disabled
- Q0 Enable Result Codes
- &D2 Hang up if DTR is dropped

Header timeout

The Header Timeout attribute of the SPA lines defines the maximum waiting time in milliseconds within which the first byte of a response from the slave should have been received after the transmission of a message. The default value for a modem connection is 2000 ms, but the value can be increased by clicking the "< Advanced" button, if having a poor communication link.
13. **Time/Date Settings, Time Synchronization and General Settings**

In this chapter, time based activities such as setting of date and time of the PC, time synchronization of the relays and the Automatic Logoff function are described.

13.1. **Time/Date Settings**

The Time/Date Settings function is used to check the date and time settings of the system and also to adjust date and time of the PC.

13.1.1. **Starting Time/Date Settings**

Start the function by selecting **Time_Date** in the **System Tools** menu in the Project Structure Navigator, see the figure below:

![Figure 13.1.1.-1 Starting the Time/Date function](image)

Upon selecting Time_Date, the view in Fig. 13.1.1.-2 appears.

![Figure 13.1.1.-2 Time/Date settings in SMS 510](image)

13.1.2. **Menus**

There are two menus in Time/Date Settings; Settings and Help.
13.1.2.1. **Settings menu**

**Exit**

![Exit Time/Date tool](image)

*Fig. 13.1.2.1.-1 Exit the Time/Date tool*

You exit the Time/Date tool from the Settings menu by selecting **Exit**, see Fig. 13.1.2.1.-1.

13.1.2.2. **Help menu**

**About**

![About Time/Date Settings](image)

*Fig. 13.1.2.2.-1 About the Time/Date Settings*

The menu item **About Time/Date Settings**, see Fig. 13.1.2.2.-1, presents the About Dialog.

13.2. **Time synchronization**

Time synchronization supports two protocols: LON and/or SPA. LON time synch is not described in this manual, refer to the *SMS 510 Installation and Commissioning manual*. Time Synchronization is available on the **Communication** page of the **System Configuration** in the **System Tools** menu in the Project Navigator. When devices configured to use SPA protocol are directly connected [Connection Type: Direct, see Fig. 13.2.1.-1], they are being synchronized by default. The synchronization can also be disabled. The time is taken from the PC.

Synchronization over the SPA protocol is done using a broadcast address as follows:

- Once per second: \(>900WT:ss.sss:CCCr\)
- Full synchronization message \(>900WD:yy-mm-dd hh:mm:ss.sss:CCCr\) once per minute.

CC = Checksum, Cr = Carriage return.

More details about setting up and configuring Time synchronization over LON/SPA is given in the *SMS 510 Installation and Commissioning manual*.

13.2.1. **Starting/Stopping Time Synchronization (SPA)**

The time synchronization of remote devices using SPA protocols can be stopped/restarted from the **Communication** page in **System Tools** available from the **System Configuration** menu by clicking the **Send Time Synchronization** check box, see Fig. 13.2.1.-1.
13.3. General Settings

13.3.1. Automatic Monitor Logoff

The function Automatic Monitor Logoff is used for enabling automatic logoff. This function is found on page General Settings in the System Configuration in the System Tools menu in the Project Structure Navigator, see Fig. 13.3.1.-1.

Fig. 13.2.1.-1  Time synchronization is enabled on COM1
The Automatic logoff function is enabled after 15 minutes

The time for logoff can be set between 10 to 60 minutes. The logoff is performed if the specified time elapses without any user activity. The current cursor position is compared to the previous position, and if it is the same, the idle time counter is increased.

Before the actual logoff, a warning message is shown. This message box includes a button for cancelling the logoff. The predefined times for showing the warning is dependent on the defined idle time setting:

- Idle time 10...19 min. → Warning time before logoff = 1 min.
- Idle time 20...29 min. → Warning time before logoff = 2 min.
- Idle time 30...60 min. → Warning time before logoff = 5 min.

The logoff function is also valid when the user authorization mechanism is disabled, see Section 14.3. User Manager main switch.

13.3.2. System Self Supervision

For more information about enabling/disabling the System Self Supervision function, see Section 10.4. Enabling System Self Supervision and Section 10.5. Disabling System Self Supervision.

13.3.3. MicroSCADA user settings for remote connections

The password for the MicroSCADA user in remote computer can be defined on the General Settings page in the System Configuration Tool. If the password is not given, the default MicroSCADA user password "microscada" is used when creating connections. This is because the value used in the net use command has to differ from empty string "". Otherwise the net use command (executed in the console) pauses and prompts the user to type the password. Thus, the execution of the SCIL is stopped until the password is given.

The password defined by the user (or the default password respectively) is used while opening the connections both in the invisible monitor by the Scheduler and in the visible monitor opened by the user via the navigator window. If the login fails in
the invisible monitor, an error dialog is shown and the execution of the task is cancelled. If the login fails from the navigator, the login dialog is shown and the user can enter the new password manually.
14. User Management

This chapter describes the User Management function and how to configure it.

14.1. General

The User Management Tool is for defining users and user authorities. In SMS 510, all of the currently included tools belong to the authorization group “GENERAL”. The menu items for adding and removing authorization groups are therefore disabled.

The authorization levels used:
- View (0) = Not authorized to make operations
- Control (1) = Authorized to make operations
- Engineering (2) = All rights, but user definition
- Reserved (3) = Reserved for future
- Reserved (4) = Reserved for future
- System manager (5) = All rights

The user with rights on level 5 (system manager) can make changes in the User Management function.

The modifications will not become active until they are saved in the User Management dialog and SMS 510 is restarted.

14.2. Starting User Management

The User Management tool is opened from the System Tools menu by selecting User Management, see Fig. 14.2.-1.

![Fig. 14.2.-1 Selecting User Management from the System Tools menu](image)

14.3. User Manager main switch

The whole login mechanism can be disabled by the system manager by setting the User Management and Authorization Mechanism "Off", see Fig. 14.3.-1. Click the check box to toggle mode enable/disable. An ‘x’ in the check box means that the Disable authorization mechanism is selected and authorization disabled.
At start up of SMS 510, the login can therefore be performed without giving a User name and a Password. In that case, the user is granted all authorization rights.

Fig. 14.3.-1 The authorization mechanism is enabled (part of Fig. 14.3.2.-1)

Authorization is taken back into use by “emptying” the check box in Fig. 14.3.-1, by clicking at the check box.

14.3.1. User language

The language can be chosen from a list of supported ones, the default is English (0).

14.3.2. User interface

The authorization levels of the selected user are displayed. The levels can be directly modified by the system manager.

The GENERAL level for the system manager cannot be changed. Changing of levels is done by selecting the authorization group(s) from the list and then selecting the new authorization level with the combo-box below the list.

Access to the various tools and functions is provided by means of a toolbar, menus and keyboard shortcuts. Fig. 14.3.2.-1 illustrates the tool’s user interface and its elements.

Fig. 14.3.2.-1 User interface of the User Management

A description of the elements in Fig. 14.3.2.-1 is given in the following table.

**Table 14.3.2-1 User Management user interface components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption Bar</td>
<td>Displays the name of the tool. It also contains the standard operating system’s window management commands for minimising, maximising and closing the window.</td>
</tr>
<tr>
<td>Menu bar</td>
<td>File, Edit, Tools and Help menu menu.</td>
</tr>
<tr>
<td>Tool Bar</td>
<td></td>
</tr>
</tbody>
</table>
14.4. File menu

The File menu, see Fig. 14.4.-1, contains the save, print and exit functions.

![File menu](image)

**Fig. 14.4.-1 File menu**

14.4.1. Save

Keyboard entry: `<Ctrl>+<S>`

**Toolbar entry:**

![Save](image)

By selecting this function, the currently open User Management settings are saved.

14.4.2. Print

Keyboard entry: `<Ctrl>+<P>`

**Toolbar entry:**

![Print](image)

By selecting this function the following is printed:

- User
- User language
- Authorization group list
- Authorization level list

---

**Table 14.3.2-1 User Management user interface components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toolbar</td>
<td>The toolbar contains shortcuts for fast access to the frequently used functions.</td>
</tr>
<tr>
<td>Disable authorization mechanism</td>
<td>Enabling/Disabling of User Management (&quot;main switch&quot;)</td>
</tr>
<tr>
<td>User</td>
<td>Contains a list of users</td>
</tr>
<tr>
<td>User Language</td>
<td>Contains a list of supported languages</td>
</tr>
<tr>
<td>Authorization group</td>
<td>Contains all authorization groups that have been defined.</td>
</tr>
<tr>
<td>Authorization level</td>
<td>The authorization level is shown for corresponding authorization group</td>
</tr>
<tr>
<td>Level for selected row</td>
<td>Opens a list of the access rights 0..4, the selected level is updated to the authorization level list for the selected authorization group.</td>
</tr>
</tbody>
</table>
14.4.3. **Print Setup**

By selecting this menu alternative, the user can set up the printer.

14.4.4. **Exit**

Toolbar entry:

![Exit button](image)

**Exit** closes the User Management session.

14.5. **View menu**

The **View** menu, see Fig. 14.5.-1, enables/disables the viewing of the Toolbar buttons.

![View menu](image)

*Fig. 14.5.-1 View menu*

14.6. **Tools menu**

The **Tools** Menu, see Fig. 14.6.-1, contains the tools menu items for User Management.

![Tools menu](image)

*Fig. 14.6.-1 Tools menu*

14.6.1. **Add User**

The system manager can add users with the dialog shown in Fig. 14.6.1.-1.

![Add User dialog](image)

*Fig. 14.6.1.-1 Adding a user and copying authorization*
User's Guide

In the following table, the buttons in Fig. 14.6.1.-1 are described.

*Table 14.6.1-1* Button functions in the Add User dialog

<table>
<thead>
<tr>
<th>Button</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply</td>
<td>Saves the changes without closing the dialog</td>
</tr>
<tr>
<td>Done</td>
<td>Closes the dialog, NO SAVING</td>
</tr>
<tr>
<td>Help</td>
<td>Run-time help</td>
</tr>
</tbody>
</table>

The name for the new user can be given in the "Username" field. The name may not include special characters and it may not consist of two characters followed by a number.

In addition, the name cannot begin with a number. Authority levels can be copied from other normal users (not from system manager) by selecting the source. The password for a new user is `<enter>` before the user changes it with the Change Password dialog.

After the system manager has added new users to SMS 510, then exit SMS 510. Then each new user may perform a login with the new user name in order to assign a new individual password instead of the empty password. Alternatively, the password may also remain unassigned; then the empty password remains valid until changed later.

14.6.2. Remove User

The system manager can remove users with the Remove User function, see Fig. 14.6.2.-1.

*Fig. 14.6.2.-1* Removing a user

In the following table, the buttons in Fig. 14.6.2.-1 are explained.

*Table 14.6.2-1* Button functions in the Remove User dialog

<table>
<thead>
<tr>
<th>Button</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove</td>
<td>Removes the selected user without closing the dialog</td>
</tr>
<tr>
<td>Done</td>
<td>Closes the dialog, NO SAVING</td>
</tr>
<tr>
<td>Help</td>
<td>Run-time help</td>
</tr>
</tbody>
</table>

The user selected from the list is removed when the remove button is clicked. The system manager cannot be removed.

14.6.3. Add Group

The function is not relevant in SMS 510 and is therefore disabled.
14.6.4. **Remove Group**

The function is not relevant in SMS 510 and is therefore disabled.

14.6.5. **Change Password**

All users can change their own password by means of the function Change Password, see Fig. 14.6.5.-1.

![Change Password dialog](image)

*Fig. 14.6.5.-1  Dialog for changing the password*

In the following table, the buttons in Fig. 14.6.5.-1 are explained.

<table>
<thead>
<tr>
<th>Button</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OK</strong></td>
<td>Approves the changed password and closes the dialog</td>
</tr>
<tr>
<td><strong>Cancel</strong></td>
<td>Cancels the proposed change of password and closes the dialog</td>
</tr>
<tr>
<td><strong>Help</strong></td>
<td>Run-time help</td>
</tr>
</tbody>
</table>

If the old password is correct, the password is changed to the one given in the new password field.

14.6.6. **Define View Monitors**

The function is not relevant in SMS 510 and is disabled.

14.7. **Help menu**

The Help menu, see Fig. 14.7.-1, contains the General User Management Help and the About User Management dialog.

![Help menu](image)

*Fig. 14.7.-1  Help menu*

14.7.1. **Help**

A run-time help that gives the user information about the User Management functions.

14.7.2. **About User Management**

The About User Management item shows the Tool Information.
15. **Task scheduling**

This chapter describes the usage of task scheduling in SMS 510 and preparation of Scheduled Tasks. Since uploading of disturbance recordings is a major implementation area for task scheduling, the examples in this chapter are mainly based on disturbance uploading tools, but others may be used as well. Finally, the principles for how DR-Collector Tool is operating in the scope of task scheduling are described.

15.1. **General**

There are situations when tasks are needed to be performed automatically on a cyclical basis. One example is uploading of disturbance recordings from relay modules. Therefore, SMS 510 has a Scheduler function that enables tasks to be automatically and repeatedly performed based on time intervals, see Fig. 15.5.-2.

The SMS 510 Scheduler is a function that starts programs or functions defined in a Scheduled Task. There can be one or several Scheduled Tasks with one or more tasks each. Each Scheduled Task has a time interval and the tasks are started according to this interval. There is a Task Manager in the Scheduler that synchronises and controls starting of tasks from different Scheduled Tasks.

Depending on the program, a user interface of the tasks started by the Scheduler can be shown. The DR-Collector Tool, for example, is carrying out its tasks without any user interface when started from the Scheduler.

The status of the tasks is presented in the Task Monitor function, see Chapter 16. Task monitoring.

15.2. **Scheduler operating principles**

The Scheduler is a function that is working independently and is automatically started by SMS 510. What you need to do is to define the tasks to the Scheduler as described in Section 15.6. Task preparation for task scheduling. The Scheduler task activation is automatic and is executed when you have logged out from SMS 510.

In the Scheduler view, see e.g. Fig. 15.5.-2, the tasks are **not** executed. The Scheduler that is described in this chapter is used for assigning and preparing tasks to the Scheduler.

Task Monitoring, described in Chapter 16. Task monitoring, helps you observe the task execution.

15.3. **Activation of scheduled tasks**

The tasks are activated by the Scheduler when:

- SMS 510 is started, but the login has not been performed
- Logging out from SMS 510, but not exiting SMS 510
Furthermore, the following conditions have to be fulfilled:

- “In use” = ‘Yes’ for Scheduled Tasks (individual setting)
- ‘Enable Scheduler’ should be selected (setting applicable for all tasks)
- Tasks are assigned (Scheduled Tasks definitions)

Since the Scheduler is a part of SMS 510, it is running only when the SMS 510 system is running. When a user is logged on to the SMS 510 system, the Scheduler only adds tasks to be performed during that time to the task list. These waiting tasks are performed later when the user has logged off either manually or due to an automatic logoff.

The Task Monitoring, described in Chapter 16. Task monitoring, enables monitoring of the task status.

15.4. Stopping of Scheduler tasks

The tasks in the Scheduler are stopped in any of the following ways:

- By closing the SMS 510 session by choosing Exit in the login window
- By logging in to SMS 510
- By setting “In use” for a Scheduled Task in the Scheduler to ‘No’
- By deleting tasks in the Scheduled Task, see Fig. 15.5.-2.
- By taking the Scheduler entirely out of use, ‘Enable Scheduler’ in the Scheduler window, see Fig. 15.5.-2.

In case there are tasks waiting to be performed and you want to stop these tasks from being performed, refer to Section 16.4. Removing of tasks with status waiting.

15.5. Opening the Scheduler for task preparation

The Scheduler is opened for task preparation by selecting System Configuration in the System Tools menu, see Fig. 15.5.-1, and clicking the page Scheduler.

![Fig. 15.5.-1 Selecting System Configuration from the System Tools menu](image)

In Fig. 15.5.-2, an example with five Scheduled tasks is shown. The tasks are executed according to the conditions described in Section 15.3. Activation of scheduled tasks.
Fig. 15.5.-2 Examples of task lists in the Scheduler

In the following two tables, the Scheduler contents in Fig. 15.5.-2 is described.

**Table 15.5.-1 Columns and check box explanations to the Scheduler**

<table>
<thead>
<tr>
<th>Column</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Tasks</td>
<td>Scheduled Task Number</td>
</tr>
</tbody>
</table>
| In Use              | ‘Yes’ or ‘No’, the option is changed by double-clicking at it. ‘No’ means that the Scheduled Task is taken out of use, but can be activated later by clicking ‘Yes’. Tasks in waiting mode are executed, even if in ‘In Use’ is set to ‘No’.
| Connection          | The type of connection that is used for the tasks. Note that the connection is said to be local also for tasks that do not use SMS 510 projects. |
| Starting Time       | The time when the task is started                                                                                                         |
| Execution Interval  | The interval for executing the tasks in the Scheduled Task                                                                             |
| Tools               | The name of the files and programs to be executed, the path is shown for User defined type of programs                                     |
| Check box           | An ‘x’ in the check box means that the Scheduler function is enabled, an empty check box that it is taken out of use. Tasks in waiting mode in the Task List are cleared (after OK or Apply) when (temporarily) taking the Scheduler out of use. Click the check box to toggle mode. |

**Table 15.5.-2 Scheduler buttons**

<table>
<thead>
<tr>
<th>Button</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Adding tasks to Scheduled tasks, see Section 15.6. Task preparation for task scheduling.</td>
</tr>
<tr>
<td>Delete</td>
<td>Deletes selected Scheduled Task. Select the task to be deleted and press Delete. Confirm the removal.</td>
</tr>
<tr>
<td>Properties</td>
<td>Shows the properties of a Scheduled Task and enables modification of it. Select a Scheduled Task and press Properties to enter the edit mode.</td>
</tr>
<tr>
<td>OK</td>
<td>Confirm the Scheduled task settings and exit the Scheduler</td>
</tr>
</tbody>
</table>
The Task Scheduling preparation session is closed either by pressing **OK**, **Apply** or **Cancel**.

### 15.6. Task preparation for task scheduling

In the following sections, the principles for adding tasks are described briefly and some recommendations are given.

#### Tool recommendation

Programs that are suitable for use in the Scheduler, are programs that close automatically after finishing the mission. Thereby you can avoid opening a new program session every time the Scheduler activates the task.

#### Types of tasks

There are two types of tasks (both types can be mixed in the same Scheduled Task):

- **Predefined tasks** available from a list of tasks (tasks available are defined by SMS 510). Typical predefined tasks are the disturbance uploading tools like DR-Collector Tool and HV/Collect.
- **User defined tasks**. Examples are disturbance evaluation tools or any other program defined by the user. Start-up arguments for the program can be given.

#### Callback Function

Using the callback function means that the task execution is supervised by the Tool Manager in the Scheduler. When the program is closed (automatically by the predefined types and manually by user defined types of tool), closing of the program is noticed and the callback is received. Before the callback is received, new tasks in the Scheduled Task list are not started, even if the time to start has elapsed.

The tasks to be performed are set in waiting mode until the callback is obtained from the previous task. User defined tasks, not using callback function are also set on a waiting list when used in the same Scheduled Task as predefined tasks.

### 15.6.1. Adding tasks

In the following section, we will follow two examples of how to add tasks to the Scheduler. The examples feature a predefined task and a user defined task.

- **DR-Collector Tool** is run every 4th hour using remote communication and performs a copy of recordings from an SMS 510 project in another location.
- **Notepad** is opened every Monday at 7.30 in the morning. The operator may close the program when finished.
These tools are set into different tasks, because the wanted time intervals are different for each tool. A task list can contain one or more tools. Notepad is added just because it is a harmless example, but it gives the idea of using user defined tools.

In Scheduler, start by clicking the **Enable Scheduler** check box, step number 1 in Fig. 15.6.1.-1. Then click **Add**, step number 2 in Fig. 15.6.1.-1, to open the Task Properties.

*Disabling the Scheduler* is done by clicking the **Enable Scheduler** check box again.

---

**Task Properties**

Upon clicking **Add** in Fig. 15.6.1.-1, the Task Properties view is opened, where you can assign the tasks to be performed as in Fig. 15.6.1.-2.
The following properties are set in the Task Properties window Fig. 15.6.1.-2:

**Connection:**
Select the type of connection you are using. Local (which refers to the project set as local in the actual SMS 510) is always available, but the remote connections that you have defined are also listed.

**Time Settings:**

*Cycle* is used for selecting type of interval

Available settings are:

- Fixed intervals, no synchronization
- Absolute point of time, once an hour
- Absolute point of time, once a day
- Absolute point of time, once a week
- Absolute point of time, once a month

*Date* is used for setting date

*Time* is used for interval definition or synchronization point

The task is started after the interval has elapsed. This means that if setting the interval to e.g. 30 min., the task can be started at the earliest 30 min. after it was defined.

Fixed interval allows only time setting, no date settings. With the ‘Absolute point of time, once a week/month’ settings you can set both time and date. You can use the arrows or type the value manually in the fields.
User’s Guide

Tools:
This field contains the tools that have been added to this task. Use Add to add tools. Once you have a tool in the tools list you can modify or add arguments to the tool by clicking the Properties button, or remove the tool by clicking the Delete button.

15.6.1.1. Adding a predefined tool
Press Add in the Tools field in Fig. 15.6.1.-2 to add tools. When you add a predefined tool, see Fig. 15.6.1.1.-1, the drop down list contains the available tools. These tools are defined by SMS 510. Press OK when the selection is ready.

Fig. 15.6.1.1.-1 Adding DR-Collector Tool

Defining properties for the added tool
Once the tool has been added and the ‘Connection:’ has been made, add properties to the tool, see Fig. 15.6.1.1.-2.

Fig. 15.6.1.1.-2 Defining ‘Properties’ for the selected tool
**Tool Properties**

When clicking **Properties**, see Fig. 15.6.1.1.-2, the Tool Properties’ view is opened, see Fig. 15.6.1.1.-3.

![Fig. 15.6.1.1.-3 Selecting file uploading method for DR-Collector Tool](image)

For the tools of type Predefined tools in SMS 510, the **Callback required** check box is always enabled. The **File Upload Method** check box is enabled when the type of connection is Remote or LAN, i.e. the disturbances are not uploaded from the relay modules directly, but from another remote system that already has performed the uploading.

Selectable settings are **Copy disturbance recordings from station** or **Move disturbance from station**. In the latter case, the recordings are deleted at the source after a successful transfer.

**15.6.2. Adding a user defined tool**

Press **Add** in the Tools field in Fig. 15.6.1.-2 to add tools. When you want to add a tool that is not in the list of predefined tools, you can add it by activating the **User Defined Tool** selection by clicking that field, see Fig. 15.6.2.-1.

You can add tools either manually by giving path and file name, or by using the browse function (**Browse** button).

![Fig. 15.6.2.-1 Adding a User Defined Tool](image)

**15.6.2.1. Browsing for user defined tools**

The browse function, see Fig. 15.6.2.1.-1, permits searching for tools on various volumes. There is a tree navigator, which is used for browsing.
Click on directories in the tree to navigate. The path is shown in the lower left-hand corner.

When you have found the tool or file you are looking for, click on it and it is added to the ‘File name:’ field.

Use the ‘C:’ box to select the drive to search. Click the arrow to open the list.

The fields ‘Operating System Paths’ and ‘Files of type’ do not contain other options.

The files in the list in the field to the right can be sorted according to ‘Name’, ‘Size’ and ‘Modified’ by clicking on the wanted column.

Press ‘Open’ when you have found the file you are looking for, and the tool is added, see Fig. 15.6.2.1.-2.

‘Cancel’ ends the browsing without selecting any tools.

---

**Fig. 15.6.2.1.-1 Browsing for tools**

---

**Fig. 15.6.2.1.-2 Notepad is added**
When the Tool is added to the Add Tool as in Fig. 15.6.2.1.-2, press OK to return to the Task Properties window, see Fig. 15.6.2.1.-3. Now you can give properties to the tool.

**Defining tool properties**

Properties can be given for a user-defined tool as well. Select the tool and click Properties, see Fig. 15.6.2.1.-3.

![Fig. 15.6.2.1.-3 Selecting properties for the Notepad tool](image)

**Tool Properties**

The Tool Properties function is launched for the user defined tool, see Fig. 15.6.2.1.-4.

![Fig. 15.6.2.1.-4 Tool Properties for a user defined tool](image)

As illustrated in Fig. 15.6.2.1.-4, the callback function can be selected and a tool start-up argument can be chosen.
User's Guide

Callback required

In case callback is selected, the callback is given when the Notepad program is closed. This also means that in case Notepad remains open for a longer time, no other tasks are started until Notepad is closed and the callback received. Thus, the recommendation for user defined tools is to use **Callback required** only when you have programs that close automatically.

Arguments

The arguments are added as input parameters at start up of the tool. In the example, Notepad will open the file openme.txt located in the remarks directory.

Press **OK** to finish and save the settings, or use **Cancel** to exit without changes.

15.6.3. The finished example

After adding the tools as described above, the Scheduler contains two tasks, see Fig. 15.6.3.-1.

![System Configuration](image.png)

**Fig. 15.6.3.-1** Two tasks are added to the Scheduler

15.7. Uploading of disturbance recordings using the Scheduler

The following explains the principles for using DR-Collector Tool as a task in the Scheduler.

15.7.1. Connection methods

There are two main types of connections:

**Uploading of recordings from the relays directly**

- Direct to the relays (the project is in the same PC as SMS 510 and set as local)
- Dial-Up (SPA) to the relays (the project is in the same PC as SMS 510)
Uploading of recordings from a remote system

- LAN to another SMS 510 (the project is in the remote SMS 510)
- Remote/RAS to another SMS 510 (the project is in the remote SMS 510)

You need to define a separate Scheduled Task for each type of connection.

15.7.2. Connection type dependent upload

The tasks that DR-Collector Tool performs within the Scheduler depend on the type of connection.

Local and Dial-Up (SPA) connections

The project that is set as local and projects using dial-up modems (SPA bus only) perform the upload of the disturbances from the relay modules and saves the recordings in the SMS 510 project. The path is found from the DR-Collector Tool.

LAN and Remote/RAS connections (SMS to SMS only)

LAN or Remote/RAS connections can be used to copy or move already uploaded recordings. This means that the remote SMS 510 is performing the upload from the relay modules and the recordings are transferred to the other SMS 510 over LAN or RAS. At the moment, SMS to SMS is supported, SMS to COM 500 + LIB 5x0 or SYS 500 + LIB 5x0 are not supported for transfer of recordings.

LAN or Remote/RAS connections initiated by the Task Scheduler do not permit uploading of recordings from the relays. This has to be done locally, either by task scheduling or by the uploading tool. Uploading of recordings over remote can be done manually by using the DR-Collector Tool.

15.8. Running DR-Collector Tool over LAN/Remote

This information concerns the usage of DR-Collector Tool when started from the SMS 510 Project Navigator (from the System Tools menu), connecting over LAN or Remote/RAS. The recordings of both the remote SMS 510 and the local SMS 510 can be seen in the DR-Collector Tool recordings list, and the recordings are marked with local or remote depending on location. This means that the recordings can be accessed over remote within DR-Collector Tool as well.

The LAN or Remote/RAS connection is opened the usual way in this case, as in the example in Section 12.3. Activating a remote connection.
16. Task monitoring

This chapter describes how the status of scheduled tasks is monitored.

16.1. General

There are two ways of checking the progress and status of tasks.

- On a general level by colors in the traffic light in the SMS 510 login window, see Section 16.2. Task status colors.
- On a detailed level by means of the Task Monitor window, see Section 16.3. Task Monitor.

16.2. Task status colors

The general status of the tasks is indicated by colors in the traffic light in the login window, see Fig. 16.3.-1.

In the following table, a description of the meaning of the colors used in the traffic light, as well as the effects of a login to SMS 510 for certain colors, is given.

<table>
<thead>
<tr>
<th>Color</th>
<th>Status</th>
<th>Login action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>No tasks scheduled</td>
<td>Proceed with login</td>
</tr>
<tr>
<td>(Fig. 16.2.1.-1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td>Tasks are scheduled, but not performed at the moment</td>
<td>A login might postpone the execution of the task</td>
</tr>
<tr>
<td>(Fig. 16.2.2.-1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td>The Scheduler is busy with tasks.</td>
<td>A login or exit terminates the task execution. Consider if you should wait or continue with login. Check the task with the Task Monitor if needed.</td>
</tr>
<tr>
<td>(Fig. 16.2.3.-1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16.2.1. Green color

The green color, see Fig. 16.2.1.-1, indicates that there are no tasks defined in the Scheduler. A login to SMS 510 can be performed without any effects on tasks in the Scheduler.

![Task status: Green](image)

Fig. 16.2.1.-1 Task status green, no tasks are scheduled

16.2.2. Yellow color

The yellow color, see Fig. 16.2.2.-1, indicates that there are pending tasks. The tasks are not carried out at the moment, but will become active later according to the interval set for the task(s). Starting SMS 510 might postpone the start of the task(s), in case the time to execute the scheduled task elapses during the user is logged on to SMS 510.
16.2.3. Red color

The red color, see Fig. 16.2.3.-1, indicates that a task is carried out at the moment. Consider if it is possible to wait for the task to finish or check with the Task Monitor to see what is being done at the moment, before you log in.

Logging in to SMS 510 during red light means that the task executed is terminated, a login notification is shown as in Fig. 16.2.3.-2.

In the same way, when selecting exit in the SMS 510, the user will be informed that the task executed will be terminated, see Fig. 16.2.3.-3.

16.3. Task Monitor

The tasks in the Scheduler are monitored from the Task Monitor function, click Task Monitor, see Fig. 16.3.-1.
16.3.1. Task Monitor status list

The list in the Task Monitor shows the status of the tasks, see Fig. 16.3.-1. The Task Monitor Status List shows tasks running and waiting to be executed. When a task is finished, (callback received by the Scheduler), it is removed from the list.

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Operation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Open connection 00051501, WEST 24 (EPA DIAL-UP)</td>
<td>Running</td>
</tr>
<tr>
<td>3</td>
<td>Execute task: DR-COLLECTOR TOOL</td>
<td>Running</td>
</tr>
<tr>
<td>3</td>
<td>Execute task: H2/COLLECT</td>
<td>Running</td>
</tr>
<tr>
<td>3</td>
<td>Close connection 00051501</td>
<td>Running</td>
</tr>
<tr>
<td>2</td>
<td>Open connection 00051502, STATION 45 SOUTH VIA REMOTE</td>
<td>Waiting</td>
</tr>
<tr>
<td>2</td>
<td>Execute task: DR-COLLECTOR TOOL</td>
<td>Waiting</td>
</tr>
</tbody>
</table>

Fig. 16.3.1.-1  List of tasks and corresponding status in the Task Monitor

In the following table, the columns and button in the Task Monitor, see Fig. 16.3.-1, are described.

Table 16.3.1-1  Task Monitor contents

<table>
<thead>
<tr>
<th>Column</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task ID</td>
<td>The number of the Scheduled Task in the Scheduler</td>
</tr>
<tr>
<td>Operation</td>
<td>The tasks that have been executed are listed as well as operations</td>
</tr>
<tr>
<td></td>
<td>concerning establishing the communication in regards to tasks.</td>
</tr>
</tbody>
</table>
16.3.1.1. 

**Task with status waiting**

Tasks in the Scheduler with status ‘waiting’ are waiting for their turn to be performed and are started when there is a suitable occasion.

A task gets the status ‘waiting’ as a result of the following:

- If the previous task needs more time than expected and it is of the type giving a callback to the Scheduler when finished, the next task to be started is set on the waiting list and is started when the callback signal has been received.
- When a user is logged on to SMS 510. The longer the user is logged on to SMS 510, the more tasks get status ‘waiting’.

16.4. 

**Removing of tasks with status waiting**

It might be convenient to clear tasks with status ‘waiting’, in particular when there are many tasks in waiting mode.

Waiting tasks are removed by temporarily taking the Scheduler function out of use (**Enable Scheduler** check box in the Scheduler window, see Fig. 15.5.-2). Pressing **OK** or **Apply** when the **Enable Scheduler** is in “off” mode, the tasks in waiting mode are removed. After this, you can take the Scheduler in use again, by clicking the **Enable Scheduler** check box.

The Scheduled tasks that you have prepared in the Scheduler are not modified or deleted by the Enable Scheduler “on/off” operation.

Tasks in waiting mode are **not** removed by closing SMS 510 by exit.
17. **SMS Conversion Tool**

This chapter describes how to import projects from SMS 010 to SMS 510.

17.1. **Purpose**

The purpose with the SMS Conversion Tool (SMSCT) is to import existing SMS 010 application structures into the SMS 510 environment. Thereby the user can create new SMS 510 projects from existing SMS 010 applications, and view the summary report of operations. To reuse (import) applications made for SMS 010 when upgrading to SMS 510, this SMSCT tool can be used. The original SMS 010 application is not modified during the import procedure to SMS 510.

17.2. **What is an SMS 010 application?**

An SMS 010 application structure is an application containing five levels; Organization, Station, Object/Bay, Unit and Module and it is created by the SMS-BASE program. The application has a name; e.g. DATA-EX. Another example of an SMS 010 application is C:\SMS\DATA-EX. The same names that have been used in the SMS 010 applications are also used in the imported project.

SMSCT also supports import of applications containing three or four levels (normal is five), which were possible to use in SPASET systems.

17.3. **Features**

- Reusing of SMS 010 applications (SPACOM relays)
- Application tree browser and details
- Importing SMS 010 application structures to SMS 510 projects
- Import whole application or parts of it
- Skip empty elements at import
- Import report
- Import progress bar
- Support for several languages of the applications
- Setting data of relays converted to the SMS 510 project
- Columns in the views can be resized to fit the contents
- Can select one organization out of several in an SMS 010 application to be imported to a project of its own. As default all organizations are imported

17.4. **Limitations**

The following limitations apply for SMSCT:

- The units supported for import are relays from the SPACOM series of relays.
- The drives where the source application is to be imported and the destination project is to be produced are located on the hard disk where the SMS 510 is installed.
In case the SMS 010 application is on another disk, you can, before importing it by SMSCT, copy it to the same computer. This can be done by copying the application over the network, copying it to a floppy or compressing it to a ZIP file and then transferring it, using e.g. the AS Handler in SMS 010. Since the application is a stand-alone structure, it can be transferred to any location.

In case you want to import a compressed SMS 010 application (*.ZIP), you have to decompress it before importing.

The amount of relays that can be imported is limited to the maximum amount of relays that a project on SMS 510 can hold.

A project used in SMS 510 can contain maximum 50 relays. Therefore, you should examine the SMS 010 application before importing it. You can use the Details... (see Fig. 17.8.2.-3) to check the amount of "Unit" objects (= relays) in the SMS 010 application you want to import. In case you have more than 50 units in the application you intend to import, then you have to import portions of the application. Thus, via multiple import operations you create two or more separate projects out of the original. Use the Select button (see Fig. 17.10.-3), for partial import of selected branches of the SMS 010 application.

17.4.1. Import remarks

During the import, the following is automatically performed by SMSCT:

- Conversion of SACO 16D1B to SACO 16D2B
- Conversion of SPCD 3C2X to SPCD3C21, 3C22, 3C23
- If, for some reason, a relay is lacking some settings, i.e. parameters, these are completed during the conversion by default values
- The measuring transducer values in a SMS 010 application are given for each unit as primary and secondary values, plus the relay input value. Thus, if the transducer values have been set to 0, 1 or left empty these are ignored by the SMS Conversion Tool.

17.5. Abbreviations and terms

The abbreviations used in this chapter are described in the table below:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMSCT</td>
<td>SMS Conversion Tool</td>
</tr>
<tr>
<td>Application</td>
<td>SMS 010 Application</td>
</tr>
<tr>
<td>Project</td>
<td>SMS 510 Project</td>
</tr>
</tbody>
</table>

SMS 010 terms are mapped to SMS 510 terms as described in the table below:

<table>
<thead>
<tr>
<th>SMS 010 Term</th>
<th>SMS 510 Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Project</td>
</tr>
<tr>
<td>Application structure root level</td>
<td>Level objects (views)</td>
</tr>
<tr>
<td>Organization level</td>
<td>n/a</td>
</tr>
<tr>
<td>Station level</td>
<td>n/a</td>
</tr>
<tr>
<td>Object/Bay level</td>
<td>n/a</td>
</tr>
</tbody>
</table>
17.6. Starting SMS Conversion Tool

The SMS Conversion Tool is started in the System Tools menu in SMS 510 by selecting the menu item SMS Conversion Tool, see Fig. 17.6.-1.

![Fig. 17.6.-1 Selecting SMS Conversion Tool in the System Tools menu](image1)

17.7. User interface

The main view of SMS Conversion Tool contains lists of applications both in SMS 010 and applications that have been imported to SMS 510 projects.

SMSCT is divided into two sections; one for SMS 010 applications and one for SMS 510. In the figure below, the SMS 010 applications and paths are the ones shown to the left:

![Fig. 17.7.-1 The main view in the SMS Conversion Tool](image2)
The following table describes the fields in Fig. 17.7.-1.

<table>
<thead>
<tr>
<th>Field</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path</td>
<td>The path where the application or project is located</td>
</tr>
<tr>
<td>Applications</td>
<td>A list of the applications</td>
</tr>
<tr>
<td>Project</td>
<td>List of projects available to SMS 510</td>
</tr>
</tbody>
</table>

### 17.8. Menus and toolbar

The following sections describe the Toolbar and the menus.

#### 17.8.1. File menu

The File menu, see Fig. 17.8.1.-1, contains the menu item for the conversion of SMS 010 applications to SMS 510 Projects and conversion reports as well as exit from the program.

![File menu](image)

*Fig. 17.8.1.-1  File menu*

**Import**

**Toolbar entry:**

This command opens the dialog containing the import options. The toolbar button and the menu item are enabled only when an application is selected in the SMS 010 application list, which means that you have to select the application to be imported before you can start the import function. The Import function is described in Section 17.10. Importing SMS 010 applications.

**Import Report**

This menu item shows the most recently performed import operation report.

**Exit**

**Toolbar entry:**

Exit and return to the SMS 510 Project Structure Navigator.
17.8.2. Application menu

The Application menu items, see Fig. 17.8.2.-1, apply to the SMS 010 part of the SMS Conversion Tool view.

Fig. 17.8.2.-1 Application menu

Refreshing

This menu item refreshes the list of applications.

Set Default Path

The path for location of SMS 010 applications is set back to the default path, e.g. C:\SMS\ in the Path: text box as in the figure below:

Fig. 17.8.2.-2 Path: text box with default SMS 010 application path

Details…

Select an application in the application list and then select Details… from the Application menu and a detail dialog pops up, see Fig. 17.8.2.-3. The same function can also be started by double clicking on an application in the application list.
User’s Guide

Fig. 17.8.2.-3  Details for an SMS 010 application

The following table describes the fields and buttons in Fig. 17.8.2.-3.

Table 17.8.2-1  Fields and buttons in the SMS 010 Application detail presentation

<table>
<thead>
<tr>
<th>Field</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path:</td>
<td>The path where the application or project is located</td>
</tr>
<tr>
<td>Source code page</td>
<td>By means of the source code page selector you can select the proper code page in case you use another language than the default English</td>
</tr>
<tr>
<td>Destination code page</td>
<td>Cannot be changed by the user</td>
</tr>
<tr>
<td>Button</td>
<td></td>
</tr>
<tr>
<td>Expand All</td>
<td>Show the whole application tree</td>
</tr>
<tr>
<td>Select</td>
<td>Has no function in this case, therefore disabled</td>
</tr>
<tr>
<td>Close</td>
<td>Exit the details presentation</td>
</tr>
</tbody>
</table>

17.8.3.

Project menu

The Project menu items, see Fig. 17.8.3.-1, applies to the SMS 510 part of the SMS Conversion Tool view.

Fig. 17.8.3.-1  Project menu
User’s Guide

Refresh

The Refresh menu item refreshes the list of SMS 510 projects that are in the projects list.

Set Default Path

The path for location of SMS 510 applications is set back to the default path e.g. C:\SMS510\Prj in the path text box as in Fig. 17.8.3.-2.

Details...

Select a project in the project list and then select Details… from the Project menu and a detail dialog pops up, see Fig. 17.8.3.-3. The same function can also be started by double clicking on a project in the project list.

Some options are disabled, while they are used when browsing applications for SMS 010.

The following table explains the fields and buttons in Fig. 17.8.3.-3.

<table>
<thead>
<tr>
<th>Field</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path:</td>
<td>The path where the project is located</td>
</tr>
<tr>
<td>Source code page</td>
<td>Cannot be changed by the user</td>
</tr>
<tr>
<td>Destination code page</td>
<td>Cannot be changed by the user</td>
</tr>
<tr>
<td>Button</td>
<td></td>
</tr>
<tr>
<td>Expand All</td>
<td>Show the whole project tree</td>
</tr>
<tr>
<td>Select</td>
<td>Has no function in this case, therefore disabled</td>
</tr>
<tr>
<td>Close</td>
<td>Exit the details presentation</td>
</tr>
</tbody>
</table>
17.8.4. Options menu

Options

The Toolbar Visible menu item, see Fig. 17.8.4.-1, toggles the presentation of the Toolbar in SMSCT.

Fig. 17.8.4.-1 Options menu

17.8.5. Help menu

About

The About menu item in Fig. 17.8.5.-1 presents the About dialog.

Fig. 17.8.5.-1 Help menu

17.9. Browsing for SMS 010 applications to import

Before you can start the import function, you have to select the application to be imported. This section describes how to select and browse application paths not available from the default C:\SMS\\.

The applications are listed in the application list, see Fig. 17.9.-1, according to the path selected in the Path: text box. Therefore, what you need to know is the path where the applications are at, SMSCT detects the names of the applications.

Fig. 17.9.-1 The following applications were found in C:\SMS\\

17.9.1. Select path

Click the arrow down button to the right of the Path: text box and the known paths are shown, see Fig. 17.9.1.-1.
17.9.1. The list of paths containing SMS 010 applications known to SMSCT

Click the path you want to select and it is shown in the Path: text box. In case you have many SMS 010 installations, you get a scroll bar to the right, by which you can scroll through all paths in the list.

You can also type the path manually in the Path: text box or use the Select a directory function (explained as the next topic) to add a missing path. The paths listed in the Path: text box are remembered once they have been added to the path library.

17.9.2. Select a Directory

In case your SMS 010 application is found at another path than the default one, and this path is not included in the list, you can add it to the list by the Select a Directory function. In case you know the exact location, you can fill it in manually in the Path: text box, see the figure below:

Fig. 17.9.2.-1 Starting the browser by clicking the Select a Directory button

By clicking the Select a Directory button, you can start adding more paths, see Fig. 17.9.2.-2.
The following table explains the menus and buttons in Fig. 17.9.2.-2.

**Table 17.9.2-1 Menus and buttons in the Select a Directory function**

<table>
<thead>
<tr>
<th>Menu</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>The recently visited paths are shown</td>
</tr>
</tbody>
</table>
| Special| Home <Ctrl><H>  
Mark <Ctrl><H>  
Unmark                                                    |
| View   | By name (alphabetical)  
By Date (according to date)  
By Modified (according to date of modification)              |
| Volumes| The volumes available on the PC; e.g. A, C, D  
*Note*! Normally network volumes cannot be accessed. In that case you first have to copy the SMS 010 application to the hard drive of the PC and then add these to the list and convert. |
| Button | Arrow left: Go one directory back from the selected one  
Arrow right: Go one directory up from the selected one  
Select: Add the path marked to the Path: list  
*Note*! Pressing <Enter> is the same as <Select>  
Open: Go one directory up, same function as arrow right  
Cancel: Exit the function without adding any paths  
*Note*! Pressing <Esc> is the same as <Cancel> |

You can add only one path per session, so you have to redo the procedure for every path you want to add.
17.10. Importing SMS 010 applications

Once you have selected an application in the application list, you can import it, see Fig. 17.10.-1 below:

![Application List](image1.png)

Fig. 17.10.-1 An application is selected in the application list

The import function is started by selecting **Import** in the **File** menu or by clicking the **Import** button:

![Import Options](image2.png)

The Import Options dialog is presented in Fig. 17.10.-3.

![Import Project](image3.png)

Fig. 17.10.-2 The project importing was stopped because of too many objects in the application
Fig. 17.10.-3 Import Options shown

The following table explains the fields and buttons in Fig. 17.10.-3.

**Table 17.10.-1 Fields and buttons in Import Options**

<table>
<thead>
<tr>
<th>Field/Button</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS 010 application path</td>
<td>The path where the application to be imported is located</td>
</tr>
<tr>
<td>SMS 010 application name</td>
<td>Name of the application</td>
</tr>
<tr>
<td>Application root level</td>
<td></td>
</tr>
<tr>
<td>Application root node</td>
<td>This field is empty by default, which means that the whole application is converted. By using the Select button, you can select a part of the application and only that part of the application structure will be imported.</td>
</tr>
<tr>
<td>SMS 510 project path</td>
<td>Where the SMS 510 projects are located, changed by SMS 510 Path: text box</td>
</tr>
<tr>
<td>SMS 510 project name</td>
<td>The project name that the imported application is getting in SMS 510.</td>
</tr>
<tr>
<td>Source code page</td>
<td>Select the code page that have been used for the application.</td>
</tr>
<tr>
<td>Destination code page</td>
<td>Cannot be set by the user, the program selects 1252 Windows US English or 1251 Cyrillic</td>
</tr>
<tr>
<td>Skip empty objects (check box)</td>
<td>The tool converts only those organizations, stations, bays and units, for which at least 1 child unit or module would be transferred to the new project (that is, object type was recognized).</td>
</tr>
<tr>
<td>Include relay names into object names (check box)</td>
<td>When check box is selected, the relay name (for example SPAJ 140) is included in the object name of the converted object. The name can then be seen in the tree structure (for example &quot;SPAJ 140 Phase and neutral overcurrent relay&quot;). When the check box is cleared, only the relay description can be seen (for example &quot;Phase and neutral overcurrent relay&quot;).</td>
</tr>
<tr>
<td>Select</td>
<td>You can select parts (organization or station) of the structure to be imported. See Fig. 17.10.1.-1 as an example.</td>
</tr>
</tbody>
</table>
User's Guide

### Table 17.10.1 Fields and buttons in Import Options

<table>
<thead>
<tr>
<th>Field/Button</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import</td>
<td>The import starts according to the conditions given</td>
</tr>
<tr>
<td>Cancel</td>
<td>Exit without importing</td>
</tr>
</tbody>
</table>

#### 17.10.1. Select Application Root Node

![Select Application Root Node](image)

**Fig. 17.10.1.-1** Selecting a node from which to import

The following table describes the fields and buttons in Fig. 17.10.1.-1.

### Table 17.10.1-1 Fields and buttons in Select Application Root Node for Import

<table>
<thead>
<tr>
<th>Field</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path</td>
<td>The path where the application to be imported is located</td>
</tr>
<tr>
<td>Source code page</td>
<td>Select the code page that has been used for the application to present the texts in the right way.</td>
</tr>
<tr>
<td>Destination code page</td>
<td>Cannot be set by the user, the programs selects 1252 Windows US English or 1251 Cyrillic</td>
</tr>
<tr>
<td>Statistics (list)</td>
<td>The amount of elements on different levels in the application</td>
</tr>
<tr>
<td><strong>Button</strong></td>
<td></td>
</tr>
<tr>
<td>Expand all</td>
<td>Show the expanded tree structure</td>
</tr>
<tr>
<td>Select</td>
<td>Select the part of the application that you intend to convert, can be any station or organization within the application. The button is disabled on other levels in the application</td>
</tr>
<tr>
<td>Close</td>
<td>Exit the function</td>
</tr>
</tbody>
</table>

#### 17.10.2. Starting the import operation

By clicking the **Import** button in Fig. 17.10.-3, the import operation starts. In case the SMS 510 project already exists, a warning is given, see Fig. 17.10.2.-1.
Fig. 17.10.2.-1 Warning saying that the specified project already exists

The import operation progress can be followed on-line as shown in Fig. 17.10.2.-2 below:

Fig. 17.10.2.-2 Progress of the import

The second row shows the actual object being processed (in this case a SPCJ 4D29 module), while the third row presents the corresponding path to this object as found in the source SMS 010 application.

The entire operation of scanning through the source application to perform the import of individual objects is shown in percentage on the fourth row. This is illustrated by the first progress bar.

The second progress bar is run when the settings of relay modules are imported.

17.10.3. Import Summary Report

After the import has been carried out, a summary report is presented. There are two ways of presenting it; as a tree view in Fig. 17.10.3.-2 and as a list view in Fig. 17.10.3.-3. The idea is to set focus on objects that for some reason have not been imported. For instance, REPORT and DR-COM stations are of no use to SMS 510; therefore, they are not imported. The whole sub-tree, where all objects have been successfully imported shows a message ‘The object is converted successfully’, see Fig. 17.10.3.-1.
Fig. 17.10.3.-1 Station Wasa1 and all objects within it successfully converted

The whole imported application is shown in the SMS 510 part of SMSCT, see Fig. 17.7.-1.

When you have analysed the report, you can close it with the Close button. The report can also be saved by the Save button for later analysis. You should save it as a *.TXT file. You can recall the latest import report with the Import Report menu item in the File menu, but import reports made earlier have to be opened with e.g. Notepad (provided that you have saved them).

Fig. 17.10.3.-2 Import Summary Report as Tree View
17.10.3.1. Import summary messages

The following table explains the import summary messages.

<table>
<thead>
<tr>
<th>Message</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The object is converted</td>
<td>Conversion successful</td>
</tr>
<tr>
<td>Object type could not be mapped</td>
<td>The element in the application could not be mapped. Reason for this can be that it is an unknown element to SMS 510 Project Manager, e.g. a Manual Entry module, or that it has meaning only for SMS 010 like REPORT and DR-COM station settings.</td>
</tr>
<tr>
<td>The object is not converted</td>
<td>The object was not converted, and neither was any possible child elements on the next level.</td>
</tr>
<tr>
<td>None of child objects converted</td>
<td>The objects within the element were not converted (only the previous level designation), e.g. REPORT station is converted but not the REPORT station configuration.</td>
</tr>
<tr>
<td>Duplicate title resolved</td>
<td>Means that the object title was not unique within the application subtree being imported. Therefore, a unique numeric suffix is added to such titles. For example, if the source SMS 010 application contains three objects &quot;SPAC 535 C Feeder terminal&quot;, they would be named &quot;Feeder terminal 1&quot;, &quot;Feeder terminal 2&quot; and &quot;Feeder terminal 3&quot; in the new project. An information message notifies the user that the object title was changed.</td>
</tr>
</tbody>
</table>

17.11. Browsing SMS 510 projects

After the import of the projects, the project can also be browsed in the SMS 510 project list. Select a project in the list and select Details from the Projects Menu or double click the item and the details window is opened.

17.12. Modifying imported projects

When you have imported an SMS 010 application to an SMS 510 project, you can modify the project the same way as a project that has been created by the tools in SMS 510. You just have to select the project to be active in SMS 510 (see the next section).
17.13. **Taking the imported project into use in SMS 510**

Exit the SMSCT function. Select **Open** from the **File** menu and a dialog for opening project is opened, see Fig. 17.13.-1. More details about opening projects can be found in Section 4.7.1. File Open.

![Fig. 17.13.-1 The list of projects with description](image)

Select the project you intend to use and click **Open**.

Check that the system configuration is OK, see Fig. 3.11.-1. Furthermore, you should add and configure relays that for some reason have not been imported to the project.
# Index

## A
- Abbreviations .......................................................................................... 12
- Application Events
  - N/A ................................................................................................. 98
- Application Menu – SMS Conversion Tool
  - Details............................................................................................... 159
  - Refresh ............................................................................................. 159
  - Set Default Path ............................................................................. 159
- Application State Monitoring
  - Application memory pool supervision .............................................. 83
  - Application state ............................................................................... 83
- Application State Supervision
  - Application memory pool supervision .............................................. 90
  - Application state ............................................................................... 90
- Authorization Level
  - Control (1) ....................................................................................... 133
  - Engineering (2) ............................................................................... 133
  - Reserved (3) ..................................................................................... 133
  - Reserved (4) ..................................................................................... 133
  - System manager (5) ......................................................................... 133
  - View (0) .......................................................................................... 133
- Automatic Monitor Logoff ................................................................. 129
  - Disable ............................................................................................. 130
  - Enable ............................................................................................. 130

## C
- CAP 2/316 Tool ....................................................................................... 21
- Clear All Events .................................................................................... 100
- COM 610 .............................................................................................. 79
  - Communication setting ..................................................................... 81
  - Insertion ............................................................................................. 80
  - Supported protocols ......................................................................... 79
- Common Events
  - Predefined Events ........................................................................... 94
- Configuring Objects
  - Procedure .......................................................................................... 33
  - REB 500 Relays ............................................................................... 39
  - RED 500 Relays ............................................................................... 34
  - REx 216/316 Relays .......................................................................... 38
  - REx 5xx Relays ............................................................................... 39
  - SPACOM Relays ............................................................................... 36
- Corrective Measure - SSS
  - Application State Supervision .......................................................... 90
  - Icon Dimmed .................................................................................... 88
  - Icon No ............................................................................................ 89
User's Guide

Icon NoConf ................................................................. 88
Icon Red ........................................................................ 88
Icon Stop ....................................................................... 89
Line Communication Supervision .................................. 90
OS Events Supervision ................................................... 91

D
Definitions – SMS Conversion Tool
  Application ............................................................... 156
  Project ..................................................................... 156
Details – SMS Conversion Tool
  Close .......................................................................... 160
  Destination code page ................................................. 160
  Expand All ................................................................ 160
  Path ........................................................................... 160
  Select ......................................................................... 160
  Source code page ....................................................... 160
Dial-Up (SPA)
  Configuring .............................................................. 122
  Modem Command Initialization String ......................... 124
  System Configuration ................................................ 123
  System Configuration for Modem ................................. 123
Disable
  Automatic Logoff ....................................................... 130
  Scheduler .................................................................. 143
  System Self Supervision ............................................ 85
  Time Synchronization (SPA) .......................................... 128
  User Management ..................................................... 133
Disturbance Draw Tool ................................................. 22
Disturbance evaluation tools ......................................... 22
Disturbance recording tools .......................................... 21
DR-Collector Tool ........................................................ 21

E
Edit Menu - Project Structure Navigator
  Delete Object ............................................................ 53
  Insert Object ............................................................ 51
  Object Properties ...................................................... 53
Enable
  Automatic Logoff ....................................................... 130
  Scheduler .................................................................. 143
  System Self Supervision ............................................ 84
  Time Synchronization (SPA) .......................................... 128
  User Management ..................................................... 133
Example Figure
  Activating Remote Connection .................................... 110
  Common Events View ................................................ 95
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuring General Object Attributes</td>
<td>34</td>
</tr>
<tr>
<td>Configuring Serial Ports Project</td>
<td>32</td>
</tr>
<tr>
<td>Disabling System Self Supervision</td>
<td>85</td>
</tr>
<tr>
<td>Enabling Authorization Mechanism</td>
<td>134</td>
</tr>
<tr>
<td>Enabling Automatic Logoff</td>
<td>130</td>
</tr>
<tr>
<td>Enabling System Self Supervision</td>
<td>85</td>
</tr>
<tr>
<td>Enabling Task Scheduling</td>
<td>143</td>
</tr>
<tr>
<td>Enabling Time Synchronization (SPA)</td>
<td>129</td>
</tr>
<tr>
<td>Entering User View Data</td>
<td>40</td>
</tr>
<tr>
<td>Example Tasks Added to Scheduler</td>
<td>149</td>
</tr>
<tr>
<td>General Object Attributes for REF54X</td>
<td>54</td>
</tr>
<tr>
<td>Launching Tools</td>
<td>42</td>
</tr>
<tr>
<td>Login to SMS 510</td>
<td>48</td>
</tr>
<tr>
<td>Open Project</td>
<td>49, 171</td>
</tr>
<tr>
<td>Quick Start Project View</td>
<td>31</td>
</tr>
<tr>
<td>REF54X Configuration</td>
<td>35</td>
</tr>
<tr>
<td>Remote Connection Dial-Up (SPA) Settings</td>
<td>123</td>
</tr>
<tr>
<td>Remote Connection LAN to COM 500 or SYS 500 Settings</td>
<td>116</td>
</tr>
<tr>
<td>Remote Connection LAN to SMS 510 Settings</td>
<td>116</td>
</tr>
<tr>
<td>Remote Connection Remote/RAS to SMS 510 Settings</td>
<td>119</td>
</tr>
<tr>
<td>Scheduled Tasks in Scheduler</td>
<td>141</td>
</tr>
<tr>
<td>Setting Time/Date</td>
<td>127</td>
</tr>
<tr>
<td>SMS Conversion Tool View</td>
<td>157</td>
</tr>
<tr>
<td>SMS Conversion Tool, Import View</td>
<td>166</td>
</tr>
<tr>
<td>SPACOM Address Configuration</td>
<td>37</td>
</tr>
<tr>
<td>SPACOM Configuration</td>
<td>37</td>
</tr>
<tr>
<td>System Events View</td>
<td>96</td>
</tr>
<tr>
<td>System Self Supervision Alert</td>
<td>86</td>
</tr>
<tr>
<td>Task Monitor View</td>
<td>153</td>
</tr>
<tr>
<td>Task Scheduling, Browsing for Tools</td>
<td>147</td>
</tr>
<tr>
<td>Traffic Light, Green Color</td>
<td>151</td>
</tr>
<tr>
<td>Traffic Light, Red Color</td>
<td>152</td>
</tr>
<tr>
<td>Traffic Light, Yellow Color</td>
<td>152</td>
</tr>
<tr>
<td>User Management, Adding User</td>
<td>136</td>
</tr>
<tr>
<td>User Management, Changing User Password</td>
<td>138</td>
</tr>
<tr>
<td>User Management, Removing User</td>
<td>137</td>
</tr>
<tr>
<td>Exit</td>
<td></td>
</tr>
<tr>
<td>Project Structure Navigator</td>
<td>50</td>
</tr>
<tr>
<td>Remote Connection</td>
<td>112</td>
</tr>
<tr>
<td>SMS Conversion Tool</td>
<td>158</td>
</tr>
<tr>
<td>Supervision Log Viewer</td>
<td>100</td>
</tr>
<tr>
<td>System Self Supervision</td>
<td>86</td>
</tr>
<tr>
<td>Task Monitoring</td>
<td>154</td>
</tr>
<tr>
<td>Task Scheduler</td>
<td>142</td>
</tr>
<tr>
<td>Time/Date Settings Tool</td>
<td>128</td>
</tr>
<tr>
<td>User Management</td>
<td>136</td>
</tr>
</tbody>
</table>
F
File Menu – SMS Conversion Tool
  Exit ................................................................. 158
  Import ............................................................ 158
  Import Report .................................................. 158
Filter Menu – Supervision Log Viewer
  Common System Message Log Type .................... 105
  Log Types ....................................................... 104
  Operating System Events ................................ 103
  Supervision Log Profile ................................... 104
  Unknown Process Object Log .............................. 104
Floppy disks
  Importing projects from multiple floppy disks .......... 66

G
Gateway object types (COM 610) ............................. 79
Graphical I/O Setting Too ..................................... 21
Green Color
  Traffic Light .................................................... 151

H
Help Menu – SMS Conversion Tool
  About .................................................................. 162
  HV/Collect Tool ................................................ 21

I
Import Option - SMS Conversion Tool
  Application root level ........................................ 166
  Application root node ....................................... 166
  Cancel ............................................................. 167
  Destination code page ....................................... 166
  Import ............................................................. 167
  Select ............................................................. 166
  Skip empty objects .......................................... 166
  SMS 010 application name ................................. 166
  SMS 010 application path ................................. 166
  SMS 510 project name ...................................... 166
  SMS 510 project path ...................................... 166
  Source code page ............................................ 166
Import Summary Messages - SMS Conversion Tool
  Duplicate title resolved ..................................... 170
  None of child objects converted ........................ 170
  Object type could not be mapped ......................... 170
  The object is converted .................................... 170
  The object is not converted ................................ 170
Import Summary Report - SMS Conversion Tool
  List View ........................................................ 168
  Tree View ........................................................ 168
User’s Guide

Introduction
- Project Structure Navigator .......................................................... 17
- SMS 510 Applications ...................................................................... 17
- SMS 510 Base System ..................................................................... 17
- SMS 510 Functions and Tools ......................................................... 17
- SMS 510 Operational Features ....................................................... 16
- SMS 510 Supported Communication Protocols .............................. 17
- SMS 510 User Interface ................................................................. 17
- Supported LON cards .................................................................. 17

Introduction – Monitoring Functions
- Relay Setting Tools ........................................................................ 20
- Supervision Log Viewer ................................................................. 19
- System Self Supervision ................................................................. 19
- Task Monitor ................................................................................ 19

Introduction – Project Handling
- Organize Projects .......................................................................... 17
- SMS Conversion Tool .................................................................... 18

Introduction – Relay Setting Tools
- CAP 2/316 Tool ............................................................................. 20
- PST Tool ........................................................................................ 20
- REBWIN HMI Tool ................................................................. 20
- RED Relay Tool ............................................................................ 20
- SPA Relay Tool ............................................................................ 20

Introduction – System Configuration
- Device Level Communication Settings ........................................... 18
- Plant Structure Settings ................................................................. 18
- Remote Connections ....................................................................... 19
- System Configuration Tool ............................................................ 18
- System Configuration Tool – Automatic Logoff .............................. 18
- System Configuration Tool – Basic Communication Settings ........ 18
- System Configuration Tool – Task Scheduling .............................. 18
- Time/Date ..................................................................................... 19
- User Management ......................................................................... 19

K
Kernel
- Starting the MicroSCADA service .................................................. 25, 48
- Stopping the MicroSCADA service ............................................... 50

L
LAN
- Checking Connection ..................................................................... 117
- Configuring .................................................................................. 114
- Examples ..................................................................................... 115, 116

Launching Tools
- REB 500 Tools ............................................................................. 43
- RED 500 Tools ............................................................................. 43
User’s Guide

REx 216/316 Tools ................................................................. 43
REx 5xx Tools ......................................................................... 44
SPACOM Tools ......................................................................... 43

Line Communication
Devices ......................................................................................... 83
LON Channels ............................................................................... 83
Serial Ports .................................................................................. 83

Line Communication Supervision
Devices ......................................................................................... 90
Serial ports .................................................................................... 90

Log Menu – Supervision Log Viewer
Application Events from the Operating System ......................... 99
Common System Events ............................................................... 99
Security Events from the Operating ........................................... 99
System Events from the Operating System ................................. 99

Login
SMS 510 ..................................................................................... 48

Login Mechanism
Disable ....................................................................................... 133
Enable ......................................................................................... 133

LON
Time Synchronization .................................................................... 128

M

Master Design View
Insertion of Objects ....................................................................... 51
Master protocol ............................................................................. 79

Menus – Project Structure Navigator
Edit Menu ..................................................................................... 50
File Menu .................................................................................... 49
Help Menu ................................................................................... 59
System Tools Menu ....................................................................... 58
Views Menu ................................................................................ 55

Menus – SMS Conversion Tool
File Menu .................................................................................... 158
Help Menu ................................................................................ 162
Options Menu ............................................................................. 162
Project Menu ............................................................................... 160

Menus – Supervision Log Viewer
Filter Menu ................................................................................ 102
Log Menu ..................................................................................... 99
Options Menu ............................................................................ 105
View Menu .................................................................................. 100

Menus – Time/Date Settings
Help Menu ................................................................................... 128
Settings Menu .............................................................................. 128
User's Guide

Menus – User Management
File Menu ................................................................. 135
Help Menu ............................................................... 138
Tools Menu ............................................................... 136
View Menu ............................................................... 136

MicroSCADA Network Control system
Plant structure compatibility ........................................ 72

MicroSCADA service
Starting the MicroSCADA service ................................ 25, 48
Stopping the MicroSCADA service ............................... 50

MicroSCADA Service Access manager ......................... 22

MicroSCADA user settings for remote connections .......... 130
Moving Objects .......................................................... 31

Object Type Groups
Gateway ................................................................. 46
Plant Structure .......................................................... 46
Protection & Control .................................................... 46
SMS 510 Object Type Groups ........................................ 46
User Structure .......................................................... 46

Object Types
Compound Object Types .............................................. 46
Device Level Object Types .......................................... 46
Level Object Types ...................................................... 46
SMS 510 Object Types ................................................ 46
User Structure Object Type .......................................... 77

Objects
Basic Object Properties .............................................. 51
Configure objects ...................................................... 55
Deleting Objects ....................................................... 53
General Object Attributes .......................................... 54
Inserting Objects ...................................................... 51
Insertion of Level Objects in the User Views .................. 53
Insertion of Objects in the Master Design View ............... 51
Insertion of Objects in the User Views ........................... 52
Move objects .......................................................... 55
Procedure for Moving Objects .................................... 55
Save changes to objects' general attributes .................... 54
View/change objects' name ........................................ 54, 164
View/change objects' title ......................................... 54
Viewing object properties ......................................... 53

Operating System
Event Viewer .......................................................... 91
Operating System events from the operating system ....... 83
Security events from the operating system ..................... 83
System events from the operating system ..................... 83
User’s Guide

Operating System Events
AUDIT FAILURE ...................................................... 104
AUDIT SUCCESS .................................................... 104
ERROR ................................................................. 104
Handler State ......................................................... 104
INFORMATION ......................................................... 104
Settings ................................................................. 104
WARNING ............................................................. 104

Operating System Events Supervision
Application events ................................................. 91
Security events ........................................................ 91
System events ......................................................... 91

Options Menu - SMS Conversion Tool
Tool bar Visible .................................................. 162

Options Menu – Supervision Log Viewer
Background Color .................................................. 106
Configure Font ....................................................... 106
Default Colors .................................................... 106
Default Font ......................................................... 107
Definitions ............................................................ 105
Enlarge Font .......................................................... 107
Foreground Color .................................................. 107
Log Settings .......................................................... 107
Reduce Font ........................................................... 107
Toolbar Visible ..................................................... 106

Password
Change User Management Password ......................... 138
LAN and Remote/RAS ........................................... 113

Plant Structure Object Attributes
Field Length .......................................................... 72
Level Description .................................................. 72
Level Id ............................................................... 72

Plant Structure Object Types
Bay Objects .......................................................... 74
Overview ............................................................. 73
Station objects ....................................................... 73

Plant Structure Objects
Insertion Constraints ............................................. 73
Modifiable Attributes ............................................ 71

Plant Structure Settings Tool
Overview ............................................................. 71
Starting Tool ........................................................ 71

Project Export/Import Tool
Accessing Network Projects .................................. 63
Copying projects between network computers ............. 63
User’s Guide

Creating Projects ................................................................. 68
Deleting projects ................................................................. 67
Duplicating projects ............................................................ 68
Exporting projects ............................................................... 65
General project properties .................................................. 67
Importing projects ............................................................... 66
Overview ................................................................................ 61
Selecting projects ................................................................. 62
Set as Local ............................................................................. 68
Starting Tool ........................................................................... 61
Storage location for temporary projects ............................... 65

Project Menu – SMS Conversion Tool
Details................................................................. 161
Refresh ................................................................................. 161
Set Default Path ................................................................. 161

Project Structure Navigator
Alerts ..................................................................................... 47
Caption bar ............................................................................. 47
Changing/Viewing Project Properties .................................. 57
Closing the Current Project .................................................. 50
Customizable System Tools Menu ........................................ 59
Deleting Objects from Project .............................................. 53
Deleting User Views ............................................................ 57
Edit Menu .............................................................................. 50
Entering ................................................................................... 48
Exiting the session ............................................................... 50
File Menu ................................................................................. 49
Help Menu .............................................................................. 59
Inserting Objects to Project .................................................. 51
List of Views ........................................................................... 58
Menu bar ................................................................................. 47
Moving Objects ...................................................................... 55
Object tools list ...................................................................... 47
Opening Projects ................................................................. 49
Overview ................................................................................. 45
Projects .................................................................................. 45
ROOT ....................................................................................... 58
Status bar ................................................................................ 47
Structure ................................................................................. 47
System Tools Menu .............................................................. 58
Tool bar ................................................................................... 47
User Interface ........................................................................... 46,47
User Interface Elements ....................................................... 47
Viewing Object Properties ................................................... 53
Views Menu ............................................................................. 55

Project System Configuration
Modem Connection .............................................................. 123
Projects
Accessing Network Projects ................................................................. 63
Built-in Master Design View ................................................................. 45
Changing/Viewing Project Properties ..................................................... 57
Closing the Current Project ................................................................... 50
Copying projects between network computers .......................................... 63
Creating Projects ................................................................................... 68
Deleting Objects from Project ................................................................. 53
Deleting projects .................................................................................... 67
Duplicating projects ............................................................................... 68
Exporting projects .................................................................................. 65
General project properties ....................................................................... 67
Importing projects ................................................................................... 66
Importing projects from multiple floppy disks ......................................... 66
Inserting Objects to Project ..................................................................... 51
Maximum number of projects .................................................................. 45
Opening Projects .................................................................................... 49
Overview ................................................................................................. 45
Overview of project views ........................................................................ 45
Plant Structure Attributes ....................................................................... 71
Procedure for Moving Objects ................................................................. 55
Project list ................................................................................................. 62
Project's system configuration .................................................................. 64
Selecting projects in the Project Export/Import Tool ................................ 62
Set as Local ............................................................................................... 68
Storage location for temporary projects ................................................... 65
Tool for Project Management ................................................................. 61
Viewing/Changing Object Attributes ....................................................... 54

Quick Start
Apl Utils... ............................................................................................. 36
Configuring Objects ................................................................................ 33
Configuring REB 500 Objects ............................................................... 39
Configuring RED 500 Objects ............................................................... 34
Configuring REx 216/316 Objects ......................................................... 38
Configuring REx 5xx Objects ............................................................... 39
Configuring SPACOM Objects ............................................................. 36
Creating User Views ............................................................................... 40
Example .................................................................................................. 23
Insertion of Objects ................................................................................ 25
Launching Object Tools ........................................................................... 42
Launching REB 500 Tools ....................................................................... 43
Launching RED 500 Tools ...................................................................... 43
Launching REx 216/316 Tools ................................................................. 43
Launching REx 5xx Tools ........................................................................ 44
Launching SPACOM Tools ...................................................................... 43
User's Guide

Making System Configuration ........................................................... 32
Moving Objects ............................................................................... 31
Relay Configuration Procedure .................................................33
SOST Project .............................................................................. 24
Uploading of Application Configuration for RED 500 Objects .... 36

R
Red Color
Traffic Light ................................................................................ 152

Remote Connections
Activating a Remote Connection ..............................................110
Adding ..................................................................................... 114
Application Areas – Dial-Up (SPA) ......................................110
Application Areas – LAN and Remote/RAS ......................... 109
Checking LAN Connection ..................................................... 117
Closing a Remote Connection ............................................... 112
Configuring ........................................................................... 114
Configuring Dial-Up (SPA) .................................................. 122
Configuring LAN .................................................................. 114
Configuring Remote/RAS .................................................... 117
Connection Status .................................................................. 111
Deleting .................................................................................. 114
Dial-Up (SPA) .......................................................................... 109
Features .................................................................................. 109
Features – Dial-Up (SPA) .................................................. 110
Features – LAN and Remote/RAS ...................................... 109
Initial Steps .............................................................................. 113
LAN Examples ......................................................................... 115, 116
LAN over a local network ..................................................... 109
Modifying ............................................................................... 114
Overview ............................................................................... 109
Password and Access for LAN and Remote/RAS .................. 113
Preparing .................................................................................. 113
Remote Task Monitoring ...................................................... 111
Remote/RAS .......................................................................... 117
Remote/RAS Activation ...................................................... 111
Remote/RAS Example .......................................................... 119

Remote/RAS
Configuring .......................................................................... 117
Example ............................................................................... 119

S
Security Events
N/A ......................................................................................... 97
Select Application Root Node - SMS Conversion Tool
Close .................................................................................... 167
Destination code page .......................................................... 167
User’s Guide

Expand all ................................................................. 167
Path ................................................................. 167
Select ................................................................. 167
Source code page .................................................. 167
Statistics ............................................................... 167
Select Directory - SMS Conversion Tool
Arrow left ............................................................... 164
Arrow right ............................................................. 164
Cancel ................................................................. 164
History ................................................................. 164
Open ................................................................. 164
Path text box ......................................................... 163
Select ................................................................. 164
Special ................................................................. 164
View ................................................................. 164
Volumes ............................................................... 164
Select Path – SMS Conversion Tool
Path text box ......................................................... 162
Slave protocol ......................................................... 79
SMS 010 Application List
Application List ..................................................... 162
SMS 010 Application Structure
Module ............................................................... 155
Object/Bay ............................................................ 155
Organization ......................................................... 155
Station ............................................................... 155
Unit ................................................................. 155
SMS 010 Terms
Application .......................................................... 156
Application structure root level ......................... 156
Module/Part of Unit level ...................................... 157
Object/Bay level .................................................. 156
Organization level ............................................... 156
Station level ......................................................... 156
Unit level ........................................................... 157
SMS 010/510
Project ............................................................... 158
SMS 010/510 Field
Applications ......................................................... 158
Path ................................................................. 158
SMS 510
Applications ........................................................ 17
Base system ........................................................ 17
Contents of Manual ............................................. 15
Documentation ................................................. 15
Documentation Navigation .................................. 15
Exit ................................................................. 25, 50
User's Guide

Introduction ................................................................. 15
Login .................................................................................. 48
Login Window .............................................................. 48
Multiple instances not allowed ...................................... 49
Operational Features ....................................................... 16
Requested product information when contacting your local support . 59
Start .................................................................................. 25
Starting SMS 510 .......................................................... 48
Starting the MicroSCADA service .................................... 25
Stopping the MicroSCADA service ............................... 50
Substation Monitoring System .......................................... 15
Supported communication protocols ............................... 17
Supported LON communication cards ............................ 17
User Interface ................................................................. 17
Viewing Product Version Information ............................ 59

SMS 510 Introduction
Disturbance Recordings Tools ........................................... 21
Functions and Tools ......................................................... 17
Monitoring Functions ....................................................... 19
Project Handling ............................................................. 17
Project Structure Navigator ............................................. 17
Relay Setting Tools ........................................................ 20
System Configuration ...................................................... 18

SMS Conversion Tool
Abbreviations ................................................................ 156
File Menu ......................................................................... 158
Help Menu ........................................................................ 162
Import Operation ........................................................... 165
Import Remarks .............................................................. 156
Import Report ................................................................. 158
Import Summary ............................................................. 168
Limitations ...................................................................... 155
Options Menu ................................................................. 162
Overview ......................................................................... 155
Project Menu ................................................................. 160
Start Tool ........................................................................ 157
Starting Import Operation .............................................. 167
User Interface ................................................................. 157

SOST Project .................................................................. 24

SPA
Time Synchronization ..................................................... 128
SPA Terminal Emulator .................................................... 22

SPTO Configuration Tool .................................................. 21

Start
Open Project Export/Import Tool ...................................... 61
Open System Self Supervision ......................................... 85
Open Task Scheduler ...................................................... 140
<table>
<thead>
<tr>
<th>User’s Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open User Management ......................................................... 133</td>
</tr>
<tr>
<td>Project Structure Navigator .................................................. 48</td>
</tr>
<tr>
<td>SMS 510 ................................................................................. 48</td>
</tr>
<tr>
<td>SMS Conversion Tool ............................................................ 157</td>
</tr>
<tr>
<td>Supervision Log Viewer .......................................................... 98</td>
</tr>
<tr>
<td>Task Monitor ........................................................................... 152</td>
</tr>
<tr>
<td>Time Synchronization (SPA) ....................................................... 128</td>
</tr>
<tr>
<td>Time/Date Settings Tool ............................................................ 127</td>
</tr>
<tr>
<td>Stop</td>
</tr>
<tr>
<td>Time Synchronization (SPA) ....................................................... 128</td>
</tr>
<tr>
<td>Supervision Log Profile</td>
</tr>
<tr>
<td>Cancel .................................................................................. 105</td>
</tr>
<tr>
<td>Load New... .......................................................................... 105</td>
</tr>
<tr>
<td>OK ....................................................................................... 105</td>
</tr>
<tr>
<td>Profile Settings ....................................................................... 105</td>
</tr>
<tr>
<td>Save As... ............................................................................ 105</td>
</tr>
<tr>
<td>Supervision Log Viewer</td>
</tr>
<tr>
<td>Application Events ................................................................. 97</td>
</tr>
<tr>
<td>Common Events ......................................................................... 94</td>
</tr>
<tr>
<td>Device .................................................................................... 94</td>
</tr>
<tr>
<td>Engineers and after sales support engineers ............................ 93</td>
</tr>
<tr>
<td>Event Types ............................................................................ 95</td>
</tr>
<tr>
<td>Events .................................................................................... 93</td>
</tr>
<tr>
<td>Exit ....................................................................................... 100</td>
</tr>
<tr>
<td>Filter Menu ........................................................................... 102</td>
</tr>
<tr>
<td>Filters .................................................................................. 93</td>
</tr>
<tr>
<td>Glossary ............................................................................... 94</td>
</tr>
<tr>
<td>Help Menu .............................................................................. 108</td>
</tr>
<tr>
<td>Log Entries ............................................................................ 93</td>
</tr>
<tr>
<td>Log Menu ............................................................................... 99</td>
</tr>
<tr>
<td>Maintenance people .................................................................. 93</td>
</tr>
<tr>
<td>MicroSCADA .......................................................................... 94</td>
</tr>
<tr>
<td>NET ..................................................................................... 94</td>
</tr>
<tr>
<td>Net Line ............................................................................... 94</td>
</tr>
<tr>
<td>Operating System Based Events ............................................... 95</td>
</tr>
<tr>
<td>Operators ............................................................................... 93</td>
</tr>
<tr>
<td>Options Menu .......................................................................... 105</td>
</tr>
<tr>
<td>Overview ............................................................................... 93</td>
</tr>
<tr>
<td>Running ................................................................................ 94</td>
</tr>
<tr>
<td>Security Events ................................................................. 97</td>
</tr>
<tr>
<td>Start Viewer .......................................................................... 98</td>
</tr>
<tr>
<td>Station ................................................................................. 94</td>
</tr>
<tr>
<td>Suspended ............................................................................. 94</td>
</tr>
<tr>
<td>System Events .......................................................................... 95</td>
</tr>
<tr>
<td>Toolbar and Menus .................................................................. 98</td>
</tr>
<tr>
<td>Toolbar buttons ....................................................................... 98</td>
</tr>
<tr>
<td>Updating ............................................................................... 93</td>
</tr>
</tbody>
</table>
User's Guide

System Configuration ................................................................. 32
System Events
  N/A ......................................................................................... 97
System Self Supervision ............................................................. 130
  Alert ...................................................................................... 87
  Application State Supervision ............................................... 89
  Enabling SSS ........................................................................ 84
  Exit ....................................................................................... 86
  Line Communication Supervision .......................................... 90
  Object Status Representation ............................................... 86
  Open from Alert message .................................................... 85
  Open from Views Menu .......................................................... 86
  Overview .............................................................................. 83
  Project ................................................................................... 84
  Status Code ........................................................................... 87
  Status Icons ........................................................................... 87
  Status Information ................................................................. 86
  Status Text ............................................................................ 87
  Stopping SSS .......................................................................... 85
  Viewing .................................................................................. 85
System Self Supervision Status Icons
  Icon Dimmed ........................................................................... 88
  Icon No .................................................................................... 89
  Icon NoConf .......................................................................... 88
  Icon Not OK .......................................................................... 87
  Icon OK .................................................................................. 87
  Icon Stop ............................................................................... 89
System Tools
  Customizing ........................................................................... 59

T

Task Monitoring
  Colors .................................................................................... 151
  Green Color .......................................................................... 151
  Open ..................................................................................... 152
  Overview .............................................................................. 151
  Red Color ............................................................................. 152
  Removing Waiting Task .......................................................... 154
  Status List ............................................................................. 153
  Traffic Light .......................................................................... 151, 152
  Waiting Task ........................................................................... 154
  Yellow Color ........................................................................... 151

Task Scheduling
  Adding Predefined Tool ........................................................... 145
  Adding Tasks .......................................................................... 142
  Adding User Defined Tool ...................................................... 146
  Callback Function ................................................................... 142
# User’s Guide

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example</td>
<td>141, 149</td>
</tr>
<tr>
<td>Open Scheduler</td>
<td>140</td>
</tr>
<tr>
<td>Overview</td>
<td>139</td>
</tr>
<tr>
<td>Running Tasks</td>
<td>139</td>
</tr>
<tr>
<td>Stopping Tasks</td>
<td>140</td>
</tr>
<tr>
<td>Task Types</td>
<td>142</td>
</tr>
<tr>
<td>Tool Arguments</td>
<td>149</td>
</tr>
<tr>
<td>Tool Recommendation</td>
<td>142</td>
</tr>
<tr>
<td>Uploading Disturbance Recordings</td>
<td>149</td>
</tr>
<tr>
<td>Time Synchronization</td>
<td>128</td>
</tr>
<tr>
<td>LON</td>
<td>128</td>
</tr>
<tr>
<td>SPA</td>
<td>128</td>
</tr>
<tr>
<td>Starting (SPA)</td>
<td>128</td>
</tr>
<tr>
<td>Stopping (SPA)</td>
<td>128</td>
</tr>
<tr>
<td>Time/Date Settings</td>
<td>127</td>
</tr>
<tr>
<td>Help Menu</td>
<td>128</td>
</tr>
<tr>
<td>Open Tool</td>
<td>127</td>
</tr>
<tr>
<td>Settings Menu</td>
<td>128</td>
</tr>
<tr>
<td>Traffic Light</td>
<td>151</td>
</tr>
<tr>
<td>Green Color</td>
<td>151</td>
</tr>
<tr>
<td>Red Color</td>
<td>152</td>
</tr>
<tr>
<td>Yellow Color</td>
<td>151</td>
</tr>
<tr>
<td>Universal Naming Convention</td>
<td>63</td>
</tr>
<tr>
<td>Specifying paths in (UNC) format</td>
<td></td>
</tr>
<tr>
<td>User Defined Tool</td>
<td>149</td>
</tr>
<tr>
<td>Arguments</td>
<td></td>
</tr>
<tr>
<td>User Interface – User Management</td>
<td>135</td>
</tr>
<tr>
<td>Authorization group</td>
<td>135</td>
</tr>
<tr>
<td>Authorization level</td>
<td>135</td>
</tr>
<tr>
<td>Caption bar</td>
<td>134</td>
</tr>
<tr>
<td>Disable authorization mechanism</td>
<td>135</td>
</tr>
<tr>
<td>Level for selected row</td>
<td>135</td>
</tr>
<tr>
<td>Menu bar</td>
<td>134</td>
</tr>
<tr>
<td>Tool bar</td>
<td>135</td>
</tr>
<tr>
<td>User</td>
<td>135</td>
</tr>
<tr>
<td>User Language</td>
<td>135</td>
</tr>
<tr>
<td>User Management</td>
<td>137</td>
</tr>
<tr>
<td>Add Group</td>
<td>137</td>
</tr>
<tr>
<td>Add User</td>
<td>136</td>
</tr>
<tr>
<td>Authorization Groups</td>
<td>133</td>
</tr>
<tr>
<td>Authorization Levels</td>
<td>133</td>
</tr>
<tr>
<td>Change Password</td>
<td>138</td>
</tr>
<tr>
<td>Disable</td>
<td>134</td>
</tr>
<tr>
<td>Enable</td>
<td>133</td>
</tr>
<tr>
<td>File Menu</td>
<td>135</td>
</tr>
</tbody>
</table>
User’s Guide

Help Menu .............................................................................................................. 138
Overview ................................................................................................................ 133
Remove Group ......................................................................................................... 138
Remove User ........................................................................................................... 137
Start Tool ................................................................................................................ 133
Tools Menu .............................................................................................................. 136
User Interface ......................................................................................................... 134
View Menu ............................................................................................................. 136
User Structure Object Types
   Overview .............................................................................................................. 77
   Usability In Project Views .................................................................................... 77
User Views
   Insertion of Objects .......................................................................................... 52
User Views – Project Structure Navigator
   Insertion of Level objects ................................................................................... 53

V
View Menu – Supervision Log Viewer
   All Events .......................................................................................................... 100
   Details ................................................................................................................ 101
   Newest First ........................................................................................................ 101
   Next Page .......................................................................................................... 102
   Oldest First ......................................................................................................... 101
   Previous Page .................................................................................................... 102
   Refresh ............................................................................................................... 102
   Use Event Filter ................................................................................................. 101
Views – Project Structure Navigator
   Deleting User Views .......................................................................................... 57
   List of Views ....................................................................................................... 58
   Master Design View ............................................................................................ 45
   Overview ............................................................................................................. 45
   User Views ......................................................................................................... 45

Y
Yellow Color
   Traffic Light ....................................................................................................... 151